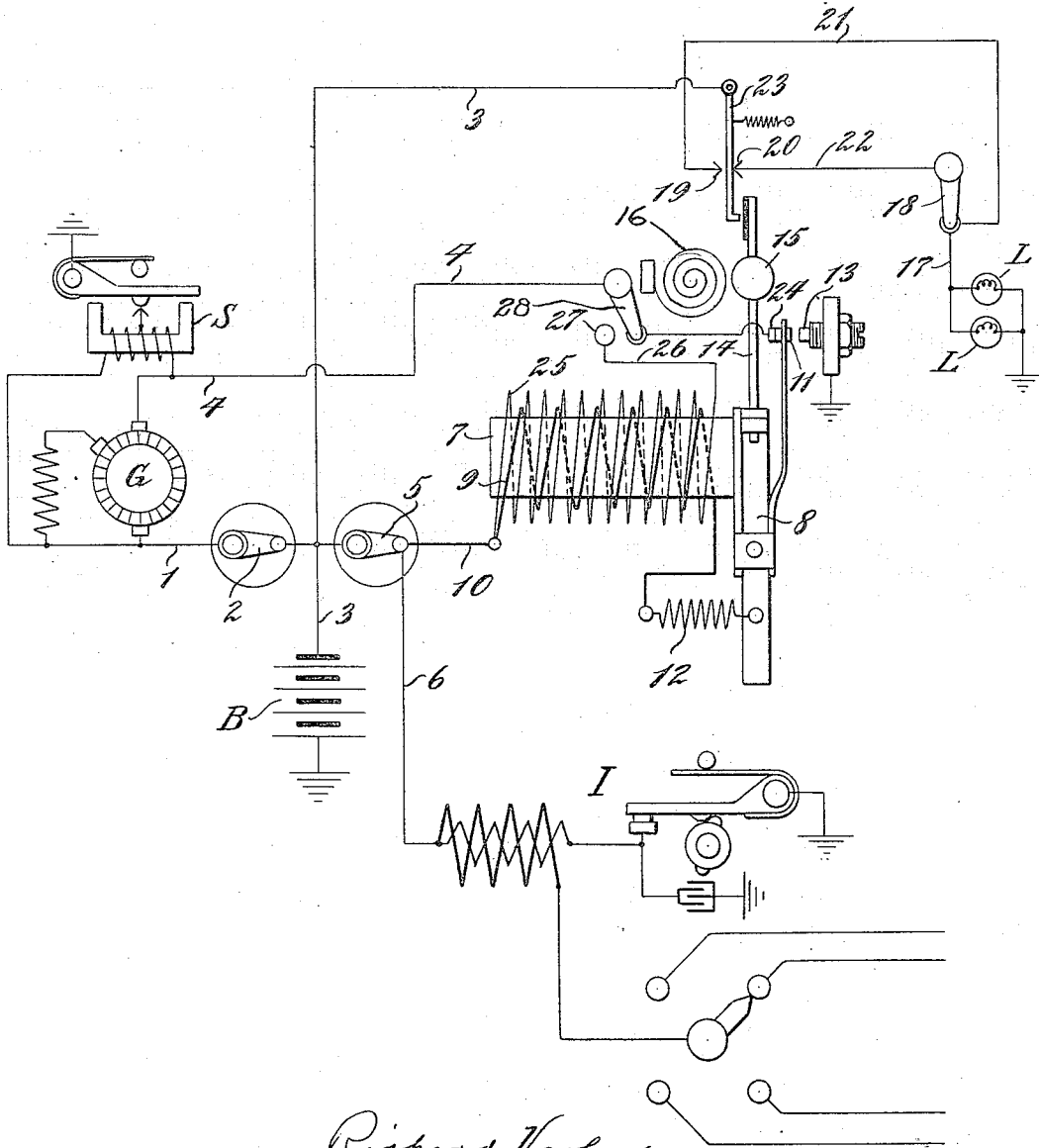


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R. VARLEY  
AUTOMOBILE ALARM SYSTEM

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INVENTOR.

BY

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## UNITED STATES PATENT OFFICE.

