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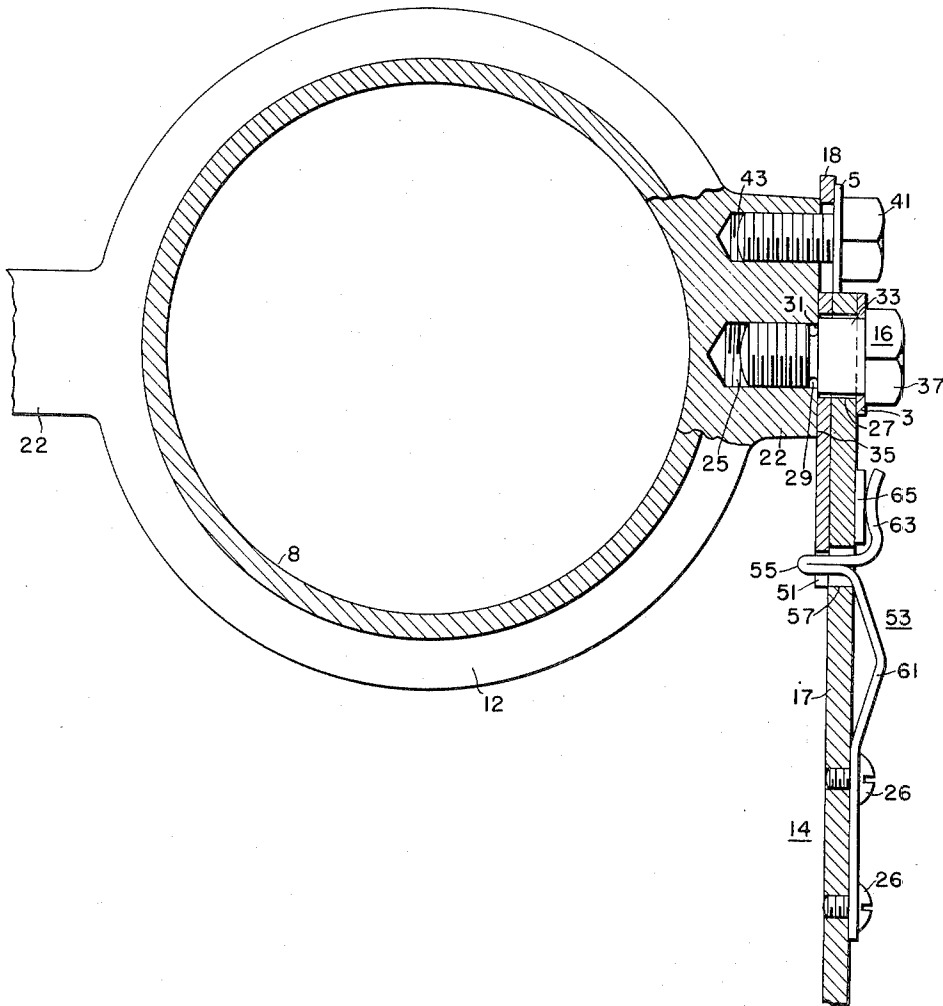
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LIGHTING FIXTURE

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2 Sheets-Sheet 2

Fig. 2.



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LIGHTING FIXTURE

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8 Claims. (Cl. 240—52)

Our invention relates to lighting fixtures which are generally utilized for illuminating large outside areas.

Such fixtures are frequently mounted in relatively inaccessible places where it is usually necessary that the fixture be positioned and aligned in a predetermined manner in order to achieve proper lighting of a particular area. Fixtures which have been heretofore used for such purposes have been unsatisfactory in that considerable difficulty has been encountered both in servicing the fixture, including cleaning, the replacement of parts, and in adjusting the alignment of the fixture. Other fixtures which have been designed to overcome these objections have been proven to be unsatisfactory in that they required either extensive time and/or use of special or large number of tools. This invention contemplates a lighting fixture composed of a plurality of separate parts having a novel construction so that such fixtures may be readily serviced without the use of any tools. Another part of this invention provides a novel form of construction for such a fixture so that it may readily be serviced without affecting the alignment of the fixture. A further part of this invention has to do with the provision of a novel structure permitting such alignment to be altered with the use of a simple standard wrench.

