W. F. SNOWDON.

HEAD LAMP CONTROLLER.

APPLICATION FILED JUNE 26, 1917.

1,257,141.

Patented Feb. 19, 1918.

3 SHEETS—SHEET 1.

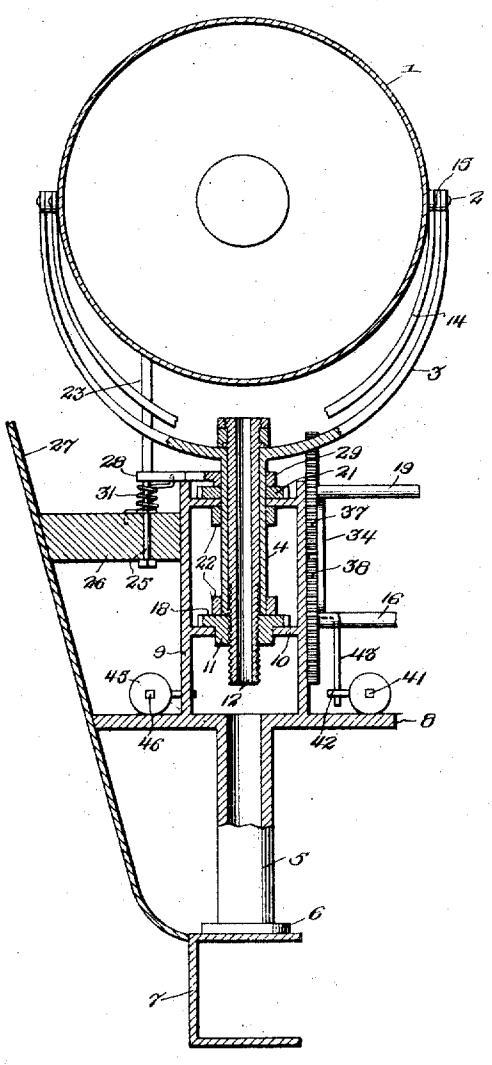


Fig. 2.

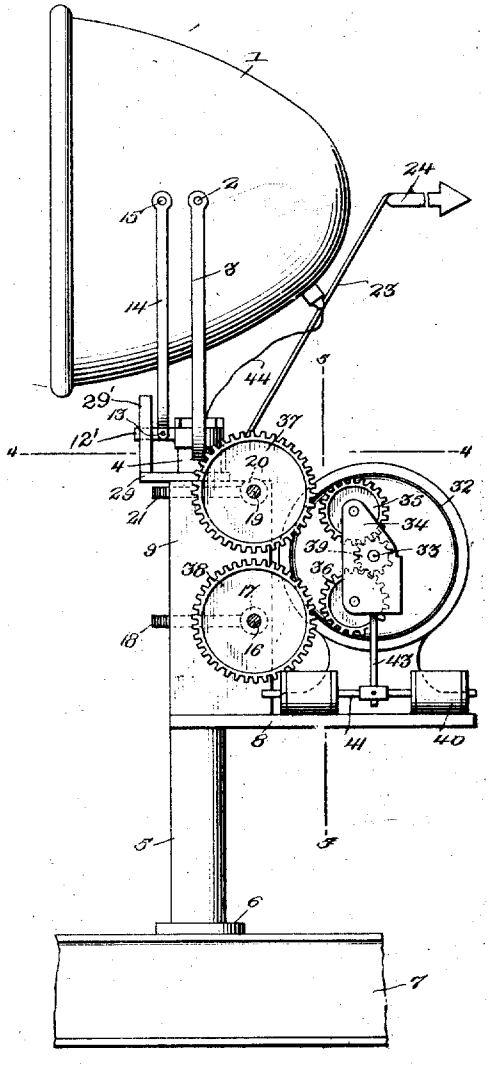


Fig. 1.

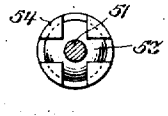


Fig. 9.

WITNESSES

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3 SHEETS—SHEET 2.

