



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
07.01.2015 Bulletin 2015/02

(51) Int Cl.:
A45B 11/00 (2006.01) A45B 25/00 (2006.01)

(21) Application number: **14167536.3**

(22) Date of filing: **08.05.2014**

(84) Designated Contracting States:
AL 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 RS SE SI SK SM TR
Designated Extension States:
BA ME

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(30) Priority: **08.05.2013 NL 2010782**

(54) **Illumination assembly**

(57) Illumination assembly (10) suitable for mounting to a parasol (P) or sunshade provided with cloth material (D), comprising a first housing part (12) which is provided with at least one solar cell (14) on a first side (12a) of the housing.

The illumination assembly also comprises a second housing part (16) in which a battery (18) is included. Further, the illumination assembly comprises electrical wir-

ing (17) which is connectable to the first and the second housing part for connecting the at least one solar cell with the battery. Connected with the second housing part is a clip (20) which is configured to hook behind a bounding edge of the cloth material of the parasol or sunshade. The illumination assembly further comprises at least one set of LEDs which is connectable to the battery with the aid of electrical wiring.

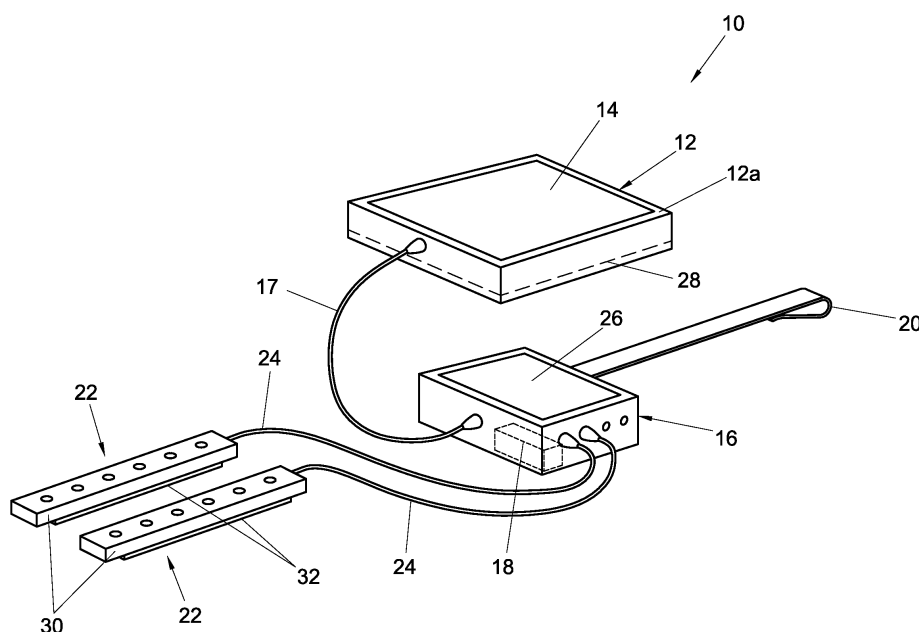


Fig. 1

Description

FIELD

[0001] The invention relates to an illumination assembly, more particularly an illumination assembly intended and suitable for mounting to a parasol or a sunshade provided with cloth material.

BACKGROUND

[0002] From the prior art, parasols are known which are provided with lighting. An example thereof is known from EP-1 621 098. In that publication, the lighting forms an integral part of the parasol. For obtaining illumination, therefore, the purchase of a new parasol is required. Also, it is known to hang lighting from sunshades. The lighting of parasols known from EP'098 and also the lighting which is hung from sunshades are dependent on the electricity grid for power supply. US2007-0242450 A1 shows a solar cell which can be hung from the cloth edge of a parasol with a clip. This known device, however, is provided with a separate housing for receiving the batteries, which is to be attached to the pole of the parasol. The construction known from US'450 is relatively costly and also the placement thereof is not simple. When the parasol is to be collapsed, the housing which is mounted on the pole of the parasol sits in the way and needs to be removed. GB 2398738 A shows a parasol illumination provided with LED strips which can be attached to the ribs of the parasol. The solar cells of this known device are mounted on the top of the post of the parasol. This requires a special construction of the upper end of the post. In fact, the device known from GB'738 is not suitable for placement on a parasol already purchased.

