

April 26, 1949.

G. H. BURT

2,468,481

LAMP HOLDER

Filed Nov. 8, 1945

2 Sheets-Sheet 1

Fig. 1.

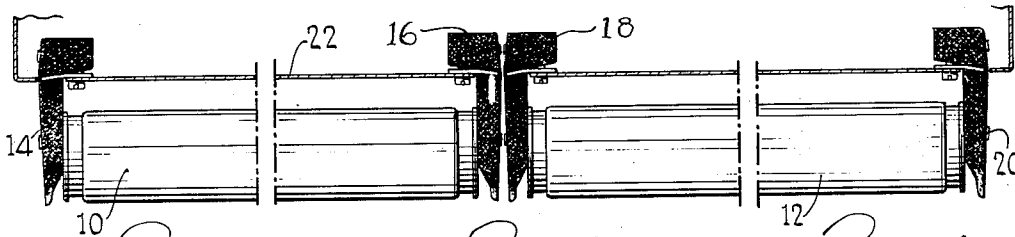


Fig. 3.

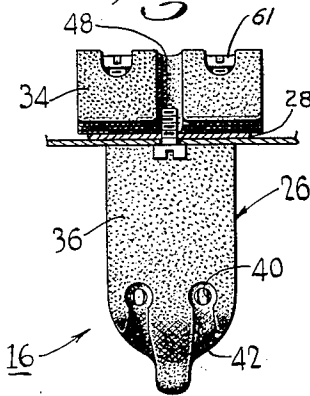


Fig. 2.

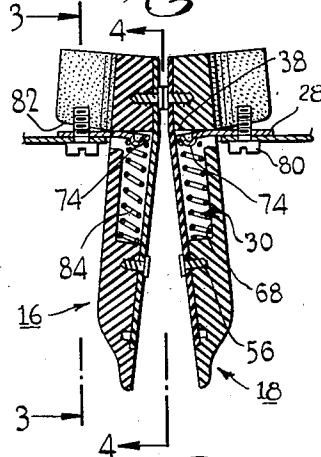


Fig. 4.

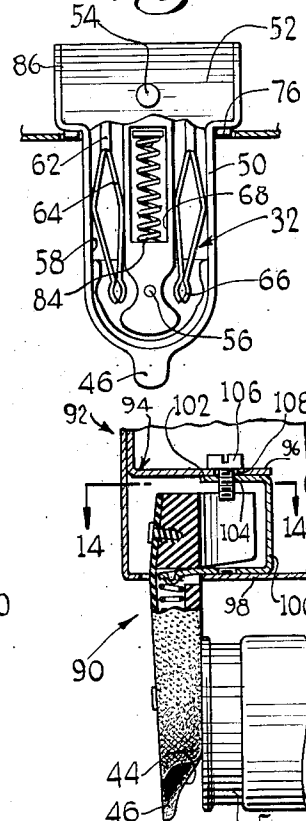


Fig. 5.

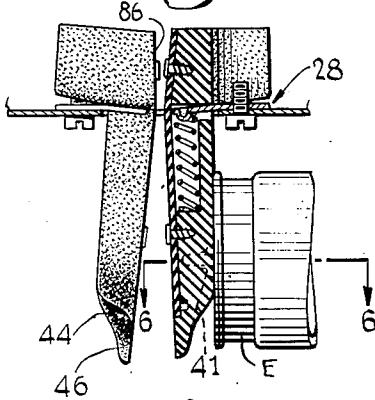


Fig. 6.

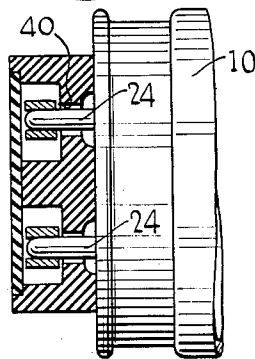
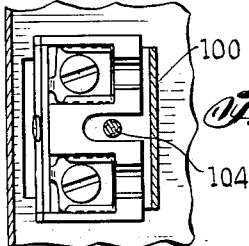


Fig. 13.

