June 8, 1965 W. L. LIPSCOMB 3,188,461

PLURAL WALLED FIXTURES

Filed March 12, 1963 2 Sheets-Sheet 1

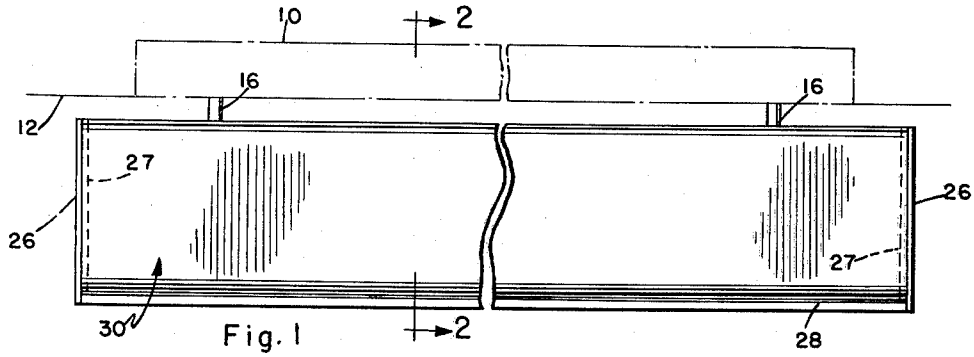


Fig. 1

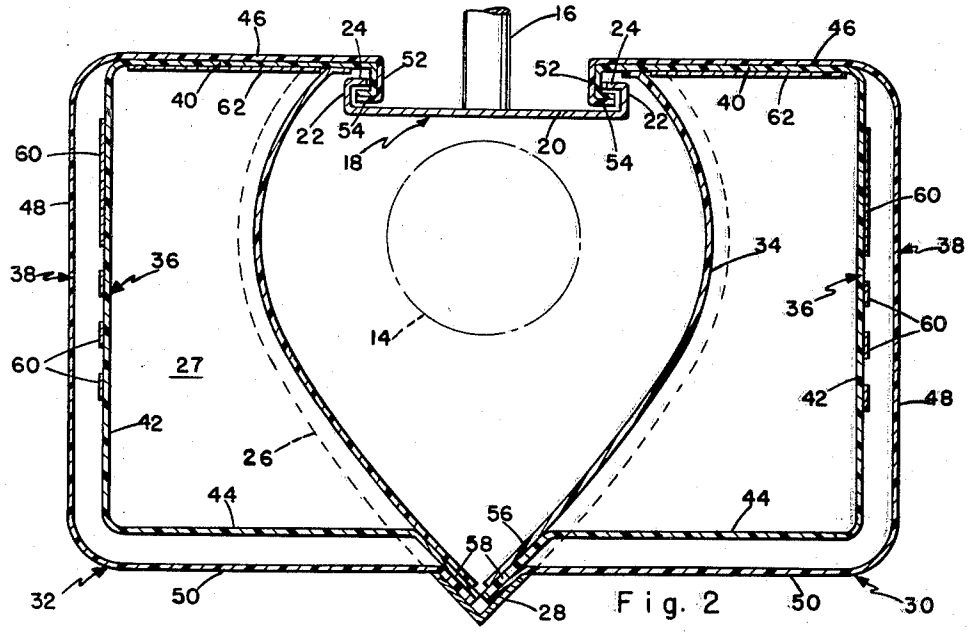


Fig. 2

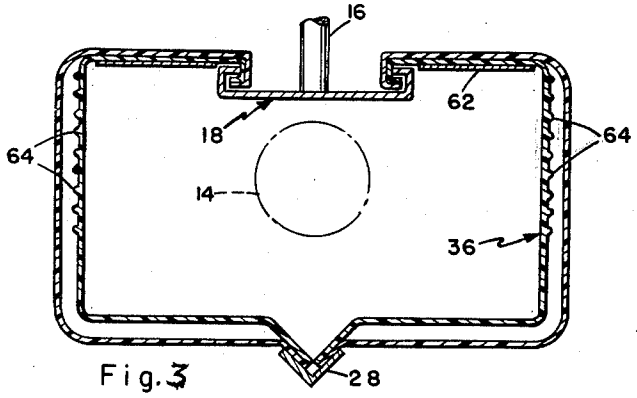


Fig. 3

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June 8, 1965 W. L. LIPSCOMB 3,188,461

