(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 607 675 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
21.12.2005 Bulletin 2005/51

(51) Int Cl.[7]: **F21S 8/02**, F21V 25/00

(21) Application number: **04257764.3**

(22) Date of filing: **14.12.2004**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR LV MK YU

(30) Priority: **18.06.2004 GB 0413655**

(71) Applicant: **Scolmore International Limited**
Tamworth, Staffs B79 7XB (GB)

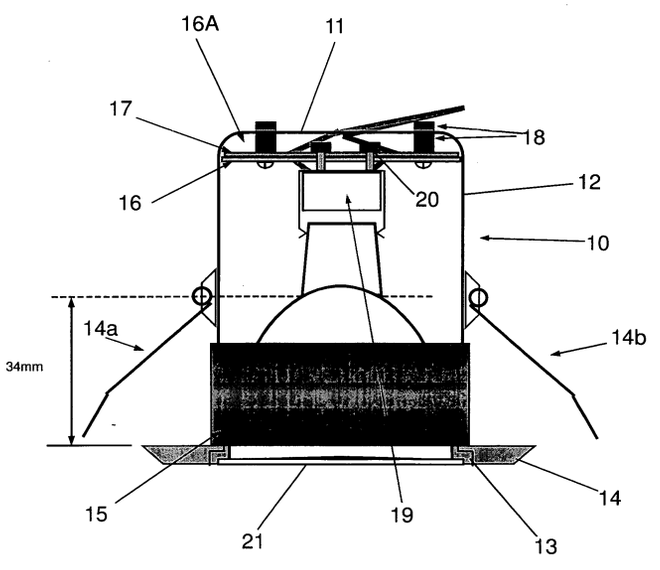
(72) Inventor: **Rawlins, Kark Justin**
Tamworth Staffordshire B77 4JY (GB)

(74) Representative: **Fenwick, Elizabeth Anne**
5 Stonehouse Road
Sutton Coldfield, West Midlands B73 6LR (GB)

(54) Heat resistant casing

(57) A casing 10 (fire hood) for an electrical fitting comprises a top 11 of heat resistant material provided with at least one aperture and supporting a sidewall 12.The housing encloses an electrical fitting 19 attached to the housing by attachment means, and within the housing is a first solid fire-resistant intumescent material 17 positioned between the interior surface of the top 11 and electrical fitting 19. Intumescent material 17 is provided with at least one aperture and is spaced from the interior surface of top 11. The housing is further provided with a collar of a second solid fire-resistant intumescent material 15 extending around the exterior surface of side wall 12. In the event of fire or significant temperature increase, intumescent material 17 and 15 expand to around nine times their original volume, filling the gap 16A between the top 11 and plate 16, together with the apertures in the top 11, and the space between the housing and the surrounding structure e.g. a ceiling or wall. These expansions help to prevent a fire from spreading.

Figure 1.



EP 1 607 675 A1

Description

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

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. 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.

[0002] According to one aspect of the present invention, there is provided a heat-resistant casing for an electrical fitting in which the casing comprises a housing of heat resistant material comprising a top supporting one or more side-walls, the top is provided with at least one aperture, the housing encloses an electrical fitting which is attached to the housing by an attachment means, and within the housing is a first solid fire-resistant intumescent material positioned between the interior surface of the top and the electrical fitting, characterised in that the first solid fire-resistant intumescent material is provided with at least one aperture and is spaced apart from the interior surface of the top, and the housing is further provided with a collar of a second solid fire-resistant intumescent material which extends substantially completely around the exterior surface of the side wall or walls.

[0003] The housing is preferably of substantially circular cross-section and is preferably of self-supporting substantially rigid construction and 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.

The intumescent material may be based on graphite or other intumesecent 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 fibre mat containing easily dispersed foliating graphite bonded in acrylic. The first and second intumescent materials may be of the same composition or different.

[0004] 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. 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 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.

[0005] 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.

[0006] It will be appreciated that certain features of the invention 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.

[0007] 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.

[0008] 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 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 12mm thick and is glued in place. Within the housing is a steel plate 16 supporting a 12mm 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.

