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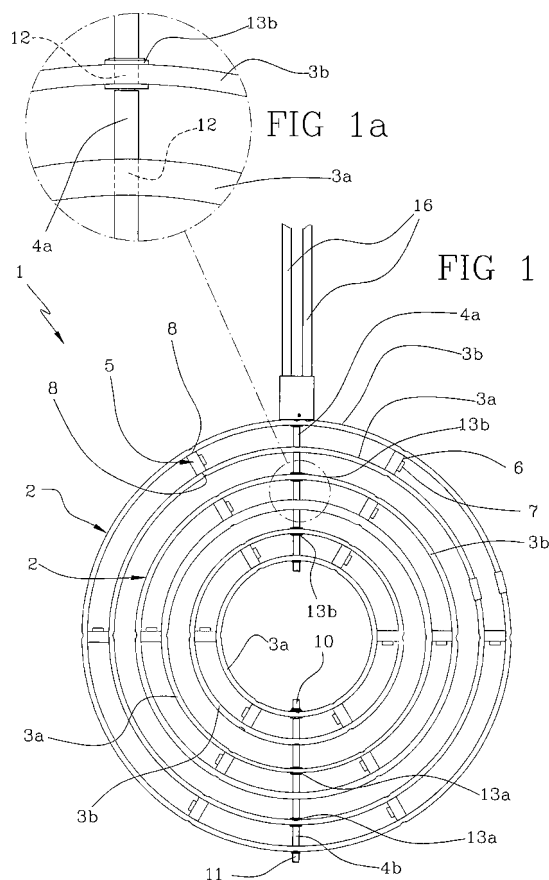
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(54) **Lighting unit**

(57) A lighting unity comprising a plurality of supporting elements (2), each of which has at least one pair of electrically conductive bars (3a, 3b); each supporting element (2) is connected to a plurality of lamp-holders (5). The unity further has a first and a second substantially coaxial rods (4a, 4b) for electric supply, each of which corresponds to a respective electric pole; each conductive bar (3a, 3b) being rotatably associated with the first and second rods (4a, 4b) for pivotally moving about the longitudinal axis of the rods (4a, 4b) themselves.



Description

[0001] The present invention relates to a lighting unity mainly to be used in rooms of dwelling houses.

[0002] It is known that there are lighting unities such as light fixtures or lamps of various kinds that are used for lighting domestic places or rooms.

[0003] Generally, these unities comprise one or more lamp-holders, each of which is adapted to support a respective illuminating body such as an incandescent light bulb for example. Lamp-holders are provided with a pair of electric connectors, operatively connected to the domestic mains system to energise the respective lamps and supported by respective supporting frames that can have different shapes and sizes depending on the particular construction and aesthetic requirements.

[0004] For instance, there are frames comprising electrically conductive metal bars with which a series of lamp-holders is associated, said lamp-holders being suitably spaced apart to diffuse light in a homogeneous manner. In particular, these types of frames consist of a pair of bars each of which corresponds to a respective electric pole and with which said connectors for each lamp are in engagement.

[0005] In accordance with the present aesthetic and construction requirements, low-voltage powered lighting unities are also manufactured, by way of example in the order of 12-24 volts, in which possible protective insulation members placed around the frame bars can be eliminated. For this reason the energised parts that in this case consist of said bars, appear to be externally in sight, giving the whole lighting unity an excellent aesthetic effect.

[0006] The Applicant has found that known lighting unities have some limits, mainly connected with versatility of same in terms of adaptation to the places where they must be installed and/or to the users' requirements.

[0007] These limits involve an increasing need for technical solutions enabling the unity to be enriched with new aesthetic shapes, and offering the possibility of adapting the light diffusion to different requirements without replacement of the whole unity.

[0008] The present invention aims at providing a lighting unity capable of meeting the above mentioned requirements in a satisfactory manner.

[0009] In particular it is an aim of the invention to make available a versatile lighting unity that can be modified in its shape so as to fit the different aesthetic and lighting requirements.

[0010] It is a further aim of the present invention to make available a lighting unity provided with a simple and cheap structure.

[0011] The technical task mentioned and the aims specified are substantially achieved by a lighting unity in accordance with the features claimed in the appended claims.

