

Oct. 23, 1951

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2,572,094

DIRECTIONAL SIGNAL AND CIRCUITS THEREFOR

Original Filed July 11, 1947

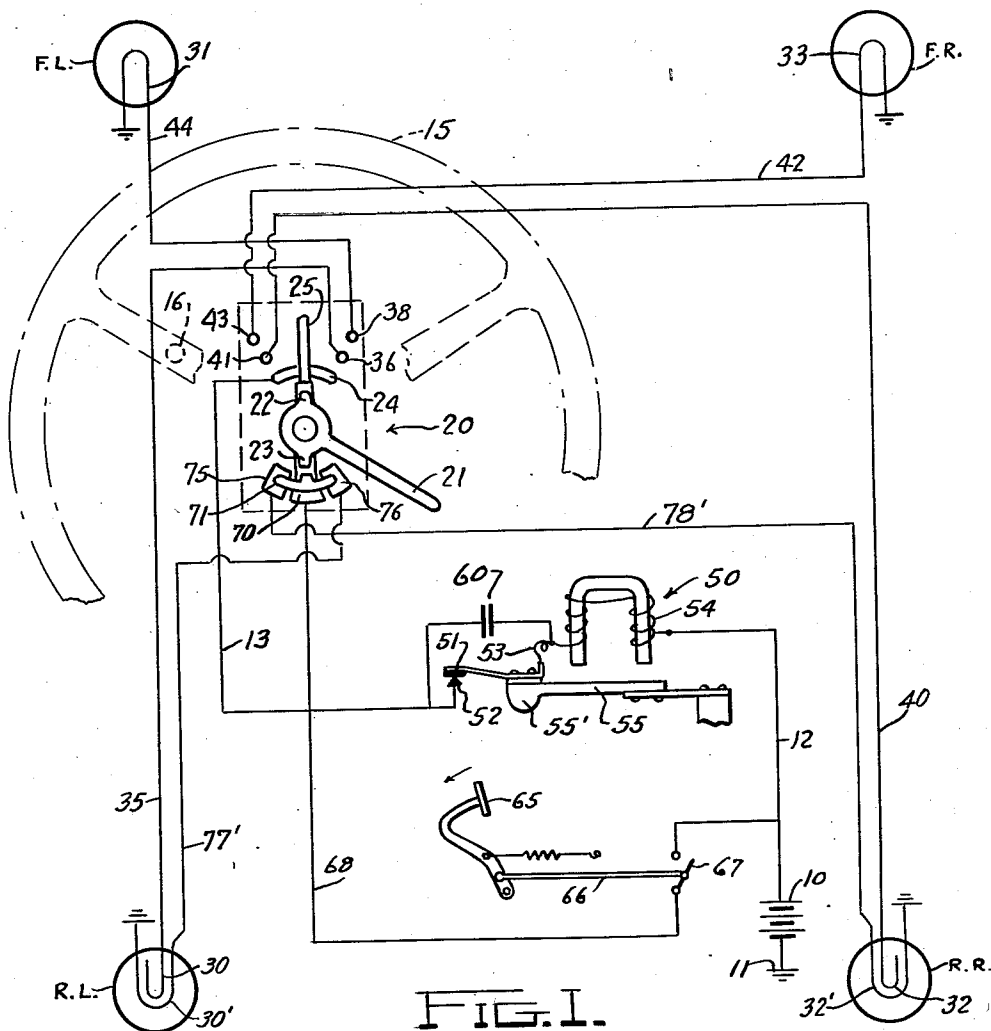


FIG. I.

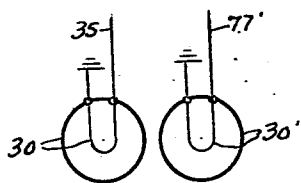


FIG. II.

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2,572,094

DIRECTIONAL SIGNAL AND CIRCUITS
THEREFOR

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by mesne assignments, to The Electric Auto-
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Application July 11, 1947, Serial No. 760,393, now
Patent No. 2,560,539, dated July 17, 1951, which
is a division of application Serial No. 555,717,
September 25, 1944, now Patent No. 2,456,242,
dated December 14, 1948. Divided and this ap-
plication October 4, 1949, Serial No. 119,444

4 Claims. (Cl. 177—337)

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This invention relates to improved circuits and circuit control means therefor for directional signals on motor vehicles in combination with warning signals, tail lamps, and stop lights and has for its object to provide a simplified flashing mechanism in a directional system in which a single flasher is provided for the various positions of the control in combination with the operation of the tail lamps and stop signal devices, switches, and controls thereof. This application is a division of my prior application, Serial No. 760,393, filed July 11, 1947, which issued into Patent No. 2,560,539 of July 17, 1951, which, in turn, is a division of the parent application, Serial No. 555,717, filed September 25, 1944, which issued into Patent No. 2,456,242 of December 14, 1948. The present application is a duplicate of said prior applications insofar as the embodiment of the invention illustrated therein as Figures IX and X and X and XI respectively.

