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(54) A lighting fitting

(57) A lighting fitting comprises a housing (1, 18) and a closure (4). The closure (4) has a frame (6) which includes a flexible fork like extension (7) which forms a seal with the ceiling in which the fitting is installed. The housing and closure have complementary connecting means comprising projections (9) and inverted U-shaped cross-section (17) which enable them to be connected together with a push fit. Adjustable brackets (25) may be provided so that the fitting can be adjusted in position within the ceiling after installation. The seal presents a substantially smooth transition between fitting and ceiling which facilitates cleaning and the push fit connection enables easy detachment for cleaning and lamp replacement.

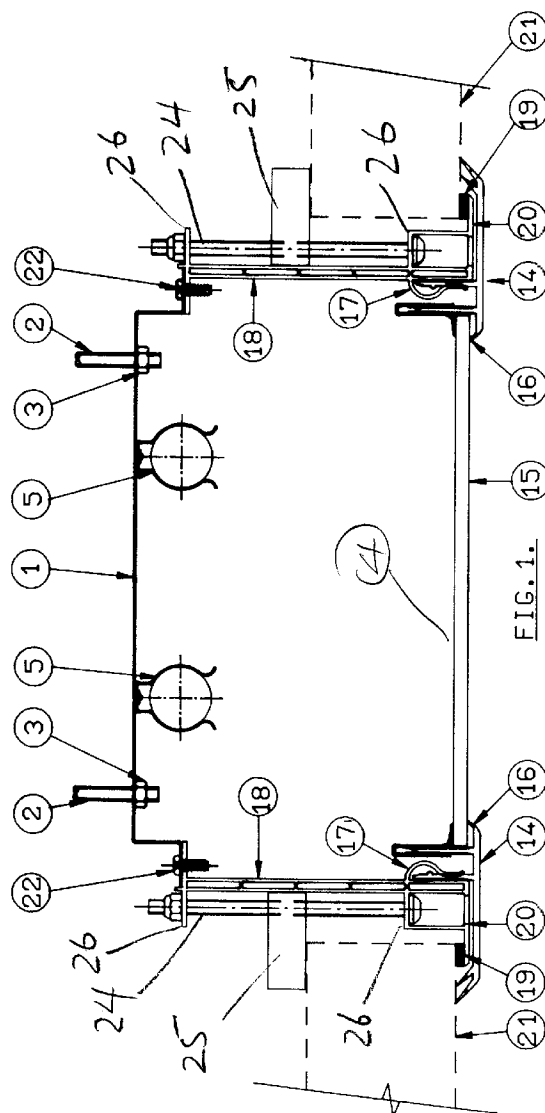


FIG. 1.

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Description

The present invention relates to a lighting fitting particularly, but not exclusively, a lighting fitting for use in a clean room such as for medical or advanced technology use.

Current modern lighting fittings are usually incorporated in the ceilings of the rooms in which they are to be used. To this end an aperture is formed in the ceiling through which the body of the lighting fitting is introduced, the diffuser of the fitting then in effect closing off the aperture in the ceiling. In use, fixing the diffuser and its associated parts if any to the remainder of the fitting can be laborious and time consuming thus complicating lamp exchange when lamps are changed from below. The fitting may be difficult to clean and foreign matter may enter the room from the ceiling enclosure through gaps between the fitting and surrounding ceiling. It is an object of embodiments of the invention to overcome or mitigate one or more of these disadvantages.

According to one aspect of the present invention there is provided a lighting fitting comprising a housing for a lamp adapted for fitting in an aperture in a ceiling, and a closure for closing off the housing to provide an enclosure for the lamp, the closure and housing having complementary connecting means enabling the housing and closure to be connected to each other with a push fit.

According to another aspect of the present invention there is provided a lighting fitting comprising a housing for a lamp adapted for fitting in an aperture in a ceiling and a closure for closing off the housing to provide an enclosure for the lamp the closure being formed with a peripheral jointless member having an integral relatively flexible seal whereby when the closure is advanced to the housing the flexible seal abuts and is resiliently deformed by the ceiling adjacent the aperture to form a seal between the fitting and the ceiling.

