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H. K. LORENTZEN

DIMMER

Filed Aug. 13. 1924

Fig. 1.

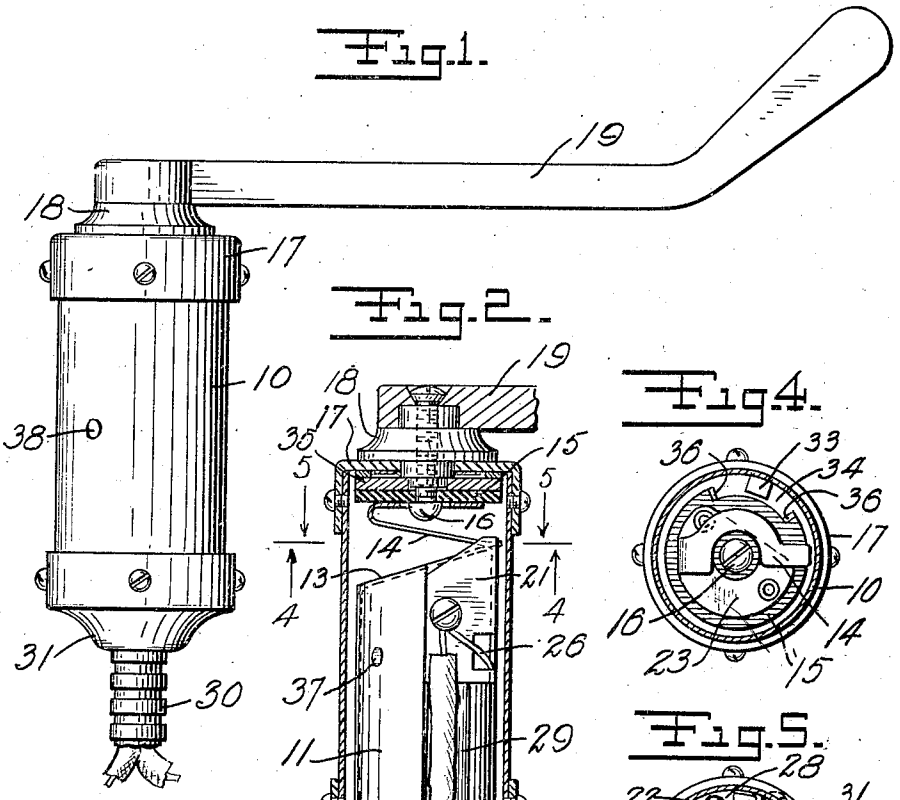


Fig. 2.

Fig. 4.

Fig. 5.

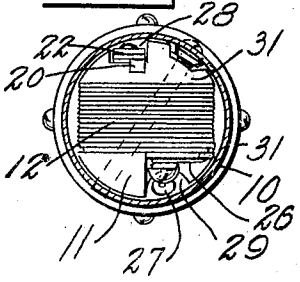
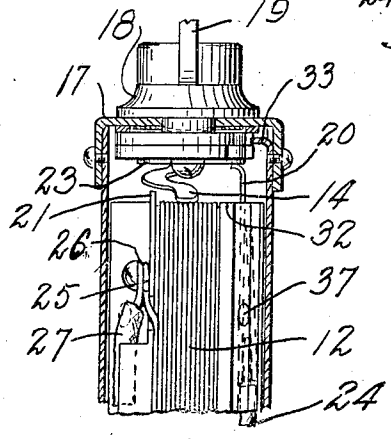


Fig. 3.



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DIMMER.

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This invention relates generally to dimmer devices for use with automobile headlights.

A general object of the invention is to provide an improved device for this general purpose which can be readily operated without removal of the driver's hand from the steering wheel and which in addition provides for a varying degree of dimming effect within the control of the operator.

