The purpose of this invention is to provide a construction of vehicle-mounted searchlight or spotlight for the purpose of insuring automatic extinguishment of the light when the lamp is directing its beam within certain prohibited angular ranges vertical and horizontal. It consists in the elements and features of construction shown and described as indicated in the claims.

In the drawings:

Figure 1 is a partly sectional side elevation of the lamp having mountings embodying this invention.

Figure 2 is a rear elevation of the same.

Figure 3 is a vertical section axial with respect to the lamp and its stem at the plane indicated by line 3—3 on Figure 2, on an enlarged scale.

Figure 4 is a section axial with respect to the stem, as at the line 4—4 on Figure 3.

Figure 5 is a perspective view of one of the circuit-interrupting cams.

Figure 6 is a diametric section of the same as at the line 6—6 on Figure 3, said cam being shown on the pivot bolt which carries it.

Figure 7 is a partly sectional elevation of the other cam and its stem, section being axial with respect to the latter.

Figure 8 is a section at the line 8—8 on Figure 7.

Figure 9 is a perspective view of an insulating key which holds the parts shown in Figure 7 to the stem of the lamp body for rotation therewith.

Figure 10 is an elevation of a bolt which forms the pivot stem of the lamp body.

Figure 11 is a section at the line 11—11 on Figure 10.

Figure 12 is an end view of said bolt.

Figure 13 is a section at the line 13—13 on Figure 4 for showing a frictioning and adjusting plate provided for connecting the lamp body adjustably with its pivot stem.

Figure 14 is an elevation of said frictioning and adjusting plate looking in the direction of the arrow 14 on Figure 13.

Figure 15 is a section at the line 15—15 on Figure 14.

In the drawings, 1 represents a body member construction, in that it comprises a casing, 10, containing a reflector, 100, and a lamp socket indicated at 11 for holding an electric lamp, 12. This lamp body has at the rear a handle, 13, by which it may be adjusted in its supports. The supports comprise two members in addition to the lamp body, the first of which is fixed with respect to the vehicle, the lamp body constituting the third and last of a series of members which are pivoted to each other successively, the axes of pivotal connection of this second or intermediate member to the other two being intersecting, and in the construction shown one axis being vertical and the other being horizontal.

The first supporting member which is adapted to be fixed with respect to the vehicle is indicated at 15. The second or intermediate member which is pivoted to the other two is indicated at 16, its pivotal connection to the member, 15, in the particular position of mounting shown in the drawings being the horizontal pivot consisting of the pivot bolt, 17, which extends through two parallel lugs, 15a, 15b, projecting from the base of the member, 15, and through two intervening lugs, 16a, 16b, which project from the body portion of said second or intermediate member, 16, and is arranged to be made fast to the fixed supporting member, 13, by a cap nut, 17a, clamping said bolt tightly to the lugs, 15a.

The lamp body, 10, is provided with a mounting bracket, 10a, which is bolted rigidly to and constitutes substantially a part of said body and comprises a short cylindrical body portion 18 which terminates in a downwardly facing shoulder at 20 and which has a centrally positioned downwardly projecting stem, 21, consisting of a hollow bolt screwed into the bracket at the center of the downwardly facing shoulder, 20, and which is further made fast to the bracket by a jam nut, 22, and an intermediate washer, 23, both applied inside the lamp casing, 10. Said stem, 21, constitutes the pivotal terminal of the bracket and it has a head 24 stopped at its lower end below a shoulderly 25, which is the upper end of the downwardly open cylindrical recess, 26, formed between the downwardly extending lugs, 16a, 16b, of the member, 16, and the upper end of said member, 16, is finished for making and seating the lower end of the part 10a, with an intervening washer, 27. A spring washer, 28, is interposed between the head, 24, of the pivot stem, 21, and the shoulder, 25, said spring washer being dimensioned for being put under substantial tension by screwing the stem, 21, into the part, 19, as shown, so that by reaction of the spring...
washer, the two parts 16 and 10° are frictionally engaged at the annular areas of their mated ends around the pivot stem, 21, by having interposed between said mated sur-
faces for the purpose of avoiding the necessity of finely finishing the latter cooperating friction members, 30 and 31, the part, 30, being an annular steel disk with an upturned lug, 30°, at one side by which it is secured by screw, 30°, to the part, 10°, and the part, 31, being a fiber washer.

