

J. PFEIFER.  
 DIRECTION SIGNAL FOR MOTOR VEHICLES.  
 APPLICATION FILED AUG. 9, 1918.

1,379,835.

Patented May 31, 1921.  
 3 SHEETS—SHEET 1.

FIG 1

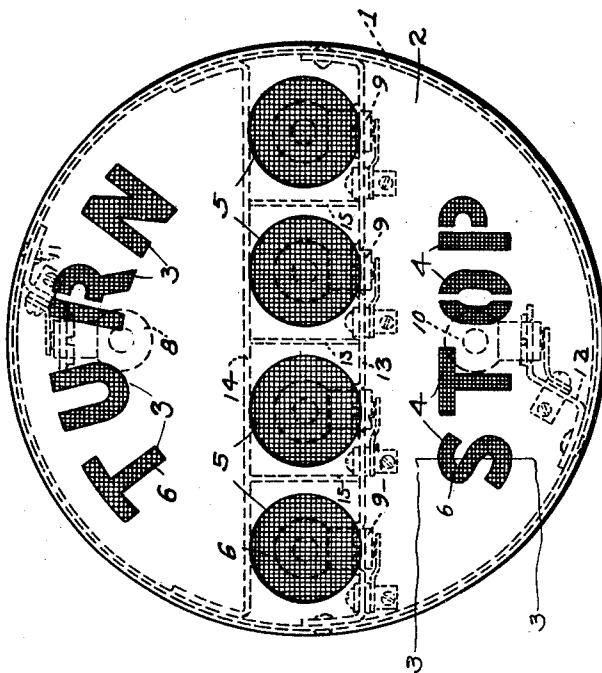


FIG 3

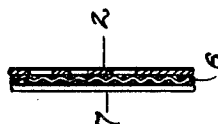
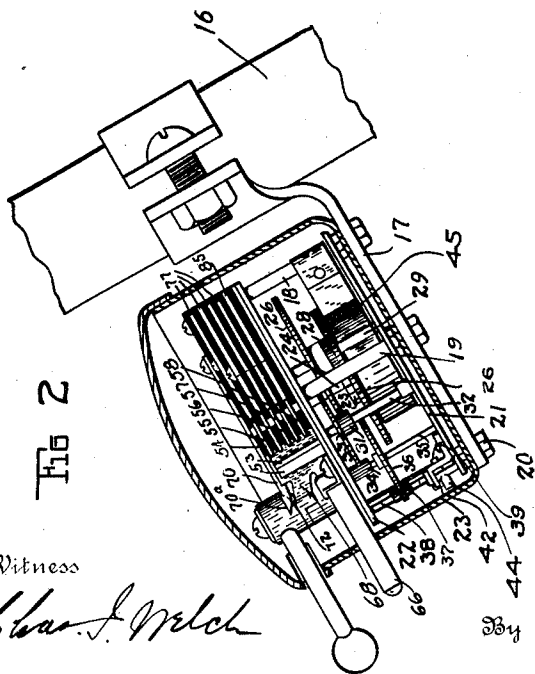