According to a further aspect of the present invention, there is provided a lighting fitting comprising a housing for a lamp adapted for fitting in an aperture in a ceiling and a closure for closing off the housing to provide an enclosure for the lamp in which the housing provides supports for adjustable support brackets to enable the position of the housing to be adjusted after installation in a ceiling.

In a preferred embodiment of the invention, the housing comprises a member having a part formed with an inverted U-shaped cross-section. The closure comprises a peripheral member. This peripheral member comprises the peripheral flexible seal. It also includes an upstanding projection adapted for insertion in the inverted 'U' shaped cross-section of the housing part. This projection is also advantageously externally formed to coact with the formations internally of the inverted 'U' shape. The coaction enables the closure to be a push fit into the housing. The closure comprises a further peripheral member which also has an inverted 'U'-shape

in cross-section which is also advantageously provided with internal formations. The first mentioned peripheral member comprises a further upstanding projection which is also provided with external formations. These formations coact with those on the U-shape of the further peripheral member to provide a push fit between them. A transparent or translucent diffuser in planar form is held between the peripheral members when the two members are connected together with a push fit. To provide a seal with the diffuser, the diffuser advantageously coacts with a further flexible seal on the jointless frame. A closed cell PVC foam strip may also be disposed between the housing member and the adjacent ceiling when the fitting is in position. The peripheral members are advantageously moulded, for example, extruded, from a synthetic plastics material such as UPVC. The formations may comprise serrations, which provide a degree of adjustability between corresponding projections and 'U' shape.

In order that the invention may be more clearly understood, one embodiment thereof will now be described by way of example with reference to the accompanying drawing, in which:-

Figure 1 shows a cross-sectional view of a lighting fitting according to the invention,

Figure 2 shows a cross-sectional view of part of the fitting of Figure 1 and

Figure 3 shows a cross-sectional detail view of part of the fitting of Figure 1.

Referring to Figure 1, the lighting fitting comprises a housing having a metal upper part 1 and downwardly dependant extruded synthetic plastics material (e.g. UPVC) extensions 18 connected to the upper part 1 by rivets 22 or similar. The extensions are formed at their lower ends with parts of inverted U-shaped cross-section 17 for a purpose to be described later. The housing is suspended by means of drop rods 2 or similar within the ceiling enclosure. The drop rods 2 are externally screwthreaded and complementary internally screwthreaded nuts 3 are screwed onto them to fix the housing in the desired position. This alternative method of suspension is also shown for convenience on Figure 1, although it will be appreciated that both methods of suspension would not be used together. In the alternative method, the aluminium side supports brackets each define an internally screwthreaded through bore through which complementary screwthreaded rods 24 extend. These rods are supported in flanges 26 which are integrally formed on the extensions 18. The housing is open to its lower side and this opening may be closed off by a closure member 4 shown separately in Figure 2 and in position on the housing in Figure 1. The position of two fluorescent tubes within the housing is indicated diagrammatically at 5.

Referring to Figure 2, the closure member 4 comprises a jointless peripheral frame 6, which is square or

rectangular in plan view, extruded from a synthetic plastics material such as UPVC. At its external periphery the frame is formed by coextrusion with a flexible fork like extension 7 of PVC. The extension 7 extends from a planar body 8 from which two upstanding projections 9 and 10 extend. The extension 7, upstanding projections 9, 10 and planar body 8 extend around the whole of the frame 6 and are all integrally formed with one another. The projections 9, 10 are externally serrated.

A further peripheral member 11, which has an inverted U-shape in cross-section is provided also moulded from a synthetic plastics material such as UPVC. This further member 11 has serrations internally of the inverted 'U'. The innermost leg 12 of the 'U' has at its free end an inwardly extending lip 13. Between this lip 13 and an adjacent lip 14 on the frame 6 a channel is defined. This channel accommodates a transparent or translucent diffuser 15. So that the diffuser is resiliently held the jointless frame also comprises a further flexible seal 16 extending to the inside of the frame and formed during the extrusion process. When the member 11 is pushed onto the upstanding member 10, this seal 16 is compressed and is held in that condition by the diffuser 15 which in turn is held by the two lips 13 and 14 under action of the interacting serrations in the 'U' and on the projection 10 respectively. The seal in the uncompressed condition can be seen on Figure 3.