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## AUTOMOBILE ALARM SYSTEM.

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*To all whom it may concern:*

Be it known that I, RICHARD VARLEY, a citizen of the United States, residing at Englewood, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Automobile Alarm Systems, of which the following is a full, clear, and exact description.

My invention relates to alarm systems for automobiles and the like for the purpose of apprising the operator when the ignition circuit is left closed through the battery while the engine is still and no current is being generated, in order to avoid the accidental draining of the battery. In the embodiment of my invention which I have selected for illustration the alarm is shown as both an audible and visual signal, but it is manifest that the character of the signal is discretionary.

In accordance with my invention, I provide a suitable indicator which is electrically operated and is arranged to be closed through the battery when the switch controlling the ignition is closed, unless the engine is running and the generator is supplying current to the battery, in which event a suitable electro-magnetic device energized by the generated current functions to incapacitate the indicator.

The indicator may well be a make-and-break device similar to the ordinary buzzer or electric bell, and a convenient way of incapacitating the indicator by means of the generated current, is to employ the generated current to energize the electro-magnet of the indicator and hold the armature in its attracted position so long as the engine is running. A separate magnet winding may be employed for this purpose or a single winding may be used by providing a back contact for the armature which, when closed, will connect the magnet winding into the generator circuit.

I shall now describe the illustrated embodiment of my invention and shall thereafter point out my invention in claims.

The drawing is a diagrammatic representation of one embodiment of my invention.

The generator G is driven by the vehicle engine (not shown) in the usual way, and after the automatic switch S is closed the generator supplies a charging current to the battery B through the wire 1, switch 2,

wire 3, battery B, ground, switch S and wire 4. The switch 5 controls the connection between battery lead 3 and wire 6 leading to the ignition coil I. Connected in parallel with the ignition is the alarm circuit which is closed unless held open by the generated current, and this alarm circuit will now be described.

The vibrating alarm device consists of the electro-magnet 7 and the pivoted armature 8 and the magnet winding 9 which has one end connected to the fixed contact of the switch 5 through the wire 10, and has its other end connected to the contact 11 on the armature 8 which can be through the retractile spring 12 and the armature or it can be by direct connection through a flexible wire. The contact 11 on the armature cooperates with the stationary contact 13 which is grounded. It is therefore evident that when the switch 5 is closed the armature 8 will, unless restrained, vibrate or oscillate between attracted and retracted positions.

As a means for operating the signal mechanism I have shown the armature 8 as provided on its free end with a projecting leaf or finger 14 which is composed of some resilient and relatively flexible material such as thin steel or spring brass and which will therefore have a greater amplitude of oscillation than will the rigid armature. This finger 14 may carry a hammer 15 arranged to strike against a sound device 16 as the finger oscillates. The sound device 16 is so positioned as to be clear of the hammer by a small space when the armature is in its attracted position and is not vibrating, as shown in the drawing. When the armature is vibrating the inertia of the weighted finger will cause the finger to flex after the armature stops in its attracted position and allow the hammer to continue in its movement until it strikes the sound device. This continued movement of the finger 14 also serves to open and close a light circuit rapidly, as will now be described.

Two lights L, which are suitably arranged on the vehicle, one, for instance, being the tail light and the other being the dash light, are arranged in multiple and have one terminal grounded while the other is connected by wire 17 to the fixed contact of switch 18. This switch contact is con-

nected in multiple to two opposing spaced contacts 19 and 20, the connection to the contact 19 being through the wire 21 and the connection to the contact 20 being through the lever of switch 18 and the wire 22. Arranged between the two contacts 19 and 20 and cooperative with both is a pivoted contact 23 which is connected to the battery B through the wire 3, and which has a bias to the contact 20. The free ends of the vibratory finger 14 and of the pivoted contact 23 are so related that in the biased position of the contact, the two are just clear when the armature 8 is quiet in its attracted position, as shown in the drawing.

It is manifest that when the armature 8 is vibrated the movement of the free end of the finger 14 will be sufficient to cause it to strike the end of the lever 23 and thus rapidly oscillate the lever between the two contacts 19 and 20 and cause the lights to flicker, and this will serve as an additional indication to the operator at night when the switch 18 is closed.