FIG 2



Witness

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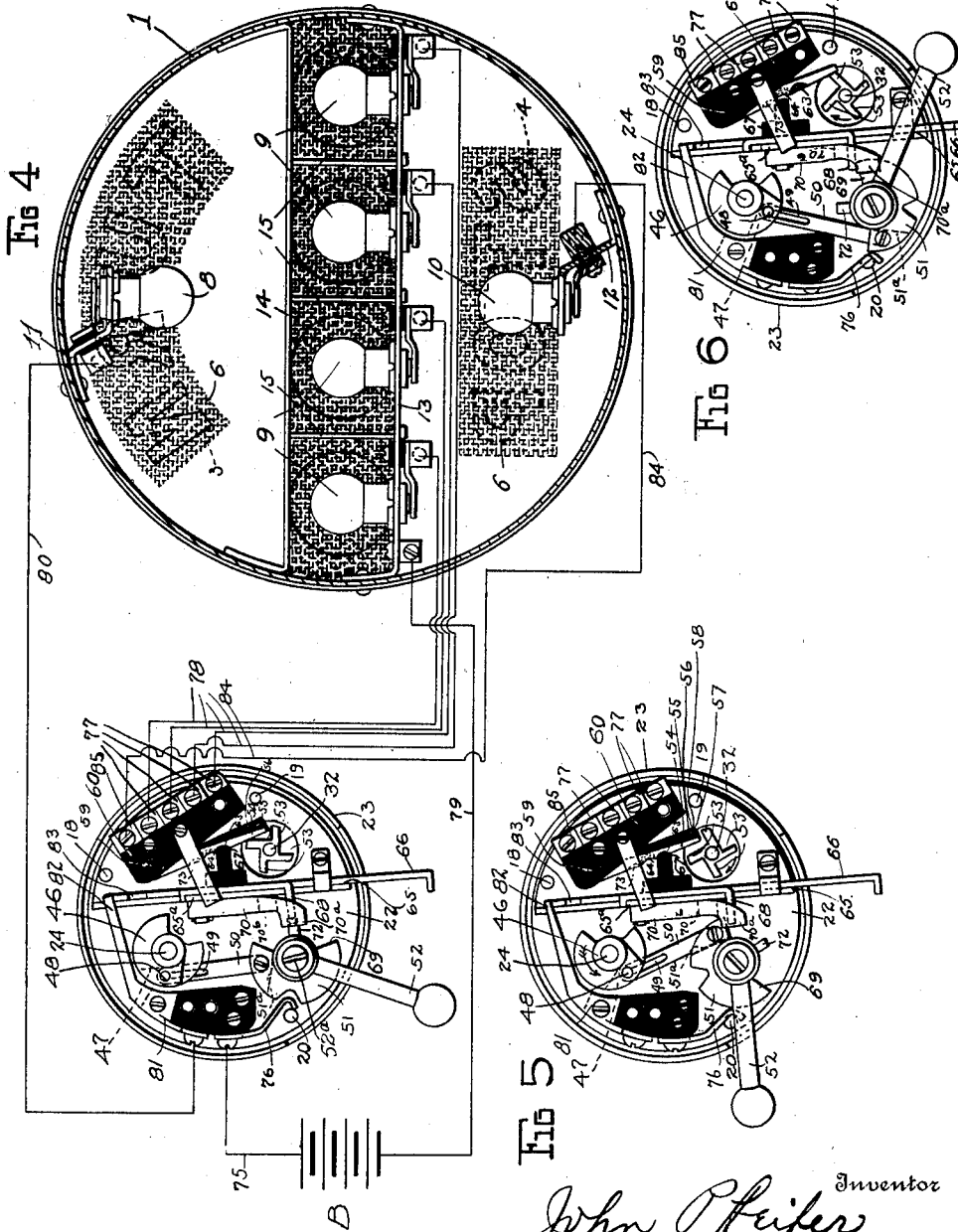
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Witness

