

(19)



(11)

**EP 2 105 658 A1**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**30.09.2009 Bulletin 2009/40**

(51) Int Cl.:  
**F21V 21/00<sup>(2006.01)</sup>**

(21) Application number: **09156544.0**

(22) Date of filing: **27.03.2009**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL BA RS**

• **de Ketelaere, Ward**  
**B-2160, Wommelgem (BE)**

(74) Representative: **Hatzmann, Martin et al**  
**Vereenigde**  
**Johan de Wittlaan 7**  
**2517 JR Den Haag (NL)**

(30) Priority: **28.03.2008 NL 2001416**

(71) Applicant: **Etap N.V.**  
**2390 Malle (BE)**

(72) Inventors:  
• **Lambrechts, Jürgen**  
**B-2960, Sint Lenaarts (BE)**

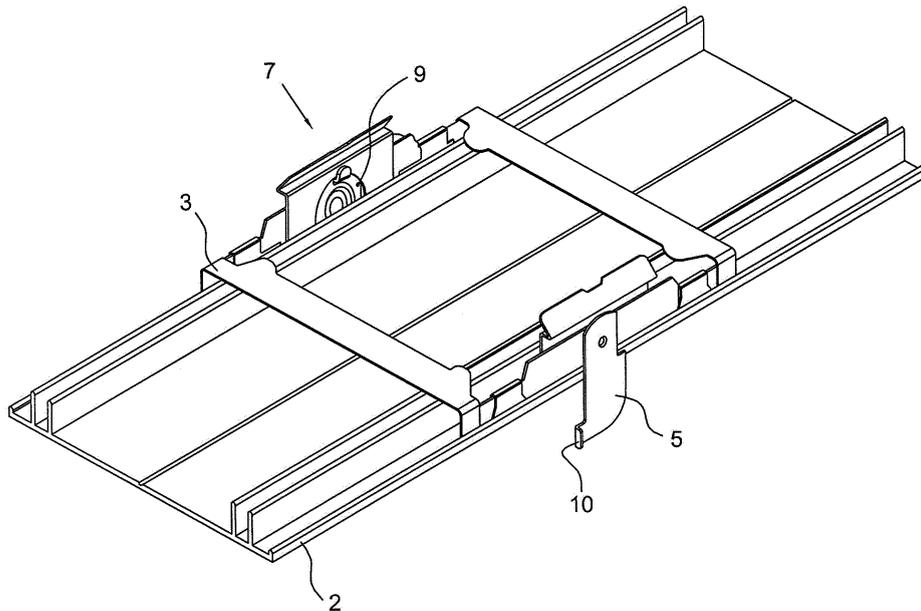
Remarks:

A request for correction of the drawings (references) has been filed pursuant to Rule 139 EPC. A decision on the request will be taken during the proceedings before the Examining Division (Guidelines for Examination in the EPO, A-V, 3.).

(54) **Light fitting module and fitting frame**

(57) Light fitting module (2) which is fastenable in a fitting frame. The light fitting module comprises a locking module (1) with a manually operable locking arm (5) which is adjustable between a stable release position in

which the locking arm releases the light fitting module for mounting and/or demounting in the fitting frame, and a stable locking position in which the locking arm locks the light fitting module in the fitting frame. The locking arm may be pivotably fastened to the light fitting module.



**FIG. 3**

**EP 2 105 658 A1**

## Description

**[0001]** The invention relates to a light fitting module which is fastenable in a fitting frame.

**[0002]** Such a light fitting module is generally known. When providing lighting in a space of, for instance, an office, a hotel, a conference center, or a house, an option is to arrange fitting frames, such as channel sections, in which various light fitting modules are fastenable, in or against the ceiling. Such a light fitting module may for instance be a spotlight, but also a lamp with diffusor or a blind plate. Elegantly, a modular lighting system can thus be obtained which can be simply adjusted to the wishes of the customer and/or the space to be lighted.

**[0003]** A drawback of the known light fitting modules is that it is complex and labor intensive to fasten them in the fitting frame. Furthermore, during mounting and/or demounting, fingerprints may be left on the light fitting modules, which is undesired from an aesthetic point of view. On the other hand, the use of gloves, which prevent the above effect, is naturally difficult and laborious from a fitter's point of view.