The part of inverted U-shaped cross-section 17 is also internally serrated and receive the other upstanding projection 9 with a push fit. During extrusion a closed cell PVC foam strip 19 is applied to a lip 20 forming part of the extension 18. The relative positions of the members 11 and 17 on the frame member 6 can be altered by altering the degree to which the internally serrated 'U's are pushed onto the externally serrated upstanding projections 9 and 10.

On assembly the housing is introduced into the ceiling and fixed in position by nuts 3 on rods 2 the foam strip 19 being compressed between the lower surface of the ceiling 21 and the lip 20 forming part of the extension 18. Once the sub-assembly comprising the frame member 6, member 11 and diffuser 15 is complete, it may be offered up to the housing. On being offered up, projection 9 is inserted into the 'U' shaped channel 17 of extension 18 the flexible extension 7 being deformed to provided a seal between the ceiling 21 and the light fitting. The degree of deformation of the extension 7 is determined by the degree to which the projection 9 is inserted into the 'U' shaped channel 17 of the extension 18. The completed assembly presents a substantially smooth transition between fitting and surrounding ceiling which facilitates cleaning. The peripheral jointless seal around the fitting between the fitting and the surrounding ceiling prevents ingress of dirt from the ceiling interior to the room below. The absence of a joint removes a possible source of bacteriological contamination. This is important in clean rooms and other sterile environments. The sub-assembly may be easily de-

tached from the housing for cleaning and/or lamp replacement by pulling the sub-assembly away from the housing the projection 9 then being withdrawn from the complementary inverted U-shape channel. Once the sub-assembly is withdrawn, the foam strip 19 maintain a seal between the lip 20 and the adjacent ceiling 21.

It will be appreciated that the above embodiment has been described by way of example only and that many variations are possible without departing from the scope of the invention. For example, the various members of the fitting may be formed from other materials and may be produced other than by extrusion. The serrations may be replaced by other suitable formations.

Claims

1. A lighting fitting comprising a housing (1,18) for a lamp (5) adapted for fitting in an aperture in a ceiling, and a closure (4) for closing off the housing to provide an enclosure for the lamp(5), characterised by the closure (4) and housing (1) having complementary connecting means (9, 17) enabling the housing and closure to be connected to each other with a push fit.
2. A lighting fitting comprising a housing (1, 18) for a lamp (5) adapted for fitting in an aperture in a ceiling and a closure (4) for closing off the housing to provide an enclosure for the lamp characterised by the closure being formed with a peripheral jointless member (6) having an integral relatively flexible seal (7) whereby when the closure (4) is advanced to the housing (1) the flexible seal (7) abuts and is resiliently deformed by the ceiling adjacent the aperture to form a seal between the fitting and the ceiling.
3. A lighting fitting comprising a housing (1,18) for a lamp (5) adapted for fitting in an aperture in a ceiling and a closure (4) for closing off the housing to provide an enclosure for the lamp characterised in that the housing (1,18) provides supports for adjustable support brackets (25) to enable the position of the housing (1,18) to be adjusted after installation in a ceiling.
4. A lighting fitting as claimed in claim 1 or 3, in which the closure comprises a peripheral member (6) having a peripheral flexible seal (7).
5. A lighting fitting as claimed in claim 2 or 3, in which the closure (4) and housing (1, 18) have complementary connecting means (9,17) enabling the housing (1,18) and closure (4) to be connected to each other with a push fit.
6. A lighting fitting as claimed in any preceding claim,

in which one of the complementary connecting means (9) is externally formed to coact with the other (17).

7. A lighting fitting as claimed in claim 2 or 4, in which the peripheral member (6) comprises a projection (10) onto which a further peripheral member (11) is pushed, the peripheral members (6, 11) defining a channel therebetween to house a translucent or transparent member (15). 5 10
8. A lighting fitting as claimed in claim 7, in which the peripheral member (6) has another flexible seal (7) which coacts with the translucent or transparent member (15). 15
9. A lighting fitting as claimed in claim 3, in which the members (18) support threaded bolts (24) which extend through threaded apertures in the support brackets so that on rotation of the bolts (24) the brackets move longitudinally thereof. 20
10. A lighting fitting as claimed in claim 2 or 4, in which the housing (1, 18) supports a sealing strip which is adapted in use to abut the adjacent ceiling to provide a seal therewith. 25

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