Nov. 26, 1957 B. L. FRY 2,814,721

LIGHTING FIXTURE FOR CARRYING A PLURALITY OF FLUORESCENT LIGHTS

Filed Aug. 12, 1954

FIG. 1.

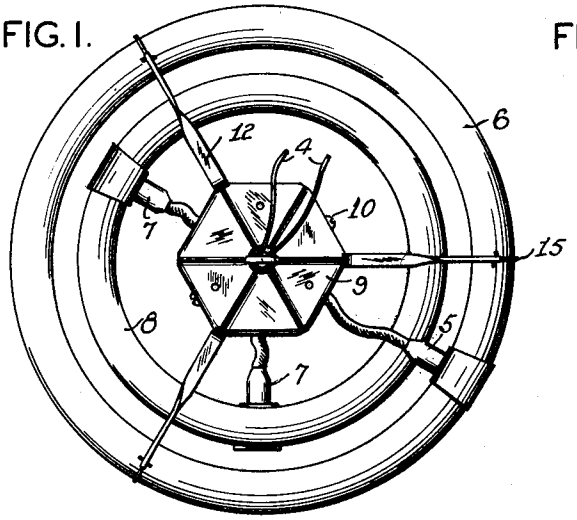


FIG. 3.

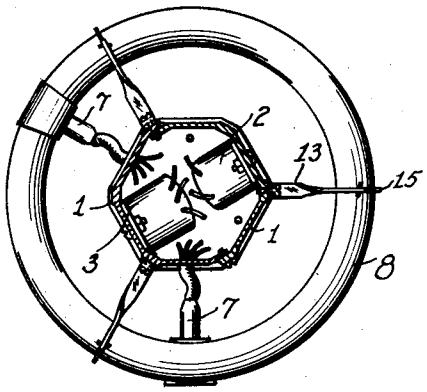


FIG. 2.

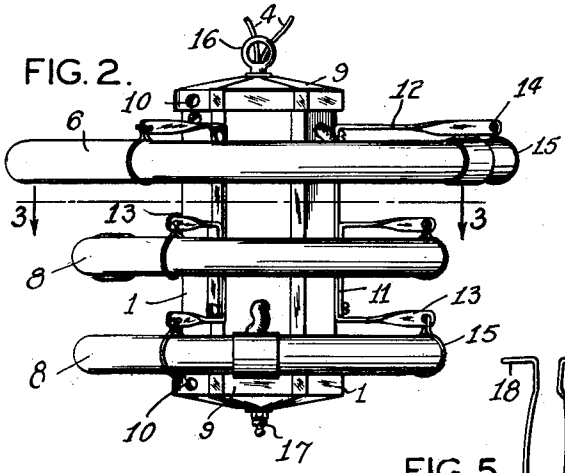
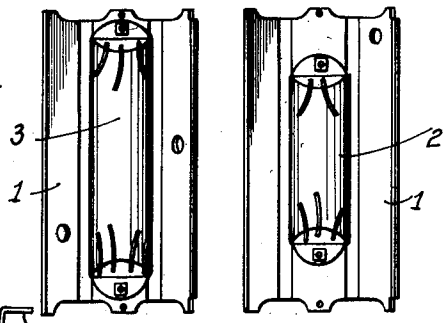


FIG. 4.



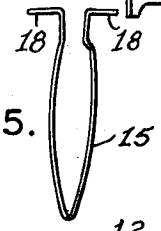


FIG. 5.

FIG. 6.

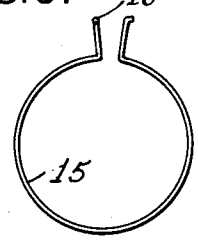
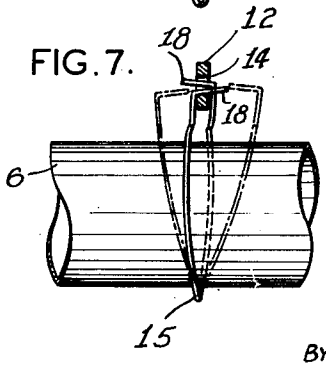


FIG. 7.



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LIGHTING FIXTURE FOR CARRYING A PLURALITY OF FLUORESCENT LIGHTS

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3 Claims. (Cl. 240—51.12)

This invention relates to improvements in lighting fixtures generally, but more especially to those for carrying a plurality of circular fluorescent lighting tubes.

The principal object of this invention is to so construct a fixture of the kind described, that it will be easily opened whenever the need therefor arises, to thereby provide ready access to the various parts and wires that are enclosed within the fixture, and just as easily reassembled into operative relation.

Another object of my invention is to so construct such a fixture of the kind described, that it will have mating parts that form a housing for enclosing the ballast elements and the like that control the operation of the fluorescent light tubes, and in which all of said electrical elements are closely compacted, said mating parts each carrying some of the latter, so that when said parts are separated, it is quite easy to inspect, repair or replace any of said electrical elements.

