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Remarks:

Amended claims in accordance with Rule 137(2) EPC.

(54) **Built-in light with flexible bracket**

(57) The invention includes a built-in light (1) for installation in building elements such as ceilings and cabinets, where the light has a light source (2) which is installed in a housing (4), where the light source (2) radiates light via a front plate (3), and where there is an air gap (15) between the light source (2) and the front plate (3),

and where the housing (4) is connected to a cable connection or transformer unit (6) via a flexible belt (5).

The flexible belt (5) in the product ensures that separate units (4, 6) in the built-in light (1) can simply and cheaply be connected mechanically and easily installed in for example in ceilings or cabinets.

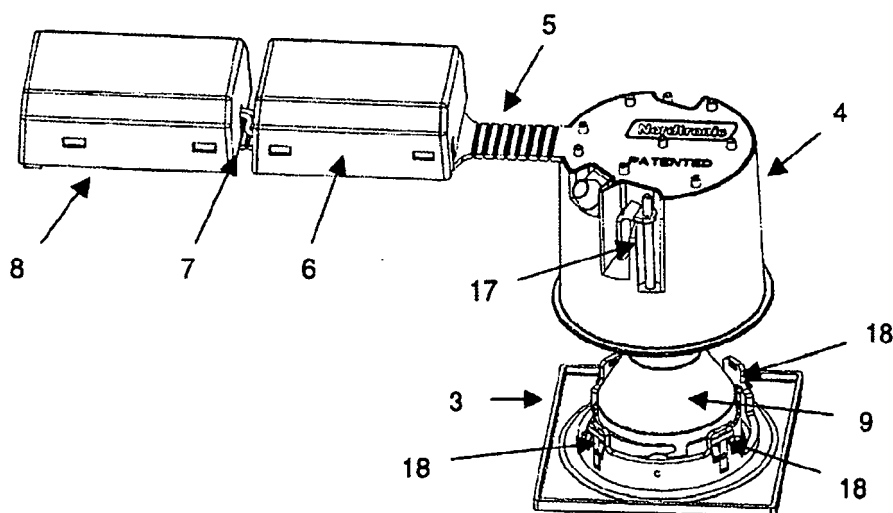


Fig. 2

Description

FIELD OF THE INVENTION

[0001] The present invention relates to a built-in light for installation in building elements such as ceilings and cabinets. Moreover, the present invention relates to a flexible bracket used to connect the housing of the built-in light to various connection boxes.

BRIEF DESCRIPTION OF THE INVENTION

[0002] Built-in lights are well known, and they are typically installed in ceilings, meaning that the height of the built-in light is desired to be minimized.

[0003] Built-in lights are often constructed in several parts for this reason, such that the light source is placed in a housing which is separated from a cable connection and/or a transformer unit which is used when the light source's operating voltage is lower than the mains voltage, as is the case, for example, with halogen or LED-based light sources.

[0004] In the current built-in light types, the housing and the cable connection and/or transformer unit are normally connected with a mechanical bracket to allow installation in narrow spaces, for example when the built-in lights are installed through holes in the ceiling.

[0005] It has, however, been found that there are certain disadvantages with the known technique, including that it is relatively expensive to manufacture and install the mechanical bracket used to connect the housing and the cable connection and/or transformer unit.

[0006] Moreover the mechanical brackets have a limited movement flexibility, which can make installation very difficult or impossible in many installation areas.

[0007] One object of the invention is therefore to improve the technique for manufacturing of built-in lights.

[0008] Another object of the invention is to make installation of built-in lights possible in areas, where it has previously been difficult or impossible.

[0009] This object is achieved via a procedure of the type specified in claim 1, the characteristic of which is that the housing is connected to a cable connection and/or transformer unit via a flexible belt.

[0010] This means that the relatively expensive and inflexible mechanical bracket can be replaced by a simple, cheap and flexible belt manufactured, for example, from rubber.

[0011] Other appropriate embodiments for the light are given in claims 2 to 7.

BRIEF DESCRIPTION OF THE FIGURES

[0012]

Figure 1 shows a preferred embodiment of the built-in light.

Figure 2 shows a partially separated built-in light.

Figure 3 shows a sectional view of a preferred embodiment of the built-in light.

Figure 4 shows a magnified section of figure 3.

