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(54) **Fitted lamp**

(57) The invention includes a fitted lamp (1) for mounting in building elements such as ceilings, where the fitted lamp includes a light source (2), which is mounted in a cover housing (4), where the light source (2) emits light through 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 cover housing (4) is connected to a cable connection and / or transformer unit (6) where there between the light source (2) and the cover housing (4) is placed a heat shield (9) and where the cover housing (4) is connected to a cable connection and / or transformer unit (6) via a flexible belt (5)

With the invention, the heating of the cover housing (4) is reduced from the light source (2) such that new types of light sources (2) with high heat emission such as halogen or LED based can be used in fitted lamps (4), which for example must be CE approved.

Moreover, the flexible belt (5) ensures that the separate devices (4,6) of the fitted lamp (1) simply and inexpensively can be connected mechanically.

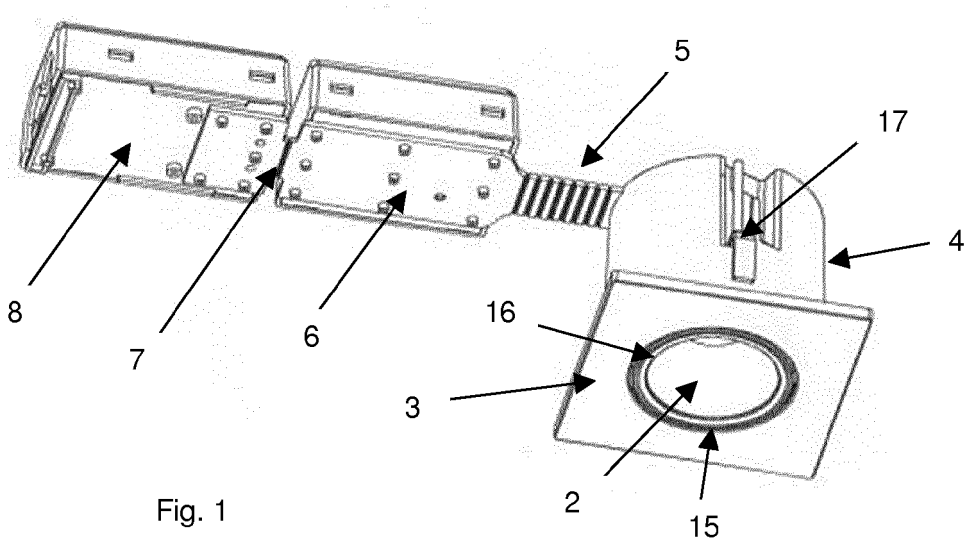

Fig. 1

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Description

[0001] The invention relates to a fitted lamp for mounting in building elements such as ceilings where the fitted lamp includes a light source, which is mounted in a cover housing where the light source is mounted to a front part and emits light through a front plate and where there is an air gap between the front part and the front plate, and where the cover housing is connected to a cable connection and / or transformer unit where a heat shield is placed between the light source and the cover housing and where the cover housing is provided with one or more heat distribution layers and / or thermo insulation layers where the heat shield can also be provided with a ventilator.

[0002] It is known to manufacture fitted lamps, which are typically mounted in ceilings, which means that the height of fitting is desired to be minimised.

[0003] From that reason, fitted lamps are often two-parted such that the light source is placed in a cover housing, which is separated from a transformer unit, which is used when the working stress of the light source is lower than the voltage of the current network, which is for example the case for halogen or LED based light sources.

[0004] In the hitherto known types of fitted lamps, the cover housing and the transformer unit are typically connected to a mechanical bracket.

[0005] It has been found, however, that there are some drawbacks connected to this known technique, including that new types of light sources, such as halogen or LED based, cannot be used in the hitherto known fitted lamps since they generate so much heat that the cover housing is heated to a temperature, which is higher than the one, which can maximum be allowed for example for achieving the necessary CE approval of fitted lamps, which are to be sold in the EU.

[0006] Moreover, it is a drawback, that it is relatively costly to manufacture and mount the mechanical brackets, which are used to connect cover housing and cable connection unit and / or the transformer unit. The hitherto used mechanical brackets are moreover not flexible enough for many types of assembly situations.

[0007] From US 5664872 A (SPEARMAN et al) is known a fitted lamp for mounting in building elements where the fitted lamp includes a light source, which is mounted in a cover housing, where the light source is mounted to a front part and emits light through a front plate, and where there is an air gap between the front part and the front plate, and where the cover housing is connected to a cable connection unit. Between the light source and the cover housing, there is placed a heat shield.

