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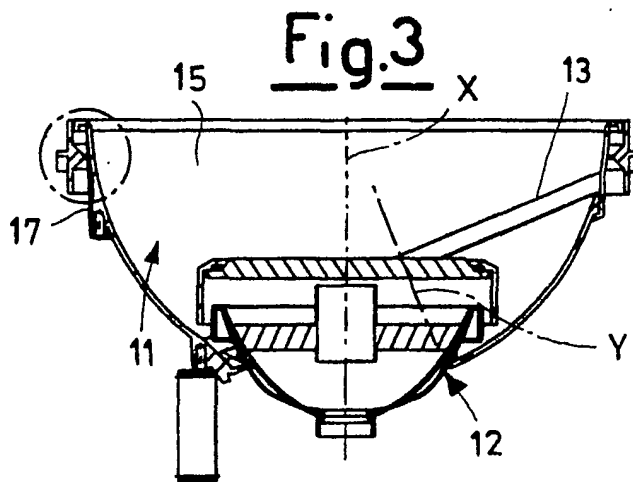
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(54) **Embedded adjustable lighting apparatus**

(57) A embedded adjustable lighting apparatus comprises an outer support element (11) and an element carrying a lighting body (12). According to the in-

vention, both said outer support element (11) and said element carrying a lighting body (12) are in the form of a spherical sector one rotatable with respect to the other with respect to axes (X, Y) which intersect.



## Description

**[0001]** The present invention refers to a embedded adjustable lighting apparatus.

**[0002]** In the field of lighting, there are currently numerous embedded lighting apparatuses which have various possibilities of being orientated towards the outside of a suspended ceiling or another reference surface to which they are applied.

**[0003]** Moreover, these apparatuses must emit a light beam of varying type in the direction selected by the user who has requested its operation.

**[0004]** However, it has been noted that the apparatuses currently available have a certain constructive complicatedness and difficult manoeuvrability which make their use on the whole complicated.

**[0005]** In addition, it is not always easy to have a embedded apparatus available which allows variable arrangement at discretion according to the specific requirement of the user, that is not complicated to construct and does not have a certain difficulty of positioning precisely due to its construction.

**[0006]** Consequently, with this type of prior art emerging, it would be desirable to try to realise a embedded lighting apparatus that overcomes the constructive and technical limitations outlined previously.

**[0007]** Therefore, the general purpose of the present invention is that of overcoming the problems and drawbacks indicated previously relative to the prior art in an extremely simple, cost effective as well as functional manner.

**[0008]** Another purpose of the invention is that of realising a embedded adjustable lighting apparatus which allows immediate and easy positioning.

**[0009]** Another purpose is that of realising an apparatus that is easy to construct and that has almost immediate application.

**[0010]** In view of the aforementioned purposes, according to the present invention, it has been thought of to realise a embedded adjustable lighting apparatus, having the characteristics outlined in the attached claims.

**[0011]** The structural and functional characteristics of the present invention and its advantages compared to the prior art to date shall become even clearer from an examination of the following description, referring to the attached drawings, which show a embedded adjustable lighting apparatus.

**[0012]** In the drawings:

- figure 1 shows a side view of an apparatus according to the invention with the support element of the lighting element in a first central position;
- figure 2 is a top view of that which is shown in figure 1;
- figure 3 is a section according to the line III-III of figure 2;
- figures 4-6 are views similar to those of figures 1 to

3 in a second operating position with the support and lighting elements arranged at the side;

- figure 7 is an enlarged section of a detail which shows the attachment between a perimetric edge and a sector of central sphere, equipped with an opening;
- figure 8 is an enlarged section of a detail which shows the rotation attachment between the small spherical sector and the opening.

**[0013]** With reference to the drawings, a embedded adjustable lighting apparatus in object is wholly indicated with 10, and in the illustrated example, according to the invention, comprises an outer supporting element 11 and an element carrying a lighting body 12.

**[0014]** The outer support element 11 comprises a hemispherical body or dome-shaped element, equipped with an opening 13 in which the element carrying a lighting body 12 is arranged so that it can rotate.

