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FLUORESCENT LIGHTING ARRANGEMENT

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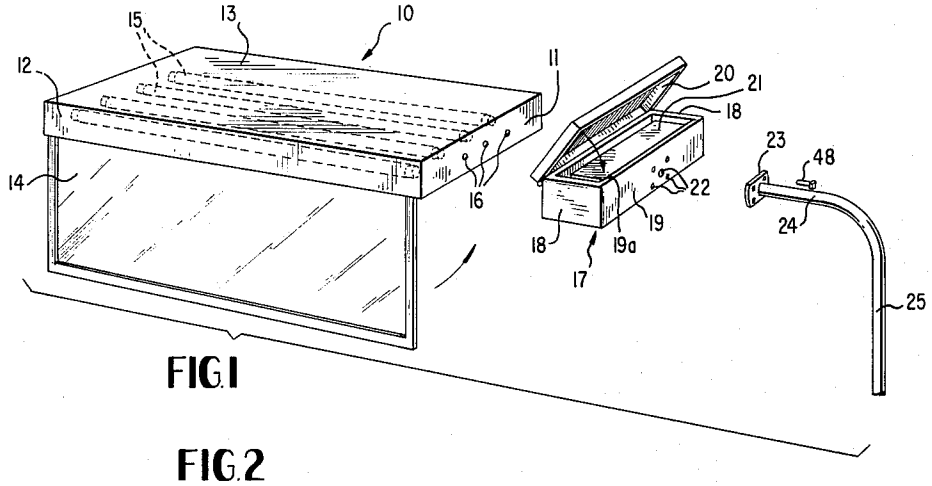


FIG. 1

FIG. 2

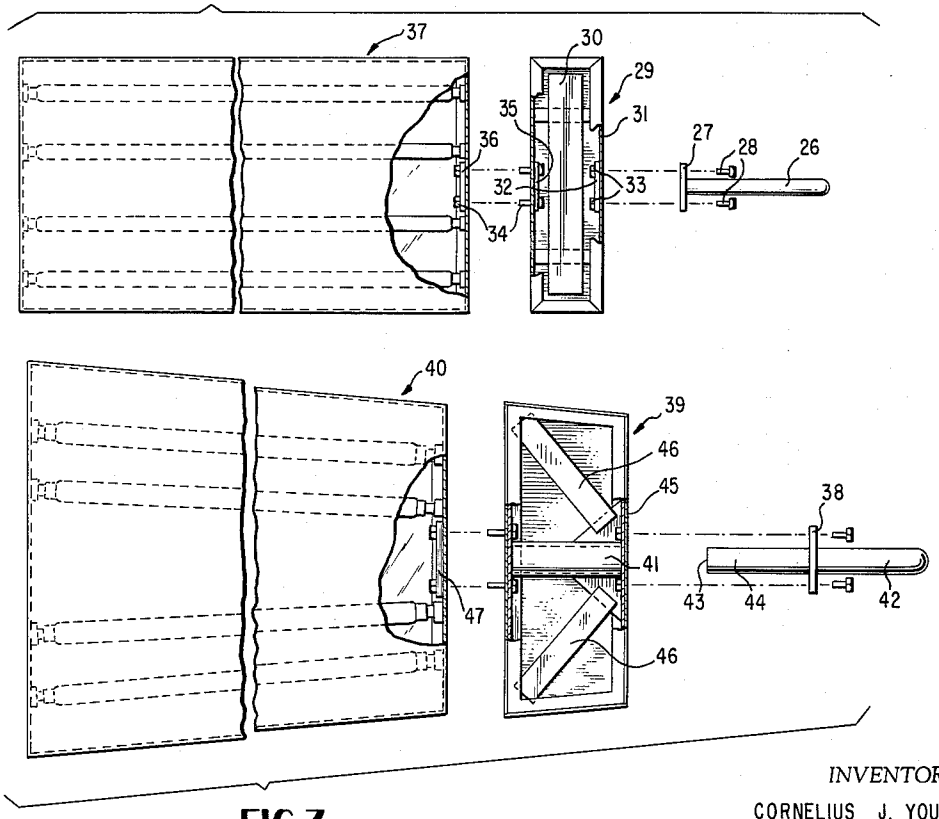


FIG. 3

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FLUORESCENT LIGHTING ARRANGEMENT

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This invention relates to indoor and outdoor lighting fixtures and more particularly to the construction of fluorescent outdoor lighting fixtures of the cantilever suspension type to render them easily manageable for assembly and quickly accessible for repair.