[0009] Referring to Figure 3, cables 22 and 23 are shown, together with ventilation apertures 28,29.

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

Figure 5 is a schematic representation showing i.a. more clearly how the down-lighter cover 14 clips into place.

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.

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.

Claims

1. A heat resistant casing for an electrical fitting in which the casing comprises a housing of fire resistant material comprising a top supporting one or more side-walls, the top is provided with at least one aperture, the housing encloses an electrical fitting which is attached to the housing by an attachment means, and within the housing is a first solid fire-resistant intumescent material positioned between the interior surface of the top and the electrical fitting, **characterised in that** the first solid fire-resistant intumescent material is provided with at least one aperture and is spaced apart from the interior surface of the top, and the housing is further provided with a collar of a second solid fire-resistant intumescent material which extends substantially completely around the exterior surface of the side wall or walls.

2. A heat resistant casing according to Claim 1 **characterised in that** the housing is of a self-supporting substantially rigid construction.

3. A heat resistant casing according to Claim 1 or 2 **characterised in that** the collar is adjacent the edge of the side wall remote from the top.

4. A heat resistant casing according to any preceding claim **characterised in that** the first solid fire-resistant intumescent material is provided with a plurality of apertures.

5. A heat resistant casing according to any preceding claim **characterised in that** the housing is further provided with a plate which supports the first solid fire-resistant intumescent material.

6. A heat resistant casing according to any preceding claim **characterised in that** the first solid fire-resistant intumescent material is spaced apart from the internal surface of the top by a gap of from 2 to 8mm.

7. A heat resistant casing according to Claim 6 **characterised in that** the gap is from 2 to 5mm.

8. A heat resistant casing according to Claim 5 **characterised in that** the plate is provided with at least one aperture.

9. A heat resistant casing according Claim 8 **characterised in that** at least one aperture in the plate coincides with at least one aperture in the first solid fire-resistant intumescent material.

10. A heat resistant casing according to any one of claims 5 to 9 **characterised in that** the electrical fitting is attached to the plate.

11. A heat resistant casing according to any preceding claim **characterised in that** the electrical fitting is spaced from the internal surface of the side wall or walls.

Figure 1.

