R. E. REED.

DIMMING DEVICE.

APPLICATION FILED FEB. 9, 1917.

1,228,478. Patented June 5, 1917.

Fig. 1.

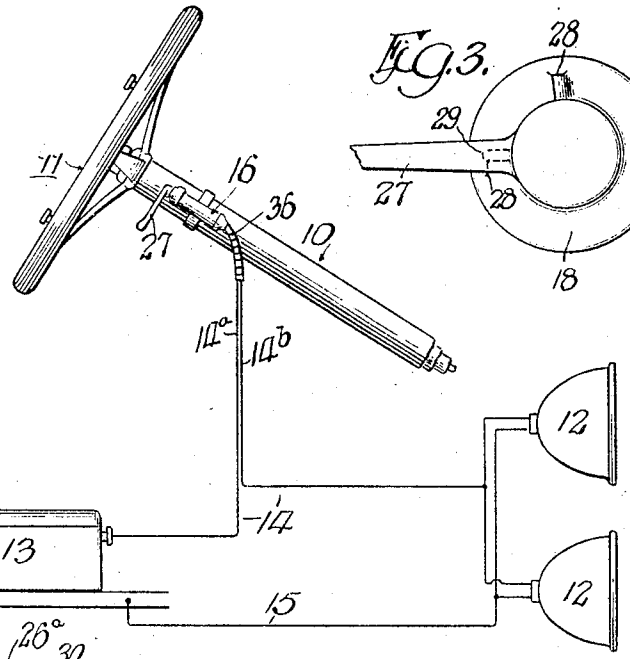


Fig. 3.

Fig. 2.

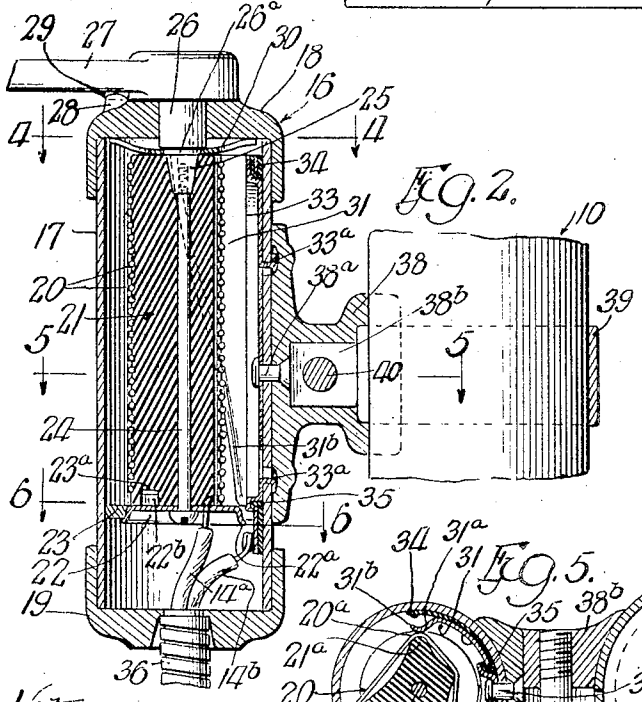


Fig. 4.

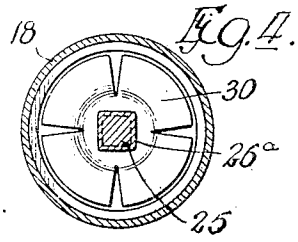


Fig. 6.

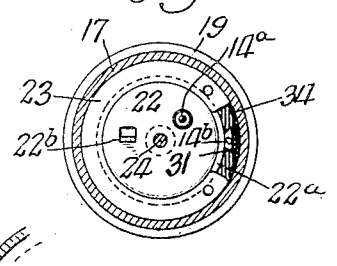
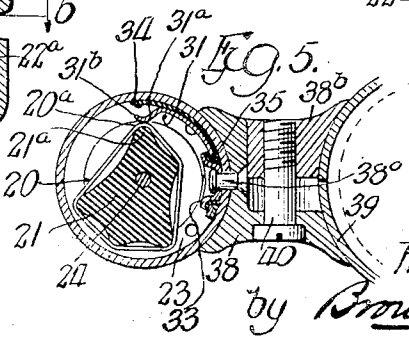


Fig. 5.



