April 19, 1966 W. C. NANNY 3,247,369

LIGHTING FIXTURE

Filed Feb. 3, 1964 3 Sheets-Sheet 1

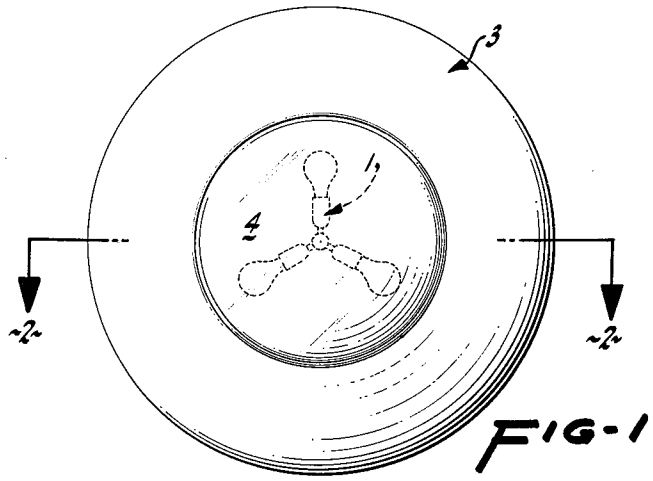
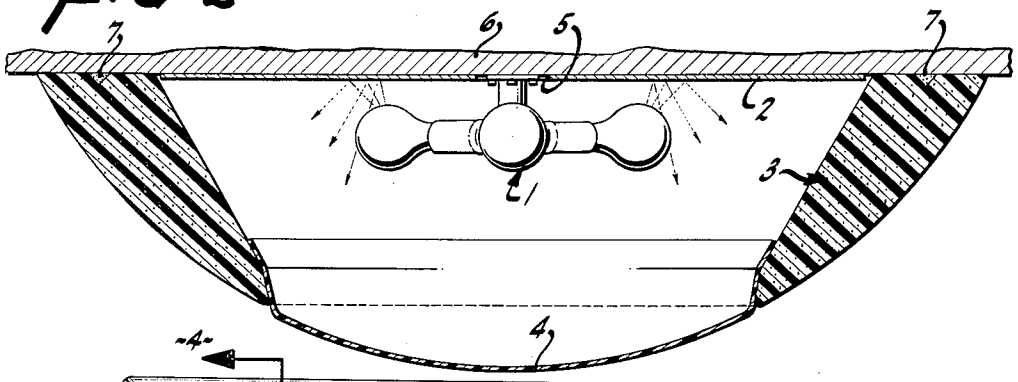