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Fig. 14.



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2 Sheets-Sheet 2

Fig. 7.

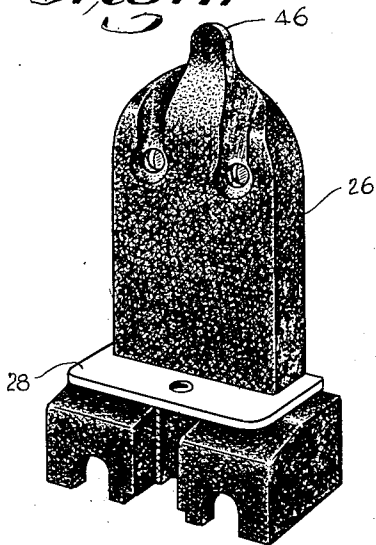


Fig. 12.

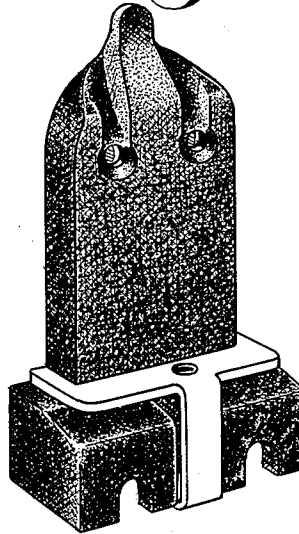


Fig. 8.

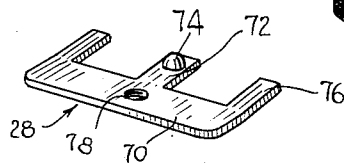


Fig. 9.

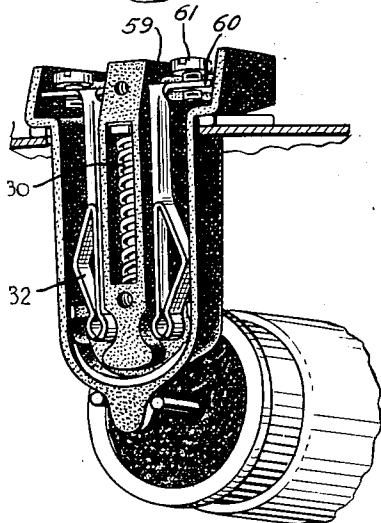


Fig. 10.

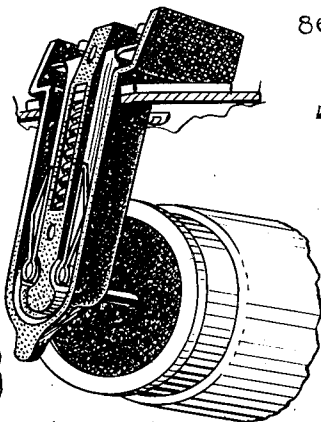
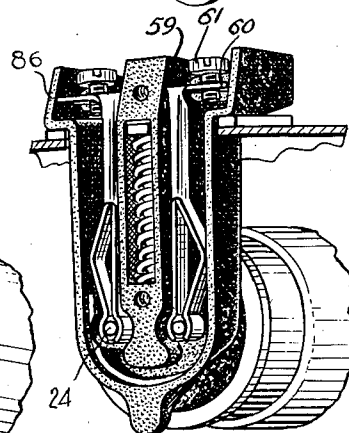


Fig. 11.



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2,468,481

LAMP HOLDER

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Application November 8, 1945, Serial No. 627,367

7 Claims. (Cl. 173—328)

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This invention relates to lamp holders. More particularly, it pertains to lamp holders which are adapted to individually support and supply power to the ends of an electric illuminating device such as an elongated fluorescent lamp by coaction with the projecting contact pins on the ends thereof.

