

July 19, 1927.

E. W. VOSE

1,636,024

SIGNAL APPARATUS FOR AUTOMOBILES

Filed July 12, 1922

4 Sheets-Sheet 1

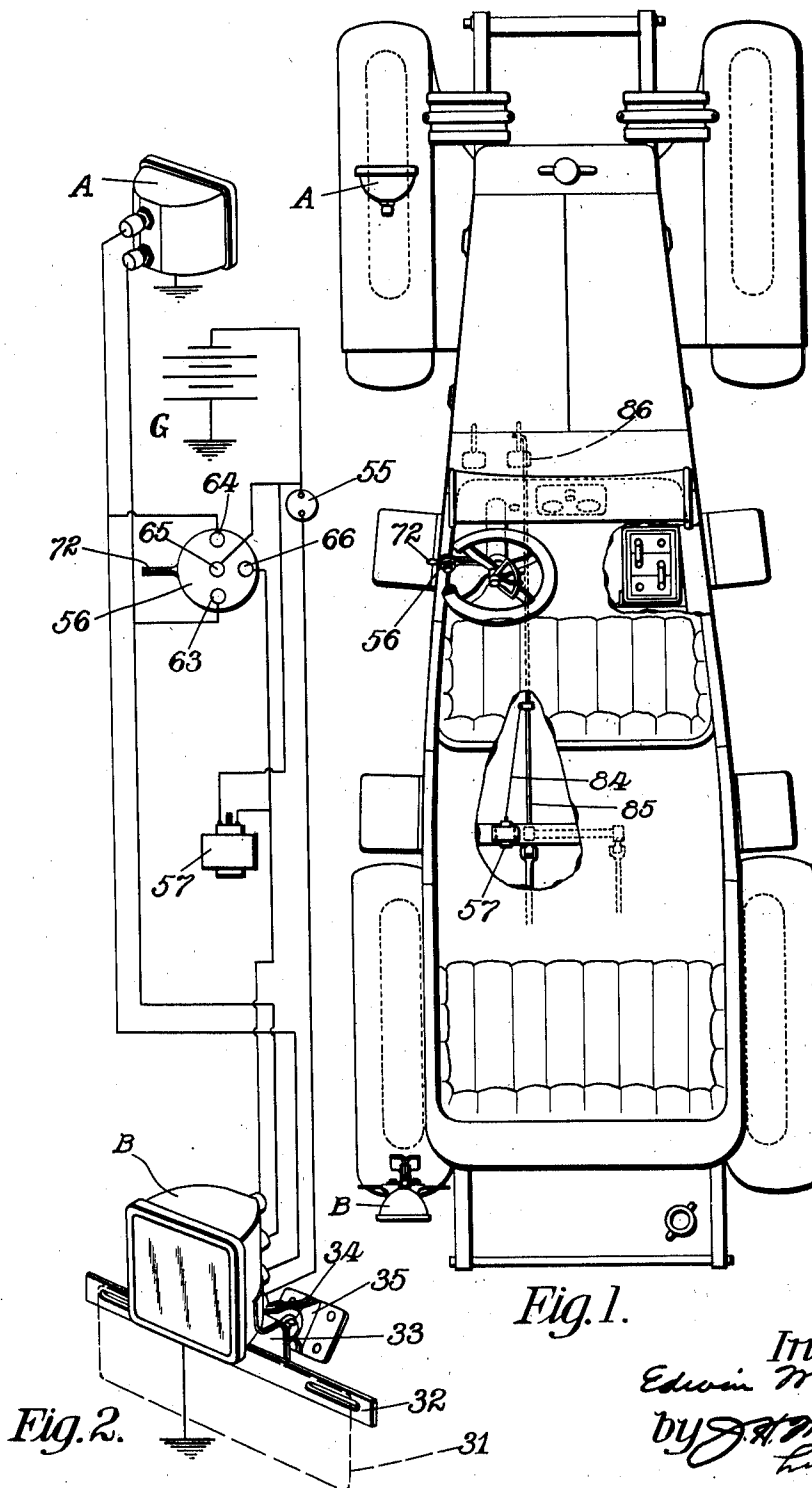


Fig. 1.

