

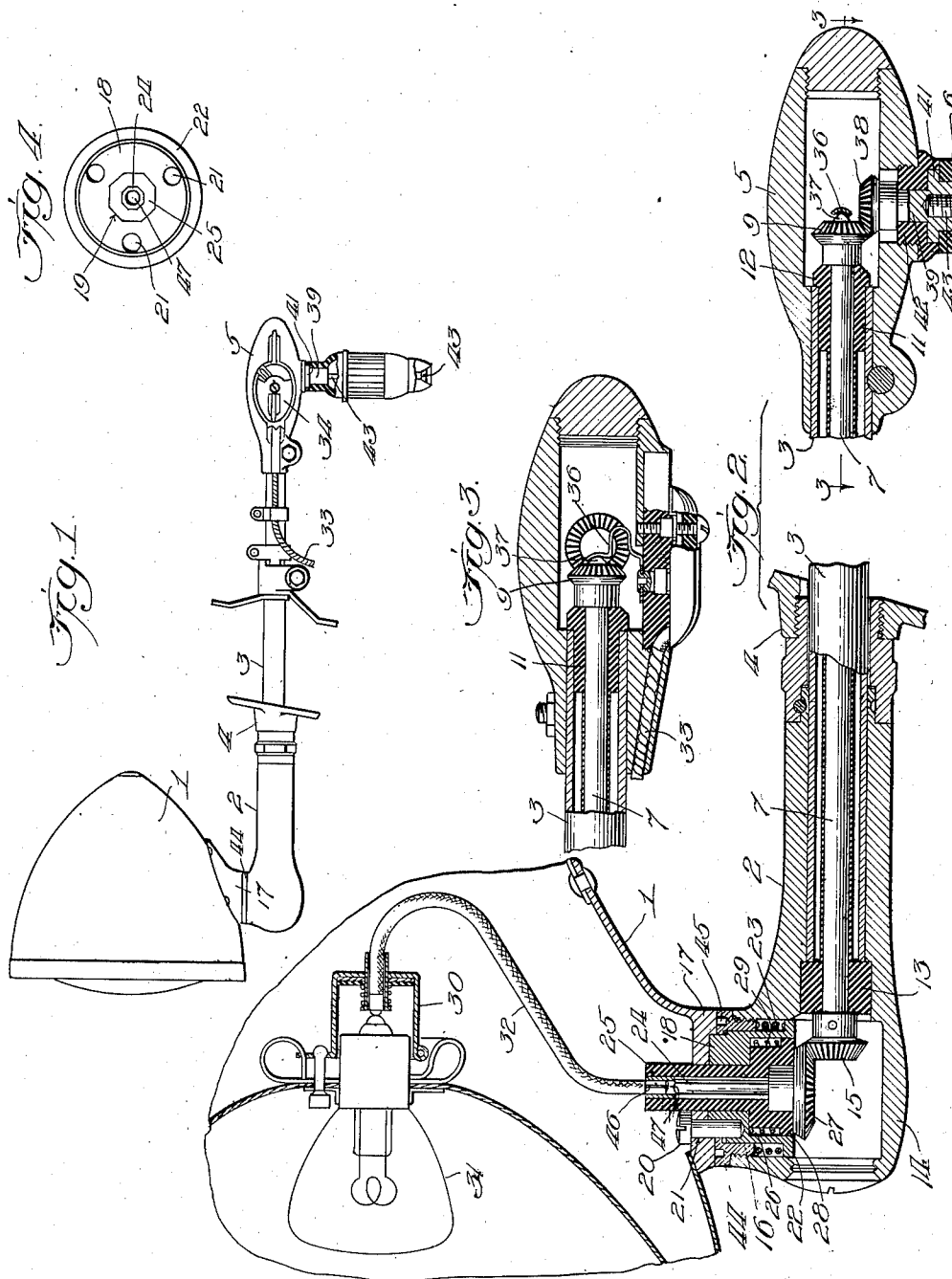
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SPOTLIGHT OR THE LIKE

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SPOTLIGHT OR THE LIKE

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In the usual automobile spotlight, the construction is complicated by the presence of wires running through the supporting shafts for the lamp heads, and by the need for relatively movable cooperating contacts or collector devices when it is desired to permit the heads to turn completely around upon such shafts.