The lamp holder is characterized by its free pivotal movement towards and away from an end of the electric lamp and by the presence of a mechanism for urging the lamp holder into coupling engagement with the projecting contact pins, and, in these respects, it is patterned upon the lamp holder shown and described in copending application, Serial No. 469,227, filed on December 16, 1942, by Charles E. Dansereau, now Patent No. 2,403,968, dated July 16, 1946, both the instant application and said copending application being owned by the same assignee.

It is a primary object of the present invention to provide a lamp holder of the character described which is a general improvement over the aforementioned lamp holder and is simpler both to construct and operate.

More specifically, it is an object of the present invention to provide a lamp holder of the character described which is more readily flexed by a lamp upon insertion thereof and is more easily assembled than the lamp holder described in the aforesaid patent application, and which, when mounted in back-to-back relationship with a similar lamp holder, can be placed closer thereto than could the lamp holder of said copending application.

It is another object of the invention to provide a lamp holder of the character described which is so constructed that it can be easily manipulated to release a lamp, although of pleasing appearance and not projecting below the lamp where it could be accidentally struck.

It is a further object of the present invention to provide a lamp holder of the character described which is capable of either flush or surface mounting.

Other objects of the invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists of the features of construction, combinations of elements and arrangements of parts which will be exemplified in the constructions hereinafter described, and of which the scope of application will be indicated in the appended claims.

In the accompanying drawings, in which are shown various possible embodiments of the invention,

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Fig. 1 is a side elevational view of two pairs of lamp holders embodying the invention, flush mounted on a support and cooperatively holding two fluorescent electric discharge lamps in aligned end-to-end or tandem relationship;

Fig. 2 is a vertical central sectional view through two adjacent lamp holders mounted on a support in back-to-back relationship;

Figs. 3 and 4 are front and rear views of one of the lamp holders shown in Fig. 2, these views being taken substantially along the lines 3—3 and 4—4 respectively of Fig. 2;

Fig. 5 is a side elevational view in partial section of a pair of back-to-back lamp holders, in one of which an end of a fluorescent lamp is disposed;

Fig. 6 is an enlarged sectional view taken substantially along the line 6—6 of Fig. 5;

Fig. 7 is a perspective view of one of the lamp holders shown in Fig. 1;

Fig. 8 is a perspective view of the mounting plate employed with this lamp holder;

Figs. 9, 10 and 11 are fragmentary perspective views showing the manner in which a fluorescent lamp is coupled with a lamp holder embodying the invention;

Fig. 12 is a perspective view of a modified lamp holder embodying the invention and adapted for surface or flush mounting;

Fig. 13 is a side elevational view in partial section of the lamp holder shown in Fig. 12 as it appears when surface mounted; and

Fig. 14 is a sectional view taken substantially along the line 14—14 of Fig. 13.

Referring now in detail to the drawings, and more particularly to Figs. 1—11, 10, 12 denote a pair of conventional fluorescent electric discharge lamps mounted by means of two pairs of lamp holders 14, 16, 18, 20 on a suitable support 22 which, by way of example, comprises a housing for the ballast and wiring, not shown, customarily associated with lamps of this nature. The lamps are of the incandescent filament type and each has a pair of projecting contact pins 24 (Fig. 7) at both ends thereof which, as is usual in the lighting field, are adapted to be coupled with the lamp holders 14—20 to provide both electric power and physical support for the lamp.

All the lamp holders are of the same construction and the lamp holder 16 will be described in detail by way of example. This lamp holder basically includes four essential elements, to wit, a body 26, a mounting plate 28 adapted to be secured firmly to the support 22 and pivotally secured to the body 26, means 30 for resiliently

urging the body into coupling engagement with the contact pins 24, and means 32 to effect a detachable electric connection between said pins and a source of power.

It will be appreciated as the description proceeds that the instant invention is primarily concerned with the construction of the body, of the mounting plate, and of an end of the resilient means 30, so that, although an electric connecting means 32 and the remainder of the resilient means 30 are necessary to the proper operation of the lamp holder, the specific construction thereof forms no part of the present invention and is hereinafter described in detail only by way of example.

