Aug. 12, 1930. C. SKLAREK 1,772,918

DIRIGIBLY MOUNTED LIGHT

Original Filed Jan. 31, 1925 2 Sheets-Sheet 1

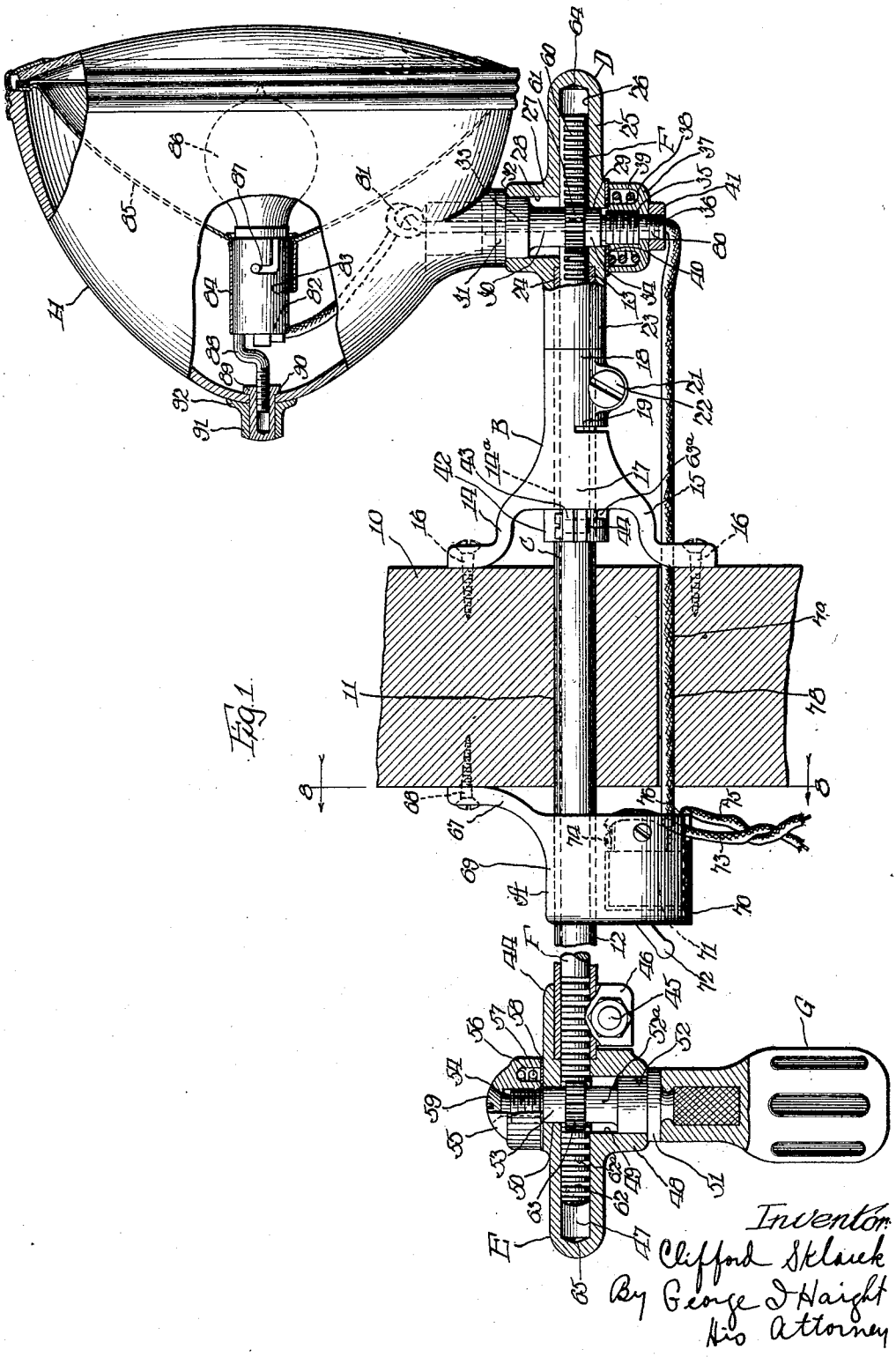


Fig. 1.

Inventor
Clifford Sklarek
By George D Haight
His Attorney

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Fig. 2.

