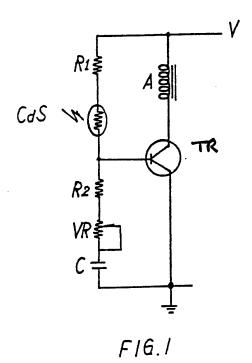
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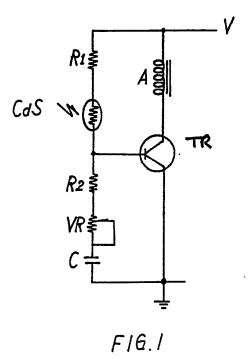
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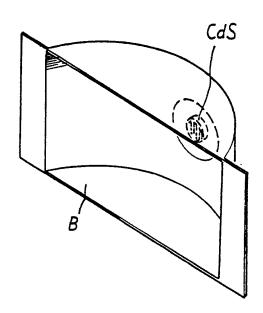
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(54) Automobile headlight switching arrangement

(57) An automatic switching arrangement for switching an automobile's headlights from high beam to low beam when approaching another automobile at night on the road, and afterwards to resume the high beam setting as long as no other automobile approaches, includes a light collecting device which focuses light from the approaching automobile on to a light-sensitive resistor (CdS) which in repsonse renders a transistor (TR) conductive causing operation of a relay (A) to effect the required switching. By means of a CR network (C;VR) the return from low beam to high beam setting is delayed for a preset time to allow the approaching automobile to pass.







F1G.2



F16.3

AUTOMOBILE HEADLIGHT SWITCHING ARRANGEMENT

This invention relates to an automobile headlight switching arrangement.

Conventional automobiles are equipped with headlights with high beam and low beam settings, and the changes between the settings is manually achieved by means of a switch usually disposed beside the steering wheel. Ιt is particularly important for a driver to switch his headlights from high beam to low beam when approaching another automobile on the road at night, so that the other driver will not be bothered or annoyed by the strong high beam light, thus permitting the other driver to see and keep proper control of his or her vehicle at that Many automobile accidents happening at night are caused by drivers not employing proper low beam headlights when their automobiles approach each other, the drivers being unable to see and keep their automobiles on the right track because of the glaring high beams of the headlights.

Usually, a well-trained or careful driver will employ low beam headlights in consideration of not annoying other drivers of approaching automobiles to prevent possible accidents by manually operating the switch disposed beside the steering wheel. However, in many situations, drivers easily fail to respond properly and quickly to change to low beam

headlights because of their negligence or lack of consideration of driving safety.

According to this invention there is provided headlight switching arrangement, comprising automobile light-sensitive resistor, a variable resistor and a capacitor connected in series across a supply voltage; a transistor having its emitter-collector path connected across the supply voltage and its base connected to the junction between the light-sensitive resistor and the variable resistor; and a relay connected in the collector circuit of the transistor, the arrangement being such that in use light incident on the light-sensitive resistor renders the transistor conductive and thus causes operation of the relay which effects switching of the headlights of a vehicle on which the arrangement is mounted from a high beam to a low beam setting; the headlights remaining in the low beam setting after the end of the incident light, for a period determined by the variable resistor and the capacitor.

The invention provides an automatic arrangement which can perform switching of the headlights of an automobile from a high beam to a low beam setting when two automobiles meet each other face to face on the road at night, and to resume the original setting afterwards.

This invention will now be described by way of example with reference to the drawings, in which:-

Figure 1 is a circuit diagram of an arrangement

according to the invention;

Figure 2 is a diagram showing the structure of a light collecting device for use in an arrangement according to the invention; and

Figure 3 is a diagram illustrating the respective high beam and low beam headlights of two face-to-face approaching automobiles.

As shown in Figure 1, the arrangement comprises a resistor R1, a light-sensitive resistor CdS, a resistor R2, a variable resistor VR and a capacitor C connected in series across a supply voltage, with the base of a transistor TR connected to the junction between the light-sensitive resistor CdS and the resistor R2, the collector of the transistor TR being connected to a relay A. The light-sensitive resistor CdS is housed in a light collecting device B as shown in Figure 2.

As two automobiles each provided with an arrangement as shown in Figures 1 and 2 approach in the head-on direction the light cast from the headlights of one automobile will reach and be collected by the light collecting device B of the other automobile, the intensified light being focused on the light-sensitive resistor CdS, causing the resistance thereof to reduce and the voltage at the base of the transistor TR to rise. Thus, the transistor TR is rendered conductive, and the capacitor C is charged accordingly, resulting in actuation of the relay A to perform a switching operation setting the headlights from the high beam to the low beam setting.

After the approaching automobile has passed by with no other automobile approaching consecutively, the resistance of the light-sensitive resistor CdS gradually increases, causing the resistor R1 and the light-sensitive resistor CdS to drop in voltage with the voltage of the transistor TR approaching With the capacitor C having been fully charged, the feedback discharge of the capacitor C flows to the base of the transistor TR maintaining it in the conductive state, with the relay A being kept operated until the capacitor has been fully discharged, the voltage at the base of the transistor TR transistor TR becomes gradually decreasing until the non-conductive, resulting in termination of the operation of Thus, the original setting is resumed. The variable resistor VR in co-operation with the capacitor C constitutes a delay network which serves for adjustment of the switching time of the headlights from high beam to low beam setting.

The features of the arrangement in practical application are given as follows.

1. As shown in Figure 3, when two automobiles A, B approach face-to-face, automobile B equipped with an arrangement according to the invention is first affected by the high beam of the headlights of automobile A, and the headlights of automobile B are automatically switched from high beam to low beam setting accordingly. As the two automobiles come closer with the headlights of automobile A being manually set into low beam by the driver, the weaker low

beam of automobile A will still keep the arrangement of the invention working normally.

- 2. If another automobile approaches consecutively after automobile A, the headlights of automobile B will be delayed to switch from low beam back to high beam until no automobiles are approaching.
- 3. The working range of the arrangement obtained via tests are given below:

At a speed of 60-70 km/hr with low beam the headlights will be automatically switched with two automobiles 20-30 meters apart; at a speed of 60-70 km/hr with high beam the headlights will be automatically switched with two automobiles 40-80 meters apart.

- 4. The arrangement is not affected by the weather.
- 5. The time of switching the headlights back to high beam can be adjustably delayed by means of the variable resitor VR.
- 6. When an automobile equipped with the arrangement of the invention using high beam headlights enters a city area, the lights of buildings and road lamps will actuate the arrangement.

CLAIMS

- switching arrangement, headlight automobile 1. An comprising a light-sensitive resistor, a variable resistor and a capacitor connected in series across a supply voltage; a transistor having its emitter-collector path connected across the supply voltage and its base connected to the junction between the light-sensitive resistor and the variable resistor; relay connected in the collector circuit of the and transistor, the arrangement being such that in use light incident on the light-sensitive resistor renders the transistor conductive and thus causes operation of the relay which effects a vehicle on which the headlights of switching of the arrangement is mounted from a high beam to a low beam setting; the headlights remaining in the low beam setting after the end of the incident light, for a period determined by the variable resistor and the capacitor.
- 2. An arrangement as claimed in Claim 1, in which the light-sensitive resistor is mounted on a light collecting device which serves to focus the incident light on the light-sensitive resistor.
- 3. An automobile headlight switching arrangement substantially as hereinbefore described with reference to the drawings.