Through the hollow pivotal stem, 21, there is extended an electric circuit member consisting of a metal rod, 33, which is insulated from the pivot stem, 21, by an insulating sleeve, 34, which serves not only for insulation, but at the same time assists the key construction hereinafter described in rendering the rod, 33, rigid with the stem, 21, which in turn is made fast as described for rotation with the lamp body.

At the outer end of the conductor rod, 33, there is mounted fixedly with respect to said rod a contact member, 35, which is in the form of an inverted cup, and on the bolt, 17, which constitutes the pivot of the second or intermediate member, 18, to the first or vehicle-supported member, 15, there is mounted with respect to said pivot bolt, 17, a disk, 36, diametered and positioned along the axis of the bolt for intersection of its circumferential edge with the inner circumferential edge of the flange wall, 35°, of the cup-shaped contact member, 35, which periphery of the disk, therefore, intersects for contact at two points, which in view of the central position of the disk on the pivot bolt, 17, as shown, are diametrically opposite each other on the edge of the cup flange.

Said cup flange has an interruption in its circumferential periphery caused by a notch, 37°, in said flange edge; and the disk, 36, has an interruption in its circumferential edge at the short segment, 36°, said interruptions having angular extent in the parts to which they pertain corresponding respectively to the horizontal and vertical angles of adjustment within which the lamp is to be extinguished.

The lamp-energizing circuit comprises an inleading wire, 40, for which entrance is provided axially of the pivot bolt, 17, as seen at 17a, the axial cavity having a radial outlet at 17°, between the journals at which the lugs, 16°, 17°, obtain bearing upon said pivot bolt, and the end of the wire, 40, is attached to the side or edge of the disk, 36, necessary slack being provided to accommodate easy adjustment of the parts in assembling.

From the above description it may be understood that except when the lamp is adjusted within the prohibited vertical and horizontal angles, the circuit for energizing the lamp comprises from the inleading wire, 40, the disk contact member, 36, the cup-shaped contact member, 35, the conductor rod, 33, and a circuit wire, 45, which is attached by a binding screw, 46, at the upper end of the conductor rod, 19, and which leads thence to the center contact of the lamp as indicated at 45; and it may be understood that the lamp is grounded or the circuit completed to the other pole of the source of electric energy, in respect to which the construction is not shown. It will also be understood that the return or ground side of the circuit comprises (a) the wire seen at 60 attached by binding screw to the lamp socket and at any convenient point to the lamp body, 10, as indicated at 61, (b) the metal parts comprising the mounting in metallic contact at their successive pivots to each other, containing said return or ground side of the circuit through the first of said three members, the mounting bracket, 15, and (c) a wire, 63, secured by binding screw to said mounting bracket as seen at 64, said wire, 63, extending either to a metal part of the vehicle or to the proper pole of the source of electric energy.

It will be understood that this wire, 63, is embodied in the return course of the circuit by reason of the circumstance that the bracket, 15, may be mounted upon some wooden part of the vehicle so that the circuit return would be interrupted by the insulation produced by such wooden support.

Certain details of the construction warrant particular description.

The contact disk member, 36, is specially constructed for facilitating its insulated mounting on the pivot bolt, 17, and its adaptation for serving the function of transmitting the current by contact at its periphery with the cup-shaped contact member, 35, the same being for this purpose comprising a disk, 33°, of insulating material such as bakelite or similar hard insulating substance, which is enclosed in a sheet metal stamping, 37°, into which the disk, 35°, is forced, being dimensioned for a forced fit therein, while the stamping, 35°, is in the form of a flanged annulus after which its said flange, 35°, is clinched over the margin of the disk. The construction as thus described may be understood clearly from Figures 5 and 6, from which also it may be understood that the device thus formed is mounted non-rotatably with respect to the pivot bolt by having the central aperture, 36°, of the bakelite member, 35°, formed with a flat as seen at 36°, which registers with a corresponding flat, 17°, on the pivot bolt, 17. For securing the said disk, 36, against longitudinal displacement on the bolt, the latter has a flange, 17°, forming a shoulder against which the disk is seated, and an annular groove, 17°, spaced from said shoulder a distance equal to the thickness of the disk, 36, for receiving a spring retaining ring, 17°.