The object of the present invention is to produce a lamp mounting which will permit the lamp to be energized and the head to be turned completely around without running wires through the shaft or other tubular support, and without requiring separate relatively movable cooperating collector devices arranged respectively on the head and its support.

In carrying out my invention, I employ the driving mechanism by which the lamp head is turned about an axis at right angles to the axis of its tubular support or supporting shaft as a part of the energizing circuit for the lamp proper. I am thus enabled to do away with wires in the mounting for the lamp head and need only provide a suitable fixed connection in the head between the lamp socket and the adjacent end of the driving mechanism. One terminal of the lamp socket is, of course, grounded, as is also one terminal of the circuit of the usual battery. A control switch, which conveniently may be located at or on any suitable operating handle, connects the other terminal of the battery circuit to the aforesaid driving mechanism for rotating the lamp head.

In addition to simplifying the lamp structure as a whole through the elimination of separate distributing means for the electric current, I have otherwise simplified and improved the same. Therefore, viewed in one of its aspects, the present invention may be said to have for its object to produce a simplified and improved device of the spotlight or driving light type.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but, for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawing, wherein:

Figure 1 is a side elevation of a complete lamp and mounting therefor embodying the present invention; Fig. 2 is a central longitudinal section through the lamp head and its mounting, portions being broken away; Fig. 3 is a section on line 3—3 of Fig. 2; and Fig. 4 is a plan view of the

rotatable post to which the lamp head is fixed and rotatably held upon its tubular support.

Referring to Figure 1 of the drawing, 1 represents a lamp head of any usual or suitable type mounted on one end of a tubular stem or shaft 2 fixed on one end of a long tubular shaft 3, of smaller diameter and extending through and supported by a bracket 4 adapted to be fixed to the outside of the corner post of an automobile. As is customary, the shaft 3 is long enough to extend into the interior of the automobile, and is provided on its inner end with a hollow head 5 from which projects laterally an operating handle 6. As is usual in the case of structures of this general type, when the shaft 3 is turned about its long axis, the lamp head turns with it. Also, when the handle 6 is turned about its long axis, the lamp head revolves about an axis extending at right angles to the axis of the shaft 3.

In the particular construction illustrated, the rotation of the lamp head about an axis at right angles to that of the tubular supports 2 and 3 is effected by a rotary shaft 7 extending lengthwise through the compound tubular shaft or support 2, 3. As is shown in Figs. 2 and 3, the head 5 is hollow, and the chamber therein has a bore extending out through the front end of the handle into which the inner or rear end of the shaft 3 fits. Upon removing the usual holding screw, the head 5 may be moved lengthwise off the end of the shaft 3.

The inner or rear end of the shaft 7 extends beyond the corresponding end of the shaft 3 and has thereon, within the chamber in the head 5, a bevel gear wheel 9. The shaft 7 is supported within the surrounding shaft by means which insulates it therefrom. In the arrangement shown, in the rear end of the shaft 3 is fixed a sleeve or bushing 11 of insulating material that forms a supporting bearing for the rear end of the shaft 7; this sleeve or bushing having at the rear end an enlargement or flange 12 lying between the end face of the shaft 3 and the gear wheel 9 so as to prevent this gear wheel from coming in contact with the shaft 3. The front or outer end of the shaft 7 is journaled in a sleeve or bushing 13 of insulating material fixed within the front end of the tubular member 2. Beyond the front end of the tubular member 2 is a hollow body 14 of which the part 2 may be said to form a stem or extension. Within the chamber in the member 14 is a bevel gear wheel 15 fixed to the front end of the shaft 7. Since the sleeve or bushing 13 is shown as being larger in diameter than the wheel 15, it serves without a flange or

enlargement to hold the wheel 15 away from the tubular part 2.

