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(54) **HEAT RESISTANT CASING**

HITZEBESTÄNDIGES GEHÄUSE

BOITIER RESISTANT A LA CHALEUR

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Description

[0001] This invention relates to a new fire resistant casing for use with electrical fittings, particularly for use with lamp holders.

[0002] New building regulations require down-lighters fitted into ceilings to be provided with fire hoods to prevent or at least minimise the spread of fire. Various types of fire hood have been proposed which include a fire resistant intumescent material that upon excessive heating (e.g. in the event of a fire) expand to many times their original volume, thus forming a fire barrier to minimise or prevent fire spread. For example, GB 2 326 467A describes a fire-resistant fabric hood containing a fitting to receive a bulb. The hood consists of a flexible fabric coated or impregnated with a liquid based intumescent material. These hoods have been quite successful, but the aim is still to increase the efficiency of the built-in ventilation and fire/heat protection, whilst providing a cost effective and easy to install option. An object of the present invention is to provide a new heat resistant casing (fire hood) which can be supplied already fitted with a lamp holder or other electrical fitting and which in use is efficient at minimising heat build up and also in preventing or minimising fire spread, should that occur.

[0003] According to one aspect of the present invention, there is provided a heat-resistant casing (10) for an electrical fitting (19) in which the casing (10) comprises a housing of fire resistant material comprising a top (11) supporting one or more side-walls (12), the top (11) is provided with at least one aperture (26), the housing encloses an electrical fitting (19) which is attached to the housing by an attachment means (16,18,20), and within the housing is a first solid fire-resistant intumescent material (17) positioned between the interior surface of the top (11) and the electrical fitting (19), whereby the housing is of a self-supporting substantially rigid construction, and the first solid fire-resistant intumescent material (17) is provided with at least one aperture (29), characterised in that the housing is provided with a collar (15) of a second solid fire-resistant intumescent material which extends substantially completely around the exterior surface of the side wall or walls (12), and the first solid fire-resistant intumescent material (17) is spaced apart from the interior surface of the top (11) to form a gap (16A) so that in the event of a fire or excessive heating the first solid fire-resistant intumescent material (17) can expand into the gap (16A).

[0004] The housing is preferably of substantially circular cross-section and is preferably of metal or plastic. The top preferably has a plurality of apertures for ventilation (heat dissipation), passage of electrical cables and attachment means for the first fire resistant intumescent material. The 'free edge' of the side wall, i.e. the side wall remote from the top, preferably has an outwardly extending lip. This lip may be used for attachment of a cover for the electrical fitting. Where the electrical fitting is a lamp holder, a cover in the form of a decorative ring can be

attached to the lip. The casing is particularly applicable for recessing into a support structure such as a ceiling or wall, especially when the support structure is being constructed. In a preferred embodiment, a seal is provided substantially overlying the lip so that the seal when in use is sandwiched between the lip and the surface into which the casing is fitted e.g. a ceiling or wall. One aim of the seal is to prevent moisture and air from getting between the casing and the fitting surface (e.g. ceiling or wall) and thus into the voids between floors and into loft spaces. This is an area in which house builders are being told to clamp down, so to improve energy efficiency and is requested by the NHBC (National House Builders Council). A further potential benefit of the seal is that it allows the casing to sit evenly on the ceiling where a textured surface, e.g. "Artex" (Trade Mark), has been used, thus not showing gaps around the rim and preventing the downlighter leaning at an angle. In addition the seal helps to reduce the contact temperature between the rim of the downlighter and the ceiling board. The seal may e.g. be made of a moisture resistant elastomeric composition and preferably is provided with a raised rib portion on the surface remote from the lip.

[0005] The intumescent material may be based on graphite or other intumescent materials which upon exposure to extreme heat expand in volume. An example of a graphite based material is that supplied by Technical Fibre Products Limited as 'Intumescent Material' and consists of a high temperature "Rockwool" (Trade mark) fibre mat containing easily dispersed foliating graphite bonded in acrylic. The first and second intumescent materials may be of the same composition or different.

[0006] Preferably the first intumescent material is provided with a plurality of apertures. The apertures are for passage of electrical cables and/or for ventilation to dissipate heat that tends to build up in the casing when the electrical fitting is switched on.

[0007] Preferably a plate is provided to support the first intumescent material, in which case the plate is usually provided with apertures, at least some of which coincide with those of the first intumescent material. The apertures are conveniently circular holes punched through with a suitable tool. The plate is preferably sized to fit snugly within the casing and may then be attached to the interior surface of the top by means of e.g. nuts and bolts. The nuts, when present, also serve to maintain the necessary space between the interior surface of the top and the first intumescent material supported on the plate. Preferably the gap between the interior surface of the top and the first intumescent material is in the range 2 to 8 mm, more preferably 2 to 5mm.

[0008] Where a plate is provided, this may conveniently be used for attachment of the electrical fitting e.g. by means of nuts and bolts. The electrical fitting is preferably positioned within the housing so that it does not touch the internal surface of the side wall or walls.