[0012] Description of a preferred but not exclusive embodiment of a lighting unity is now taken hereinafter by

way of non-limiting example and illustrated in the accompanying drawings, in which:

- Fig. 1 is an elevation side view of a lighting unity in accordance with the present invention;
- Fig. 1a is an enlarged view of a construction detail in Fig. 1;
- Fig. 2 shows the unity seen in Fig. 1 in a further operating condition;
- Fig. 3 is a cross-section view of a construction detail of the unity seen in Fig. 1; and
- Fig. 4 is an elevation side view of a lighting unity in accordance with a second embodiment.

[0013] With reference to the drawings, a lighting unity in accordance with the present invention has been generally identified with reference numeral 1.

[0014] The low-voltage powered lighting unity 1, just as an indication in the order of 12-24 volts, is particularly adapted to be used in domestic rooms, shops, offices or other premises in dwelling houses.

[0015] In particular, unity 1 comprises a plurality of supporting elements 2, parallel to each other, each of which has at least one pair of bars 3a, 3b made of an electrically conductive material.

[0016] Each bar 3a, 3b and consequently each supporting element 2 preferably has an annular conformation with a circular extension, as clearly shown in Figs. 1 and 4. At diametrically opposite points of element 2 two engagement portions 2a are defined that are opposite to each other and each of which is connected to a respective rod 4a, 4b, as better described in the following.

[0017] Alternatively, the bars 3a, 3b of each supporting element 2 can have a substantially C-shaped conformation, with an arched extension or according to a broken line following an angled path, with the engagement portions 2a located close to respective opposite ends of the supporting element 2.

[0018] It will be noted that three mutually parallel and concentric supporting elements 2 are shown in Fig. 1, each of which is made up of a first and a second bars 3a, 3b that are mutually spaced apart, have a circular conformation and are concentric with each other. The first bar 3a of each supporting element 2 is arranged in a circumference internal to the second bar 3b of the adjacent element 2.

[0019] However, it is to be pointed out that each supporting element 2 can have any conformation and any number of bars 3a, 3b depending on the different aesthetic and lighting requirements.

[0020] As above mentioned, the bars 3a 3b are spaced apart from each other to accommodate a plurality of lamp-holders 5. Under this situation, each supporting element 2 supports a series of lamp-holders 5 distributed along the whole peripheral extension of the support 2 itself and each interposed between the bars 3a, 3b of the respective supporting element 2.

[0021] Each lamp-holder 5 has a fitting portion 6 for a

respective illuminating body 7, such as a low-voltage powered incandescent light bulb. Extending from opposite sides of the fitting portion 6 are two connecting portions 8 that are each electrically connected to one of the bars 3a, 3b to power said illuminating body 7. Advantageously, as shown in Figs. 2 and 4, the connecting portions 8 are secured to the respective bars 3a, 3b by means of suitable fastening members such as screws 9 passing through respective holes formed in the bars 3a, 3b themselves. Under this situation the lamp-holders 5 also perform functions of mechanical connection between the bars 3a, 3b of each supporting element 2, making said bars integral with each other.

[0022] As above said, the unity 1 further comprises a first and a second rods 4a, 4b for electric supply, which rods are substantially coaxial with each other and each electrically connectable to a respective electric pole of a feeding line.

[0023] In more detail, the rods 4a, 4b are in mutual alignment and located at mutually opposite positions relative to the supporting elements 2, close to the engagement portions 2a thereof.

[0024] The rods 4a, 4b preferably have a substantially cylindrical conformation with a circular cross section and are such disposed that their respective longitudinal axes are coaxial along a diametrical line with respect to said supporting elements 2. The rods 4a, 4b consequently have respective inner ends 10 mutually spaced apart and facing each other, being disposed internally of the first bar 3a of the supporting element 2 having the smallest diameter, and respective outer ends 11 opposite to the inner ends 10 and projecting from the second bar 3b of the supporting element 2 having the largest diameter.

[0025] Each conductive bar 3a, 3b is rotatably associated with the first and second rods 4a, 4b to pivot around the longitudinal axes of the rods 4a, 4b. In fact, each rod 4a, 4b extends through a series of through cavities 12 coaxial with each other and each made in one of the bars 3a, 3b. Therefore each bar 3a, 3b is provided with two mutually coaxial cavities 12 through which the respective rods 4a, 4b extend.

[0026] In this manner, as shown in Fig. 2, the supporting elements 2 can rotate in an independent manner from each other to be oriented at choice, depending on the configuration that one wishes to give to unity 1.

