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(54) **A lamp aperture collar**

(57) A lamp aperture collar (1) comprising: a substantially tubular main body (2) having a flexible section (7) and a first flange (5) for at least partially supporting the collar (2) when fitted to a lamp aperture (10), the first flange (5) extending radially away from the main body (2), the main body (2) being biased away from a first configuration and into a second configuration by the flex-

ible section (7), a diameter of the main body (2) being greater in the second configuration than in the first configuration, wherein the main body (2) can be moved towards the first configuration to permit the collar (1) to be placed into a lamp aperture (10) and allowed to move towards the second configuration to fit the collar (1) to the lamp aperture (10).

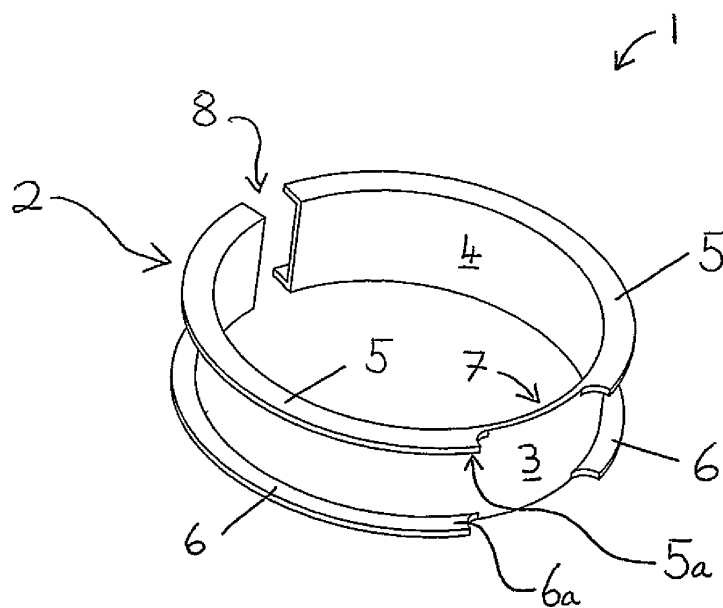


Figure 1

Description

[0001] THE PRESENT INVENTION relates to a collar for a lamp aperture, a kit including the collar, a wall to which the collar has been fitted, a building including the wall, and a method of fitting the collar.

[0002] Lamp fittings such as down-light fittings have become popular in recent years. Down-light fittings comprise a hollow cylindrical body which houses the lamp, a flange at one end of the hollow cylindrical body, and an arrangement to secure the hollow cylindrical body to, for example, a ceiling such that the flange abuts the ceiling and the hollow cylindrical body is substantially located above the ceiling (in a roof space - for example).

[0003] Ceilings are usually constructed, at least in part, out of a layer of plaster (such as plasterboard). To fit a down-light, a lamp aperture is created in the layer of plaster and a down-light fitting secured using the arrangement described above - the electrical supply and the like are usually provided above the ceiling.

[0004] If it is ever necessary to remove the down-light fitting, then this can be achieved by, for example, applying a downward force to the flange or cylindrical body. This typically disengages the arrangement which otherwise secures the down-light fitting to the ceiling. During this process, however, it is common for the layer of plaster to be damaged. The damage may be so extensive that it is still visible when a down-light fitting is re-fitted in the ceiling aperture (i.e. the damage is not covered by the flange of the down-light fitting). In yet other cases, the damage is so extensive that the arrangement which normally secures the down-light fitting to the ceiling no longer functions correctly.

[0005] In such instances, it is often necessary to repair the ceiling or replace sections of the plaster layer.

[0006] The present invention seeks to ameliorate some of the problems associated with the prior art.

[0007] Accordingly, one aspect of the present invention provides a lamp aperture collar comprising: a substantially tubular main body having a flexible section and a first flange for at least partially supporting the collar when fitted to a lamp aperture, the first flange extending radially away from the main body, the main body being biased away from a first configuration and into a second configuration by the flexible section, a diameter of the main body being greater in the second configuration than in the first configuration, wherein the main body can be moved towards the first configuration to permit the collar to be placed into a lamp aperture and allowed to move towards the second configuration to fit the collar to the lamp aperture.

[0008] Preferably, the main body further comprises at least one additional flange which is spaced apart from the first flange, a gauge of the collar being defined by the distance between the first flange and at least one additional flange.

[0009] Advantageously, the flexible section comprises a portion of the main body which does not have the first

flange.

[0010] Conveniently, the flexible section comprises a portion of the main body which does not have an additional flange.