SUMMARY OF THE INVENTION

[0003] The object of the invention is to provide an illumination assembly which can function independently of the electricity grid and which, moreover, is simple to attach to existing terrace parasols or sunshades provided with cloth material, while for collapsing and extending the parasol or the sunshade, the housing of the illumination assembly does not need to be displaced or removed. To this end, the invention provides an illumination assembly according to claim 1, more particularly, an illumination assembly comprising:

- a housing provided with:
 - at least one solar cell on a first side of the housing;
 - a battery which is included in the housing;
 - a clip which is connected with the housing and which is configured to hook behind a bounding edge of the cloth material of the parasol or sunshade;

- at least one set of LEDs which is connectable to the battery with the aid of electrical wiring.

[0004] As all parts are included in the housing, and the housing can be hung on a bounding edge of the cloth material of the parasol or the sunshade with the aid of the clip, the parasol or the sunshade can be collapsed and extended straightforwardly, without the housing needing to be removed or displaced. From the viewpoint of costs, it is preferred when, in an embodiment, the housing comprises a single housing part which bounds a chamber in which the battery and any control electronics are included and on which or in which the at least one solar cell is mounted. The LEDs may be designed as strips which, for instance, can be attached to the ribs of the parasol.

[0005] In an alternative embodiment, the housing can comprise:

- a first housing part provided with at least one solar cell on a first side of the housing;
- a second housing part in which a battery is included;
- electrical wiring which is connectable to the first and the second housing part for connecting the at least one solar cell with the battery,

wherein the clip is connected with the second housing part.

[0006] With the clip, the second housing part can be attached to a bounding edge of the cloth. Then, the first housing part and the second housing part can be connected with each other, the cloth material being thereby clamped between the first and the second housing part. Thus, the illumination assembly is simple to mount on an existing parasol or an existing sunshade.

[0007] In an embodiment, one of the first and the second housing part may be provided with a magnet and the other of the first and the second housing part may be provided with a ferromagnetic part, such that in a mounted condition the second housing part can be suspended by the clip from a bounding edge of the cloth material and be laid against a side of the cloth material that faces down in an extended condition of the parasol or sunshade, while on the opposite side of the cloth material, which faces up, the first housing part can be positioned, so that the magnet which is part of one housing part comes into attractive connection with the ferromagnetic part which is part of the other housing part and thus the first housing part and the second housing part are held together by magnetism, with the cloth material extending between the first housing part and the second housing part, such that the first and the second housing part are mounted on the cloth material in a stable manner.

[0008] Due to the magnetic force of attraction between the first and the second housing part, these housing parts on opposite sides of the cloth material can be placed against each other, thereby clamping the cloth material between them. This leads to a quick and simple attach-

ment of the first and the second housing part on the parasol or the sunshade. Such a manner of mounting the illumination assembly on a parasol provides in both the extended and collapsed condition of the parasol a stable attachment on the parasol. In a parasol, the clip can be hung behind the edge of the central wind vent of the parasol. Such a central wind vent is present in every parasol to prevent the parasol being lifted up and blown away when wind gets under the parasol. In the collapsed condition, the assembly is therefore suspended not only from the cloth material via the magnetic connection by clamping of the cloth material between the first and the second housing part, but also from the edge of the central vent via the clip.

[0009] Further elaborations of the invention are described in the subclaims and will be further clarified hereinafter, on the basis of an exemplary embodiment, with reference to the drawings.

BRIEF DESCRIPTION OF THE FIGURES

[0010]

Fig. 1 shows a perspective view of the different components of the illumination assembly;

Fig. 2 shows the illumination assembly shown in Fig. 1, in a mounted condition on a parasol; and

Fig. 3 shows a perspective view of the different components of an alternative embodiment of the illumination assembly with only one housing part.

