April 29, 1924. 1,491,930

H. E. SMITH

VEHICLE LAMP

Filed April 30, 1923 2 Sheets-Sheet 1

Fig. II.

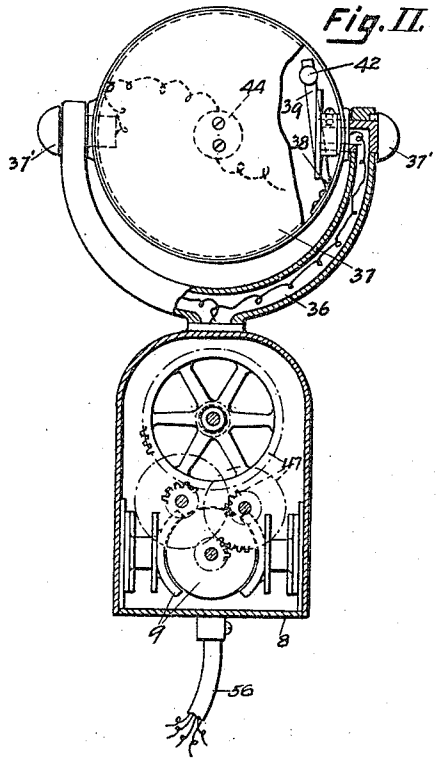


Fig. I.

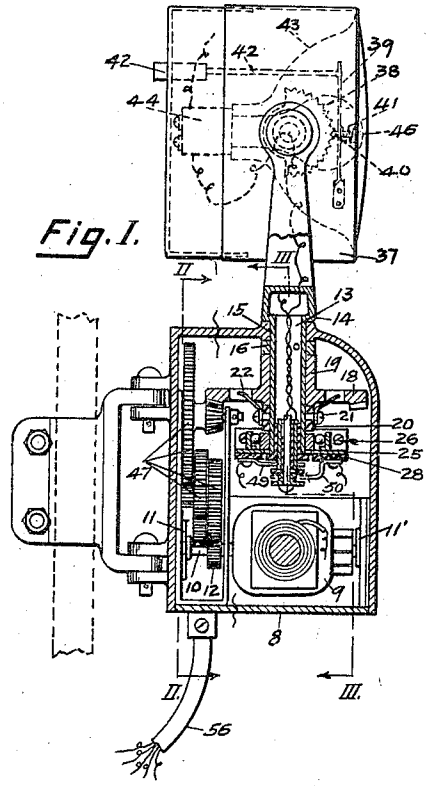
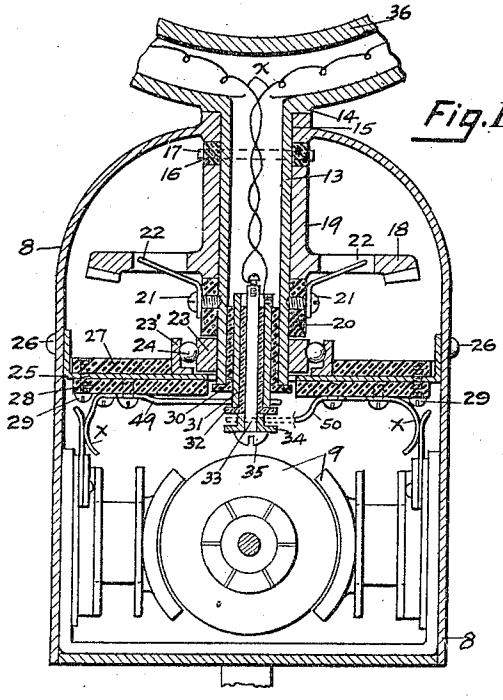


Fig. III.



