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(54) Spotlight for flush mounting with rotation of the lamp body

(57) A spotlight (1) for flush mounting with rotation of the lamp body, comprising a fixed supporting frame (2), which can be inserted in a supporting wall and supports a luminaire (3) which can rotate about a first axis, which is substantially parallel to the plane of arrangement of the supporting frame (2), and about a second axis, which is substantially perpendicular to the plane of arrangement of the supporting frame (2). The spotlight further comprises motorized means (20) for rotation about the first and second axes.

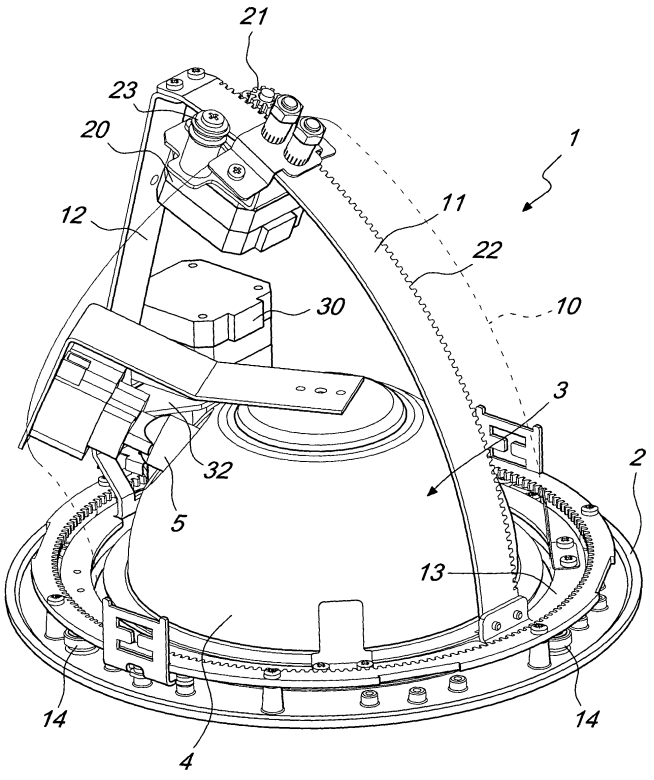

Fig. 1

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Description

[0001] The present invention relates to a spotlight for flush mounting with rotation of the lamp body.

[0002] As is known, orientable spotlights for flush mounting are already commercially available which are generally constituted by a fixed supporting structure, which is generally shaped like a ring and is inserted in an appropriate hole provided to size in the supporting wall.

[0003] Fixing is performed by means of springs or screws or in any case by means which stabilize the arrangement of the fixed supporting structure.

[0004] A base ring is inserted within the fixed supporting structure and is rotatably accommodated on the fixed supporting structure so that it can rotate about an axis which is substantially perpendicular to the plane of arrangement of the structure.

[0005] Within the base element there is an L-shaped body, which is pivoted with respect to the base ring so that it can rotate about an axis which is substantially parallel with respect to the plane of arrangement of the base ring.

[0006] The L-shaped body, which internally supports the luminaire, which can be constituted by a parabolic reflector with a lamp or by an electronic circuit with LEDs, is connected to a curved guiding element, which is shaped like a circular portion and is rigidly associated with the base ring and allows to guide the L-shaped body in order to allow its rotation and extraction with respect to the fixed supporting structure.

[0007] The L-shaped body, and therefore the luminaire, are currently oriented manually, requiring the intervention of a person who acts directly on the L-shaped body and positions it until the intended effect is obtained.

[0008] In many cases, this operation can be extremely difficult and in some cases it can be dangerous if it is performed in areas which are not easily accessible.

[0009] The aim of the invention is to eliminate the drawbacks mentioned above by providing a spotlight for flush mounting with rotation of the lamp body which allows the orientation of the light beam to be adjustable remotely in any direction.

[0010] Within this aim, an object of the invention is to provide a spotlight for flush mounting with rotation of the lamp body which is structurally compatible with current installations while having considerably improved features.

