March 27, 1951 E. T. KOPPANG ET AL 2,546,190

HOUSING AND LIGHT DIFFUSER FOR FLUORESCENT FIXTURES

Filed June 21, 1946

FIG. 1

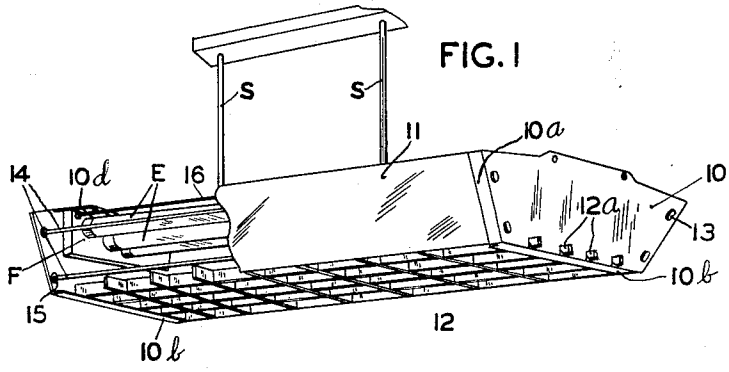


FIG. 2

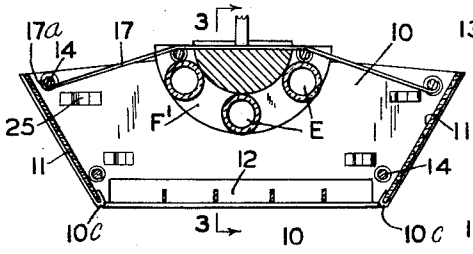
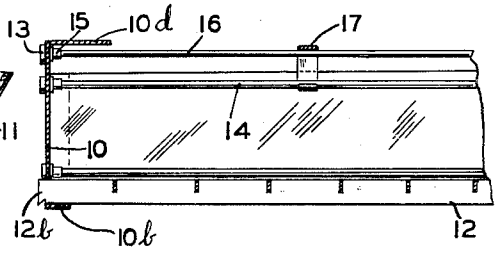


FIG. 3



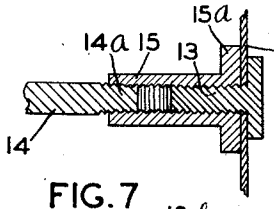


FIG. 4

FIG. 7

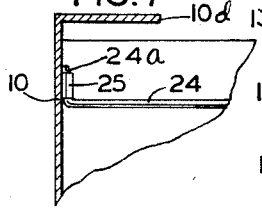


FIG. 5

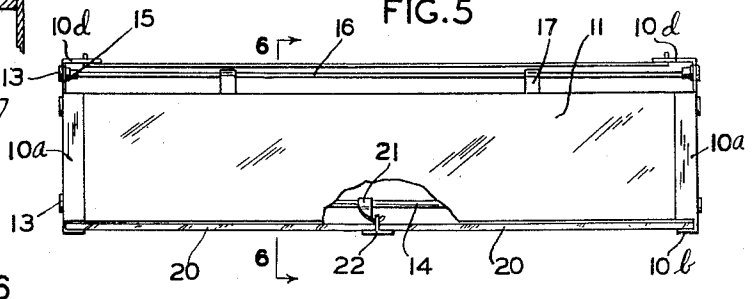
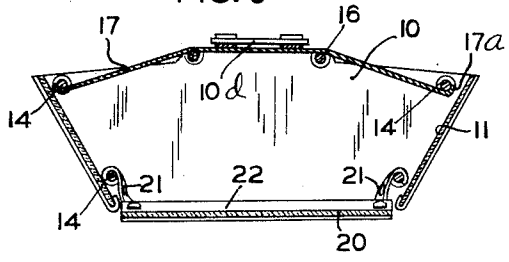


FIG. 6



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HOUSING AND LIGHT DIFFUSER FOR FLUORESCENT FIXTURES

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6 Claims. (Cl. 240—51.11)

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This invention relates to lighting fixtures of the type employing fluorescent, luminescent or cold cathode lighting elements and particularly relates to an ornamental housing and light diffuser, manufactured and shipped in collapsed, compact form and adapted to be readily assembled to surround and improve the appearance of installed, old type fixtures and to efficiently diffuse the light produced thereby.