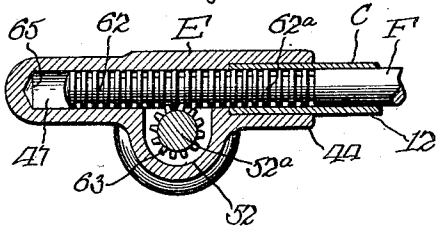


Fig. 3.

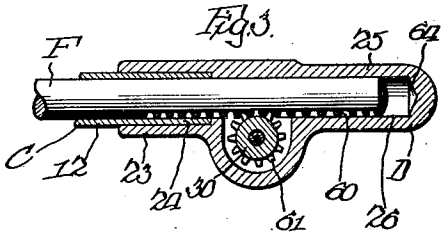


Fig. 4.

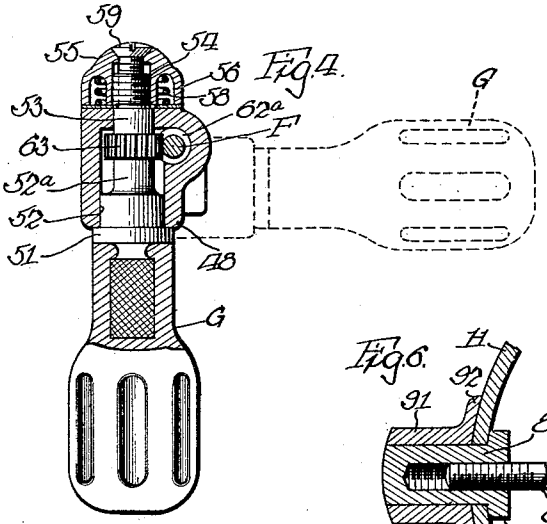


Fig. 5.

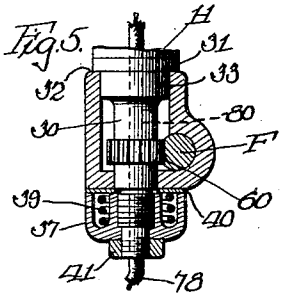


Fig. 6.

Fig. 7.

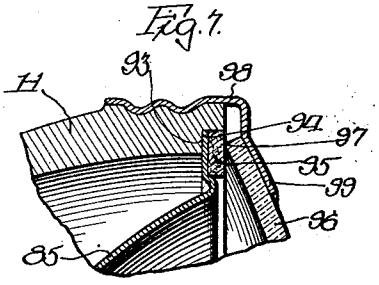


Fig. 8.

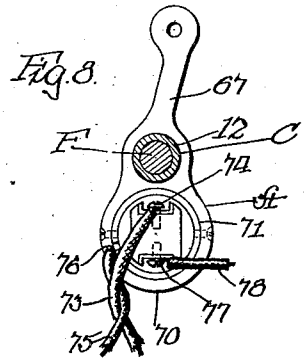
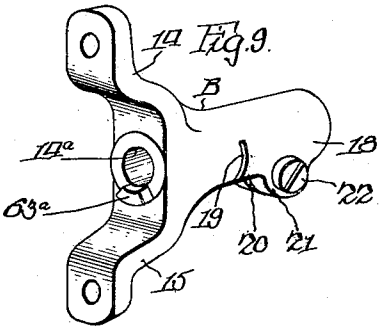


Fig. 9.



Inventor:
Clifford Sklarek
By George I Haight
His Atty.

Patented Aug. 12, 1930

1,772,918

UNITED STATES PATENT OFFICE

CLIFFORD SKLAREK, OF CHICAGO, ILLINOIS, ASSIGNOR TO INTERNATIONAL SPOTLIGHT CORPORATION, A CORPORATION OF ILLINOIS

DIRIGIBLY-MOUNTED LIGHT

Application filed January 31, 1925, Serial No. 5,909. Renewed March 18, 1929.

This invention relates to improvements in dirigibly mounted lights.

An object of my invention is to provide a dirigibly mounted lamp of a type usually equipped with a reflector and known as a search light or spotlight, and which is particularly adapted for use upon the windshields of automobiles, motor boats and the like, where it is desirable to manipulate and adjust the light so as to throw the rays in any desired direction.

Another object of the invention is to provide a spotlight of this character, including an operating rod provided with an annular rack at one portion thereof, in conjunction with an adjustable handle device having means for operatively engaging the annular rack on said rod in the various adjusted positions of the handle device.

Another object of the invention is to provide adjustable bearings, for the lamp used in connection with the spotlight, and the handle for operating said spotlight, whereby said bearings may be adjusted to compensate for wear and to maintain said members sufficiently tight to prevent too free movement of the parts held thereby, and to obviate the rattling commonly incident to the use of bearings of an ordinary character.