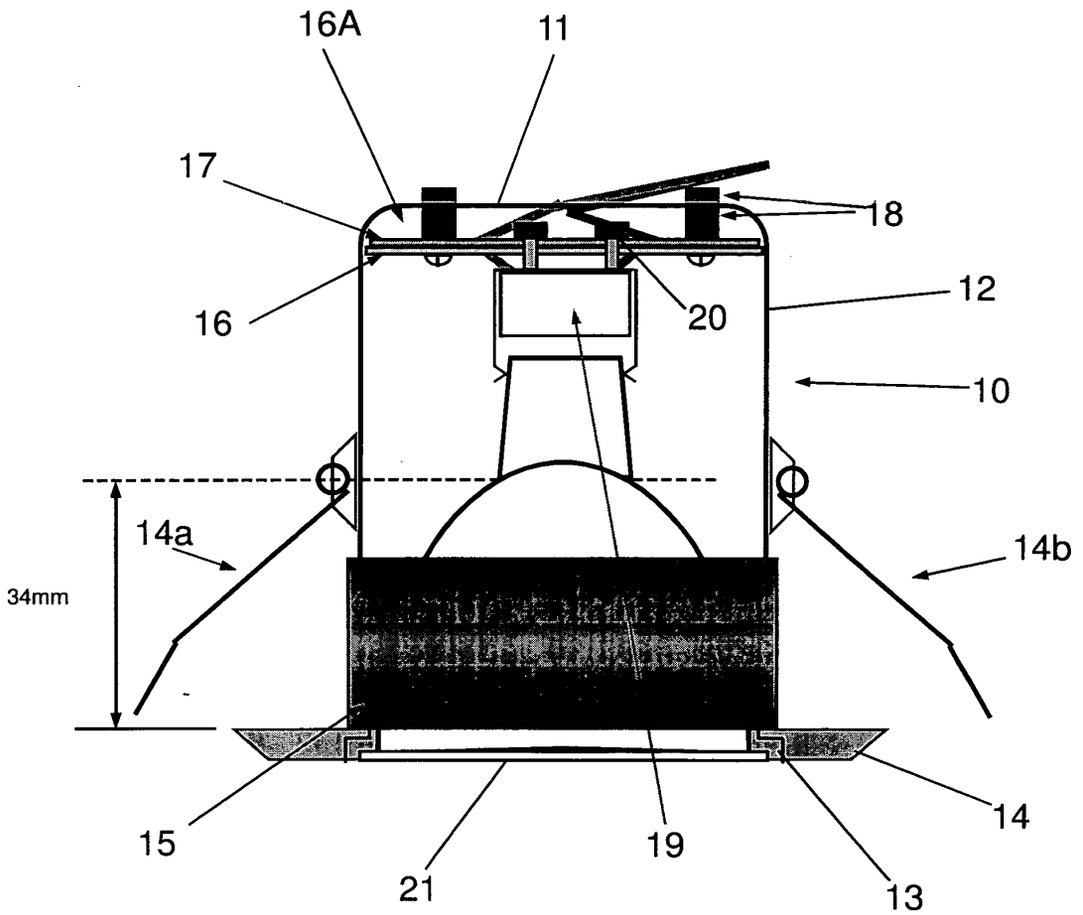


Figure 2.

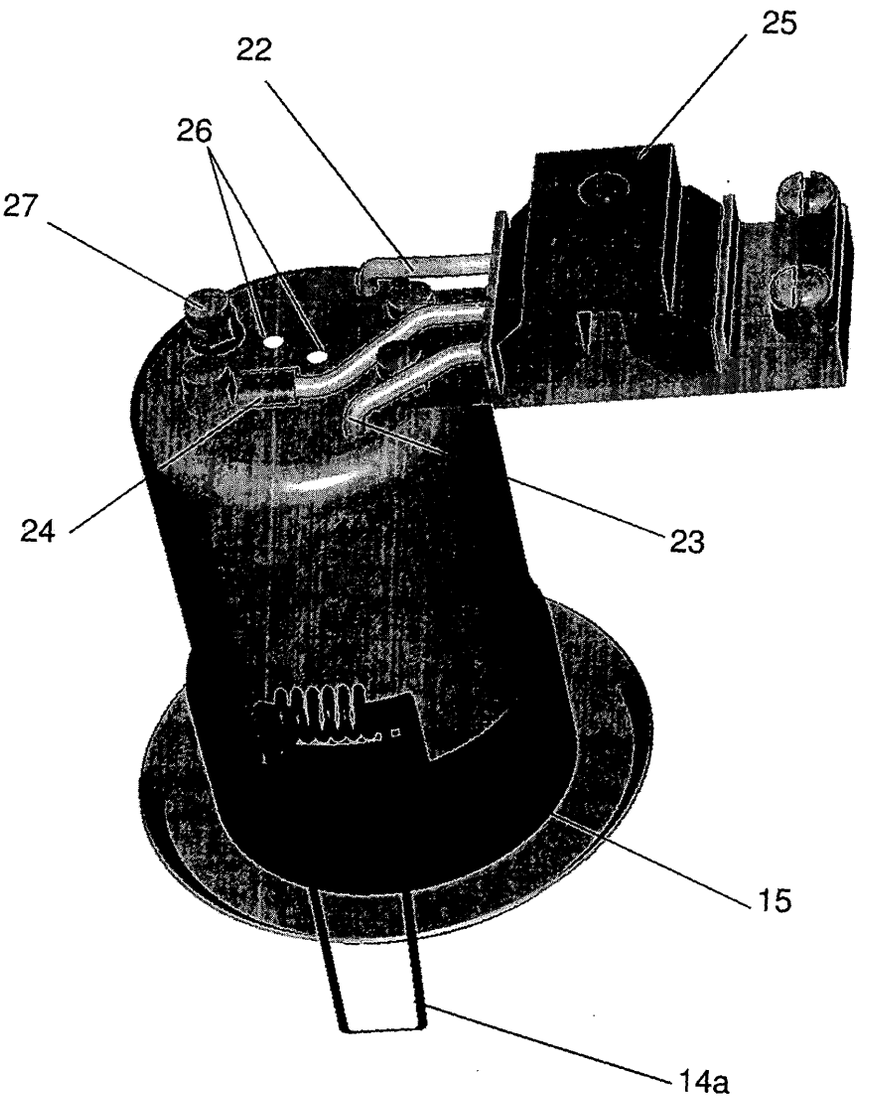


Figure 3.