At the present time, many thousands of lighting fixtures of the general fluorescent type have been installed for a period of years at relatively high installation cost and are more or less old type in appearance, design and efficiency of light direction and diffusion. Such units are ordinarily of certain standard lengths and width and some are suspended from the ceiling by hanger stems while some are attached to hanger brackets with the tops thereof disposed in slightly spaced relation from the ceiling. The replacement cost of such fixtures to modernize the same and obtain proper light diffusion is quite substantial although the light elements or tubes of the old units are identical with those used in units of modern manufacture and in most instances, give adequate candle power for the purposes intended.

It is an object of our invention to provide a comparatively inexpensive and quickly assembled ornamental housing which may be readily installed over and supported by installed fixtures now in use and which will beautify and modernize the old fixture and in addition, produce a highly efficient direction and diffusion of the light rays produced.

A further object is the provision of an ornamental housing and light diffuser of the type described which when manufactured in comparatively few sizes and designs, will have substantial universal application to old fixtures now in use.

A further object is the provision of structure of the class described which is adapted to be very quickly and easily assembled and installed by an unskilled operator and which is of such structure that the parts thereof may be collapsed and very compactly packaged for shipment.

Another object is the provision of an economical unit of the class described which, when installed upon an obsolete fixture, will give the appearance of a modernistic, expensive new fixture with functional advantages and light diffusion equal to those of the finest fluorescent fixtures manufactured at this time.

These and other objects and advantages of our invention will be more apparent from the following description made in connection with the

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accompanying drawings wherein like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a perspective view with some portions broken away, showing an embodiment of our invention applied to a common type of fluorescent lighting fixture;

Fig. 2 is a cross section of an embodiment of our invention applied to and supported by an old type fluorescent fixture of a different style;

Fig. 3 is a vertical section taken on the line 3—3 of Fig. 2 with the installed fixture removed;

Fig. 4 is a detail longitudinal section showing one of the stringer rods with a form having detachable anchoring means for connection with the end walls of the housing;

Fig. 5 is a side elevation of a somewhat different form of our invention wherein in place of light diffusing louvers, transluscent plates are utilized at the bottom of the housing as well as in the side walls thereof;

Fig. 6 is a cross section taken on the line 6—6 of Fig. 5; and

Fig. 7 is a detail vertical section taken longitudinally through a somewhat different form of the invention, utilizing a more simplified and less expensive type of anchoring means between the stringer rods and end walls of the housing.

In Fig. 1, an embodiment of our invention is shown, operatively applied to a common type of fluorescent fixture F having end plates, interconnected by suitable means and carrying the detachable fluorescent elements E, said fixtures being suspended some distance below the ceiling by hanger stems S.

In Fig. 2, a somewhat different type of fluorescent fixture F' is shown having three triangularly arranged fluorescent elements E mounted between the ends thereof.

The said fixtures F and F' are both of common types and have no efficient means for lighting direction or diffusion.

The embodiment of our invention as illustrated in Figs. 1 to 3 comprises a pair of independent, ornamental end walls 10 constructed preferably of polished, sheet material such as aluminum or an aluminum alloy and of adequate area to more than cover the ends of installed electrical fixtures on which our structure is to be mounted. The end walls 10 may be of general inverted trapezoid shape having inturned, oppositely and symmetrically inclined side flanges 10a which assist in the support of the transluscent side walls 11 and having as shown, an inturned bottom flange 10b for support and mounting of the

light diffusion louver or grill 12. End walls 10 are each provided at each of the sides thereof with a pair of vertically spaced rod-securing apertures adjacent the marginal edges thereof in which rod-connector elements such as the screws 13, are received for securing the longitudinal tie or stringer rods 14 which inter-connect, reinforce and in most installations, support the entire ornamental housing structure and which further, act as guides and retainers for the inclined, longitudinal transluscent side walls 11.

The structure, as manufactured and shipped, is knocked down with the end walls 10 superimposed with compact relation with the rods and louver elements collapsed in a compact package. As shown, in Figs. 1 to 4 inclusive, the tie rods 14 are made in appropriate lengths for accommodating our housing to the lengths of standard fluorescent lighting units and are threaded at their outer ends 14*a* for adjustable clamping engagement with an internally threaded, elongated collar 15. One of said collars 15 is provided for each end of the rods 14 and has an out-turned annular flange 15*a* for abutment against the end wall 10 of the housing. The headed clamping screw 13 previously referred to, threadedly engages the interior of collar 15 and as clearly shown in Fig. 4, adjustably clamps the two end walls 10 to the tie rods, the tension of the rods 14 being adjusted through the threaded elements.