[0009] It will be appreciated that certain features of the invention within the scope of the appended claims which

are, for clarity, described in the context of separate embodiments, may also be provided in combination in a single embodiment. Conversely, various features of the invention, which are for brevity described in the context of a single embodiment, may also be provided separately or in any suitable combination.

[0010] Embodiments of the present invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a schematic view, partly in section, of a casing according to the present invention;

Figure 2 is a perspective top view of the casing of Figure 1, also showing connections of the electrical cable to a terminal housing.

Figure 3 is a perspective top view of the first solid fire-resistant material used in Figure 1, attached to its backing plate and threaded through with electrical cables.

Figure 4 is a bottom view of the first solid fire-resistant material and attached backing plate of Figure 3 in position in the casing.

Figure 5 is a schematic side view, partly in section, of the casing of Figure 1.

Figure 6 are perspective and side views illustrating a moisture seal (2 views), the seal positioned on a heat resistant casing and the casing recessed into a ceiling.

[0011] Referring now to Figure 1 a heat resistant casing 10 comprises a cylindrical pressed steel housing consisting of a top 11 supporting a side wall 12. The side wall 12 has a lip 13 onto which is clipped a cover 14 (see Figure 5) by means of spring clips 14a & 14b. A collar 15 of solid fire resistant intumescent material surrounds the lower edge of the side wall 12. The collar 15 is 25mm high and 1.2mm thick and is glued in place. Within the housing is a steel plate 16 supporting a 1.2mm thick layer of solid fire resistant intumescent material 17. Plate 16 and layer 17 have corresponding apertures. The gap 16A between the top 11 and layer 17 is chosen to be in the range 2 to 5mm. The plate 16 is held in place by nuts and bolts 18, which also keep the gap 16A consistent. A pressed steel lamp holder 19 is attached to plate 16 by means of nuts and bolts 20. An aluminium lamp 21 fits into the lamp holder 19. Referring to Figure 2, seven apertures are apparent in top 11. Through three apertures electrical cabling 22 to 24 passes, into two apertures are fitted fixing nuts and bolts for the terminal housing 25, one aperture 26 is open for ventilation, and one aperture 27 is occupied by a nut and bolt connected to the plate 16 inside the casing.

[0012] Referring to Figure 3, cables 22 and 23 are shown, together with ventilation apertures 28, 29.

[0013] Referring to Figure 4, cables 22 & 23 are shown through plate 16, plus four ventilation apertures e.g. 30.

[0014] Figure 5 is a schematic representation showing i.a. more clearly how the downlighter cover 14 clips into

place.

[0015] In operation, the apertures in the top 11, solid fire resistant intumescent material 17 and plate 16 act to ventilate the casing and dissipate heat.

[0016] In the event of a fire, the solid fire resistant intumescent material 17 expands to 9 times its volume, filling the gap between the top 11 and plate 16 and the aforementioned apertures including those through which the cabling passes. This expansion helps to prevent the fire from spreading e.g. to an upper floor when the housing is recessed into a ceiling. Also, the collar 15 of solid fire resistant intumescent material expands to nine times its volume, filling the space between the housing and the surrounding structure e.g. the ceiling. This expansion helps to prevent the fire from spreading. Where a seal is fitted as in Figure 6, this aims to prevent moisture and air from getting between the casing and the ceiling and also helps to give the casing a flat fitting in the ceiling.

Claims

1. A heat resistant casing (10) for an electrical fitting (19) in which the casing (10) comprises a housing of fire resistant material comprising a top (11) supporting one or more side-walls (12), the top (11) is provided with at least one aperture (26), the housing encloses an electrical fitting (19) which is attached to the housing by an attachment means (16, 18, 20), and within the housing is a first solid fire-resistant intumescent material (17) positioned between the interior surface of the top (11) and the electrical fitting (19), whereby the housing is of a self-supporting substantially rigid construction, and the first solid fire-resistant intumescent material (17) is provided with at least one aperture (29), **characterised in that** the housing is provided with a collar (15) of a second solid fire-resistant intumescent material which extends substantially completely around the exterior surface of the side wall or walls (12), and the first solid fire-resistant intumescent material (17) is spaced apart from the interior surface of the top (11) to form a gap (16A) so that in the event of a fire or excessive heating the first solid fire-resistant intumescent material (17) can expand into the gap (16A).
2. A heat resistant casing (10) according to claim 1 **characterised in that** the housing has a substantially circular cross-section.
3. A heat resistant casing (10) according to claim 1 or 2 **characterised in that** the housing is of metal or plastic.
4. A heat resistant casing (10) according to any preceding claim **characterised in that** the collar (15) is adjacent the edge of the side wall (12) remote from the top (11).