**[0004]** The object of the invention is to provide a light fitting module which obviates at least one of the above-mentioned disadvantages.

**[0005]** To this end, the invention provides a light fitting module which is fastenable in a fitting frame, wherein the light fitting module comprises a locking module which is provided with a manually operable locking arm which is adjustable between a stable release position in which the locking arm releases the light fitting module for mounting and/or demounting in the fitting frame, and a stable locking position in which the locking arm locks the light fitting module in the fitting frame.

**[0006]** By providing the light fitting module with a locking module having a locking arm which is manually adjustable between a stable release position and a stable locking position, the light fitting module can in a simple manner be mounted relatively fast and easily in the fitting frame. Also, based on the position of the locking arm, it can be perceived whether the light fitting module is locked in the fitting frame or not, which can facilitate a final check after mounting of the light fitting module. Furthermore, the light fitting module can also be easily demounted. Both during mounting and during demounting, contact with the light fitting module proper can be avoided, which can signify an important advantage from an aesthetic point of view.

**[0007]** In the locking position, the light fitting module is locked to the fitting frame, such that the module is firmly anchored and does not fall from the fitting frame, so that the module could uncouple only upon application of a relatively major external force. Conversely, in the release position the coupling between the module and the fitting frame is removed to such an extent that the module can easily be taken out of the fitting frame, also upon application of a relatively minor external force, for instance a limited pull force. By configuring the release position in

such a way that the coupling between the light fitting module and the fitting frame, while relatively weak, is yet maintained, then, despite exertion of gravity on the light fitting module, the light fitting module in the release position is prevented from falling out of the frame, which would be undesired. As the light fitting module remains suspended in the frame also in the release position, the demounting process is simplified considerably. Taking out the module is then done in the release position by manually removing the relatively weak coupling between module and frame. In the release position, the module can be relatively easily pulled from the frame. Thus, bringing the locking arm into the release position and actually taking out the light fitting module can be carried out separately. As a result, during mounting and demounting, actions can take place in succession rather than simultaneously. Thus, mounting and/or demounting can be carried out by a small number of persons, in principle even by one person. Thus, a construction is obtained by which both a reliable, firm anchorage between light fitting module and fitting frame, and an easily practicable mounting and/or demounting can be realized.

**[0008]** As the release position and the locking position are stable, during mounting and/or demounting the locking arm can be set in the desired position, after which the fitter advantageously has the hand free for other activities, without the locking arm adjusting of its own motion to a different position less desired at that time.

**[0009]** Elegantly and advantageously, the locking arm can be pivotably fastened to the light fitting module. The locking arm may also be slidably fastened to the light fitting modules.

**[0010]** By providing the locking module, for the purpose of cooperation with the locking arm, with an elastic element which is configured for clamping engagement in the fitting frame, the light fitting module can be mounted in the fitting frame relatively easily without tools. As the light fitting module engages clampingly in the fitting frame, the locking arm can be brought in the locking position without bearing the whole weight of the module. In principle, for instance for reasons of cost price, the module can also be designed without elastic element.

**[0011]** By designing the elastic element as a spring, the elastic element and/or the locking arm can be constructed in a relatively simple manner. For instance, the spring is designed as a leaf spring but the spring may also be designed as a linear spring, a torsion spring or a springing lip. Alternatively, the elastic element comprises a relatively stiff body and a resilient body to provide the spring action.

**[0012]** By providing the locking arm with a catch for fixing the elastic element in the locking position, the elastic element can be made of relatively light design. This is because in the locking position the light fitting module can be fixed in the channel section in that the catch of the locking arm blocks the spring action of the elastic element. As the catch then takes over the function of the elastic element, the necessary spring force of the elastic

element is relatively small, which enables a light design of the elastic element without loss of function.

**[0013]** By providing the elastic element with an opening through which the catch engages in the locking position of the locking arm, the locking module can be made of relatively thin and yet robust design. Instead of an opening there may also be provided a guide in which the locking arm engages. Thus the locking arm may be provided with a protrusion which engages in a guide of the elastic element.