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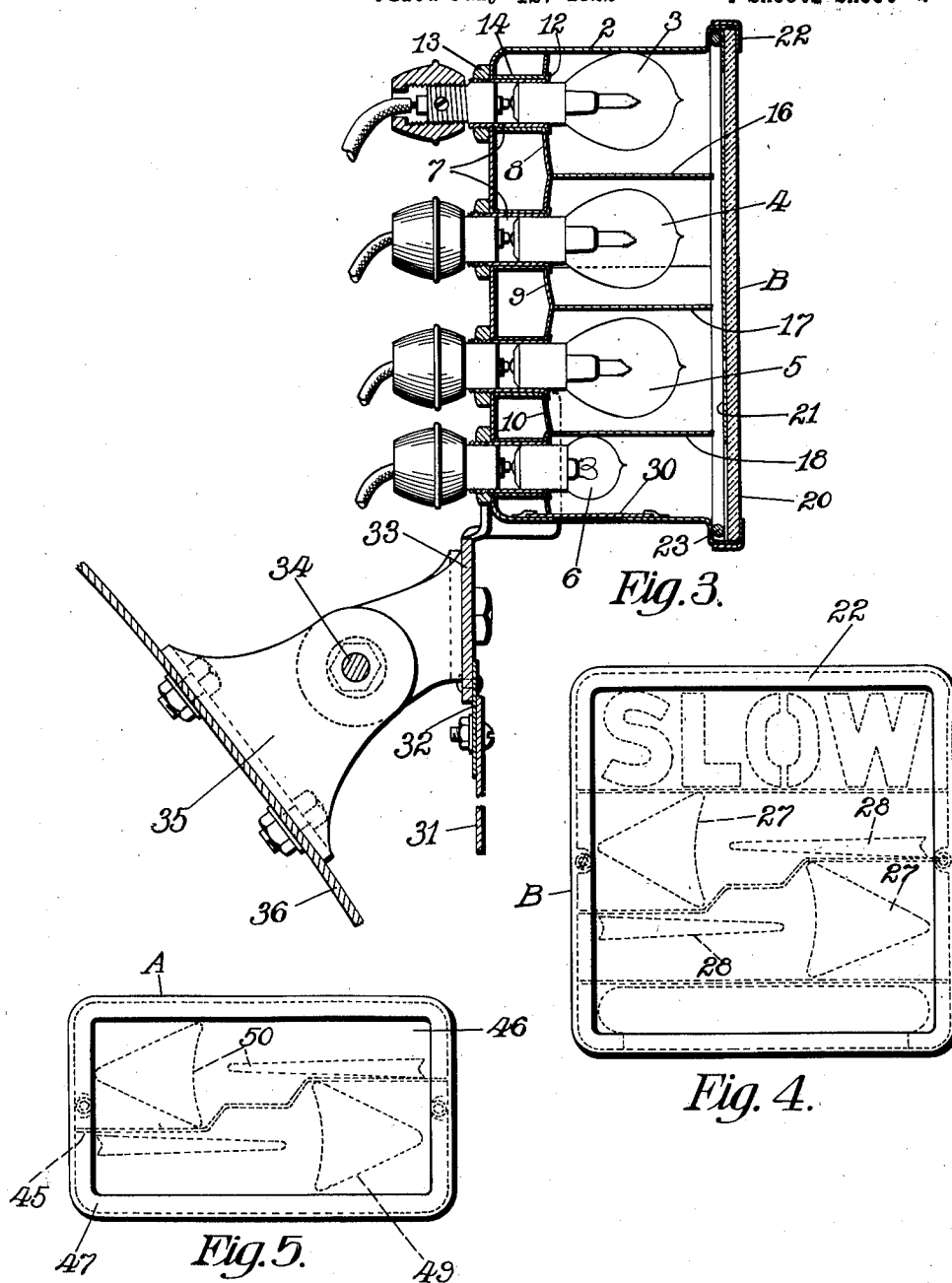
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4 Sheets-Sheet 2