5. A heat resistant casing (10) according to any preceding claim **characterised in that** the collar (15) is positioned so that in the event of a fire or excessive heating the collar (15), can expand to fill the space between the casing (10) and the surrounding structure. 5
6. A heat resistant casing (10) according to any preceding claim **characterised in that** the side wall (12) remote from the top has an outwardly extending lip (13). 10
7. A heat resistant casing (10) according to claim 6 **characterised in that** a seal is provided which extends substantially around the surface of the outwardly extending lip (13). 15
8. A heat resistant casing (10) according to claim 7 **characterised in that** the seal is positioned so that when the casing (10) is fitted into a retaining surface the seal will be sandwiched between the outwardly extending lip (13) and that retaining surface. 20
9. A heat resistant casing (10) according to any preceding claim **characterised in that** the top (11) is provided with a plurality of apertures (26, 27). 25
10. A heat resistant casing (10) according to any preceding claim **characterised in that** the first solid fire-resistant intumescent material (17) is provided with a plurality of apertures (28,29). 30
11. A heat resistant casing (10) according to any preceding claim **characterised in that** the housing is further provided with a plate (16) which supports the first solid fire-resistant intumescent material (17). 35
12. A heat resistant casing (10) according to any preceding claim **characterised in that** the first solid fire-resistant intumescent material (17) is spaced apart from the internal surface of the top (11) by a gap (16A) of from 2 to 8mm. 40
13. A heat resistant casing (10) according to Claim 12 **characterised in that** the gap (16A) is from 2 to 5 mm. 45
14. A heat resistant casing (10) according to Claim 11 **characterised in that** the plate (16) is provided with at least one aperture (28,29). 50
15. A heat resistant casing (10) according Claim 14 **characterised in that** at least one aperture in the plate (16) coincides with at least one aperture in the first solid fire-resistant intumescent material (17). 55
16. A heat resistant casing (10) according to any one of claims 11 to 15 **characterised in that** the electrical

fitting (19) is attached to the plate (16).

17. A heat resistant casing (10) according to any preceding claim **characterised in that** the electrical fitting (19) is attached by means of electrical cabling (22) to a terminal housing (25) outside the casing (10).
18. A heat resistant casing (10) according to any preceding claim **characterised in that** the electrical fitting (19) is spaced from the internal surface of the side wall or walls (12).
19. A heat resistant casing (10) according to any preceding claim **characterised in that** the electrical fitting (19) comprises a lamp holder.
20. A heat resistant casing (10) according to any preceding claim **characterised in that** the first solid fire-resistant intumescent material (17) is of substantially the same composition as the second solid fire-resistant intumescent material.
21. A heat resistant casing (10) according to any preceding claim **characterised in that** it is adapted to be recessed into a support structure.

Patentansprüche

1. Hitzebeständiges Gehäuse (10) für einen elektrischen Anschluss (19), bei dem das Gehäuse (10) ein Gehäuse aus feuerbeständigem Material umfasst, das eine Oberseite (11) umfasst, die eine oder mehrere Seitenwände (12) trägt, wobei die Oberseite (11) mit mindestens einer Öffnung (26) versehen ist, wobei das Gehäuse einen elektrischen Anschluss (19) umhüllt, welcher an dem Gehäuse durch ein Befestigungsmittel (16, 18, 20) befestigt ist, und sich in dem Gehäuse ein erstes festes feuerbeständiges Brandschutzmaterial (17) befindet, das zwischen der Innenoberfläche der Oberseite (11) und dem elektrischen Anschluss (19) angeordnet ist, wobei das Gehäuse eine selbsttragende, im Wesentlichen starre Konstruktion ist und das erste feste feuerbeständige Brandschutzmaterial (17) mit mindestens einer Öffnung (29) versehen ist, **dadurch gekennzeichnet, dass** das Gehäuse mit einer Manschette (15) aus einem zweiten festen feuerbeständigen Brandschutzmaterial versehen ist, welche sich im Wesentlichen vollständig um die Außenoberfläche der Seitenwand oder der Seitenwände (12) herum erstreckt, und das erste feste feuerbeständige Brandschutzmaterial (17) von der Innenoberfläche der Oberseite (11) beabstandet ist, um einen Spalt (16A) so auszubilden, dass sich das erste feste feuerbeständige Brandschutzmaterial (17) im Fall eines Feuers oder einer

übermäßigen Erhitzung in den Spalt (16A) hinein ausdehnen kann.

2. Hitzebeständiges Gehäuse (10) nach Anspruch 1, **dadurch gekennzeichnet, dass** das Gehäuse einen im Wesentlichen kreisförmigen Querschnitt aufweist.
3. Hitzebeständiges Gehäuse (10) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** das Gehäuse aus Metall oder Kunststoff besteht.
4. Hitzebeständiges Gehäuse (10) nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Manschette (15) zu dem Rand der Seitenwand (12) benachbart ist, der von der Oberseite (11) entfernt ist.
5. Hitzebeständiges Gehäuse (10) nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Manschette (15) so angeordnet ist, dass sich die Manschette (15) im Fall eines Feuers oder einer übermäßigen Erhitzung ausdehnen kann, um den Raum zwischen dem Gehäuse (10) und der umgebenden Struktur auszufüllen.
6. Hitzebeständiges Gehäuse (10) nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die von der Oberseite entfernte Seitenwand (12) eine sich nach außen erstreckende Krempe (13) aufweist.
7. Hitzebeständiges Gehäuse (10) nach Anspruch 6, **dadurch gekennzeichnet, dass** eine Dichtung bereitgestellt ist, die sich im Wesentlichen um die Oberfläche der sich nach außen erstreckenden Krempe (13) herum erstreckt.
8. Hitzebeständiges Gehäuse (10) nach Anspruch 7, **dadurch gekennzeichnet, dass** die Dichtung so angeordnet ist, dass die Dichtung beim Einbau des Gehäuses (10) in eine Haltefläche zwischen der sich nach außen erstreckenden Krempe (13) und dieser Haltefläche eingeklemmt wird.
9. Hitzebeständiges Gehäuse (10) nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Oberseite (11) mit einer Vielzahl von Öffnungen (26, 27) versehen ist.
10. Hitzebeständiges Gehäuse (10) nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass**

das erste feste feuerbeständige Brandschutzmaterial (17) mit einer Vielzahl von Öffnungen (28, 29) versehen ist.