**[0015]** The outer support element 11 can, more precisely, foresee a perimetric edge portion 14 with respect to which a large central spherical section 15, which, as stated, is equipped with the aforementioned opening 13, can rotate by 360°. The aforementioned rotation therefore allows complete orientation with respect to a vertical axis X.

**[0016]** The opening 13 is formed through a cut in the large spherical sector 15 according to a certain angle  $\alpha$ , for example about 22.5°, which allows a further total orientation of the lighting bodies by 45°. The lighting bodies can be PAR lamp, superspot, halogen or dichroic lamps.

**[0017]** The perimetric edge 14 foresees perimetric and localised flanged portions 16 which give the possibility of eased arrangement.

**[0018]** The perimetric edge 14 is attached to the large central sphere section 15, equipped with an opening 13, through self-supporting springs 17, schematised in the detail of figure 7.

**[0019]** The element carrying a lighting body 12 comprises a small spherical sector 18 inserted in the opening 13 and, as stated, rotatable with respect to it. The small spherical sector 18 can rotate with respect to an axis Y that can be displaced with respect to the first vertical axis X thanks to the insertion of the small spherical sector 18 in the large spherical sector 15.

**[0020]** The rotating arrangement between the two parts is possible thanks to the presence of matching portions 19, 20 which partially engage with each other. More precisely, a projecting edge 19 is foreseen along the opening 13 against which a perimetric widening 20 abuts free to rotate, foreseen, projecting outwards, on the free part of the small spherical sector 18.

**[0021]** Moreover, near to this perimetric widening 20 small pins 21 are foreseen suitable for receiving wheel elements 22 that can be attached through screws or similar stable positioning elements.

**[0022]** The wheel elements 22, in the example two in number, attach the small spherical sector 18 with re-

spect to the opening 13, but allow it to rotate with respect to it. Through this differentiated arrangement, the small spherical sector 18 can assume opposite end positions, like those represented in the figures. A first position in which a lamp-holder 23, arranged in the small spherical sector 18, aligns itself with the vertical axis X, and a second position in which the lamp-holder 23 is tilted at its maximum towards the perimetric edge 14.

[0023] Therefore, a double rotation both of the outer support element 11 and of the element carrying a lighting body 12 is possible, which are both in the form of a sphere sector, one respect to the other with respect to axes (X, Y) which intersect.

[0024] The possibility of orientation according to two combined movements is achieved: by rotating the small spherical sector 18 to define the inclination of the lamp (not shown) between vertical beam and 45° and by rotating the large spherical sector 15, the orientation with respect to the vertical axis X from 0 to 360° is defined.

[0025] This allows all of the space represented by a cone with vertex in the embedded lighting apparatus that is adjustable by an angle 2x45° to be covered.

[0026] It must be noted how the lamp (not shown) when orientated is hidden to the observer. For example, by orientating the lamp on a picture positioned on a wall, the observer, in the function of observing the picture, is at the opposite side of the apparatus and cannot see the light source.

[0027] Moreover, it is possible to integrate the embedded adjustable lighting apparatus of the present invention in a wall and/or a suspended ceiling.

[0028] Indeed, the apparatus, without flange and painted in the same colour as the wall and/or suspended ceiling, integrates with them and becomes a single unit, managing to conjure up the image of old lacunar ceilings of the past.

[0029] From the description that has been made the characteristics of the embedded adjustable lighting apparatus, object of the present invention, are clear, just as the advantages and its operation are clear.

[0030] Finally, it is clear that numerous variants can be brought to the apparatus, without for this reason departing from the novelty principles inherent to the present inventive idea.

[0031] It is also clear that, in the practical embodiment of the invention, the materials, the shapes and the sizes of the illustrated details can be whatever according to requirements and they can be replaced with others that are technically equivalent.

[0032] The scope of the invention is defined in the claims attached to the present application.