Additional tie rods 16 may if desired, be provided at the medial and upper edges of the end walls 10, serving to additionally reinforce the housing structure and to also act, if desired, as a supporting medium as shown in Fig. 2 for resting upon the top of the fixtures F and F' although it will of course, be understood that these rods may be dispensed with in most of the embodiments of our invention.

The translucent, longitudinal side walls 11 of the housing are merely slipped in between the side tie rods 14 and the inturned side flanges 10*a* of the end walls and may be inserted from below by sliding the walls 11 upwardly between the rods 14 and the end walls and thereafter, moving the same slightly outwardly to engage the lower edges thereof, with upturned retaining fingers 10*c* provided by extended lugs or strips from the end walls. Side walls 11 may be made of glass, plastic or other transparent or translucent material for transmitting and/or diffusing light rays. The grill structure 12 may be made up in conventional manner from two series of crossed, intersecting light metal strips, each having interengaging, transversely spaced slots and this structure may be shipped in collapsed, compact manner and thereafter assembled to form the louver or grill. It is essential that the strips of the louver be disposed vertically to block off and diffuse light rays emanating from the elements E. The louver structure as shown, is supported at the ends of its longitudinal strips upon the inturned flanges 10*b* of the endwalls 10 and may also have connection with said end walls through diminished, notched lugs 12*a* at the extremities of said longitudinal strips which interfit with slotted portions of the end walls, as clearly shown in Figs. 1 and 3.

Our ornamental housing, as shown in Figs. 1 to 3 inclusive, may be supported from the installed, old lighting fixture in a number of different manners provided. Thus, in many instances, the auxiliary tie rod 16 may longitudinally traverse the old lighting fixture to support our entire housing structure. In most frequent instances, we supply hanger straps 17 which have horizontal, medial portions and downwardly inclined ends, the medial portions overlying and traversing the lighting tubes or other structure of the installed fixture and the declined ends of the hanger straps being upturned at their extremities to underlie and support, as shown in Fig. 2, the upper tie rods 14.

In the case of installed fixtures which are mounted substantially flush against the ceiling, provision is made for support of the housing by suitable means such as inturned, upper flanges 10*d* integrally formed with the upper ends of the end wall sections 10, said flanges overlying the end blocks or members of the installed fixture and being disposed between the same and the ceiling to which the fixture is suspended.

With our improved structure, it will be noted that the entirety of the old fixture with the exception of its hanger stems, is concealed and covered by our ornamental housing. It will further be noted that the translucent, longitudinal side walls 11 of our structure emit and diffuse horizontally projected or slightly downwardly projected light rays. It will further be seen that the louver structure 12 effects efficient direction and diffusion of the downwardly directed light rays from elements E.

The reconditioned old fixture thus, with our improved housing presents a highly ornamental, modernistic appearance equal that of expensive, modern fluorescent fixtures now extensively used.

Our structure may be readily dusted and cleaned and the louver construction easily removed from the end walls for cleaning by disengaging the retaining ends 12*a* when the opposite end of the louver structure is slightly raised above its supporting flange 10*b*.

In Figs. 5 and 6 we have shown a somewhat different embodiment of our invention which dispenses with the use of a louver structure and substitutes therefor for light diffusion of downwardly directed rays, a pair of relatively thick translucent, flat lenses or plates 20, detachably supported at the bottom of our housing. To this end, the end walls 10 of the second form have inturned lens-supporting flanges 10*b* substantially identical with the flanges of the form first described, upon which the outer, transverse edges of the respective lens plates rest and are supported. At the medial portion of the lower tie rods 14, small hanger brackets 21 are supplied, having supported therefrom a transverse T rail 22 which is positioned fixedly in the center of the bottom portion of the housing. The inner ends of the lens plates 20 rest upon and are detachably supported from the horizontal webs of the T rail, as clearly shown in Fig. 5.

The variable supporting means for this form of the invention, the longitudinal side walls 11 and other features of the construction are identical with the form first described and need not therefore, be herein described in detail.

In Fig. 7, we illustrate simplified and less expensive form of tie rod and connector, the tie rod being indicated by the numeral 24 and having its extremities upturned at right angles to form attachment studs 24*a*. These attachment studs are detachably connected with and support small sleeves 25 which are spot welded or otherwise affixed to the inner sides of the end walls 10 at appropriate points.

