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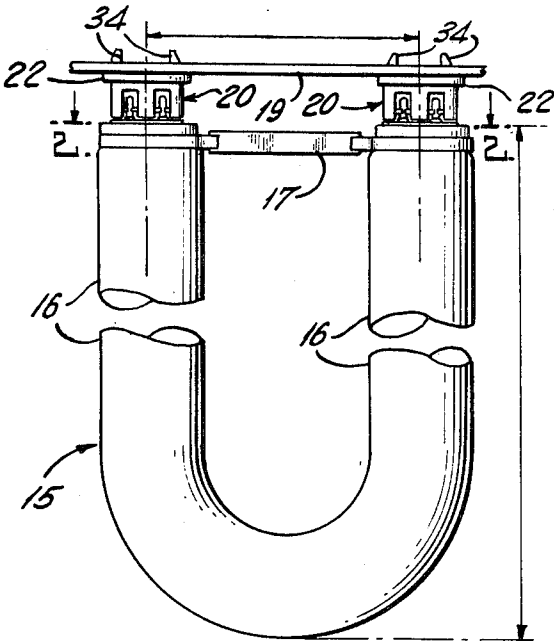
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[54] **SELF-ADJUSTING LAMPHOLDER FOR U-SHAPED
FLUORESCENT LAMP**
7 Claims, 2 Drawing Figs.

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339/128
[51] Int. Cl..... **H01r 33/08**
[50] Field of Search..... **339/50-57,**
119, 128; 240/51.11, 52, (Inquired);
248/(Inquired)

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ABSTRACT: The present invention relates to a self-adjusting lampholder which is adapted for use with a U-shaped fluorescent lamp having spaced legs and a bipin base at the end of each leg. Such a lampholder comprises a socket body adapted to receive a pair of lamp pins therein and a mounting member which permits both angular and lateral movement of the lamp engaging portions of the lampholder relative to a fixture panel or other support. The mounting member also includes means for engaging with and detachably securing the lampholder to a fixed panel or the like. A pair of such lampholders are employed to receive and make electrical connections with pairs of lamp pins extending from bases at the spaced ends of the two legs of the lamp.