[0011] Another object of the present invention is to provide a spotlight for flush mounting with rotation of the lamp body which thanks to its particular constructive characteristics is capable of giving the greatest assurances of reliability and safety in use.

[0012] Another object of the present invention is to provide a spotlight for flush mounting with rotation of the lamp body which can be obtained easily starting from commonly commercially available elements and materials and is further competitive from a merely economical standpoint.

[0013] This aim and these and other objects, which will become better apparent hereinafter, are achieved by a spotlight for flush mounting with rotation of the lamp body, according to the invention, comprising a fixed supporting frame, which can be inserted in a supporting wall and supports a lamp body which can rotate about a first axis, which is substantially parallel to the plane of arrangement of said supporting frame, and about a second axis, which is substantially perpendicular to the plane of arrangement of said supporting frame, characterized in that it comprises motorized means for rotation about said first axis.

[0014] Further characteristics and advantages will become better apparent from the description of a preferred but not exclusive embodiment of a spotlight for flush mounting with rotation of the lamp body, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a schematic perspective view of the spotlight for flush mounting according to the invention, with the L-shaped body removed;
Figure 2 is a perspective view of the spotlight for flush mounting with the luminaire removed;
Figure 3 is a perspective view, rotated with respect to Figure 2, of the spotlight for flush mounting;
Figure 4 is a schematic sectional view, taken along a diametrical plane, of the spotlight for flush mounting in the retracted position;
Figure 5 is a sectional view of the spotlight for flush mounting in the extracted position;
Figures 6, 7 and 8 are views of different positions of the spotlight for flush mounting.

[0015] With reference to the figures, the spotlight for flush mounting with rotation of the lamp body, according to the invention, generally designated by the reference numeral 1, comprises a fixed supporting frame, which is constituted advantageously but not necessarily by an annular element 2, which is fixed in the supporting wall by screws, clips or any other suitable means.

[0016] The supporting frame internally supports a luminaire 3, which in the illustrated example is provided by means of a parabolic reflector 4 with a lamp 5 but in practice can be provided by any other element, such as for example multiple LEDs or other equivalent light sources.

[0017] The luminaire 3 is accommodated within an L-shaped body 10, which can oscillate about a first axis, which is substantially parallel to the plane of arrangement of said annular body 2, and lies along a circular portion; the body 10 is slidingly supported by a curved portion 11, connected to a rod 12, which is fixed to a base ring 13, accommodated rotatably within the fixed supporting frame 2 and kept in position by guiding rollers 14, which allow its rotation about a second axis, which is substantially perpendicular to the plane of arrangement of the supporting frame 2.

[0018] The particular feature of the present invention

consists in that there are motorized means for rotation about the first axis, which are constituted by motors or gearmotors and, for example, by a first step motor 20, which is supported by the L-shaped body 10 and drives a first gear 21, which engages a curved rack portion 22 provided on an edge of the curved portion 11.

[0019] An abutment roller 23 is provided opposite the region where the first gear 21 acts with the curved rack 22, and acts on the edge of the curved portion 11 which lies opposite the one provided with the rack 22.

[0020] With this arrangement, by actuating the first step motor 20 it is possible to vary the arrangement of the L-shaped body 10 and consequently extract, in the selected manner, the luminaire with respect to the base frame.

[0021] Advantageously, the assembly is structured so as to achieve a rotation of approximately 60° about the first axis, which is substantially parallel to the fixed supporting frame.

[0022] In practice it has been found that the breadth of the resulting beam of light allows to illuminate perfectly even the wall that is perpendicular to the wall in which the spotlight is recessed, as shown schematically in Figures 6 to 8.

[0023] Moreover, the spotlight for flush mounting comprises motorized means for rotation about the second axis, which are constituted by motors or gearmotors and, for example, by a second step motor 30, which is rigidly connected to the base ring by way of a connection by means of a bracket 31 to the rod 12.

[0024] The second step motor 30 drives a second gear 33, which meshes with an annular rack 34 rigidly connected to the base frame.

[0025] The rotation produces the movement of the L-shaped body around the second axis, which is substantially perpendicular to the plane of arrangement of the frame.