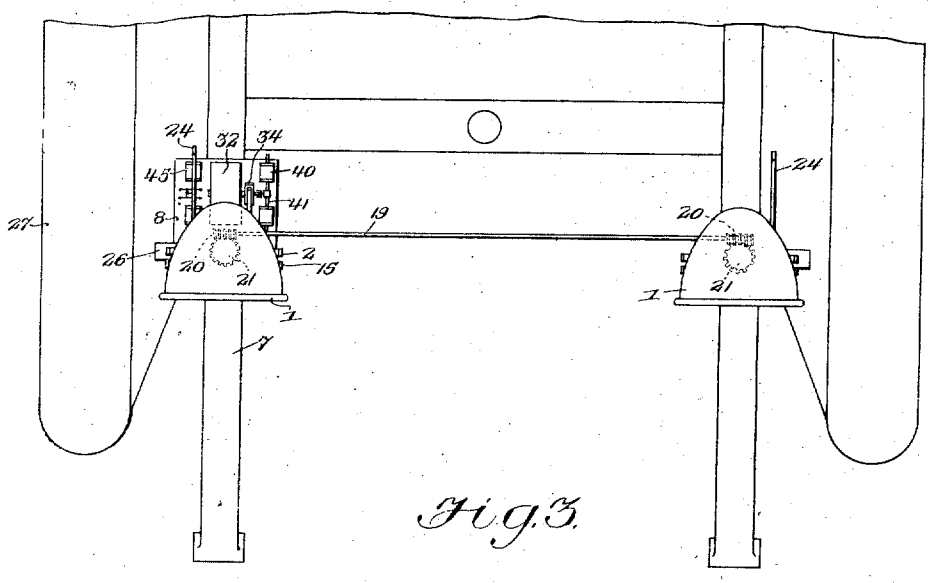


Fig. 3.

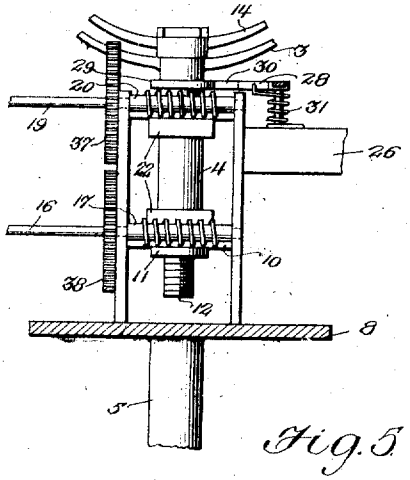


Fig. 5.

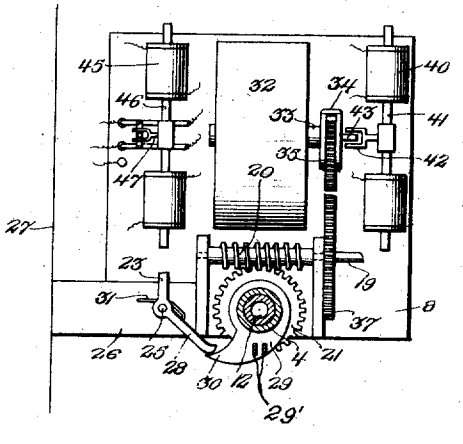


Fig. 4.

WITNESSES

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3 SHEETS—SHEET 3.

Fig. 8.

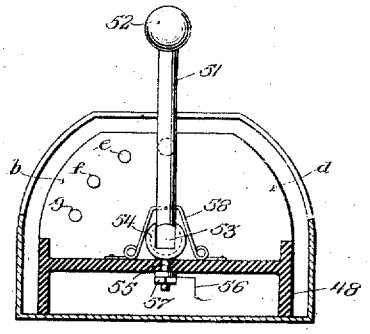
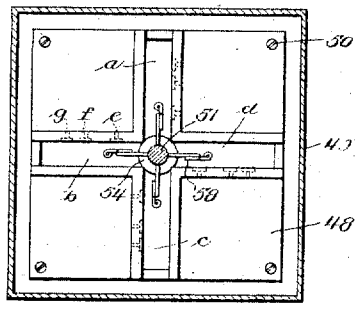


Fig. 7.