ELURAL WALLED FIXTURES

Filed March 12, 1963 2 Sheets-Sheet 2

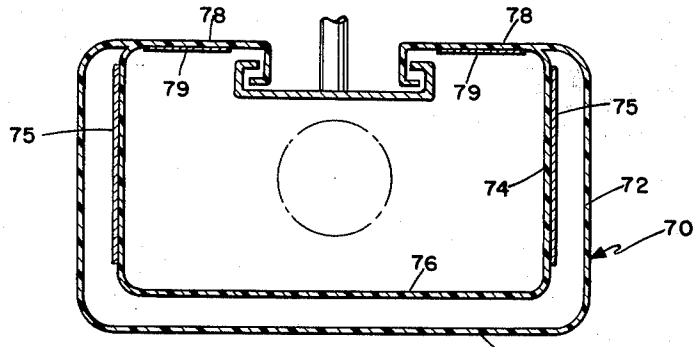


Fig. 4

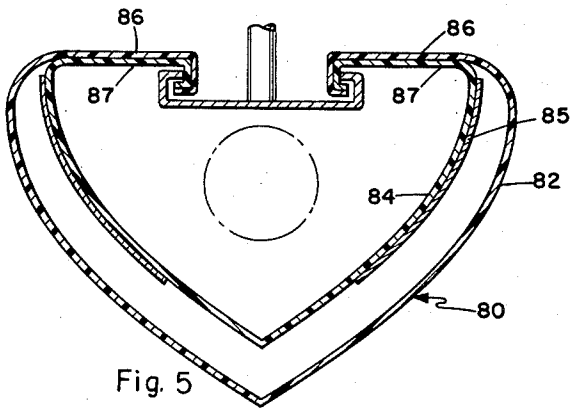


Fig. 5

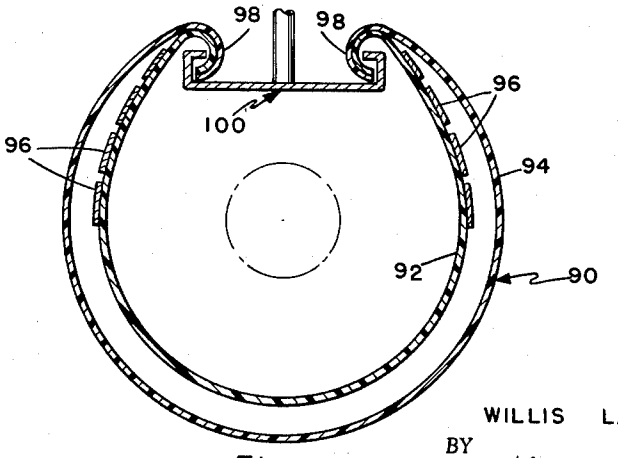


Fig. 6

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United States Patent Office 3,188,461
Patented June 8, 1965

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PLURAL WALLED FIXTURES

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Filed Mar. 12, 1963, Ser. No. 264,550
4 Claims. (Cl. 240—78)

The present invention relates generally to plural walled lighting fixtures and more particularly to such fixtures having brightness control means sealed in the space between the walls.

The primary object of this invention is to provide an improved lighting fixture in which brightness control means is sealed in to the fixture so that it is unaffected by washing, or other cleaning procedures, of the fixture and remains constant throughout the life of the fixture.

A further object of this invention is to provide an improved plural walled lighting fixture which will act as an effective insulator and prevent unwanted cooling of the lamps thereby insuring operation of the lamp at the designed temperature for peak efficiency.

A still further object of this invention is to provide an improved plural walled lighting fixture in which reflective material is placed on the side walls only of the fixture to give localization of brightness control.

A further and important object of this invention is to provide an improved plural walled lighting fixture in which brightness control means is sealed into the fixture thereby preventing contamination by dust and dirt.