[0026] Rotation can occur through a maximum of 360°.

[0027] The combined action of the rotation about the first axis and about the second axis allows the light beam of the spotlight to be directed in any direction and at any time from a remote location; the fact is also stressed that the two movements are completely independent of each other.

[0028] It should be added to the above that the step motors can be controlled remotely by way of an electrical connection or by a remote control or other similar solutions which allow the user to change the arrangement of the spotlight for flush mounting.

[0029] From what has been described above it is therefore evident that the invention achieves the proposed aim and objects, and in particular the fact is stressed that a spotlight for flush mounting is provided in which it is possible to perform, very quickly and simply, the movement of the luminaire, which can be obtained in practice in a completely automatic manner and which can be controlled remotely or not.

[0030] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0031] All the details may further be replaced with other technically equivalent elements.

[0032] In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to requirements.

[0033] The disclosures in Italian Patent Application No. MI2004A002182 from which this application claims priority are incorporated herein by reference.

[0034] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A spotlight for flush mounting with rotation of the lamp body, comprising a fixed supporting frame, which can be inserted in a supporting wall and supports a luminaire which can rotate about a first axis, which is substantially parallel to the plane of arrangement of said supporting frame, and about a second axis, which is substantially perpendicular to the plane of arrangement of said supporting frame, **characterized in that** it comprises motorized means for rotation about said first axis.

2. A spotlight for flush mounting with rotation of the lamp body, comprising a fixed supporting frame, which can be inserted in a supporting wall and supports a lamp body which can rotate about a first axis, which is substantially parallel to the plane of arrangement of said supporting frame, and about a second axis, which is substantially perpendicular to the plane of arrangement of said supporting frame, **characterized in that** it comprises motorized means for rotation about said second axis.

3. A spotlight for flush mounting with rotation of the lamp body, comprising a fixed supporting frame, which can be inserted in a supporting wall and supports a lamp body which can rotate about a first axis, which is substantially parallel to the plane of arrangement of said supporting frame, and about a second axis, which is substantially perpendicular to the plane of arrangement of said supporting frame, **characterized in that** it comprises motorized means for rotation about said first axis and motorized means for rotation about said second axis.

4. The spotlight for flush mounting according to one or more of the preceding claims, **characterized in that** said motorized means for rotation about said first

axis comprise a first step motor supported by an L-shaped body which accommodates said luminaire, a first gear being connected to said first step motor and engaging a curved rack portion formed on an edge of a curved portion which is connected to the base ring supported by said supporting frame.

5. The spotlight for flush mounting according to one or more of the preceding claims, **characterized in that** it comprises an abutment roller, which can engage said curved portion on the opposite side with respect to said first gear.

6. The spotlight for flush mounting according to one or more of the preceding claims, **characterized in that** said curved rack covers substantially an angle of approximately 60°.

7. The spotlight for flush mounting according to one or more of the preceding claims, **characterized in that** said motorized means for rotation about said second axis comprise a second step motor, which is rigidly connected to said base ring and drives a second gear, which meshes with an annular rack rigidly connected to said base frame.

8. The spotlight for flush mounting according to one or more of the preceding claims, **characterized in that** said annular rack lies on a plane which is substantially parallel to the plane of arrangement of said supporting frame.

9. The spotlight for flush mounting according to one or more of the preceding claims, **characterized in that** said second step motor is adapted to provide a rotation of substantially 360°.