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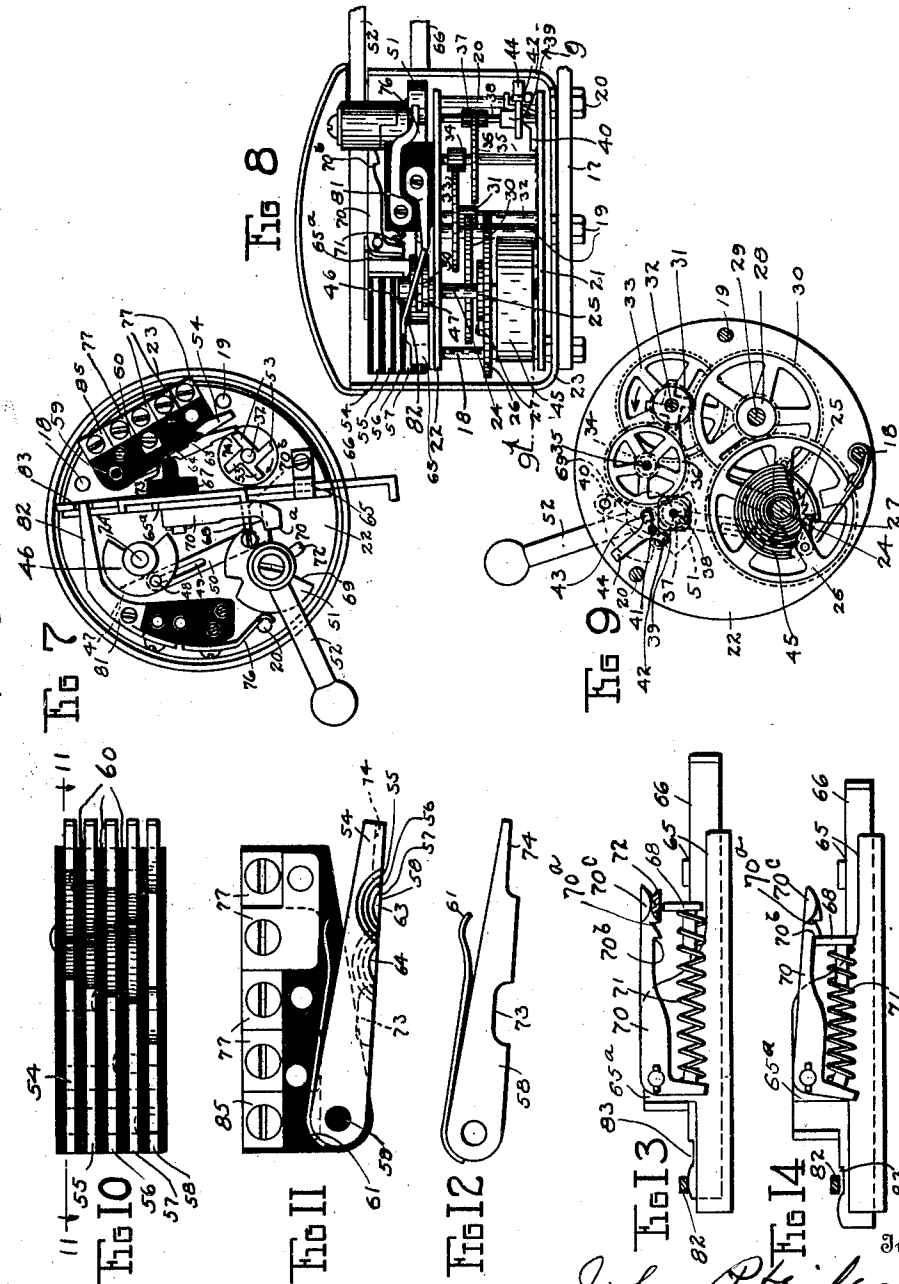
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3 SHEETS—SHEET 3.



Witness

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# UNITED STATES PATENT OFFICE.

JOHN PFEIFER, OF SPRINGFIELD, OHIO, ASSIGNOR OF ONE-THIRD TO CHARLES L. FRIERMOOD, OF SPRINGFIELD, OHIO.

## DIRECTION-SIGNAL FOR MOTOR-VEHICLES.

1,379,835.

Specification of Letters Patent.

Patented May 31, 1921.

Application filed August 9, 1918. Serial No. 249,165.

*To all whom it may concern:*

Be it known that I, JOHN PFEIFER, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Direction-Signals for Motor-Vehicles, of which the following is a specification.

This invention relates to improvements in direction signals for automobiles, it more particularly relating to that type of direction signal in which a series of lights are flashed in successive order in the direction in which it is desired to turn.

The object of the invention is to specify and make more convenient the manner of flashing the lights, a more specific object of the invention being to provide a switch located at a convenient point which can be so manipulated as to flash the lights in the desired direction through a definite period of time, the construction being such that the switch will be automatically thrown out of operation after the predetermined and required number of flashes have been made.

A further object of the invention is to so construct the switch as to indicate the signal "Stop," the manipulation of the switch to indicate this signal automatically cutting out the direction light flashes.

A further object of the invention is to simplify the construction and make more convenient and effective the operation of signals of this character.

In the accompanying drawings:—

Figure 1 is a front elevation of the signal proper, the switch mechanism not being shown in this figure.

Fig. 2 is a side elevation of the switch mechanism shown attached to the steering post of an automobile with the casing shown in section.

Fig. 3 is a section on the line 3—3 of Fig. 1.

Fig. 4 is a view somewhat diagrammatic in character showing the rear of the signal casing proper, with the rear of the casing removed, and also showing a top plan of the switch, with the upper part of its casing removed, and the circuits between the switch and the lights in the signal casing, the switch in this view being shown in neutral position.

Fig. 5 is a top plan view of the switch with the upper portion of the casing re-

moved showing the parts in the position in which they will be thrown for flashing the lights in one direction.

Fig. 6 is also a top plan view of the switch with the upper portion of the casing removed showing the parts in the position in which they will be thrown for flashing the lights in the opposite direction.