[0027] Advantageously, each conductive bar 3a, 3b is electrically insulated from one of the rods 4a, 4b and electrically connected to the other rod 4a, 4b.

[0028] In particular, the first conductive bar 3a of each supporting element 2 is electrically connected to the first rod 4a and electrically insulated from the second rod 4b. The second bar 3b of each supporting element 2 on the contrary, is electrically connected to the second rod 4b and electrically insulated from the first rod 4a.

[0029] As better illustrated in the enlarged view in Fig. 1a, the electric insulation between each of the bars 3a, 3b and one of the rods 4a, 4b is carried out by respective hollow sleeves 13a, 13b, made of electrically insulating

material. More specifically, each first bar 3a has a first sleeve 13a fitted in the respective cavity 12 in which the second rod 4b is caused to pass, while each second bar 3b has a second sleeve 13b fitted in the respective cavity 12 in which the first rod 4a is caused to pass.

[0030] In this way, each bar 3a, 3b is electrically connected to a respective rod 4a, 4b and insulated from the other rod 4a, 4b by interposition of said sleeve 13a, 13b.

[0031] In accordance with the first embodiment shown in Figs. 1 and 2, the unity 1 further has a box-shaped body 14 disposed on the outer end 11 of the first rod 4a. As illustrated in Fig. 3, where only one top portion of the unity 1 sectioned along a diametrical plane relative to the outermost supporting element 2 is shown, a first and a second electric connectors 15a, 15b are housed within the box-shaped body 14.

[0032] The first connector 15a is in engagement with the outer end 11 of the first rod 4a, while the second connector 15b is associated with the second bar 3b that, as above described, is electrically insulated from the first rod 4a. Each electric connector 15a, 15b has a substantially cylindrical conformation and is adapted to be connected to a respective hanging and electrical-energy-supplying or powering element 16, so that unity 1 can be hung from a ceiling with the respective rods 4a, 4b disposed vertically. The hanging and powering elements 16 represented as distinct components in Figs. 1 and 2, can possibly be integrated into a single structure in the form of a cable or bar incorporating two or more conductors.

[0033] Shown in Fig. 4 is the unity 1 in accordance with a second embodiment, in which each rod 4a, 4b has a respective electric connector 17 projecting from the first end 10 and ready for connection with a hanging and powering cable.

[0034] The electric connectors 17 have a substantially cylindrical conformation and extend at right angles to the longitudinal extension of the rods 4a, 4b. Under this situation, unity 1 can be hung from the ceiling with the respective rods 4a, 4b disposed horizontally.

[0035] Instead of the hanging cables, stiff metal bars can be used as the hanging and powering elements, which metal bars are able to support the lighting unity from below as well, in the case of a floor lamp or a lamp in overhang from a vertical wall.

[0036] Advantageously, the user can intervene manually on the individual supporting elements 2 to vary the configuration of the unity 1 itself.

[0037] In fact, by rotating each individual supporting element 2 about said rods 4a, 4b, orientation of the bars 3a, 3b can be carried out so as to adapt the structure of the lighting unity 1 to the surrounding environment.

[0038] In addition, by moving the supporting elements 2, the lamp-holders 5 can be oriented depending on the different lighting requirements.

[0039] Advantageously, depending on the positioning of the supporting elements 2 it is possible to adjust the light intensity in the room or place of interest.

[0040] A further advantage of the present invention re-

sides in the simplicity of the unity 1 in terms of structure and operation, as replacements are not required for making it suitable for use in the place where it is installed.

Claims

1. A lighting unity comprising:

- supporting elements (2), each of which has at least one pair of electrically conductive bars (3a, 3b); and
- lamp-holding elements (5), each operatively connected to a respective supporting element (2);

characterised in that it further comprises a first and a second substantially coaxial rods (4a, 4b) for electric supply, each connectable to a respective electric pole of a powering line; each conductive bar (3a, 3b) being rotatably in engagement with at least one of said first and second rods (4a, 4b) for rotation around the longitudinal axis of the rods (4a, 4b) themselves.

2. A unity as claimed in the preceding claim, **characterised in that** each conductive bar (3a, 3b) is electrically insulated from one of said rods (4a, 4b) and electrically connected to the other rod (4a, 4b).

3. A unity as claimed in anyone of the preceding claims, **characterised in that** each conductive bar (3a, 3b) is rotatably in engagement with both said rods (4a, 4b).