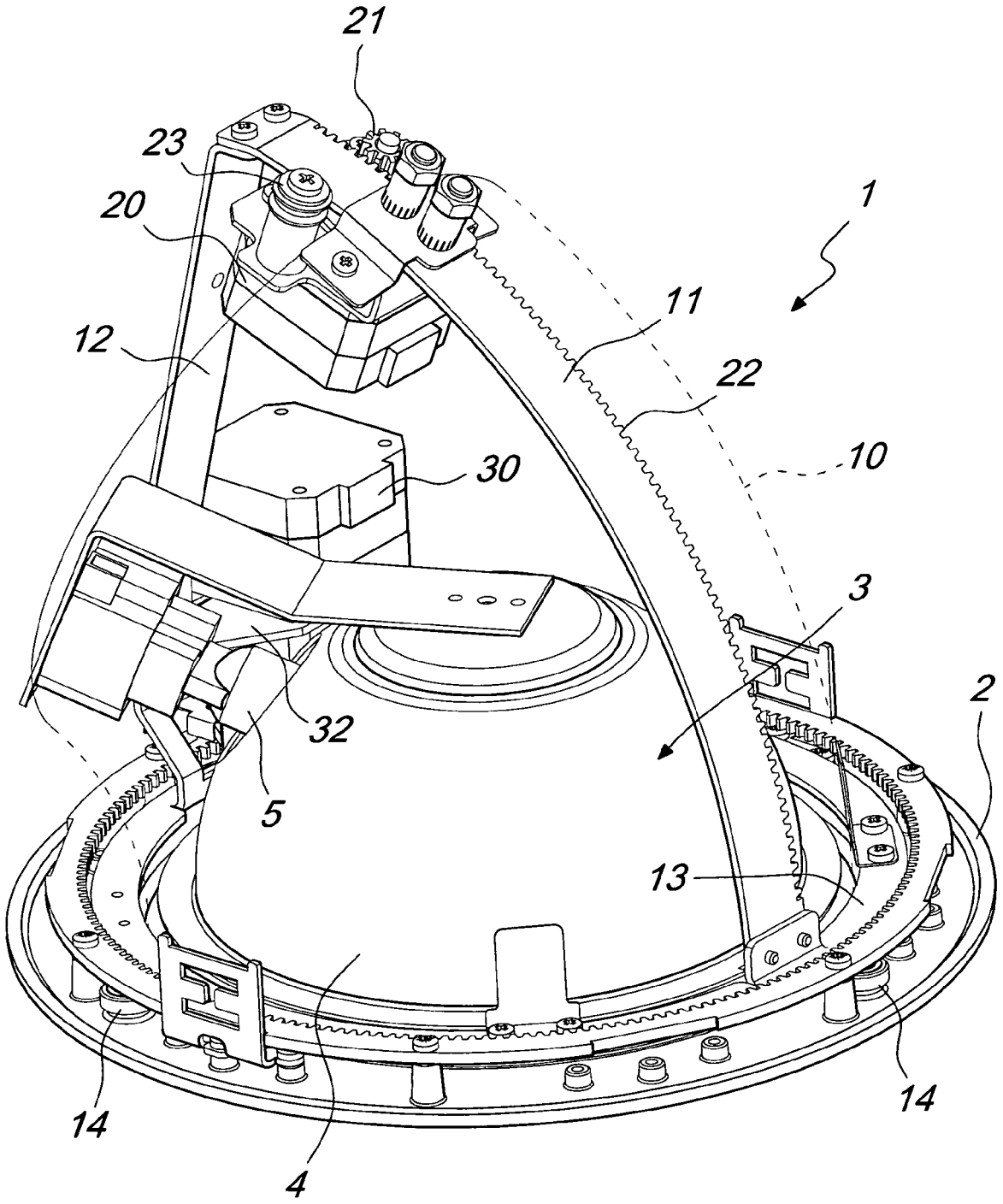