- 5 11. Hitzebeständiges Gehäuse (10) nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** das Gehäuse ferner mit einer Scheibe (16) versehen ist, die das erste feste feuerbeständige Brandschutzmaterial (17) trägt.
- 10 12. Hitzebeständiges Gehäuse (10) nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** das erste feste feuerbeständige Brandschutzmaterial (17) von der Innenoberfläche der Oberseite (11) durch einen Spalt (16A) von 2 bis 8 mm beabstandet ist.
- 15 13. Hitzebeständiges Gehäuse (10) nach Anspruch 12, **dadurch gekennzeichnet, dass** der Spalt (16A) 2 bis 5 mm beträgt.
- 20 14. Hitzebeständiges Gehäuse (10) nach Anspruch 11, **dadurch gekennzeichnet, dass** die Scheibe (16) mit mindestens einer Öffnung (28, 29) versehen ist.
- 25 15. Hitzebeständiges Gehäuse (10) nach Anspruch 14, **dadurch gekennzeichnet, dass** mindestens eine Öffnung in der Scheibe (16) sich mit mindestens einer Öffnung in dem ersten festen feuerbeständigen Brandschutzmaterial (17) überschneidet.
- 30 16. Hitzebeständiges Gehäuse (10) nach einem beliebigen der Ansprüche 11 bis 15, **dadurch gekennzeichnet, dass** der elektrische Anschluss (19) an der Scheibe (16) befestigt ist.
- 35 17. Hitzebeständiges Gehäuse (10) nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** der elektrische Anschluss (19) mit Hilfe einer elektrischen Verkabelung (22) an einem Anschlussgehäuse (25) außerhalb des Gehäuses (10) befestigt ist.
- 40 18. Hitzebeständiges Gehäuse (10) nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** der elektrische Anschluss (19) von der inneren Oberfläche der Seitenwand oder Seitenwände (12) beabstandet ist.
- 45 19. Hitzebeständiges Gehäuse (10) nach einem beliebigen der vorstehenden Ansprüche,
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dadurch gekennzeichnet, dass

der elektrische Anschluss (19) eine Lampenhalterung umfasst.

20. Hitzebeständiges Gehäuse (10) nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** das erste feste feuerbeständige Brandschutzmaterial (17) im Wesentlichen die gleiche Zusammensetzung wie das zweite feste feuerbeständige Brandschutzmaterial aufweist. 5
21. Hitzebeständiges Gehäuse (10) nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** es zur Aufnahme in einer Aussparung einer Tragestruktur ausgelegt ist. 10

Revendications

1. Boîtier résistant à la chaleur (10) pour un élément de raccordement électrique (19), lequel boîtier (10) comprend une enveloppe en matériau résistant au feu comprenant une partie supérieure (11) qui supporte une ou plusieurs parois latérales (12), la partie supérieure (11) est pourvue d'au moins une ouverture (26), l'enveloppe entoure un élément de raccordement électrique (19) qui est fixée sur elle à l'aide de moyens de fixation (16, 18, 20), dans ladite enveloppe un premier matériau solide intumescent résistant au feu (17) est placé entre la surface intérieure de la partie supérieure (11) et l'élément de raccordement électrique (19), l'enveloppe étant une construction autoporteuse globalement rigide, et le premier matériau solide intumescent résistant au feu (17) est pourvu d'au moins une ouverture (29), **caractérisé en ce que** l'enveloppe est pourvue d'un collier (15) composé d'un second matériau solide intumescent résistant au feu qui s'étend globalement sur tout le tour de la surface extérieure de la ou des parois latérales (12), et le premier matériau solide intumescent résistant au feu (17) est espacé de la surface intérieure de la partie supérieure (11) pour former un espace (16A), de sorte qu'en cas d'incendie ou d'échauffement excessif, ledit premier matériau solide intumescent résistant au feu (17) peut se dilater dans l'espace (16A). 20
2. Boîtier résistant à la chaleur (10) selon la revendication 1, **caractérisé en ce que** l'enveloppe a une section transversale globalement circulaire. 25
3. Boîtier résistant à la chaleur (10) selon la revendication 1 ou 2, **caractérisé en ce que** l'enveloppe est en métal ou en matière plastique. 30
4. Boîtier résistant à la chaleur (10) selon l'une quel- 35

conque des revendications précédentes, **caractérisé en ce que** le collier (15) est voisin du bord de la paroi latérale (12) qui est éloigné de la partie supérieure (11).

