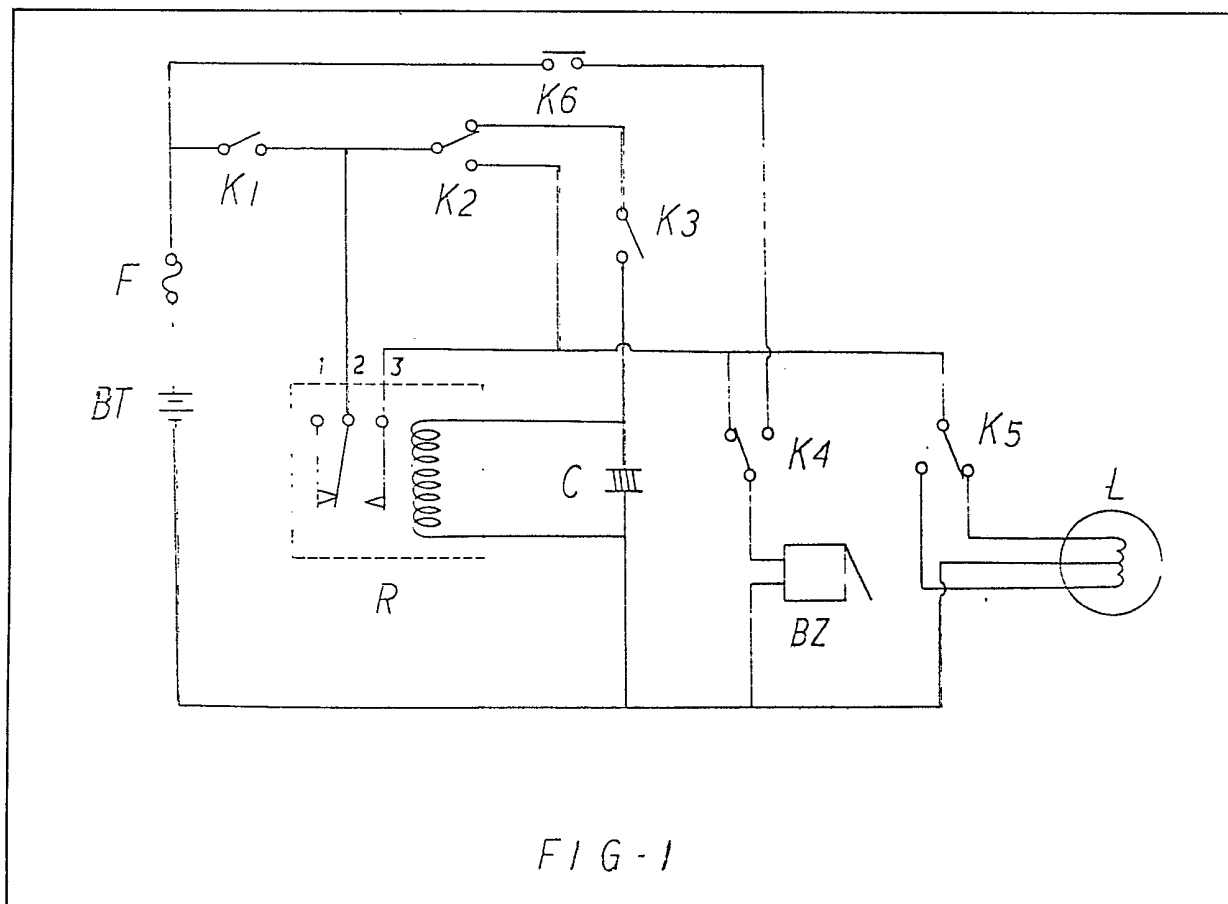


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(54) Car light automatic controller for  
burglar alarm

(57) A car light automatic controller  
comprising an automatic control wiring  
comprising a relay R, an electrolytic  
capacitor (C) with large capacitance,  
and three change-over switches  
(K<sub>2</sub>, K<sub>4</sub>, K<sub>5</sub>) which is characterized by  
automatic change-over of headlights,  
saving unnecessary switching actions  
and current during parking or driving at  
night, and simultaneously being used  
as a burglar alarm through the said  
control wiring during parking.