4. A unity as claimed in anyone of the preceding claims, **characterised in that** each supporting element (2) has a first conductive bar (3a) electrically connected to the first rod (4a) and electrically insulated from the second rod (4b), and a second conductive bar (3b) electrically connected to the second rod (4b) and electrically insulated from the first rod (4a).

5. A unity as claimed in anyone of the preceding claims, **characterised in that** each bar (3a, 3b) has at least one through cavity (12) rotatably passed through by one of said first and second rods (4a, 4b).

6. A unity as claimed in the preceding claim, **characterised in that** each supporting element (2) further comprises a first hollow sleeve (13a) made of electrically insulating material and interposed between the through cavity (12) of the first bar (3a) and the second rod (4b); and a second hollow sleeve (13b) made of electrically insulating material and interposed between the through cavity (12) of the second bar (3b) and said first rod (4a).

7. A unity as claimed in anyone of the preceding claims,

characterised in that each lamp-holder (5) comprises two connecting portions (8) that are opposite to each other and each in engagement with one of the bars (3a, 3b) of the respective supporting element (2) to make the bars (3a, 3b) integral with each other.

8. A unity as claimed in anyone of the preceding claims, **characterised in that** each supporting element (2) has at least one portion of substantially arched conformation carrying portions (2a) that are opposite to each other and each connected to a respective rod (4a, 4b).

9. A unity as claimed in anyone of the preceding claims, **characterised in that** each supporting element (2) has a substantially annular conformation.

10. A unity as claimed in claim 9, **characterised in that** said supporting elements (2) are concentric to each other.

11. A unity as claimed in anyone of the preceding claims, **characterised in that** each rod (4a, 4b) carries one electric connector (17) to be fastened to a respective hanging and powering element (16).

12. A unity as claimed in anyone of the preceding claims, **characterised in that** it further comprises a first electric connector (15a) operatively carried by an outer end (11) of the first rod (4a) and a second electric connector (15b) operatively carried by the second bar (3b) of one of said supporting elements (2); each electric connector (15a, 15b) being suitable for fastening to a respective hanging and powering element (16).