[0008] It is, however, a drawback of the technique described in US 5664872 A that the light source cannot be fixed in a stable way in a given position.

[0009] It is therefore an object of the invention to improve the technique for manufacturing fitted lamps.

[0010] The object of the invention is achieved by a fitted lamp of the, in the introduction to claim 1, stated type which is **characterized in that** the light source and the heat shield are suspended in rotatable shafts and can be moved in these with a frictional resistance, which is defined by compression springs, which impact the shafts.

[0011] In this way it thus becomes possible to fix the light source in a given position, which is optimum for a specific application.

[0012] As stated in claim 2, it is furthermore a characteristic of the invention that the cover housing is connected to a cable connection and / or transformer unit via a flexible belt.

[0013] It is hereby achieved that the relatively costly and non-flexible mechanical brackets are replaced by a simple, inexpensive and flexible belt, for example manufactured from rubber.

[0014] Further appropriate embodiments for the fitted lamp are stated in claims 3 to 7.

[0015] The invention will now be explained more fully with reference to the drawings, on which:

Fig. 1 shows a preferred embodiment of the fitted lamp.

Fig. 2 shows a partially separated fitted lamp.

Fig. 3 shows a sectional view of a preferred embodiment of the fitted lamp.

Fig. 4 shows a magnified section of fig. 3.

Fig. 5 shows a magnified section of fig. 3.

[0016] On fig. 1 is with 1 shown a fitted lamp, which is manufactured according to the invention.

[0017] The fitted lamp 1 contains a light source 2, which is mounted 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.

[0018] The light source 2 is placed in a cover housing 4, which via a flexible belt 5 is connected to a transformer unit 6, which is used for transforming the voltage of the grid to the operating voltage of the light source 2.

[0019] The air gap 15 is used for air circulation such that the heat from the light source 2 can be led away from the fitted lamp 1, since the cover housing 4, which encloses the light source 2 behind the front plate 3 is air tight such the hot air cannot penetrate the cover housing and thereby heat underlying building sections.

[0020] In fig. 1 is furthermore seen that the transformer unit 6 in the shown preferred embodiment is connected with a cable mounting unit 8, which is used for connection to the current network.

[0021] The transformer unit 6 and the cable mounting unit 8 are connected with a flexible belt 7.

[0022] The flexible belt 5 and the flexible belt 7 can be manufactured from a polymeric material such a rubber

material.

[0023] By using a flexible polymeric belt 5,7 to connect the different units, which are included in the fitted lamp 1, it is achieved that the mechanical coupling is inexpensive to manufacture, easy to mount and minimally space demanding.

[0024] In fig. 1 is also seen that the cover housing is provided with a number, preferably two, fastening devices 17, which consist of angled plate pieces, which can be turned and moved with a screw, whereby the fastening devices 17 can be used to fasten the fitted lamp 4 to the ceiling, in which it is placed.

[0025] Fig. 2 shows a partially separated fitted lamp 1, where it is seen that the front plate 3 with appertaining light source 2 and the partially enclosing heat shield 9 are fastened to the cover housing 4 by application of a number, preferably 4 friction elements, which in the shown preferred embodiment consists of leaf springs 18.

[0026] In fig. 3 is shown a sectional view of the preferred embodiment of the fitted lamp, which is shown in fig. 1.

[0027] From fig. 3 is seen, that there is placed a heat shield 9 between the light source 2 and the cover housing 4.

[0028] The heat shield 9 is airtight and encloses the light source 2 in direction towards the cover housing 4 whereby heating of the cover housing from the light source 2 is reduced significantly in relation to the hitherto known fitted lamps, which are not provided with a heat shield 9.

[0029] The heat shield 9 encloses the light source 2 such that the air gap 15 can create air circulation around the light source 2 and thereby emit heat to the surroundings in the same direction as the one where the light source emits light.

[0030] Moreover, the heat shield 4 distributes the backward emitting heat, which reduces local point heating of the cover housing 4, which can be critical in connection with product approval.

[0031] Tests have shown that the desired heat dispersal is optimised by application of aluminium for manufacturing of the heat shield 4.

[0032] In a preferred embodiment, the heat shield 9, can besides functioning as a thermal insulant between the light source 2 and the cover housing 4, be used for securing the light source 2.