Fig. 7 is a top plan view of the switch with the upper portion of the casing removed showing the position of the parts when thrown to indicate the "stop" signal.

Fig. 8 is a side elevation of the switch with the casing shown in section, the view being in the opposite direction to that shown in Fig. 2.

Fig. 9 is a section on the line 9—9 of Fig. 8 looking upwardly.

Fig. 10 is an enlarged side elevation of the contact fingers of the switch, looking at them in the direction in which they are shown in Fig. 8.

Fig. 11 is an enlarged sectional view of the contact fingers, the section being on the line 11—11 of Fig. 10.

Fig. 12 is a detail of the "stop" contact finger.

Fig. 13 is a detail of that portion of the switch which controls the contact fingers to change the order of their contact for one of the directions and also for throwing them out of operation when it is desired to indicate "stop," with the automatic release for the same, the parts being shown in neutral position.

Fig. 14 is a view of the same parts showing them in the position in which they are manipulated for the "stop" signal.

In the installation of the signal, it is the intention to install one of the signal casings at the rear of the automobile and another signal casing at some convenient point at the front, one switch mechanism serving to illuminate and extinguish the lights in both casings, the switch mechanism being located at some convenient point such as on the steering post of the automobile just beneath the steering wheel. As both of the casings containing the lights will be of identical construction, but one has been shown.

Referring to Figs. 1 and 4, the casing for the signal proper is indicated by 1, this casing being of metallic construction and having a removable front 2 stamped or stenciled

out to form lettered openings 3 to indicate the word "Turn" at the top, lettered openings 4 to form the word "Stop" at the bottom and round openings 5 in the center for the light flashes which indicate the directions. Immediately back of all of the openings in the casing front are placed screens 6 preferably of wire and back of these wire screens is a disk 7 of translucent material such as celluloid. (See Fig. 3 for detail). The screens 6 should be of the same color as the metal of the casing, such as black, and the purpose of the screens is to render the signals "Turn" and "Stop" invisible or ineffective by daytime except at such times as the lights are illuminated behind them and also permit more effective daylight indications as well as by night. While the sheet of translucent material 7 is more to provide for a weather proof covering for the front 2 of the casing it will at the same time permit the proper indications both by day and night. While the sheet 7 has been described as translucent, which is preferable, it might be of a transparent nature with the same result.

Within the casing behind the word "Turn" is an electric light 8, behind each of the openings 5 are lights 9 and behind the word "Stop" is a light 10, suitably supported upon the brackets 11, cross-bar 13 and bracket 12. Each of the lights 9 is in a separate compartment, the compartments being formed by the bar 13 as the bottom, another bar 14 as the top and vertical partitions 15 between the respective bars 13 and 14.

As before stated, the switch for flashing the lights for signaling purposes is supported in convenient reach of the driver, such as on the steering post 16 (Fig. 2) a circular bracket 17, clamped to the steering post, being employed as the supporting means. Secured to the bracket 17 are upright supports 18 19 and 20 which support circular plates 21 and 22; a casing 23 being clamped between the bracket 17 and nuts on the supports for inclosing the switch mechanism. Journaled in the supporting disks 21 and 22 is a shaft 24 to which is fixed a ratchet wheel 25. Loosely mounted upon the shaft 24 is a gear wheel 26 having a pivoted pawl 27 in spring-pressed engagement with the ratchet wheel. The gear 26 is in mesh with a pinion 28 fixed to a shaft 29 which carries a gear 30. The gear 30 meshes with another pinion 31 on a shaft 32 which carries a gear 33. The gear 33 is in mesh with the pinion 34 on a shaft 35 which carries a gear 36. The gear 36 meshes with the pinion 37 on a shaft 38 which carries a four-sided disk 39. Pivoted on a small bracket 40 is a pin 41 having connected therewith oppositely arranged studs 42 and 43 placed in the path of movement of the corners of

the four-sided disk. The pin 41 also has a tail 44 projecting therefrom between the studs 42 and 43 at right angles to the pins. The ratio of the gearing and the action of the studs upon the four-sided disk which performs the function of a governing device is such as to regulate the speed of the mechanism to the proper degree; the governor mechanism consisting of the pin and studs and tail being given a vibratory movement by reason of the contact of the points of the four-sided disk with the studs to cause it to act as an inertia governor.

