

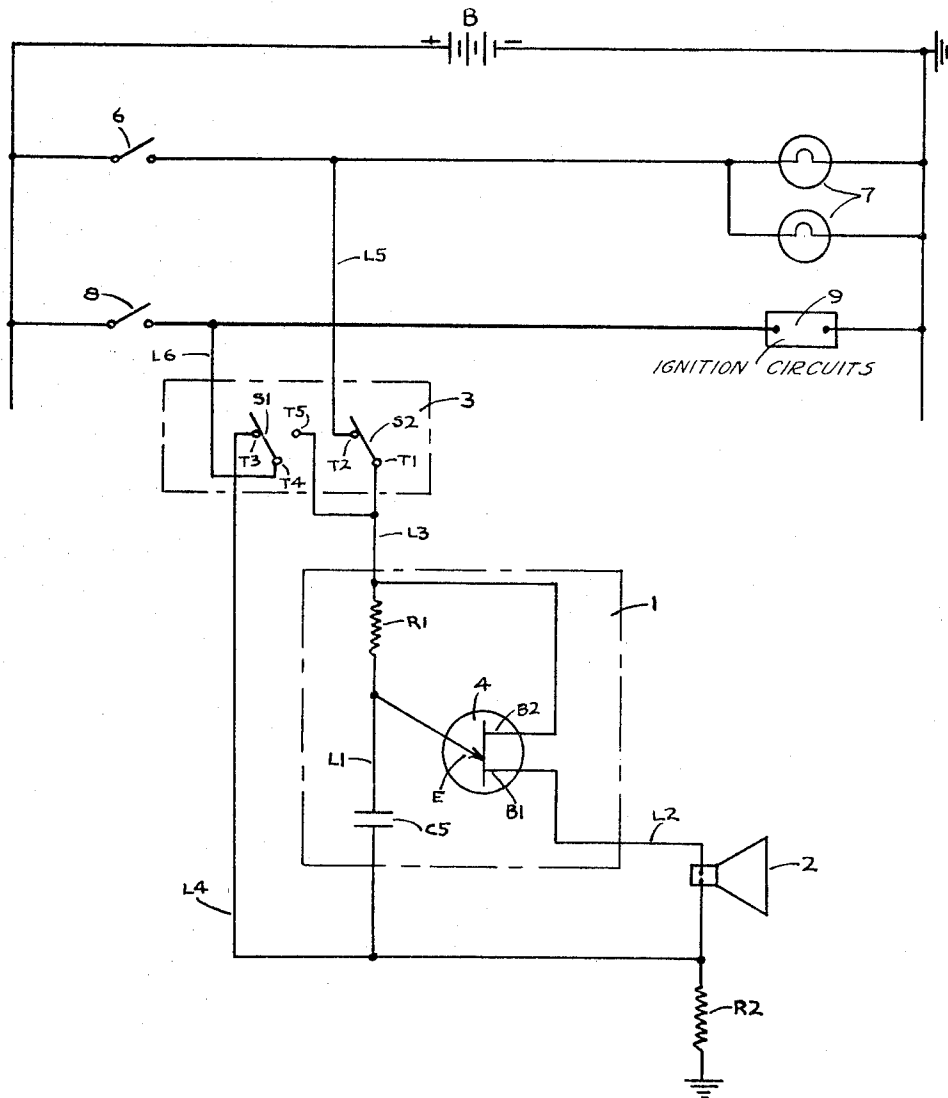
Nov. 1, 1966

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3,283,299

MOTOR VEHICLE SIGNAL DEVICE

Filed June 4, 1964



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Filed June 4, 1964, Ser. No. 372,527

3 Claims. (Cl. 340—52)

This invention relates to motor vehicle signal devices, but is directed particularly to an improved warning device to automatically signal a motorist when the vehicle lights are energized with the ignition switch turned off.

It is not uncommon for motorists to alight from their automobiles and, unknowingly, leave the vehicle lights energized. This often results in battery failures. Therefore, an object of the present invention is an improved warning device to eliminate unnecessary battery drainage and failure.