[0033] Fig. 4 shows a magnified section A of fig. 3, from which it is seen that the top of the cover housing 4 is provided with a heat distribution layer 13, which is preferably manufactured from aluminium, and a thermo insulation layer 14, which can be appropriate for reduction and distribution of the heat emission from the surroundings.

[0034] It moreover appears from fig. 4 that the cover housing 4 is fastened to the flexible belt 5 by application of assembly guys 19, which by heating can be deformed in the top and thereby hold the units together.

[0035] In a preferred embodiment, the heat shield 4 can be shaped such that it contains a ventilator, which can be mounted in the volume stated at 12.

[0036] A ventilator can improve the air circulation between the heat shield 4 and the light source 2 and thereby reduce the internal heating of the fitted lamp 1.

[0037] In fig. 5 is shown a magnified section B from fig. 3 with a preferred embodiment of the fitted lamp 1, where the light source and the partially enclosing heat shield 9 via shafts 10 is connected to the front plate 3 and is thereby turned a number of degrees for adjusting the light direction.

[0038] The shafts 10 are affected by springs 11 such that spring force provides a certain friction, which ensures, that the light source 2 remains in the position to which it is turned.

Claims

1. Fitted lamp (1) for mounting in building elements such as ceilings where the fitted lamp includes a light source (2), which is mounted in a cover housing (4) where the light source (2) is mounted to a front part (16) and emits light through 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 cover housing (4) is connected to a cable connection and / or transformer unit (6) where a heat shield (9) is placed between the light source (2) and the cover housing (4) and where the cover housing (4) is provided with one or more heat distribution layers (13) and / or thermo insulation layers (14) where the heat shield (9) can also be provided with a ventilator **characterized in that** the light source (2) and the heat shield (9) are 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).

2. Fitted lamp (1) according to claim 1 **characterized in that** the cover housing (4) is connected to a cable connection and / or transformer unit (6) via a flexible belt (5).

3. Fitted lamp (1) according to claim 2 **characterized in that** the flexible belt (5) is manufactured from a polymeric material including preferably rubber.

4. Fitted lamp (1) according to one or more of claims 1 to 3 **characterized in that** a transformer unit (6) is connected to a cable mounting device (8) with a flexible belt (7), which is preferably manufactured from a polymeric material including preferably a rubber material.

5. Fitted lamp (1) according to one or more of claims 1 to 4 **characterized in that** the light source (2), the front plate (3) and the heat shield (9) are fastened

to the cover housing (4) with friction elements preferably leaf springs (18).

6. Fitted lamp (1) according to one or more of claims 1 to 5 **characterized in that** the cover housing (4) is provided with a number, preferably two, fastening devices (17).

7. Fitted lamp (1) according to one or more of claims 1 to 6 **characterized in that** the heat shield (9) is manufactured from aluminium.

