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(54) **Modular lighting device**

(57) A lighting device comprises a stem (2) and a plurality of rings (10), which can be attached to the stem (2). The attachment means are releasable and comprise first electrical contacts associated with the stem (2) and second electrical contacts (60) associated with the ring (10), a centring pin (40) associated with the stem (2) and a centring hole associated with the ring (10), and an attachment screw associated with the stem (2) and an attachment pin (70) rotatable to engage the screw, pulling it to block the ring (10) to the stem (2).

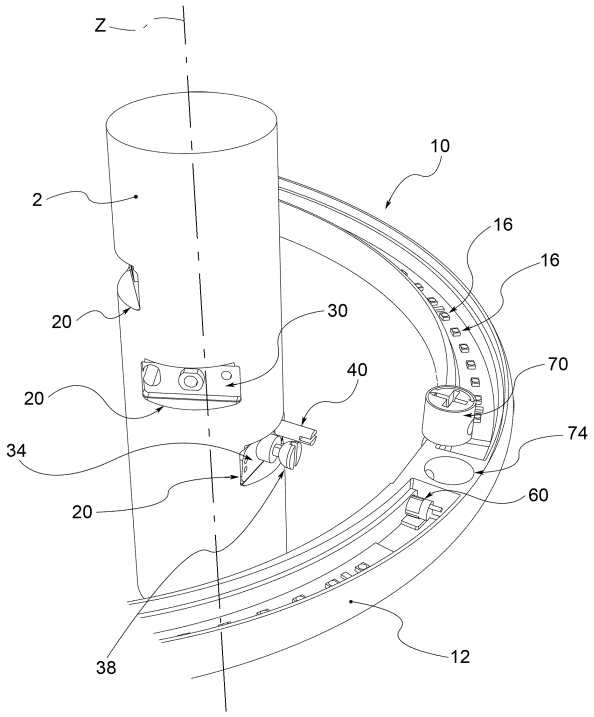

Fig. 2

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Description

[0001] The present invention relates to a modular lighting device, in particular for hanging.

[0002] The lighting sector is characterised by great efforts to innovate, both aesthetic and functional, so as to offer buyers ever new products, capable of attracting attention.

[0003] However, some aesthetic solutions need innovative technical solutions to be introduced to make use of them commercially.

[0004] In particular, some aesthetically valued lighting devices, often hanging, occupy considerable space so that transport costs become prohibitive.

[0005] In such case, the lighting device is designed so as to be dividable into components which can be transported in compact size, which can be assembled by the purchaser.

[0006] Such devices require a simple, accurate and reliable assembly system however since the purchaser must not encounter installation difficulties and, above all, the end result of assembly must be excellent, in that it must not detract from the specific aesthetic effect of the device itself.

[0007] The purpose of the present invention is to make a modular lighting device provided with an assembly system able to overcome the aforementioned difficulties.

[0008] Such lighting device is made according to claim 1.

[0009] The characteristics and advantages of the lighting device according to the present invention will be evident from the description below, made by way of a non-limiting example in accordance with the appended drawings wherein:

[0010] - figure 1 shows a lighting device according to the present invention, in a hanging embodiment;

[0011] - figures 2 and 3 show assembly diagrams of the device in figure 1.

[0012] With reference to the appended drawings, reference numeral 1 globally denotes a lighting device according to the preset invention, according to a hanging embodiment.

[0013] For clarity of exposition, reference will be made below to the hanging embodiment; in actual fact the innovation described below is equally applicable to table, floor or wall lighting devices.

[0014] The lighting device 1 comprises a hollow support element or stem 2, extending from a lower extremity to an upper extremity along a main axis Z which, in the hanging embodiment, coincides with the vertical direction. For example, the stem 2 is hung from the ceiling C by means of a support 4, for example a cable.

[0015] The device 1 further comprises a plurality of lighting elements or rings 10, suitable for being mechanically and electrically connected to the stem 2 to make the device 1.

[0016] According to a preferred embodiment, the rings 10 are an annular shape, for example circular, of different dimensions. For example, the rings increase in size from the lower extremity to the upper extremity.

[0017] Preferably, the rings 10 encircle around the stem 2 and in contact with it in one section only of its edge.

[0018] Preferably, in addition, defined the orthogonal planes to the main axis Z, the rings 10 are connected to the stem 2 so as to have different inclinations from said orthogonal planes.

[0019] For example, the rings 10 positioned at the lower extremity of the stem lie substantially on said orthogonal planes, while proceeding towards the upper extremity, the inclination increases, for example towards the upper extremity.