[0011] Preferably, the main body has a substantially circular cross-section.

[0012] Conveniently, the main body is constructed out of plastic.

[0013] Advantageously the collar further comprises a break in the tubular main body defined between two ends of the main body which substantially oppose each other across the break.

[0014] Preferably, the break is filled with a compressible material which links the two ends of the main body.

[0015] Conveniently, the break is filled with a flexible material which links the two ends of the main body.

[0016] Preferably, the collar further comprises a cap of intumescent material fitted to the main body of the collar and configured to house a lamp fitting therein.

[0017] Another aspect of the present invention provides a lamp fitting kit comprising: a lamp aperture collar according to the above; and a lamp fitting.

[0018] Another aspect of the present invention provides a wall having a lamp aperture to which a lamp aperture collar according to the above.

[0019] Another aspect of the present invention provides a building including a wall according to the above.

[0020] Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings in which:

Figure 1 shows a perspective view of an embodiment of the present invention;

Figure 2 shows a first side view of an embodiment of the present invention;

Figure 3 shows a second side view of an embodiment of the present invention;

Figure 4 shows a perspective view of an embodiment of the present invention;

Figure 5 shows an embodiment of the present invention;

Figure 6 shows a sectional view of an embodiment of the present invention;

Figure 7 shows an embodiment of the present invention; and

Figure 8 shows a sectional view of an embodiment of the present invention.

[0021] Figures 1, 2 and 3 show an embodiment of the present invention. The embodiment comprises a collar 1 having a main body 2. The main body 2 is substantially

tubular in shape, and has an outer circumferential surface 3 and an inner circumferential surface 4. A first flange 5 extends radially away from the outer circumferential surface 3 of the main body 2 of the collar 1 in a direction which is substantially perpendicular to the outer circumferential surface 3. A second flange 6 extends radially away from the outer circumferential surface 3 of the main body 2 of the collar 1 also in a direction which is substantially perpendicular to the outer circumferential surface 3 (i.e. the first 5 and second 6 flanges are substantially parallel to each other).

[0022] The tubular main body 2 preferably has a substantially circular cross-sectional shape; alternatively, the tubular main body 2 may have a substantially square cross-sectional shape. The main body 2 may be formed from a number of substantially straight sides that form the desired cross-sectional shape. Different collars 1 having different shapes may be provided to fit different shaped lamp apertures.

[0023] The first 5 and second 6 flanges are separated from each other across the outer circumferential surface 3 of the main body 2 of the collar 1. The distance between opposing inner surfaces 5a,6a of the two flanges 5,6 across the outer circumferential surface 3 of the collar 1 is a gauge of the collar 1.

[0024] The first 5 and second 6 flanges preferably extend away from the outer circumferential surface 3 of the main body 2 by a distance which is greater than about 2 mm. Preferably, this distance is not greater than about 5 cm and is conveniently approximately 1 cm.

[0025] The gauge of the collar 1 (as defined above) is substantially equal to the thickness of a typical layer of plaster 9 used (see figures 4-8), for example, to construct a ceiling. Indeed, the gauge of the collar 1 is marginally larger than the thickness of the relevant plaster layer 9 so as to allow the plaster layer 9 to be received by the collar 1 between the two flanges 5,6. It will be appreciated that different collars 1 having different gauges may be provided for use with different thicknesses of plaster layer 9. Preferably, the collar 1 gauge is suitable such that plasterboard with a thickness of 9.5 mm or 12.7 mm can be received between the two flanges 5,6 of the collar 1. As such, preferably, a collar 1 may have a gauge of approximately 12.8 mm or approximately 9.6 mm. The gauge of the collar 1 is preferably less than 5 cm.

[0026] The main body 2 of the collar 1 is provided with a flexible section 7. The flexible section 7 biases the collar 1 away from a first configuration into a second configuration. In the second configuration a diameter of the main body 2 of the collar 1 is greater than the diameter of the main body 2 of the collar 1 in the first configuration.

[0027] The flexible section 7 may be such that the collar 1 can be moved towards the first configuration manually.

[0028] In an embodiment, the flexible section 7 comprises a section of the main body 2 which does not have a first 5 and/or a second 6 flange. Preferably, the arcuate length of the flexible section 7 is less than 5 cm.

[0029] In some embodiments, more than one flexible

section 7 is provided around the main body 2 of the collar 1. Each of the plurality of flexible sections 7 need not be identical. In an embodiment, there may be a series of small flexible sections forming a castellated flange structure.