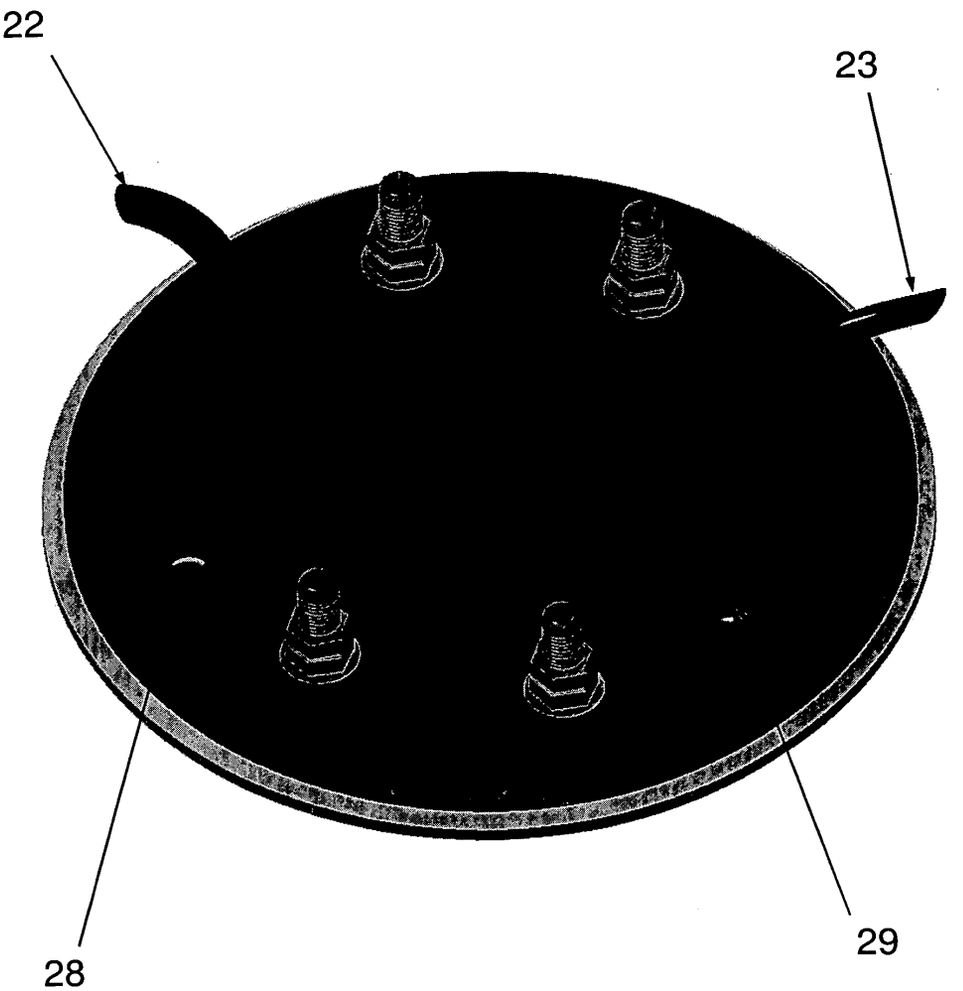


Figure 4.