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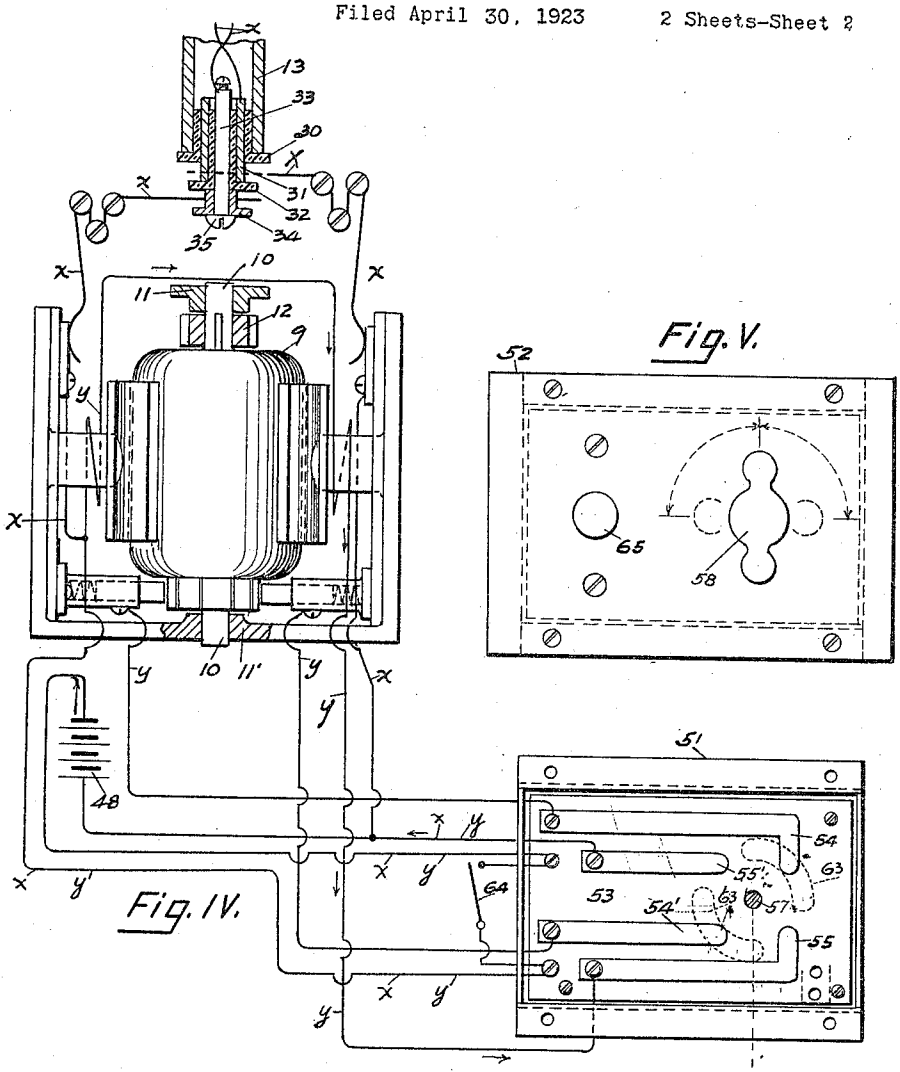


Fig. IV.

Fig. V.

Fig. VI.

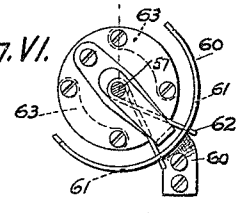
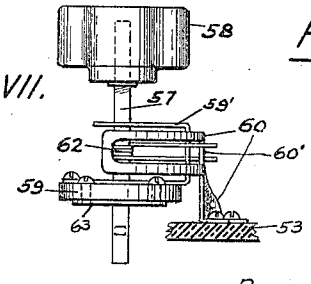


Fig. VII.



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Patented Apr. 29, 1924. 1,491,930

UNITED STATES PATENT OFFICE.

HARRY E. SMITH, OF PORTLAND, OREGON.

VEHICLE LAMP.

Application filed April 30, 1923. Serial No. 635,615.

