This invention relates to lighting fixtures and more specifically to a novel and improved device particularly used for mounting flush type fluorescent and other lighting fixtures.

The mounting of flush type lighting fixtures has presented a serious problem in industry and a considerable effort has been devoted to the improvement of installation devices and procedures. Most modern lighting is generally accomplished by recessing fluorescent or other fixtures within a preformed ceiling opening and prior mounting devices have utilized relatively complicated yokes and other similar structures secured to ceiling supporting members bordering the opening for attachment of the fixtures. In the case of fluorescent fixtures at least two such yokes are generally used for each fixture and means are included on the fixtures for the engagement of the yokes. This procedure forms essentially a two point support with the result that accurate alignment and leveling of the fixture relative to the ceiling is a difficult and tedious task.

The invention provides a novel and improved device which overcomes the above and other difficulties and is characterized by its simplicity, low cost and ease of operation. With this invention a fluorescent or other electric fixture can be secured in place in the ceiling opening and quickly and easily leveled relative to the surface of the ceiling. At the same time the fixture can be removed from the ceiling opening without the necessity for disassembling the fixture or even removal of the fluorescent tubes.

Another object of the invention resides in the novel and improved leveling device adapted to be carried by the lighting fixture that is operable upon insertion of a lighting fixture in a ceiling opening to engage ceiling supporting elements and level the fixture relative to the ceiling. To remove the fixture the fixture supporting elements are readily movable out of engagement with the ceiling supporting elements.

A still further object of the invention resides in a novel and improved device for supporting fluorescent and other electric fixtures.

The above and other objects and advantages of the invention will become more apparent from the following description and by the drawings forming part of the application.

In the drawings:

Fig. 1 is a perspective view of a flush type fluorescent fixture having a mounting means thereon in accordance with the invention;

Fig. 2 is a perspective view of one embodiment of the mounting means in accordance with the invention;

Fig. 3 is an exploded view of the embodiment of the invention shown in Figs. 1 and 2;

Fig. 4 is a view of one of the mounting devices shown in Fig. 1 taken in the direction of the arrow 4; and

Fig. 5 is a cross sectional view of Fig. 4 taken along the line 5—5 thereof.

Referring now to the drawings and more specifically to Fig. 1 thereof there is illustrated a fluorescent fixture 10 adapted to be mounted within an opening 11 in the ceiling 12. For simplicity merely the reflector of the fixture 10 has been illustrated and it is intended to be mounted within the opening 11 with the rim of the fixture substantially flush with the surface of the ceiling 12.

The ceiling 12 may be supported in any manner and the edge of the opening 11 is usually supported by metal furring or channels 13 which may constitute part of the ceiling support and in addition provide means for supporting the fixture 10.

As previously pointed out it has been customary in the past to utilize yokes or bridging members supported by channel members 13 and to which the fluorescent or other fixture is attached to hold it within the ceiling opening. According to the present invention leveling devices, generally denoted by the numeral 14, are secured to the fixture and are arranged as will be described so that the fixture can be inserted within the opening 11 and thereupon the levelers are operated to engage the channels 13 for supporting and leveling the fixture. In the instant embodiment of the invention four levelers 14 are provided at the ends of an elongated fluorescent fixture, though it will become apparent that any number of these levelers may be utilized.

Each leveler 14 comprises a substantially vertically disposed frame member 15 having a pair of legs 16 and 17. The leg 16 in the illustrated embodiment is somewhat longer than the leg 17 and terminates in an inclined tab 17' having an opening 18 therein. When the frame as described above is mounted on a fixture the tab 16' is inserted through an opening 19 in the fixture 10 as shown in Fig. 5 and the lower tab 17' is secured to the fixture by a screw 20 threadably engaging the opening 18 in the tab 17'. The lengths of the legs 16 and 17 are proportioned in accordance with the slope of the fixture sides so that the frame member 15 will be substantially vertical in the case of a ceiling mounted fluorescent fixture.

A lead screw 21 is carried by the legs 16 and 17 in a spaced parallel relation with the frame member 15 as shown in Figs. 2 and 5. The lead screw is provided with a slotted head 22 on the bottom thereof and the upper end extending beyond the leg 17 is deformed as indicated at 23 to retain the screw in place between the two legs. If desired any suitable means, such as cotter pins or the like, may be used in place of deforming the end of the screw as indicated on the drawing.