In a more specific embodiment of my invention I utilize the same filament usable in connection with one of the warning signal devices as the directional signal illuminating means as will thereby save expense and greatly reduce costs of installation, and in a still further embodiment of my invention I employ a double filament bulb usable for one of the warning signal devices and also as a directional signal indicator.

Further objects and advantages are within the scope of this invention such as relate to the arrangement, operation and function of the related elements of the structure, to various details of construction and to combinations of parts, elements per se, and to economies of manufacture and numerous other features as will be apparent from a consideration of the specification and drawing of various forms of the invention, one of which may be preferred, in which:

Figure I illustrates diagrammatically one embodiment of my invention in which a double filament bulb is used as illuminating means for indicating direction and stop warning signals while Figure II illustrates another embodiment of my invention in which separate illuminating means for directional signals and stop signals are employed.

Referring to Figure I, the battery 10 is grounded at 11 as shown, it being understood that the battery 10 is charged by the generator connected thereto by a suitable relay on an automobile and therefore that 10 represents a source of electrical energy for the signaling systems. The steering wheel of the vehicle is indicated at 15 and on this steering wheel or the supporting col-

umn thereof is mounted the manually settable, automatically releasable directional signal switch indicated generally by the reference numeral 20. This switch has a handle 21 rotatable around the steering column of the motor vehicle and handle 21 carries extensions 22 and 23, each extension supporting insulated switch contacting elements for establishing the circuits hereinafter set forth.

In Figure I, I have illustrated directional signal illuminating means in the form of incandescent bulbs R. L. and F. L. located on the rear and front left side portions of the vehicle and R. R. and F. R. located at the rear and front of the right side of the vehicle. The incandescent bulbs R. L. and R. R. are of the double filament type, the first having the separate energizable filaments 30 and 30' and the second having the filaments 32 and 32'. The incandescent bulbs F. L. and F. R. are of the single filament type, each having filament 31 and 33 respectively. A lead 35 connects the filament 30 with a terminal 36 of the switch mechanism. Likewise lead 40 connects filament 32 with a contacting terminal 41 and lead 42 connects filament 33 with contact 43. A lead 44 connects filament 31 with terminal 38 as shown. The filament 30' is connected by lead 77' to the switch contact 76 while the filament 32' is connected by lead 78' to switch contact 75.

From the battery 10, leads 12 and 13 connect the source of energy with an arc-shaped terminal 24 for connection with the proper illuminating means to indicate directional turn of the vehicle. Interposed between the leads 12 and 13 is an automatic flashing device indicated generally by the numeral 50. This device includes the make and break contacts 51 and 52, 52 being connected with the wire 13 leading to the main control switch 20, while the other contact 51 is connected through flexible connector 53 with coil 54, with lead 12 and battery 10, the coil thereby being in series with the source of energy 10. The armature 55 of the device is weighted as indicated at 55' so as to reduce the periodicity of the action of the make and break, the armature being so mounted as to move toward and away from the core of the coil 54. The armature 55 carries the make and break contact 51 with it as indicated so that as the coil 54 is alternately energized and de-energized, a make and break in the circuit at 51 and 52 occurs, the weight of the arm 55 returning the contact 51 to closed position.

Bridging the contacts 51 and 52, I have provided a condenser 60 to not only prevent arcing,

3

and hence deterioration of the points 51 and 52, but also as a means in which energy is stored and returned to the system in the operation of the mechanism.

It will be understood that the extension 22 carries a bridging electrical conductor 25 for bridging the arc-shaped terminal 24 with either contacts 36 and 38 or 41 and 43 depending on the position of the switch 20.

The brake pedal of the motor vehicle is indicated at 65 and has a pivotally connected rod 66 for controlling a switch 67 which connects the source of energy 10 with the stop signals of the motor vehicle. To this end the lead 68 is connected to a terminal block 70 and the extension 23 of switch 20 has a cooperating insulated arc-shaped switch plate 71. In normal position for switch 20, the switch blade 71 connects both rear filaments 30' and 32' with the source of energy 10 to form a non-flashing stop signal at both sides of the car in the rear if switch 67 be closed by an operation of the brake pedal 65. When the switch 20 is moved to either one of its right hand or left hand settable positions, the sweeping contact 71 will bridge the other rear stop signal filament (left hand) 30 or (right hand) 32 as the case may be. To this end, terminals 75 and 76 are connected by leads 78' and 77' respectively to the filaments 30' and 32' at the rear of the vehicle.