Another object of the invention is a warning device which uses an oscillator circuit in conjunction with an electromagnetic speaker to provide an audible warning signal.

A further object is a warning device having a transfer switch to provide control over the device.

A still further object is an improvement in warning devices such as described in U.S. Patent No. 2,799,843 and my co-pending application Serial No. 250,326, filed January 9, 1963.

Other objects of the present invention will become apparent in the course of the following specifications.

The invention will appear more clearly from the following description when taken in conjunction with the accompanying drawing showing by way of example the preferred embodiment of the inventive idea.

The sole figure of the drawing is a diagram showing the circuits of the improved warning signal device and its adaptation to the motor vehicle circuits.

Referring to the drawing, the warning device consists of an oscillator 1, and a suitable electromagnetic speaker 2 connected to the output of the oscillator 1. The transfer switch 3 is associated with the warning device and its function will subsequently be described.

The oscillator circuit 1 consists of the transistor 4, the resistor R1, and the capacitor c5. The transistor 4 may be of the unijunction type have base B1, base B2, and emitter E. The emitter E is connected to the conduit L1 which is connected to one side of the resistor R1 and to one side of the capacitor c5. The base B1 is connected to one side of the energizing circuit of the speaker 2 by the conduit L2. The base B2 is connected to the other side of the resistor R1 which, in turn, is connected to terminals T1 and T5 of the switch 3 by the conduit L3. The other side of the capacitor c5 is connected to the other side of the energizing circuit of the speaker 2 by the conduit L4. The conduit L4 also connects to the terminal T3 of the switch 3 and to one side of the current limiting resistor R2. The other side of the resistor R2 connects to ground which forms the negative side of the power source B.

The vehicle light switch 6 is shown in the open position, with one side connected to the positive side of the power source B and the other side connected to the vehicle lights 7 and the conduit L5. The conduit L5 is connected to the terminal T2 of the switch 3. When the light switch 6 is in a closed position, the vehicle lights 7 and the conduit L5 become energized.

The vehicle ignition switch 8 is shown in the open position with one side connected to the positive side of the power source B. The other side of the switch 8 is connected to the vehicle ignition circuits 9 and the conduit L6. When the switch 8 is in a closed position, the ignition circuits 9 and the conduit L6 become energized. The conduit L6 connects the ignition switch 8 to the terminal T4 of the transfer switch 3.

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The transfer switch 3 is a multi-pole switch, with the connecting bar S1 associated with the terminals T3, T4 and T5, and the connecting bar S2 associated with the terminals T1 and T2. The switch is shown in its closed position. The bar S1 connects the terminals T3 and T4, thereby connecting the conduit L6 to the conduit L4. Likewise, the bar S2 connects the terminals T1 and T2 to complete the circuit from the conduit L5 to the conduit L3. In the open position, the bar S1 connects to the terminals T4 and T5, thereby opening the circuit between the conduit L6 and the conduit L4 and completing the circuit between the conduit L6 and the conduit L3. Similarly, in the open position the bar S2 is no longer in contact with the terminal T2 and the circuit between the conduit L5 and the conduit L3 is opened.

To illustrate the invention, let it be assumed that the light switch 6 is in the closed position and the ignition switch 8 is in the open position. As previously mentioned, when the switch 6 is in a closed position the vehicle lights 7 and the conduit L5 become energized. The conduit L3 which is connected to the oscillator circuit 1, becomes energized by way of the positive side of the power supply B, the light switch 6, the conduit L5, the switch terminal T2, the switch bar S2, and the switch terminal T1 which connects to the conduit L3. With the conduit L3 energized, the oscillator circuit 1 becomes energized in the following manner. The capacitor c5 starts to charge through the resistor R1. The time rate of build-up of the charge and voltage across the capacitor c5 will depend on the capacitor c5 resistor R1 values. Since the emitter E is connected to the capacitor c5, the same voltage build-up takes place at the emitter E. When the voltage on the capacitor c5 and the emitter E has reached the value required to operate the transistor 4, the capacitor c5 will discharge through the emitter E and the base B1 to energize the speaker 2. During this period of discharge, some current will also flow from the base B2 to the base B1. On discharging, the capacitor voltage is reduced to a point where the transistor 4 is cut off and no more current flows to the speaker 2. The capacitor c5 then starts charging again and when the voltage reaches the value required to operate the transistor 4 the capacitor will once again discharge through the emitter E to once again energize the speaker 2. The oscillations just described repeat as long as the light switch 6 is closed. The frequency of the energy pulses that energize the speaker 2 will depend on the values of the resistor R1, the capacitor c5, and the characteristics of the transistor 4. The values are chosen to provide a suitable audible signal to warn the motorist that the vehicle lights are energized with the ignition switch turned off.