Power to drive the mechanism so far described, is imparted by a spring 45 coiled about the shaft 24, with one end thereof connected to the said shaft 24 and the other end to the support 18. Connected to the upper end of the shaft 24 above the supporting plate 22 is a partial disk 46, one portion of the periphery of which has a slot 47 (shown in dotted lines in the various figures). This disk has a vertically extending pin 48 which receives the elongated slot 49 of the link 50. The other end of the link is pivotally connected with a partial disk 51, the connection being by means of a vertical pin which extends through a slot 51<sup>a</sup> in the periphery of the disk in the same manner as described in connection with the disk 46. Connected to the disk 51 is a lever 52.

As a result of this construction, when the lever 52 is turned either to the right or to the left it will impart a rotary movement in the same direction to the shaft 24 by reason of the peculiar construction of the connection consisting of the slotted link 50 and disk 46, placing the spring 45 under tension to a sufficient degree to return the parts to normal position.

Referring to Fig. 4 in which the mechanism is shown in neutral position it will be observed that the link 50 is arranged on a straight line with the pivotal points of the link with the disks 46, 51 and the pivotal connection 52<sup>a</sup> of the disk 51, said disk being pivotally supported on the upper plate 22 or in other words the three pivotal points are in a straight line with each other. When the lever 52 is thrown to the left or to the position shown in Fig. 5 it will revolve the shaft 24 in the direction shown by the arrow in that figure, placing the spring 45 under increased tension; the movement of the lever being limited by the contact of the end of the slot 51<sup>a</sup> in the disk 51 with the link 50. When the lever is released by the operator the spring and train of gearing before described will revolve the shaft 32 in the direction of the arrow shown in Fig. 6, the movement of the parts being automatically stopped when they assume the position shown in Fig. 4, or as before explained, when the pivotal connections of the lever 52 and link 50 become aligned.

When the lever 52 is thrown to the right, or to the position shown in Fig. 6, a like action will take place; that is, the shaft 24 will be revolved in the same direction to

5 place the spring under tension and the mechanism then operated to drive the shaft 32 in the same direction until the parts have again assumed their neutral position shown in Fig. 4.

10 Secured to the shaft 32 is a wiper consisting in the present instance of four wings 53. Arranged in the path of movement of these wings 53, is a series of five fingers 54, 55, 56, 57 and 58, these fingers being pivoted on a pin 59 of insulating material and also separated by blocks 60 of insulating material which are connected to and supported by the plate 22. Springs 61 arranged between the blocks of insulating material tend to throw the fingers against the wiper wings 53. Each finger 54, 55, 56 and 57 has a pair of grooves 63 and 64, one deep groove and one shallow groove, as best shown in Fig. 11. It will be noticed that these grooves are

25 arranged in two series; that the outer groove of the topmost finger 54 is the deepest and that the outer groove of the lower finger 57 is the shallowest, the grooves in the intermediate fingers varying in depth, decreasing downwardly. It will also be noticed that the innermost groove 64 of the upper finger is the shallowest and that the grooves in the succeeding fingers increase in depth.

30 Slidably mounted in a guideway 65 on the upper side of the frame plate 22 is a slide rod 66 carrying a block 67 of insulating material. In the neutral position of the mechanism this block of insulating material 67 stands in line with the series of grooves 63 of the fingers. When the operating lever 52 is thrown to the position shown in Fig. 5 and released, the revolution of the shaft 32 causes the wings 53 to press or wipe back the fingers against the tension of the springs, the fingers as they ride from one wing to the next springing back by the action of the springs until arrested by the insulating block 67. By reason of the difference in depth of the grooves, the fingers, as they

45 ride off of one wing will assume a position such as shown in Fig. 5 so that the next succeeding wing will first contact the upper finger and then each successive finger in order, as a result of which, by reason of the electrical connections hereinafter to be described the lights 9 will be illuminated in successive order while the fingers are being pressed back by one of the wings and then simultaneously extinguished while all the fingers are springing back again to a position to be contacted by the next succeeding wing and the flashes of light will be to the left or in the direction in which the operating lever 52 has been thrown.