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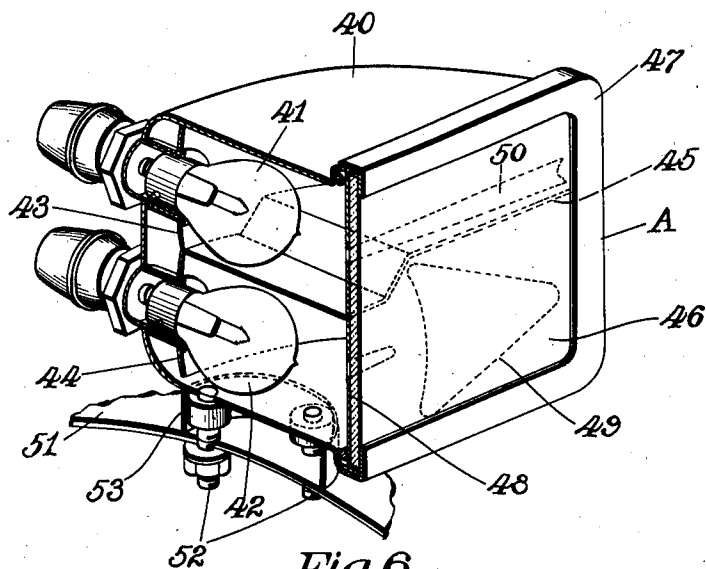
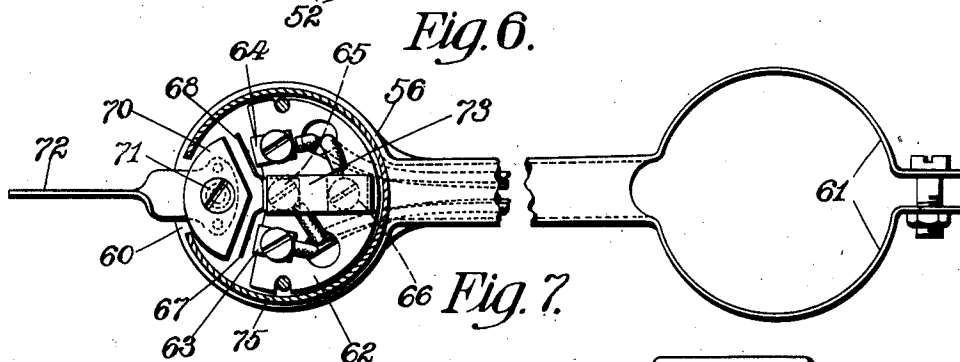
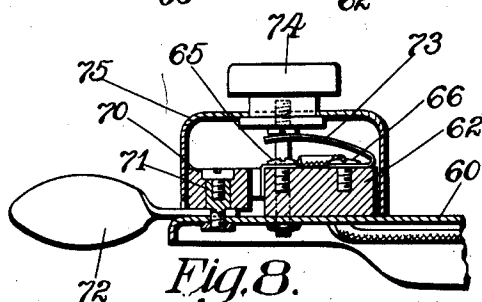
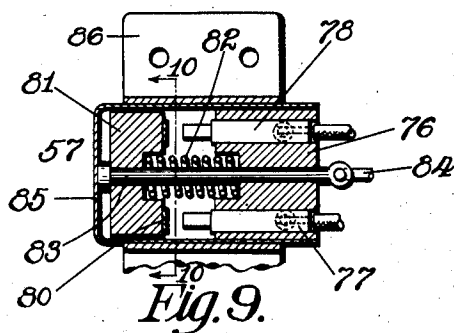
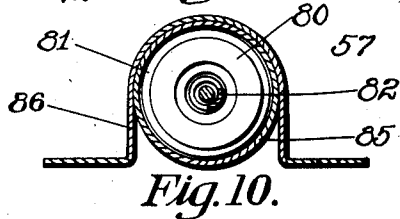
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SIGNAL APPARATUS FOR AUTOMOBILES