FIG-1

FIG-2



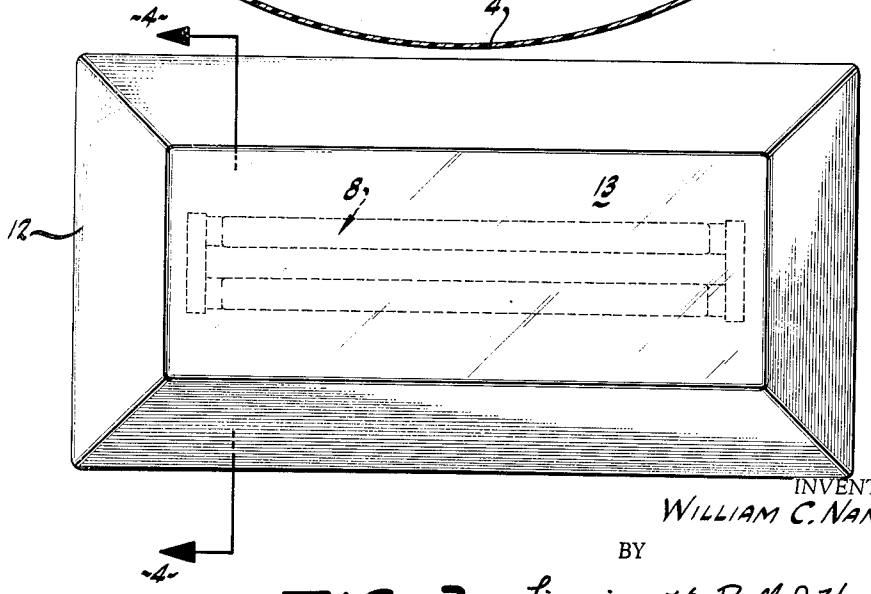


FIG-3

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LIGHTING FIXTURE

Filed Feb. 3, 1964 3 Sheets-Sheet 2

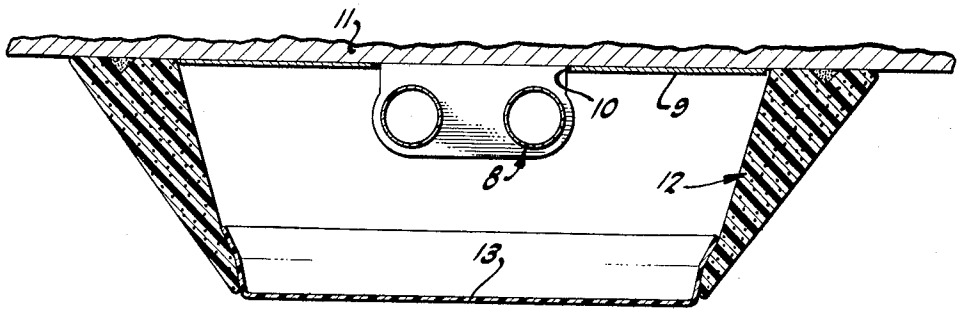


FIG-4

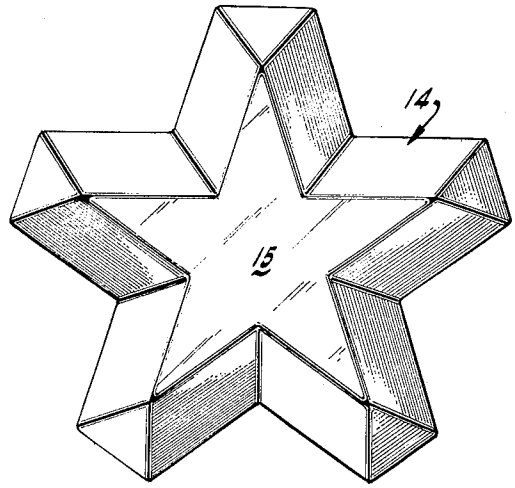


FIG-5

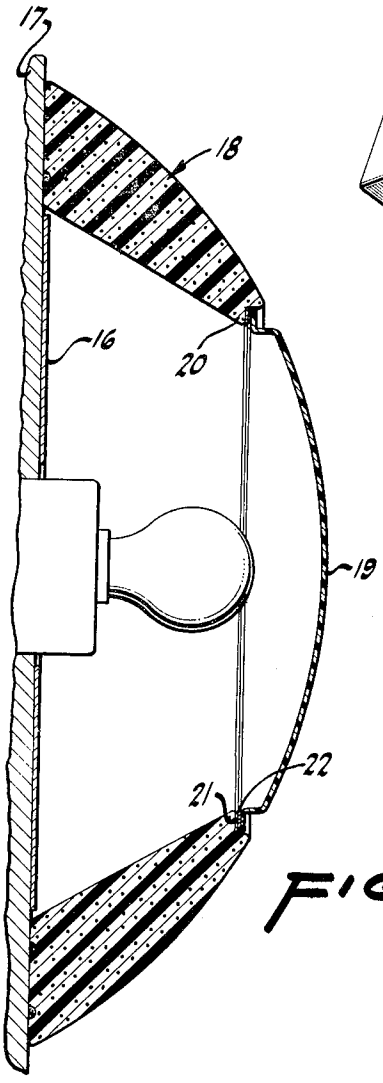


FIG-6

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LIGHTING FIXTURE

Filed Feb. 3, 1964 3 Sheets-Sheet 3

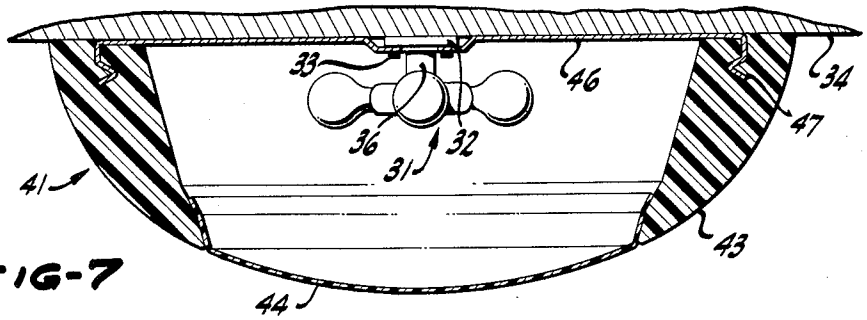


FIG-7

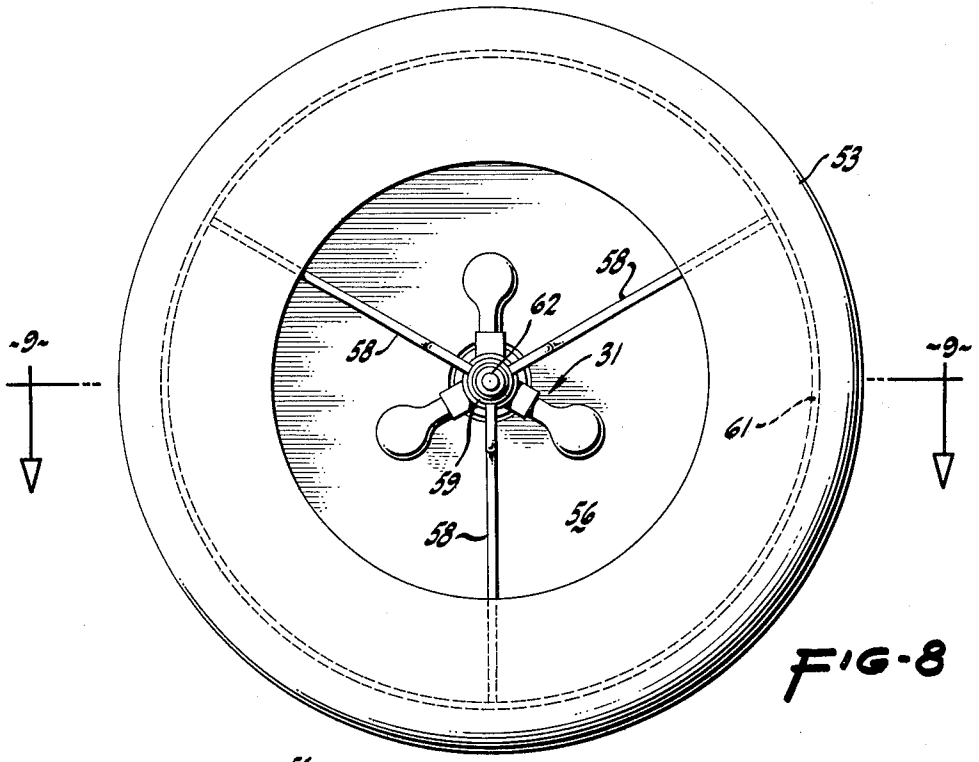


FIG-8

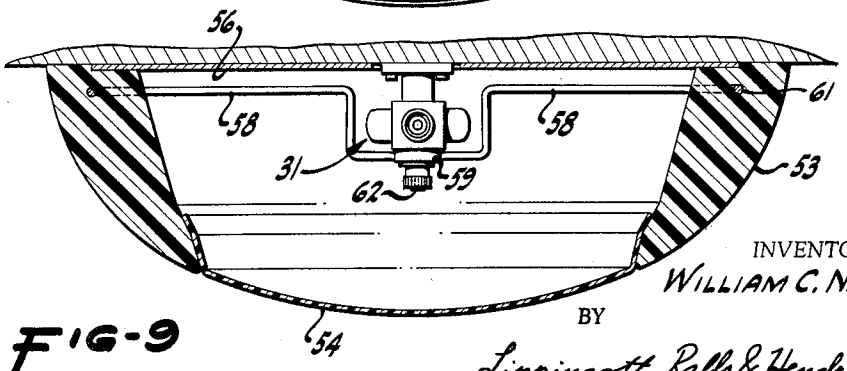


FIG-9

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United States Patent Office 3,247,369 Patented Apr. 19, 1966

3,247,369

LIGHTING FIXTURE

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Filed Feb. 3, 1964, Ser. No. 342,859
4 Claims. (Cl. 240—78)

This invention relates to an improved lighting fixture which is decorative, inexpensive, easy to install and lightweight, and which provides a large area light diffuser. This application is a continuation-in-part of my prior copending U.S. patent application Serial No. 185,000, filed April 4, 1962 now abandoned.

Lighting fixtures with diffusers are in wide use and have a wide variety of applications and functions. Heretofore, lighting fixtures with large area light diffusers have been primarily used in public buildings, offices, and the like, and have not been extensively used in the home, chiefly because of cost and difficulty of installation. For example, if an existing fixture is to be replaced, it is commonly