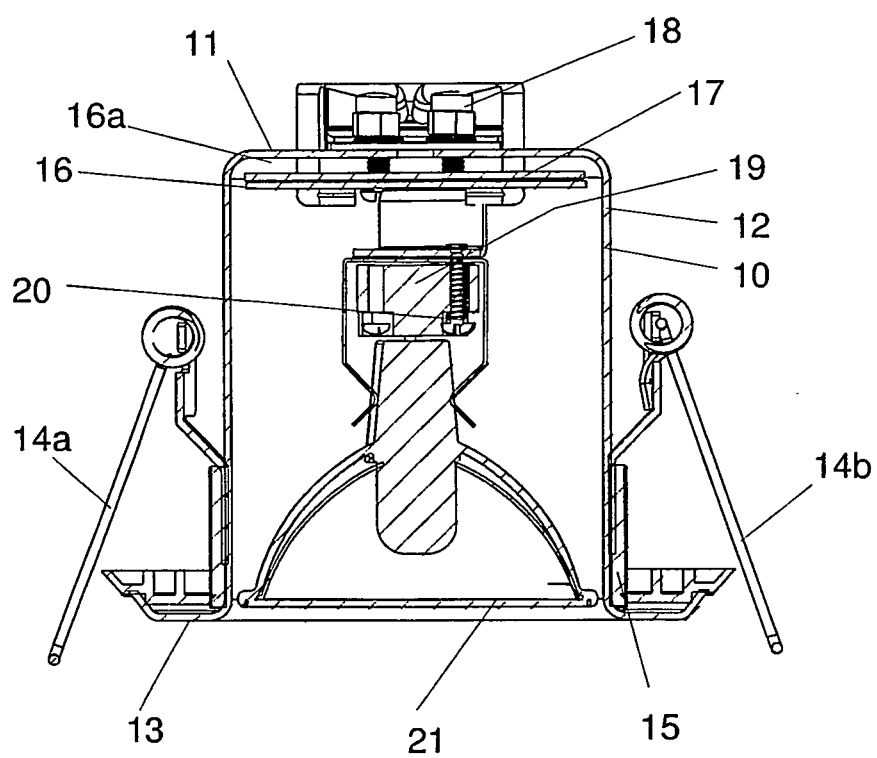
5. Boîtier résistant à la chaleur (10) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le collier (15) est placé de telle sorte qu'en cas d'incendie ou d'échauffement excessif il puisse se dilater pour remplir l'espace entre le boîtier (10) et la structure environnante. 40
6. Boîtier résistant à la chaleur (10) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la paroi latérale (12) éloignée de la partie supérieure a une lèvre (13) qui s'étend vers l'extérieur. 45
7. Boîtier résistant à la chaleur (10) selon la revendication 6, **caractérisé en ce qu'il** est prévu un joint d'étanchéité qui s'étend globalement autour de la surface de la lèvre (13) qui s'étend vers l'extérieur. 50
8. Boîtier résistant à la chaleur (10) selon la revendication 7, **caractérisé en ce que** le joint d'étanchéité est placé de manière à être pris en sandwich, quand le boîtier (10) est installé dans une surface de retenue, entre la lèvre (13) qui s'étend vers l'extérieur et la surface de retenue. 55
9. Boîtier résistant à la chaleur (10) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la partie supérieure (11) est pourvue de plusieurs ouvertures (26, 27).
10. Boîtier résistant à la chaleur (10) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le premier matériau solide intumescent résistant au feu (17) est pourvu de plusieurs ouvertures (28, 29).
11. Boîtier résistant à la chaleur (10) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'enveloppe est également pourvue d'une plaque (16) qui supporte le premier matériau solide intumescent résistant au feu (17).
12. Boîtier résistant à la chaleur (10) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le premier matériau solide intumescent résistant au feu (17) est espacé de la surface intérieure de la partie supérieure (11) par un espace (16A) de 2 à 8 mm.
13. Boîtier résistant à la chaleur (10) selon la revendication 12, **caractérisé en ce que** l'espace (16A) mesure de 2 à 5 mm.