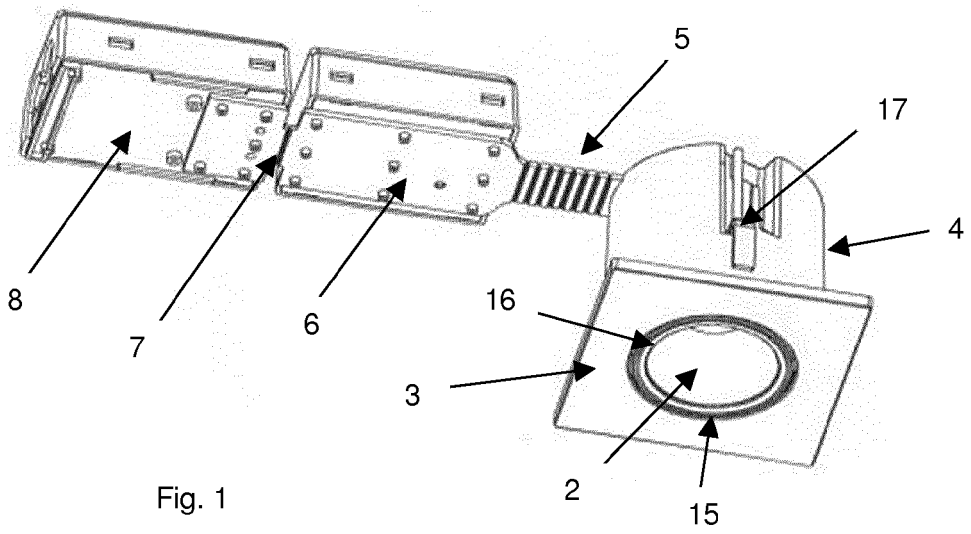

Fig. 1

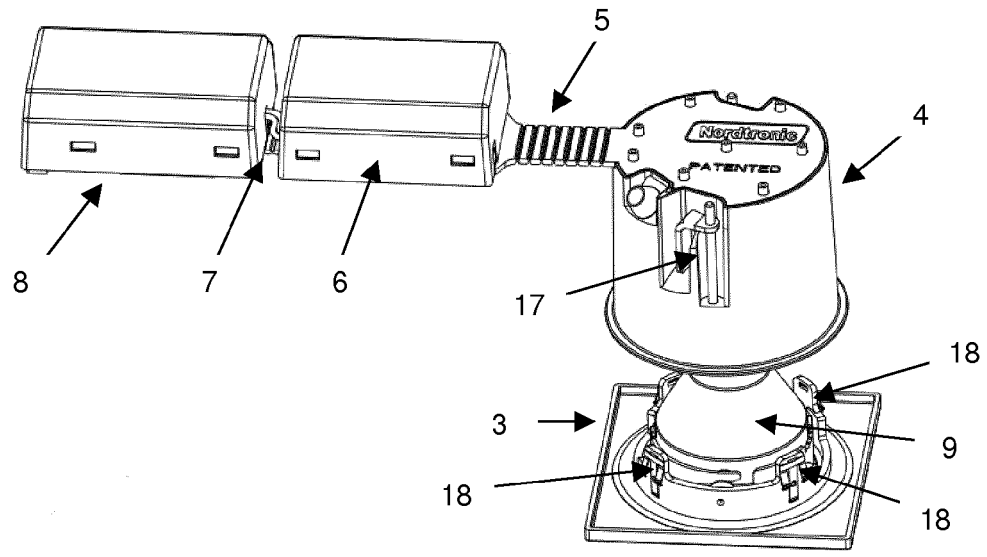

Fig. 2

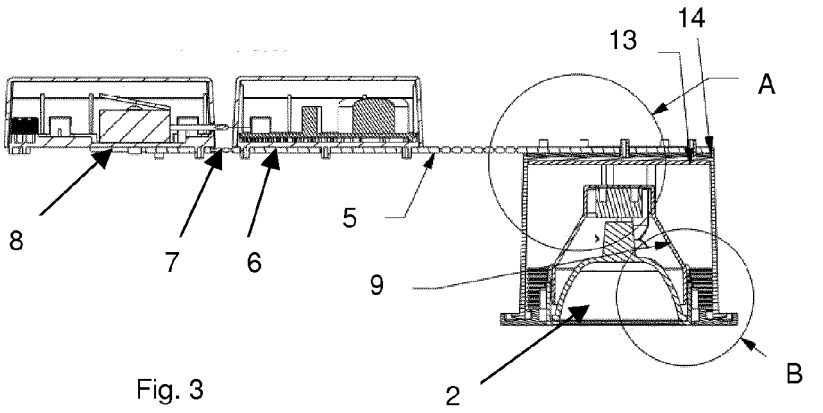

Fig. 3

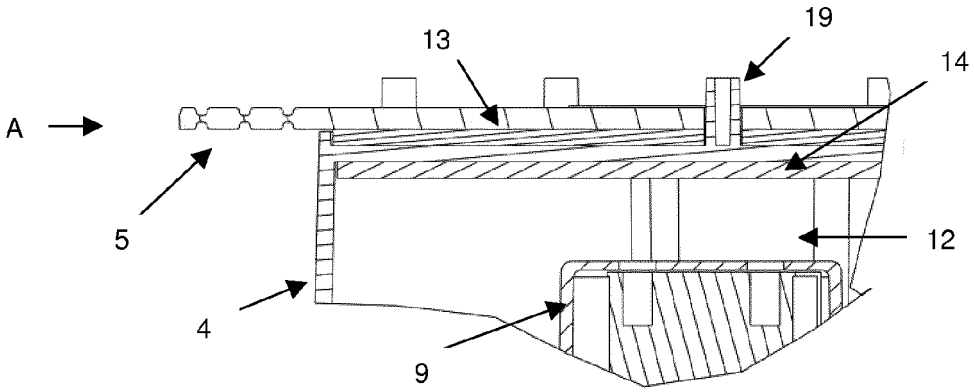

Fig. 4

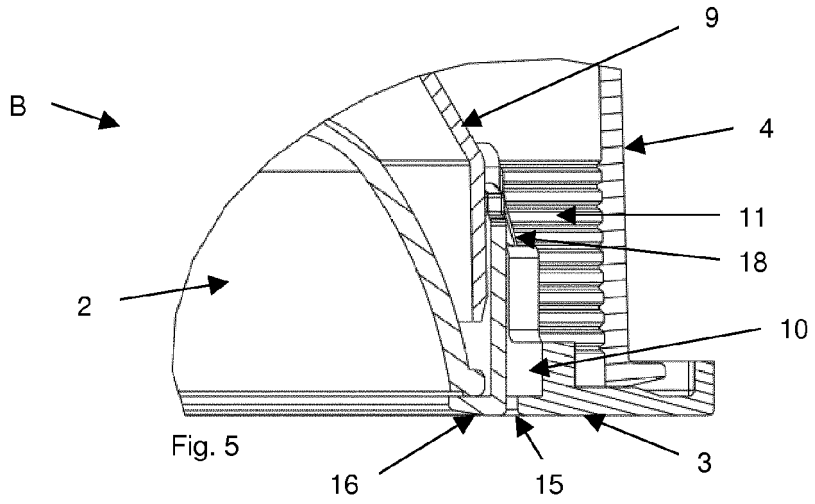

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 12 18 3790

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 2010/061108 A1 (ZHANG KANGHONG [US] ET AL) 11 March 2010 (2010-03-11) * paragraph [0052] - paragraph [0074]; figures 1a, 10, 13, 17 *	1-7	INV. F21V15/06 F21S8/02 F21V21/30 F21V23/02
Y	US 5 130 914 A (BENGOCHEA FULGENCIO [US]) 14 July 1992 (1992-07-14) * column 5, line 57 - column 6, line 8; figures 1, 3, 6 *	1-7	
Y	WO 2009/080046 A1 (DAXTOR APS [DK]; DAHL TORBEN [DK]) 2 July 2009 (2009-07-02) * page 5, line 4 - page 7, line 4; figures 1, 4 *	1-7	
A	US 2003/161155 A1 (CALUORI GIUSEPPE [CA]) 28 August 2003 (2003-08-28) * paragraph [0018] - paragraph [0020]; figures 1-3 *	1-4	
A	EP 1 378 708 A2 (DAISALUX SA [ES]) 7 January 2004 (2004-01-07) * abstract; figures 2, 3 *	1-4	TECHNICAL FIELDS SEARCHED (IPC) F21V F21S
A	US 6 068 384 A (TYSON GLENN M [US] ET AL) 30 May 2000 (2000-05-30) * the whole document *	1-7	