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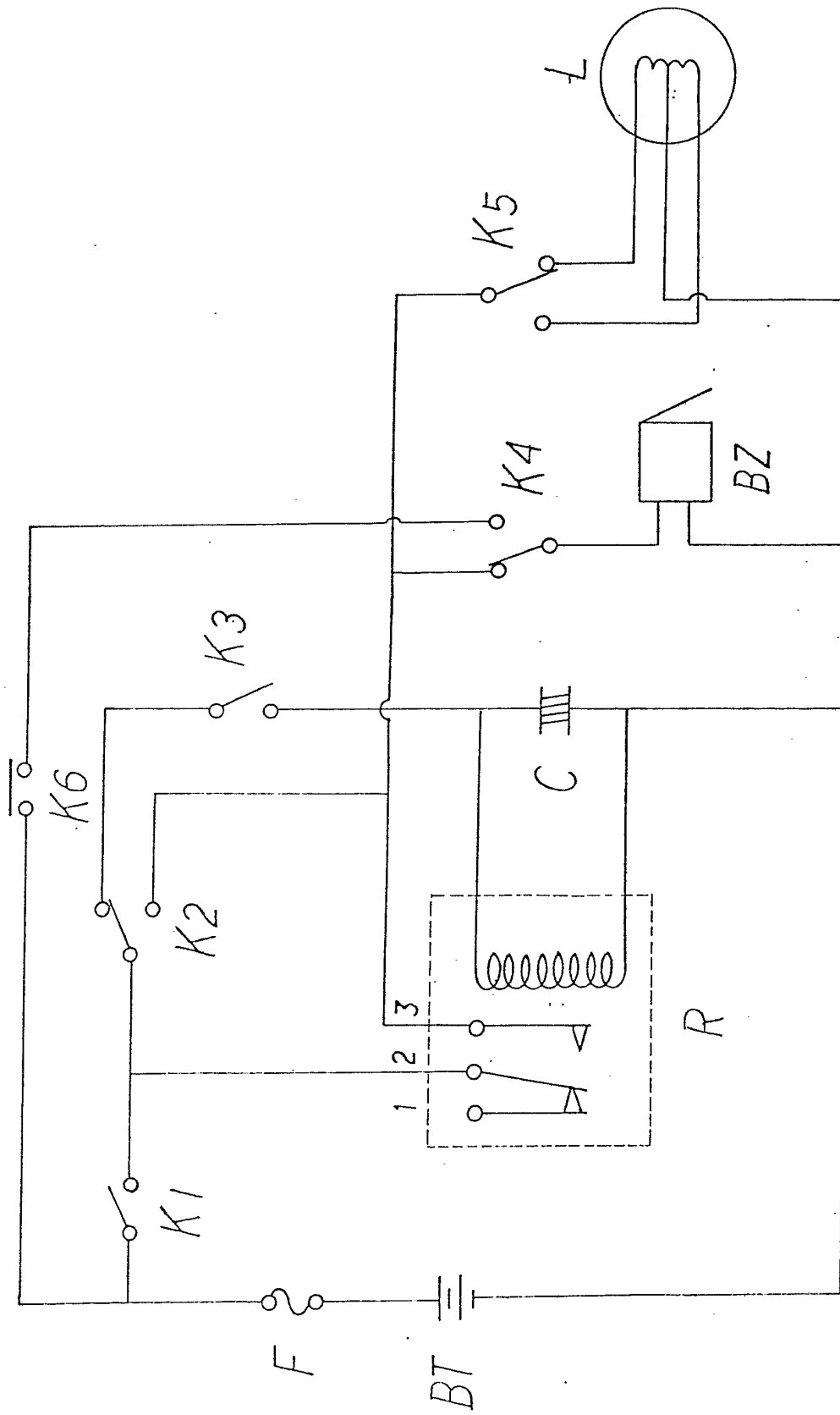


FIG. 1

## SPECIFICATION

**Car light automatic controller for burglar alarm**

5 The present invention relates to a circuit arrangement for an automotive vehicle enabling automatic switching of the headlights during parking or driving at night and simultaneously acting as a burglar alarm during parking.

10 Travel by car instead of by foot has become almost a necessity in modern society due to rapid industrial and commercial progress. To car users at large, a car should not only be convenient and fast but also should provide the desirable comfort, fuel economy,

15 easy maintenance, and security to prevent burglary.

During driving at night, it is occasionally found that the headlights of cars stopping at crossroad awaiting the green light are turned off in order to avoid excess consumption of electric energy in the car while other drivers keep their headlights turned on since they do not like to be bothered by the repeated and troublesome switching on and off. In addition, when car users park or temporarily stop their cars on the roadside and leave their cars for a while, a burglar can steal these cars to modify or disassemble them or use them for committing another crime. As a result, these car users can suffer a great loss.

The object of the present invention is to provide an automatic car light controller and burglar alarm using an easily installed control wiring, in need of no maintenance, to automatically cut-off the car headlights and save electric energy so as to avoid the troubles of switching the car light at crossroad or upon stopping and then driving.

Further, it is sought to provide a burglar alarm which is aimed at and characterized by triggering the said control wiring in the stopped or parked car by the burglar as soon as he drives the car away leading to the horn sounding and car head lights being turned on to attract the attention of others nearby so as to achieve the purpose of preventing burglary.

According to the present invention there is provided an automatic controller for the headlights of a vehicle comprising control wiring including a relay, a capacitor and three change-over switches interconnected so as to provide for automatic switching of the headlight or switch control during parking or driving for activating a burglar alarm.

50 The invention will be described further, by way of example, with reference to the accompanying drawings which is an automatic controller according to the invention.