[0020] The rings 10 comprise a casing 12, preferably fitted with a colourless or coloured transparent screen 14, for the emission of light.

[0021] In addition, the rings 10 comprise light sources 16, for example LEDs, housed in said casing.

[0022] The device 1 comprises attachment means suitable to mechanically and electrically connect the lighting elements 10 and the support element 2.

[0023] For each ring 10, said attachment means comprise, on the stem 2, a window 20 made through the thickness of the stem 2, in a circumferential portion of it, so as to access the inside.

[0024] The windows 20 are angularly spaced without interruption around the main axis Z and extend from the lower extremity to the upper extremity of the stem, following a path which winds around the main axis Z, for example spiral.

[0025] Each window defines a point of attachment of the rings 10 to the stem 2.

[0026] The attachment means further comprise a plate 30, inserted in the window 20.

[0027] The plate 30 comprises first electrical contacts 32, projecting towards the inside of the stem 2, and emerging on the visible surface 34 of the plate 30, for example in the form of electrical contact surfaces for the pressurised support of pins of a spring connector.

[0028] In addition, the plate 30 comprises an attachment screw 36, inserted through the plate, orthogonally mobile but prevented from escaping from it.

[0029] On the outside, the screw 36 is fitted with a spherical head 38.

[0030] Lastly, the plate 30 comprises a centring pin 40, which crosses the plate 30 and projects outwards, by means of which it is blocked to the stem 2.

[0031] On the ring 10, the attachment means comprise a window 50 which opens towards the wall of the casing 12, for the section of it destined for attachment to the stem 2.

[0032] In addition, the means of attachment comprise second electrical contacts 60, housed in the casing 12, projecting from the window 50 with a pair of spring connector pins suitable for engaging with the respective contact surfaces of the plate 30.

[0033] The second electrical contacts 60 are electrically connected to the light source of the ring.

[0034] In addition, the attachment means comprise an attachment pin 70, provided with a coupling aperture 72 on the side wall, suitable for attaching the spherical head of the screw 36.

[0035] The attachment pin 70 is inserted in a seat 74 made in the casing 12, communicating with the window 50 through an aperture 76, suitable for inserting the head of the screw 36.

[0036] Lastly, the attachment means comprise a centring hole 78, projecting into the window 50, suitable for housing the centring pin 40 projecting from the plate.

[0037] The reference surface 50a which defines the window 50 is preferably inclined in relation to the main axis Z, so as to define the inclination of the ring when coupled to the stem.

[0038] For the assembly of the device 1, the ring 10 is moved towards the stem 2, so that the reference surface 50a of the window 50 abuts against the visible surface 34 of the plate 30.

[0039] The connector pins of the electrical contact 60 engage with the contact surfaces of the plate 30 and, by means of adequate pressure, ensure electrical contact.

[0040] At the same time, the centring pin 40 enters the centring hole 78, ensuring the correct positioning of the ring in relation to the stem.

[0041] Lastly, the head of the screw 36 enters the aperture 76 and through this, the coupling aperture 72 of the attachment pin 70.

[0042] By rotating the attachment pin 70, the screw 36 is pulled towards the ring and, since it is prevented from escaping from the plate, it blocks the ring to the stem.

[0043] In addition, the device 1 comprises electrical contacts connectable to the power grid, positioned in the stem 2, electrically connected to the electrical contacts 32 of the plate 30.

[0044] Innovatively, the lighting device according to the present invention is modular and enables assembly of the lighting elements in a simple, fast and efficient manner, so as to safeguard the aesthetic appearance of the device.

[0045] Advantageously, in addition, the device also permits the electrical contact to be made at the same time.

[0046] It is clear that a person skilled in the art may make variations to the device described above so as to satisfy contingent requirements, while remaining within the sphere of protection as defined by the following claims.

Claims

1. Lighting device comprising:

- a support element (2);
- light sources (16);
- a plurality of lighting elements (10), attachable to the support element (2) which support the respective light sources;
- releasable attachment means suitable to mechanically and electrically connect the lighting element (10) to the stem (2);

wherein the lighting elements (10) encircle around the support element (2).

2. Device according to claim 1, wherein the lighting elements have a variable inclination.

3. Device according to claim 1 or 2, wherein the lighting elements are annular, for example eccentric to the support element (2).

4. Device according to any of the previous claims, wherein the lighting elements (10) have variable dimensions.

5. Device according to claim 4, wherein the lighting elements (10) increase in size from the lower end to the upper end of the support element.