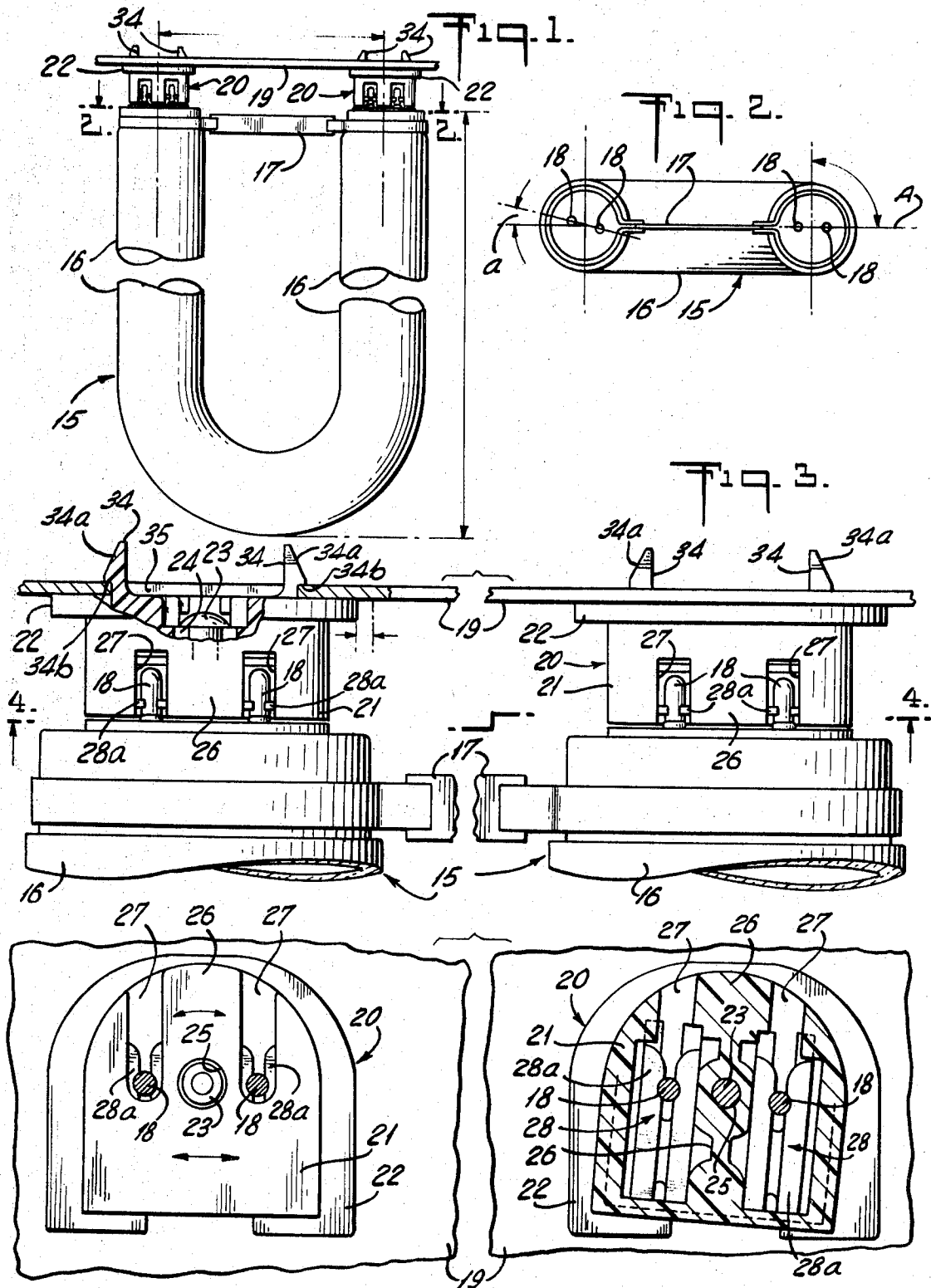


Fig. 4.

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Fig. 5.

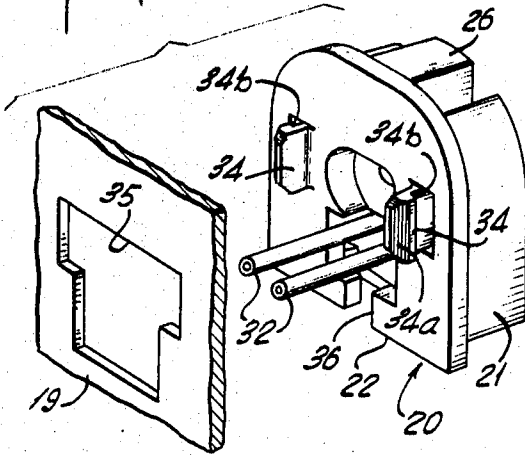


Fig. 6.

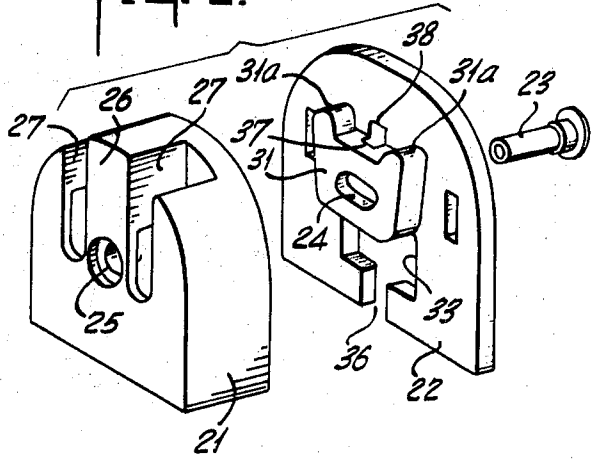


Fig. 7.

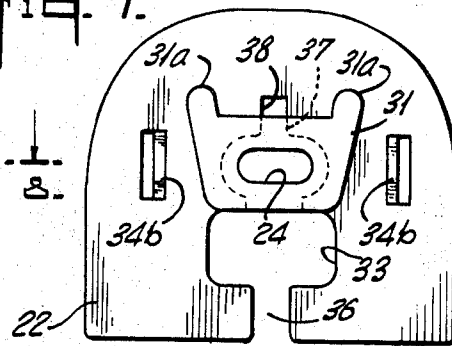


Fig. 11.

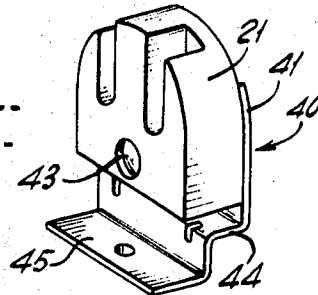


Fig. 12.