As shown in the drawing, the said control circuit uses the storage battery BT in the car as the power source. The switch K1 is a conventional car headlight switch. In addition, a relay R, a capacitor C connected in parallel with the coil of said relay R, and a manual and automatic change-over switch K2 connected in series with the power source BT are provided. A neutral switch K3 is provided, controlled by the gear-change lever, in other words, the switch K3 is closed when said lever is in gear but open when the said gear lever is neutral. An alarm switch K4 is cascade connected between the horn BZ and horn

push button K6 installed on the steering wheel to form a horn circuit normally comprising the horn BZ, switch K6 and power source BT, but when K4 is changed-over, the said control circuit and horn BZ form a burglar alarm circuit; and K5 is a change-over switch for control of the driving lamp and dimmer.

The operating characteristics of said control wiring can be best described in reference to the accompanying drawing as follows:

75 When the car is driven at night, the car headlight switch K1 is closed so as to connect the power source BT and car headlight L which is thus turned on for illumination. However, if the change-over switch K2 is in the "manual" position, the car headlight circuit acts conventionally and cannot be optionally turned off or on and the driver may control the change-over switch K5 of the driving lamps L and dimmer. When the change-over switch K2 is in the "automatic" position shown, the power source BT positive pole is connected to the coil of relay R through switches K1, K2 and K3 and returns to power source BT negative pole to form a circuit so that the switch contacts of relay R change to close contacts 2 and 3 from close contacts 1 and 2, and the power source BT in the said circuit is connected to the headlight L via switch K1 and relay contacts 2 and 3 and returns to power source BT to form a circuit so that the car light is turned on. As mentioned above, K3 is a change-over switch under the control of the gear-change-lever; when the gear-change rod is in a low-speed gear for starting or in high-speed gear, the said car headlight automatic controller and power source BT form a circuit to turn on the car headlight L. When the car is driven to the crossroad awaiting the green light and thus stopped, the gear-change lever is pushed back to the neutral position to turn off K3, so that the said automatic control loop is open, the relay coil is not excited and there is an open circuit between the relay switch contacts 2 and 3, so the car headlights automatically turn off. When the car starts off once again, as soon as the gear-change lever is put into gear, K3 is closed to operate the relay and the control wiring becomes a circuit once again to turn on the car headlights.

110 When the gears are changed during driving, normally the gear-change lever would turn off K3 at the instant of passing through the neutral causing the car headlights to be momentarily switched off. However, capacitor C connected across relay coil eliminates this undesirable phenomenon. As shown in the drawing, the capacitor C is connected in parallel with the relay coil, when K3 is turned off by the gear-change lever, the capacitor C can keep the said coil in an excited state hold the contacts 2 and 3 closed until the capacitor C is discharged. Therefore, when the gear-change lever passes through the neutral position, the said control circuit will not affect the car headlight illumination even if switch K3 is open. The discharging time may depend on the coil size and capacitor size. Normally, it is sufficient to have a 1,000F or 2,000F capacitance for a 3-6 seconds discharging time.

When the driver intends to leave the car for a while or to park the car, he or she may use the switch K4 to turn off the horn push-button K6 on the steering

wheel so that the automatic control wiring can control the horn as a burglar alarm. As shown in the drawing, the circuit comprising horn BZ, change-over switch K4 and the control wiring is connected in parallel with the car headlights, and the operating characteristic thereof is the same as mentioned above. When a burglar gets in the car and uses the gear-change lever, the said circuit is closed by switch K3 to connect the power source BT to horn BZ and car headlight L, so that before he starts the car, the horn sounds aloud and the headlights turn on to attract the attention of others nearby until switch K4 is turned off or the gear-change lever is shifted to the neutral position. Even if the burglar rapidly shifts the said lever to the neutral position, the car cannot be driven too far and he may be apprehended quickly because of the unexpected commotion he has caused.

Thus, by installing three change-over switches, a relay and a capacitor in the conventional wiring in a car one can achieve the purpose of automatic switching-off car headlights and burglar alarm.

#### CLAIMS

1. An automatic controller for the headlights of a vehicle comprising control wiring including a relay, a capacitor and three change-over switches interconnected so as to provide for automatic switching of the headlight or switch control during parking or driving for activating a burglar alarm.
2. An automatic controller as claimed in Claim 1, which is connected between the power source and headlight wiring and wherein the first change-over switch enables control of the head lights automatically or manually.
3. A controller as claimed in Claim 1, or 2, wherein the second change-over switch is connected to control change-over via the gear-change lever so as to be open when the said lever is in the neutral position and closed when the said lever is in other gears.
4. A controller as claimed in Claim 1, 2 or 3, wherein the third change-over switch is connected between the horn of the vehicle and horn push button and the said control wiring and horn form a burglar alarm wiring.
5. An automatic controller for a burglar alarm for a vehicle comprising control wiring as claimed in Claim 1, the vehicle headlights and horn, which is actuated by means of the second change-over switch in the said wiring and connected to the gear-change lever to make the horn sound and the headlights turn on.
6. A controller as claimed in Claims 1, 3 or 5 wherein a capacitor is connected in parallel with the relay so as to keep the said circuit closed when the second change-over switch is open temporarily.
7. A controller and burglar alarm wiring for a vehicle substantially as herein described with reference to and as illustrated in the accompanying drawings.