Fig. 1

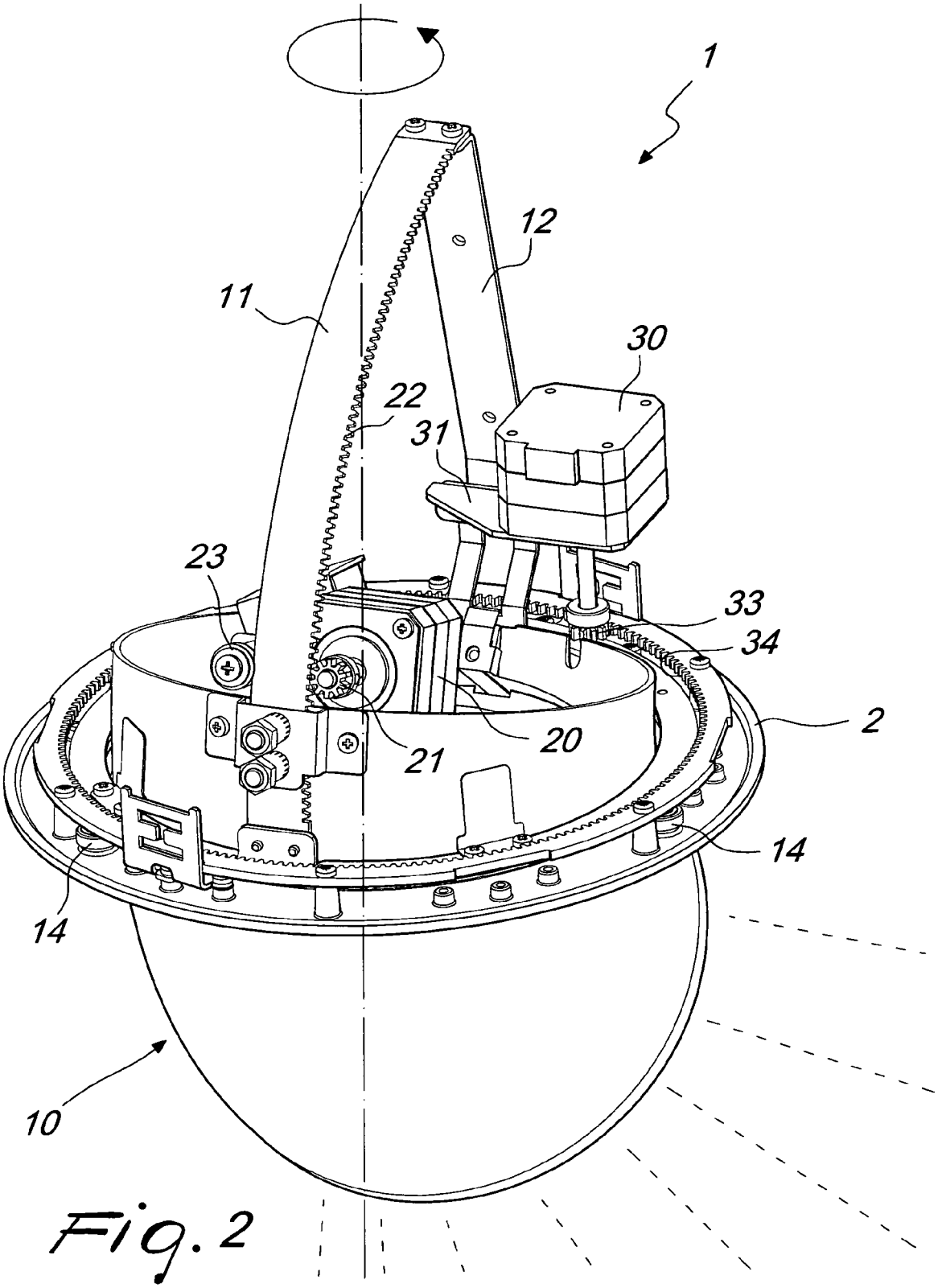