The primary object of this invention is to provide a cantilever arrangement for fluorescent lighting fixtures in which the greater portion of the weight of the fixture is concentrated adjacent or directly upon a supporting standard.

Another important object of this invention is to provide an improved construction for a fluorescent lighting fixture enabling detachment of a lamp-reflector housing from a separate ballast chamber without necessitating the removal of the ballast chamber form a support structure.

Another object of this invention is to provide a separate chamber for the lamps and the ballast unit of a fluorescent lighting fixture and to provide a removable or hinged lid for each chamber to enable ease in servicing.

With the foregoing and other objects in view, the invention resides in the following specification and appended claims, certain embodiments and details of construction being illustrated in the accompanying drawings in which:

FIGURE 1 is an exploded perspective view of a lighting fixture and support structure illustrating the detachable and accessible nature of an assembly within the contemplation of this invention;

FIGURE 2 is a plan view of detachable rectangular lamp and ballast housings and a support standard for attachment with the lighting fixture; and

FIGURE 3 is a plan view of a modified form of the invention illustration detachable fan-shaped lamp and ballast housings with a tubular passage in the ballast housing for insertion of a supporting pole.

Referring particularly to the drawings there is shown in FIGURE 1 a generally rectangular fluorescent lamp housing **10**. Housing **10** is provided with end walls **11**, side walls **12**, top wall **13**, and a movable, transparent bottom wall **14**—all components defining a generally box-shaped enclosure. Housing **10** is also provided with suitable electrical and mechanical connecting members to allow attachment of fluorescent lamps **15** within the enclosure. Preferably, bottom wall **14** is rotatably supported along one of its edges to an adjacent side wall **12** or end wall **11** with means provided to form a secured closure with an opposite end wall or side wall. Although, bottom wall **14**, as illustrated, is rotatably supported to housing **10** to facilitate access to the illuminating elements, it is recognized that wall **14** may be adapted for complete removal from lamp housing **10** or suitable means may be provided to permit sliding relationship between bottom wall **14** and lamp housing **10**. Preferably, at least one side wall or end wall of lamp housing **10** is provided with holes **16** to receive connecting means such as bolts (not shown) to enable attachment to a separate ballast housing **17**.

Ballast housing **17** is also shown in FIGURE 1 as a generally rectangular unit provided with end walls **18**, side walls **19** and **19***a*, a bottom wall (not shown) and a top wall **20** adapted for pivotal movement about a side wall or an end wall. The components of ballast housing **17** form a generally box-shaped enclosure for encasement of electrical transforming means **21**. At least

one side wall **19** or end wall **18** of ballast housing **17** is provided with holes **22** to receive connecting means such as bolt **48** for securing the ballast housing to a terminal connecting member **23** on an angularly disposed upper portion **24** of a generally vertical supporting standard **25**. The opposite side wall or end wall of ballast housing **17** is provided with holes for receiving suitable connecting means to enable easy junction of lamps housing **10** to ballast housing **17** and apertures through which electrical connections may be passed between the transforming means to the connecting members for lamps **15** within the lamp housing **10**.

Preferably, top wall **20**, as illustrated in FIGURE 1, is hinged to allow rotation about side wall **19***a* furthest from the terminal connecting member **23**. In the event that servicing of the transforming means is required, as a result of this manner of construction a person may easily attain access to the transforming means by boarding a ladder positioned against the supporting member **25**. However, top wall **20** may be adapted for complete removal from ballast housing **17** or suitable means may be provided to permit sliding relationship between top wall **20** and housing **17**.