[0030] In an embodiment, the main body 2 of the collar 1 includes a break 8. The break 8 is defined between a first 8a and a second 8b edge of the main body 2 of the collar 1 (see figure 2). Preferably, the distance between the first edge 8a and the second edge 8b of the main body 2 of the collar 1 is less than 2 cm. In an embodiment (not shown), the break 8 comprises a section of flexible or compressible material in the main body 2 of the collar 1.

[0031] The main body 2 of the collar 1 is preferably constructed out of plastic. Alternatively, the main body 2 of the collar 1 can be constructed out of a metal (such as stainless steel, steel, tin or aluminium). In an embodiment, a mixture of both a metal and plastic are used in the construction of the main body 2 of the collar 1.

[0032] The collar 1 may be fitted to a lamp aperture 10 (see figure 4) by applying a compressive force across a diameter of the main body 2 of the collar 1. This force flexes the flexible section 7 and closes the break 8 in the main body 2 of the collar 1. Thus, the overall diameter of the main body 2 of the collar 1 is reduced. In other words, the collar 1 is moved towards the first configuration as described above.

[0033] The collar 1 may then be inserted into a lamp aperture in a plaster layer such that the outer circumferential surface 3 of the main body 2 is substantially aligned with an inner circumferential surface 10a of the lamp aperture 10 (see figure 4). In this position, the first flange 5 is preferably above the top surface of the plaster layer and the second flange 6 is preferably below a lower surface of the plaster layer.

[0034] When the compressive force is removed from the main body 2 of the collar 1 the flexible section 7 of the main body 2 biases the collar 1 back towards the second configuration.

[0035] When the collar 1 is allowed to return towards the second configuration, the plaster layer 9 is received (to a greater extent if already partially received) by the space defined between the first 5 and second 6 flanges (and specifically the inner surfaces thereof 5a,6a) and the outer circumferential surface 3 of the collar 1.

[0036] The first flange 5 of the main body 2 at least partially prevents the collar 1 from falling through the lamp aperture under the force of gravity. In an embodiment, the first flange 5 supports at least part of the weight of the collar 1 when the collar 1 has been fitted.

[0037] The collar 1 is thus fitted to a lamp aperture 10 in a plaster layer 9. The collar 1 remains secured to the plaster layer 9 by, for example, the abutment of the inner surfaces 5a,6a with the plaster layer 9 or, for example, the friction between the outer circumferential surface 3 of the collar 1 and the inner circumferential surface 10a of the lamp aperture 10. Preferably, the inner surface 5a at least partially supports the weight of the fitted collar 1.

[0038] The inner circumferential surface 4 of the main body 2 of the collar 1 defines, when fitted, a lamp aperture 10b (see figures 4 and 5).

[0039] A lamp fitting 11 such as a down-light fitting 11 (see figures 7 and 8) may be fitted to the collar 1 and plaster layer 9 in much the same manner as described above. The collar 1, however, protects the plaster layer 9 from excessive damage from insertion and removal of the lamp fitting 11.

[0040] The collar 1 may also support at least part of the weight of the lamp fitting 11 which is fitted thereto. In an embodiment, the first flange 5 (and the inner surface 5a thereof) at least partially supports the weight of a lamp fitting 11 fitted to the collar 1.

[0041] Preferably, when the collar 1 is fitted, there is still a degree of separation of the first edge 8a and the second edge 8b of the main body 2 across a break 8 and part of the collar 1 do not overlap each other around the lamp aperture 10.

[0042] In an embodiment, the collar 1 is provided without one or both of the first 5 and second 6 flanges.

[0043] A ceiling along with positions and directions relative to that ceiling have been used for illustrative purposes only. The collar 1 may be fitted to any suitable wall or panel. Similarly, a plaster layer 9 has been described by way of example only and any suitable layer of rigid building material may be used. The wall may be part of a building which may be a domestic or commercial building.

[0044] In an embodiment, not shown, a cap is provided which may be attached to the collar 1 and this attachment may be a removable attachment. The cap could take many different forms. The cap is formed, at least in part, from an intumescent material. In an embodiment, the cap comprises a hood of woven intumescent material which expands when exposed to high temperatures such as a fire. The cap may be configured to cover the rear of a lamp fitting 11 fitted to the collar 1 - i.e. to house a lamp fitting 11. Thus, the cap is, in an embodiment, provided to form a barrier which substantially resists or prevents the passage of fire through the lamp aperture 10 to which the collar 1 is fitted into a space beyond the cap. In other words, the cap and collar 1 form a barrier to the transmission of fire from one side of a panel to which the collar 1 is fitted to the other side of the panel.