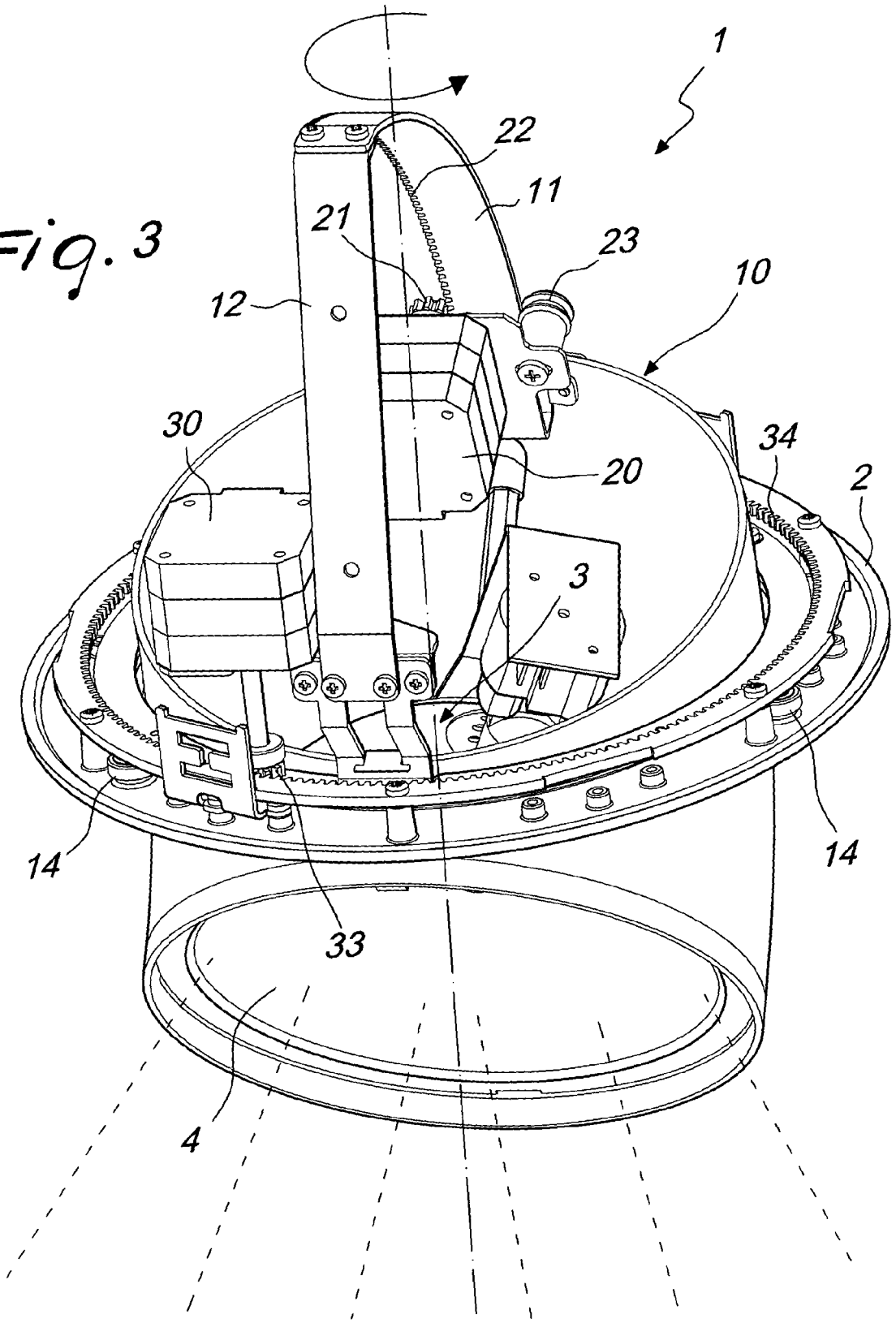