**[0014]** By providing the locking arm with an operating element for manually operating the locking arm for adjusting the locking arm between the release position and the locking position, the light fitting module can be fastened in the fitting frame relatively easily without tools. As a result, mounting and fastening of the light fitting module can be carried out relatively fast. The operating element may be designed as an operating projection. In another embodiment, the operating element comprises a hook, eye or grip to engage the locking arm. Also, the locking arm may be provided with an operating element that can only be operated with an instrument, so that the locking arm can be concealed from view more easily. Moreover, operation of the arm can then, in principle, be reserved to professional users.

**[0015]** By additionally providing the locking module with a mounting frame on which the locking arm is arranged, the locking module can be constructed as a separate part which, in principle, can be fastened on any light fitting module. This can enhance the flexibility in use of the locking module and/or of the light fitting module. Alternatively, the locking module is fastened to the light fitting module directly, without intermediacy of a mounting frame.

**[0016]** In a compact manner, the elastic element can be fastened to the mounting frame. Thus, the locking arm additionally comprises the elastic element, so that the locking module can be designed as a compact separate part. Naturally, the elastic element may also be fastened differently, for instance directly, to the light fitting module.

**[0017]** By arranging for the locking module in the locking position to cooperate with the fitting frame for laterally fixing a sidewall of the fitting frame, yielding of the sidewall of the fitting frame in a direction transverse to the longitudinal direction of the fitting frame can be prevented. As a result, the construction of the fitting frame can be simplified and be made of less stiff design. Also, in the locking position of the locking arm, the locking module can cooperate with the fitting frame to fix an intermediate distance between sidewalls of the fitting frame, thereby preventing the light fitting module from falling out of the fitting frame. In a simpler embodiment, there is no provision or a different provision for a fixation of a sidewall or an interspace between sidewalls.

**[0018]** In an optional embodiment in accordance with the invention, the mounting frame cooperates with the fitting frame for laterally fixing sidewalls of the fitting frame.

**[0019]** Elegantly, the locking arm in the locking position is substantially completely folded into the fitting frame. In this way, a fitting frame with light fitting module having a relatively level finish can be obtained, with external disturbances in the aspect of the locking module being practically absent. Furthermore, possible fingerprints on the locking arm and/or dirt distortions are out of sight in the locking position.

**[0020]** Further advantageous embodiments are represented in the dependent claims.

**[0021]** The invention will be further elucidated on the basis of an exemplary embodiment which is represented in a drawing.

**[0022]** In the drawing:

Fig. 1 shows a schematic perspective view of a locking module of a light fitting module according to the invention in the release position;

Fig. 2 shows a schematic perspective view of the locking module of Fig. 1 in the locking position;

Fig. 3 shows a schematic perspective view of a light fitting module according to the invention; and

Fig. 4 shows a schematic front view of a light fitting module according to the invention fastened in a channel section.

**[0023]** It is noted that the figures are only schematic representations of advantageous embodiments which are represented by way of non-limiting exemplary embodiment. In the figures, identical or corresponding parts are designated with the same reference numerals.

**[0024]** Fig. 1 shows a locking module 1 of a light fitting module according to the invention which can be fastened to a light fitting module 2 as shown in Fig. 3 and Fig. 4. Different designs of light fitting modules 2 are possible. For instance, the light fitting module 2 may be designed as a diffusor plate, shown in Fig. 3, or the light fitting module may be designed as a lamp with a reflector (shown in Fig. 4). Also, the light fitting module may for instance be designed as a spotlight, a blind plate or as an optic.

**[0025]** The locking module 1 is connected with the light fitting module 2 via a mounting frame 3. The light fitting module 2 is fastenable in a fitting frame designed as a channel section 4. The channel section 4 can be mounted in or against the ceiling. Also, the channel section 4 can be designed in a wall or axle pendant mounting.

**[0026]** The locking module 1 comprises a locking arm 5 which is adjustable between a stable release position in which the locking arm 5 releases the light fitting module 2 for mounting and/or demounting in the channel section 4 and a stable locking position in which the locking arm 5 locks the light fitting module 2 in the channel section 4. The locking module 1 with the locking arm 5 in the release position is shown in Fig. 1. The locking module 2 with the locking arm 5 in the locking position is shown in Fig. 2. By providing the locking arm 5, the light fitting module 2 can be mounted in the channel section 4 and

locked in a simple manner. Moreover, it can be perceived relatively easily whether the light fitting module 2 is locked in the channel section 4.