[0045] If the cap comprises a woven intumescent material, then the gaps between the woven fibres provide ventilation during normal operation but are closed when the intumescent material expands - for example on exposure to fire.

[0046] The woven intumescent material may be a flexible material.

[0047] The cap may be bag-like in form with the open mouth of the bag-like cap being attached to the collar 1.

[0048] The cap may be attached to the collar 1 by an adhesive or may be attached to the collar 1 by the use of a clamp member which sandwiches the cap between the clamp member and the collar 1 or by any other suitable

attachment arrangement. The cap may be attached to the first flange 5, the second flange 6, the inner circumferential surface 4, and/or the outer circumferential surface 3. The cap may be attached to surfaces 5a, 6a and/or the cap may be attached to the opposing surfaces of the flanges 5, 6.

[0049] In an embodiment, the cap includes one or more apertures to provide additional ventilation during normal use (the or each aperture being configured such that the or aperture is closed by the expanding intumescent material - for example, if exposed to a fire).

[0050] The cap may also be formed from a heat resistant polymer or other material (e.g. steel) and may include an intumescent plate across one or more apertures defined by the cap. The intumescent plate may comprise, for example, intumescent material sandwiched between two sheets of heat resistant material (one or which may be a wall of the cap). One or more apertures may be provided through the intumescent plate (the apertures being open in normal use but closed if the intumescent material expands - for example, due to exposure to fire).

[0051] The cap preferably includes at least one flexible segment to allow the collar 1 to which it is attached to move between the first and second configurations.

[0052] The cap preferably includes a brim located adjacent the collar 1 to which it is attached. The brim may, in an embodiment, extend beyond a remote edge of the first flange 5. Thus, when exposed to fire, the intumescent material may expand (in this embodiment) to seal, substantially, any gaps between the collar 1 and panel to which it is fitted (for example, at the break 8 in the collar 1). The brim is preferably flexible such that it can be deformed easily to allow manual fitting of the collar 1 to the lamp aperture 10 as described herein.

[0053] The brim, if provided, may be located adjacent the first flange 5 or may be adjacent the second flange 6. In the latter case it will be appreciated that the cap may extend through the collar 1 or around the collar 1.

[0054] It will be appreciated that a cap with a brim may have the general appearance of a top hat. A cap without a brim may have the general appearance of an inverted beaker.

[0055] In an embodiment (not shown), the collar 1 includes a coating of intumescent material around the inner circumferential surface 4 of the collar 1. This intumescent material coating may be provided in order to seal, substantially, the lamp aperture 10 in the event of a fire or to close any gap between a lamp fitting 11 fitted to the collar 1 and the inner circumferential surface 4 of the collar 1.

[0056] In an embodiment (not shown), the collar 1 includes a coating of intumescent material around the outer circumferential surface 3 of the collar 1. This intumescent material coating may be provided in order to ensure, substantially, a seal between the outer circumferential surface 3 of the collar 1 and the inner circumferential surface 10a of the lamp aperture 10 in the event of a fire.

[0057] A down-light fitting has also been used by way

of example only and it will be appreciated that the same problem may exist in relation to other lamp fittings. The present invention may also be used in relation to such fittings where appropriate.

[0058] When used in this specification and claims, the terms "comprises" and "comprising" and variations thereof mean that the specified features, steps or integers are included. The terms are not to be interpreted to exclude the presence of other features, steps or components.

Claims

1. A lamp aperture collar (1) comprising:

a substantially tubular main body (2) having a flexible section (7) and a first flange (5) for at least partially supporting the collar (1) when fitted to a lamp aperture (10), the first flange (5) extending radially away from the main body (2), the main body (2) being biased away from a first configuration and into a second configuration by the flexible section (7), a diameter of the main body (2) being greater in the second configuration than in the first configuration, wherein the main body (2) can be moved towards the first configuration to permit the collar (1) to be placed into a lamp aperture (10) and allowed to move towards the second configuration to fit the collar (1) to the lamp aperture (10).

2. A collar (1) according to claim 1, wherein the main body (2) further comprises at least one additional flange (6) which is spaced apart from the first flange (5), a gauge of the collar (1) being defined by the distance between the first flange (5) and at least one additional flange (6).

3. A collar (1) according to claim 1 or 2, wherein the flexible section (7) comprises a portion of the main body (2) which does not have the first flange (5).