A further object of the invention is to provide an adjustable wear compensating bearing of the type referred to upon which the lamp is mounted, such bearing being arranged with a passage to accommodate an electric conductor leading to the light bulb, the arrangement being such that the adjustments may be accomplished without interference with the conductor.

Other and further objects of the invention will appear more clearly from the description and claims hereinafter following.

In the drawing forming a part of this specification, Figure 1 is a partial side elevational, and partial sectional view of the dirigible spotlight contemplated by my invention, showing the same mounted in operative position upon the superstructure of an automobile.

Figure 2 is a horizontal sectional view of one portion of the operating mechanism, taken upon the line 2—2 of Figure 1.

Figure 3 is a horizontal sectional view of the lamp mounting and operating mechanism, on the line 3—3 of Figure 1.

Figure 4 is a vertical sectional view of the handle operating mechanism taken on the line 4—4 of Figure 1.

Figure 5 is a vertical sectional view of the lamp mounting on the line 5—5 of Figure 1.

Figure 6 is an enlarged sectional detail view of the focusing mechanism for the light bulb.

Figure 7 is an enlarged detail view of a fragment of the lamp housing showing the manner of securing the lens therein.

Figure 8 is a part sectional, part elevational view of the switch mechanism used in connection with my invention, said view being taken substantially upon the line 8—8 of Figure 1 and

Figure 9 is a detail prospective view of a bracket for supporting the operating mechanism of the lamp.

Referring to the drawings 10 represents a fragment of the superstructure of an automobile upon which the spotlight is mounted. In carrying out my invention, I employ broadly a supporting bracket A, a bracket B, an operating arm C, a bearing member D, a bearing member E, operating rod F, handle device G, and a lamp H.

The fixed structure 10 is provided with an opening 11 therethrough for the accommodation of the operating arm C which is in the form of a tube extending through the opening 11, and having its ends 12 and 13 extending an appreciable distance on either side of the structure 10. The tubular arm C is adapted to be rotatably mounted on the

structure 10 by means of the brackets A and B. The bracket B has extensions 14ª and 15 formed thereon, through which securing screws 16 are extended and embedded in the structure 10. The rear portion 17 of the bracket B is provided with a cylindrical bore 14 which fits about the tubular operating arm C, and the forward portion 18 of the bracket B is split transversely as indicated at 19, and longitudinally at 20, as best shown in Figures 1 and 9, the forward portion 18 being provided with ears 21 through which is passed a tightening screw 22, by means of which any desired pressure may be exerted upon the tubular operating arm C, to vary the frictional contact between the bracket and the tubular operating arm C.

Adapted to be secured to the opposite ends of the operating arm C are the bearing members D and E. The bearing member D is preferably in the form of a hollow cap the inner end 23 of which has a driving fit with the end 24 of the operating arm C. The outer end 25 of the cap B is provided with a bore 26 adapted for the reception of one end of the operating rod F. Disposed at one side of the longitudinal axis of the bearing member D is the bearing proper for mounting the lamp H. Such bearing preferably includes a hollow boss 27, having a bore 28 extending transversely through the bearing member D, and co-axially with a counterbore 29 at the opposite side of the bearing member D. Rotatably mounted in the bearing thus provided is the stub shaft 30 affixed to the lamp H. The stub shaft 30 includes an annular shoulder 31 adapted to rest upon the top edges 32 of the boss 27, and further includes a cylindrical bearing portion 33, adapted to fit the bore 28 of the boss 27, the shaft 30 being reduced below the bearing portion 33 to such an extent that the portion 34 thereof fits the bore 29 of the bearing member. The shaft 30 after passing through the bore 29 is still further reduced as indicated at 35, and this portion is threaded. The extremity of the shaft is still further reduced as indicated at 36 and provided with exterior threads thereon which are reversely disposed with reference to the threads on the portion 35 of the shaft. Threaded upon the portion 29 of the shaft 30 is a securing nut 37, such nut being provided with an annular chamber 38 in which is mounted a coiled spring 39 which is arranged to bear upon a brass washer 40 interposed between the nut and the adjacent bearing face of the bearing member D. A lock nut 41 is adapted to be threaded upon the portion 36 of the shaft in a direction opposite to that of the adjusting nut 37. By this arrangement it will be noted that the adjusting nut 37 may be turned against the washer 40 as tightly as desired, to regulate the freedom with which the lamp H is rotated, and to prevent rattling of the parts, the lock nut 41 being threaded onto the shaft in the opposite direction, preventing unwinding movement of the adjusting nut 37.