Witnesses:
F. N. Alfieds.
D. Darrenougue

Inventor
Roy E. Reed
by Brown Wells Lupe Attys

UNITED STATES PATENT OFFICE.

ROY E. REED, OF RIPON, WISCONSIN.

DIMMING DEVICE.

1,228,478. Specification of Letters Patent. Patented June 5, 1917.

Application filed February 9, 1917. Serial No. 147,666.

To all whom it may concern:

Be it known that I, ROY E. REED, a citizen of the United States, and a resident of Ripon, in the county of Fond du Lac and State of Wisconsin, have invented certain new and useful Improvements in Dimming Devices; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in dimming devices for regulating electric lights, such as headlights, search lights and other lights more particularly of motor driven vehicles, and consists of the matters hereinafter described and pointed out in the appended claims.

The object of the invention is to produce a dimming device of the kind described, which is of simple and economical construction; which is of superior efficiency in operation; and which is readily and easily applied to any motor vehicle. The device includes a controlling member preferably placed near the steering wheel or post and adjacent to the usual engine controlling members, and it is primarily intended for use with automobiles, although it is also applicable for use with other kinds of vehicles, either land, water or air.

The advantages of the invention will appear more fully as I proceed with my specification.

In the drawings:

Figure 1 is a view representing a side elevation of the steering wheel and post of an automobile, with my improved dimming device attached thereto, and with the headlights, battery and electric conductors and other connections indicated diagrammatically.

Fig. 2 represents a longitudinal, central section through the dimming device on an enlarged scale.

Fig. 3 represents a top plan view of the same.

Fig. 4 is a view representing a transverse section through the device in a plane indicated by the line 4—4 of Fig. 2.

Fig. 5 is a view representing a transverse section through the device in a plane indicated by the line 5—5 of Fig. 2.

Fig. 6 is a view representing a transverse section through the device in a plane indicated by the line 6—6 of Fig. 2.

Referring now to that embodiment of the invention illustrated in the drawings:—10 indicates the steering post, and 11, the steering wheel, of an automobile or other motor vehicle; 12, 12 indicate the lights, in this case the headlights of the vehicle; 13 indicates the battery or other source of electric current for the lights; and 14, 15 indicate the line wires leading from said battery to the lights and including, as will presently appear, the dimming device in their circuit.

16 indicates the dimming device as a whole. Said device has an inclosing casing, in the form of an elongated barrel 17, and caps 18 and 19 attached respectively to the top and bottom ends of said barrel. The barrel contains a resistance member and a brush member, the one made rotative with respect to the other, and constructed in such manner as to be operated by an arm without the barrel to produce the relative rotative movement. One of said members is in the form of a helical coil, while the other member presents a long spiral, or inclined edge which extends transversely of the coils of the helical member. As shown herein and preferably, the resistance member has the helical form, while the brush member has the long spiral form.

20 indicates the resistance member which is mounted on an insulating core 21, rotatively sustained within the casing. The core 21 is of irregular cross section, as illustrated in Fig. 5, preferably made to provide a maximum length for each coil of the helix, and has suitable grooves to receive and hold said coils. The core has a longitudinal, radial rib 21^a which extends the coils of the helix into contact loops 20^a which are in a line extending parallel to the axis of rotation of the resistance member.

In the preferred form of construction, the core 21 is rotatively mounted in the casing as follows. At the bottom of the core is attached a flanged bearing plate 22. Said plate engages within a split, expanding spring-metal washer 23, which is spring-engaged against the interior surface of the casing and is supported by a radial bur 22^a on the flange of the plate 22. The bearing plate 22 has a tongue 22^b stamped from it, and engaged in a recess 23^a in the bottom end of the core 21, to lock it against

rotation with respect to the core. Said plate is attached to the core by a long bolt 24, extending centrally through the core and threaded at its top to receive a squared head 25 engaged in a similarly formed recess in the top end of the core.