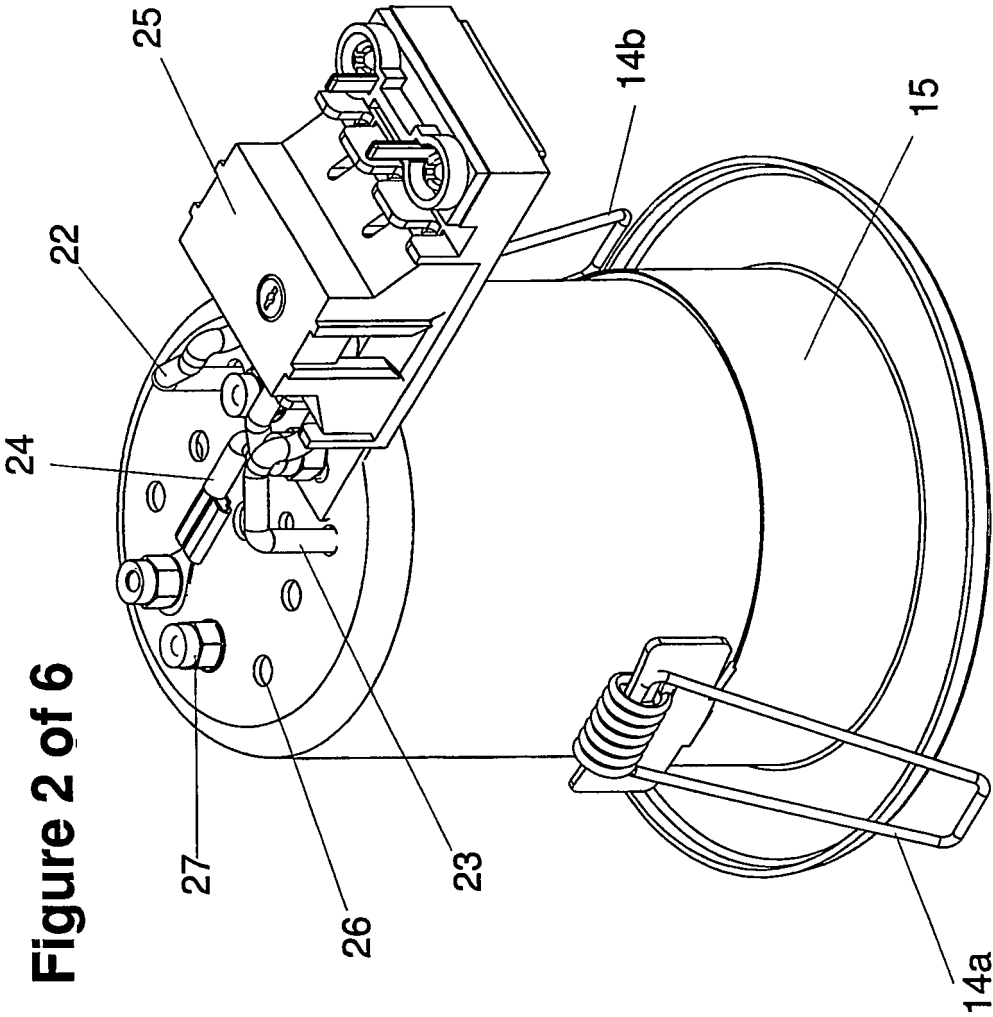
14. Boîtier résistant à la chaleur (10) selon la revendication 11, **caractérisé en ce que** la plaque (16) est pourvue d'au moins une ouverture (28, 29).
15. Boîtier résistant à la chaleur (10) selon la revendication 14, **caractérisé en ce qu'**au moins une ouverture de la plaque (16) coïncide avec au moins une ouverture du premier matériau solide intumescent résistant au feu (17). 5
16. Boîtier résistant à la chaleur (10) selon l'une quelconque des revendications 11 à 15, **caractérisé en ce que** l'élément de raccordement électrique (19) est fixé à la plaque (16). 10
17. Boîtier résistant à la chaleur (10) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'élément de raccordement électrique (19) est fixé à l'aide d'un câblage électrique (22) à une enveloppe de bloc de connexion (25) située à l'extérieur du boîtier (10). 15 20
18. Boîtier résistant à la chaleur (10) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'élément de raccordement électrique (19) est espacé de la surface intérieure de la ou des parois latérales (12). 25
19. Boîtier résistant à la chaleur (10) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'élément de raccordement électrique (19) comprend une douille de lampe. 30
20. Boîtier résistant à la chaleur (10) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le premier matériau solide intumescent résistant au feu (17) a globalement la même composition que le second matériau solide intumescent résistant au feu (17). 35 40
21. Boîtier résistant à la chaleur (10) selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il est apte à être évidé pour former une structure de support. 45