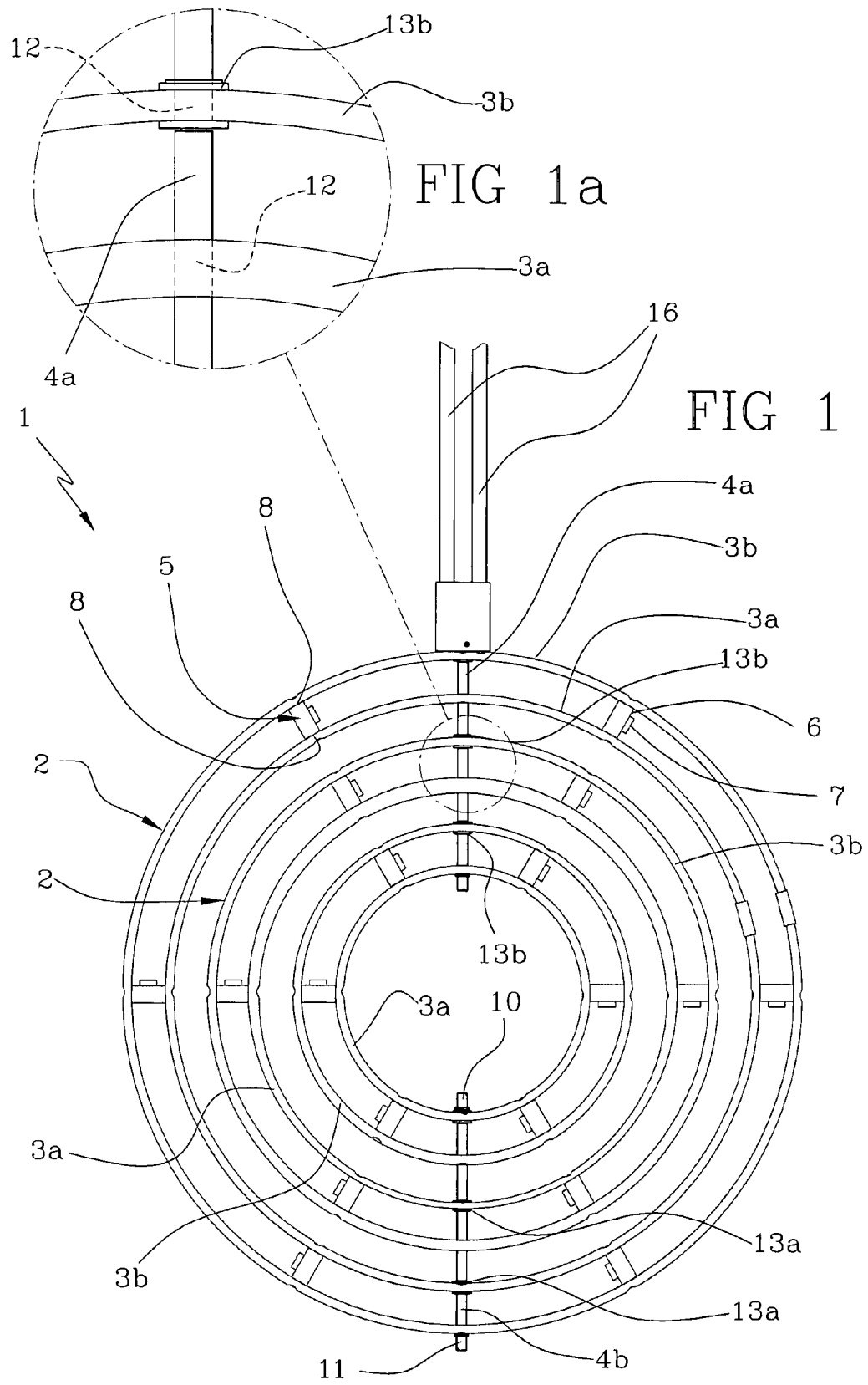