Support of the fixture 10 is accomplished by arms 24 carried by the lead screws 21 and these arms engage the channels 13 to support and adjust the fixture. More specifically the arms 24 in the instant embodiment of the invention are each provided with a pair of spaced parallel tabs 25 and 26 for receiving the lead screw 21. While the tabs 25 and 26 may include threaded openings for engagement of the lead screw 21, the instant embodiment of the invention uses a U-shaped spring clip 27 which engages one of the tabs and has an opening aligned with the tab openings for threadably engaging the lead screw 21. The outer end of each arm 24 may include a downwardly extending tab or stop 28 for engaging the channel and preventing accidental disengagement of the channel.

In order to facilitate adjustment of the arms 24 the fixture is provided with a plurality of openings in the sides of the reflector and in alignment with lead screw heads 22 so that the lead screws can be rotated when the fixture is in place in the opening 11. With this arrangement upon rotation of the lead screws 21 in a clockwise direction as shown in Fig. 4 the arms 24 will be moved in a clockwise direction until the corners 25' and 26' of the tabs 25 and 26 strike the frame member 15. When this occurs continued rotation in a clockwise direction as viewed in Fig. 4 will cause the arm to move
upwardly on the lead screw as shown in Fig. 5. In this way the arms can be moved automatically inwardly of the fixture and permit it to be inserted within the opening 11. When the fixture is in place the lead screws 21 are each turned in a counterclockwise direction as shown in Fig. 4 which moves the arms 24 outwardly until the arm engages the edge of the frame member 15 whereupon continued rotation in the same direction will move the arms downwardly against the channels 13 to lift the fixture into the opening 11 and adjust it relative to the ceiling. By individually adjusting the several lead screws 21 the fixture can be quickly and accurately leveled.

If for any reason it may be necessary to remove a fixture that has been installed with leveling devices in accordance with the invention, the fixture need only be held in position in the opening and each lead screw operated to move the associated arms upwardly. As soon as the tab 28 of each clears the channel 13 continued rotation of the lead screw will cause it to swing inwardly to the dotted line position shown in Fig. 4 whereupon the fixture may be lowered from the opening 11.

While only one embodiment of the invention has been shown and described it is apparent that other modifications, alterations and changes may be made without departing from the true scope and spirit thereof as defined by the appended claims.

What is claimed is:

1. The combination with an electric fixture, of at least one leveling device carried by said fixture for engagement with a fixture supporting member, said device comprising a fixedly positioned frame member having a substantially vertical portion and legs carried by said vertical portion securing said frame to the fixture, a lead screw carried by said leg members for rotatable engagement therewith and fixed against axial movement, and an arm threadably engaged with said lead screw and extending outwardly therefrom, said arm upon rotation of said lead screw in one direction being moved to a position extending outwardly from said fixture and in slideable engagement with said vertical frame portion and upon rotation of the lead screw in the other direction being movable angularly about the lead screw and inwardly toward said fixture.

2. The combination with an electric lighting fixture adapted to be mounted within an opening and wherein said opening includes supporting means about at least part of its periphery, of at least two leveling devices carried by said fixture for engagement of said supporting means, each of said devices including an elongated frame member fixedly secured to said fixture and positioned to permit the fixture to be moved into and out of said opening, a lead screw rotatably carried in substantially parallel relationship to said frame member, said fixture including an access opening adjoining one end of said screw for rotation thereof, and an arm threadably engaging said lead screw, said arm being moved outwardly from said fixture and longitudinally of said lead screw upon rotation of the screw in one direction to cause the arm to engage said supporting means, and said arm further being moved out of engagement with said supporting means and angularly inwardly of the fixture upon rotation of the screw in the other direction, the outermost position of said arm being determined by engagement of the arm with said fixed frame member.

References Cited in the file of this patent

UNITED STATES PATENTS

2,152,197 Levy ........................ Mar. 28, 1939
2,305,015 Langer ....................... Dec. 15, 1942
2,272,846 Lindstrom ................. Feb. 10, 1942
2,320,400 Bedell ..................... June 1, 1943
2,423,757 Dudge ..................... July 8, 1947
2,597,875 Kruger ................... May 27, 1952

FOREIGN PATENTS

484,226 Canada ....................... June 24, 1952