Figure 5 shows a magnified section of figure 3.

10 DETAILED DESCRIPTION OF THE INVENTION

[0013] On Fig. 1 is with 1 shown a built-in light which is manufactured according to the invention.

[0014] The built-in light 1 contains a light source 2 which is fitted to a front part 16, and which emits light from a front plate 3, where there is an air gap 15 between the front part 16 and the front plate 3.

[0015] The light source 2 is placed in a housing 4, which is connected via a flexible belt 5 to a transformer unit 6, which is used to transform the mains voltage to the operating voltage for the light source 2.

[0016] The air gap 15 is used for air circulation so that the heat from light source 2 can be conveyed away from the built-in light 1, as the housing 4, which surrounds the light source 2 behind front plate 3, is airtight, such that hot air cannot penetrate the housing and thereby heat the building sections around it.

[0017] Fig. 1 also shows that the transformer unit 6 in the preferred embodiment is connected to a cable connection unit 8 which is used for connection to the mains.

[0018] The transformer unit 6 and the cable connection unit 8 are connected with a flexible belt 7.

[0019] In other embodiments the housing 4 might be connected directly to the cable connection unit 8 via a flexible belt.

[0020] The flexible belt 5 and the flexible belt 7 can be manufactured in a polymer such as a rubber material.

[0021] By using a flexible polymer belt 5, 7 to connect the different units in the built-in light 1, it is achieved that the mechanical connection is cheap to manufacture, easy to install on the built-in light and requires minimal space where the built-in light is installed.

[0022] Fig. 1 also shows that the housing is supplied with a number of, preferably, two fastening devices 17, which consist of angled plates which can be turned and moved with a screw, such that the fastening components 17 can be used to fix the housing 4 to the ceiling in which it is placed.

[0023] Fig. 2 shows a partially separated built-in light 1, showing that the front plate 3 with associated light source 2 are fixed to the housing 4 by use of a number of, preferably, 4 friction elements which, in the preferred embodiment shown, consist of leaf springs 18.

[0024] Fig. 3 shows a cut-away of the preferred embodiment of the built-in light which is shown in Fig. 1.

[0025] Fig. 4 shows that the housing 4 is attached to the flexible belt 5 by use of assembly guys 19, which by heating can be deformed in the top and thereby hold the

units together.

[0026] Fig. 5 shows an enlarged section B from Fig. 3 with a preferred embodiment of the built-in light 1, where the light source via shafts 10 is connected to front plate 3, and thereby turned several degrees for adjustment of the light direction.

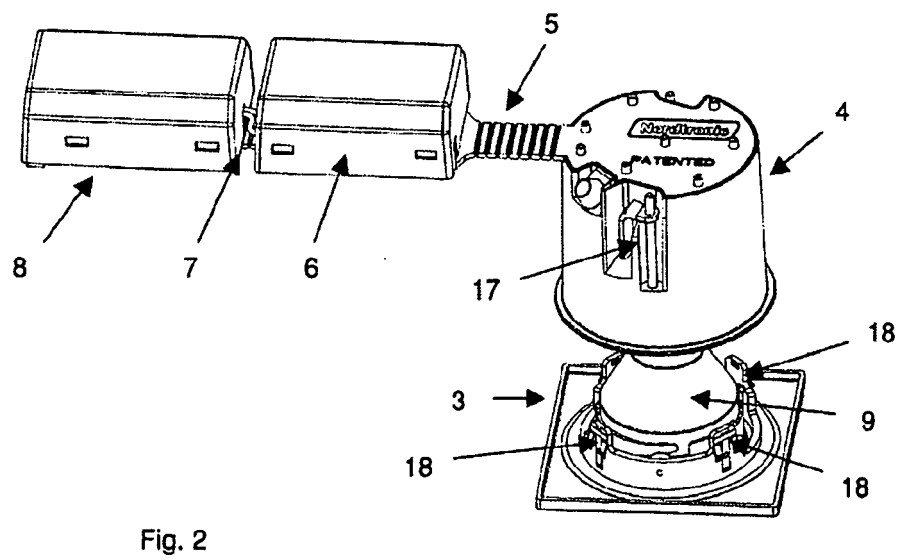
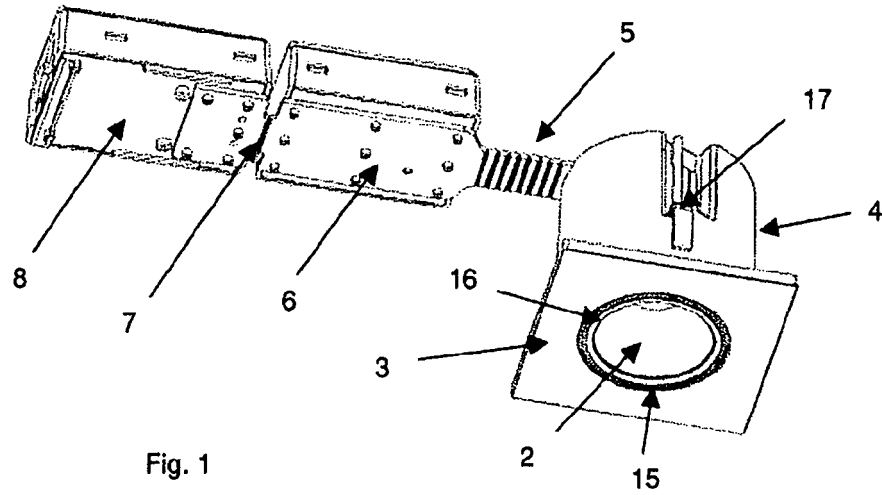
[0027] Shafts 10 are affected by springs 11 such that the force of the springs provides a degree of friction, ensuring that light source 2 remains in the position to which it is turned.