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Figure 1 of 6





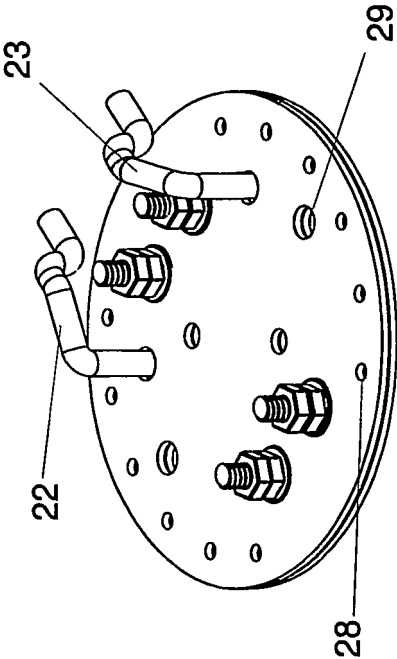


Figure 3 of 6

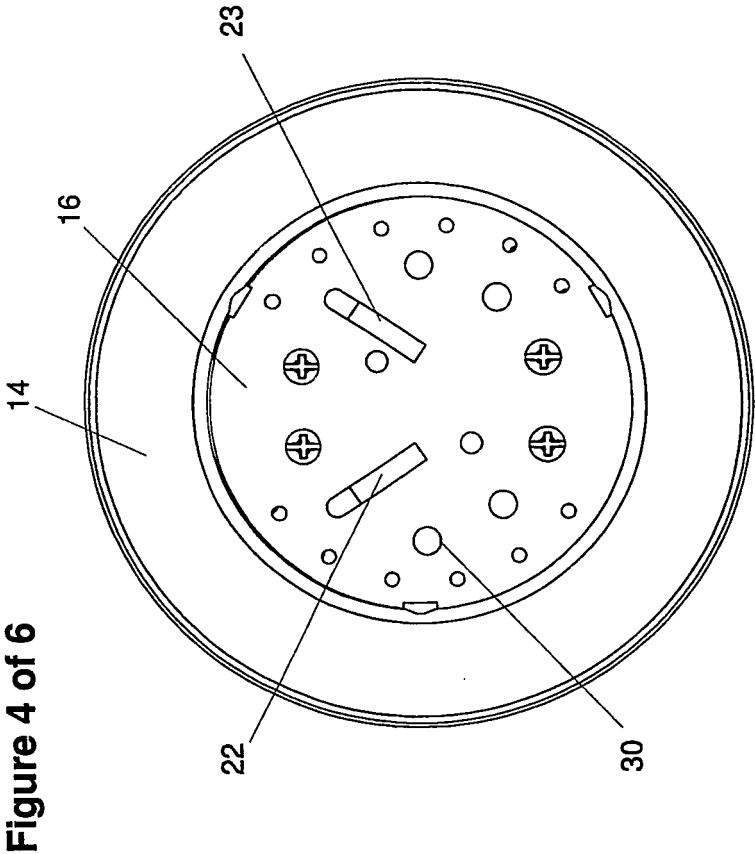
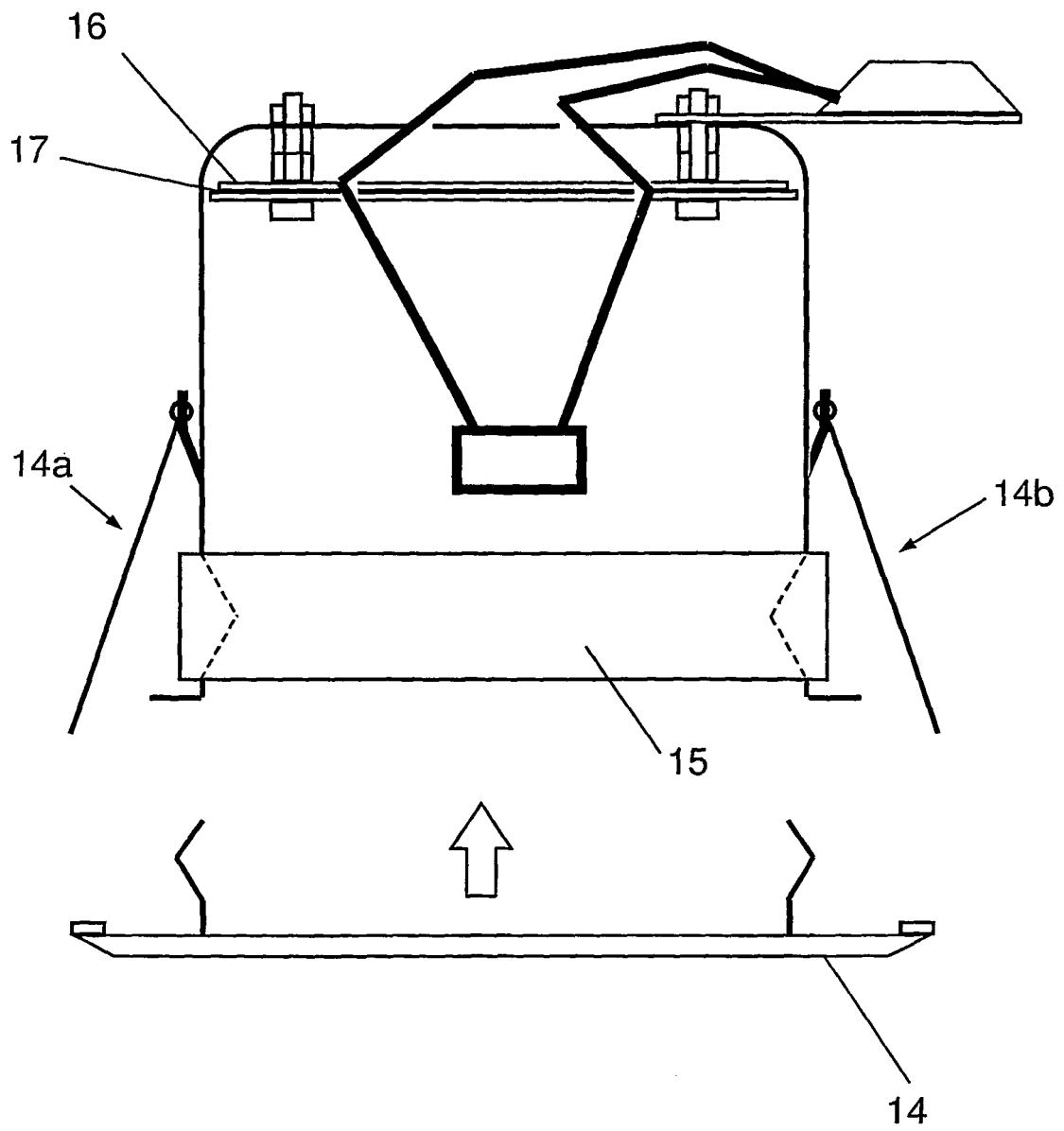
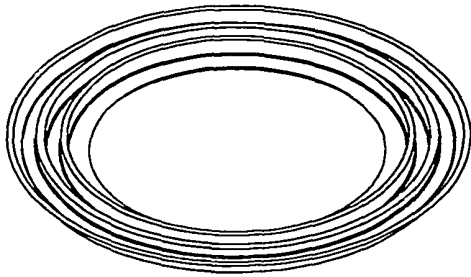