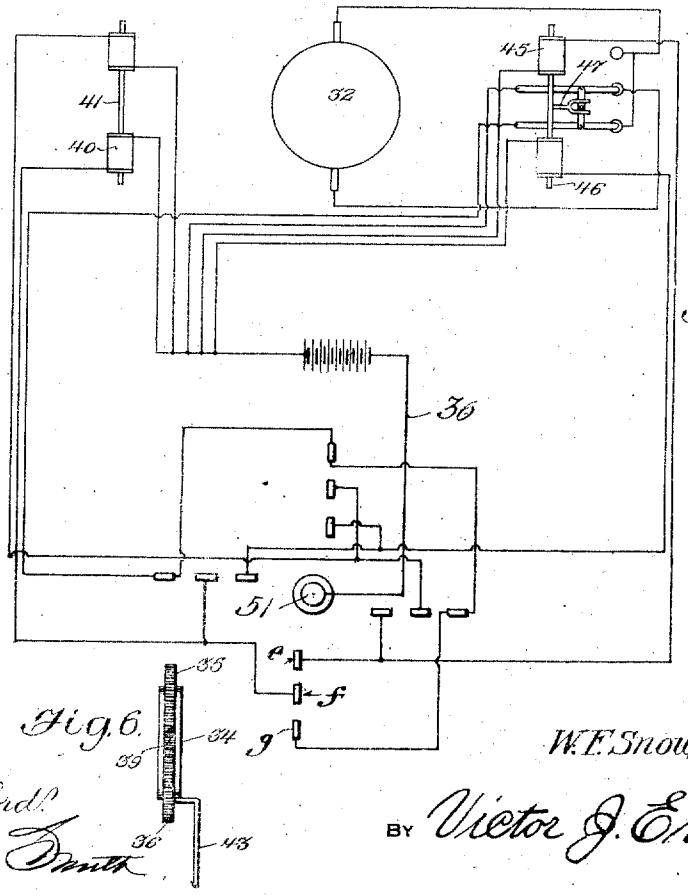


Fig. 10.

Fig. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM F. SNOWDON, OF BROOKLYN, NEW YORK.

HEAD-LAMP CONTROLLER.

1,257,141. Specification of Letters Patent. Patented Feb. 19, 1918.

Application filed June 26, 1917. Serial No. 177,098.

To all whom it may concern:

Be it known that I, WILLIAM F. SNOWDON, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Head-Lamp Controllers, of which the following is a specification.

This invention relates to headlamp controls, the object in view being to provide electrically controlled means whereby the headlamps of a motor vehicle may be disposed at different angles with respect to a vertical and a horizontal plane, enabling the lamps to be swung laterally to either side of the normal path of the vehicle and also swung on a substantially horizontal axis for the purpose of directing the rays of light in a downward or upward direction or in a horizontal plane.

A further object of the invention is to provide lamp controlling means of the character above referred to which will enable both the lamps to be turned on a horizontal or a vertical axis at the same time thus adapting the lamps to be used as search lights whether the machine is in motion or at rest.

With the above and other objects in view, the invention consists in the novel construction, combination and arrangement of parts, herein fully described, illustrated and claimed.

In the accompanying drawings:—

Figure 1 is a side elevation of one of the lamps, showing the supporting and operating means therefor.

Fig. 2 is a vertical sectional view taken at right angles to Fig. 1.

Fig. 3 is a plan view showing the lamp controlling mechanism in its applied relation to the forward portion of a motor vehicle chassis.

Fig. 4 is a fragmentary section on the line 4—4 of Fig. 1.

Fig. 5 is a fragmentary section on the line 5—5 of Fig. 1.

Fig. 6 is a detail elevation of one of the gear shifting and carrying members.

Fig. 7 is a plan view of the switch.

Fig. 8 is a vertical diametrical section through the same.

Fig. 9 is a detail view of the switch lever socket member.

Fig. 10 is a diagram of the wiring system.

In accordance with the ordinary automobile practice, I employ a pair of headlamps arranged at the front of the vehicle and supported on the frame thereof. Each lamp 1 is of the ordinary construction and is supported by pivots 2 to swing on a substantially horizontal axis between fork arms 3 extending upwardly from a tubular lamp post 4.

In connection with each tubular lamp post 4, I employ a lamp post support or standard 5 preferably of tubular formation as shown and having at the bottom thereof a base flange 6 by means of which the support 5 may be fixedly secured to the adjacent frame bar 7 of the vehicle. At a suitable elevation, the lamp post support carries a flange or shelf 8 on which certain parts of the mechanism hereinafter referred to are mounted. Extending upwardly from the shelf 8 is a tubular housing 9 in which the tubular lamp post 4 is received and adapted to turn on a vertical axis. In the lower portion of the housing 9 there is a stationary annular flange 10 forming a guide for an internally threaded nut 11 in which is received a threaded tubular stem 12 that extends upwardly through the tubular post 4 and above said post where it has connected thereto by pivots 13, arcuate links 14. The links 14 embrace the lower part of the lamp 1 and are connected thereto by pivots 15. The nut 11 is seated upon and within the annular shoulder or flange 10 so that as the nut 11 is turned, it serves to elevate or depress the stem 12 and correspondingly tilt the respective lamp 1 on a substantially horizontal axis for the purpose of directing the rays of light therefrom in an upward or downward direction or in a horizontal path.