## Claims

1. Embedded adjustable lighting apparatus comprising an outer support element (11) and an element carrying a lighting body (12), **characterised in that**

both said outer support element (11) and said element carrying a lighting body (12) are in the form of a spherical sector one rotatable with respect to the other with respect to axes (X, Y) which intersect.

2. Apparatus according to claim 1, **characterised in that** said element carrying a lighting body (12) is inserted in an opening (13) formed in said outer support element (11) through a cut therein according to a certain angle ( $\alpha$ ), preferably about 22.5°.
3. Apparatus according to claim 1 or 2, **characterised in that** said element carrying a lighting body (12) and said outer support element (11) have matching portions (19, 20) which partially engage with each other, allowing the mutual rotation thereof.
4. Apparatus according to claim 3, **characterised in that** said outer support element (11) foresees a projecting edge (19) along said opening (13) against which a perimetric widening (20) abuts free to rotate, foreseen, projecting outwards, on said element carrying a lighting body (12).
5. Apparatus according to claim 2, **characterised in that** said element carrying a lighting body (12) and said outer support element (11) carry, respectively, pins (21) suitable for receiving wheel elements (22) acting on the other and able to be attached through screws or similar stable positioning elements.
6. Apparatus according to claim 1 or 2, **characterised in that** said outer support element (11) foresees a perimetric edge portion (14) with respect to which a large central spherical portion (15), equipped with an opening (13), can rotate by 360° with respect to a vertical axis (X).
7. Apparatus according to claim 6, **characterised in that** said perimetric edge portion (14) is attached to said large central spherical portion (15) through self-supporting springs (17).

Fig.1

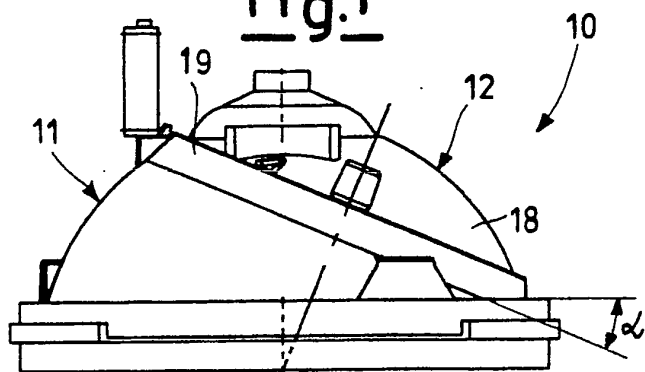


Fig.8

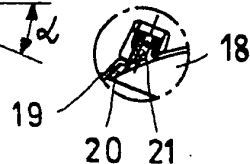
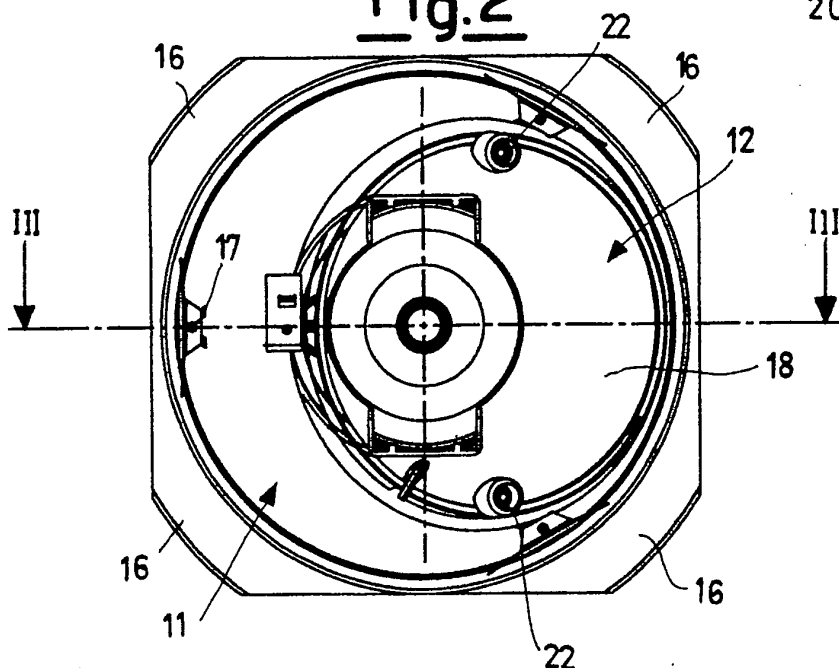