Fig. 2

Fig. 3



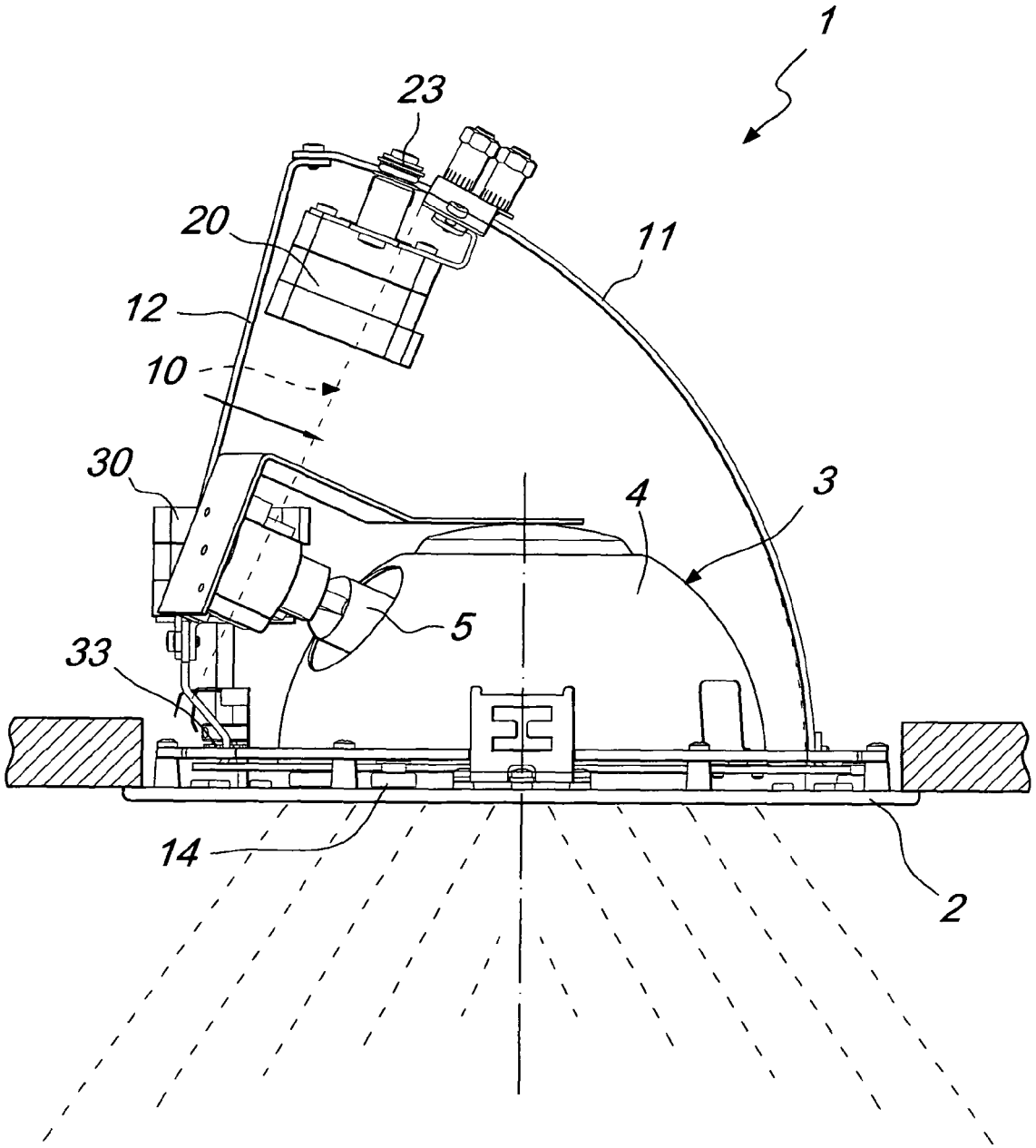


Fig. 4