Accordingly one object of this invention is generally to provide a novel lighting fixture which may readily be serviced without requiring any tools or skilled personnel for such servicing.

Another object of our invention is to provide a lighting fixture of the type, whereby a beam of light is produced, that may readily be adjusted to vary the direction of the light beam by known increments.

Another object of our invention is to provide a lighting fixture which may be released manually from its support and be returned to its initial position when the fixture will automatically be positioned without altering the relative position of the fixture and the support.

A more specific object of our invention is to provide a lighting fixture having a support and a lamp holder member rotatably mounted in such support and a manually releasable spring to secure said support and lamp holder means in a definite relationship and which will automatically after release secure such support and lamp holder means in the same relative relationship.

Another more specific object of our invention is to provide a lighting fixture having a support, a lamp holder portion and a disc for indicating the relative position of said support and lamp holder, such disc being manually releasable to alter such relative position.

A still further object of this invention is to provide a novel lighting fixture having a support and a lamp holder member rotatably mounted in such support, and a manually releasable spring to secure such support and lamp holder in a definite relationship which will automatically upon reengagement after release realign the support and lamp holder in the same relationship and having a disc for indicating such relationship which is manually releasable to alter such relationship.

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These and other objects of this invention will become more apparent upon consideration of the following detailed description of a preferred embodiment thereof when taken in connection with the attached drawings in which:

Figure 1 is a side elevational view of a lighting fixture constructed in accordance with this invention with parts of the fixture being broken away and shown in section; and,

Fig. 2 is an enlarged sectional view of a portion of the lighting fixture shown in Fig. 1 taken substantially along the line II—II of Fig. 1.

The illustrative embodiment of the invention shown on the drawings comprises a lighting fixture having a housing socket assembly 2, a reflector assembly 4 and a door 6, which are all capable of being releasably assembled together in a manner to provide a sealed weather-tight enclosure. The housing socket assembly 2 comprises a socket housing casting 8 which is generally cup-shaped in form, having an open end joined to the reflector 7 proper. The reflector 7 is formed of a single piece of material capable of having a reflecting surface formed thereon, such as for example aluminum or an alloy thereof, and is generally flared outwardly in section and is joined to the socket housing 8 at the inner end of the reflector at one side. The door assembly 6 includes a transparent material 96, such as glass or the like.

The open end of the socket housing 8 is formed with a flange 10 which is offset outwardly to provide a shoulder 12 between the flange and the side wall of the socket housing 8 which is adapted to support interiorly thereof lamp holding means, illustratively shown in this embodiment of the invention as comprising a screw type of lamp socket 23, which is secured to the bottom wall of the socket housing 8, as for example by screws 30. The lamp socket 23 has its own terminal screws 32 to which electrical supply conductors 34 and 36 may be secured. The supply conductors 34 and 36 preferably emanate from a cable having a sheath 38 of flexible waterproof material, such as lead or a non-metallic waterproof material, and the cable enters the socket housing 8 through a side opening 40 in the socket housing 2 having an inner shoulder 42. In order to seal the point of entrance of the cable into socket housing 8, there is provided a threaded bushing 44 adapted to receive the cable and be threaded into the opening 40 in the socket housing 8, there being compressible packing material 45 interposed between the bushing 44 and the shoulder 42 such, for example, as a packing material having a rubber or asbestos base, so that when the bushing is tightened the material 45 will be deformed into intimate engagement with the socket housing 8 and the cable sheath 38 to seal the opening in the socket housing 8.