To all whom it may concern:

Be it known that I, HARRY E. SMITH, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Improvement in Vehicle Lamps, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to lamps of the type commonly known as spotlights, used upon motor vehicles, and usually operated by electric power.

The object of my invention is to provide a lamp of this type with electrically operated mechanism in connection with same, whereby the lamp may be moved along any horizontal plane in which it is vertically secured, and the operation be made by an operator with electrical means. These objects, as well as other advantages, I attain by the construction, combination and arrangement of parts illustrated in the accompanying drawings which form a part hereof.

Fig. I is a side elevation with parts in section.

Fig. II is a rear elevation with parts broken away and parts in section on the line II—II in Fig. I.

Fig. III is an enlarged sectional view on the line III—III in Fig. I.

Fig. IV is a diagrammatic view of wiring, breaker and switches.

Fig. V is a plan view of the cover of the casing for switch mechanism with switch handles in view.

Fig. VI is a plan view of switch for operating motor to right or left.

Fig. VII is an elevation of switch shown in Fig. VI.

Like characters refer to like parts in all views.

A casing 8 of convenient form and size is provided. A small electric motor 9 is transversely and horizontally positioned in the lower part of the casing, with the motor shaft 10 rotatably mounted in bearings 11—11′ of the opposing motor casing walls. The motor is of a common type. The shaft 10 has a rigid toothed pinion 12 near one end. Above the motor is a vertical hollow lamp shaft 13 which has a shoulder 14 resting upon the outer surface of the casing, adjacent to the opening 15, through which it extends downwardly into the casing 8. A horizontal collar 16, of insulating substance, is keyed rigidly to the shaft 13 by a cotter pin 17. The upper surface of the collar 16 engages the adjacent lower surface of the casing hub. Below the collar 16 is a spoked wheel 18, having a bevelled gear on its lower outer surface, and a hub 19. The wheel 18 is rotatably mounted in horizontal position on the shaft 13, its upper bearing being the collar 16 and its lower bearing an insulating collar 20, rigidly secured below it upon the shaft 13 by screws 21. Looped wires 22 are also secured upon the collar 20 by the same screws, and extend upwardly between the spokes of the wheel 18. The wires are arranged to engage the wheel spokes with sufficient tension to allow the wheel to remain in secured position on the shaft 13 when said shaft is rotated by the motor, also to slip over the spokes and allow the shaft 13 to rotate without rotating the wheel, when the shaft is rotated from without by a power sufficient to overcome the friction clutch of the wires upon the wheel. Below the collar 20 the shaft has a rigid collar 23, positioned within a cup 23′ which contains balls 24 between its walls and the collar 23, thus forming ball bearings for the shaft. The cup 23′ rests upon a horizontal metal support 25, which is secured to the casing walls by screws 26. An insulating strip 27 extends about the cup 23′ and rests upon the metal support 25. Below the latter another insulating strip 28 is positioned, and rigidly secured by screws 29. The shaft 13 extends downwardly through central openings in the cup 23′ and strips 27 and 28 and beyond the same a suitable distance. Within the shaft 13 a vertical insulating sleeve 30 extends upwardly, having a shoulder or flange on its lower end covering the lower end of the shaft for insulation. A metal tube 31 extends through the sleeve 30. An insulating sleeve 32 extends through the tube 31 and has a shoulder or flange on its lower end to insulate the contact wire. A contact pin 33 extends through the sleeve 32 and without the upper and lower ends of the tube 31. On the lower end of the pin a flanged collar 34 is held by the pin head 35. Upon the upper end of the shaft 13 is an integral, vertical, hollow yoke 36. In its upper ends a lamp casing 37 is pivotally mounted upon rigid, hollow pins 37′, having openings leading into the hollow yoke. Upon one of the pins 37′ and within the casing 37, a quadrant 38,