To make the oscillator circuit 1 ineffective when the ignition switch 8 is closed, a short circuit is placed around the oscillator circuit 1 and the speaker 2 through the current-limiting resistor R2. This circuit is by way of the positive side of the power source B, the ignition switch 8, the conduit L6, the switch terminal T4, the switch bar S1, the switch terminal T3, the conduit L4 which at this point forms the short circuit around the capacitor c5 and the speaker 2, and the resistor R2.

The transfer switch 3 is useful to cut out the warning device when the vehicle lights are being serviced or when the motorist wishes to leave the lights on when parked on a dangerous road. The switch 3, however, has a built-in memory so that the switch 3 is not left in the open position and defeat the purpose of the warning device. When the switch 3 is opened, the switch bar S2 opens the circuit between the conduit L5 and the conduit L3. In this position the light switch 6 has no effect on the oscillator 1. At the same time, the switch bar S1 moves from the switch terminal T3 and makes contact with the switch terminal T5. This action disconnects the conduit L4 from

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the conduit L6 thereby disconnecting the short circuit around the oscillator 1 and the speaker 2. It also connects the conduit L6 to the conduit L3. Therefore, when the ignition switch is turned on the oscillator circuit 1 and the speaker 2 are made effective by way of the positive side of the power source B, the ignition switch 8, the conduit L6, the switch terminal T4, the switch bar S1, the switch terminal T5, and the conduit L3 which energizes the warning circuit as previously described. This warning signal indicates to the motorist that the switch 3 is in the open position and should be closed.

It is apparent that the examples shown are given solely by way of illustration and not by way of limitation, and they are subject to many variations and modifications without exceeding the scope of the present invention. All such variations and modifications are to be included within the scope of the present invention.

What is claimed is:

1. A signalling system for a motor vehicle provided with an ignition switch and a light switch comprising, a source of electric power, an oscillator circuit connected to the vehicle light switch, an electromagnetic speaker connected to the output of said oscillator circuit whereby said speaker emits an audible warning signal when said oscillator circuit is energized by the closure of said light switch, and a circuit connection between the oscillator circuit and the vehicle ignition switch to render said oscillator circuit inoperative when said ignition switch is in the closed position.

2. A signalling system for a motor vehicle provided with an ignition switch and a light switch comprising, a source of electric power, an oscillator circuit connected

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to the vehicle light switch, said oscillator circuit consisting of a transistor electrically connected with a capacitor and a resistor to emit a frequency of electric pulses, an electromagnetic speaker connected to the output of said oscillator circuit whereby said speaker emits an audible warning signal when said oscillator circuit is energized by the closure of said light switch, and a circuit connection between the oscillator circuit and the vehicle ignition switch to render said oscillator circuit inoperative when said ignition switch is in the closed position.

3. A signalling system for a motor vehicle provided with an ignition switch and a light switch comprising, a source of electric power, a signalling device connected to the vehicle light switch whereby said signalling device is made operative when said light switch is in a closed position, a circuit connection between said signalling device and the vehicle ignition switch to render said signalling device inoperative when said ignition switch is in a closed position, and a transfer switch connected between said light switch and said signalling device and between said ignition switch and said signalling device whereby the operation of said transfer switch renders the connection between said light switch and said signalling device inoperative and conditions the signalling device to become operative when the ignition switch is closed.

No references cited.

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