It is understood that the steering wheel 15 has a depending finger 16 adapted to contact the handle 21 of the control switch and automatically return the same to neutral position, after it is moved to the right or to the left as the case may be. This is done when the vehicle has completed the turn.

Finger 16 as a cut off may be replaced by an apparatus surrounding the steering column which maintains the energization of the directional signal as long as the steering wheel is not turned backward in a direction to straighten out the wheels, as upon the completion of a turn.

In the operation of the system, when the switch 20 is in normal position an operation of the brake pedal will cause a non-flashing signal to be indicated at both rear filaments 30' and 32'. To make a left hand turn, the operator turns the handle 21 of the switch 20 to the left. In this case switch contact 25 connects terminal 24 with contacts 36 and 38, which in turn connect the same with the filaments 30 and 31 on the left hand side of the vehicle. Arc-shaped contact 24 being connected through leads 12 and 13 to the battery, energy is supplied through the flashing device 50, and both filaments 30 and 31 will give a flashing periodically interrupted signal to indicate that the driver is turning toward the left. When the high point of the turn has been reached, the wheel 15 will be so turned that the finger 16 will contact the handle 21 returning it to normal position. The wheel is then straightened out. Thereafter, when a turn is desired to be made to the right, the operator moves the handle 21 to the right so that contact 25 now bridges contact 24 to connect the same with contacts 43 and 41 which, in turn, energizes the filaments 32 and 33, the current likewise passing through the flasher 50 and the operation on the right hand side is repeated.

In connection with the flashing device or interrupter relay 50, attention is called to the fact that I employ the condenser 60 across the breaker points 51 and 52 not only to prevent arcing but as an element of the combination of the present invention in which I also have in mind other types of interrupters which may well be employed and

4

in which the condenser 60 is also used. When a break occurs at the points 51 and 52 even in a 6-volt system on an automobile, the induced voltage in the strong magnetic field in the air gap and in the iron of the magnetic circuit may run as high as 30 to 50 volts, and of course, is in a direction to try and keep the current flowing, which might arc across the breaker points. By connecting the condenser 60 across the points, a new path for the current resulting from the relatively high induced voltage surges into the condenser and the energy of the magnetic field is thus stored therein and thereupon returned to the system instead of being wasted in arcing at the breaker points.

In the embodiment of Figure II, instead of using the double filament bulb of Figure I, I use two separate bulbs 30 and 30' on the left hand side and also two separate bulbs on the right rear of the vehicle, one (30) for the flashing directional signal, and the other (30') for the stop signal. Moreover, I also combine the lamps, filaments, and circuits as in Figure I, and, the tail light filament either as a double filament bulb with the tail light filament combined with one or the other of the directional or stop signal bulbs, or as a separate tail lamp bulb and in every case with appropriate bulb casings, housings, brackets and supports therefor.

It is apparent that, within the scope of the invention, modifications and different arrangements may be made other than is herein disclosed, and the present disclosure is illustrative merely, the invention comprehending all variations thereof.

What I claim is:

1. In a vehicle, two spaced flashing directional signals located at the front and two at the rear of said vehicle; two spaced stop warning signals for giving a steady indication located at the rear of said vehicle; circuit connections from each of said signals to a source of power; a manually settable automatically releasable directional circuit switch comprising a pivoted arm carrying a conductor plate for bridging stationary contacts located to the right and left of said plate upon manual operation of said pivoted arm; an electrically actuated periodic circuit interrupter functioning in response to the setting of the conductor plate with either of said stationary contacts to cause the intermittent energization of the direction signals; a brake pedal switch for said stop signal circuits; and additional switching means having a neutral position for effecting the energization of both said rear stop signals upon closure of said brake pedal switch, said additional switching means movable by said manually operable pivoted arm in a direction opposite to that imparted by said arm to the conductor plate to a right hand and left hand stop signal terminal for connecting the opposite rear stop signal when the directional signal on one side of the rear of said vehicle is energized.

2. In a vehicle, two spaced flashing directional signals located at the front and two at the rear of said vehicle; two spaced stop warning signals for giving a steady indication located at the rear of said vehicle; circuit connections from each of said signals to a source of power; a manually settable automatically releasable directional circuit switch comprising a pivoted arm carrying a conductor plate for engagement with stationary contacts when moved to the right or left from its central position by manual operation of the pivoted arm; a single electromagnetic periodic

circuit interrupter in said directional signal circuits for both said rear directional signals to give a flashing indicating signal; a brake pedal switch for said stop signal circuits; a second switch operable by said manually settable means for preventing energization of the opposite rear stop signal when the directional signal on one side of the rear of said vehicle is energized.