The head 25 is made integral with a stud 26 which has bearing in a suitable opening in the top cap 18, and which is fixed to an arm 27 that swings upon the top face of said cap. This arm is limited in its movement by means of arcuately spaced, radial shoulders, 28, 28 (see Fig. 3) on the cap 18, adapted to be engaged by a rib or detent 29 on the bottom of the arm 27. Between the head 25 and the bearing stud 26, there is provided a part 26^a of reduced diameter upon which is engaged a friction, retaining spring 30, which bears upon the bottom surface of the cap 18, and holds the top of the resistance member away from said cap.

31 indicates the brush member. This consists of a plate extending the full length of the resistance member, and fixed to, but insulated from, the casing. It is provided with an inwardly extending, radial flange 31^a, which is bent to provide a rounded or beaded contact edge, 31^b, extending in a long, spiral curve transversely of the coils of the helical resistance member and located in the cylindrical surface adapted to be described by the contact loops 20^a of the resistance member. The construction is such that when the resistance member is rotated relatively to the brush member, the contact edge 31^b of the brush will be brought to contact with the contact loops of successive coils of the helical resistance member, in a way to cut in, or to cut out, of circuit, one or more of the said coils.

The plate constituting the brush 31 is attached to the interior surface of the casing in any convenient way. As shown, it is provided with a long slot in which is engaged a flanged rivet plate 33. Said plate directly engages the casing wall, and is attached thereto by prongs 33^a stamped from it and engaged through suitable holes against the outside face of the casing. An insulation strip 34 insulates the brush plate from the casing and a second insulation strip 35 (see Fig. 5) insulates the rivet plate from the brush plate.

The device is connected in the line circuit by branch lines 14^a, 14^b led by a flexible bushing 36 through the bottom cap 19 into the casing. One of said branch lines, 14^a, is led through the bearing plate 22 and connected to the helical resistance member, while the other, 14^b, is connected to the bottom end of the brush member.

The casing is attached to the steering post in any desired manner. As shown, it is secured to the post by means of a base block 38 fixed to the casing and a split ring 39 rigidly connected at one end to said base block and adapted to be sprung upon and clamped to the steering post. The base block 38 is attached by a rivet 38^a to the casing (see Fig. 2). One side of the block is recessed to receive a clamping wedge 38^b and a bolt or screw 40 is adapted to be inserted through one face of the block, and screwed into a threaded socket in the wedge block, so as to draw the free end of the split ring closely about the steering post.

The arcuate distance between the radial shoulders 28, 28 on the top of the cap 18, which define the limit of movement of the arm 27, is made greater than the arc which includes the top and bottom ends of the spiral contact edge 31^b of the brush 31. Thus when the arm is rotated into engagement with the shoulder 28 on one side, the circuit will be broken, since the resistance member will be swung beyond that position in which any of its helical coils will engage with the brush. When the arm 27 is swung in the other direction, the full length of the helix of the resistance member will be brought into circuit, and gradually as the arm is swung toward the other shoulder 28, the length of the helix in the circuit will be reduced. The intensity of the light of the lamps 12, 12 will thus be increased gradually from nothing until they are finally brought to complete brilliancy, which state is reached when the arm strikes the second named shoulder at which time practically the entire length of the helical resistance coil is eliminated.

From the foregoing description it is apparent that my improved dimming device possesses many advantages. It consists of but few parts which may be manufactured and assembled at low cost. It may be readily applied to any automobile or other motor vehicle, with but small change in the wiring of the electrical circuits thereon. All parts are firmly and securely mounted so that the vibration of the motor vehicle will not act to cause a flickering in the light rays of the lamps, due to variations of the resistance occurring by reason of movements of the parts of the device due to such vibration.

While in describing the invention, I have referred to many details of mechanical construction and arrangement, it is to be understood that the invention is in no way limited thereby, except as may be pointed out in the appended claims.