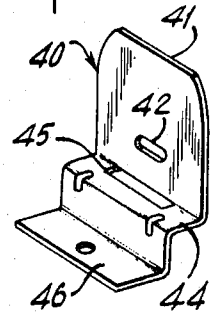


Fig. 8.

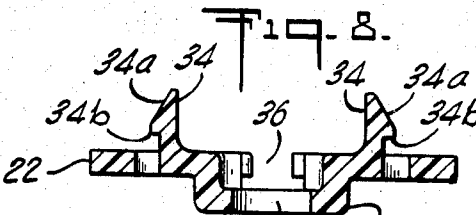


Fig. 13.

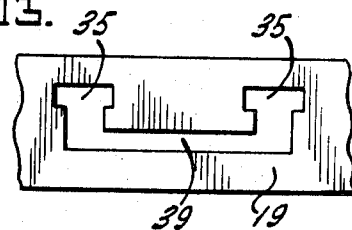


Fig. 9.

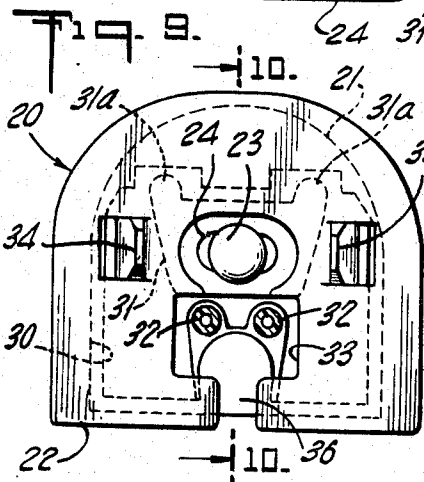
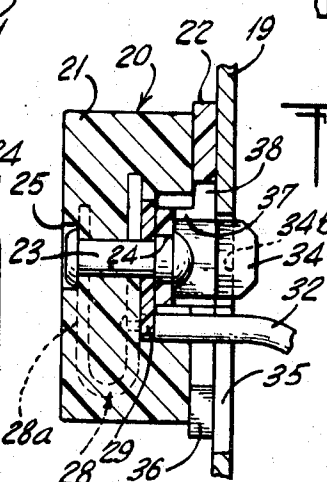


Fig. 10.



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SELF-ADJUSTING LAMPHOLDER FOR U-SHAPED FLUORESCENT LAMP

The present invention relates to a self-adjusting lampholder for use with a U-shaped fluorescent lamp.

One object of the present invention is to provide a lampholder for a U-shaped fluorescent lamp which is adjustable both angularly and laterally relative to a support so as to permit the introduction therein of contact pins carried by the lamp without difficulty and without damage to the lamp. In a lighting fixture for a U-shaped lamp, a pair of lampholders is employed to receive and establish electrical connections with spaced pairs of lamp pins extending from the legs of the lamp at the base ends thereof. The angular and lateral adjustment of the lampholders relative to the fixture permits the lamp pins to be introduced into each of the lampholders without difficulty despite certain variations in the structure and dimension of different lamps of a given size.

Another object of the invention is to provide a self-adjusting lampholder in which the contacts grip the lamp pins and securely support a U-shaped lamp in a lighting fixture. This also reduces the possibility that the lamp pins may become disengaged from the contacts by endwise movement of the lamp in the fixture. In addition, the contacts engage with the lamp pins at points spaced from their outer ends to allow for possible differences in the lengths of the lamp pins or the legs of the lamp which may occur in manufacture of the lamp.

A further object of the invention is to provide a self-adjusting lampholder for a U-shaped fluorescent lamp which can be removably mounted in a preformed opening in a panel or other support forming part of a lighting fixture without the use of screws or the like.