A light source 46 is shown as being supported by the lamp socket 23, and comprises in the illustrative embodiment of the invention, an incandescent lamp. In this regard, however, it is desired to point out that the invention is not limited to this type of light source or to the particular type of lamp socket illustrated, as the invention is equally applicable to other types of lamps and lamp supports. It will be noted that the lamp 46 extends into the reflector assembly 4, and particularly that the latter may be provided with a generally hemispherical inner end portion 48 into which the lamp extends from an opening at the inner end of the reflector assembly 4 but at one side thereof.

The reflector assembly 4 and socket housing 8 are secured together at the opening through which the lamp extends into the reflector assembly 4. For this purpose the reflector 7 has an opening corresponding to the opening in the reflector housing 8, which is defined by an outwardly extending flange 50 which terminates in an in-

wardly extending lip 52. Lip 52 defines the opening 54 in the reflector which is adapted to align with the opening in the reflector housing 8 when the reflector and housing are secured together.

The securing means employed for the socket housing 8 and reflector assembly 4 comprises a generally U-shaped leaf spring hinge member 56, having one end secured to the flange 10 of the socket housing 8, as by screws 58, and having the other end formed into a hook 60, for receiving a pivot pin 62 supported on a bracket 64. The pivot pin supporting bracket 64 is provided with spaced arms which are spanned by the pivot pin 62, and the bracket is secured to the reflector 7 by having its base secured to the outer surface of the reflector 7, for example as by rivets 66. The spring hinge member 56 is formed of any suitable resilient material, such for example as stainless steel.

At a point opposite the spring hinge relative to the juncture of the socket housing 8 and the reflector assembly 4, there is provided an angled supporting bracket 68, one leg of which is secured to the reflector 7 substantially at the innermost end thereof, as by rivets 80. The other leg of the angled bracket 68 projects outwardly for supporting an angled manually operable toggle member 82, as by a pivot pin 84. The toggle lever 82 is in turn pivotally connected at an intermediate point, as by a pivot pin 86, with one end of a leaf spring toggle clamping lever 88, the other end of which has a nose 90 for engagement with the outside of shoulder 12 on the socket housing 8. If desired, the nose 90 of the toggle clamping lever 88 may be covered with a suitable resilient shielding material, such as rubber or the like, to prevent damage to the outer surface of the socket housing at the point of engagement therewith. It will be noted that a gasket 91 is preferably interposed between the shoulder 12 of the socket housing 8, and the lip 52 around the opening in the reflector assembly 4, and the purpose of the hinge spring 56 and spring clamping lever 88 is to maintain these parts of the socket housing 8 and the reflector assembly 4 under spring pressure exerted on the gasket 91 interposed between them to provide a weather-tight sealed joint. The gasket 91 may be made of any desired compressible sealing material, such as a rubber or asbestos composition. The particular mode of removing and securing the reflector assembly 4 to socket housing 8 forms no part of this invention and it is more particularly described and claimed in the copending application of Joseph William Steiner and Edward L. Beach on a Lighting Fixture (Serial No. 345,525) filed concurrently herewith (March 30, 1953) and assigned to the same assignee of this invention. Accordingly for a more complete description of such features reference is hereby made to the above mentioned copending application.

The outer end of the reflector assembly 4 is formed to engage the door 6, by having a recessed shoulder 92 formed integrally with the reflector 7 and extending outwardly therefrom to terminate in a flange 94. The door 6, as previously stated, is formed of a transparent material 96, such as glass or the like, and is especially adapted for assembly with the reflector 7 without the use of any frame for the transparent material. Thus, the door is provided with an integral peripheral flange 98 adapted to engage a gasket 99 which is, in turn, adapted to seat in the recess of the reflector shoulder 92, to seal the joint between the reflector 7 and door 6. The gasket 99 may be formed of any suitable compressible material similar to the gasket 91 referred to above.