4. A collar (1) according to claim 3, wherein the flexible section (7) comprises a portion of the main body (2) which does not have an additional flange (6).

5. A collar (1) according to any preceding claim, wherein the main body (2) has a substantially circular cross-section.

6. A collar (1) according to any preceding claim, wherein the main body (2) is constructed out of plastic.

7. A collar (1) according to any preceding claim, further comprising a break (8) in the tubular main body (2) defined between two ends (8a, 8b) of the main body (2) which substantially oppose each other across the break (8).

8. A collar (1) according to claim 7, wherein the break (8) is filled with a compressible material which links the two ends of the main body (2).

9. A collar (1) according to claim 7, wherein the break (8) is filled with a flexible material which links the two ends of the main body (2).

10. A collar (1) according to any preceding claim further comprising a cap of intumescent material fitted to the main body (2) of the collar (1), the cap defining a space for housing an electrical fitting, the cap of intumescent material being configured to permit ventilation of the space defined by the cap during normal use and to inhibit the transmission of fire through the cap.

11. A lamp fitting kit comprising:

a lamp aperture collar (1) according to any preceding claim; and
a lamp fitting (11).

12. A wall having a lamp aperture (10) to which a lamp aperture collar (1) according to any one of claims 1 to 10 is fitted.

13. A building including a wall according to claim 12.

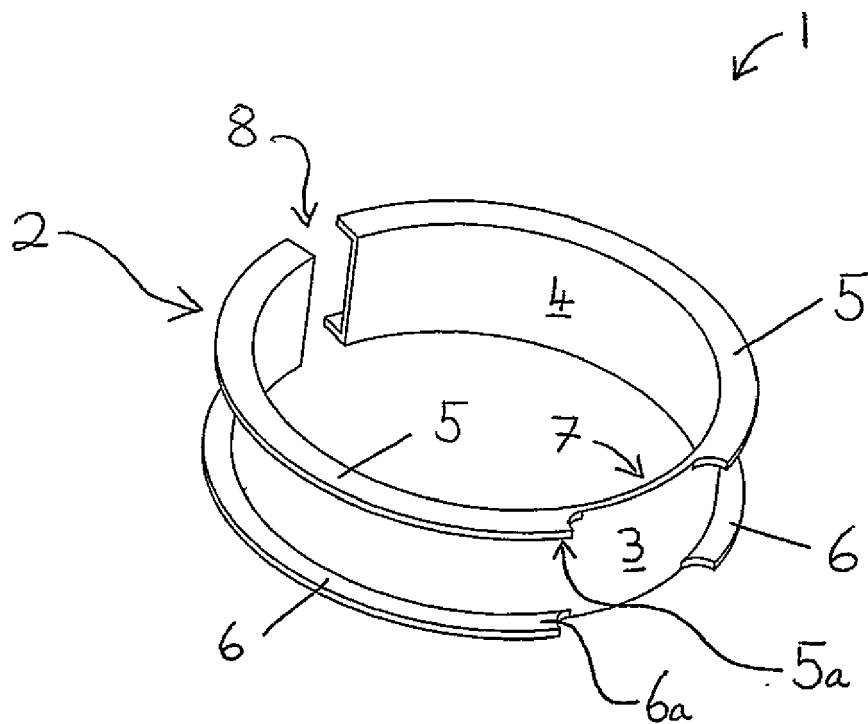


Figure 1

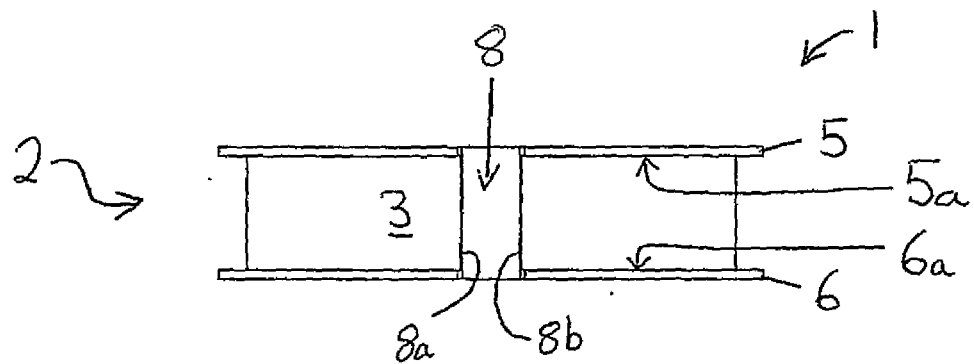


Figure 2

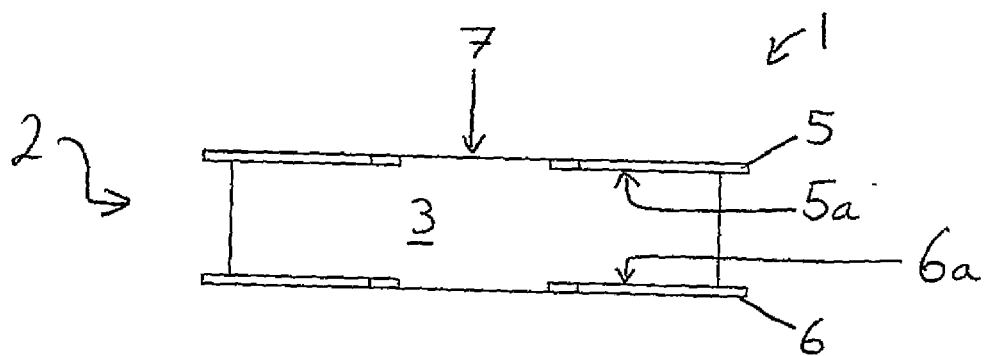


Figure 3

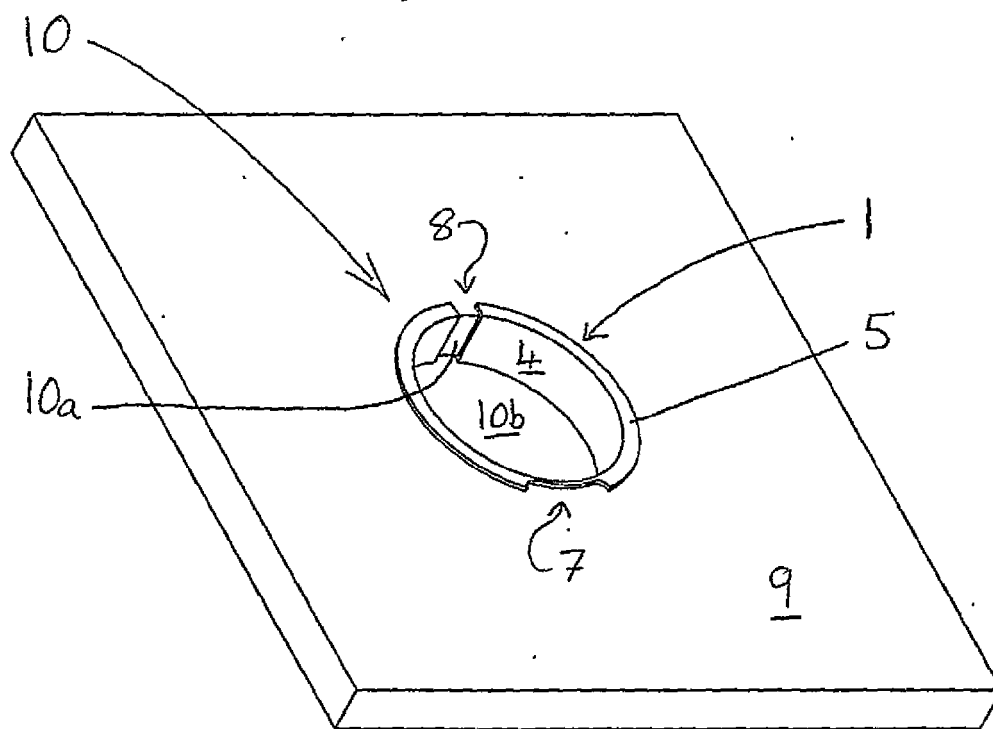
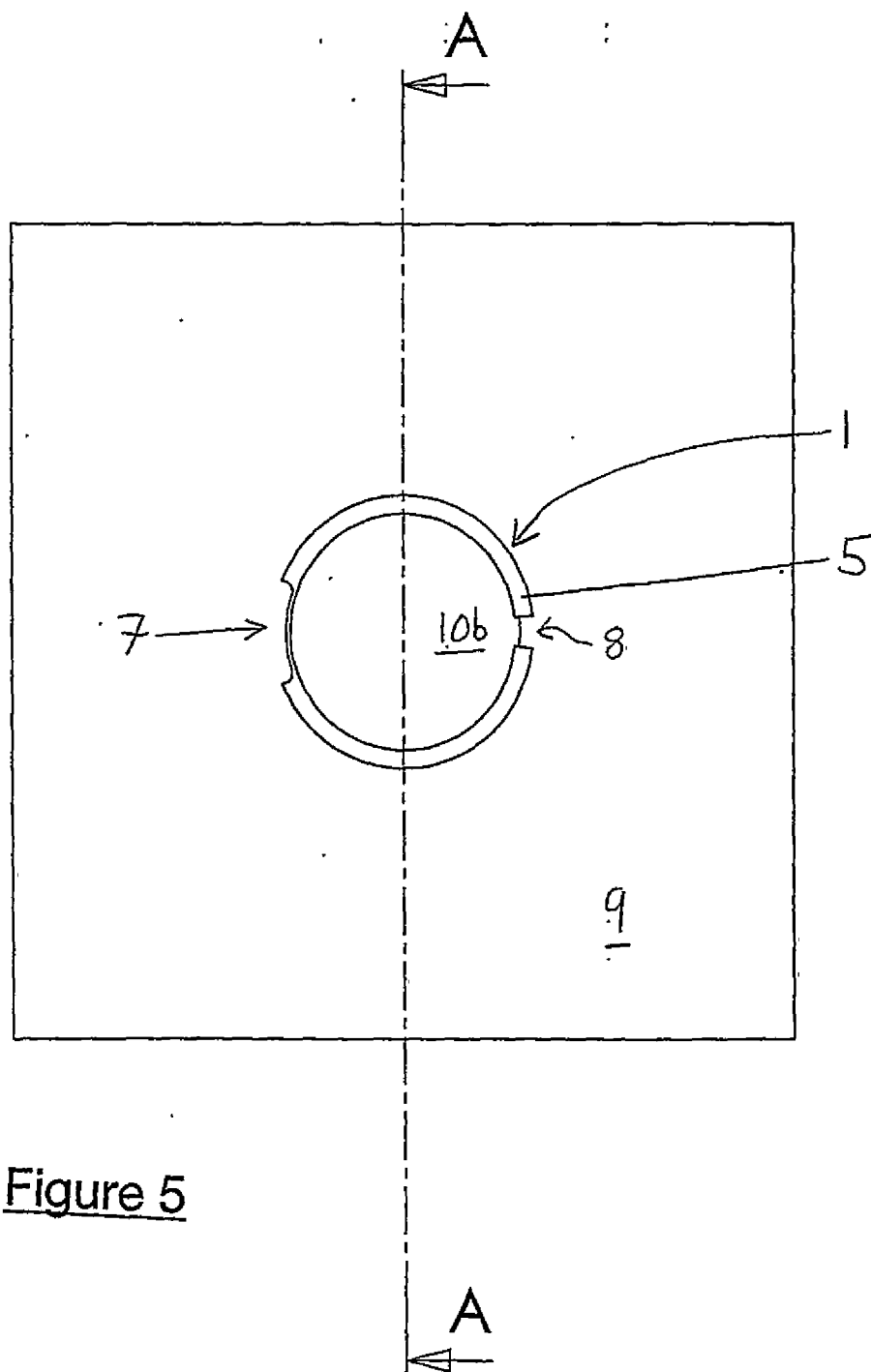