necessary to remove the existing light source, usually incandescent, and replace it with a new light source, usually fluorescent. Even in the case of new construction, large area light diffusers have been too heavy, too expensive, and too hard to install to be used extensively in homes.

The present invention provides a lighting fixture formed of a combination of plastic and cellular plastic or foam, in which the foam member is the structural element. Materials such as polystyrene foam may be readily cast in large configurations to provide adequate structural strength as the major element of a lighting fixture, and yet have a very light weight, so that fixture mounting is facilitated. Conventional metal boxes, or the like, which form the bases of most lighting fixtures are herein replaced by cast foam so as to reduce cost, increase available fixture size at reasonable cost, and minimize fixture weight.

One object of the present invention is to provide an improved lighting fixture to conceal and beautify existing light sources, whether they be incandescent or fluorescent.

Another object is to provide an inexpensive lightweight lighting fixture with a large area diffuser, which can be easily installed even by unskilled workers or home owners.

A further object of the present invention is to provide an improved lighting fixture which is easily installed as a replacement for old fixtures, both in homes and in public or commercial buildings, and at the same time to provide a lighting fixture which is, itself, just as easily and economically replaceable.

It is another object of the present invention to provide a new lighting fixture structure having a flat rear surface for direct application to walls or ceilings without insetting, and yet transmit light through all portions about the light source.

A still further object of this invention is to provide a lighting fixture structure which may be economically formed in a large size and yet have insufficient weight to require extensive mounting means for securing same to ceilings or walls.

Other objects and advantages of the invention will become apparent from the following description, and the accompanying drawings, wherein:

FIGURE 1 is a view of the underside of a round lighting fixture in accordance with the present invention;

FIGURE 2 is a section taken along the line 2—2 of FIGURE 1;

FIGURE 3 is a view of the underside of a rectangular lighting fixture in accordance with the present invention;

FIGURE 4 is a section taken along the line 4—4 of FIGURE 3;

FIGURE 5 is a view of the underside of a star-shaped lighting fixture in accordance with the present invention;

FIGURE 6 is a section of a lighting fixture in accordance with the present invention, as applied to a wall or other vertical surface;

FIGURE 7 is a central transverse sectional view of an alternative embodiment of this invention;

FIGURE 8 is a plan view of another embodiment of this invention with the light-transmitting panel removed; and

FIGURE 9 is a central sectional view taken in the plane 9—9 of FIGURE 8 with light bulbs removed to show mounting details.