**[0027]** It is noted here that 'stable' is understood to denote that the locking arm remains in the release position or the locking position without autonomously adjusting therefrom to a different position. Thus the release position and the locking position form a stable, static position.

**[0028]** A light fitting module 2 can comprise a plurality of locking modules 1. Also, a single locking module 1 may be provided with different locking arms 5. Thus, for instance, in Fig. 3 and Fig. 4 a locking module 1 is shown which is provided with a locking arm 5 on both sides of the mounting frame 3.

**[0029]** In the exemplary embodiment of the light fitting module 2 as shown in Fig. 3, the locking arm 5 is pivotably fastened to the light fitting module 2 via the mounting frame 3. The locking arm 5 may also be slidably fastened to the light fitting module 2. Optionally, the locking arm 5 may also be connected directly to the light fitting module 2. Thus, the locking module 1 could be designed as an integral part of the light fitting module 2.

**[0030]** As for instance shown in Fig. 4, the locking module 1 comprises an elastic element 6 for cooperation with the locking arm 5, the elastic element 6 being configured for clamping engagement in the channel section 4. Fig. 4 shows a locking arm 5 in the release position and a locking arm 5 on the opposite side of the channel section 4 in the locking position. The elastic element 6 engages through the spring force behind a tooth 7 of the channel section 4. In this way, in the release position the light fitting module 2 can be mounted in the channel section 4. By thereupon adjusting the locking arm 5 into the locking position, the elastic element is fixed against the channel section and the light fitting module 2 is locked in the channel section 4.

**[0031]** Advantageously, the elastic element 6 is designed as a spring 6; in this exemplary embodiment the spring is designed as a leaf spring.

**[0032]** In Fig. 1 and Fig. 2 it is shown that the locking arm 5 is provided with a catch 8 for fixing the elastic element. By fixing the spring 6 in the locking position, spring action in the locking position is prevented and the light fitting module 2 can be locked in the locking position in the channel section 4. As a result, the elastic element 6 can be made of relatively light design. The elastic element 6 can be made sufficiently elastic for the light fitting module 2, in the release position, to be mounted in the channel section 4. Via the catch 8 the spring action can be blocked in the release position, so that the catch 8 contributes to the locking of the light fitting module 2.

**[0033]** In the exemplary embodiment of Fig. 1 and Fig. 2, it is shown that the elastic element 6 has an opening 9 through which the catch 8 engages in the locking position. As a result, in the locking position, the spring action of the elastic element 6 can be blocked better, so that the locking module 1 can be made of relatively robust

and thin design. Advantageously, the catch 8 engages through the opening 9 in the release position as well. In this way, the locking module 1 can be made of more reliable design, in that a situation can be prevented where the catch 8, when adjusting the locking arm from the release position to the locking position, for instance, cannot engage through the opening 9. Conversely, a situation can be prevented where the catch 8, when adjusting the locking arm 5 from the locking position to the release position, is hooked in the locking position. By also providing the mounting frame 3 with an opening corresponding to the opening 9 of the elastic element 6, the locking module 1 can optionally be made of still more compact design. Instead of a catch 8 and an opening 9, also a guide means may be provided on the locking arm 5, which is guided in a guideway on the elastic element 6. Optionally, also a protrusion (for instance a lug) may be provided which cooperates with a groove on an elastic element 6.

**[0034]** The locking arm 5, as for instance shown in Fig. 1 and Fig. 2, is provided with an operating projection 10 for manually operating the locking arm 5 for adjusting the locking arm 5 between the release position and the locking position. In this way, the locking arm 5 can be engaged by hand in a simple manner, and no tool is needed, for instance, to mount and lock the light fitting module 2 in the channel section 4. Nor is any tool needed to take the light fitting module 2 out of the channel section 4. Via the operating projection 10, the locking arm 5 can be engaged and be adjusted from the locking position to the release position, so that the spring action is released and the light fitting module 2 can be taken out of the channel section 4.