It will be noted that in the specific form of the invention described, the rotary member, in this case the resistance member, is entirely supported from the top end of the casing. It will also be noted that the proper position of the bottom end of the rotary member and its bearing within the casing,

is provided by means of a split spring ring which is easily set in position. These features of the preferred construction as herein described, are of especial advantage in connection with the economy and ease of assembling the parts of the device.

I claim as my invention:

1. A dimming device comprising a casing, a resistance unit including a core inclosed in said casing, a split ring fixed in said casing, a bearing plate fixed to one end of said core and engaging in said ring, a stud fixed with respect to the other end of said core and journaled in said casing, a brush inclosed in said casing and adapted to engage said resistance unit, said resistance unit and said brush being relatively rotative the one with respect to the other, said core having helical coils thereon and the said brush having a long spiral member extending transversely of the helical coils on said core.

2. A dimming device comprising a casing, a resistance unit including a core inclosed in said casing, a helically coiled resistance member wound upon said core, a split ring fixed in said casing, a bearing plate fixed to one end of said core and engaging said ring, a spiral brush member in said casing extending transversely of and adapted to engage the helically coiled resistance member on said core, a stud fixed with respect to the other end of said core and journaled in the adjacent end of the casing, a disk-like spring interposed between the last mentioned end of said core and said adjacent end of the casing, a lever fixed to said core stud without the casing and by means of which said core may be rotated, and stop lugs on said casing to limit the rotative movement of said lever.

3. A dimming device comprising a casing, a resistance unit including a core inclosed in said casing, a resistance wire helically wound in loops upon said core, a plate on one end of said core, a stud on the other end of said core, a bolt extending through said core and securing said plate and stud to the core, a split ring fixed in said casing and in which said core plate has rotative bearing said core stud being journaled in one end of said casing, a brush having a spiral edge extending transversely of and engaging the loops on the core when said core is rotated, and means on said core stud without the casing whereby rotative movement may be imparted to said core.

4. A dimming device, comprising a casing, cap members closing the top and bottom ends of said casing, a bearing ring located near one of said caps, a core of insulating material rotatively mounted in said casing, a plate non-rotatively fixed to said core and engaging in said bearing ring, a helical resistance coil wound upon said core member, said core having a longitudinally extending radial rib, a brush member having a spiral, beaded edge extending transversely of and adapted to engage with the successive parts of said coil on the radial rib of said core member, a stud non-rotatively fixed to the other end of said core member, said stud having bearing in and projecting through the other of said caps, and an operating arm fixed to the projecting end of said stud.

5. A dimming device, comprising a casing, caps closing the ends of said casing, a bearing ring non-rotatively fixed at one end of said casing, a core member journaled at one end in said bearing ring, a helical coiled resistance wire mounted on said core, a bolt extending through said core, a movable operating arm located without the casing, said arm having a stud normally located within the casing and non-rotatively engaged with said core, said bolt having screw threaded engagement at one end with said stud, a brush member comprising a thin, flexible, metal plate fixed along one edge in said casing, the other edge of said brush member being formed to provide a bead which extends transversely of and is adapted to engage with said coils on said core member, and stop lugs on the cap associated with said operating arm adapted to limit the movement of said arm.

6. A dimming device, comprising a casing, cap members closing the ends of said casing, a split bearing ring in said casing near one of said caps, a core of insulating material rotatively mounted in said casing, a flanged plate fixed to one end of said core and bearing in said ring, the flange of said plate acting to retain said ring against endwise displacement, a helical resistance coil mounted on said core, a brush member fixed in said casing, said brush member having a spiral beaded edge extending transversely of and adapted to engage with successive parts of said coil, a stud journaled in the other of said caps and being non-rotatively fixed to said core, a spring plate interposed between the last mentioned cap and the adjacent end of said core, and an arm fixed to said stud for imparting rotative movement to said core.

In testimony that I claim the foregoing as my invention I affix my signature, in the presence of two witnesses, this 2d day of February, A. D. 1917.

ROY E. REED.

Witnesses:
LAURENCE F. LEHMAN,
LEWIS E. REED.