The side of the member 14 which may be termed the top is open, and into this open end or side is screwed a plug 16 on which the lamp head proper is movably supported. In the arrangement shown, the casing of the lamp has at the bottom a base or turntable 17 in the form of a thick disk that rests upon the top of the plug 16. A tubular post 18, rotatable in the sleeve-like plug 16, engages with the under side of the base member of the lamp; said base member being fastened to the post by means of screws 20 extending from within the lamp head through holes 21 in the base member and into the post. On the lower end of the post is a flange 22 between which and the bottom of the plug is located a coiled compression spring 23. This spring exerts a constant downward pressure on the post and, consequently, draws the base of the lamp head down into frictional engagement with the upper face of the plug 16.

The post 18 has an axial bore or passage extending through the same, the upper part 19 of this bore or passage being shown as octagonal in cross section, while the lower part is of greater size and may be cylindrical. Extending through this bore or passage of the post is a stem comprising a shaft 24 surrounded by a sleeve 25 of insulating material. The upper part of the sleeve 25 is a sliding fit in the non-circular portion 19 of the bore in the sleeve while the enlarged lower portion is smaller in diameter than the surrounding part of the post, so as to leave an annular space or chamber 26 within the post around the lower end of the sleeve. On the lower end of the shaft 24, below the post, is a bevel gear 27 meshing with the gear 15 on the shaft 7. It will be seen that when the shaft 7 is turned, the shaft 24 also turns and causes the lamp head to rotate upon the member 14. The insulating sleeve 25 on the shaft 24 has at its extreme lower end a flange 28 that supports a compression spring 29 positioned in the annular chamber around the lower half of the sleeve 25. The spring 29 acts constantly to force the shaft 24 and the bevel gear 27 inward or downward and thus to maintain an effective contact between the surfaces of the gear teeth of the wheel 27 and those of the wheel 15.

One terminal of the socket 30 for the lamp proper, 31, is connected to the shaft 24 by a suitable conductor 32, the other terminal being grounded as is customary.

It will be seen that if the shaft 7 be connected to one terminal of a battery whose other terminal is grounded, an energizing circuit for the lamp proper will be completed through the shaft 7, the gear wheels 15 and 27, the shaft 24, and the conductor 32. Such a connection to the shaft 7 may be made through the usual or any suitable cable 33 brought to the head 5 of the device and there connected to a suitable switch device 34 which may conveniently be similar to that disclosed in my prior application, Serial No. 121,081. It is sufficient to say that the switch device is adapted to connect the cable 33 to a suitable terminal 36 within the head 5. In the arrangement shown, this terminal consists of a spring finger resting on a button-like projection 37 on the rear or inner end of the shaft 7.

The shaft 7 is rotated by a bevel gear 38 fixed to the upper or inner end of a shaft 39 that serves to connect the handle 6 rotatably to the hollow head or gear housing 5; the gear wheel 38 meshing with and serving to drive the bevel gear 9

and thus, upon turning the handle 6 about its own axis, rotating the shaft 7.

It is necessary that the shaft 39 and its gear wheel be insulated from any adjacent members of conducting material except the gear wheel 9. I therefore provide this shaft with an annular flange 41 spaced at some distance apart from the bevel gear 38 and between this flange and the gear is located a flanged sleeve or button 42 of insulating material that is screwed tightly into the head 5, and thus serves to hold the shaft on the head. The handle proper is made hollow, and is slipped on the shaft 39 below the flange on the latter, being held in place by a long screw 43 which extends inwardly from the outer end of the handle to the lower or outer end of the shaft 38, and is screwed into the lower or outer end of the shaft.

The post 18 and the gear wheel 27 cannot be removed without first unscrewing the plug 16. In order to insure against tampering with the device, the parts are so devised that the plug cannot be removed without first taking off the lamp head. To accomplish this, I make the flange like part 44 of the plug, which overlies the top of the body member 14, quite thin and place the holes 45 for the reception of projections on a wrench for turning the same in the upper face of the plug. Thus, the holes 45 are normally covered by the lamp head and a wrench cannot be applied thereto. However, after the lamp head is detached, by removing the screws 20, the plug can be unscrewed. Since the lamp head must be detached before the shaft 24 can be taken out, the connection between this shaft and the lamp socket should be readily separable. This I accomplish by providing the conductor 32 with a resilient plug 46 that is normally frictionally held in a hole 47 drilled in the outer end of the shaft 24.