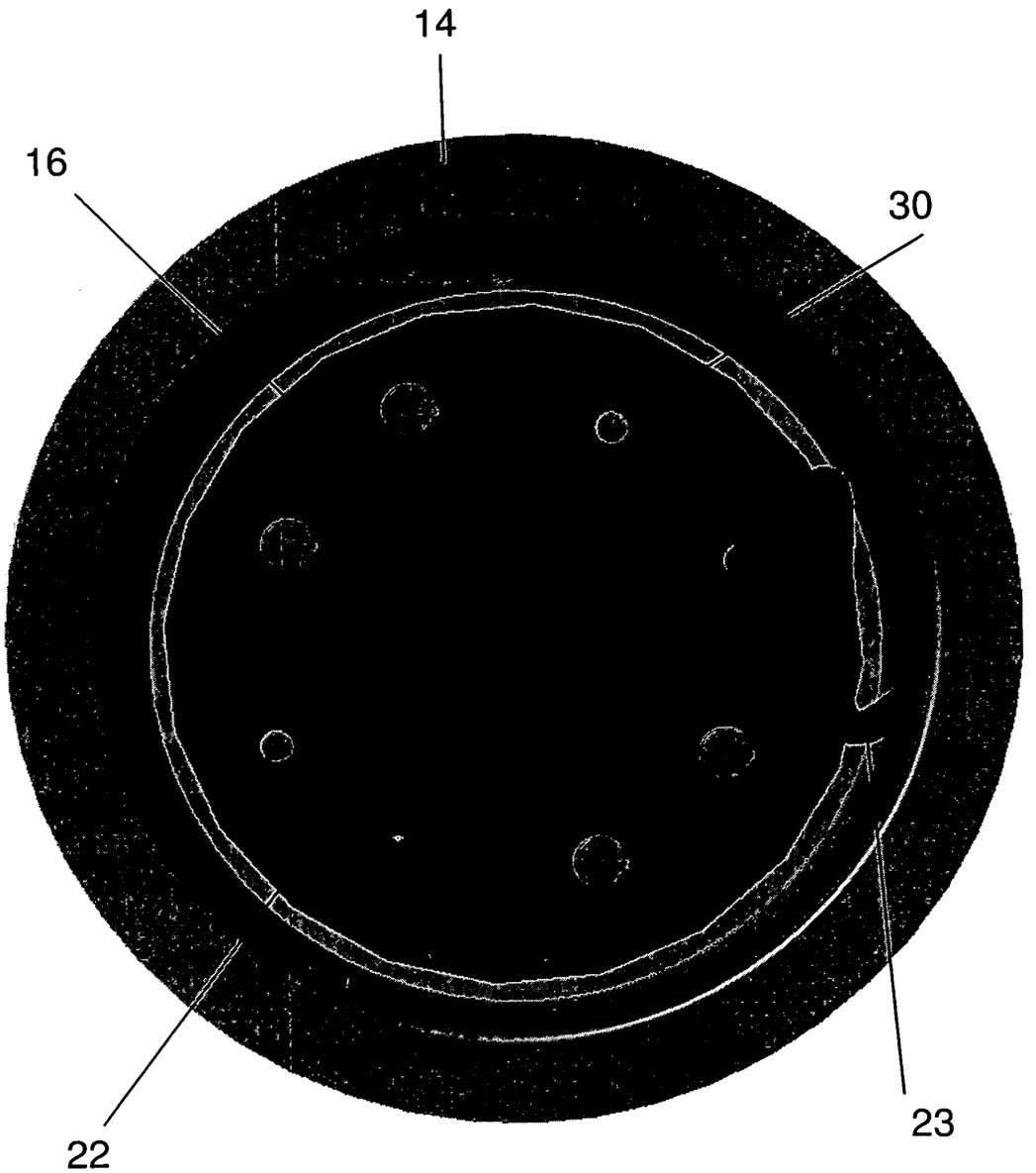
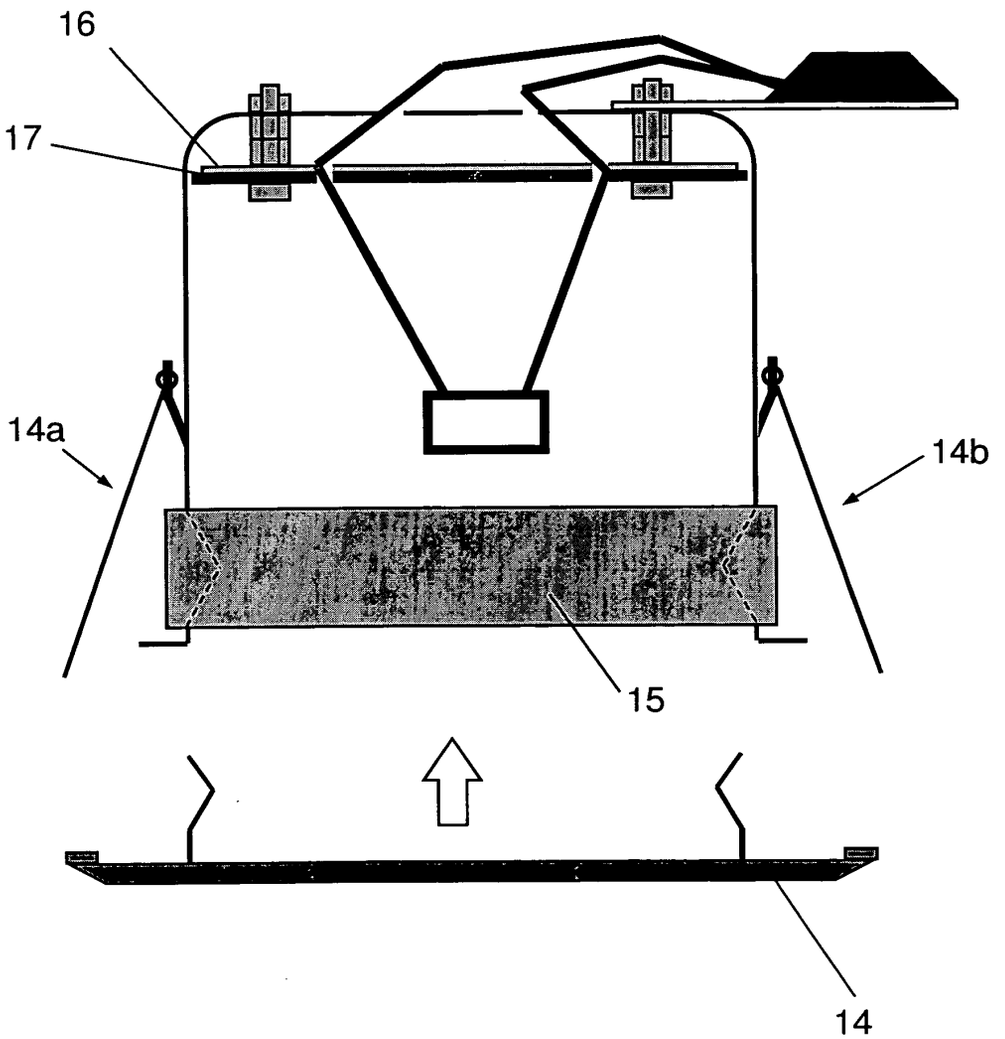


Figure 5.



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 25 7764

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	GB 2 326 467 A (* ENVIRONMENTAL SEALS LIMITED) 23 December 1998 (1998-12-23) * page 3, line 13 - page 5, line 5 * * figures 1,2 *	1-3,5-11	F21S8/02 F21V25/00
A	WO 98/12472 A (JONES, PETER, CHARLES) 26 March 1998 (1998-03-26) * page 6, line 15 - line 24 * * figure 1 *	1	
A	GB 2 325 728 A (* EURO PASSIVE FIRE PROTECTION LIMITED) 2 December 1998 (1998-12-02) * claims 1-4,6,10 * * figures 1-8 *	1,2,4	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

F21V
F21S

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	5 October 2005	De Mas, A

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 25 7764

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

05-10-2005

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2326467 A	23-12-1998	AT 212427 T	15-02-2002
		AU 7538698 A	30-12-1998
		DE 69803567 D1	14-03-2002
		EP 0983471 A1	08-03-2000
		WO 9854512 A1	03-12-1998
WO 9812472 A	26-03-1998	AU 4311097 A	14-04-1998
		DE 69731897 D1	13-01-2005
		EP 0950159 A1	20-10-1999
GB 2325728 A	02-12-1998	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82