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4 Sheets-Sheet 3



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SIGNAL APPARATUS FOR AUTOMOBILES

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4 Sheets-sheet 4

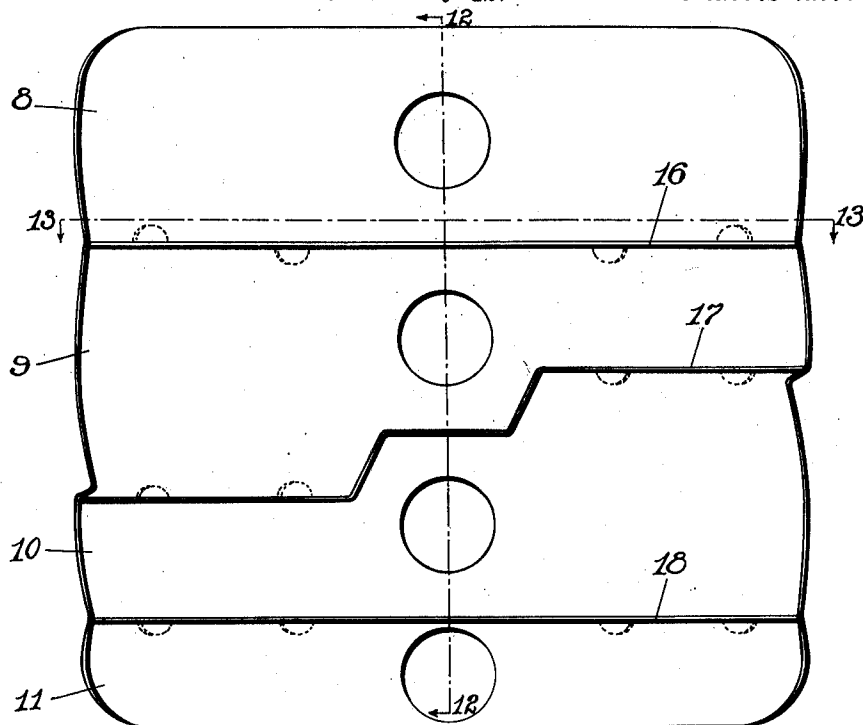


Fig. 11.

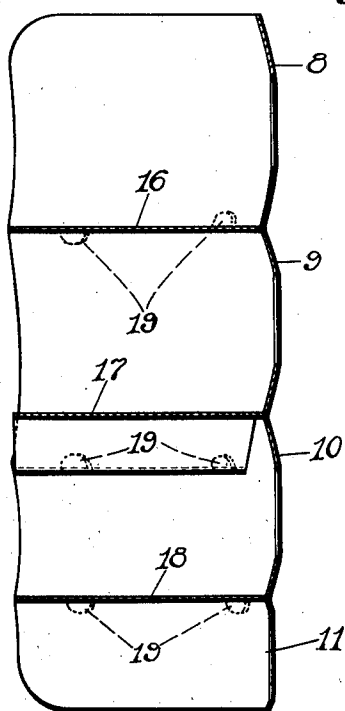
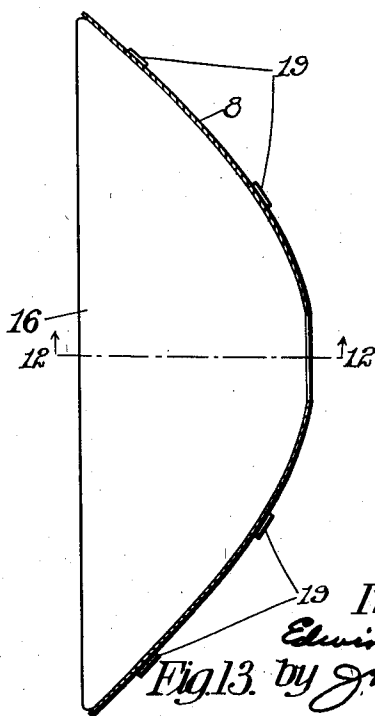


Fig. 12.



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Fig. 13. by J. M. Cready
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UNITED STATES PATENT OFFICE.