These and other objects and advantages of the present invention become apparent and will be more clearly understood from the following description and the accompanying drawings, in which:

FIG. 1 is a plan view illustrating a pair of lampholders embodying the present invention mounted on a panel forming part of a lighting fixture with a U-shaped fluorescent lamp installed therein;

FIG. 2 is an end view of the fluorescent lamp shown in FIG. 1 and illustrates the position of the lamp pins extending from the base ends of the spaced legs of the U-shaped lamp;

FIG. 3 is a fragmentary view in partial section illustrating a portion of the lamp installation shown in FIG. 1 on an enlarged scale;

FIG. 4 is a section view taken along the line 4-4 of FIG. 3;

FIG. 5 is an exploded view in perspective illustrating one of the lampholders shown in FIG. 1 and a portion of the fixture panel containing an opening for reception of the lampholder as seen from the rear;

FIG. 6 is an exploded view in perspective illustrating certain parts of the lampholders shown in FIG. 5 as seen from the front;

FIG. 7 is a plan view of a mounting plate forming part of one of the lampholders shown in FIG. 1 as seen from the front;

FIG. 8 is a section view taken along line 8-8 of FIG. 7;

FIG. 9 is a plan view of one of the lampholders shown in FIG. 1 as seen from the rear;

FIG. 10 is a section view taken along line 10-10 of FIG. 9;

FIG. 11 is a perspective view of a modified form of lampholder embodying the invention;

FIG. 12 is a perspective view of the mounting plate forming part of the lampholder shown in FIG. 11; and

FIG. 13 is a plan view of a fixture panel containing lampholder mounting openings which may be used for different sizes of lamps where the lampholders have been prewired to other components in the fixture.

Generally speaking, a U-shaped fluorescent lamp may be used in a lighting fixture in place of two straight lamps of a lower output or wattage to obtain greater lamp efficiency and to reduce the number of components required. For example,

in a 2' x 2' fixture, two straight lamps each of which requires two lampholders and a ballast, can be replaced by a U-shaped lamp which requires only two lampholders and a single ballast.

In a lighting fixture for a U-shaped lamp, the two lampholders required are mounted in spaced relation to each other on a panel or other suitable support in positions to receive and establish electrical connections to lamp pins extending from base ends of spaced tubular legs which are connected at their other ends to form a tubular U-shaped envelope or enclosure of glass which is illuminated when the lamp is in operation. A pair of lamp pins extend outwardly from the base end of each of the legs and insertion of the two pairs of lamp pins into their respective lampholders takes place at more or less the same time. To permit insertion of the lamp pins in their respective lampholders without difficulty, the dimensions of the lamps and the positioning of the contact pins must conform to established standards within close limits. For example, the legs of the lamp including the lamp pins should be the same length and the pairs of lamp pins carried by the two legs should be located in a common horizontal plane bisecting the center of each leg of the lamp. In addition, the spacing between the base ends of the legs and the lamp pins carried thereon should be the same for different lamps of a given size.

However, certain differences or deviations from the standards may be encountered in these respects due to manufacturing tolerances or the like and such deviations may make it difficult, or even impossible, to insert the lamp pins in their respective lampholders without damage to the fragile glass envelope of the lamp. As will be seen from the following description, lampholders made in accordance with the present invention are self-adjusting to different angular and lateral positions in a fixture to compensate for such deviations and thus, enable the lampholders to receive and make electrical connections to the lamp pins as the lamp is installed despite the possible differences. In addition, lampholders embodying the present invention incorporate contact elements which grip the lamp pins firmly and thus, tend to prevent forward movement of the lamp to a point where the lamp pins may become disengaged endwise from their respective contact elements.

Referring now to the drawings in detail and in particular to FIG. 1, there is a U-shaped fluorescent lamp 15 having a U-shaped tubular glass envelope with a pair of spaced oppositely disposed legs 16.

The free or base ends of the legs 16 may be connected by a spacer or strap 17 and a pair of spaced lamp pins 18 to which electrical connections are made for operation of the lamp, extend outwardly from the base end of each of the legs.

The lamp pins of both pairs should lie in a common horizontal plane, as indicated at A in FIG. 2, which bisects the base ends of the legs 16. However, as indicated at the left side of FIG. 2, it is possible that the pins of either or both sets may be displaced angularly relative to the common plane as indicated by the angle α .

As shown in FIGS. 1, 3 and 4, a panel 19 of sheet metal or other suitable material forms part of a lighting fixture (not shown) and a pair of self-adjusting lampholders 20 are mounted on the panel 19 in spaced relation to each other to receive and make electrical connections with the lamp pins 18 extending from the base ends of the spaced legs 16.