The body 26, which is preferably moulded from a plastic electrically non-conductive material, comprises a pedestal 34 and an elongated integral standard 36. The front of the standard, i. e., the surface facing the lamp, is generally level and unbroken. However, said surface is pierced adjacent the pedestal by a through transverse slot 38 which is centrally located at the base of the standard and is adapted to pivotally engage a portion of the mounting plate 28. At the lamp receiving end of the pedestal, a pair of through transverse apertures 40 are provided, the same being designed to freely pass the lamp contact pins 24.

In addition, two grooves 42 are formed in the front of the standard. These grooves extend from the free end of the standard up to the apertures 40 and serve to guide the pins into the apertures upon insertion of a lamp. The bases 41 of said grooves lessen gradually in depth from the edge of the standard to the apertures so as to cam the socket outwardly when the tips of the pins press against the bottoms of the grooves upon insertion of a lamp.

Pursuant to the invention, the free end 44 of the front face of the lamp holder slopes away from the lamp beginning at a point between the apertures 40 and the tip of the standard.

As will be pointed out hereinafter, this construction of the standard permits an end of the lamp to engage a lamp holder and cam the same outwardly to a position in which the grooves 42 are positioned to permit entry of the contact pins 24.

Further, pursuant to the invention, a projection or finger 46 depends from the tip of the standard, the same being set back from the front of the standard. This finger is much thinner than the main portion of the standard, and the base of the finger runs smoothly into the sloped front surface 44 of the free end of the standard. By virtue of such arrangement, the front surface of the finger 46 is spaced from the end E of a lamp mounted in the lamp holder, as shown in Fig. 5. The width of the finger is less than the spacing between the apertures 40 in order to permit both contact pins 24 to clear the same during insertion of a lamp. In addition the tip of the finger is rounded toward the sides, as seen in Fig. 3, so as to cam the contact pins and lamp to proper position, if not placed there initially.

The front of the pedestal has a deep central vertical groove 48 provided therein to facilitate attachment of the mounting plate 28 to the support 22.

A marginal ledge 50 at the rear of the lamp holder, and extending around all but the top edge thereof, defines a seat which receives a back cover plate 52 (Fig. 4) of an electrically non-

conductive sheet held in position by drive screws 54 threaded into bores 56 (Fig. 2) opening at the rear face of the lamp holder. Said rear face is also provided with a pair of longitudinally extending elongated spaced recesses 58 adjacent the lateral portions of the ledge 50 to accommodate the means 32 for supplying electric power to a lamp. These recesses run into a pair of forwardly extending recesses 59 at the top of the pedestal.

Any suitable means may be employed for supplying electric power to the lamp and, by way of example, said means as illustrated herein comprises contacts each of which is formed from resilient electrically conductive metallic sheet stock and includes a base 60 which is received in one of the forwardly extending recesses. Said base is tapped to receive a binding screw 61. A contact shank 62, which extends integrally away from the contact base at right angles thereto, comprises a pair of abutted wall portions joined by a central fold. Each wall portion has an extension 64 terminating at an inwardly concave pin-engaging blade or tip 66. The contacts are so formed that their tips normally either touch or are spaced apart a distance less than the diameter of a lamp contact pin whereby the extensions 64 urge said tips into good frictional engagement with a lamp pin. The extensions are spaced apart and engage opposite walls of the elongated recesses 58 at points nearer the pins than the contact shanks 62. By thus limiting outward flexion of the relatively long extensions to less than the full lengths thereof, engagement pressure on the contact pins is materially increased.

A third longitudinally extending elongated recess 68 is formed on the rear face of the lamp holder between the recesses 58. The recess 68 has its upper end terminate at the rear of the slot 38 and serves to house the means 30 for resiliently urging the body into coupling engagement with the contact pins.

The mounting plate 28 is composed of a rigid sheet of any form-maintaining material, e. g. heavy gauge sheet steel, and includes a flat body portion 70 slightly wider than the standard, and a flat tongue 72 which extends freely through the slot 38 and into the recess 68. Said tongue is approximately coplanar with the body portion, but may slope slightly downwardly therefrom, as seen in Fig. 2, in order to allow the fronts of the lamp holders to be inclined slightly toward each other when idle. This enables the lamp holders to assume an approximately vertical position when a lamp is mounted therein (see Fig. 5).