This structure, of course, eliminates the need for the several threaded elements 13, 14a and 15, comprising the clamping structure illustrated in Figs. 1 to 4 inclusive, but it of course, does not have the improved feature of being able to variably tension the tie connection between the end walls.

From the foregoing description, it will be seen that we have provided a simple, inexpensive, but highly efficient ornamental housing and light diffuser for various types of fluorescent, luminescent and cold cathode lighting fixtures to convert such fixtures to effective light diffusers of modernistic and highly ornamental design.

It will of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts without departing from the scope of our invention.

The terms "lighting fixtures of the fluorescent type" as used in the claims of this application, are intended to include lighting fixtures of the various types which utilize tubular or elongated lighting elements such as fluorescent, luminescent, cold cathode or neon lighting fixtures.

What we claim is:

1. An ornamental housing and light diffuser for concealing and converting installed lighting fixtures of the fluorescent type comprising a pair of widely spaced, substantially rigid and substantially vertical end walls, said end walls having a substantial area adapted to more than cover and conceal the outer surfaces of the entire end portions of an installed fixture and light diffusers contained therein, longitudinal reinforcing connections between said pair of said end walls, said connections being arranged in two side series adjacent the outer marginal portions of said end walls to leave a large, unobstructed space between said end walls, certain of said reinforcing connections being disposed at the top of the body formed and serving in the dual capacity of connections and hanger supports for said body and adapted to engage top portions of the installed lighting fixture, said end walls having adjacent their lower edges at the sides thereof side wall-supporting elements and a pair of side walls of substantially the height of said end walls, supported at their lower edges upon said supporting elements and cooperating with said end walls to form a box-like housing for completely covering and concealing the end portions, tubes and light diffusers as well as the sides of an installed lighting fixture, said side walls being spaced apart adequate distances to be disposed in spaced relation to side portions of the installed fixture when said body is supported from the top thereof by said top reinforcing elements.

2. The structure set forth in claim 1 and transverse, spanning hanger members secured to the upper longitudinal reinforcing members and extending transversely thereof for cooperating therewith to engage the top portion of an installed fixture for supporting the body formed by said end walls, said side walls and the interconnected structure.

3. An ornamental housing and light diffuser for concealing and converting installed lighting fixtures of the fluorescent type comprising a pair of widely spaced substantially vertical end walls, a plurality of horizontally extending tie rods, detachably connected at their outer ends with said end walls and arranged to be disposed longitudinally of and at the sides of an installed lighting fixture, detachable side walls extending between said end walls, means at the lower portions of said end walls for supporting said side walls, a light diffusing structure traversing the enclosure formed by said end and side walls means for supporting said structure from the lower edges of said end walls, and means including at least two of said tie rods for overlying parts of an installed fixture to support the entire ornamental housing and light diffuser construction.

4. An ornamental housing and light diffuser for concealing and converting installed lighting fixtures of the fluorescent type, comprising a pair of widely spaced, substantially vertical end walls having inturned supporting flanges at their lower edges, a plurality of tie rods detachably connected at their outer ends with said end walls and arranged to be disposed in two series longitudinally at the sides of an installed lighting fixture, detachable side walls extending between said end walls and disposed outwardly of said tie rods and partially guided thereby, means at the lower edges of said end walls for supporting the lower edges of said side walls and a light diffusing structure traversing the bottom of said housing and supported on the inturned flanges of said end walls and supporting means for suspending the entire device from upper portions of an installed lighting fixture, said supporting means including the uppermost of said tie rods.

5. The structure set forth in claim 4 and at least, a pair of supporting hanger members adapted to overhang an installed lighting fixture and having connection at their outer ends with certain of said upper tie rods.

6. An ornamental housing and light diffuser for concealing and converting installed lighting fixtures of the fluorescent type, comprising a pair of widely spaced, substantially vertical end walls having inturned supporting flanges at their lower edges, a plurality of tie rods detachably connected at their outer ends with said end walls and arranged to be disposed in two series longitudinally at the sides of an installed lighting fixture, detachable side walls extending between said end walls and disposed outwardly of said tie rods and partially guided thereby, means connected with said end walls and including hanger brackets for supporting said housing from the upper portion of an installed fixture and said tie rods having right angled extremities interfitting and locking with vertical sockets secured to said end walls.

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