The lampholders 20 are identical to each other and each includes a socket housing or body 21 formed of insulating material which is adjustably secured to a mounting plate 22 by a shouldered rivet 23 or other suitable fastening device. As shown best in FIGS. 6 and 9, the shouldered pin or rivet 23 extends through an elongated opening 24 in the mounting plate 22 and it also extends through an opening 25 in a central vertical boss or rib 26 which divides the socket body into two contact compartments. The pin permits angular movement of the socket body 21 relative to the mounting plate 22 and the panel 19 while the elongated slot permits lateral movement of the socket body relative thereto. Such movement as required takes place as the result of introducing the lamp pins 18 into slotted openings 27 in the front of the socket body or housing

21 and then into engagement with contact elements 28 of brass or other conductive material located within the compartments in the socket body or housing 21.

As shown best in FIGS. 4 and 10, each of the lamp pin engaging contact elements 28 is U-shaped and has a forwardly disposed leg 28a which is bifurcated at its upper end to receive and firmly grip a lamp pin 18 inserted between the bifurcated end of the contact.

For forward legs of the contact elements 28 are located beneath the open upper ends of the slotted openings 27 in the socket body or housing 21 and are positioned immediately behind portions of the slotted openings which extend downwardly in the front of the socket body. Thus, the forward legs 28a of the contact elements 28 will engage with and grip the lamp pins at points spaced inwardly from their ends and thus, compensate for certain variations in the lengths of the pins or the legs of the lamp.

A sheet 29 of insulating material (see FIG. 10) located in a recess 30 formed in the rear of the socket body 21 closes the rear of the compartments and holds the contacts in place. A raised boss 31 formed on the mounting plate 22 extends into the recess 30 when the mounting plate is attached to the socket body. Projections or ears 31a carried by the raised boss 31 engage with sidewalls of the recess 30 when the socket body 21 is moved angularly relative to the mounting plate 22 and thus, limit such angular movement. Lateral movement of the socket body 21 relative to the mounting plate is limited by the dimensions of the elongated opening 24 in the mounting plate through which the pin 23 extends.

Electrical conductor wires 32 which are connected to each of the contact elements 28, extend rearwardly through openings in the closure sheet 29 and an opening 33 in the mounting plate 22 for connection to appropriate components (not shown) of the fixture.

In the lampholder shown in FIGS. 1-10, the mounting plate 22 is formed from a flexible material and may be molded from a plastic material such as nylon. A pair of spaced spring action mounting fingers 34 are formed on and extend outwardly from the rear face of the plate. Each of the mounting fingers has a downwardly and outwardly sloping outer end 34a which terminates at a shoulder 34b which is spaced from the opposing face of the plate. The spring mounting fingers 34 are spaced so that the outer ends 34a thereof will enter an opening 35 in the fixture panel or support 19. Thereafter, the outwardly sloping portions thereof engage with the sides of such opening and the flexibility of the fingers 34 and the mounting plate permits the spring fingers 34 to be forced inwardly or toward each other as they pass through the opening in the panel to a point where the shoulders 34b are located on the opposite side of the panel and snap into place. The shoulders then engage with the panel in opposition to the face of the plate and hold the mounting plate together with the socket body attached thereto in place on the panel. To promote flexibility and permit a slight buckling of the mounting plate under the forces exerted thereon during mounting of the plate on the panel, the lower portion of the mounting plate is separated by a slot 36 which extends from the lower edge of the plate to the opening 33. In addition, a groove 37 is formed in the upper portion of the boss 31 together with a slot 38 in the upper section of the mounting plate.

The conductor wires 32 which extend rearwardly from the lampholder 20 pass through a lower part of the opening 35 in the panel 19 when the lampholder is mounted on the panel. With this arrangement, the lampholder can be readily removed from the panel when desired by forcing the mounting fingers toward each other to disengage the shoulders 34b from engagement with the side edges of the opening 35 in the panel.

If desired, several openings 35 may be provided in the fixture panel 19 as shown in FIG. 13, to enable the fixture to be used with U-shaped lamps of different dimensions; i.e., lamps where the legs are spaced at different distances. This can be done without disturbing the wiring of the fixture by providing a slot 39 which connects the openings 35 in the panel and

through which the conductor wires 32 can be moved in shifting the lampholder.

In the form of the invention shown in FIGS. 11 and 12, the socket body or housing 21 is adjustably attached to a mounting bracket 40 formed of sheet metal or the like. The bracket 40 has a vertical rear wall 41 with an elongated slot 42 formed therein. The socket body 21 is attached to the rear wall of the bracket by a shouldered rivet 43 which extends through the elongated slot 42. This permits both angular and lateral movement of the socket body relative to the bracket.