3. In a vehicle, two spaced flashing directional signals located at the front and two at the rear of said vehicle; a source of electrical power; a manually settable automatically releasable directional circuit switch comprising a pivoted arm, manual means to rotate said arm about said pivot; a conductor plate carried by said pivoted arm; a stationary arcuate terminal, said conductor plate adapted to slidably contact said terminal; connections between said arcuate terminal and said source of power; an electrically actuated periodic circuit interrupter operable in response to the setting of said manually settable directional circuit switch for interrupting the current flow from the source of power to the directional signals to flash the same intermittently; two pairs of stationary terminals radially arranged from the center of said pivoted arm, one on the right side and the other pair at the left of said pivot; said terminals adapted to be bridged by said conductor plate in one position of said pivoted arm; connections from said right hand terminals to said flashing directional signals on the left side of said vehicle; connections from said left hand terminals to said flashing directional signals on the right side of said vehicle; said pivoted arm of said switch adapted to connect one or the other of said pair of stationary terminals with said arcuate terminal; two spaced stop warning signals located at the rear of said vehicle adapted to give a steady indication; a brake pedal switch for said stop signal circuits connected with said source of power and additional switching means actuated by said manually settable switch and adapted to selectively control the energization of said stop signals when said brake pedal switch is closed; said means comprising a centrally located terminal block connected with said brake pedal switch; spaced terminal blocks located to right and left of said central terminal block, said right hand terminal block being connected to said left hand stop signal and said left hand terminal block being connected to said right hand stop signal; an arcuate conductor plate adapted for movement by said manually settable switch but insulated therefrom; said arcuate plate being long enough to bridge the gap between said central terminal block and one of said right or left hand terminal blocks only, thereby to selectively energize either the said left or right stop signal only; the directional signal actuated by said directional switch being on the opposite side from the stop signal energized by said additional switching means.

4. In a vehicle, two spaced flashing directional signals located at the front and two at the rear of said vehicle; a source of electrical power; a manually settable automatically releasable directional circuit switch comprising a pivoted arm, manual means to rotate said arm about said pivot; a conductor plate carried by said pivoted arm; a stationary arcuate terminal, said conductor plate adapted to slidably contact said terminal; connections between said arcuate terminal and said source of power; an electromagnetic periodic circuit interrupter operable in response to the setting of said manually settable directional circuit switch forming part of said connection and being interposed between said arcuate terminal and the source of power for interrupting the current flow to the direction signal to flash the same intermittently giving a flashing indication; two pairs of stationary terminals radially arranged from the center of said pivoted arm, one on the right side and the other pair at the left of said pivot; said terminals adapted to be bridged by said conductor plate in one position of said pivoted arm; connections from said right hand terminals to said flashing directional signals on the left side of said vehicle; connections from said left hand terminals to said flashing directional signals on the right side of said vehicle; said pivoted arm of said switch adapted to connect one or the other of said pair of stationary terminals with said arcuate terminal; two spaced stop warning signals located at the rear of said vehicle; a brake pedal switch for said stop signal circuits connected with said source of power and additional switching means actuated by said manually settable switch and adapted to selectively control the energization of said stop signals when said brake pedal switch is closed; said means comprising a centrally located terminal block connected with said brake pedal switch; spaced terminal blocks located to right and left of said central terminal block, said right hand terminal block being connected to said left hand stop signal and said left hand terminal block being connected to said right hand stop signal; an arcuate conductor plate adapted for movement by said manually settable switch but insulated therefrom; said arcuate plate being long enough to bridge the gap between said central terminal block and both said right hand and left hand terminal blocks.

BENJAMIN F. BAILEY.

REFERENCES CITED

55 The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,122,508	Bell	July 5, 1938
2,206,199	Murray	July 2, 1940
2,267,743	Murray, Jr.	Dec. 30, 1941
2,456,242	Bailey	Dec. 14, 1948

Certificate of Correction

Patent No. 2,572,094

October 23, 1951

BENJAMIN F. BAILEY

It is hereby certified that error appears in the above numbered patent requiring correction as follows:

In the heading of the drawing, line 3, for "Original Filed July 11, 1947" read *Original Filed September 25, 1947*;

and that the said Letters Patent should be read as corrected above, so that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 12th day of February, A. D. 1952.

[SEAL]

THOMAS F. MURPHY,

Assistant Commissioner of Patents.