Figure 5.



Rear Elevation of Moisture Seal



Front Elevation of Moisture Seal

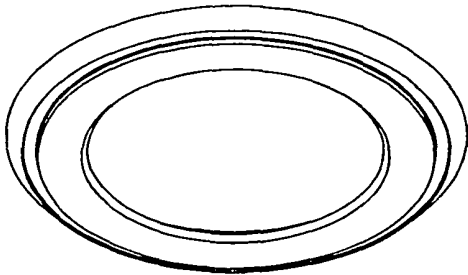
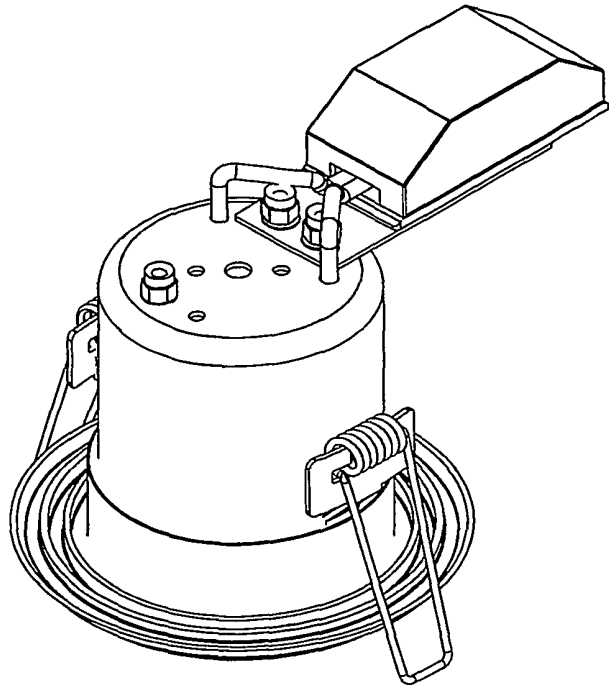
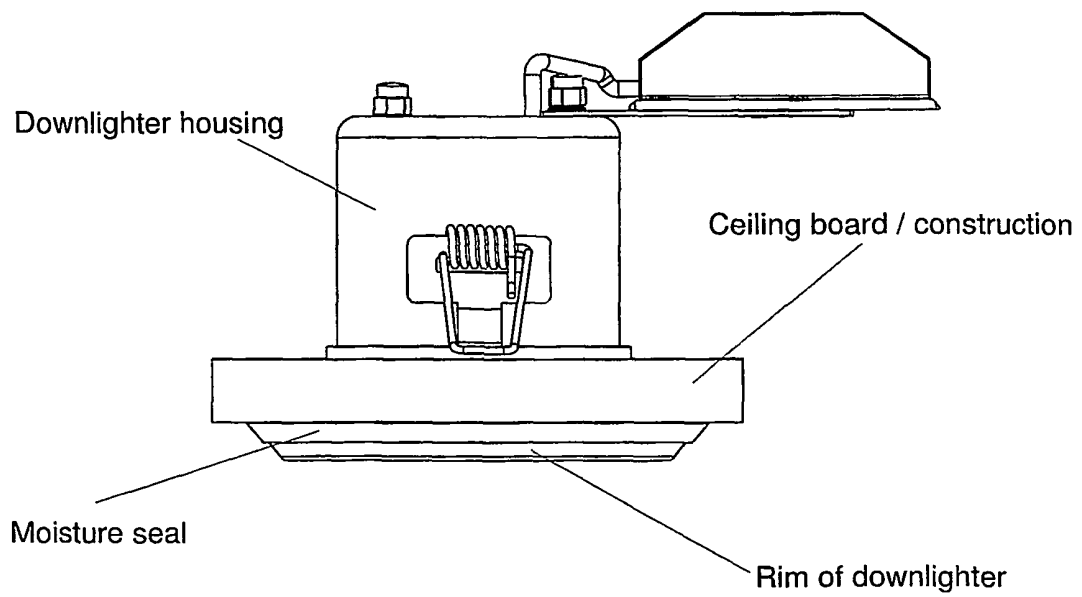


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Moisture seal in position on fire and acoustic rated downlighter.



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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