The means for revolving the nut 11, embodies a rotary horizontal shaft 16 which is associated with both lamps so that they may be simultaneously tilted. In connection with each lamp, the shaft 4 is provided with a worm 17 meshing with a worm wheel 18 preferably formed integrally with the nut 11.

The means for turning each lamp 1 on a substantially vertical axis, comprises another rotary shaft 19 common to both lamps and located above the shaft 16. The shaft 19 has a worm 20 which meshes with a worm wheel 21 surrounding and having a fixed relation to the tubular lamp post 4. Therefore when the shaft 19 is turned, the lamps 1 are correspondingly turned on a substantially vertical axis, the lamp post 4

being journaled in a pair of collars 22 arranged one above the other and in spaced relation to the other and within the housing 9.

In connection with each of the lamps, I also employ a direction indicator or pointer 23 having a horizontally extending arm 24 and a vertical journal portion 25 which is received in a bearing socket in a bracket 26 which is interposed between and secured to the housing 9 and the adjacent mud-guard 27 as shown in Fig. 2. The direction indicator or pointer 23 is also provided with an operating arm 28 and coöperating with the arm 28 is a cam 29 fast on and surrounding the tubular lamp post 4. As the post 4 is turned, a projecting shoulder 30 of the cam 29 engages the arm 28 of the pointer 23 and swings the same on a vertical axis, causing the horizontal end portion or arm 24 of the pointer to extend laterally with respect to the direction of movement of the vehicle thereby notifying traffic in general as to a proposed alteration in the course of the vehicle. When the lamps are again turned to a straight ahead position, the direction indicator or pointer 23 is returned to its non-indicating position by means of a spring 31 which is coiled around the journal portion 25 and has one extremity attached to said journal portion and the other to a fixed point of the bracket 26. Vertical guides 29′ on the cam 29 receive a tongue 12′ on the stem 12 to prevent the latter from turning independently of the post 4.

Mounted upon the shelf 8 is a reversible electric motor 32 and journaled upon the shaft 33 of said motor is a gear shifting member or frame 34 containing upper and lower gears 35 and 36, respectively, the gear 35 being movable into and out of mesh with a gear 37 on the shaft 19 above referred to, and the gear 36 being movable into and out of mesh with a gear 38 on the shaft 16 above referred to. 39 designates a gear fast on the shaft 33 of the motor 32, the gear 39 meshing simultaneously with both of the gears 35 and 36.

At one side of the electric motor 32 there is located a solenoid magnet 40, the armature 41 of which carries a fork 42 which is engaged by a projection 43 on the frame 34. The solenoid 40 embodies two magnets one arranged in front and the other in rear of the fork 42 so that by energizing one of said magnets, the fork 42 is moved in one direction and by energizing the other magnet, said fork is moved in the opposite direction. This enables either one of the gears 35 and 36 to be thrown into mesh with the adjacent respective gear 37 or 38, thus controlling the rotation of the shafts 16 and 19 and the swinging movement of the lamp either laterally on a vertical axis or on a horizontal axis for the purpose above set forth. The lead wires 44 of the lamp may be extended downwardly through the tubular stem 12 and the tubular lamp post 4 as well as the tubular lamp post support 5.

At the opposite side of the electric motor 32 there is located another solenoid magnet 45 corresponding with the magnet 40 and comprising coils arranged one in advance of the other, said solenoid having attached to the armature 46 thereof a shifter 47 for throwing a polarity changing switch, the arrangement being such that when one of the magnets of the solenoid 45 is energized, the polarity switch will be shifted in one direction and when the other magnet is energized, the polarity switch will be reversed, thus enabling the motor 32 to be operated in either direction. This is necessary in order to control the direction of rotation of the shafts 16 and 19 and the consequent changing of the angles of the lamps 1 both with respect to a vertical and a horizontal plane.