The foregoing result also depends upon the shape of the slot 38 which in the present case is shown as being substantially normal to the face of the lamp holder standard.

A large downwardly extending nib 74 is formed at the tip of the tongue for coaction with the means to resiliently urge the body into coupling engagement with the contact pins.

It may be observed that the slot 38 is downwardly enlarged at the center thereof to permit free passage of said nib during assembly of the lamp holder. The mounting plate may also be provided with a pair of lateral flat arms 76 which embrace the standard on both sides thereof adjacent the pedestal 34.

A threaded aperture 78 is tapped through the body portion of the plate to afford means for firmly attaching said plate to the support 22. Such attachment may be effected by a screw 80.

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Alternatively the head of the attaching screw 80 may be disposed on the upper side of the mounting plate and its shank threaded into a tapped aperture in the support, and it is for such modified attachment that the groove 34 is provided in the pedestal.

It will be observed that the mounting plate lies on the upper surface of the support 22 in order to conceal said plate; however, it is within the scope of the invention to place the plate on the lower surface of the support, if desired, and to this end to space the slot away from the pedestal a distance at least equal to the thickness of the thickest support likely to be employed in the field.

In order to locate the fulcrum about which rocking takes place in approximately the plane of the base of the central pins, so that a minimum bending stress is applied to the pins during insertion or removal of a lamp, the overhanging portion of the bottom face 82 of the pedestal is undercut, as by sloping it away from the mounting plate 28; the extent of the undercut also serves to limit rocking movement of the lamp holder away from the lamp. The undercut terminates where the pedestal merges into the standard thereby positioning the rocking fulcrum at the front end of the slot 38 and, more specifically, as will be soon appreciated, at the upper edge of the slot, i. e., the edge furthest from the standard.

The means 30 for resiliently urging the body into coupling engagement with the contact pins comprises a spring 84 housed in the recess 68 and held under compression between the bottom of said depression and the under surface of the tongue 72. This spring may be of any suitable construction, a helical spiral spring being illustrated by way of example. Pursuant to a feature of my invention the end of the spring which rests against the tongue is apertured to receive snugly the nib 74. Where this construction is employed the spring additionally serves to captively secure the plate 28 to the lamp holder body.

According to another feature of my invention, the upper part 85 of the rear face of the lamp holder (above the slot 38) converges upwardly toward the front face of the lamp holder, and the lower part of the rear face (below the slot 38) converges downwardly towards the front face. The purpose of this opposite convergence is to enable the lamp holders to be placed in extremely close, back-to-back relationship for tandem mounting without interfering with insertion or removal of a lamp.

The lamp holders are employed as follows:

They are conventionally flush mounted by slipping the standard through a hole in the housing and fastening the mounting plate with the screw 80. Back-to-back mounted lamp holders inserted in the same hole have the high regions of the back—where the oppositely sloping parts meet—brought into almost contacting relationship. The slope of the upper parts is such that at this time the upper parts of adjacent empty lamp holders are vertical and, therefore, almost in abutment (see Fig. 2).

A lamp is inserted in the lamp holders by aligning the lamp ends with the lamp holders, and then pushing the lamp upwardly. If the pairs of contact pins are not horizontally aligned the upper pin will strike the guiding finger 46 off center and rotate the lamp into proper position wherein the two pins at each end of the lamp will straddle said finger as illustrated in Fig. 9.

Depending upon the construction of the lamp ends, at or before the time the pins straddle the

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finger the ends of the lamp engage the sloping surfaces 44 at the tips of the standards. Upward movement of the lamp cams the lamp holders outwardly against the pressure exerted by the springs 84 until a position is reached at which the pins enter the grooves 42. Continued upward movement of the lamp causes the pins to swing the lamp holders further outwardly until the pins reach a point just short of the apertures 40, as shown in Fig. 10. The slope of the lower parts of the rear face is such that at this time the rear faces of adjacent lamp holders will be approximately parallel and almost in abutment if the other lamp holder of the back-to-back pair has a lamp mounted therein.