DETAILED DESCRIPTION

[0011] Fig. 1 shows an example of an illumination assembly according to the invention in which, moreover, a large number of the claimed embodiments are embodied. The embodiments which will be indicated hereinafter may be used independently of each other and do not have to be combined with each other. In most general terms, the invention provides an illumination assembly 10 which is suitable for mounting to a parasol P or sunshade provided with cloth material D. The illumination assembly 10 comprises a housing 12 or 12, 16 provided with at least one solar cell 14 on a first side 12a of the housing 12. In the housing 12 or 12, 16 a battery 18 is included. Connected with the housing 12, 12, 16 is a clip 20 which is configured to hook behind a bounding edge D1 of the cloth material D of the parasol P or sunshade. Further, the illumination assembly 10 comprises at least one set of LEDs 22 which is connectable to the battery 18 with the aid of electrical wiring 24.

[0012] In a most simple embodiment, of which an example is shown in Fig. 3, all components of the illumination assembly 10 may be included in a single housing 12. To such single housing 12, the clip 20 may then be attached. The housing 12 may contain the battery 18 and also bear or contain the solar cell 14. The electrical connection between the solar cell 14 and the battery 18 is

then in the housing 12 and also any control electronics are then in the housing 12 in this embodiment. The advantage of this embodiment is that it can be manufactured particularly inexpensively because there is only one housing 12 in which all relevant components, with the exception of the LEDs 22, are included. Moreover, owing to the presence of the clip 20, the whole is suspendable from the inner edge D1 of a parasol cloth material D in a secure and robust manner, and the housing 12 remains securely connected with the parasol P in both extended and collapsed condition of the parasol P. Also, for the purpose of collapsing or extending, no particular operations need to be performed to bring the illumination assembly from a storage condition into a position of use and vice versa.

[0013] In an alternative embodiment, of which an example is shown in Figs. 1 and 2, the housing comprises a first housing part 12 which is provided with at least one solar cell 14 on a first side 12a of the housing 12. Further, the housing comprises a second housing part 16 in which a battery 18 is included. The illumination assembly 10 further has electrical wiring 17 which is connectable to the first and the second housing part 12, 16 for connecting the at least one solar cell 14 with the battery 18. Connected with the second housing part 16 is the clip 20 which is configured to hook behind a bounding edge D1 of the cloth material D of the parasol P or sunshade. The clip may be manufactured, for instance, from a strip of metal or plastic which, at the free end remote from the second housing part 16, has been bent over to form a clip- or hook-shaped end. Also in this second embodiment, the illumination assembly 10 comprises at least one set of LEDs 22 which is connectable, with the aid of electrical wiring 24, to the battery 18 which in this embodiment is included in the second housing part 16. The different components of the illumination assembly 10 are clearly represented in Fig. 1.

[0014] In an embodiment, of which an example is shown in Figs. 1 and 2, one of the first and second housing part 12, 16 may be provided with a magnet 26 and the other of the first and the second housing part 12, 16 may be provided with a ferromagnetic part 28. The magnet 26 and the ferromagnetic part 28 are so arranged in the first and the second housing part 12, 16 that in a mounted condition the second housing part 16 can be suspended by the clip 20 from a bounding edge D1 of the cloth material D and be laid against a side of the cloth material D that faces down in an extended condition of the parasol P or sunshade, while on the opposite side of the cloth material D, which faces up, the first housing part 12 can be positioned, so that the magnet 26 which is part of one housing part 12 or 16 comes into attractive connection with the ferromagnetic part 28 which is part of the other housing part 12 or 16, and thus the first housing part 12 and the second housing part 16 are held together by magnetism. The cloth material D then extends between the first housing part 12 and the second housing part 16, such that the first and the second housing part

12, 16 are stably mounted on the cloth material D.

[0015] Fig. 2 shows a thus mounted illumination assembly 10.

[0016] In an embodiment, of which an example is shown in the figures, the at least one set of LEDs 22 may be included in a strip 30, the strip 30 being connectable to the battery 18 with the aid of electrical wiring 24. The illumination assembly can comprise, for instance, three of such strips 30 which are each connectable through an associated wiring 24 to the battery 18. Also, it is possible that the number of strips 30 corresponds to the number of ribs P1 of a parasol P for which the illumination assembly 10 is intended. A strip 30 may contain, for instance, three LEDs. Other possibilities, however, include a greater or lesser number of LEDs per strip 30.