The fluorescent lamp fixture of this invention, as generally described above, provides an improvement over the prior art relating to lamp fixtures and particularly the art relating to fixtures of the cantilever suspension variety in that ease in assembly and repair are obtained. Prior art devices of this nature have provided one housing for encasement of both the fluorescent lamps and their associated transformers. To meet the electrical requirements necessary to provide proper operation of the fluorescent lamps, the transformers are generally bulky and quite heavy. Oftentimes, the approximate range in length of the housing itself may vary anywhere from four feet to six feet and, depending on the number of lamps for which the fixture is adapted, the weight of the dual housing may vary from 50 to 125 pounds. The transformers, or ballasts to which they are commonly referred in the art, have been positioned at various locations within the dual housing, but at such a position within the housing that an undue moment of force is created around the supporting end of an upstanding structure.

Consequently, due to the size and great weight of the ballast, the material of which the fixture is constructed and the coupling between the fixture and the supporting structure are subjected to unwarranted stress. In the construction of the fixture, it is necessary to employ a heavy material capable of withstanding the stress. As a consequence, the overall weight of the unit is increased. The fixture is therefore quite awkward and difficult to handle, especially when it is to be positioned at an appreciable height above the ground. In the event that the dual unit requires servicing, such as adequately cleaning the inside of the fixture and/or refinishing the inner reflecting surface, it is necessary to remove the combination lamp and ballast unit from the standard. Since the dual unit is quite heavy, in order to hold it during detachment from the standard or even to hold it during attachment to the standard, the services of a boom-truck are often necessary.

It is therefore within the contemplation of this invention to provide an arrangement for a fluorescent lighting fixture in which the ballast is mounted directly adjacent to the supporting member or around the terminal of the supporting member. Thus, the largest portion of the weight of the fixture is concentrated at or directly upon the end of the supporting standard. As a result, the torque about the end of the supporting structure is substantially reduced and the stress upon the coupling between the fixture and supporting structure is minimized.

Furthermore, since the ballast is enclosed within a housing separate from a housing in which the fluorescent lamps are enclosed, the stress upon the material of the lamp housing will also be substantially reduced. Consequently, the lamp housing may be construced from a very light, narrow gauge, inexpensive material. By providing a separate, easily detachable, lightweight lamp housing, removing and servicing of the lamp portion of the fixture can be readily accomplished without removing the heavy transformer from the standard. Ease in mounting the fixture to the standard will also be attained.

Referring more particularly to FIGURE 2 there is shown a specific manner in which the lighting fixture of this invention may be mounted to a support member **26**. At the terminus of member **26** there is provided a connecting plate **27** having apertures (not shown) through which bolts **28** may be passed. Ballast housing **29** is shown as rectangular in shape and positioned such that the central axis of the generally longitudinal ballast **30** will be transverse to the central axis of the generally cylindrical support member **26** when the ballast housing is secured to the connecting plate **27**. Apertures within side wall **31** of ballast housing **29** are provided to coincide with the apertures in connecting plate **27** of member **26**. Depending on the thickness and strength of the material with which ballast housing **29** is constructed, a reinforcing plate **32** may be provided to back side wall **31**. The reinforcing plate **32** is provided with apertures coincident with the apertures in side wall **31**. Bolt members **28** and nut members **33** or any other suitable means may be employed to couple the ballast housing **29** to connecting plate **27**. Similar coupling means, such as illustrated, consisting of bolt and nut members **34** and reinforcing plates **35** and **36** or any other suitable coupling means are provided to secure a generally rectangular lamp housing **37** to ballast housing **29**. Provision of the reinforcing plate **36** is preferable since the material with which the lamp housing is constructed is generally of a lightweight substance and is generally capable of withstanding only a relatively light load.