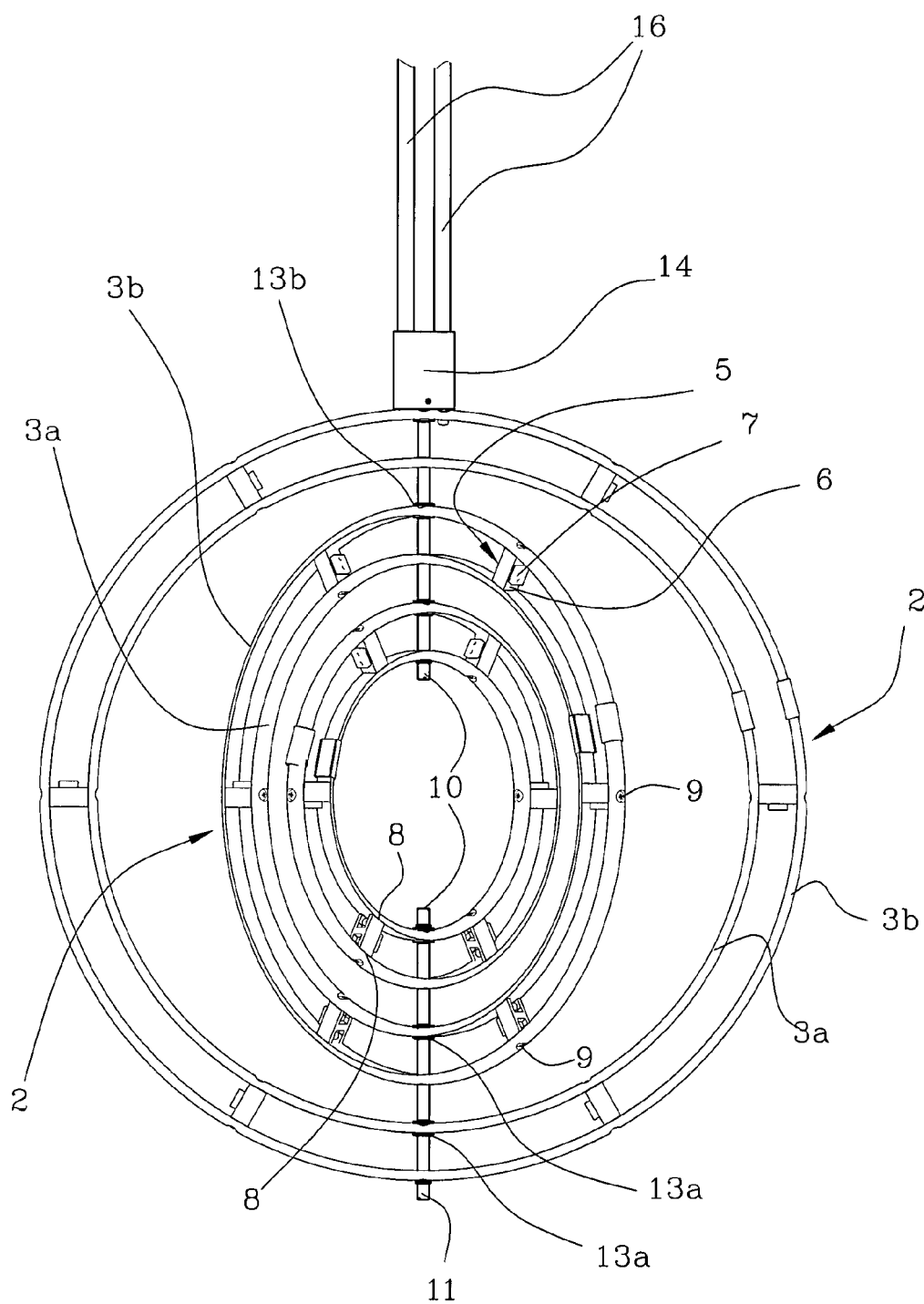