65 Assuming now that it is desired to indicate

the opposite direction, the driver will throw the operating lever 52 to the right. In order to change the direction of the flashes, it, therefore, becomes necessary that the wiper wings 53 should first contact the lower finger 57 and then in succeeding order the fingers 56, 55 and 54. In order to accomplish this, provision is made for moving the slide 66 and its connected stop block 67 so that the stop block 67 will be in line with the series of grooves 64. Connected with the slide 66 is a lateral projection 68 arranged in the path of movement of the shoulder 69 on the disk 51, as a result of which as the operating lever is swung to the right the shoulder will contact the projection 68 and move the slide and its block 67 in line with the grooves 64. In order that the slide and block may be held in this position as the operating mechanism, including the shoulder on the disk 51, returns to neutral position, there is provided a catch 70 which is pivoted to a projection 65<sup>a</sup> on the guideway 65 which springs over the lateral projection 68 on the slide by the action of the spring 71, which is interposed between the tail of the pawl and the projection 68 the notch 70<sup>a</sup> thereof engaging the projection 68 and thus retains the slide and its block 67 in operated position. To release the slide to allow it to return to its normal position at the end of the movement of the mechanism there is provided on the disk 51 a cam projection 72 which at the proper moment rides under a beveled extension 70<sup>c</sup> on the pawl and lifts it from engagement with the lateral projection 68 of the slide, the spring 71 serving to return the slide 66 and its block 67 to normal position.

105 When it is desired to indicate the "stop," signal, all of the wiper fingers 54, 55, 56 and 57 are thrown out of operation and the lowermost finger 58 into operation. Referring to Figs. 11 and 12, it will be seen that the finger 58 is provided with two grooves 73, and 74. During the time that the other wiper fingers are being manipulated to indicate directions, the high point of the lower edge of the finger 58 between the two grooves 73 and 74 will stand opposite the stop block 67 so that this finger will not be permitted to spring back against the wipers, the groove 74 being more for the purpose of giving necessary clearance to prevent the wiper wings from contacting this finger. It now being desired to indicate a "stop" signal, the operator pushes in the slide 66 to the fullest extent, or to the position shown in Fig. 14, which will bring the block 67 in line with the groove 73 of the finger 58 and out of line with the grooves of the other fingers. By throwing the operating lever 52 either to the right or left, the finger 58 alone will be permitted to

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spring from one wing to another and cause the word "Stop" to be flashed a series of times. The slide 66 is held in its operated position during this period by reason of the notch 70<sup>b</sup> of the catch 70 engaging the lateral projection 68 and is returned to neutral position in the manner before described.

When the handle 52 is thrown in either direction the lights 9 are placed in circuit with the battery B through wire 75, spring finger 76, disk 51, plate 22, wiper wings 53, spring fingers 54, 55, 56 and 57, springs 61, plates 77 secured between the respective insulating blocks 60, wires 78, lights 9, supporting plate 13 and wire 79 back to battery. When the parts are in the neutral position shown in Fig. 4, it will be noticed that the spring finger 76 coincides with a notch or recess in the disk 51, which breaks the circuit. In either of the other of the operated positions of the disk 51, the spring finger will ride about the periphery thereof so as to maintain the circuit.

The light 8 behind the word "Turn" is in circuit with the battery through wire 80, plate 81 having a projecting finger 82, push rod 66, plate 22, disk 51, spring finger 76, wire 75, battery B, and wire 79 to casing 1. In Fig. 13 the rod 82 is shown in contact with the push rod 66 and will be maintained in contact therewith so long as the rod is in the position to illuminate the direction signals. If it is desired, however, to indicate the "stop" signal, when the rod 66 is pushed into the position before described, the finger 82 will coincide with a recess 83 in the rod and thus break the circuit to the "turn" light, 8.

The light 10 behind the "stop" signal is in circuit with the battery, through wire 84, metallic plate 85, spring 61, on the lower "stop" finger 58, wiper wings 53, supporting plate 22, disk 51, spring finger 76 and wire 75, battery B, and wire 79 to casing 1.

In the event that the signal to turn in either direction has been given and it is desired to change that signal to "stop," this may be readily accomplished by simply pushing in the rod 66 and its stop block 67 to their "stop" position, which cuts out all the fingers corresponding to the lights 8 and 9 and puts in circuit the light 10. Likewise if the "stop" signal has been set and it is desired to change that to indicate a direction, this may be accomplished by releasing the rod 66 which is forced back to normal position by its spring 71, this release of the rod being accomplished by throwing the operating handle 52 back to neutral position, to cause the projection 72 thereon to raise the catch 70 which holds the push rod.