The electric control or switch comprises a body or base 48 of insulating material such as porcelain and an inclosing casing 49 to which the base 48 is secured by fastening means 50. The base or body 48 is formed to provide a cruciform guideway, or in other words a guideway embodying four branches, *a*, *b*, *c* and *d* as shown in Fig. 7 and in each of said guideways there are arranged three contact points *e*, *f* and *g*. 51 designates a switch lever having an insulating head or handle 52. The lower end of the lever 51 has a ball 53 which is received in a bearing socket 54, the shank 55 of the lever as well as the ball 53 and the socket 54 being formed of metal and the socket member 54 having a threaded stem or shank 55 which extends through the bottom of the body 48 and forms a binding post to which a common feed wire 56 is fastened by means of a binding post nut 57. In each of the guideways *a*, *b*, *c* and *d* I arrange a spring 58 which serves to return the lever 51 to its central or neutral position.

When a left hand turn is to be made, the operator moves the lever 51 into the left hand guideway *b* where it meets the contact *e* and throws the reversing switch of the motor. In the further movement of the lever 51, it breaks the contact with the point *e* and makes contact with the point *f*, sending the current through the magnet 40 and causing the gear 35 to mesh with the gear 37 and thereby turn the shaft 19. In the further movement of the lever 51 in the same direction, it leaves the point *f* and engages the point *g* thereby energizing and driving the motor 13. Upon releasing the lever 51 it is returned to its initial or neutral position by the respective spring 58.

From the foregoing description taken in connection with the accompanying drawings it will now be understood that by means of a single control lever 51, all the necessary operations may be performed to turn the headlamps 1 on a substantially vertical axis, and also on a substantially horizontal axis. This, as previously noted, enables the rays of light to be directed laterally to either side of the vehicle and also enables the rays of light to be directed at an upward or downward inclination or in a straight ahead horizontal path. Not only may the lamps thus be used by the operator to signal the contemplated movements of the vehicle which he is operating but in addition thereto, the other direction indicators or pointers are simultaneously operated, the last named indicators being more especially designed for use during the day time. The purpose in using the four guideways *a*, *b*, *c* and *d* is to enable the necessary connections to be made with certainty, to cause the lamps to swing to the right or to the left or upwardly or downwardly.

I claim:—

1. In headlamp controlling mechanism, the combination of a headlamp, supporting means therefor enabling said lamp to be turned on a substantially vertical axis and also on a substantially horizontal axis, a rotary shaft geared to the lamp supporting means to turn the same on such vertical axis, another rotary shaft geared to the lamp supporting means adapted to turn said lamp on a substantially horizontal axis, an electric motor, motor controlled means for operating either one of said rotary shafts independently of the other, the last named means comprising a gear shifting member, gears carried thereby, a gear on the motor shaft meshing with said gears, the gears on said shifting member being movable one at a time into and out of mesh with the respective gears on said rotary shafts.

2. In headlamp controlling mechanism, the combination of a headlamp, supporting means therefor enabling said lamp to be turned on a substantially vertical axis and also on a substantially horizontal axis, a rotary shaft geared to the lamp supporting means to turn the same on such vertical axis, another rotary shaft geared to the lamp supporting means adapted to turn said lamp on a substantially horizontal axis, an electric motor, motor controlled means for operating either one of said rotary shafts independently of the other, the last named means comprising a gear shifting member, gears carried thereby, a gear on the motor shaft meshing with said gears, the gears on said shifting member being movable one at a time into and out of mesh with the respective gears on said rotary shafts, and a solenoid magnet coöperatively related to said gear shifting member for oscillating the latter.

3. In headlamp control, the combination of a lamp post support, a tubular lamp post, a lamp supporting fork on said post, a lamp supported by said fork to swing on a substantially horizontal axis, electrically controlled means for turning said tubular lamp post, a threaded stem movable longitudinally within said tubular lamp post, links connecting said tubular stem with the lamp to produce a turning movement of the latter on a substantially horizontal axis, a rotary nut engaging said threaded stem for shifting the latter in the direction of its length, electrically controlled means for turning said nut, a direction indicating member journaled on a vertical axis at one side of the lamp post, a spring for holding said direction indicating member normally in a non-indicating position, and an actuating member having a fixed relation to said tubular lamp post and adapted to coöperate with said direction indicating member to move the latter to signaling position.

In testimony whereof I affix my signature.

WILLIAM F. SNOWDON.