Other features of the invention include a variable resistance or rheostat element including a specially formed coil and support therefor which can be fitted into and readily removed from a compactly formed casing adapted to be mounted on the steering post in a position accessible to the hand of the operator on the steering wheel. The casing supports a movable switch member which carries a contact arranged to be moved across the windings of the coil in direct contact therewith to thereby include a greater or lesser number of turns of the coil within the lighting circuit in which the coil is included. A terminal for the coil is mounted at the inner end of the core member and a groove in the wall of the core member provides a housing along which the conductor leading from the coil terminal extends to a point of emergence from the casing at the other end thereof. In like manner a conductor receiving groove is formed in the core member on the opposite side thereof and leads to a terminal member carried by the core adjacent its inner end and so mounted as to be engaged with a contact member carried by the switch device which engages the coil at the inner end thereof.

Other features of the invention will be hereinafter referred to.

In the drawings in which a preferred embodiment of the invention has been selected for illustration,

Figure 1 is a view in side elevation of a dimmer device embodying the invention.

Figure 2 is a view in vertical section of the device shown in Figure 1.

Figure 3 is a view similar to Figure 2 showing the parts arranged at a right angle to the position of the parts shown in Figure 2.

Figure 4 is a cross-section of the device shown in Figure 2 looking upwardly from the position of the arrows 4—4.

Figure 5 is a view in cross-section of Figure 2 looking downwardly from the position of the arrows 5—5.

Referring to the drawings for a more detailed description of the invention, a dimmer device is shown which includes a cylindrical tubular member 10 forming the body portion of a housing for a core member 11 formed of porcelain or other insulating material and providing a support for a resistance coil 12 formed of suitable conducting wire which is preferably employed in its bare form, that is, not coated with insulating material other than the insulating film tending to be provided by the products of oxidation.

The upper or inner end of the core member 11 is formed at an angle other than a right angle as indicated at 13 to facilitate contact with the upper stretch of the coil of a switch contact member 14 carried by a rotatable plate 15 formed of insulating material and attached for rotative movement to a screw 16 which forms a rotatable shaft extending through a cap member 17 for the casing 10. The screw 16 has operative connection with a rotatable collar 18 engaging the upper end of the cap member 17 and carrying a hand operating member 19 which preferably extends to a position convenient to the hand of an operator on the steering wheel. It will be seen that movement of the hand operating member 19 correspondingly swings the switch member 14 across the windings 12 between the stop members afforded by a contact terminal 20 on the one hand and a contact terminal 21 on the other.

The contact terminal 20 referred to is mounted on the core member 11 as at 22 near the inner or upper end thereof and projects to a position having movable contacting engagement with a contact plate 23 carried by the insulating plate 15 and preferably forming an integral part of the switch element 14. The contact terminal 20 is connected at its point of attachment with the end of a conductor 24 forming one side of the lamp circuit in which the terminal device is included.

The other contact terminal 21 is mounted at 25 near the upper and inner end of the core member 11 and forms a terminal for the end 26 of the coil or winding 12 as well as for the conductor 27 also included in the

lighting circuit already referred to. The conductors 24 and 27 lead downwardly and outwardly from their points of attachment near the inner ends of the core member 11 through suitable channels or grooves 28 and 29 which extend axially along the core member on opposite sides thereof. The conductors 24 and 27 lead from the channels 28 and 29 into a suitable metallic or armored tubing 30 which has a connection with the closing cap member 31 which engages the lower end of the cylindrical casing 10 as is clearly shown in Figure 2 of the drawing.

In the operation of the device it will be seen that if the handle member 19 be moved to the right as shown in Figure 3 of the drawing the switch member 14 may be moved to a position in contact with the stop member 20 and completely out of engagement with any of the windings of the coil 12. In this position of the parts the end of the switch member is moved off the coil onto the adjacent end of the porcelain core member as at 32. It will be seen that in this position of the parts the circuit is interrupted and no current will flow through the lamps so that they are placed completely out of operation.