A	US 5 664 872 A (SPEARMAN ROBERT DON ALDO [GB] ET AL) 9 September 1997 (1997-09-09) * column 2, line 11 - column 3, line 59; figures 1-4 *	1-7	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	15 November 2012	Thibaut, Arthur

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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15-11-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010061108 A1	11-03-2010	NONE	
US 5130914 A	14-07-1992	NONE	
WO 2009080046 A1	02-07-2009	DK 201000149 U1	27-08-2010
		EP 2223013 A1	01-09-2010
		US 2010294560 A1	25-11-2010
		WO 2009080046 A1	02-07-2009
US 2003161155 A1	28-08-2003	CA 2373874 A1	28-08-2003
		US 2003161155 A1	28-08-2003
EP 1378708 A2	07-01-2004	AT 403833 T	15-08-2008
		EP 1378708 A2	07-01-2004
		ES 2228216 A1	01-04-2005
		ES 2311682 T3	16-02-2009
		PT 1378708 E	12-11-2008
US 6068384 A	30-05-2000	NONE	
US 5664872 A	09-09-1997	AT 156250 T	15-08-1997
		AU 677461 B2	24-04-1997
		AU 8065694 A	13-06-1995
		CA 2171203 A1	01-06-1995
		DE 69404670 D1	04-09-1997
		DE 69404670 T2	27-11-1997
		EP 0730716 A1	11-09-1996
		ES 2105781 T3	16-10-1997
		IL 111602 A	04-01-1998
		NO 960902 A	06-03-1996
		US 5664872 A	09-09-1997
		WO 9514884 A1	01-06-1995
		ZA 9408865 A	31-08-1995

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 5664872 A, SPEARMAN **[0007] [0008]**