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SIGNAL APPARATUS FOR AUTOMOBILES.

Application filed July 12, 1922. Serial No. 574,475.

This invention relates to signal apparatus for automobiles and is especially concerned with that type of apparatus designed to give indications both in front and in the rear of a vehicle.

While signal apparatus of this general type has been proposed heretofore, it has been relatively crude and unsatisfactory and has never gone into practical use so far as I have been able to learn. It is the general object of the present invention to improve and perfect automobile signal apparatus, particularly that of the type just mentioned. The invention aims more especially to devise an apparatus of this general character which will be compact in construction, convenient to operate, economical to manufacture, and which will give clear and distinct signals even under unfavorable conditions.

The nature of the invention will be readily understood when read in connection with the accompanying drawings, and the novel features will be particularly pointed out in the appended claims.

Referring now to the drawings,

Figure 1 is a plan view of an automobile equipped with a signal apparatus constructed in accordance with this invention;

Fig. 2 is a diagrammatic view of the apparatus including the electrical connections therefor;

Fig. 3 is a vertical cross sectional view through the rear signal device;

Fig. 4 is a front elevation of the face of the rear signal;

Fig. 5 is a similar view of the face of the front signal;

Fig. 6 is a perspective view, partly in cross section, of the front signal device;

Fig. 7 is a plan view of a novel form of switch which preferably forms one element of the apparatus, the casing of the switch being shown in cross section;

Fig. 8 is a vertical cross sectional view of the left-hand part of the switch shown in Fig. 7;

Fig. 9 is a horizontal cross sectional view of another switch used in the apparatus;

Fig. 10 is a cross sectional view on the line 10—10, Fig. 9;

Fig. 11 is a front elevation of the reflector used in the rear signal and the partitions associated therewith;

Fig. 12 is a cross sectional view on the line 12—12, Fig. 11; and

Fig. 13 is a cross sectional view on the line 13—13, Fig. 11.

Referring first to Figs. 1 and 2, the apparatus shown comprises a front signal A secured to the forward part of the automobile, a rear signal B mounted in some convenient location on the back of the automobile, and suitable circuits controlling switches. The front signal device includes right and left direction signals, while the rear signal device includes right and left direction signals, a warning signal and a tail light.

The detailed construction of the rear signal device B is best shown in Figs. 3 and 4. This part of the apparatus comprises a casing 2 having the general form of half of a cylinder closed at top and bottom and with an open front. Four electric lamps designated, respectively, at 3, 4, 5 and 6 are mounted in the casing, each lamp being supported in a suitable socket 7 of the usual form. A reflector is provided for each lamp, the reflector sections for the individual lamps preferably being made in one piece, as best shown in Figs. 11 and 12. The reflectors for the lamps 3 to 6 inclusive are indicated in Figs. 11 and 12 at 8, 9, 10 and 11, respectively, these reflector sections being united in a single piece formed by the punch and die process, or in any other convenient manner. While the reflector sections thus are functionally independent, they are structurally integral. The reflector is secured in the casing by means of the sockets 7, each socket passing through a hole in its respective reflector section and having a flange 12, Fig. 3, which bears against the inner face of the reflector. Each socket is threaded to receive a nut 13, which bears against the back of the casing, and when these nuts are turned up they draw the reflector against the ends of spacing collars or ferrules 14 which encircle the respective sockets 7. Each reflector section thus is held firmly between the outer end of the ferrule 14 and the inner surface of the flange 12.

Cooperating with the reflector are a series of partitions designated at 16, 17 and 18, respectively, which divide the space in the casing into four compartments, one for each lamp. These partitions preferably are

punched out of sheet metal and are made with tabs or tongues 19, Figs. 12 and 13, which project through slots formed in the reflector between adjacent sections. After these tabs have been entered in their slots they are bent, as shown in Fig. 12, so that they firmly hold the partitions in their operative positions. This makes a sturdy construction which can be manufactured very economically. Each reflector section is made of parabolic form so that the rays of the lamp are reflected thereby in a substantially straight beam.