[0017] For the purpose of simple assembly, the strips 30, in an embodiment, may be provided with Velcro 32 with the aid of which the strips 30 are attachable to strips of Velcro 34 which may be provided on, for instance, ribs P1 of the parasol P or on the cloth material of the parasol P or sunshade. The Velcro 32 on the strips 30 is shown in the example of Fig. 1.

[0018] In an embodiment, of which an example is shown in the figures, the magnet 26 may be included in the second housing part 16 and the ferromagnetic part 28 may be included in the first housing part 12 on a second side 12b, opposite the first side 12a, of the first housing part 12. It will be clear that in an alternative variant the magnet 26 may also be included in the first housing part 12 and the ferromagnetic part 28 may be included in the second housing part 16. However, since magnets 26 are generally somewhat heavier than a ferromagnetic part 28, which may be formed, for instance, by an iron-containing plate, the first variant is preferable. The reason is that the second housing part 16 is suspended by the clip 20 from the cloth material D even when the parasol P is, for instance, in the collapsed position. The attachment of the heavier second housing part 16 hence not only depends on magnetic force but is also effected by suspension from the cloth material edge D1 via the clip 20.

[0019] In an embodiment, the illumination assembly may be provided with an electronic control 38 which may be included in the housing 12 or in the first or second housing part 12, 16 and which is arranged for switching the at least one set of LEDs 22 on and off.

[0020] For the same reasons as set out above with respect to the magnet 26, however, it is preferable to include the electronic control 38 in the second housing part 16 with the clip 20. The electronic control 38 may serve to control the charging of the battery 18. The reason is that when the battery 18 is full, charging may then be ceased to minimize the chances of overloading of the battery 18, which might lead, for instance, to overheating.

[0021] In an embodiment, the electronic control 38 may be provided with a timer for switching the at least one set of LEDs 22 on and off within defined periods of time or upon lapse of defined time intervals.

[0022] In an embodiment, the illumination assembly 10 may be provided with a light sensor 40 which is connected to the electronic control 38. The light sensor 40 can generate signals that are indicative of the amount of ambient light. The electronic control 38 may be arranged to additionally involve signals generated by the light sensor 40 in the control of the switching on and off of the at least one set of LEDs 22, such that the LEDs 22 are not switched on when the intensity of the ambient light is above a threshold value.

[0023] In an embodiment, of which an example is shown in the figures, the illumination assembly 10 may be provided with a transmitter 42. The transmitter may be implemented as a remote control. In such an embodiment, the illumination assembly 10 is further provided with a receiver 44 which is included in the housing 12 or the first or second housing part 12, 16. The receiver 44 may then be connected to the electronic control 38. The electronic control 38 may then be configured for processing signals coming from the receiver 44 and for switching the at least one set of LEDs 22 depending on those signals.

[0024] The invention is not limited to the embodiments described on the basis of the exemplary embodiment. In an embodiment, instead of or in addition to the magnetic connection between the first and the second housing part, also a number of pin/hole connections between the first and the second housing part could be used. The pins could then be provided with a point, so that these could simply be pricked through the cloth material of the parasol. Further, the pins could be provided with a circumferential groove and the holes could be internally provided with a flexible O-ring which in the mounted condition of the pin could snap into the circumferential groove of the pin. Instead, the pins could be provided with an external thread and fixation could be realized with nuts.

[0025] In an embodiment which is provided with two housing parts, the illumination assembly can comprise a second clip which is connected with the first housing part and which is configured to hook behind a bounding edge of the cloth material of the parasol or sunshade. Preferably, such a clip has substantially the same dimensions as the clip which is connected with the second housing part. With such an embodiment, a still more secure connection with the parasol or the sunshade is obtained. Since, in practice, the first housing part in most cases only contains the at least one solar cell and a ferromagnetic part, the first housing part may be relatively light of weight and the presence of an associated clip will not be necessary in most embodiments.

[0026] The various embodiments which have been described above and most of which are claimed in the subclaims can be used independently of each other and can be combined with each other in different ways. The reference numerals in the claims do not limit the claims and only serve for clarification.