In FIGURE 3 there is shown another manner of mounting the lighting fixture within the contemplation of this invention. The coupling means between connecting plate **38** and ballast housing **39** and between the ballast housing **39** and the lamp housing **40** are illustrated as a nut and bolt combination similar to coupling means illustrated in FIGURE 2. However, FIGURE 3 illustrates a ballast housing provided with a passage **41** therethrough and a support member **42** provided with a connecting plate **38** disposed inwardly from the terminus **43** of support member **42**. The passage **41** through ballast housing **39** is of sufficient size to permit insertion of the end portion **44** of supporting member **42**. When the ballast housing is mounted on the support member, connecting plate **38** preferably abuts side wall **45** of ballast housing **39** to enable the connecting means to establish a tight relationship between the connecting plate **38** and the side wall **45** of the ballast housing. Encased within the ballast housing **39** is a pair of transforming units **46**. The central axis of transforming units **46** may be angularly disposed, or may be transverse or parallel to the central axis of tubular passage **41**. A nut and bolt combination and a reinforcing plate **47** or any other suitable coupling means are provided to connect the lamp housing **40** to the ballast housing **39**.

Although the illustrations indicate that the lamp housing may be mechanically coupled to the ballast housing, it is recognized that the ballast housing may be provided with a seating arrangement, such as a saddle, so that the ballast housing may sit upon the end portion of the supporting structure. The supporting structure may then be provided with two connecting plates, one similar to plate **38**, as illustrated in FIGURE 3, and another similar to plate **27**, as illustrated in FIGURE 2. The ballast housing could then be coupled to plate **38** while the lamp housing is separately coupled to plate **27**. Conceivably, the ballast housing could thus be removed from the supporting structure without removing the lamp housing.

This invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed and desired to be secured by Letters Patent is:

1. A mounting arrangement for fluorescent lighting comprising in combination: a substantially vertical supporting standard having an angularly offset mounting terminus including a coupling plate; a separate and distinct ballast housing being generally rectangular in cross section and having interrelated end, side, top and bottom walls, said end walls being relatively longer than said side walls and said top wall being pivotally mounted to open upwardly for providing access therein; first means for fastening said coupling plate to one end wall of said separate and distinct ballast housing; transformer means selectively positioned and mounted internally of said separate and distinct ballast housing for providing ballast for fluorescent lighting; a separate and distinct fluorescent lamp housing having interrelated end, side, top and bottom walls, said bottom wall being transparent and pivotally mounted to open downwardly to provide access therein, said fluorescent lamp housing additionally being provided with a plurality of fluorescent lamps mounted therein; circuit means electrically coupling said lamps to said transformer means; and second means for fastening one end wall of said lamp housing to the other end wall of said ballast housing.

2. A mounting arrangement for fluorescent lighting comprising in combination: a supporting standard having an upper mounting terminus including a coupling plates; an independent ballast housing having interrelated end, side, top and bottom walls, said end walls being relatively longer than said side walls and said top wall being pivotally mounted to open upwardly for providing access therein; a plurality of ballast units mounted inside of said ballast housing and positioned with their lengthwise dimension angularly disposed with respect to said end and side walls; means for fastening said coupling plate to one end wall of said ballast housing; an independent fluorescent lamp housing having interrelated end, side, top and bottom walls, said bottom wall being pivotally mounted to open downwardy to provide access therein, said lamp housing additionally being provided with fluorescent lamp means mounted therein; electrical circuit means interconnecting said ballast units to said fluorescent lamp means; and second means for fastening one end wall of said lamp housing to the opposite end wall of said ballast housing.