with notched edge, is rigidly secured. A vertical spring bar 39 is secured at its lower end upon the interior of the casing 37 and has a rigid pin 40, positioned to engage the quadrant 38 in its notches. A coil spring 41 is placed about the pin 40 between the bar 39 and the opposing wall of the casing, each of which it engages with its respective ends. A push pin 42 is secured at one end to the upper end of the bar 39 and the free end thereof extends without the casing 37. A reflector 43 is placed within the casing 37 and carries an electric terminal socket 44 in its center, within which an incandescent lamp 46 is placed. The casing, reflector, socket and lamp are of a type and arrangement of the usual kind featured in motor vehicle searchlights. Between the pinion 12 of the motor shaft and the toothed wheel 18, a gear train 47 is mounted and arranged in a manner to allow the motor to transmit power through it to the shaft 13 and at the same time reduce the speed of the shaft to a comparatively slow movement.

The electric energy transmission will now be described. A battery 48 is located in a convenient position. The lamp circuit wires are traced between the battery and lamp and through the switch by the character x placed in reference. It will be noted that the lamp wiring has transmission intermediate connections through the tube 31 and pin 33 and thence through contact arms 49 and 50 which press upon the tube and pin respectively in sliding engagement. This allows the shaft 13, carrying the lamp, to rotate freely with the lamp wiring therein and obviate twisting or injuring it and at the same time preserving a continuous circuit. Part of the lamp circuit is also within the motor circuit. A switch box 51 is provided, having a cover 52. Upon an insulating plate 53, in the box, a part of which is shown in Fig. IV, are secured switch terminal strips 54—54′ and 55—55′. These are connected at one end with opposing ends of the lamp and motor circuit wire terminals. The motor circuit is designated between the battery and motor and to the switch terminals by the character y. The switch box 51 is secured in the vehicle in a position conveniently near the operator, and a cable conduit 56 carries the circuit wires between it and the casing 8, which is secured without and upon the vehicle body in a suitable position. The operating switch has a shaft pin 57 passing through the box wall and cover to obtain bearings in which it is rotatable by the finger piece 58. An insulating collar 59 is rigidly secured upon the pin 57. A yoke 59′ is rigidly secured upon the upper surface of the collar 59 and has openings in it through which the pin 57 passes. A bracket 60 of semi-circular form is secured to the plate 53 in a position opposite to and near the outer end of the yoke. The upper part of the bracket 60 has two longitudinal aligned openings 61 between which is the central part 60′. A coil spring 62 is positioned on the pin 57 between the arms of the yoke. The free ends of the spring 62 extend outwardly through the opposing bracket opening 61 and bear against the central part 60′. Terminal contact shoes 63 of segmental form are secured upon the under surface of the collar 59 positioned so that when the collar is moved, the shoes may be caused to engage the terminal strips 54—54′ or 55—55′ as desired. When the pin 57 is rotated to the right or left the opposing spring arm engages the bracket center 60′ and the spring resistance must be overcome to operate the switch. When the finger piece is released, the tension of the spring returns the switch to its primary central position. A circuit breaker is indicated at 64, and a pin 65 of any suitable form is provided to operate the circuit breaker. The circuit breaker is intended to admit the electric energy into the whole system or to break the same.

It will now be apparent that the lamp is installed in a suitable position upon the vehicle to direct the light rays forwardly, and the switch box conveniently to the operator. The first adjustment is to manipulate the pin 42 and release the catch mechanism in connection with same. The lamp is then tilted to a desired horizontal plane, and the pin released, whereupon the catch retains the lamp in this position. The circuit breaker 64 is then closed and the lamp is immediately lighted, as it remains on a continuous circuit when thus closed, regardless of reversal of the current for the motor. The switch pin 57 is then operated in one direction to move the collar 59 and cause its shoes to close a circuit through the terminals 54—54′ and in the opposite direction to close a circuit through the terminals 55—55′ and when so closed, the motor will rotate in a direction related to the flow of electric energy and will transmit power to the wheel 18 which in turn engages the wires 22 and rotates the shaft 13 in a pre-determined direction. This causes the lamp to rotate on the axis of the shaft until the rays of light are cast to right or left in a desired direction from a point in the horizontal plane to which the focus of the lamp has been adjusted. In this manner the rays of light may be directed radially to right or left within a considerable segment as desired. The engagement of the wheel with the wires 22 is sufficient to cause movement of the shaft as stated, and the lamp shaft may be turned by hand from without, rotating the shaft with the wires 22 slipping over the wheel spokes without injury to