Referring now to FIGURES 1 and 2, a fixture embodying this invention includes a light source 1, a reflector 2, a border 3, and a translucent panel 4 which serves as a light diffuser. The light source 1 that is shown is a simple conventional assembly of one or more incandescent lamps and their sockets. The type of source used is not critical. When replacing old fixtures, the lamps and socket portions of the old fixture can frequently be left in place and used as the light source for the new fixture. In other cases, basic lamp and socket assemblies of conventional types can be readily purchased and installed. Simple, easily-made installations are facilitated by the fact that this assembly does not have to support any weighty structure, hence the more elaborate fastenings required in prior fixtures to support relatively heavy light diffusers are now unnecessary.

The lighting fixture hereof may be formed with the reflector integral with the border or separate therefrom, and this latter embodiment is illustrated in FIGURES 1 and 2, wherein the reflector comprises a piece of metal foil cut to the desired circular or other shape from a conventional foil sheet, preferably of the heavy paperback type generally used in construction work. It is provided with a central opening 5, such that it can be placed around the light source 1 and flat against the ceiling 6. Reflector 2 may be fastened to the ceiling 6 by the use of adhesives or any other suitable fastening means, the use of adhesives being possible because of the light weight of the foil and the flat application thereof to an existing ceiling. Reflector 2 is not indispensable in all instances. If the ceiling 6 is sufficiently reflecting, the metal foil reflector 2 may be omitted.

The border member is the primary structural element of the fixture and is formed of lightweight cellular plastic or foam material, such as styrofoam. The border is cast in the general shape of a hallow inverted truncated cone, with a substantial wall thickness, particularly at the large rear end thereof, to insure adequate strength. This material is translucent and thus does not cast shadows, such as metal or the like. In addition, the ease of casting provides this material with a marked advantage over other plastics which require extensive and expensive equipment for the formation of large structures. By minimizing weight, the fixture is thus easily mounted and readily handled during installation.

With a thick border wall at the rear or back end, there is provided an adequate surface area for various means of attaching the fixture to walls or ceilings. The very light weight of the fixture even allows adhesive mounting of same and such an installation is illustrated in FIGURES 1 and 2, for example. In order to facilitate this type of installation, one or more grooves 7 are formed in the upper surface of the border 3, as shown, so that a liquid adhesive can be applied to fill the grooves and the border then placed against the ceiling. In this manner, a linear bond is provided between the border and the ceiling, extending all the way around the border, and

holding it securely in place. Adhesives that have adequate strength for this purpose, even while still liquid, are already known and available to those skilled in the art. Thus, installation is reasonably quick, simple, and within the ability of almost any handyman, home owner, or housewife. If it should be desired to remove the fixture at some future time, the adhesively-secured parts can be removed, and the ceiling sanded down and painted over without leaving unsightly holes to be patched. The top surface of the border **3** is made wide enough so that the entire fixture fits snugly against the ceiling **6** and does not lack rigidity.

Foam materials employed in the border **3** are somewhat translucent, a typical border transmitting about eight percent of the incident light. Hence, the border has a somewhat luminous appearance, providing a transition between the luminous sheet **4** and the non-luminous ceiling surrounding the fixture. This generally enhances the decorative effect of the fixture, but, if desired, the border can be painted—to match the ceiling, for example.

The light-transmitting panel **4** is a thin sheet, preferably of transparent plastic of a material already widely known and used for light diffusers, molded in the desired size and shape. It is installed simply by inserting it into the open bottom of the border **3**. The cross-section of the border **3** is such that the opening defined by the border is smaller near its bottom, and at this point is somewhat smaller than panel **4**, so that the lower edge of the border **3** extends under the edge of panel **4**. This translucent panel **4** is held in place by its own weight. It is easily inserted, and easily removed, when desired, for the replacement of lamps or other purposes.