Claims

1. An illumination assembly (10) suitable for mounting to a parasol (P) or sunshade provided with cloth material (D), comprising:
 - a housing (12; 12, 16) provided with:
 - at least one solar cell (14) on a first side (12a) of the housing (12);
 - a battery (18) which is included in the housing (12);
 - a clip (20) which is connected with the housing (12) and which is configured to hook behind a bounding edge (D1) of the cloth material (D) of the parasol (P) or sunshade;
 - at least one set of LEDs (22) which is connectable to the battery (18) with the aid of electrical wiring (24).
2. An illumination assembly (10) according to claim 1, wherein the housing (12, 16) comprises:
 - a first housing part (12) provided with at least one solar cell (14) on a first side (12a) of the housing (12);
 - a second housing part (16) which is separate from the first housing part (12) and in which a battery (18) is included;
 - electrical wiring (17) which is connectable to the first and the second housing part (12, 16) for connecting the at least one solar cell (14) with the battery (18),

wherein the clip (20) is connected with the second housing part (16).
3. The illumination assembly according to claim 2, wherein one of the first and the second housing part (12, 16) is provided with a magnet (26) and wherein the other of the first and the second housing part (12, 16) is provided with a ferromagnetic part (28), such that in a mounted condition the second housing part (16) can be suspended by the clip (20) from a bounding edge (D1) of the cloth material (D) and be laid against a side of the cloth material (D) that faces down in an extended condition of the parasol (P) or sunshade, while on the opposite side of the cloth material (D), which faces up, the first housing part (12) can be positioned, so that the magnet (26) which is part of one housing part (12 or 16) comes into attractive connection with the ferromagnetic part (28) which is part of the other housing part (12 or 16) and thus the first housing part (12) and the second housing part (16) are held together by magnetism, with the cloth material (D) extending between the first housing part (12) and the second housing part (16), such that the first and the second housing part (12, 16) are stably mounted on the cloth material (D).
4. The illumination assembly according to any one of claims 1-3, wherein the at least one set of LEDs (22) is included in a strip (30), wherein the strip (30) is connectable to the battery (18) with the aid of the electrical wiring (24).
5. The illumination assembly according to claim 4, comprising at least three of said strips (30), which are each connectable to the battery (18) through an associated wiring (24).
6. The illumination assembly according to claim 4 or 5, wherein the strips (30) are provided with Velcro (32) with the aid of which the strips (30) are attachable to strips of Velcro (34) which are arranged on, for instance, ribs (P1) of the parasol (P) or on the cloth material of the parasol (P) or sunshade.
7. The illumination assembly according to claim 3, wherein the magnet (26) is included in the second housing part (16) and wherein the ferromagnetic part (28) is included in the first housing part (12) on a second side (12b) of the first housing part (12), located opposite the first side (12a).
8. The illumination assembly according to any one of claims 1-7, provided with
 - an electronic control (38) which is included in the housing (12; 12, 16) and which is arranged for switching the at least one set of LEDs (22) on and off.
9. The illumination assembly according to claim 8, wherein the electronic control (38) is provided with a timer for switching the at least one set of LEDs (22) on and off within defined periods of time or upon lapse of defined time intervals.
10. The illumination assembly according to claim 8 or 9, provided with:
 - a light sensor (40) which is connected to the electronic control (38), wherein the electronic control (38) is arranged to additionally involve signals which are generated by the light sensor (40) in the control of the switching on and off of the at least one set of LEDs (22), such that the LEDs (22) are not switched on when the intensity of the ambient light is above a threshold value.
11. The illumination assembly according to any one of claims 8-10, provided with:

- a transmitter (42);
- a receiver (44) which is included in the housing (12; 12, 16) and is connected to the electronic control (38); and

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wherein the electronic control (38) is configured for processing signals coming from the receiver (44) and for switching the at least one set of LEDs (22) depending on those signals.

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12. The illumination assembly according to any one of the preceding claims, comprising:

- the features of claim 2; and
- a second clip which is connected with the first housing part and which is configured to hook behind a bounding edge (D1) of the cloth material (D) of the parasol (P) or sunshade.