FIG 2



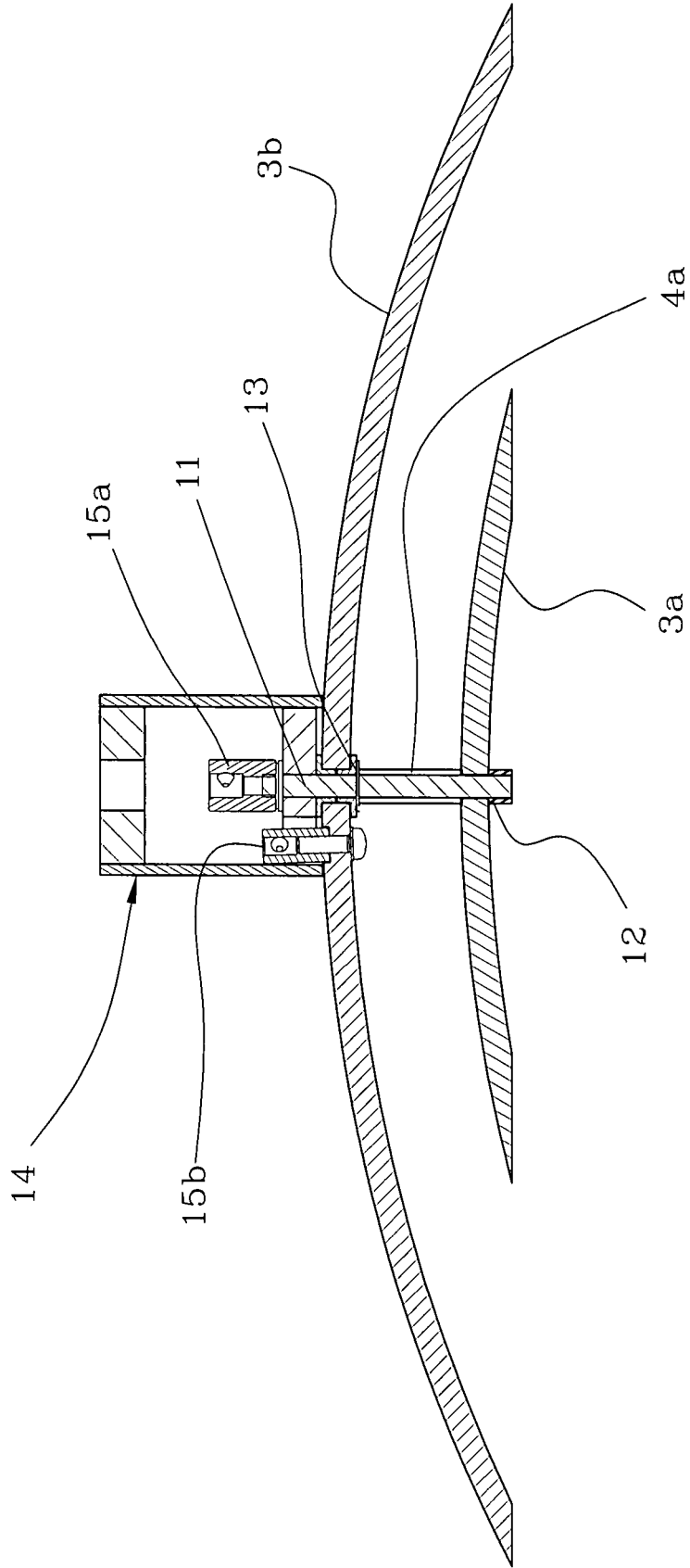


FIG 3

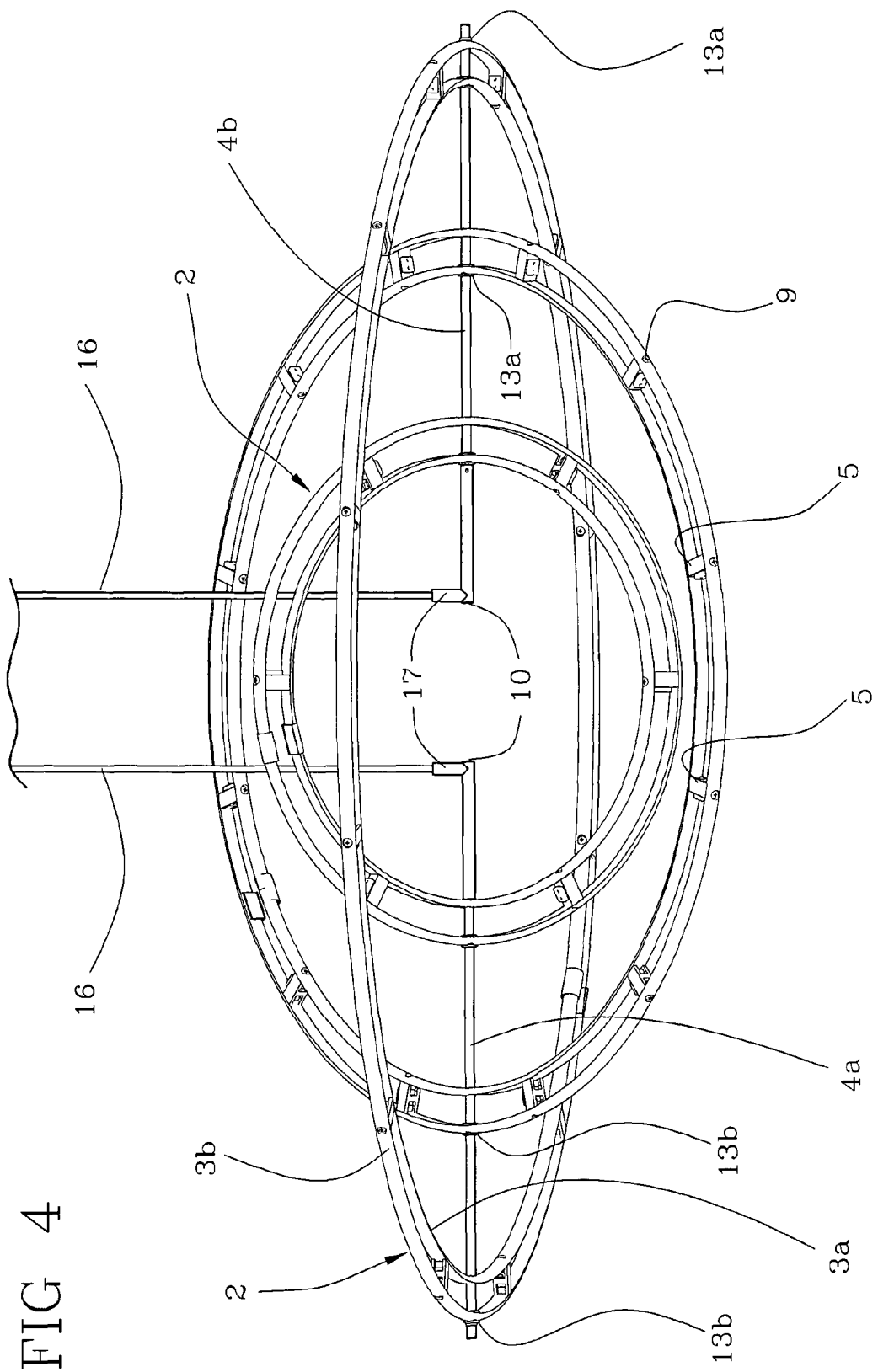


FIG 4



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 06 42 5669

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		2 February 2007	Allen, Katie
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 06 42 5669

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02-02-2007

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