**[0035]** Fig. 4 shows a locking module 1 where, in the locking position, the locking arm 5 is folded practically completely into the channel section 4. In this way, elegantly, the locking arm 5 can be concealed from view. Only the operating projection 10 of the locking arm 5 remains visible and accessible to allow the locking arm 5 to be operated and returned into the release position, for instance when the light fitting module 2 is taken out of the channel section 4.

**[0036]** To mount a light fitting module 2 in a channel section 4, the light fitting module 2 can be provided with a locking module 1. This locking module 1 can be a separate part which can be fastened to the light fitting module 2 for instance through a screw, clamp, snap or punch connection. Also, the locking module 1 may be designed as an integral part of the light fitting module 2.

**[0037]** For mounting of the light fitting module 2 in the channel section 4, the light fitting module 2 is provided with a locking module 1. The locking arm 5 of the locking module 1 is brought into the release position. The light fitting module 2 can now be mounted in the channel section 4. If the locking module 1 is provided with an elastic element 6, this elastic element 6 cooperates with the channel section 4, preferably with a tooth 7 of the channel section 4. However, the locking module 1 can also be designed without elastic element 6. In that case, the lock-

ing arm 5 may be provided at one end with, for instance, a projection which in the locking position cooperates with for instance the tooth 7 of the channel section 4. By engaging the locking arm 5 at the operating projection 10 by hand, the locking arm 5 can be brought into the locking position. In the locking position, the locking arm 5 is accommodated practically completely in the channel section 4, and only the operating projection 10 will remain accessible. The light fitting module 2 is now locked in the channel section 4. The channel section 4 with light fitting module 2 can thus be given a relatively level finish in an aesthetic manner. Optionally, the locking module 1 in the locking position of the locking arm 5 can cooperate with for instance a section hook of the channel section 4 to prevent lateral yield of sidewalls of the channel section 4. In this way, the channel section can be fixed sideways, in a direction substantially transverse to the longitudinal direction, for instance when the locking arm 5 is provided at one end with a projection which in the locking position cooperates with, for instance, the tooth 7 of the channel section. Also, in the locking position of the locking arm 5, the mounting frame 3 may hook, for instance via a protrusion or an extension of the mounting frame 3, behind a section hook, so that lateral confinement of the channel section 4 can be achieved.

**[0038]** Optionally, the locking arm 5 may also be designed as a lever. As a result, the elastic element 6 may be made, for instance, of lighter design, in that an arm of the lever can, for instance, support the elastic element 6 in the spring action in the release position.

**[0039]** The invention is not limited to the exemplary embodiments represented here.

**[0040]** Thus, the locking arm may be designed as a separate part which can for instance be fastened directly onto a light fitting module, for instance through punching, snap-fitting or screwing. Also, the elastic element 6 may be designed not only as a leaf spring but also, for instance, as a resilient lip or a resilient hook. Optionally, a torsion spring or a linear spring is also possible.

**[0041]** Furthermore, the fitting frame may be designed not as a channel section but differently, for instance as a substantially rectangular block which on a long side comprises a receiving space for receiving one or a plurality of light fitting modules. Thus, the rectangular block may be manufactured from sheet steel, formed as a folded section or as a beam in which openings are provided for cooperation with the locking arm.

**[0042]** Many variants will be clear to those skilled in the art and are understood to be within the scope of the invention as set forth in the following claims.

## Claims

1. A light fitting module fastenable in a fitting frame, wherein the light fitting module comprises a locking module, provided with a manually operable locking arm which is adjustable between a stable release

position in which the locking arm releases the light fitting module for mounting and/or demounting in the fitting frame, and a stable locking position in which the locking arm locks the light fitting module in the fitting frame.

2. A light fitting module according to claim 1, wherein the locking arm is pivotably fastened to the light fitting module.

3. A light fitting module according to claim 1 or 2, wherein the locking module for the purpose of cooperation with the locking arm comprises an elastic element, which is configured for clamping engagement in the channel section.

4. A light fitting module according to claim 3, wherein the elastic element is a spring.

5. A light fitting module according to claim 4, wherein the spring is a leaf spring.

6. A light fitting module according to any one of claims 3-5, wherein the locking arm is provided with a catch for fixing the elastic element in the locking position.

7. A light fitting module according to claim 6, wherein the elastic element is provided with an opening through which engages the catch in the locking position of the locking arm.