In order to secure the door 6 in pressure engagement with the gasket 99, there is provided a plurality of clamps substantially equally spaced about the periphery of the door which are generally similar to the releasable spring clamp 82, 88 employed for securing the reflector assembly 4 to the socket housing 8. The specific form of clamp illustrated here is adapted to be mounted by means

of a bracket 100 which is secured to the reflector 7, as by rivets 102, and has an outwardly projecting arm for pivotally supporting a manually operable toggle lever 104, as by a pivot pin 106. The manually operable toggle lever 104 is pivoted at an intermediate point, as by a pivot pin 108, to one end of a leaf spring toggle clamp 110 which is bowed in form, and like the spring toggle lever 88, is formed of any desired spring material, such as a stainless steel. The outer end of the spring toggle member 110 is provided with a nose 112 for engaging the outer surface of door flange 98 and it preferably is covered by a resilient gasket material 113, such as rubber or the like. An integral rib 114 is provided on the outer side of the door along the periphery of the door flange 98, and may have inwardly extending integral ribs (not shown) at each end of the outer rib 114, with the nose 112 of each of the spring clamping levers adapted to engage the door flange 98 within the confines of integral door rib 114.

The door 96 may also be removably hinged to the reflector 4, by a hinge arrangement illustratively shown in the preferred embodiment of the position as being located at the top of the lighting fixture. The hinge comprises an angular hinge bracket 118 having one portion secured to the upper side of the reflector 7, as by rivets 120, and having its outer end angularly bent over the recessed shoulder 92 of the reflector, and then bent outwardly and reduced in width, to form a hinge tongue portion 122. If desired, the outer edge of the hinge portion 122 may be provided with a notch 116 in order to provide a sight by means of which the lighting fixture may be aimed and adjusted when mounted as hereinafter described. The door 96 is provided with a hinge clip 124 formed of a resilient material, such as stainless steel strip, which is bent back upon itself at the outer end, and riveted together as at 125, whereupon the ends of the strip are separated to form one leg 128 for engaging the inner side of the adjacent edge of the door 96, and another leg 126 formed to engage the outer surface at the outer edge of door 96. Preferably, a compressible sheet material 130, such as rubber or the like, is interposed between the material of door 96 and the hinge clip 124 to prevent damage to the transparent material of the door, and integral ribs like ribs 114 are formed on the door at a position to receive the hinge clip 124, with the outer leg 126 of the clip being bent at 132 to conform to the shape of the rib and thus prevent withdrawal of the hinge clip. Also, in order that the inner leg 128 of the door hinge clip does not project outwardly of the inner surface of the door, and particularly the door flange 98, the latter is preferably grooved (not shown) for receiving the inner leg 128 of the hinge clip, so that it will lie flush with the inner surface of the door flange 98. The outer end of the door hinge clip 124 is angularly bent and has a pivot opening 136 for receiving the hinge tongue 122 of the hinge bracket 118. If desired, a flexible chain 138 or the like may be provided joining the parts of the lighting fixture which are releasably connected together, for the purpose of preventing accidental dropping of the parts when they have been released from clamping engagement.

The particular manner whereby the door 6 may readily be removed for servicing forms no part of this invention and it is more particularly described in and claimed in the previously identified copending application of Joseph William Steiner and Edward L. Beach on the Lighting Fixture. Accordingly for a more complete description of such features, reference is hereby made to the above mentioned copending application.

The entire lighting fixture heretofore described is adapted to be supported at the socket housing 8 by any suitable mechanical means such as a U-shaped steel supporting bracket 14 having a bight portion 15 and extending arms 17 (only one of which is shown). Bight portion 15 of bracket 14 is provided with a hole 20 through

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which bolt assembly 19 extends as well as through an opening in a stationary mounting bracket 21 which, in turn, may be secured to a desired support by any suitable mechanical means inserted through mounting hole 23 and radial slots not shown.