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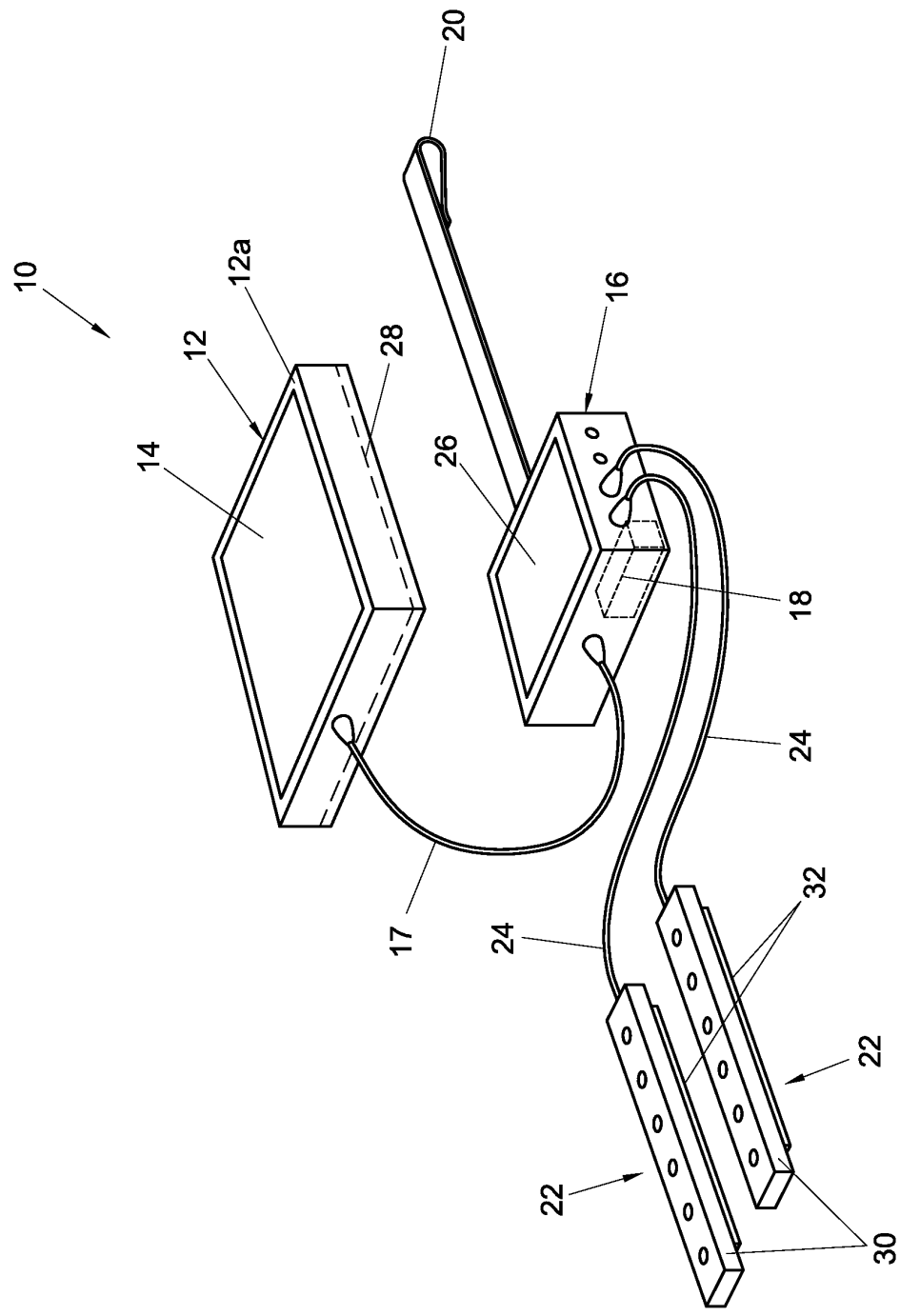