8. A light fitting module according to any one of the preceding claims, wherein the locking arm is provided with an operating element for manually operating the locking arm for adjusting the locking arm between the release position and the locking position.

9. A light fitting module according to any one of the preceding claims, wherein the locking arm is designed as a lever.

10. A light fitting module according to any one of the preceding claims, wherein the locking module further comprises a mounting frame on which the locking arm is arranged.

11. A light fitting module according to claim 10, wherein the elastic element is fastened to the mounting frame.

12. A light fitting module according to any one of the preceding claims, wherein the locking module in the locking position of the locking arm cooperates with the fitting frame for laterally fixing a sidewall of the fitting frame.

13. A light fitting module according to claim 12, wherein the locking module in the locking position of the lock-

ing arm cooperates with the fitting frame for fixing an intermediate distance between sidewalls of the fitting frame.

14. A light fitting module according to any one of the preceding claims, wherein the locking arm in the locking position is practically completely folded into the fitting frame. 5
15. A fitting frame provided with a light fitting module according to any one of claims 1-14. 10

15

20

25

30

35

40

45

50

55

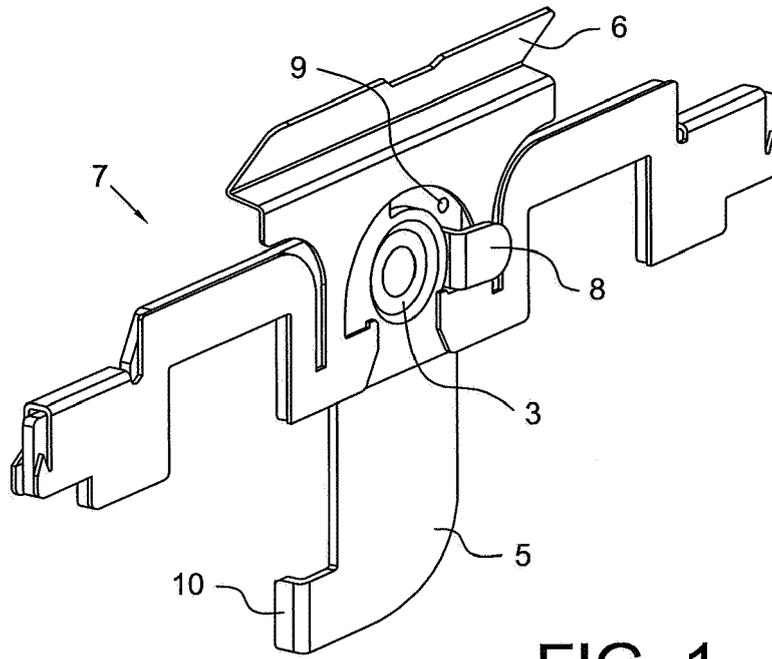


FIG. 1

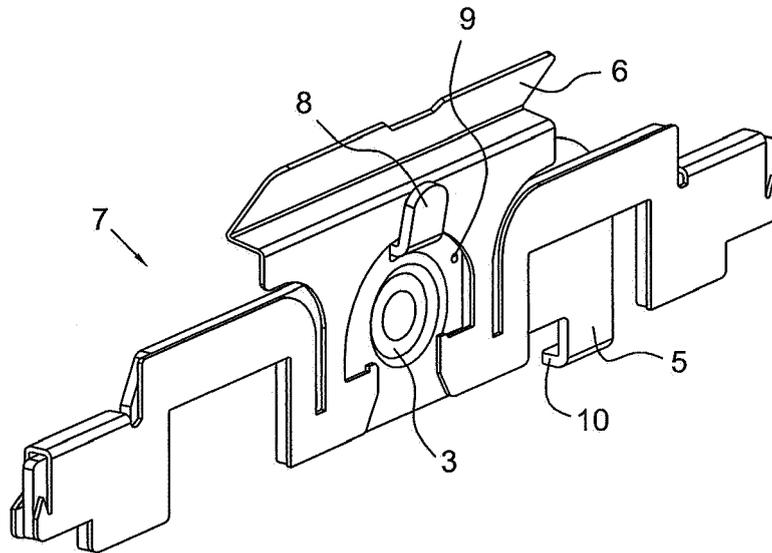


FIG. 2

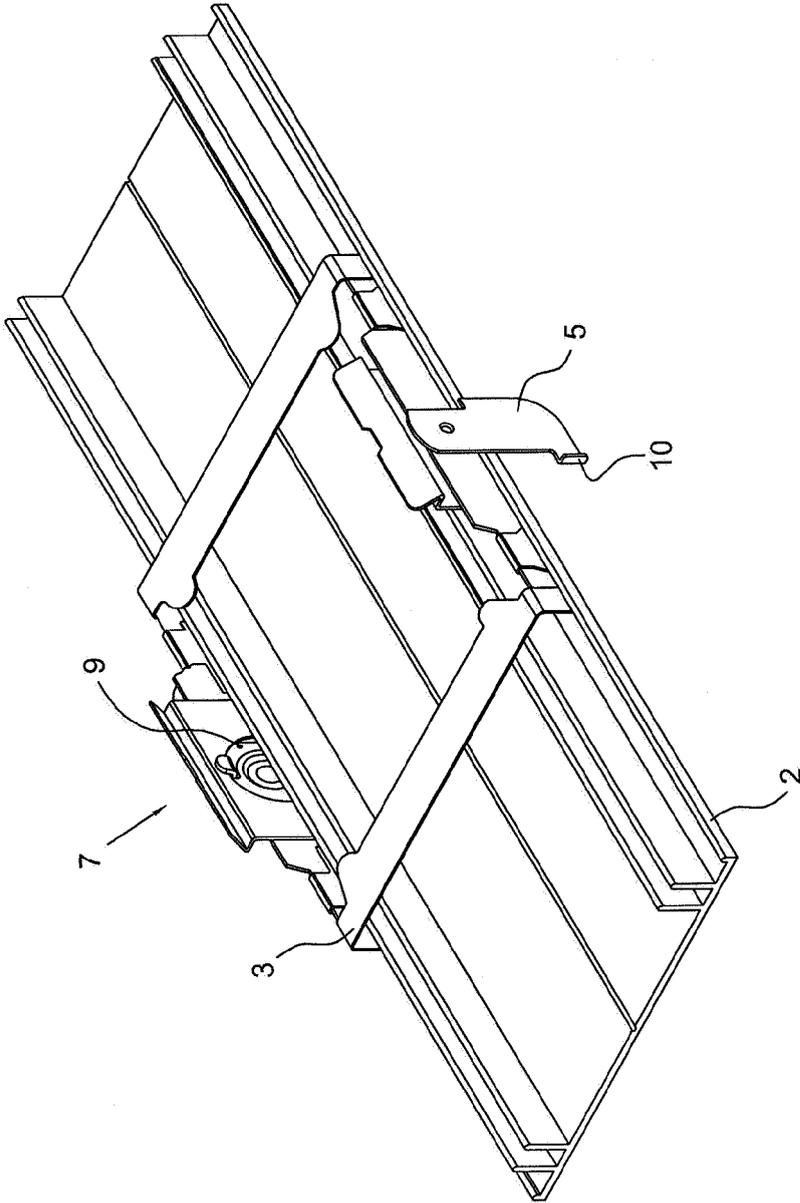
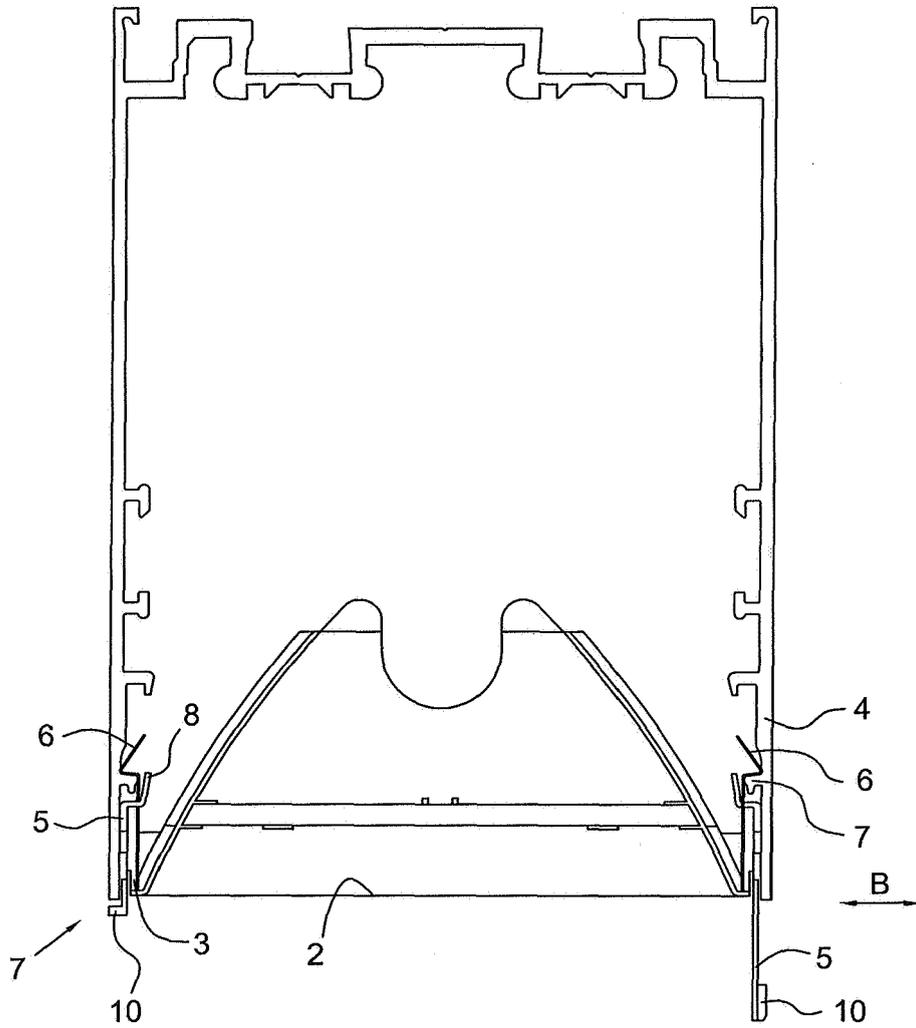