The inner end 23 of the bearing member D abuts against the outer end 18 of the bracket B, which prevents longitudinal movement of the operating arm C in a rearward direction, and to prevent forward movement of the operating arm C I provide a split collar 42, in the rear of the bracket B, the ends of said collar being provided with outturned ears 43, through which is extended an adjusting screw 44 for clamping the collar upon the arm.

Secured to the rear end 12 of the operating arm C is the bearing member E, which is very similar to the bearing member D. The forward portion 44 of the bearing member is split to facilitate engagement of the same with the end 12 of the operating arm C, there being an adjusting bolt 45 extending through the split portions 46 of the part 44 of the bearing member, whereby the bearing member is securely and adjustably mounted upon the operating arm C. The rear portion of the bearing member E is provided with a bore 47 for the accommodation of the operating rod F. Disposed to one side of the longitudinal axis of the bearing member E is an offset portion providing the bearing proper. Such bearing includes a boss 48 having a cylindrical bore 49 therethrough, and a smaller bore 50 co-axially disposed in the opposite wall of the bearing member E. Adapted to bear upon the outer edges of the boss 48 is an annular shoulder 51 on the shaft 52ª forming part of the handle G. The bearing portion 52 of the shaft 52ª engages the bore 49, and the shaft is reduced in such manner that the portion 53 thereof engages the bore 50. The portion of the shaft beyond the portion 53 is exteriorly threaded as indicated at 54. for the reception of an adjusting nut 55. The nut 55 is provided with an annular chamber 56 in which is mounted a coiled expansion spring 57 adapted to bear upon the brass washer 58 interposed between the nut and the adjacent bearing surface of the bearing member E. The end 54 of the shaft 52ª is also interiorly threaded, such threads extending in a direction opposite to the threads on the exterior of the shaft, the interior threads being adapted to be engaged by a screw 59, the head of which is adapted to bear upon the nut 55 to prevent the same unwinding.

The operating rod F is mounted for longitudinal sliding movements in the operating arm C. and the forward end of the rod F is provided with a rack 60, adapted to engage a pinion 61 formed on the shaft 30 of the lamp H, whereby longitudinal movement of the operating rod F will cause corresponding rotation of the lamp H. The rear end por-

tion 62 of the operating rod F is provided with an annular rack 62ª, which is adapted to be engaged in various angular positions by the pinion 63 formed on the shaft 52ª of the handle G.

In certain cities, regulations are in force governing the arcs through which dirigible spotlights may be swung, in order to prevent the rays of light from the spotlights being thrown in the eyes of pedestrians and operators of machines going in opposite directions, and in order to comply with such regulations I employ the following arrangement. Formed upon the rear end 17 of the bracket B, is a segmental lug 63ª, such lug being arranged in such manner as to project into the path of the ears 43 formed upon the collar 42, whereby the rotation of the operating arm C is so limited as to prevent the rays of light being directed within prohibited zones. In order to limit the oscillation of the lamp H to prevent direction of the light within prohibited zones, I limit the travel of the longitudinally movable operating rod F by proportioning the bearing members D and E so that the ends of the rod will abut against the end walls 64 and 65 of such bearing members and thus limit its movement.

Secured to the rear of the structure 10 is the bracket A, which has an extension 67, through which is extended the holding screw 68 which is embedded in the structure 10. The bracket A is provided with a cylindrical bore 69 through which operating arm C passes, the lower portion 70 of the bracket being recessed for the reception of the switch block 71, including an operating lever 72. The electrical circuit for the light is accomplished by means of a conductor 73 which is connected with a source of current and to the terminal 74 of the switch block which is in communication with the switch lever 72. The conductor 75 is connected to the bracket A indicated at 76. Connected to the terminal 77 is the conductor 78 which extends through the passage 79 in the structure 10 and passes outwardly to the bearing for the lamp, whence it is led through openings in the nuts 37 and 41 and through a concentric bore 80 in the shaft 30, into the housing of the lamp H, the conductor being knotted as indicated at 81 to prevent the withdrawal thereof from the lamp housing. The conductor is then connected in any suitable manner to the base 82 of a bulb socket 83, which is slidably mounted in a cylindrical bearing 84, rigidly supported by the reflector 85, such reflector being in turn secured in the housing in a manner which will be hereinafter described. The lamp bulb 86 is secured in the socket member by the usual bayonet slot arrangement as indicated at 87.