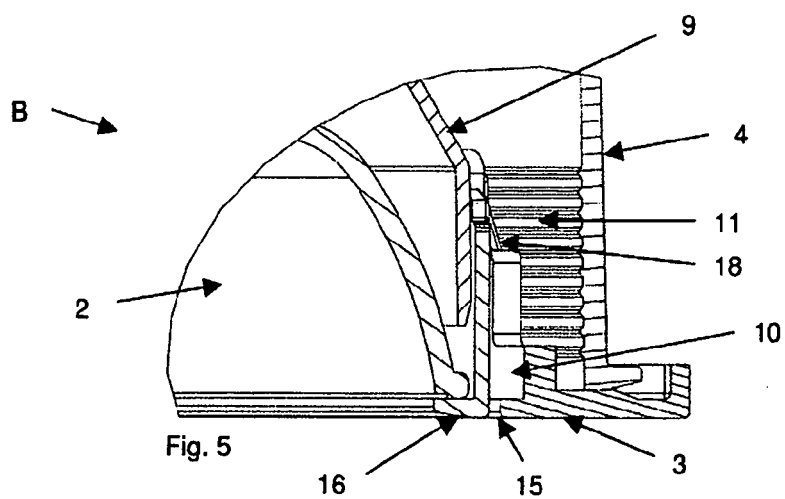
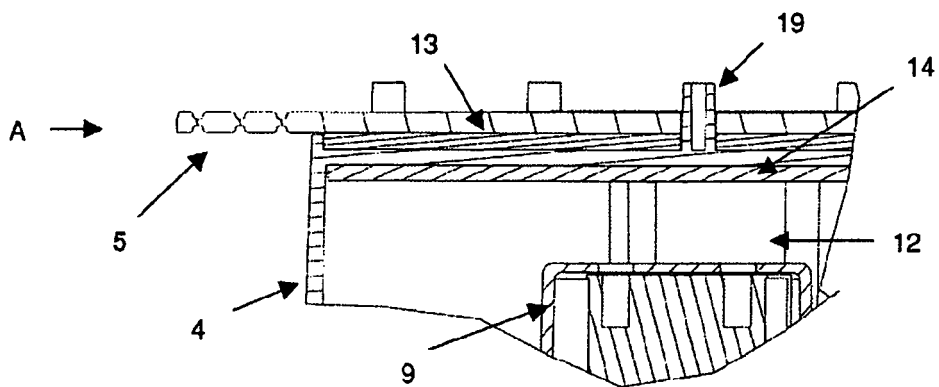
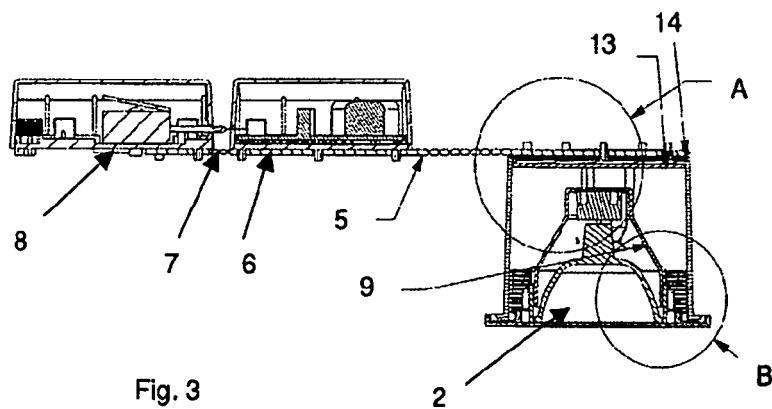
Claims