FIG. 3





## EUROPEAN SEARCH REPORT

 Application Number  
 EP 09 15 6544

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 295 19 800 U1 (RIDID LEUCHTEN GMBH [DE]) 8 February 1996 (1996-02-08) * page 6, line 7 - page 8, line 25 * * figures 1-4 *	1-5, 8-11,15	INV. F21V21/00
Y	-----	12,13	
Y	EP 0 826 919 A (PHILIPS ELECTRONICS NV [NL]; PHILIPS PATENTVERWALTUNG [DE] KONINKL PHI) 4 March 1998 (1998-03-04) * column 4, line 42 - column 6, line 54 * * figure 2 *	12,13	
A	-----	1	
X	GB 2 198 225 A (CONTACT LIGHTING LIMITED) 8 June 1988 (1988-06-08) * page 6, line 17 - page 8, line 2 * * figures 3,4 *	1,2, 8-10,15	
X	GB 2 171 786 A (WILLIAMSON GRAHAM JOHN HLC ENGINEERING) 3 September 1986 (1986-09-03)  * page 1, line 98 - page 2, line 73 * * figures 1-5 *	1,2, 8-10,14, 15	
X	DE 43 34 413 A1 (FRAENKISCHE LEUCHTEN GMBH [DE]) 23 March 1995 (1995-03-23) * column 3, line 20 - column 5, line 43 * * figures 1-7 *	1,2, 8-10,15	
X	EP 1 801 495 A (SITECO BELEUCHTUNGSTECH GMBH [DE]) 27 June 2007 (2007-06-27) * paragraph [0026] - paragraph [0039] * * figures 1-7 *	1-5, 8-11,15	
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		16 June 2009	Blokland, Russell
CATEGORY OF CITED DOCUMENTS		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	
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			

4

EPO FORM 1503 03.82 (P04C01)

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

EP 09 15 6544

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.

16-06-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 29519800	U1	08-02-1996	NONE
EP 0826919	A	04-03-1998	NONE
GB 2198225	A	08-06-1988	NONE
GB 2171786	A	03-09-1986	NONE
DE 4334413	A1	23-03-1995	NONE
EP 1801495	A	27-06-2007	NONE

EPO FORM P0459

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