6. Device according to any of the previous claims wherein the lighting elements house the light sources.

7. Device according to any of the previous claims, wherein the light sources are LEDs.

8. Device according to any of the previous claims, wherein the support element is a stem.

9. Lighting device comprising:

- a support element (2);
- electrical contacts connectable to the power grid, housed in the support element (2);
- at least one light source (16);
- at least one lighting element (10), attachable to the support element (2) wherein said light source is housed;
- releasable attachment means suitable to mechanically and electrically connect the lighting element (10) to the support element (2) comprising:

  a) first electrical contacts (32) joined to the support element (2) and second electrical contacts (60) joined to the lighting element, suitable to reciprocally engage;
  b) a centring pin (40) associated with the support element (2) and a centring hole (78) associated with the lighting element (10);
  c) an attachment screw (36) joined to the support element (2) and an attachment pin (70) swivelling in a seat (74) of the lighting element, suitable to engage in rotation the

screw (36) and to pull it, so as to block the lighting element to the support element.

10. Device according to claim 9, wherein the first electrical contacts (32), the centring pin (40) and the attachment screw (36) are accessible from a primary window (20) through the wall of the support element (2).

11. Device according to claim 9 or 10, wherein the second electrical contacts (60), the centring hole (78) and the attachment pin (70) are accessible from a secondary window (50) made through the wall of the lighting element.

12. Device according to any of the claims from 9 to 11, wherein the lighting element (10) has a reference surface (50a) suitable for abutting with the support element (2), inclined so as to define the inclination of the lighting element (10) in relation to the support element (2).

13. Device according to any of the claims from 9 to 12 when dependent on claim 10, wherein the first electrical contacts (32), the centring pin (40) and the attachment screw (36) are associated with a plate (30) inserted in the primary window (20) of the support element.

14. Device according to any of the claims from 9 to 13, wherein the lighting element (10) is a ring and the support element (2) is a stem, wherein the rings (10) encircle around the stem (2).