Fig. 1

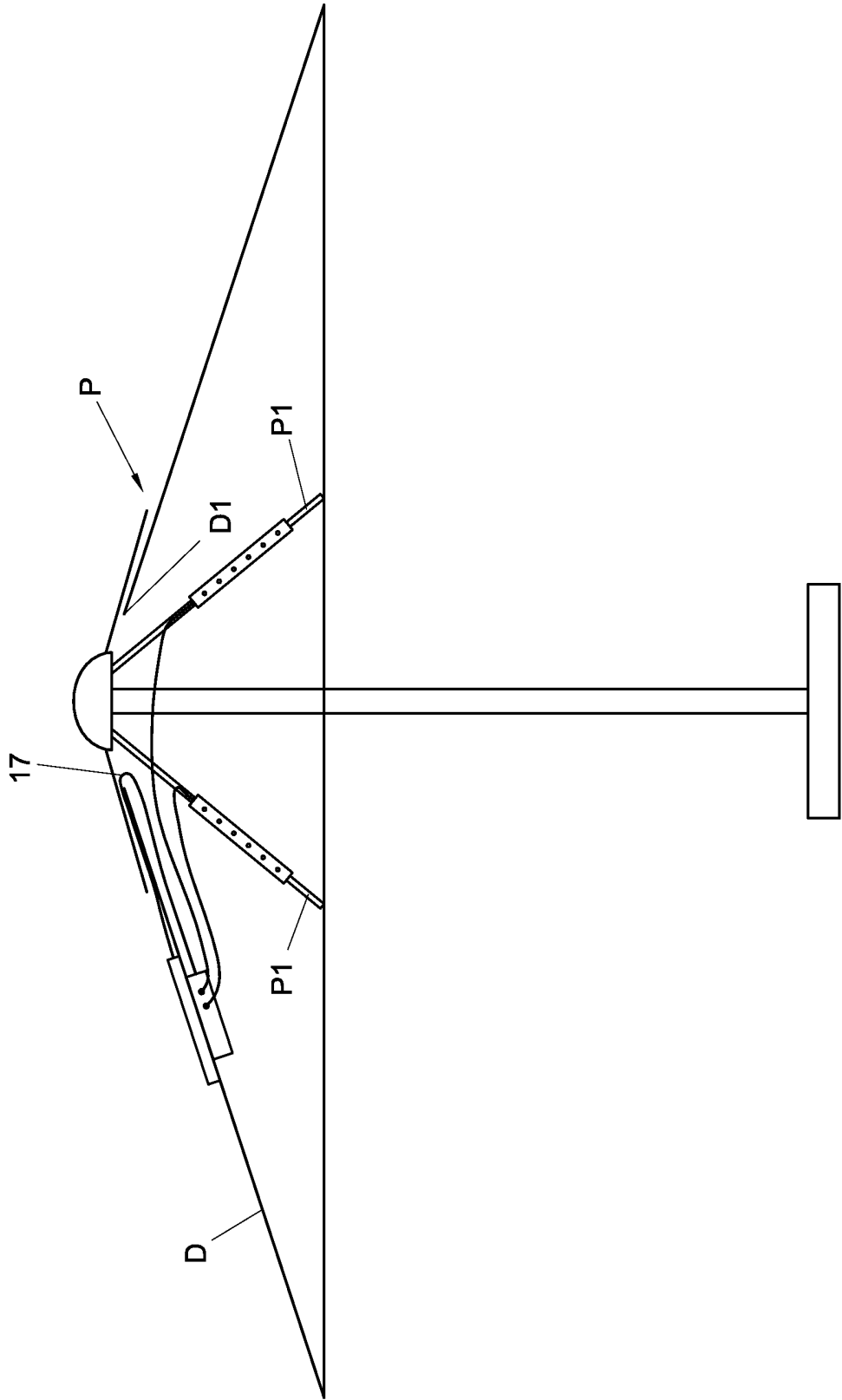


Fig. 2

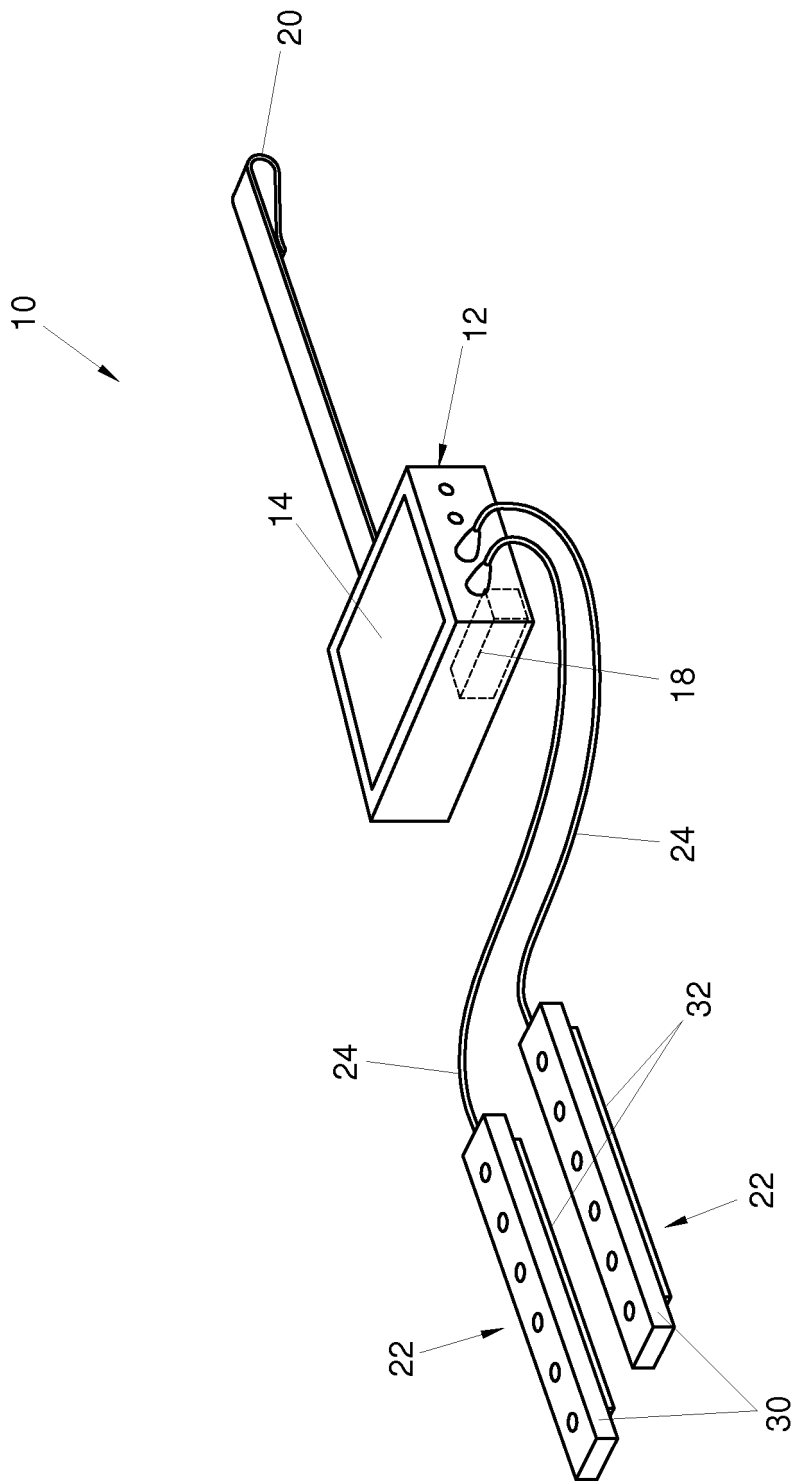


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 14 16 7536

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	US 7 674 002 B1 (WANG SHOOUPYNG [US]) 9 March 2010 (2010-03-09) * column 3, line 42 - column 6, line 26; figures *	1-5,7,8, 10-12	INV. A45B11/00 A45B25/00
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A	US 2007/242450 A1 (BLATECKY ROBERT [US]) 18 October 2007 (2007-10-18) * the whole document *	1-12	
			TECHNICAL FIELDS SEARCHED (IPC)
			A45B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 24 October 2014	Examiner Van Bastelaere, Tiny
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 (P04C01)

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

EP 14 16 7536

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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24-10-2014

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