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G. H. HEMPHILL

COMBINATION HEADLIGHT DIMMING AND SPOTLIGHT CONTROLLING MEANS

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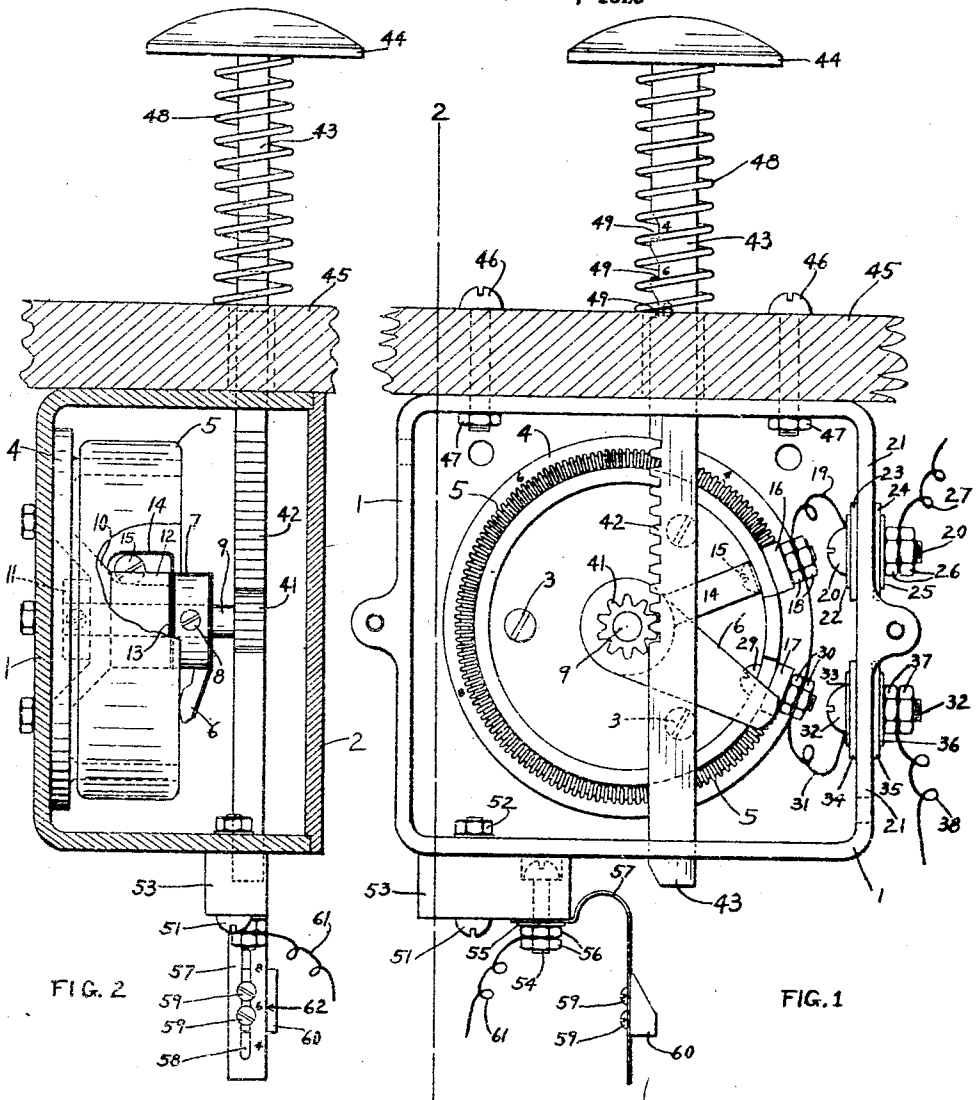


FIG. 2

FIG. 1

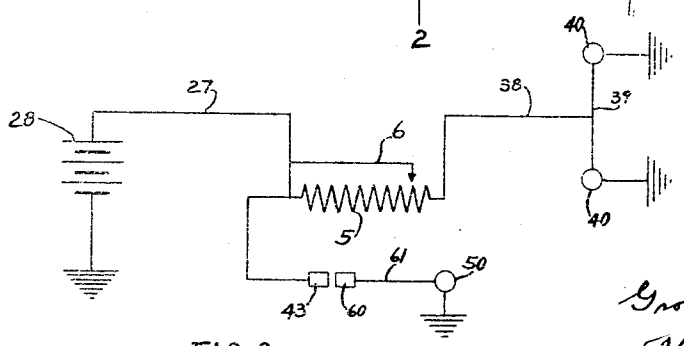


FIG. 3

INVENTOR
Grover H. Hemphill,
BY
Howard S. Smith,
ATTORNEY

UNITED STATES PATENT OFFICE.

GROVER H. HEMPHILL, OF DAYTON, OHIO.

COMBINATION HEADLIGHT-DIMMING AND SPOTLIGHT-CONTROLLING MEANS.

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To all whom it may concern:

Be it known that I, GROVER H. HEMPHILL, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Combination Headlight-Dimming and Spotlight-Controlling Means, of which the following is a specification.

This invention relates to a combination headlight dimmer and spot-light control, and has more particular reference to a device for automatically turning on the spotlight when the headlights of an automobile have been dimmed a desired amount.