Further upward movement of the lamp causes the pins to become aligned with the apertures 40, allowing the lamp holders to snap inwardly under the pressure of the springs 84 and thus automatically secure the lamp in place. This mounted position of the lamp is shown in Fig. 11.

If desired the foregoing procedure may be modified by axially moving the pins at one end of a lamp into the apertures of a lamp holder and then pressing upwardly the opposite end of the lamp to cause the associated lamp holder to flex outwardly until the pins reach the apertures 40.

It is pointed out that in mounted position of the lamp the finger 46 does not project below the lamp sufficiently to either present an unattractive appearance or to be liable to be accidentally struck. Nevertheless, due to the set back of said finger, a thumb may be inserted readily between the same and the end of a lamp in order to press the lamp holder outwardly and permit the lamp to be disengaged and removed.

Sometimes it is desirable to mount the lamp holder on the surface of a housing rather than flush therewith in the manner illustrated in the preceding figures, and accordingly, I have provided a lamp holder embodying the present invention but modified to be capable of such alternative mounting. This modified lamp holder, denoted by the numeral 90 in Figs. 12-14, is shown in conjunction with a housing 92 having an angle iron 94 on whose horizontal flange 96 the lamp holder 90 is to be mounted. A covering plate 98 optionally may be employed to conceal the lamp holder pedestal. Said lamp holder is, in all respects save one, identical with the lamp holders 14-20, the difference residing in an additional element on the mounting plate to permit surface mounting without interfering with the pivotal movement of the lamp body relative to the housing. Said additional element comprises a centrally disposed erect extension 100 integrally projecting from the rear edge of the mounting plate. The projection terminates at its upper end above the pedestal in a horizontal leg 102 provided with a tapped aperture 104. The lamp holder is secured to the angle iron 94 by a screw 106 freely passing through an aperture 108 in said angle iron and threadably engaging the tapped aperture in the horizontal leg of the mounting plate. It will be obvious that a surface mounted lamp holder functions in the same manner as a flush mounted lamp holder upon insertion and removal of a lamp.

It will thus be seen that there is provided a lamp holder which achieves the several objects of the invention, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above

set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described the invention, I claim as new and desire to secure by Letters Patent:

1. A lamp holder of the character described for mounting on a support a lamp having a pair of spaced contact pins at each end thereof, said lamp holder comprising a body having a pair of transverse apertures to receive a pin at one end of the lamp, said apertures extending inwardly of the body from the front face thereof, electrical contacts carried by said body and disposed so as to detachably engage pins in said apertures, means to mount said body for free pivotal movement relative to said support so that said apertures can be swung toward and away from said pins, said mounting means comprising an apertured plate adapted to be firmly attached to the support, said plate having a tongue extending into an aperture in the front face of the body, said body having a recess in its rear face into which said last named aperture extends whereby said body can rock on said plate, and a compression spring housed in said recess and bearing on said tongue to resiliently bias said body toward said lamp, said spring having an aperture in the end thereof bearing on said tongue, said tongue having a projection received in the aperture in the spring to captively secure the plate to the body, the pin receiving apertures being remote from the axis of pivotal movement of the body and on the side thereof on which the lamp is disposed.

2. A lamp holder of the character described for mounting on a support member a lamp having at least one contact pin at each end thereof, said lamp holder comprising a body having at least one transverse aperture to receive a pin at one end of the lamp, said aperture extending inwardly of the body from the front face thereof, an electrical contact carried by said body and disposed so as to detachably engage a pin in said aperture, means to mount said body for free pivotal movement relative to said support so that said aperture can be swung toward and away from said pin, said mounting means comprising an apertured plate adapted to be rigidly attached to the support, said plate having a tongue extending into an aperture in the front face of the body, said body having a recess in its rear face into which said last named aperture extends whereby said body can rock on said plate, and a compression spring housed in said recess and bearing on said tongue to resiliently bias said body toward said lamp, said spring having an aperture in the end thereof bearing on said tongue, said tongue having a projection received in the aperture in the spring to captively secure the plate to the body, the pin receiving aperture being remote from the axis of pivotal movement of the body and on the side thereof on which the lamp is disposed.