Fig.2



**Fig.3**

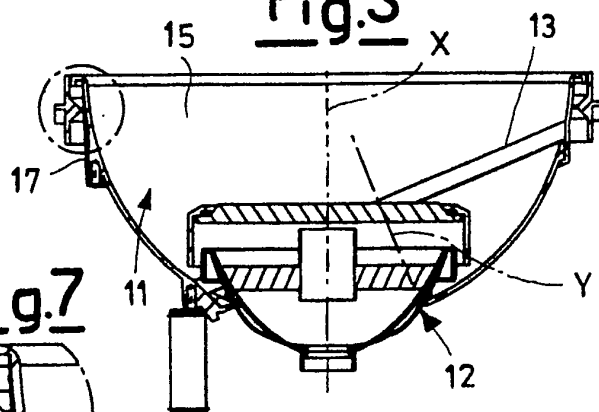


Fig.7

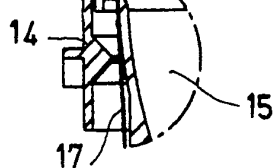


Fig.4

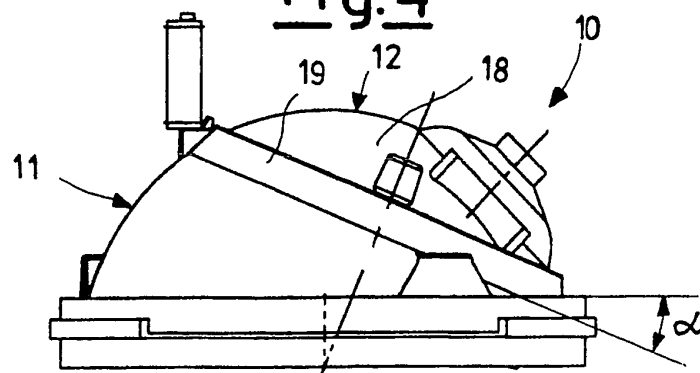


Fig.5

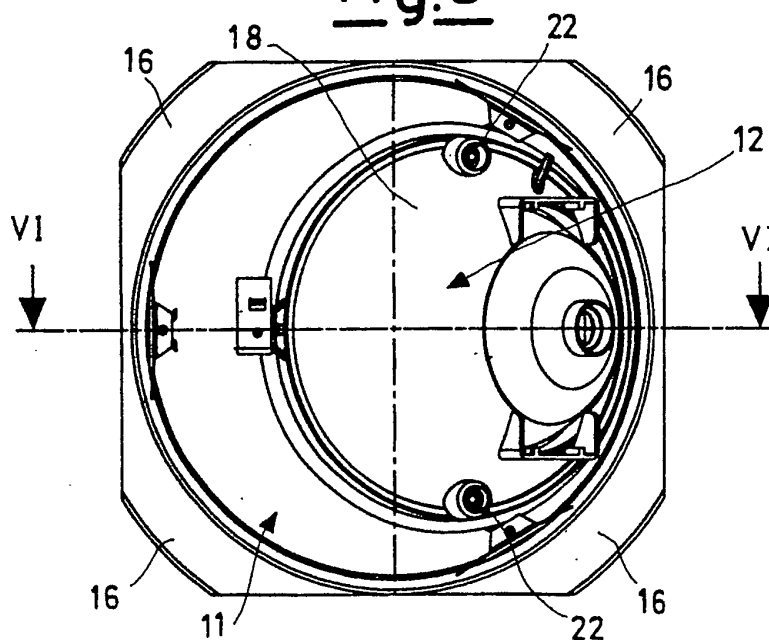


Fig.6