It is the principal object of my invention to provide a simple, compact and economical foot-controlled device for introducing variable resistance in the headlight circuit of an automobile, said device including means for closing the spot light circuit at a predetermined time in the dimming operation.

It is another object of my invention to provide means for locking the dimmer control in a predetermined position, so that after the headlights have been dimmed a desired degree, they will remain so until the locking means have been disengaged.

It is still another object of my invention to provide graduated means for enabling one to so set the spot-light control mechanism that the spot light circuit will be closed by the dimming device at a predetermined point in its travel.

In the accompanying drawings illustrating my invention, Figure 1 is a side elevational view of the dimming device and spot light control, with one side of the resistance-containing casing removed. Figure 2 is an end view of the device, partly in section and partly broken away to reveal the operating mechanism. And Figure 3 is a wiring diagram illustrating the operation of my device.

Throughout the specification and drawings, similar reference characters denote corresponding parts.

In a detailed description of the form of embodiment of my invention illustrated in the accompanying drawings, the numeral 1 designates a suitable metallic casing which is preferably rectangular in cross section and closed at one side by a removable plate 2. (See Figures 1 and 2.) Secured by screws 3 to the rear wall of the casing 1 is a resistance ring member 4 around which is wound a helically-disposed wire 5. The wire is so wound upon the ring member 4 as to leave a circular inner edge for engagement by the outer end of a radial contact lever 6 which terminates at its inner end in a hub portion 7. The latter is firmly secured by a screw 8 to a shaft 9 whose rear end projects through an axial hole in a conical boss 10 on the interior of the ring member 4. Secured to the extreme rear end of said shaft is a collar 11 which acts with the hub portion 7 of the contact arm 6 to hold the shaft in said boss.

The conical boss 10 of the ring member 4 terminates at its outer end in a reduced cylindrical part 12. Between the latter and the hub portion 7 of the contact arm 6, there is loosely fitted on the shaft 9 the enlarged eye end 13 of a stationary contact arm 14 whose outer end is turned for attachment by a screw 15 to the annular wall of the resistance ring member 4. The latter, while it is made of bakelite, may be constructed of any other suitable insulating material.

Each end of the helical wire 5 is connected to a metallic terminal piece, the upper one being designated by the numeral 16, and the lower one by the numeral 17. (See Figure 1.) The screw 15 projects through the terminal piece 16 to receive on its outer end two binding nuts 18, 18 that clamp between them one end of a wire 19, the other end of which is connected to a screw 20 that projects through a hole in the end wall 21 of the casing. Between the head of the screw and said end wall is a collar 22 and an insulating washer 23, a similar washer 24 and collar 25 being placed on the outer end of said screw between the end wall 21 of the casing and two binding nuts 26, 26 on the extreme outer end of the screw. These binding nuts receive between them a wire 27 that leads to a battery 28. (See Figures 1 and 3.)

Projecting through a hole in the annular wall of the rack 4 and the terminal piece 17 of the spring, is a screw 29 which receives on its outer end two binding nuts 30, 30. The latter receive between them one end of a wire 31 whose other end is connected to a screw 32 that projects through a hole in the end wall 21 of the casing a short distance below the screw 20. Between the head of the screw 32 and said end wall is a collar 33 and an insulating washer 34,

a similar washer 35 and collar 36 being placed on the outer end of said screw between the end wall 21 of the casing and two binding nuts 37, 37 on the extreme outer end of the screw. The latter binding nuts receive between them a wire 38 which leads to a wire 39 connecting two headlights 40, 40 that are grounded to the frame. (See Figures 1 and 3.)

For the purpose of introducing in the headlight circuit the resistance of the wire 5 in variable amounts, the following means are provided for rotating the contact arm 6 to engage said wire at different points. Referring to Figures 1 and 2, there is fixedly secured to the outer end of the shaft 9 a pinion 41 which is engaged by the rack portion 42 of a vertically movable bar 43 that terminates in its upper end in a mushroom-shaped head 44. This bar projects downwardly through a hole in the floor board 45 of an automobile, and thence through a hole in the top and lower wall of the casing 1 which is secured to said floor board by screws 46, 46 and nuts 47, 47 on them. Surrounding the upper end of the bar 43 between its head 44 and the floor board 45, is a helical spring 48 to return said bar to its normal position after it has been depressed.

By applying the pressure of his foot to the head 44 of the bar 43, the driver may force the latter downwardly to turn the contact arm 6 by virtue of the engagement of the rack portion of the said bar with the pinion 41 which is fast on the same shaft 9 that rotates the arm 6. The greater distance the bar 43 is depressed, the farther the outer end of the contact arm 6 will travel over the wire 5, thereby lengthening the headlight circuit by an amount that corresponds to the distance on the wire 5 between the outer end of the contact arm 6 and the terminal piece 17 of the wire. The wire 5 will then introduce into the headlight circuit for the purpose of dimming the lights, a resistance which is in proportion to the distance of travel of the outer end of the contact arm 6 over it.