A further object of the invention is to so construct a device of the kind described, with fluorescent tube-carrying elements that are of minimum cross-sectional size so as to form a minimum of obstruction of the light emitted from said tubes.

A still further object of the invention is to construct carriers for said tubes, of one-piece spring-wire rings whose ends are normally separated but may be forced toward one another to suspend the ring on the fixture.

An added object of my invention is to so shape the housing of the fixture that it will accommodate a series of circular fluorescent light tubes arranged one superimposed above the other, and spaced a relatively far distance from the adjacent wall of the housing so that a maximum of light is transmitted by said tubes.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art to which this invention appertains as will be more clearly evident from the disclosures herein given.

To this end, my invention consists in the novel construction, arrangement, and combination of parts herein shown and described, as will be more clearly pointed out in the claims hereunto appended.

In the drawings, wherein like reference characters represent like or corresponding parts throughout the views,

Figure 1 is a top plan view of the fixture, with light tubes attached;

Figure 2 is a side elevation of the same;

Figure 3 is a transverse cross-sectional view, taken substantially along the line 3—3 of Fig. 2;

Figure 4 is a disassembled view of the pair of housing-forming members, showing the insides of the same;

Figure 5 is a perspective view of one of the tube-suspension elements in normal free position;

Figure 6 is a side view of the latter; and

Figure 7 is a detail view, showing one of said tube-carrier elements in resiliently sprung-apart and in operative positions.

Referring more particularly to the drawings, wherein I have illustrated a preferred embodiment of my invention,

there is shown a fixture for holding a plurality of circular fluorescent light tubes, wherein a relatively large amount of light may be cast from a small fixture.

In the use of fluorescent lights, it is necessary that there be electrical ballasts, and sometimes starters, which are not only unsightly in themselves if exposed to view, but which add considerable weight to the fixture with which they are associated, and of course there must be sufficient wiring interconnecting the various parts into an operative device, and it is therefore desirable that as much as possible of the foregoing should be concealed from view, and yet permit of easy access to said vitally necessary parts for inspection, repair or replacement of any or all of them.

To this end, I have so constructed a housing or casing for enclosing said electrical controls, which housing is small enough so as not to detract from the attractiveness of the fixture, and will retain all of said parts compactly therewithin, but which may be quickly opened for any purpose whatever, and just as readily reassembled to again encompass said parts. Such a housing may comprise a pair of longitudinally extended or elongated members or sections 1—1 of suitable size and shape for the purpose, and of a material strong enough to withstand the use to which the fixture will be put, as for instance of aluminum or other metal.

In the embodiment shown, these housing sections are somewhat channel-shaped in transverse cross-section, with the elements of said channel of substantially planar form so as to thereby permit of ready attachment of electrical control elements to the inner face thereof, somewhat as shown, the ballast 2 being affixed securely and carried by one of said sections of the housing, and the other ballast, which is larger and heavier than said first ballast and is indicated at 3 is similarly affixed to one of the inner faces of the cooperating housing section, and extends for nearly the full length of the latter.

Although not all of the required wiring is shown in the drawings, it is to be understood that one of the ballasts, say the ballast 2, is connected to the pair of line leads 4—4 and has the plug element 5 leading outwardly through an opening in one of the walls of said housing section for detachable connection to the fluorescent light tube 6 that is of larger radius than the other tubes, while the other ballast 3 is similarly connected to said line leads 4—4 and has the pair of plug elements 7—7 for similarly extending through openings in the other housing section for detachable connection to the other two fluorescent tubes 8—8, the three lead-outs 5—7—7 being spaced substantially equidistantly about the circumference or perimeter of the housing so as to give better balance to the fixture, and for the same reason said lead-outs are substantially equidistantly spaced along the length of the housing.

If said housing were made of a single member, with all of said controls and wiring therein, and yet made as small in transverse size as desired for esthetic value, it would be almost impossible to inspect, repair or replace any of the parts so placed inside the same, without tearing down and removing everything inside the housing, inasmuch as it is obvious that there is insufficient room within such a tightly jammed interior to permit of insertion of regular tools or to see how to use said tools even if the tools were already inserted. As a matter of fact, in such a case it might well be cheaper to replace an entire fixture than to attempt the ordeal of repair.

To overcome this handicap, both as to accessibility and economy of servicing the fixture, said housing sections are arranged to cooperate or mate with one another to form the complete housing member that is of a minimum transverse size, just large enough to permit of all controls and wiring to fit therein snugly without regard to working

space between the several parts or between said parts and housing. The elongated terminal edges of adjacent sections are adapted to overlap one another as shown in the drawings, to together form the housing wall unit.