The open front of the casing is closed by a translucent plate 20, preferably consisting of red glass, and a stencil or mask 21 is mounted immediately behind this plate, both these elements being secured in place by a bezel 22 fastened to the casing by screws at opposite sides. A gasket 23, Fig. 3, of rubber, leather or the like, is interposed between the stencil and a marginal offset in the casing 2. The stencil extends the entire length and width of the opening in the casing and has suitable signal designations cut therein to cooperate with the lamps in the different compartments. In the arrangement shown the stencil bears the word "Slow" opposite the uppermost compartment and has two arrows pointing in opposite directions and located respectively opposite the second and third compartments, but it is almost entirely cut away below the lowermost compartment, so that the lamp in this compartment takes the place of the usual tail light.

Attention is particularly called to the form and arrangement of the arrows, each arrow having a relatively large head 27 and a relatively narrow shaft 28 which preferably is separated from the head by a substantial distance. I have found that this arrangement gives a very much clearer outline at a substantial distance from the signal, say between 100 and 200 feet, than does the usual and more common form of arrow. The arrangement of these two arrows, with the head of one overlapping the tail of the other, affords a very compact construction, the space required for these two signal elements being further reduced by the use of the stepped form of partitions 17 separating the compartments containing the lamps that illuminate the two arrows. For the purpose of reducing the effects of halation which would tend to blur the image reflected by the plate 20, the surfaces of the partitions 16, 17 and 18 are blackened, and both the inner and outer faces of the stencil 12 are blackened also. The blackening of the outer face of the stencil has the advantage of producing a clear image even when the sun or headlights are shining strongly on the glass plate 20. If the outer face of this stencil were white the outlines of the figures and letters cut therein would appear quite clearly

in the reflected light of the sun or automobile headlights, and the image produced by the signal light or lights behind the stencil thus would be very much less distinct.

The three upper lamps 3, 4 and 5 are controlled by switches which are operated only occasionally, so that normally these lights are out. The lowermost light 6, however, takes the place of the usual tail light and therefore is normally lighted at night. A hole is cut through the lower part of the casing 2 underneath the lamp 6, this hole being closed by a plate 30 of celluloid or other transparent material, so that the light shining through this aperture will illuminate a license plate 31 secured to a license plate holder 32 mounted on a bracket 33 that is welded, riveted or otherwise secured to the casing 2. This bracket 33 is secured by means of a bolt 34 to another bracket 35, bolted to one of the rear fenders 36, the connection between the brackets 33 and 35 permitting an angular adjustment of the signal device into any desired position. Any other suitable form of securing means may, however, be employed. The lower face of the partition 18 preferably is silvered or painted white so that it will reflect the rays from the lamp 16 downward through the aperture in the bottom of the casing.

The front signal device is best shown in Figs. 5 and 6 and comprises a casing 40 having lamps 41 and 42 mounted therein, the casing being of the same general form as the casing 2 but of about half the height of the latter casing. Mounted in the casing 40 is a reflector having parabolic reflecting sections 43 and 44 for the lamps 41 and 42, respectively, this reflector supporting a stepped partition 45 which divides the space in the casing into two compartments. The reflectors and partitions are supported in the casing in the same manner as in the rear signal above described, and the front of the casing is closed by a colored glass plate 46 held in position by a bezel 47 and backed up by a stencil 48 having right and left arrows 49 and 50 therein exactly like those previously described. This signal device is secured to the front mud guard 51, Fig. 6, by three threaded studs, two of which are shown at 52, the upper ends of these studs being headed over or riveted in the lower wall of the casing 40, and all three of the studs being encircled by a spacing sleeve or collar 53.

Referring to Figs. 1 and 2, it will be seen that the current is supplied to the tail light 6 from the battery G through the usual dash board switch 55, while the flow of current through the signal light circuits is controlled through two switches, one designated at 56 and the other at 57.