To incapacitate the indicator when the engine is running, means are provided for utilizing the generated current to energize the magnet 7 and hold the armature in the attracted position shown in the drawings, thus holding open the contacts 11 and 13. A convenient way to do this is to provide a back contact 24 for the armature-controlled contact 11, which back contact is connected to the lead 4 of the generator. So long as current is being generated the magnet 7 will be continuously energized through the following circuit: from one brush of the generator through wire 1, switches 2 and 5, wire 10, winding 9, spring 12, armature 8, contacts 11 and 24, switch lever 28 and wire 4 back to the other brush of the generator. It is therefore evident that when the switches 2 and 5 are both closed and the engine is running, the battery current will first energize the magnet 7 and the generated current will keep it energized from the instant that the armature 8 is attracted.

Also an additional winding 25 may be provided on the magnet 7 which has one end connected to the wire 10 and its other end to a wire 26 terminating in stationary contact 27, which cooperates with the switch lever 28 connected to generator lead 4. When the lever 28 is on contact 27 it is evident that the winding 25 will be connected across the generator brushes and will serve to magnetize the magnet and hold the armature in its attracted position as long as the engine is running. Thus either one or two windings may be used on the magnet. If desired either the winding 25 may be dispensed with, or the back contact 24 may be dispensed with and the winding 25 be permanently connected to the wire 4.

In either case the switch 28 would be unnecessary.

It is obvious that various modifications may be made in the construction shown in the drawing and above particularly described, within the principle and scope of my invention.

I claim:

1. For automobiles and the like, in combination with a battery and generator, an ignition circuit, means for connecting the battery in the ignition circuit, means controlled by the generator current for connecting the generator in the ignition circuit; an electrically operated indicator, means for connecting the indicator in circuit with the battery in parallel with the ignition circuit, said means including a switch having a bias to closed position, and electro-magnetic means connected to be energized by the generator and operative to open said switch.

2. For automobiles and the like, in combination with a battery and generator, an ignition circuit, means for connecting the battery in the ignition circuit, means controlled by the generator current for connecting the generator in the ignition circuit, an indicator including an electric make-and-break device, means for connecting the make-and-break device in closed circuit with the battery, in parallel with the ignition circuit, and electro-magnetic means connected to be energized by the generator and arranged in control of the indicator circuit.

3. For automobiles and the like, in combination with a battery and generator, an ignition circuit, means for connecting the battery in the ignition circuit, means controlled by the generator current for connecting the generator in the ignition circuit, an indicator including an electric make-and-break device, means for connecting the make-and-break device in closed circuit with the battery, in parallel with the ignition circuit, and electro-magnetic means connected to be energized by the generator and operative when energized to hold the movable member of the make-and-break device in circuit breaking position.

4. For automobiles and the like, in combination with a battery and generator, an ignition circuit, means for connecting the battery in the ignition circuit, means controlled by the generator current for connecting the generator in the ignition circuit, an electro-magnetic make-and-break device, means for connecting the make-and-break device in closed circuit with the battery in parallel with the ignition circuit, said device including an electro-magnet and a biased armature operative to close the indicator circuit when in biased position and to open it when attracted by the

magnet, and means for supplying the generated current to a winding on the magnet, whereby the magnet is energized and the armature retracted while the generator is  
5 being operated.

5. For automobiles and the like, in combination with a battery and generator, an ignition circuit, means for connecting the battery in the ignition circuit, means controlled by the generator current for connecting the generator in the ignition circuit, an electric make-and-break device,  
10 means for connecting the make-and-break device in closed circuit with the battery in

parallel with the ignition circuit, said device including an electro-magnet and a biased armature, a signal operating element carried by the armature, a signal disposed in the path of movement of the said element as the armature vibrates, and  
20 means for supplying the generated current to a winding on the magnet, whereby the magnet is energized and the armature retracted while the generator is being operated.  
25

In witness whereof I hereunto subscribe my signature.

RICHARD VARLEY.