For the purpose of focusing the lamp bulb with respect to the reflector 85, I provide the following arrangement. Secured to the base of the lamp socket is a bent shaft 88 the outer end of such shaft having threaded engagement with an adjusting nut 89, such nut being provided with a flange 90 adapted to engage the inner surface of the housing and the remaining portion of such nut extending outwardly of the housing. Disposed about and secured to the nut 89 is a collar 91, the inner portions 92 of which abut the outer wall of the housing. By this arrangement rotation of the nut 89 effects sliding movement of the lamp socket 83, which movement is transmitted to the bulb so as to vary the relation thereof with respect to the reflector 85.

In order to render the lamp housing H water tight, I provide the outer edges thereof with an annular rabbet 93, against which the turned flange 94 of the reflector 85 abuts. Disposed on the outer side of the flange 94 of the reflector and secured thereto by any suitable means such as shellac, is provided a yieldable gasket 95. The lens 96 is provided with sharp edges 97 which are adapted to abut against the outer surface of the gasket 95, and to hold the lens 96 in such position I provide a ring 98 adapted to be threaded onto the housing, such ring being provided with an annular flange 99 which holds the lens, the gasket and the reflector in position, in such manner as to maintain a water tight connection therebetween.

In the operation of the spotlight, when it is desired to bodily swing the same, the handle G is grasped and oscillated, and by reason of its fixed connection with the operating arm C, and due to the fact that the lamp H is also fixed to the outer end of the operating arm C, the oscillatory movement is transmitted to the lamp H. If it is desired to oscillate the lamp H upon its vertical axis, the handle G is rotated on its axis, effecting corresponding rotation of the pinion 63 which engages the rack 62 upon the inner end of the operating rod F, causing longitudinal movement of such rod dependent upon the direction of rotation of the pinion, and such movement is transmitted to the lamp H by the engagement of the rack 60 of the forward end of the rod with the pinion 61 mounted on the stub shaft 30, which is fixedly secured to the lamp H. The rotation of the operating arm C is limited by engagement of the ears 43 of the collar 42, with the segmental lug 63 formed on the bracket B, and the longitudinal movement of the operating rod F, and consequently the arc of oscillation of the lamp H, is limited by the abutment of the ends of the rod with the end walls 64 and 65 of the bearing members D and E.

The handle arrangement as above described is of such character that the handle G may be disposed in any suitable adjusted position with respect to the operating arm C, so that such handle may be so disposed as to have freedom of movement without inter-

ference with any of the adjacent parts of the automobile structure, and such adjustment is accomplished by loosening the bolt 45 which clamps the split end portions 46 of the bearing member E, rotating such bearing member relative to the operating arm, and again tightening the clamp and bolt 45. An important feature of the invention resides in the fact that this adjustment may be made without causing displacement of the operating mechanism, since the pinion 63 operatively engages the annular rack 62 at any circumferential position thereof. In this connection it will be noted that the bracket B is so arranged as to apply any desirable pressure upon the operating arm C by adjusting the clamp screw 22 to prevent the casual or accidental rotation of the operating arm C.

It will also be observed that by the provision of the bearings for the lamp and handle, a construction is provided which includes an adjusting nut by which the rotation of the lamp and handle, may be regulated to prevent too free movement, and to take up wear, in conjunction with a lock nut having threads oppositely arranged to the threads upon which the adjusting nut is secured, so that the rotation of the members will not disconnect the parts, or tend to change the adjustment. The bearing for the lamp has the additional feature that the same is so arranged that an electric conductor may be extended concentrically through the bearing to the bulb associated with the lamp.

Another feature of the invention resides in the provision of a combined bracket and support for the switch block, affording a location for the switch which is close enough to the handle G so that the hand of the operator which is used to operate the handle, also may be used to conveniently operate the switch.

While I have herein shown and described the preferred manner of carrying out this invention, the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. In a device of the character described, the combination with a lamp mounting including a support provided with opposed bearing surfaces and a bore extending through said support at an angle to said bearing surfaces, of a shaft element rotatably mounted in said bore, and projecting on opposite sides of said support, said shaft being provided adjacent one end portion with a bearing face adapted to engage one of said bearing surfaces; and an adjustable securing member threaded on said shaft and having an annular recess and a coiled spring in said recess, said spring being adapted to bear against the other bearing surface of said support and a locking member for holding said securing member in position.