For the purpose of locking the bar 43 against upward movement when it has been depressed to dim the headlights a desired amount, said bar is notched on one side to provide ledges 49 that are adapted to engage the under side of the top wall of the casing when the bar is shifted laterally by the foot. It may be easily disengaged therefrom by forcing it in the other direction by a lateral shift or kick of the foot. The ledges 49 may be so located on the bar 43 that the headlights may be set to receive four, six or any other number of amperes of current.

For the purpose of automatically turning on a spot-light 50 when the headlights 40, 40 have been dimmed a desired amount, the following means are provided. Referring to Figures 1 and 2, there is secured to the bottom of the casing 1 by means of a screw 51 and nut 52, or in any other suitable manner, an insulating block 53. Secured to the inner portion of the latter, with its head resting in a countersunk portion thereof, is a downwardly projecting screw 54. Attached to the lower end of this screw, and pressed against the bottom of the insulating block 53 by a washer 55 that is engaged by the inner one of two binding nuts 56, 56 on the screw, is the horizontal end of a metal strip 57 which is curved upwardly and then downwardly, terminating in a vertical portion that is parallel and close to the plane of movement of the lower end of the bar 43. This vertical portion of the strip 57 contains a longitudinal slot 58 in which there are free to move, two screws 59, 59 attached to a beveled contact piece 60 that is adapted to be engaged by the beveled lower end of the bar 43. Connected to the screw 54 between the binding nuts 56, 56 is one end of a wire 61 that leads to the spot light 50, so that when the contact piece 60 is engaged by the lower end of the bar 43, a circuit will be closed by it from the battery 28 to the spot light 50 for the purpose of illuminating the the latter. (See Figures 1 and 3.)

The contact piece 60 is free to be moved along the strip 57 so that it may be engaged by the bar 43 at any desired time during the headlight dimming operations. Numerals designating amperes such as 8, 6 and 4, may be placed on one side of the strip 57 to denote points into registry with which an indicator 62 on the contact piece 60 may be brought. They serve to indicate to the operator at just what point the contact piece 60 should be located if it is desired to have the spot-light turned on when the headlights start to receive a certain current amperage. For example, if the indicator 62 is in registry with the numeral 6 on the strip 57, it will denote that the contact piece 60 is in a position to be engaged by the bar 43 when the contact arm 6 travels to the position designated by the numeral 6 opposite the wire 5 on the periphery of the ring member 4; in other words, that the spot-light 50 will be illuminated when the current delivered to the headlights 40, 40 is reduced to six amperes. Any desired numerals designating amperes may be placed alike on the strip 57 and resistance ring member 4 as illustrated in Figure 1, and also upon the bar 43 opposite the ledges 49. In the first instance they will indicate the position of the contact piece 60 and contact arm 6 for a desired amperage; and in the second instance they will show when to lock the bar 43 for the maintenance of that amperage.

It will thus be seen that by the use of my

improved device, variable resistance may not only be introduced in the headlight circuit, but that a spot light may be automatically turned on at a desired point in the dimming operation, said device including locking means for maintaining the current delivered to the headlights at a desired amperage.

I do not wish to be limited to the details of construction and arrangement herein shown and described, and any changes or modifications may be made therein within the scope of the subjoined claims.

Having described my invention, I claim:

1. A dimmer rheostat comprising a resistance winding, a contact movable along said resistance winding, means for shifting said contact to different positions on said winding, and an electrical adjustable contact adapted to be engaged by the shifting means for the first contact when the latter is at a desired point on the resistance winding.

2. A dimmer rheostat comprising a casing, a ring member of insulating material secured therein, a resistance winding on the ring member, a contact arm pivoted at the center of the ring member for engagement with the resistance winding, a longitudinally movable member for moving the contact arm around said winding, and an adjustable electrical contact secured to the casing for engagement by one end of said longitudinally movable member at a desired point in the travel of the contact arm around said resistance winding.

3. A dimmer rheostat comprising a casing, a ring member of insulating material secured therein, a resistance winding on the ring member, a shaft journaled at the center of the ring member, a contact arm fixedly secured to said shaft for engagement with said winding, a pinion on said shaft, a bar longitudinally movable through said casing and having a toothed portion for engagement with said pinion to rotate the contact arm, a strip secured to said casing, corresponding indications on said strip and the ring member, and an electrical contact piece adjustably secured to said strip for movement to an indication thereon for engagement by one end of said bar at the time the contact arm is opposite the corresponding indication on the ring member.

4. A dimmer rheostat comprising a casing, a ring member of insulating material secured therein, a resistance winding on said ring member, a shaft at the center of the latter, a contact arm fixedly secured to said shaft for engagement with said resistance winding, a pinion on said shaft, a bar longitudinally movable through said casing and having a toothed portion for engagement with said pinion to rotate the contact arm, indications on said ring member, opposite which said contact arm is adapted to be brought, a head for said bar, a helical spring surrounding the latter between its head and the casing, and ledges formed on said bar corresponding to the indications on said ring member, and adapted to engage said casing to hold the contact arm in a stationary position after it has been brought to a selected indication on said ring member.

In testimony whereof I have hereunto set my hand this 14th day of September, 1923.

GROVER H. HEMPHILL.