As more clearly shown in Fig. 2, socket housing 8 is provided with integral bosses 22 at each side having diametrically opposed tapped holes 25 therein which are threadedly engaged by special pivot bolts 16 (only one of which is shown) extending through opposed holes 27 in arms 17. In order to insure that socket housing 8 may be freely rotated within bracket 14, bolts 16 have a smooth shank portion 33 and are provided with a peripheral groove 29 whereby a shoulder 31 is formed upon the shank portion 33 which engages the outer surface 35 of boss 22. Thus the distance between the outer surface 35 of boss 22 and the bottom of the head 37 of bolt 16 is fixed by such engagement. If desired, a washer 3 formed from any suitable material, such as brass, may be inserted between the head 37 of bolt 16 and the outer surface of arms 17 to prevent head 37 from scoring arms 17.

As also shown in Fig. 2, at least one of the bolts 16 may be provided with a longer shank portion than the other in order that an indicator disc 18 may be rotatably positioned upon shank portion 33 of bolt 16 between the inner surface of arm 17 and boss 22 of socket housing 8. Indicator disc 18 may be fabricated from any suitable material such as stainless steel and is preferably circular in form and is provided with an arcuate slot 39 through which a bolt 41 extends and threadedly engages a threaded hole 43 in boss 22 of socket housing 8, whereby disc 18 may be securely positioned with reference to socket housing 8 at a plurality of different angular positions. If desired, a washer 5 of any suitable material, such as brass, may be positioned between the head of bolt 41 and arm 17 to prevent scoring of the arm 17 by the bolt head. Disc 18 is provided with a suitable radial scale 47 upon its outer periphery which may, as shown in Fig. 1, be a scale having a zero reference point in its center and degree marks extending outwardly from each side of the zero reference point. In order that the relative position of disc 18 may be varied in known increments with reference to socket housing 8, the socket housing 8 is provided with a stationary reference point 49 which may be, as shown in Fig. 1, an integral part of the socket housing 8. The relative position of disc 18 with reference to socket housing 8 may be varied by backing bolt 41 off using only a standard wrench, rotating disc 18 around pivot bolt 16 in increments measured by scale 47 and retightening bolt 41. The rotation of disc 18 is limited, however, by the length of slot 39 due to the engagement of the ends of slot 39 with bolt 41.

The entire lighting fixture heretofore described is adapted to be supported in a fixed relationship with reference to bracket 14 by suitable latching means engaging disc 18. In the embodiment of our invention shown in the drawings, the latching means comprises a single leaf spring 53 which is formed from any suitable resilient material, such as spring steel, secured at its one end to the outer surface of arm 17 by any suitable means, such as machine screws 26. Leaf spring 53 is specially formed by being folded back upon itself at an intermediate portion to form a rider portion 55 which protrudes through an opening 57 in arm 17. Disc 18 is provided with at least one opening 51 which, when disc 18 is rotated, may be aligned with opening 57 in arm 17 thereby, due to the spring action of the spring portion 61 of leaf spring 53, forcing the rider portion 55 of spring 53 to extend through opening 51 in disc 18. Further rotational movement between the bracket 14 and the socket housing 8 is prevented by the engagement of rider portion 55 of spring 53 with the sides of opening 51 in disc 18. The outer portion 63 of leaf spring 53 is inactive with regard to spring action and may be formed in any suitable man-

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ner to provide an end grip whereby rider portion 55 may be manually withdrawn from latch opening 51 in disc 18. If desired, a spacer or striking bar 65 may be provided between outer portion 63 of spring 53 and the outer surface of arms 17 to insure that outer portion 63 will at all times be spaced above the outer surface of arm 17 whereby it may be readily grasped by hand.