2. In a device of the character described, the combination with a lamp mounting including a support provided with opposed bearing surfaces and a bore extending through said support at an angle to said bearing surface; of a shaft element rotatably mounted in said bore and projecting on opposite sides of said support, said shaft being provided adjacent one end portion with a bearing face adapted to engage with one bearing surface of said support, the other end portion of said shaft having stepped threaded portions; an adjustable securing member threaded on one of said stepped threaded portions of said shaft and bearing against the opposite bearing surface of said support; and a lock nut threaded on the other stepped portion of said shaft element in a direction opposed to the threads of said securing member, said lock nut bearing against said securing member.

3. In a device of the character described, the combination with a fixed structure; of an operating arm rotatably mounted in said fixed structure; a bracket having spaced extensions mounted on said structure and rotatably supporting said arms, said bracket being provided with a stop between said extensions; a bearing member secured to said arm beyond said bracket and adapted to abut against said bracket; a collar mounted on said arm between said extension and bearing against the opposite end of said bracket, said collar being provided with projections adapted to engage said stop to limit rotation of said arm.

4. In a device of the character described, the combination with a fixed structure; of an operating arm rotatably mounted in said structure; a bracket mounted on said structure and rotatably supporting said arm, said bracket having a spaced extension secured to said fixed structure and a split portion at the opposite end thereof arranged to be adjustably clamped upon said arm to rotatably support the latter and operate as a friction brake with respect thereto, said bracket having a stop thereon arranged between said spaced extensions; a bearing member secured to said arm beyond said bracket and adapted to abut against one side of said bracket; and a collar mounted on said arm at the opposite side of said bracket and bearing against said side to maintain the bearing member in position, said collar being provided with projections adapted to engage the stop on said bracket to limit rotation of said arm.

5. In a device of the character described, the combination with a support; of an elongated tubular operating member rotatably mounted in said support; and a bracket through which said operating member is rotatably disposed, said bracket being provided

with a housing at one side of said operating member adapted for the accommodation of a switch member, said bracket also being provided with a single arm secured to said support in spaced relation with reference to said rotatable operating member.

6. In a device of the character described, the combination with a lamp mounting including a support provided with opposed bearing surfaces and a bore extending through said support at an angle to said bearing surfaces of a shaft element rotatably mounted in said bore and having projecting portions on opposite sides of said support, said shaft being provided adjacent one end portion with a bearing shoulder adapted to engage one of said bearing surfaces, the other projecting portion of said shaft being exteriorly threaded in one direction and having a concentric opening interiorly threaded in the opposite direction, a cap nut engaging and housing the exteriorly threaded portion of said shaft element and adapted to bear against the other bearing surface of said support, and a locking member threaded into the end of the shaft and engaging the interior screw threads therein, and having an enlarged head portion bearing upon the exterior of the cap nut and lying flush therewith.

7. In a dirigible light for vehicles, attached to a part of a vehicle on a supporting member, the combination with means for operating said light including an operating shaft extending through said vehicle part; a bracket for supporting said shaft, said bracket being secured to said vehicle part and the shaft extending through said bracket, said bracket being provided with a housing portion at one side of the operating shaft; and electrical connections for said light including a switch mounted in the housing.

8. In a dirigible light, the combination with a hollow operating tube adapted to be rotatably mounted in a fixed support and extended to opposite sides thereof; of a bearing member fixedly secured to one end of said tube and provided with journal bearings therein, the axes of said bearings being disposed at an angle to the axis of said tube; a lamp having a journal rotatably mounted in said bearings, said journal having a pinion in line with said tube; a second bearing member at the opposite end of said tube and having journal bearings therein, the axes of which are disposed at an angle to the axis of the tube; means for rigidly attaching said last named bearing member to said other end of the tube in any predetermined angular position with reference to the first named bearing member; an operating handle having a journal rotatably mounted in said bearings of the second named bearing member, said journal having a pinion in line with said tube; and an operating rod reciprocably mounted in said tube and provided with racks at each end thereof cooperable with said first and second named pinions, respectively, the rack at said end of the rod adjacent the handle comprising rack teeth of circular form whereby the circular formed rack teeth are cooperable with the pinion of the handle in any angularly adjusted position of the handle bearing member with respect to the lamp bearing member.

In witness that I claim the foregoing I have hereunto subscribed my name this 26th day of January, 1925.

CLIFFORD SKLAREK.