3. A mounting arrangement for fluorescent lighting comprising in combination: a substantially vertical supporting standard having mounting terminus including a coupling plate; a separate and distinct ballast box having interrelated rectangular end, side, top and bottom walls, said end walls being relatively longer than said side walls and said top wall being pivotally mounted to open upwardly for providing access therein; a tubular passage through the width of said ballast box transverse to and centrally located with respect to said end walls allowing said supporting standard to mate therewith; means for fastening said coupling plate to one end wall of said ballast housing; a pair of fluorescent ballast units mounted inside of said ballast box and being selectively disposed with respect to said end and side walls, one on each side of said tubular passage; a separate and distinct fluorescent lamp housing having interrelated end, side, top and bottom walls including a plurality of fluorescent lamps mounted therein, said bottom wall being generally trans-

parent and pivotally mounted to open downwardly for providing access thereto; electrical circuit means connecting said pair of ballast units to said plurality of fluorescent lamps; and means for fastening one end wall of said lamp housing to the other end wall of said ballast box.

4. A mounting arrangement for fluorescent lighting comprising in combination: a substantially vertical supporting standard having an angularly offset mounting terminus including a coupling plate; a separate and distinct ballast box having interrelated rectangular end, side, top and bottom walls, said end walls being relatively longer than said side walls and said top wall being pivotally mounted to open upwardly for providing access therein; a tubular passage through the width of said ballast box transverse to and centrally located with respect to said end walls allowing said supporting standard to enter therein; means for fastening said coupling plate to one end wall of said ballast housing; a pair of fluorescent ballast units mounted internally of said ballast box such that the central axis of said ballast units is angularly disposed with respect to the central axis of said tubular passage; a separate and distinct fluorescent lamp housing having interrelated end, side, top and bottom walls including a plurality of fluorescent lamps mounted therein, said bottom wall being transparent and pivotally mounted to open downwardly for providing access thereto; electrical circuit means connecting said pair of ballast units to said plurality of fluorescent lamps; and means for fastening one end wall of said lamp housing to the other end wall of said ballast box.

5. A mounting arrangement for fluorescent lighting comprising in combination: a supporting standard having an upper mounting terminus including a coupling plate located a predetermined distance away from the end thereof; a separate and distinct ballast housing having interrelated end, side, top and bottom walls, said end walls being relatively longer than said side walls and one end wall of said end walls being longer than the other end wall, said top wall being pivotally mounted to open upwardly for providing access therein; a tubular passage through said ballast housing transverse to and centered with respect to said end walls for mating with the standard such that said coupling plate abuts said other end wall; means for fastening said coupling plate to said other end wall of said ballast housing; a plurality of ballast units mounted internally of said ballast housing and disposed on each side of said tubular passage in a selected alignment with respect to said end and side walls; an independent fluorescent

lamp housing having interrelated end, side, top and bottom walls, said bottom wall being transparent and pivotally mounted to open downwardly to provide access therein, said lamp housing being provided with a plurality of fluorescent lamps mounted therein; electrical means for selectively connecting said plurality of ballast units to said plurality of fluorescent lamps; and second means for fastening one end wall of said lamp housing to the longer end wall of said ballast housing.

6. A mounting arrangement for fluorescent lighting comprising in combination: a supporting standard having an upper mounting terminus including a coupling plate located a predetermined distance away from the end thereof; a separate and distinct ballast housing having interrelated end, side, top and bottom walls, said end walls being relatively longer than said side walls and one end wall of said end walls being longer than the other end wall, said top wall being pivotally mounted to open upwardly for providing access therein; a tubular passage through said ballast housing transverse to and centered with respect to said end walls for mating with the standard such that said coupling plate abuts said other end wall; means for fastening said coupling plate to said other end wall of said ballast housing; a plurality of ballast units mounted internally of said ballast housing and disposed with their lengthwise dimension angularly disposed with respect to the central axis of said tubular passage; an independent fluorescent lamp housing having interrelated end, side, top and bottom walls, said bottom wall being transparent and pivotally mounted to open downwardly to provide access therein, said lamp housing being provided with a plurality of fluorescent lamps mounted therein; electrical means for selectively connecting said plurality of ballast units to said plurality of fluorescent lamps; and second means for fastening one end wall of said lamp housing to the longer end wall of said ballast housing.

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