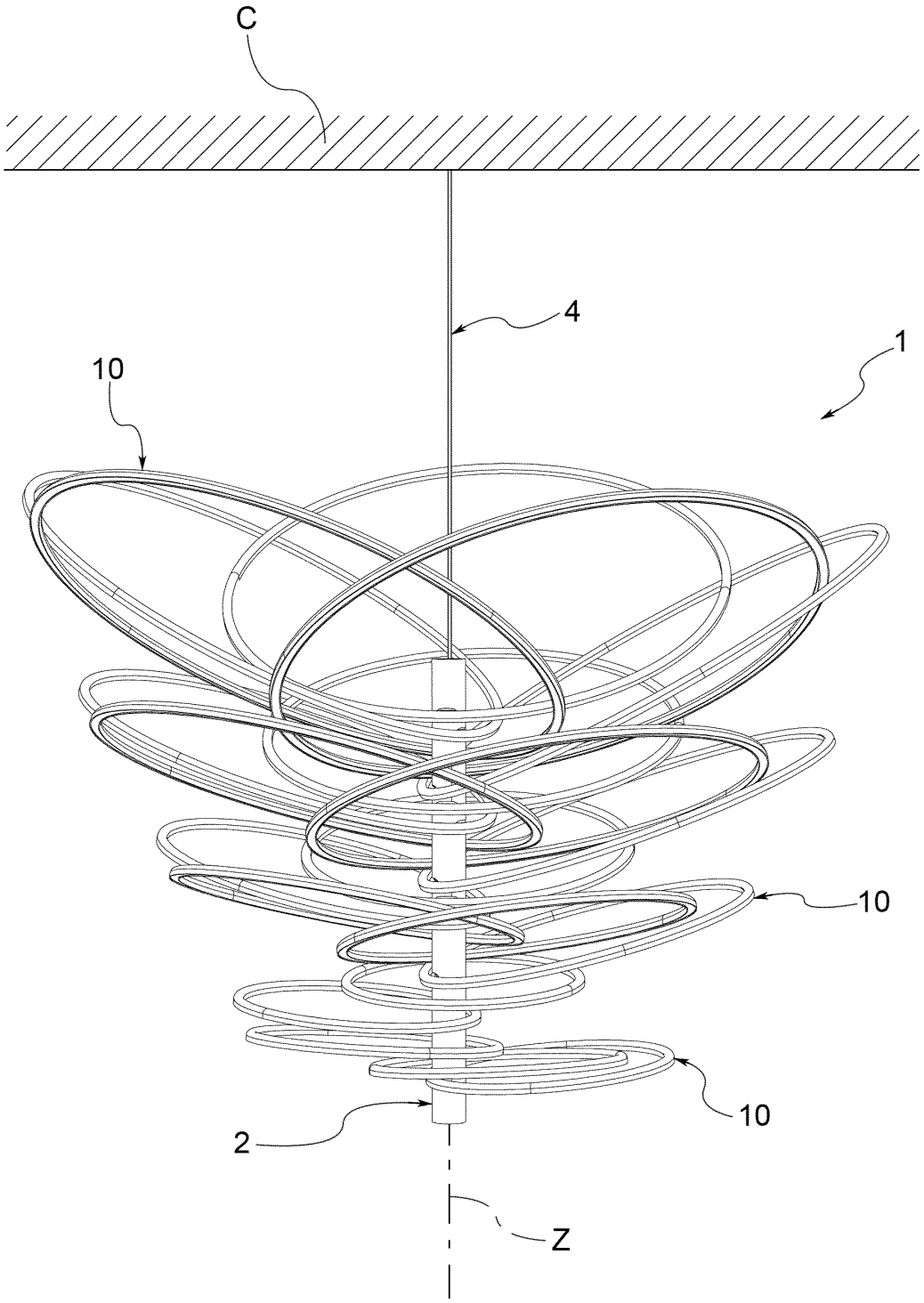

Fig.1

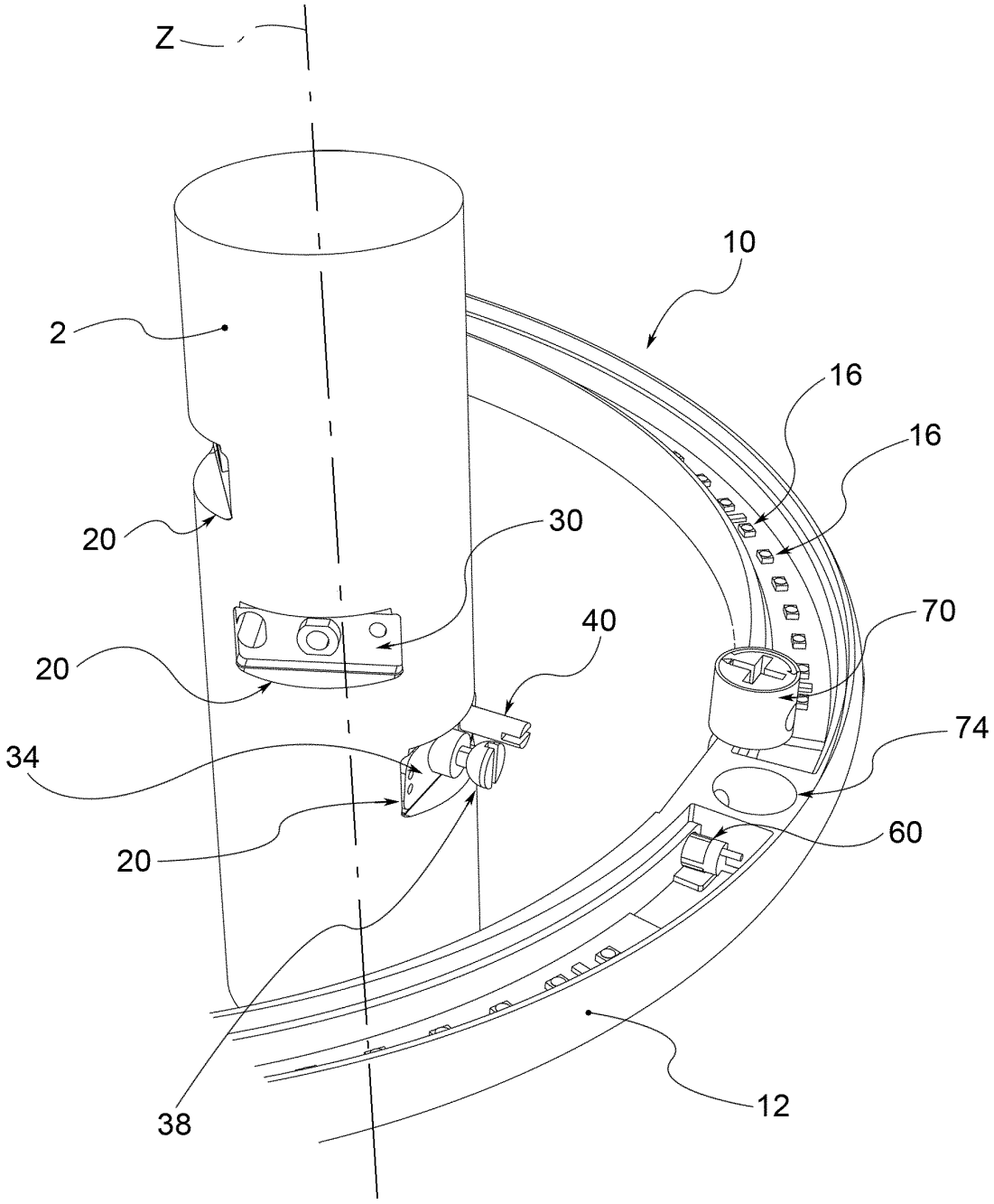