The switch 56 is of novel construction and is best shown in Figs. 7 and 8. It comprises

a base 60 having an extension terminating in a split clamp 61 designed to be secured on the steering column of the automobile, as clearly shown in Fig. 1. Mounted on the base 60 is an insulating block 62 having four terminals or contacts secured thereon and indicated, respectively, at 63, 64, 65 and 66. Diverging from the stationary contact 65 are two spring contacts 67 and 68, respectively, which project in front of the respective stationary contacts 63 and 64, and are so biased or tensioned that they are normally separated slightly from the stationary contacts. Positioned immediately in front of the spring contacts just mentioned is an insulating block 70 having a V-shaped face adjacent to the switches, this block being pivoted on a stud 71 which is secured in the base. This stud is pinned to a lever 72 also mounted on the pivot stud 71. Consequently, by swinging this lever on its fulcrum, the block 70 will move either of the contacts 67 or 68 into engagement with its cooperating stationary contact and thus close one switch or the other, depending on the direction in which the lever is swung.

Referring to the diagram shown in Fig. 2, it will be seen that the contact 63 is connected to a lead running to a conductor which is connected to the front and rear lamps that illuminate the arrows pointing to the left-hand side of the vehicle. The contact 64 is connected to another conductor running to the front and rear lamps that illuminate the arrows that point to the right-hand side of the vehicle. The central contact 65 is connected to one side of the battery G, the other side of this battery being grounded. The arrangement thus is such that when the switch lever 72, Figs. 1, 7 and 8, is pushed forward, the arrows pointing to the right are illuminated, and when it is pushed backwardly the arrows pointing to the left are illuminated. The driver thus can indicate both to a traffic officer in front and also to a car behind the direction in which he intends to turn, and this indication is given by a movement of the switch handle 72 which is naturally related to the direction in which he intends to go.

The terminal screw 66 secures one end of a spring contact or switch arm 73 to the base 62, and the other end of this arm is bent backward, as clearly shown in Fig. 8, and extends over the stationary contact 65. A push button 74 rests on the part 73. Consequently, when this push button is depressed, it closes the switch 73—65, thus lighting the uppermost lamp 3 in the rear signal and illuminating the word "Slow".

All the contacts and terminals above mentioned are enclosed in a housing 75 through which the lever 72 and push button 74 project, as clearly shown in Fig. 8. This arrangement thus provides a very compact

switch mounted within convenient reach of the driver, and enabling him to operate either of the direction signals or the "slow" signal, at will.

The manual control just described for the "slow" signal is provided in order to enable the driver to set this signal whenever he wishes to for any reason, as for instance, when he intends to slow down on a hill and does not wish to apply his brakes. Usually it is more convenient, however, to have the "slow" signal operated automatically by a switch connected with the brake mechanism. It is for this purpose that the switch 57 is provided. The detailed construction of this switch is best shown in Figs. 9 and 10, from which it will be seen that it comprises an insulating block 76 having two binding posts 77 and 78 secured therein and having ends that project forward in front of the part 76. The two members 77 and 78 form the stationary contacts of the switch. The movable contact consists of an annular metal plate 80 secured on the face of an insulating block 81, this block normally being held away from the block 76 by means of a coiled spring 82 which is interposed between these two parts. A rod 83 extends through the parts 76 and 81 and has a head bearing on the left-hand end, Fig. 9, of the block 81. A cord, wire, or the like, 84, connects this rod with the brake rod 85, Fig. 1, of the machine. Consequently, when the brake pedal 86 is depressed and the brake rod 85 is moved forward to set the brakes, the movable contact 80 will be carried forward into engagement with the contacts 77 and 78, thus closing the circuit through the "slow" lamp 3, as will be evident from an inspection of the wiring diagram in Fig. 2. The more important parts of this switch are enclosed in a housing 85 which is riveted, spot-welded, or otherwise secured, to a metal strap 86 having holes therein to receive screws by means of which the switch may be secured to the floor boards of the car, or in any other convenient location.

The operation of the apparatus has been so fully described in connection with the foregoing description of construction that any further statement of operation is believed to be unnecessary.