Having thus described my invention, I claim:—

1. In a device of the character described, a plurality of lights, electric circuits for the

same, a power operated switch mechanism for making and breaking said circuits, and a hand operated device for controlling said switch mechanism, the construction and arrangement of said mechanism being such that when said hand operated device is thrown in one direction the switch mechanism will control the circuits to illuminate the lights successively in one direction and when said hand operated device is thrown in the opposite direction said switch mechanism will control said circuits to illuminate said lights successively in the opposite direction.

2. In a device of the character described, a plurality of lights, electric circuits for the same, a power operated switch mechanism for making and breaking said circuits, and a hand operated device for controlling said switch mechanism, the construction and arrangement of said mechanism being such that when said hand operated device is thrown in one direction the switch mechanism will control the circuits to illuminate the lights successively in one direction and when said hand operated device is thrown in the opposite direction said switch mechanism will control said circuits to illuminate said lights successively in the opposite direction, and means whereby when said switch mechanism is restored to neutral position said circuits will be broken.

3. In a device of the character described, a plurality of lights, electric circuits for the same, a power operated switch mechanism for making and breaking said circuits, and a hand operated device for controlling said switch mechanism, the construction and arrangement of said mechanism being such that when said hand operated device is thrown in one direction the switch mechanism will control the circuits to illuminate the lights successively in one direction and then simultaneously extinguish said lights and when said hand operated device is thrown in the opposite direction said switch mechanism will control said circuits to illuminate said lights successively in the opposite direction and then simultaneously extinguish the same.

4. In a device of the character described, a plurality of lights, electric circuits for the same, a power operated switch mechanism for making and breaking said circuits, and a hand operated device for controlling said switch mechanism, the construction and arrangement of said mechanism being such that when said hand operated device is thrown in one direction the switch mechanism will control the circuits to illuminate the lights successively in one direction and then simultaneously extinguish said lights and when said hand operated device is thrown in the opposite direction said switch mechanism will control said circuits to

illuminate said lights successively in the opposite direction and then simultaneously extinguish the same, and means incorporated in said switch mechanism whereby when the same has been restored to neutral position the circuits will be broken.

5 5. In a device of the character described, a plurality of lights, electric circuits for the same, a plurality of pivoted fingers incorporated in said circuits, one finger for each  
10 light, a power operated switch mechanism for controlling said circuits including a revoluble contact in operative relation with said fingers, and means for controlling said  
15 fingers whereby said revoluble contact will make electrical connection therewith in successive order to illuminate said lights in successive order in either direction.

20 6. In a device of the character described, a plurality of lights, electric circuits for the same, a plurality of pivoted fingers incorporated in said circuits, one finger for each light, a power operated switch mechanism  
25 for controlling said circuits including a revoluble contact in operative relation with said fingers, and means for controlling said fingers whereby said revoluble contact will make electrical connection therewith in successive order to illuminate said lights in  
30 successive order, together with means for reversing the order of electric connection between said revoluble contact and said fingers to reverse the direction of illumination of said lights.

35 7. In a device of the character described, a plurality of lights, electric circuits for the same, a spring operated switch mechanism for controlling said circuits including an operating handle, said operating handle being  
40 movable in opposite directions for placing the spring of said mechanism under tension to operate said switch mechanism, a series of wipers rotatably connected with said switch mechanism, and movable contacts associated with said wipers for making  
45 and breaking said circuits.

50 8. In a device of the character described, a plurality of lights, electric circuits for the same, a switch mechanism having a spring associated therewith, an operating lever associated with said mechanism so connected with said spring as to place said  
55 spring under tension by a movement of said lever in either direction, a rotatable shaft associated with said mechanism rotatable in the same direction by said spring regardless of the direction of throw of said lever, a series of wipers connected with said shaft, and a series of movable contacts, one for  
60 each circuit, associated with said wipers.

65 9. In a device of the character described, a plurality of lights for indicating directions, electric circuits for the same, a plurality of pivoted contact fingers incorporated in said circuits, a motor operated

switch mechanism controlling said circuits, an operating lever movable in either direction for energizing the motor of said mechanism to cause a movement of said mechanism, a series of wipers rotatably connected  
70 with said mechanism, a series of fingers associated with said circuits and with said wipers, means for holding said fingers in advanced progressive relation with each other with respect to said wipers in one  
75 direction of the throw of said operating lever, and means for reversing the order of the advanced relation of said fingers in the opposite direction of throw of said lever.