Figure 4



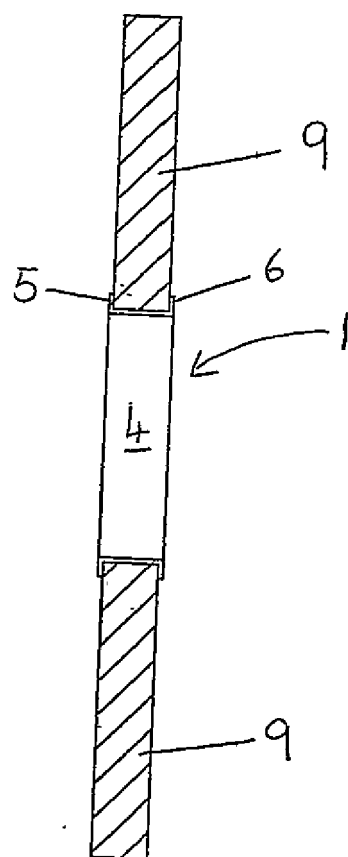


Figure 6

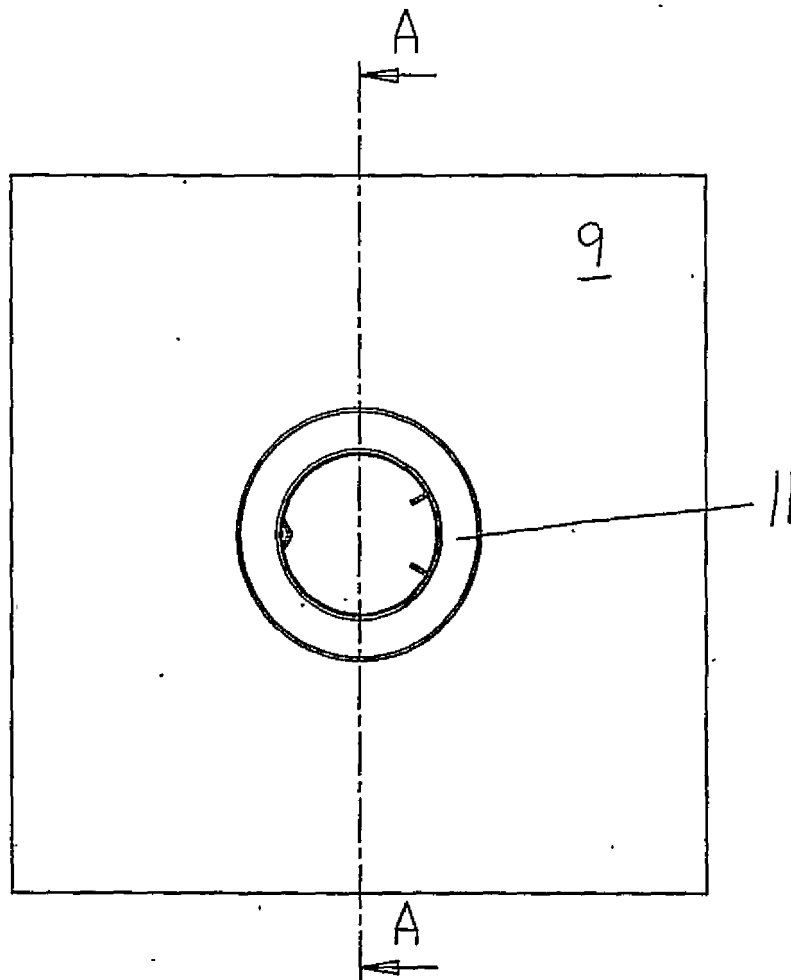


Figure 7

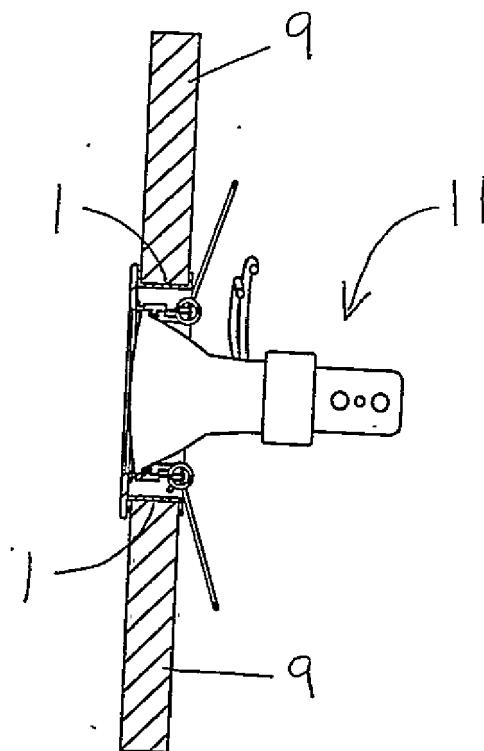


Figure 8



EUROPEAN SEARCH REPORT

Application Number
EP 09 17 3783

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 102 48 705 B4 (SITECO BELEUCHTUNGSTECH GMBH [DE]) 23 February 2006 (2006-02-23) * paragraph [0005] - paragraph [0043]; figures 1-5 *	1,5-7, 11-13	INV. F21S8/02 F21V17/16
Y	-----	2	
Y	WO 00/12840 A (BURGESS JOHN DAVID TILBURY [AU]) 9 March 2000 (2000-03-09) * page 11, line 30 - page 13, line 8; figures 8-11 *	2	
A	----- US 2006/101741 A1 (RAE ANDREW [CA]) 18 May 2006 (2006-05-18) * paragraph [0049] - paragraph [0076]; figures 2-18 * -----	1-13	
			TECHNICAL FIELDS SEARCHED (IPC)
			F21S F21V
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 18 January 2010	Examiner Arboreanu, Antoniu
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	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 17 3783

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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18-01-2010

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