The bottom of the socket body is located above a forwardly extending horizontal portion 44 of the bracket and engages therewith to limit angular movement of the socket body relative to the mounting bracket.

The horizontal portion of the bracket may be provided with an opening 45 through which the conductor wires may pass and a forwardly extending lip 46 may also be provided at the lower end of the bracket for attachment of the bracket to the fixture.

In the foregoing description, the same reference numerals have been used to identify corresponding parts in the several embodiments.

It will also be understood that various modifications and changes may be made in the several embodiments of the invention which are illustrated and described herein without departing from the scope of the invention as defined by the following claims.

I claim:

1. In a self-adjusting lampholder for a U-shaped fluorescent lamp having a pair of legs with spaced ends and a bipin base at the end of each leg, the combination which comprises:

- a. a socket body having a front face with a pair of open-ended slots formed therein;
- b. said slots being spaced apart to permit insertion therein of a pair of spaced lamp pins;
- c. a pair of contacts located in said socket body;
- d. each of said contacts being aligned with one of the slotted openings in the front face of the socket body for engagement with one of the lamp pins;
- e. a mounting plate of a flexible material adjustably secured to said socket body by a pin and slot connection;
- f. said pin and slot connection permitting both angular and lateral movement of the socket body relative to the mounting plate;
- g. spring fingers carried by and extending from a face of said mounting plate; and
- h. said spring fingers being positioned for detachable engagement with side edges of an opening in a fixture panel.

2. In a self-adjusting lampholder for a U-shaped fluorescent lamp, the combination as defined in claim 1 wherein:

- a. the mounting plate and the spring fingers are formed from a flexible plastic material.

3. In a self-adjusting lampholder for a U-shaped fluorescent lamp, the combination as defined in claim 1 wherein:

- a. the socket body has a recess in a rear face thereof;
- b. a stop member on the mounting plate extends into said recess; and

- c. said stop member being positioned for engagement with sides of said recess upon angular movement of the socket body relative to the plate.

4. In a self-adjusting lampholder for supporting and establishing electrical connections to a pair of spaced contact pins carried by and extending from an end of a fluorescent lamp, the improvement which comprises:

- a. a socket body of insulating material having a front face and a rear face;
- b. said body having a pair of spaced open-ended slots formed in the front face thereof for the reception therein of a pair of spaced contact pins carried by and extending from an end of a fluorescent lamp;
- c. a pair of spaced lamp pin engaging contacts mounted within said body and in alignment with the open-ended slots therein;

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- d. means for supporting said socket body and permitting angular and lateral movement of the body relative thereto;
 - e. said supporting means including a mounting plate having an elongated opening formed therein and extending transversely of said plate;
 - f. a shouldered pin extending through said opening in the mounting plate and securing the mounting plate to the rear face of the socket body;
 - g. said pin having a headed portion extending over a portion of the mounting plate surrounding said opening and an enlarged shouldered portion extending through the elongated opening in the mounting plate; and
 - h. said shouldered portion of the pin terminating at and bearing against the rear face of the socket body with the socket body being movable angularly about the axis of said pin and with said pin being movable laterally in said slot in response to introduction of the pair of spaced lamp pins in the slotted openings in the front face of the socket body.
5. In a self-adjusting lampholder, the improvement as defined in claim 4, which includes:
- a. means for detachably securing said mounting plate and said socket body to a supporting panel which comprises;
 - b. a pair of spaced spring fingers carried by and extending

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- rearwardly from the mounting plate;
 - c. said spring fingers being positioned for engagement with side edges of an opening formed in the supporting panel and having outwardly extending shoulders formed thereon; and
 - d. said shoulders being spaced rearwardly from the mounting plate and extending over the side edges of the panel opening when the spring fingers are inserted therein.
6. In a self-adjusting lampholder, the improvement as defined in claim 5 wherein:
- a. the mounting plate and the spring fingers extending rearwardly therefrom are formed from a flexible plastic material.
7. In a self-adjusting lampholder, the improvement as defined in claim 5 wherein:
- a. the rear face of the socket body contains a recess having upstanding sidewalls;
 - b. a stop member carried by the mounting plate extends into said recess; and
 - c. said stop member being positioned to engage with the sidewalls of said recess and limit angular movement of the socket body relative to the mounting plate.

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