Finally, it is an object to provide a lighting fixture of the aforementioned character which is simple and convenient to use and which will give generally efficient and durable service.

With these and other objects definitely in view, this invention consists in the novel construction, combination and arrangement of elements and portions, as will be hereinafter fully described in the specification, particularly pointed out in the claims, and illustrated in the drawings which form a material part of this disclosure, and in which:

FIGURE 1 is a side elevation view of one modification of the improved fixture;

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

FIGURES 3–6 are sectional views of modified forms of the invention, on a reduced scale, taken on a line similar to the line 2—2 of FIGURE 1.

Referring now to FIGURES 1 and 2 of the drawing the lighting fixture comprises an elongated housing 10 suitably secured to ceiling 12. Fixed inside the housing 10 is the usual ballast required with the tubular fluorescent type lamp 14. Extending downwardly from housing 10 are tubular support members 16, 16 thru which the usual wire for the lamp 14 may be threaded. Lower end of tubes 16 is secured to an elongated flat support member 20 the opposite lateral edges of which are turned upwardly at 22 and then inwardly at 24 to form inwardly facing channel the purpose of which will be hereinafter set forth.

Suspended from the aforementioned supporting structure is the improved plural walled lighting fixture which will now be described.

As shown in FIGURE 2 the lighting fixture consists of two similar elongated light diffusers 30 and 32. Since they are identical only one will be described for purposes of clarity. Diffuser 30 consists of an inner translucent wall generally indicated by the reference numeral 36 and an outer translucent wall generally indicated by numeral 38. These walls are formed of any suitable material preferably a light weight resilient plastic. Inner wall 36 is formed with a horizontally extending top portion 40 and a horizontally extending bottom portion 44, said portions

being generally parallel and vertically extending portion 42 interconnecting the top and bottom portions. Outer wall 38 is similarly formed with a horizontally extending top portion 46, a bottom portion 50 and a vertically extending portion 48 interconnecting the top and bottom portion. The top portions 40 and 46 are positioned in abutting relationship and are united by any conventional adhesive or heat sealing process. The free edge 54 is turned back upon itself to interlock with the inwardly facing channel formed on the support 20. The free edges of the bottom portions 44 and 50 are turned angularly downward to form abutting portions 56 and 58 respectively which are also united together and positioned in the groove formed by supporting bracket 28. The ends of the inner and outer walls 36 and 38 adjacent the end brackets 26 are joined together so that the space between the inner and outer walls is completely sealed from contact with the ambient atmosphere. As will be readily apparent from FIGURE 2 the inner and outer walls 36 and 38 form as a unit a member rectangular in cross section the upper and lower legs of which are spanned by a convex transparent panel 34 formed of clear plastic or the like. The lower portion of panel 34 is sealed to flange 56 of wall 44 and the upper portion of panel 34 is provided with a flange 52 in abutting relation with and sealed to portion 40 of inner wall 36.

Light diffusers 30, 32 are provided at opposite ends thereof with plastic end plates 27, 27 which are secured thereto and completely seal the space between the opposite side walls 48 and the top portion 40 and bottom portion 50. The assembly is completed by metal plates 26, 26 positioned axially outwardly of end plates 27, 27. Plates 26, 26 are secured at their top to support member 20 and at their bottom to supporting bracket 28.

From the above description it will be evident that there are two completely enclosed air spaces in light diffuser 30, one between the panel 34 and inner wall 36 and the other between the inner and outer walls 36 and 38. Brightness control means may be ideally located in these enclosed air spaces where they will be free from contact with dust and dirt of the ambient atmosphere. Also they will be completely out of contact with harsh detergents or cleaning media used in washing the diffusers. These brightness control means may take any of a number of forms. In FIGURE 2 there is shown a strip of light reflective material 62 bonded to the inside surface of inner wall portion 40. When used in this position the major portion of light from lamp 14 will be reflected downwardly. Additional strips of reflective material 60, in any desired pattern can be placed on the outer surface of inner wall 36 to reflect light inwardly and provide for a controlled degree of diffusion in a horizontal direction. If desired other forms of brightness control may be substituted for the reflective strips 62 and 60. Reflective paint spattered on is a common brightness control means. FIGURE 3 discloses another form in the molded ridges 64 which may be formed integral with the inner wall portion 36.