If it is desired to cause the lamps to glow dimly or at a reduced illumination a slight movement of the handle member to the left as indicated in Figure 3 of the drawing will move the switch member 14 into contact with windings of the core 12 adjacent the right-hand extremity thereof. It will be seen that the effect of this is to cause current to flow from the contact member 20 through the plate 23 and switch member 14 to the right-hand windings of the coil 12 and turns through the entire series of windings to the terminal 26 and the conductor 27. It will thus be seen that all the windings of the coil 12 have been included in the circuit with the corresponding addition of resistance to the flow of current and the resulting diminution of the light projected by the headlights. It will be seen that a further movement of the handle member 19 to the left will omit more and more of the windings of the coil 12 and thereby cut out additional resistance to thereby produce increased illumination by the headlights. The maximum lighting effect will be produced when the handle member 19 has been moved to a position to bring the contact member 14 into contact with the terminal contact member 21 which acts to cut out all the windings of the coil 12 and to cause current to flow directly from the switch member 14 through the contact terminal 21 to the conductor 27 as will be clear. It will thus be seen that by a simple movement of the hand operating member 19 the driver can switch out the headlights altogether or produce any desired degree of illumination between zero and the maximum illumination capable of being produced when the resistance coil is completely eliminated from the circuit.

In order to provide stop members for limiting the movement of the hand lever 19 an inwardly turned lug 33 is formed on the upper end of the cylindrical casing 10 and extends to a recess 34 provided in a rotatable disk 35 which supports the insulating plate 15. The recess 34 will, as is clearly shown in Figure 4 of the drawing, provide shoulders 36 which will act as stop members to prevent movement of the handle beyond definite limits in either direction.

In order to provide convenient means for attaching the device to a point on the steering post convenient to the steering wheel, a hole 37 is provided in the porcelain core member 11 and extends transversely therethrough. Corresponding openings 38 are formed in the casing 10 in alinement with the opening 37 through the core whereby a screw or bolt can be passed through the parts to attach the device in position on any desired support as will be clear.

What is claimed is:—

1. In a variable resistance device for electrical circuits, an elongated coil supporting member formed of insulating material, a coil wound on the supporting member longitudinally thereof, a casing for the coil and the supporting member, a switch arm rotatably mounted on one end of the casing, a contact member mounted on the inner face of the end of the casing and arranged to be moved by the arm, the adjacent end of the coil and the coil support being inclined to the axis of the support to facilitate engagement of the coil winding by the contact member, and conductor-receiving channels extending axially of the coil supporting member on opposite sides thereof.

2. In a control device for automobile headlights, a cylindrical casing, a switch arm rotatably mounted on one end of the casing, a core member for the casing having oppositely disposed flat surfaces, a coil wound longitudinally of the core on said flat surfaces, the end of the core adjacent the switch arm being inclined, a contact member adapted to be moved by the switch arm across the windings of the coil on the inclined face, oppositely disposed axially extending grooves in the surface of the core member between the coil-supporting surfaces, and conductor connections for the contact member and the coil leading along said grooves to the other end of the casing.

3. In a control device for automobile headlights, a cylindrical casing, a switch arm rotatably mounted on one end of the casing, a core member for the casing having oppositely disposed flat surfaces extending axially thereof, a coil wound longitudinally

of the core member on said flat surfaces, a contact member adapted to be moved by the switch arm across the windings of the coil at the adjacent end of the core, oppositely disposed axially extending grooves in the surface of the core member between the coil-supporting flat surfaces, a contact member mounted on the core member in one of the grooves adjacent the switch contact member, an electrical connection between said contact members, a coil terminal mounted in the adjacent end of the opposite groove, and conductor connection for the coil terminal and the contact member leading along said grooves to the other end of the casing.

4. In a control device for automobile headlights, a cylindrical casing, a switch arm pivoted on one end of the casing, a core member for the casing having a coil wound longitudinally thereof, a plate mounted on the inner surface of the end of the casing and connected to the switch arm for rotation thereby, a switch contact member carried by the plate and arranged to be moved across and in contact with the windings of the coil, oppositely disposed axially extending grooves on the core, a contact member mounted on the core member in one of the grooves and having contacting engagement with the plate on the casing, said contact member projecting beyond the end of the core member and serving as a stop to limit the movement of the contact member, said contact member being spaced from the first winding of the coil to provide for disengagement of the switch contact member from the coil, a terminal member for the coil mounted in the opposite groove and projecting beyond the end of the core to provide a stop member to limit the movement of the switch contact member in the other direction, supplemental coacting stop means carried by the casing and the switch arm parts, and conductor connections for the coil terminal and the contact member extending along said grooves to the other end of the casing.

In testimony whereof I affix my signature.

HANS K. LORENTZEN.