3. A lamp holder of the character described for mounting on a support member a lamp having at least one contact pin at each end thereof, said lamp holder comprising a body having at least one transverse aperture to receive a pin at one end of the lamp, said aperture extending inwardly of the body from the front face thereof, an electrical contact carried by said body and disposed so as to detachably engage a pin in said aperture, means to mount said body for free pivotal movement relative to said support so that

said aperture can be swung toward and away from said pin, the pin receiving apertures being remote from the axis of pivotal movement of the body and on the side thereof on which the lamp is disposed, the rear face of the body converging toward the front face thereof in opposite directions from a high region on the rear face adjacent the mounting means, and means to resiliently bias said body toward said lamp, the pin receiving aperture being remote from the axis of pivotal movement of the body and on the side thereof on which the lamp is disposed.

4. A lamp holder of the character described for mounting on a support member a lamp having at least one contact pin at each end thereof, said lamp holder comprising a body having at least one transverse aperture to receive a pin at one end of the lamp, said aperture extending inwardly of the body from the front face thereof, an electrical contact carried by said body and disposed so as to detachably engage a pin in said aperture, means to mount said body for movement toward and away from the lamp, means to resiliently bias said body toward said lamp, the pin receiving aperture being remote from the mounting means and on the side thereof on which the lamp is disposed, and a finger extending away from the end of the body on the same side of the mounting means as the aperture, said finger being set back from the front face of the body.

5. A lamp holder of the character described for mounting on a support member a lamp having at least one contact pin at each end thereof, said lamp holder comprising a body having at least one transverse aperture to receive a pin at one end of the lamp, said aperture extending inwardly of the body from the front face thereof, an electrical contact carried by said body and disposed so as to detachably engage a pin in said aperture, means to mount said body for movement toward and away from the lamp, means to resiliently bias said body toward said lamp, the pin receiving aperture being remote from the mounting means and on the side thereof on which the lamp is disposed, a finger extending away from the end of the body on the same side of the mounting means as the aperture, said finger being set back from the front face of the body, and a sloping portion interconnecting the base of the finger and the front face of the body.

6. A lamp holder of the character described for mounting on a support a lamp having a pair of spaced contact pins at each end thereof, said lamp holder comprising a body having a pair of transverse apertures to receive a pin at one end of the lamp, said apertures extending inwardly of the body from the front face thereof, electrical contacts carried by said body and disposed so as to detachably engage pins in said apertures, means to mount said body for movement toward and away from the lamp, means to resiliently bias said body toward said lamp, the pin receiving apertures being remote from the mounting means and on the side thereof on which the lamp is disposed, said body having grooves extending from the pin receiving apertures away from the mounting means to an edge of the body, said grooves increasing in depth toward said edge, a finger extending in the same direction away from the tip of the body between the grooves, said finger being narrower than the space between said contact pins and being set back from the front face of the body, and a sloping portion

interconnecting the base of the finger and the front face of the body between the pin receiving apertures.

7. A lamp holder of the character described for mounting on a support member a lamp having at least one contact pin at each end thereof, said lamp holder comprising a body having at least one transverse aperture to receive a pin at one end of the lamp, said aperture extending inwardly of the body from the front face thereof, an electrical contact carried by said body and disposed so as to detachably engage a pin in said aperture, means to mount said body for movement toward and away from the lamp, means to resiliently bias said body toward said lamp, the pin receiving aperture being remote from the mounting means and on the side there-

of on which the lamp is disposed, and a tongue integral with said mounting means and extending above the end of the body remote from the lamp, said tongue terminating in a mounting element adapted to be rigidly secured to the support member.

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