Fig. 2

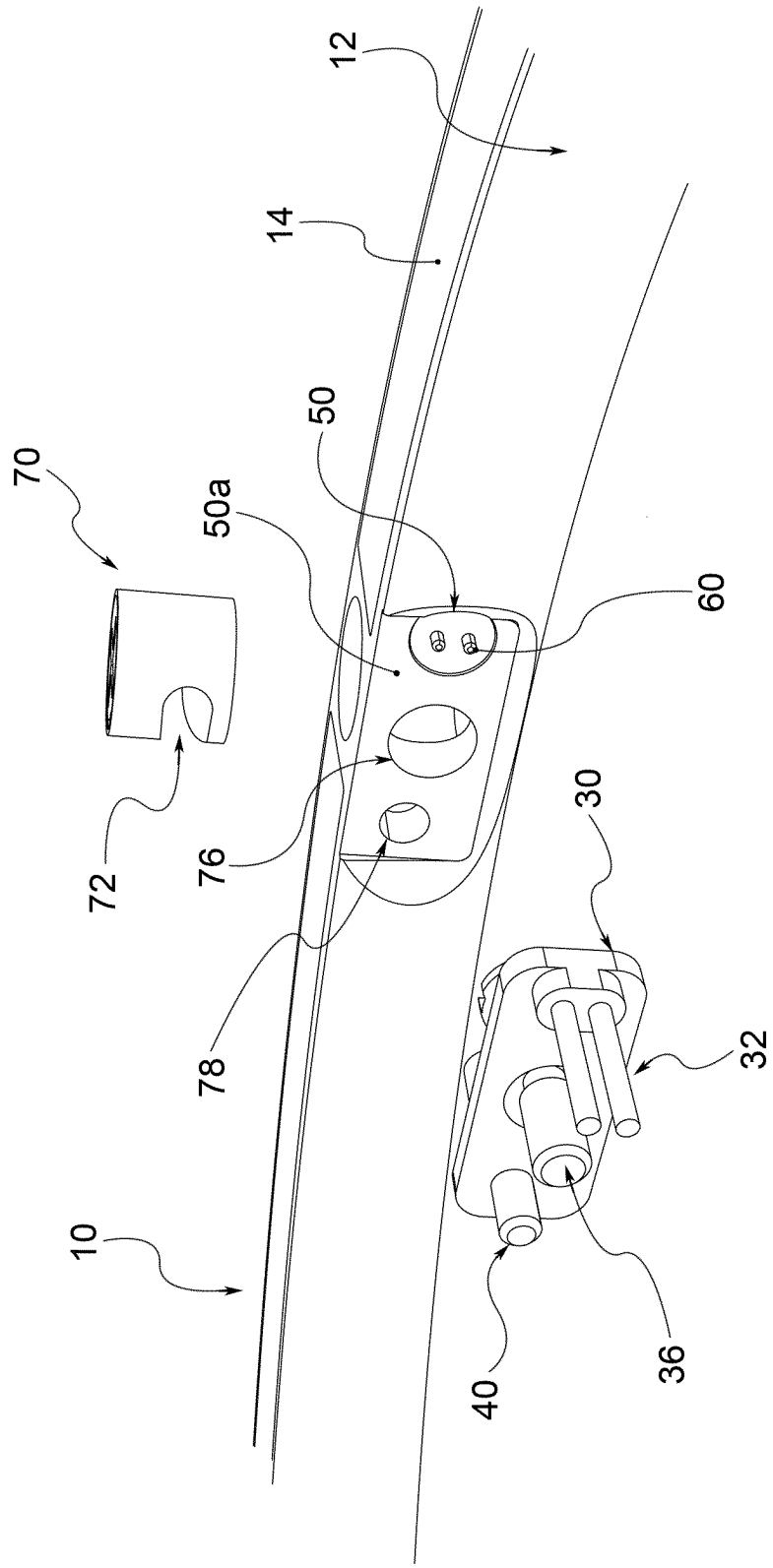

Fig.3