1. Built-in light (1) for installation in building elements such as ceilings, where the light includes a light source (2) which is fitted in a housing (4), where the light source (2) is fitted to a front part (16) and radiates light via a front plate (3), and where there is an air gap (15) between the front part (16) and the front plate (3), and where the housing (4) is connected to a cable connection (8) and/or transformer unit (6) **characterized in that** the housing (4) is connected to a cable connection (8) and/or transformer unit (6) via a flexible belt (5).
2. Built-in light (1) as per claim 1 **characterized in that** the flexible belt (5) is made of a polymer including preferably rubber.
3. Built-in light (1) according to one or both of claims 1 or 2 **characterized in that** a transformer unit (6) is connected to a cable connection (8) with a flexible belt (7).
4. Built in light (1) according to one or more of claims 1 to 3 **characterized in that** the flexible belt (7) is made of a polymer including preferably rubber.
5. Built-in light (1) according to one or more of claims 1 to 4 **characterized in that** the light source (2) and the front plate (3) are fixed to the housing (4) with friction elements, preferably leaf springs (18).
6. Built-in light (1) according to one or more of claims 1 to 5 **characterized in that** the housing (4) is fitted with a number, preferably 2, of fixing units (17).
7. Built-in light (1) according to one or more of claims 1 to 6 **characterized in that** the light source (2) is suspended in rotatable shafts (10) and can be moved in these with a frictional resistance, which is defined by compression springs (11) which impact the shafts (10).

Amended claims in accordance with Rule 137(2) EPC.

1. Built-in light (1) for installation in building elements such as ceilings, where the light includes a light source (2) which is fitted in a housing (4), where the light source (2) is fitted to a front part (16) and radiates light via a front plate (3), and where the housing (4) is connected to a cable connection (8) and/or transformer unit (6) **characterized in that** the housing (4) is connected to a cable connection (8) and/or transformer unit (6) via a flexible belt (5) and **in that** an air gap (15) is provided between the front part (16) and the front plate (3) for providing air circulation so that the heat from the light source (2) can be conveyed away from the built-in light (1).
2. Built-in light (1) according to claim 1, wherein the flexible belt (5) is made of a polymer including preferably rubber.
3. Built-in light (1) according to one or both of claims 1 or 2, wherein a transformer unit (6) is connected to a cable connection (8) with a flexible belt (7).
4. Built in light (1) according to claim 3, wherein the flexible belt (7) is made of a polymer including preferably rubber.
5. Built-in light (1) according to one or more of claims 1 to 4, wherein the light source (2) and the front plate (3) are fixed to the housing (4) with friction elements, preferably leaf springs (18).
6. Built-in light (1) according to one or more of claims 1 to 5, wherein the housing (4) is fitted with a number, preferably 2, of fixing units (17).
7. Built-in light (1) according to one or more of claims 1 to 6, wherein the light source (2) is suspended in rotatable shafts (10) and can be moved in these with a frictional resistance, which is defined by compression springs (11) which impact the shafts (10).







EUROPEAN SEARCH REPORT

Application Number
EP 12 00 6435

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2010/110699 A1 (CHOU DER JEU [US]) 6 May 2010 (2010-05-06)	1-4,6	INV. F21V23/02 F21S8/02 F21V23/00
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 19 October 2012	Examiner Kebemou, Augustin
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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EPO FORM 1503 03.82 (P04G01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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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
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82