The diffuser elements 30 and 32 can be easily removed for cleaning and replacement. With reference to element 30 this may be readily accomplished by shifting the upper portion slightly to the left, as viewed in FIGURE 2 to disengage the flange 54 from the flange 24. Movement upwardly and to the right will then completely disengage the flanges 24 and 54. Continued movement will free the flanges 56, 58 from trough support 28.

Light diffusers 30 and 32 may be formed by any well known method of shaping or forming plastic material either in sheet form or by extrusion. Elongated members 34, 36 and 38 lend themselves particularly well to shaping by extrusion and I prefer to use this method but it is to

be understood that other equal well known techniques could be used.

The modification disclosed in FIGURE 3 is generally similar to that of FIGURE 2. In the interests of economy of manufacture the transparent panel 34 of FIGURE 2 has been omitted in the form shown in FIGURE 3. The brightness control means of this modification is shown as consisting of ribs 64 molded integrally with the inner wall member 36. It is within the scope of this disclosure to substitute other forms of brightness control means such as spattered particles of light reflective material in any controlled arrangement or strips of the same material.

In the modifications disclosed in FIGURES 4, 5 and 6 a single diffuser element is used rather than separate right and left elements such as disclosed in FIGURES 2 and 3.

In FIGURE 4 diffuser element 70 is of substantially rectangular form in cross section. This is formed as an integral extrusion with spaced parallel side walls 72, 74 and spaced parallel bottom walls 77, 77. The top wall 78 is integral with, and common to, both outer wall 72 and inner wall 74. This integration of the walls may be incorporated in any one of the forms disclosed herein. Brightness control means 75 is applied to the outer surface of the inner wall 74 and if desired suitable brightness control means 79 may be applied to the inner surface of top wall 78.

The diffuser 80 shown in FIGURE 4 includes outer and inner walls 82 and 84, respectively, which converge downwardly to a point and are spaced throughout their entire length. The upper walls 78, 79 are in sealed abutting relationship to provide a structure which is substantially heart shaped in cross section.

FIGURE 6 is quite similar to FIGURE 5, the only difference being that the inner and outer walls 92, 94 respectively of diffuser 90 are generally circular in cross section and co-axially mounted to provide an air space therebetween. Brightness control means 96 is positioned on the outer surface of the inner wall member 92 and the edges of the wall members are sealed together at 98 and turned back upon themselves to define longitudinally extending, inwardly returned edge portions to co-operate with support 100 in the manner as described with reference to FIGURE 2.

Advantages

The instant invention provides many advantages to illuminating engineers. The double walled structure provides a high degree of rigidity. The use of brightness control material in the space between the walls, where it is unaffected by materials used in cleaning the fixture, prevents impairment of the brightness control and prolongs the useful life of the fixture. The double wall also acts as an effective insulator when the fixture is used in locations where the ambient atmosphere is subject to temperature variations. This prolongs the like of the fluorescent lamp and allows it to operate at peak efficiency.

It is understood that minor variation from the form of the invention disclosed herein may be made without departing from the scope and spirit of the invention, and that the specification and drawing are to be considered as merely illustrative rather than limiting.

I claim:

1. A lighting fixture comprising:
an elongated light diffuser having inner and outer translucent walls, portions of said walls being of double wall form and defining an air sealed space therein, contiguous edges of said walls sealed together and turned back upon themselves to define longitudinally extending, inwardly returned edge portions;
means supporting said light diffuser and engaging said returned edge portions;
and light reflective material on a portion of the radially outward surface of said inner wall.

2. A structure as claimed in claim 1 in which said diffuser is generally rectangular in cross section.

3. A structure as claimed in claim 1 in which said diffuser is generally heart shaped in cross section.

4. A structure as claimed in claim 1 in which said diffuser is generally circular in cross section.

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