If desired, a stop lug 67 may be formed integral with disc 18 to prevent the lighting fixture from being rotated beyond a certain point in a clockwise direction (as viewed in Fig. 1). Stop lug 67 extends outwardly from disc 18 and may be formed by punching a portion of disc 18 outward so that when the fixture is rotated clockwise its movement is limited by the engagement of the stop lug 67 with the lower edge 69 of arm 17. Thus in the event the lighting fixture should accidentally slip when being serviced its clockwise travel would be limited by such engagement and the shock of stopping such rotation will be borne by bracket 14 and housing member 8 rather than either the flexible cable 38 or the back portion of the reflector proper 7. If desired, more than one latch opening 51 could be provided in disc 18 in order to secure the lighting fixture in various fixed relationships with reference to bracket 14.

The advantages of servicing and aligning a lighting fixture constructed according to the principles of our invention are believed to be obvious. Primarily it will be noted that if the lighting fixture is secured and positioned as shown in Fig. 1, it may easily be cleaned or the lamp 46 replaced by lifting leaf spring 53 out of the latch opening 51 in disc 18 and rotating the fixture in a counterclockwise direction. Such counterclockwise rotation may be to any convenient point and is limited only by either the length of supply conductors 34 and 36 or by engagement of the head of bolt 41 with the upper surface of arms 17 of bracket 14. Once the requisite servicing has been accomplished, the fixture may be rotated clockwise, whereby the rider portion 55 of spring 35 will ride upon the outer surface of disc 18 until latch opening 51 in disc 18 is aligned with opening 57 in arm 17 at which time spring 53 will by its spring action enter opening 51 to prevent any further rotation of the lighting fixture; all without the use of tools. It is equally obvious that should it be desired to alter the relative positioning of the socket housing 8 with reference to support 14, the bolt 41 may be loosened and disc 18 rotated in a manner heretofore indicated whereby such adjustment will be accomplished.

A particular advantage of a lighting fixture constructed in accordance with this invention resides in the fact that the fixture may be initially adjusted at a predetermined angle at the time when it is installed with the adjusting plate rotated until its stop lug engages the underside of the adjacent supporting arm, and thereafter the light can be moved for servicing by means of the releasable latch. Following servicing the fixture is simply rotated back toward its initial position and is always automatically locked at the same predetermined initial position, without further adjustment.

Having disclosed a preferred embodiment of the invention in accordance with the patent statutes it is desired to point out that the above is merely illustrative of the invention and cannot be properly considered as limiting the invention to the specific details thereof. Thus the particular method of securing the indicator disc to the socket housing or the number and type of latches used to position the fixture with reference to the support may be varied from those specifically disclosed herein without departing from the essential features of our invention. Various other changes may also be made without departing from the true spirit and scope of the invention. Accordingly, it is desired that the invention be interpreted as broadly as possible and that it be limited only as required by the prior art.

We claim as our invention:

1. A lighting fixture comprising a support member

having at least two extending arms, lamp holding means rotatably mounted around a fixed axis on said support between said arms, a releasable securing means movably mounted on one of said arms comprising a flat leaf spring having an integral protrusion extending through an opening in said one arm and normally biased toward said lamp holding means, a disc having a notch therein adjustably secured to said lamp holding means, said protrusion and said notch being displaced the same radial distance from said axis so that said protrusion automatically engages said notch on said disc when said protrusion and said disc are in a predetermined relative position, whereby said lamp holding means is releasably held in a fixed predetermined position with relation to said support.

2. A lighting fixture comprising a support lamp holding means rotatably mounted about a fixed axis on said support, indicating means rotatable about said axis, means for securing said indicating means to said lamp holding means in one of a plurality of angular positions with reference to said lamp holding means, securing means mounted on said support for maintaining said lamp holding means and said support in a fixed predetermined position, said last mentioned securing means comprising a spring biased means radially displaced from said axis a portion of which is movable substantially parallel to said axis so as to be engageable with an aperture in said indicating means in a fixed predetermined relationship upon rotation of said lamp holding means.