the power transmitting mechanism, and obviates damage by unskillfully handling the lamp. The lamp can thus be promptly and effectually moved to the desired position and is retained there when the motor stops and locks the transmitting mechanism. The device allows the operator to quickly move the lamp by manipulating the switch close at hand and without neglecting other duties required of him in operating the motor vehicle.

I claim—

1. In a vehicle lamp, in combination as follows; a vertical, rotatable shaft having an integral yoke on its upper end opening upwardly, rigid hollow horizontal pins in the upper ends of the yoke, a lamp pivoted on said pins in a manner to allow it to be tilted in a vertical plane and having side openings opposing the pins to allow the extension of electric wires through the pins into the lamp, a rigid pawl positioned adjacent to the lamp with means on the lamp to engage the pawl and retain the lamp in a desired position when tilted, a spoked wheel rotatably arranged upon the lower part of the shaft, and spring mechanism secured to the shaft below the wheel, arranged and adapted to allow said mechanism to be engaged by the wheel spokes and thereby rotate the shaft, also to allow the shaft to be independently rotated without rotating the wheel.

2. In a vehicle lamp, in combination as follows; a vertical, rotatable shaft having a yoke on its upper end opening upwardly, rigid horizontal pins in the upper end of the yoke, a lamp pivoted on the pins in a manner to allow it to be tilted in a vertical plane, a spoked wheel rotatably arranged on the lower part of the shaft, and spring mechanism secured to the shaft below the wheel, arranged and adapted to allow said mechanism to be engaged by the wheel spokes and thereby rotate the shaft, also to allow the shaft to be independently rotated without rotating the wheel.

3. In a vehicle lamp, in combination as follows; a vertical, rotatable shaft having a yoke on its upper end opening upwardly, rigid horizontal pins in the upper end of the yoke, a lamp pivoted on the pins in a manner to allow it to be tilted in a vertical plane, a toothed and spoked wheel rotatably arranged on the lower part of the shaft, spring mechanism secured to the shaft below the wheel, arranged and adapted to allow said mechanism to be engaged by the wheel spokes and thereby rotate the shaft, also to allow the shaft to be independently rotated without rotating the wheel, and spur gear mechanism positioned adjacent to the lower part of the shaft, arranged and adapted to engage the wheel and through it cause the shaft to rotate in either direction at a slow speed and thereby rotate the lamp in a horizontal plane to a desired position and retain it there.

4. In a vehicle lamp, in combination as follows; a vertical, rotatable shaft having a yoke on its upper end opening upwardly, rigid horizontal pins in the upper end of the yoke, a lamp pivoted on the pins in a manner to allow it to be tilted in a vertical plane, a toothed and spoked wheel rotatably arranged on the lower part of the shaft, spring mechanism secured to the shaft below the wheel, arranged and adapted to allow said mechanism to be engaged by the wheel spokes and thereby rotate the shaft, also to allow the shaft to be independently rotated without rotating the wheel, spur gear mechanism positioned adjacent to the lower part of the shaft, arranged and adapted to engage the wheel and through it cause the shaft to rotate in either direction at a slow speed and thereby rotate the lamp in a horizontal plane to a desired position and retain it there, and electrical mechanism arranged to rotate said shaft in either direction through the intervening spur mechanism.

HARRY E. SMITH.

Witnesses:
HERBERT A. COOKE,
PEARL THOMPSON.