80 10. In a device of the character described, a plurality of lights representing turn, direction and stop signals, a motor-operated switch mechanism, an operating lever movable in either direction for causing a movement of said switch mechanism, make and  
85 break contacts controlled by said mechanism, and a controlling device operable to break the circuits to the turn and direction lights and establish a circuit to the stop light.

90 11. In a device of the character described, a plurality of lights representing turn, direction and stop signals, a motor operated switch mechanism, an operating lever movable in either direction for causing a movement of said switch mechanism, make and  
95 break contacts controlled by said mechanism, a controlling device operable to break the circuits to the turn and direction lights and establish a circuit to the stop light, together with a detent for same, and means for restoring said controlling device at the completion of the movement of said switch mechanism.

105 12. In a device of the character described, a casing having a plurality of compartments, each compartment having a window pervious to light, a light located in each compartment, electric circuits for said lights, and a motor operated switch mechanism for  
110 controlling said circuits for successively illuminating said lights in uninterrupted progression, a plurality of successive times in either direction, and means under the control of the operator for determining the  
115 direction in which the lights may be successively illuminated.

120 13. In a device of the character described, a casing having a plurality of compartments, each compartment having a window pervious to light, a light located in each compartment, electric circuits for said lights, and a motor operated switch mechanism for  
125 controlling said circuits for successively illuminating said lights in uninterrupted progression a plurality of successive times in the same direction, and devices associated with said circuits and switch mechanism for reversing the direction of illumination of  
130 said lights.



14. In a device of the character described, a casing having a plurality of compartments, each compartment having a window pervious to light, a light located in each compartment, circuits for said lights, a motor operated switch mechanism, an operating lever movable in either direction for energizing the motor of said mechanism to move said mechanism, said mechanism, when said operating lever is thrown in one direction, serving to control said circuits for successively illuminating and extinguishing said lights in uninterrupted progression a plurality of successive times in the same direction, and said mechanism when said lever is thrown in the opposite direction serving to control said circuits to reverse the direction of illumination of said lights in the same manner.

15. In a device of the character described, a switch mechanism having a motor for operating the same, a plurality of circuits, a movable contact connected with each circuit, a stop for said contacts, a wiper connected with said mechanism cooperating with said contacts, and means whereby said contacts are held in advanced progressive relation with respect to each other and said stop.

16. In a device of the character described, a switch mechanism having a motor for operating the same, a plurality of circuits, a movable contact connected with each circuit, a stop for said contacts, a wiper connected with said mechanism cooperating with said contacts, and means whereby said contacts are held in advanced progressive relation with respect to each other and said stop, and means whereby the order of advanced relation of said contacts may be changed to reverse the order of energization of said circuits.

17. In a device of the character described, a switch mechanism having a motor for operating the same, a plurality of circuits, a movable spring pressed contact fin-

ger connected with each circuit, a wiper connected with said mechanism cooperating with said contacts, each of said fingers having a pair of slots arranged in line with the slots of the other fingers, one series of slots varying in depth in one direction and the other series in the opposite direction, and an insulating stop block arranged to be shifted in line with either series of slots.

18. In a device of the character described, a switch mechanism having a motor for operating the same, a plurality of circuits, a movable spring pressed contact finger connected with each circuit, a wiper connected with said mechanism cooperating with said contacts, each of said fingers having a pair of slots arranged in line with the slots of the other fingers, one series of slots varying in depth in one direction and the other series in the opposite direction, and an insulating stop block arranged to be shifted in line with either series of slots and also out of line with both series of slots to hold said fingers out of the path of said wipers.

19. In a direction signal for motor vehicles, a plurality of transversely arranged lights, electric circuits for the same, a power operated switch mechanism for making and breaking said circuits, and a hand operated device for controlling said switch mechanism, the construction and arrangement of said mechanism being such that when said hand operated device is operated in one manner said switch mechanism will control the circuits to illuminate said lights successively in one direction and when said hand operated device is operated in another manner said switch mechanism will control said circuits to illuminate said lights successively in the opposite direction, independently of the direction of travel of the vehicle.

In testimony whereof, I have hereunto set my hand this 30th day of July, 1918.

JOHN PFEIFER.

Witness:

CHAS. I. WELCH.