The installed fixture has a completely enclosed interior which remains free of dust, insects, and the like, much longer than conventional smaller fixtures, which usually have openings for ventilation. Despite this complete enclosure, overheating is prevented by the large size of the present fixture. For example, the fixture illustrated in FIGURES 1 and 2 may be about three feet in diameter.

FIGURES 3 and 4 illustrate a fixture in which the light source **8** is an assembly of tubular fluorescent lamps, and their conventional sockets. The reflector **9** may be formed of a rectangular piece of metal foil provided with slit **10** through which the fluorescent lamps and sockets are inserted and attached to the ceiling **11** by the use of a suitable adhesive. The border **12** may be in the form of a rectangle and also fastened to the ceiling **11** by an adhesive. Translucent light diffuser panel **13**, also rectangular in shape, is fitted into the border **12** and is held there by its own weight.

FIGURE 5 is an illustration of a star-shaped lighting fixture having a star-shaped border **14** and a star-shaped translucent panel **15**. Such complicated shapes are easily manufactured, since both the border and the panel are plastic moldings, easily made in various shapes, and are sufficiently large, in relation to the size of a light source, that enough space is provided to house the light source adequately. Numerous other diverse forms and configurations are possible with the present invention, and many beautiful and decorative lighting fixtures may be made into circular, square, rectangular, triangular, or almost any other desired shape, including artful abstractions.

FIGURE 6 illustrates a fixture according to the present invention, applied to a vertical structure or wall. In this embodiment also a metal foil reflector **16** may be fastened to the wall **17** by adhesives. The border **18** is also shown to be fastened to the wall by adhesives, and the translucent panel **19** is inserted into the border **18**. However, in this case the panel cannot be supported merely by its weight. Because of its vertical disposition, panel **19** must be fastened to the border **18** in such a way that it will not fall out. For this purpose, the border **18** is provided with an outwardly facing shoulder **20**, to which there is cemented one strip **21** of two, mutually-adhering strips of tape **21** and **22**, such as the hook-face tape and loop fabric strips, previously used in place of zippers in clothing, and the like. The complementary piece of tape **22** is attached to the backside along the edge of the panel **19**. When the panel **19** is in place, the two strips of tape **21** and **22** adhere to each other, holding the panel **19** in place so that it will not tilt, and will not fall out of the lighting fixture. The hook-face tape and loop fabric **21** and **22** may be pulled apart and put back together repeatedly without loss of their mutual adherence, whereby the panel **19** may be removed at will for cleaning, inspection, or the replacement of bulbs. For a further description of mutually-adhering tape to support lighting panels, reference is made to my copending U.S. patent application Serial No. 144,376, filed October 11, 1961.

In addition to the above-described variations in physical configuration of the overall fixture, numerous other modifications are possible. Thus, for example, various different mounting means may be employed and some of these are of particular advantage for certain applications. FIGURE 7 illustrates an embodiment of the invention wherein the lighting fixture is secured to a conventional light source **31**, as may be normally found in a ceiling fixture. Such a light source **31** is shown to include some type of base plate **32** affixed by screws or bolts **33** to a ceiling **34** or a receptacle therein. A central shaft **36** of the source depends from the plate **32** and carries a number, here three, of receptacles for light bulbs **37**. The lighting fixture **41** includes a border **43**, a light-transmitting panel **44** of the type previously described. Attachment of the fixture **41** to a ceiling or wall is accomplished by means of a rear member **46** extending across the back surface of the border **43**. This rear member **46** is firmly anchored to the border, as for example by insertion of crimped ends or edges **47** into the back surface of the border, as shown. In addition, this rear member extends over at least part of the plate **32** and is secured thereto by the screws or bolts **33**. The rear member **46** may be formed as a rear reflecting wall of the fixture, or may comprise wires extending from a central collar outward to spaced points on the border **43**. In the latter instance, a reflective coating may be disposed on the rear member if necessary for adequate reflection of light. Mounting is, however, accomplished by screws or the like extending through the light fixture **41**, either into a part of the light source or possibly directly into the ceiling or wall, out of sight from the exterior of the fixture. The light weight of the fixture allows the use of minimal mounting means such as described.