Top and bottom covers or closures 9—9 are detachably fastenable to said pair of cooperating housing sections, by screws 10 or the like to thereby hold the entire structure together as a single, closed unit.

It is to be remembered that this fixture is intended to support a plurality of circular lighting tubes, arranged one above the other and vertically spaced apart, and it is good practice to have the largest-diameter tube uppermost. In such an arrangement, it is a common practice to make a series of step-offs on the carrying support or base member or shield holding said tubes, but this is objectionable because where so constructed, the light from the tubes are cut off from effective transmittal by their proximity to the base member or shield, so that only such rays as are directed outwardly from said shield are useful.

To correct this defect in mounting of the circular tubes, I have so constructed the housing as to avoid such shoulders or step-offs, the housing being substantially of the same uniform peripheral size from top to bottom, and being without shoulders or step-offs. Brackets 11 are carried at equidistantly spaced intervals about the periphery of the housing, said brackets being fixedly carried by the housing sections, and each bracket having a series of vertically spaced arms 12 and 13—13 projecting transversely outwardly beyond said housing sections, the free ends of said arms provided with apertures 14 for a purpose to be hereinafter described, and which apertures are spaced a relatively great distance from the exterior face of the housing.

Rings or annuli 15 are removably carried by each of said bracket arms, in said apertures 14, for detachably supporting and suspending said light tubes, as shown, each ring being preferably of spring wire, of one-piece construction, with the ends at the split normally or initially spaced apart axially of the ring, as indicated in the drawings, especially in Fig. 5, and there being legs 18—18 formed at each of said ends, the legs of each ring projecting in mutually opposite directions, but substantially in a line as indicated in Fig. 6.

In order to removably affix a ring to an arm, one of the legs of the ring is threaded through the aperture in the arm, and the other end of the ring is forced axially toward and past the first end as indicated in dotted lines in Fig. 7 until the second leg is in registry with said aperture, thereby tensioning the sprung-apart legs, whereupon release of said second leg will permit it to retrieve resiliently back toward said first leg to thereby hold said ring pivotally suspended by said arm. The bracket arms that support the tubes of smaller diameter are of course shorter than the one supporting the larger tube.

The entire fixture may be suspended from overhead by any suitable means, such as by the ring 16, and if desired, a bowl or shield (not shown) may be attached to the unit by the adjusting nut 17.

Assuming that access to the interior of the fixture is desired for any reason, as for instance, for inspection, repair or replacement of one or more of the inside parts, all that is required is to disengage the spring rings from the tubes to temporarily remove the latter, and then as soon as the cover plates have been detached from the housing, the two housing members may be separated (as indicated in Fig. 4), whereupon each such housing section will still carry the parts of the control elements and wiring affixed thereto without danger of any such elements dropping out, and thus any regular repair tool may be used on the parts thus exposed to clear view. There is no cramping of the hand or tool within the confines of a housing, the adjustment or repair may be most readily and quickly made, and reassembly of the sections of the housing to original arrangement is correspondingly efficiently and easily made.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of the invention; hence I do not wish to be understood as limiting myself to the exact form, arrangement, construction and combination of parts herein shown and described, except as limited by the state of the art to which this invention appertains and by the claims hereunto appended.

I claim:

1. In a fixture for carrying a plurality of circular fluorescent light tubes, a plurality of casing members to together form a hollow tubular housing, a ballast fixed to each of said members and carried wholly by the latter, brackets carried by said members and projecting radially outwardly therefrom, and ring elements of relatively exceedingly small-gauge wire detachably carried by said brackets to receive said tubes, each ring being a one-piece spring-wire annulus having the ends normally spaced apart axially of the ring, with a pair of oppositely directed legs at said ends, whereby said ends may be resiliently forced past one another axially of the ring to spread said legs apart sufficiently to receive said bracket therebetween and to spring back and engage said bracket from opposite sides of the latter when said spreading force is released.

2. In a fixture for circular fluorescent lights and including a housing for suspendingly carrying a circular fluorescent light tube therefrom and which housing is provided with brackets having apertures therethrough, relatively very-small diameter spring-wire annuli providing the sole suspension of said tube from said housing, each annulus being in a single piece and of a diameter sufficient to encircle said tube and having a pair of ends normally spaced apart axially of the annulus, said ends having a pair of permanently offset oppositely directed legs whereby said annulus may be positioned encircling said tube and said pair of legs moved axially in a direction opposite to that in which they are normally spaced apart so as to tension said legs and positioned in registry with one of said apertures and thence released so that said pair of legs retract toward one another to enter the same aperture from opposite sides of the latter.

3. A device as set forth in claim 2, but further characterized in that said sprung-apart legs straddle that part of said housing brackets that has said apertures therethrough, and that said pair of sprung-apart legs enter each aperture from opposite sides of the latter upon retraction of said pair of legs.

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