3. A lighting fixture comprising a support having an opening, lamp holding means positioned in said opening rotatably mounted on said support about a fixed axis, a circular disc rotatable about said axis having a notch therein, a first securing means for releasably securing said disc to said lamp holding means, a second securing means comprising a flat leaf spring having an integral projection biased to enter said notch and being movably mounted on said support member for maintaining said disc and said support in a fixed predetermined position when said lamp holding means is rotated in one direction, said second securing means being releasable to permit rotation of said disc, said first securing means being releasable for securing said disc and said lamp holding means in any one of a plurality of angular relationships, and means integral with said disc comprising an outwardly extending tab engageable with one side of said support at substantially the same instant said projection enters said notch for additionally preventing rotation in said one direction.

4. A lighting fixture comprising a support member having at least two extending arms, lamp holding means rotatably mounted around a fixed axis on said support between said arms, a releasable first securing means movably mounted on one of said arms comprising a flat leaf spring having an integral protrusion extending through an opening in said one arm and normally biased toward said lamp holding means, a disc rotatably mounted about said axis located between said one arm and said lamp holding means and having a notch therein, a second securing means for releasably securing said disc to said lamp holding means, said protrusion and said notch being radially displaced the same distance from said axis so that said protrusion automatically engages said notch in said disc for maintaining said lamp holding means and said support in a fixed predetermined relationship, said first securing means being manually releasable to permit rotation of said lamp holding means, and said second securing means being located within an arcuate slot in said disc and releasable to permit said disc to be secured in different the positions relative to said lamp holding means.

5. A lighting fixture comprising a support member, a lamp holder member pivotally secured to said support member about an axis, an adjustable element having a notch therein, a securing means for securing said adjustable element to one of the members, said securing means being releasable to vary the relative position of said adjustable element and said one member, releasable securing means located upon the other member comprising spring biased means radially displaced from said axis and having a portion thereof movable substantially parallel to said axis so as to be engageable with said notch, whereby the relative positions of said members are fixed when said one member is rotated in one direction to a predetermined point, and means integral with said adjustable element positioned to be engageable with said other member when said latching means engages said notch for additionally preventing further rotation in said one direction.

6. A lighting fixture comprising, a support, lamp holding means pivotally mounted on said support on a given axis, indicating means rotatably mounted on said support, means for selectively securing said indicating means to said lamp holding means at any of a plurality of relative angular positions, resilient latching means mounted on said support having a part thereof biased to engage said indicating means, and one portion of said indicating means being formed to be engaged by said part of said latching means upon rotation of said lamp holding means to automatically lock the lamp holding means at an angular position relative to said support predetermined by the relative angular position at which said indicating means is secured.

7. A lighting fixture comprising a support, lamp holding means pivotally secured to said support about an axis, indicating means rotatable about said axis releasably secured to said lamp holding means in one of a plurality of angular positions with reference to said lamp holding means, an opening in said indicating means, resilient latching means secured to said support having a movable portion normally biased toward said indicating means, said opening in said indicating means and said movable portion of said latching means being displaced radially outwardly from said axis substantially the same distance, and said movable portion of said latching means being of a length to automatically engage said opening when said lamp holding means is rotated to a predetermined position to prevent further rotational movement of said lamp holding means.

8. A lighting fixture comprising, a support member, a lamp holding member pivotally mounted on said support member on a given axis, adjustable indicating means, securing means for securing said indicating means to one of the members at any of a plurality of relative positions with respect to the other of said members, resilient latching means mounted on the other of said members having a part thereof biased to engage said indicating means, and one portion of said indicating means being formed to be engaged by said part of said latching means upon rotation of said lamp holding member to automatically lock the lamp holding member at an angular position relative to said support member predetermined by the relative angular position at which said indicating means is secured.

References Cited in the file of this patent

UNITED STATES PATENTS

1,915,967	Bailey	June 27, 1933
2,166,394	Crossley	July 18, 1939
2,618,285	Heisig	Nov. 18, 1952