It will now be appreciated that this invention provides a signal apparatus which gives both a warning signal and also right and left direction signals, with convenient controlling means for operating these signals. It also combines a tail light with this apparatus in its preferred form, thus providing a very neat and compact construction. Furthermore, the construction shown is not only economical to manufacture, but is of very sturdy and substantial construction so that it will last practically as long as the car on which it is used. The parts of the

signal system, furthermore, have been so designed that they will give very clear and distinct signal indications even at considerable distances from the vehicle and under relatively unfavorable light conditions.

It will be observed that the switch lever 72 is moved to set either a right or left signal in the same direction that the steering wheel is moved to steer the vehicle in the corresponding direction. The movement of the switch thus is naturally related to the direction signal set thereby, and this fact is a very important factor in avoiding confusion in the driver's mind. Furthermore, the fact that only one direction signal can be set at a time is of especial advantage since it avoids the possibility of setting, simultaneously, signals that otherwise might be confusing.

While I have herein shown and described the best embodiment of the invention of which I am at present aware, it will be appreciated that the invention is not limited to embodiment in the specific form shown, but that various modifications may be made in this embodiment without departing from the spirit or scope of the invention.

The switch constructions disclosed herein are not claimed in this application, but the right is reserved to claim them in a divisional application or applications.

Having thus described my invention, what I desire to claim as new is:

1. In a signal device for automobiles, a casing having a lamp compartment therein, an electric lamp in said compartment, said casing having an open front, and light emitting means for closing said front including a part having an arrow therein arranged to be illuminated by said lamp, said arrow having a large head and a relatively small tapered shaft separated from the head by a substantial distance with the small end of the shaft adjacent to the head.

2. A signal device for automobiles comprising a casing having two relatively long and narrow lamp compartments therein arranged one above the other, a lamp in each of said compartments, said casing having an opening therein at one side of each of said compartments, a translucent plate closing said opening, a stencil located immediately behind said plate and having two arrows cut therein pointing in opposite directions and arranged, respectively, opposite said compartments, each of said arrows having a large head and a relatively narrow shaft separated from said head.

3. A signal device for automobiles comprising a casing having two relatively long and narrow lamp compartments therein arranged one above the other, a lamp in each of said compartments, said casing having an opening therein at one side of each of said

compartments, a translucent plate closing said opening, a stencil located immediately behind said plate and having two arrows cut therein pointing in opposite directions and arranged, respectively, opposite said compartments, each of said arrows having a large head and a relatively narrow shaft tapered toward said head and said shaft being separated from the head by a substantial distance.

4. A signal device for automobiles comprising a casing having a plurality of relatively long and narrow lamp compartments therein, an electric lamp in each of said compartments, said casing having an open front, a translucent plate closing said front, a reflector common to a plurality of said compartments having independent parabolic reflecting sections for the respective lamps in said compartments, and a partition separating adjacent compartments from each other and having tabs fitting into slots formed in said reflector and securing the partition in its operative position.

5. A signal device for automobiles comprising a casing having a plurality of lamp compartments therein arranged one above the other, an electric lamp in each of said compartments, said casing having an open front, a translucent plate closing said front, a reflector common to a plurality of said compartments and having independent reflecting sections for the respective lamps, each of said sections being of approximately parabolic form in horizontal cross-section, and a substantially non-reflecting partition separating adjacent compartments from each other.

6. A signal device for automobiles comprising a casing having a lamp compartment therein, an electric lamp in said compartment, a reflector for said lamp, a socket for said lamp, means to fasten said socket to said casing, said socket having a part bearing against the front of the reflector, and a spacing ferrule encircling said socket with its ends bearing, respectively, against the inside of the back of the casing and the reflector, whereby the ferrule and socket cooperate to hold the reflector in said compartment in place.

7. In a signal device for automobiles, a casing, a plurality of lamps in said casing, a sheet metal reflector therein comprising a plurality of sections of parabolic form in horizontal cross section, and arranged one above the other but integral with each other, and a partition separate from said reflector but having its edge secured thereto at the junction of said parabolic sections, each of said sections cooperating with one of said lamps.

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