While I have illustrated and described with particularity only a single preferred form of my invention, I do not desire to be limited to the exact structural details thus illustrated and described; but intend to cover all forms and arrangements which come within the definitions of my invention constituting the appended claims. I claim:

1. In combination, a tubular support having a hollow body member at one end, a lamp head resting on said body and having a post fixed thereto and extending into and rotatable in the body member, a sleeve of insulating material extending through said post and fitted therein so as to be compelled to rotate therewith while free to move lengthwise in the same, a metal shaft extending through and fixed in said sleeve, a lamp in the head having one terminal grounded and the other terminal conductively connected to the aforesaid shaft, a metal gear wheel in the interior of said body member fixed to the aforesaid shaft, a second metal shaft extending lengthwise through and insulated from said tubular support, a metal gear wheel on one end of said second shaft meshing with the aforesaid gear wheel, a spring acting on said sleeve in a direction to hold said gear wheels in intimate contact with each other, and means to connect the other end of said second shaft to a source of current to energize said lamp.

2. In combination, a tubular support having a hollow body member at one end, a lamp head resting on said body and having a post fixed thereto and extending through and rotatable in a wall of the body member, a spring acting on

the post in a direction to draw the head into intimate contact with said body member, a sleeve of insulating material extending lengthwise through said post and fitted therein so as to be compelled to rotate with the post while free to move lengthwise in the same, a metal shaft extending through and fixed in said sleeve, a lamp in the head having one terminal grounded and the other terminal conductively connected to the aforesaid shaft, a metal gear wheel on the end of the aforesaid shaft in the interior of said body member, a second metal shaft extending lengthwise through and insulated from said tubular support, a metal gear wheel on one end of said second shaft meshing with the aforesaid gear wheel, a spring acting on said sleeve in a direction to hold said gear wheels in intimate contact with each other, and means to connect the other end of said second shaft to a source of current to energize said lamp.

3. In combination, a tubular support having a hollow body member at one end, a lamp head resting said body and having a post fixed thereto and extending into and rotatable in the body member, a sleeve of insulating material extending through said member and fitted therein so as to be compelled to rotate with said member while free to move lengthwise in the same, a metal shaft extending through and fixed in said sleeve, a metal gear wheel within said body member on one end of the aforesaid shaft, a lamp in the head having one terminal grounded, a conductor leading to the other terminal of said lamp and detachably secured to the other end of the aforesaid shaft, a second metal shaft extending lengthwise through and insulated from said tubular support, a metal gear wheel on one end of said

second shaft meshing with the aforesaid gear wheel, a spring acting on said sleeve in a direction to hold said gear wheels in intimate contact with each other, a hollow handle at the other end of said tubular support, a contact finger within the hollow handle bearing against said second shaft, and a switch on the handle to connect said finger to a source of current supply for energizing the lamp.

4. In combination, a tubular support having a hollow body member at one end, a lamp head resting on said body and having a post fixed thereto and extending into and rotatable in the body member, a sleeve of insulating material extending through said post and fitted therein so as to be compelled to rotate therewith while free to move lengthwise in the same, said post having an exterior flange at the end within the body member, a compression spring surrounding the post and resting at one end on said flange and abutting at its other end against a stationary part, a metal shaft extending through and fixed in said sleeve, a lamp in the head having one terminal grounded and the other terminal conductively connected to the aforesaid shaft, a metal gear wheel on the lower end of the aforesaid shaft, a second metal shaft extending lengthwise through and insulated from said tubular support, a metal gear wheel on one end of said second shaft meshing with the aforesaid gear wheel, a spring acting on said sleeve in a direction to hold said gear wheels in intimate contact with each other, and means including a switch on the tubular support to connect the other end of said second shaft to a source of current for energizing the lamp.

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