For securing the contact member, 35, rig-
idly to the conductor rod, 33, and for making the latter rigid for rotation with the hollow stem, 21, the construction is as may be understood from Figures 4, 10 and 11. The lower end of the stem, 21, is slotted as seen at 21a, and the rod, 33, is correspondingly slotted as seen at 33a. The rod has an annular groove, 33b, formed before the slotting is done and the slotting makes it possible to close together the fork ends produced by the slots so that said fork ends may be entered in the central aperture of the cup-shaped contact member, 33, and then spread to engage the edges of the aperture in the remnant of the groove, 33c, in the outer side of said fork ends; and the insertion of a key, 37, of insulating material as bakelite in the registered slots of the stem, 21, and rod, 33, secures the parts and particularly the rod, 33, and the stem, 21, in a manner avoiding electrical connection between them. To assure against the possibility of conductive contact between the periphery of the disk, 36, and the end of the rod, 33, an insulating disk, 35a, is fitted in the bottom of the cup closely seated thereon and against the end of the rod, 33, and additionally retained by pricking the cup member at a plurality of points in its circumference to form inwardly protruding slight bosses, 35b, which project under the edge of the insulating disk 35a.

For insuring electrical insulation of the member, 35, from the head of the stem, 21, there is provided an insulating washer, 47, mounted on the end of the rod, 33, which protrudes from the stem 21; and for holding the cup-shaped member, 35, down into assured contact of its peripheral flange with the periphery of the disk, 36, there is interposed between the lower side of the washer, 47, and the upper side of the cup member, 35, a spirally coiled spring, 48, adapted to be compressed into nearly flat form, that is, with its coils one within another, the inner coil seating upon the upper side of the cup-shaped member, which for seating and centering it is formed with a slight upstruck boss, 35c.

The purpose of the construction as a whole being to adapt the lamp for adjustment so as to be automatically extinguished within certain prohibited angular ranges, it is desirable to be able to adjust the lamp body on the intermediate member angularly about the vertical pivot so that the prohibited angular range may correspond to the desired zone of the roadway on which illumination is prohibited. For this purpose the engagement of the hollow bolt, 21, which constitutes the pivot stem of the lamp body to the intermediate member, 16, is effected by utilizing for that purpose and as an adjusting plate the part, 30, above designated as restriction plate. The construction of this detail may be understood from Figures 10 to 15 inclusive, as will now be described. The hollow bolt, 33, which constitutes the stem of the lamp body is seg-

I claim:

1. An illuminating device comprising in combination three co-operating members of a light support pivoted successively to one another, the first member being a fixed support, the last member being a lamp body, the axes of the pivotal connections of the second member to the other two being intersecting; a circuit for energizing a lamp to be mounted in the lamp body extending through said three members and comprising annular conductive areas of two of said members extending about the two axes respectively, each of said annular areas having an interruption of limited angular extent at whose coincidence only in the adjustment about said axes, the circuit is interrupted.

2. In the construction defined in claim 1, the annular conductive areas being on parts rigid with the lamp body and the fixed support respectively.

3. In the construction defined in claim 1, the members having said annular conductive areas being, one, a cup-shaped part of which the conductive area is the margin of the cup wall or flange, the interruption being produced by a notch in the edge of said flange, the part having the other annular conductive area being a disk of which the conductive area is a peripheral edge, the interruption therein being formed by a limited recession of said edge from the circle defining it.

4. In the construction defined in claim 1, the member having one of the annular conductive areas being for intersection of its conductive area at two points thereof with the other annular conductive areas, said two points being angularly separated more widely than the angular extent of the contact-interrupting feature of the other annular area.

5. In the construction defined in claim 1, the parts having the annular conductive areas being one a cup-shaped part of which the conductive area is a margin of a cup wall or flange, the part having the other annular conductive area being a disk at which the conductive area is a peripheral edge, the inter-
ruption therein being formed by a recession in said edge, the parts having said annular conductive areas being relatively mounted as to their axes so that the periphery of the disk intersects the circle of the edge of the cup flange at points in the latter which are angularly separated more widely than the angular extent of the recession in the edge of the disk.

6. In the construction defined in claim 1, the parts having the annular conductive areas being one a cup-shaped part of which the conductive area is a margin of the cup wall or flange, and the other a disk of which the conductive area is its peripheral edge.

7. In the construction defined in claim 1, the pivot of the intermediate of the three members to the first member having a longitudinal cavity leading in from an exteriorly exposed end thereof and opening radially of said pivot, the inlet wire of the energizing circuit being entered through said cavity for attachment to the interior circuit connections.

8. In the construction defined in claim 1, the part rigid with the lamp body having the annular conductive area being secured to the lamp body with a limited range of adjustment angularly about the axis of the pivotal connection of the lamp body with the intermediate member.