Yet another embodiment of the invention illustrated in FIGURES 8 and 9 has, in addition to the described border **53**, and panel **54**, a solid rear wall **56**. This wall, preferably formed of a metal such as aluminum, is affixed to the rear surface of the border **53**, as by an adhesive, and may be inset therein, as illustrated. The rear wall **56** is apertured at the center thereof to fit over the light source **31** and the light fixture thus has a flat back surface adapted to fit flush against a wall or ceiling. The interior surface of the rear wall **56** is made reflective to any desired extent for directing light outwardly of the fixture.

In this embodiment of the invention, a relatively conventional harp **57** is employed for mounting the fixture. The harp **57** includes spokes **58** emanating from a central ring **59** into engagement with the border, as by a ring **61** buried therein. All possible portions of the harp **57** are disposed closely adjacent the rear wall **56** above the light source so that no shadows will be formed by the harp. This is shown to be accomplished by forming the spokes **58** with central depending portions adjacent the center of the light source for attachment to the ring **59** which is adapted to engage the bottom of the light source. A conventional ceiling or wall light source is provided

with a threaded lug depending or extending from the center thereof and the harp ring **59** fits about same and is held thereat by the normal cap nut **62** threaded onto this lug. With the harp firmly affixed to the border member **53** as by adhesive connection or casting, the light fixture is then mounted in the same manner as a conventional glass light diffuser in normal light fixtures. Removal of the panel **54** allows access to the light source for mounting of the fixture and replacement of the panel entirely hides the mounting means. There is thus provided a fixture which has a flat or planar back fitting flush against a wall or ceiling and completely enclosing the light source. The novel structure of the fixture of this invention provides for facile manufacture, handling and installation of large to very large fixtures having additional advantages of complete closure and pleasing appearance of a multitude of shapes.

It should be understood that this invention in its broader aspects is not limited to specific examples illustrated and described herein, and that the following claims are intended to cover all changes and modifications that do not depart from the true spirit and scope of this invention.

What is claimed is:

1. An improved lighting fixture comprising a border member of cast foam material having a hollow center and a substantial wall thickness at least at a rear end thereof, a planar rear wall extending across the rear end of the border member and secured thereto, said border and rear wall presenting a flat surface for flush engagement with a wall or ceiling surface and said rear wall having at least one aperture therethrough to accommodate extension of a light source into the border member, mounting means for securing said border member upon a wall or ceiling with the rear wall in flush engagement therewith, and a light-transmitting panel dimensioned to fit the front end of said border member in closing relation to the interior thereof and removably engaging the border member for sealing the interior of the fixture.

2. A lighting fixture as set forth in claim **1**, further defined by said mounting means including a plurality of spokes radiating from a central ring outwardly into fixed engagement with said border member, said spokes being closely spaced from said rear wall over the majority of the lengths thereof inward from the border member and extending away from the rear wall adjacent said ring to dispose the ring in position for attachment to a light source extending through said rear wall.

3. A lighting fixture as set forth in claim **1**, further defined by said rear wall having a highly reflective inner surface within the border, and said mounting means comprising means extending from the interior side of the rear wall therethrough for engagement with a surface upon which said fixture is mounted.

4. A lighting fixture comprising a large border member of cast polystyrene foam having a hollow center and a substantial wall thickness at least at a rear end thereof whereby said border member forms a major structural element of the fixture and yet is very light in weight, said border member having a substantial depth from front to rear surfaces for fully enclosing a light source, mounting means affixed to said border member interiorly thereof and formed to secure the fixture flush against a flat ceiling or wall surface, and a plastic light-transmitting panel removably engaging the front end of said border member in closing relation thereto for sealing the interior of the fixture.

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NORTON ANSHER, *Primary Examiner.*