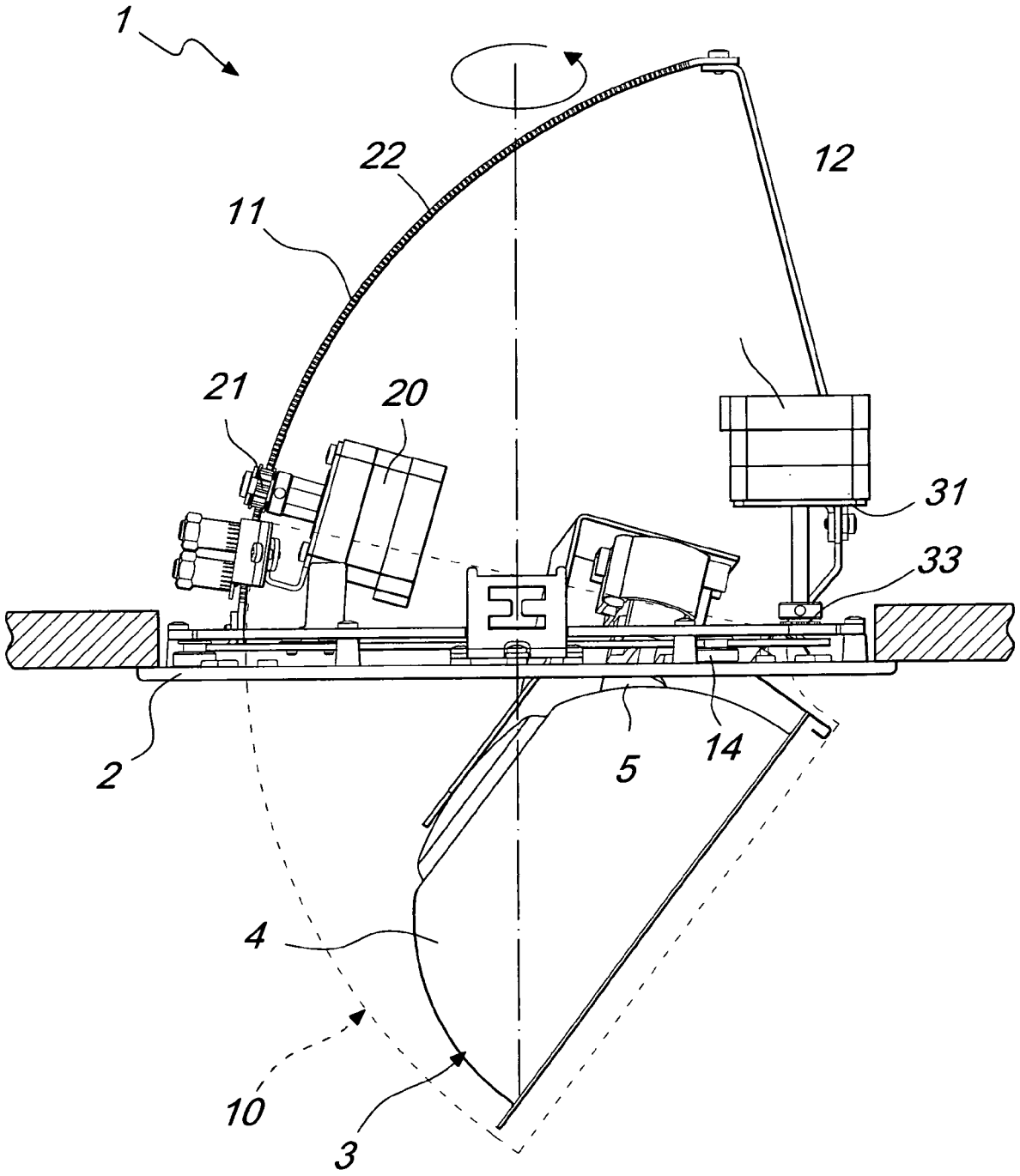


Fig. 5

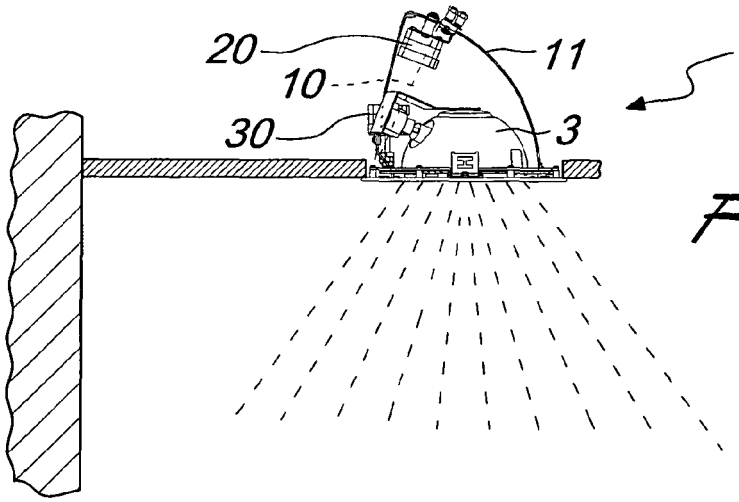


Fig. 6

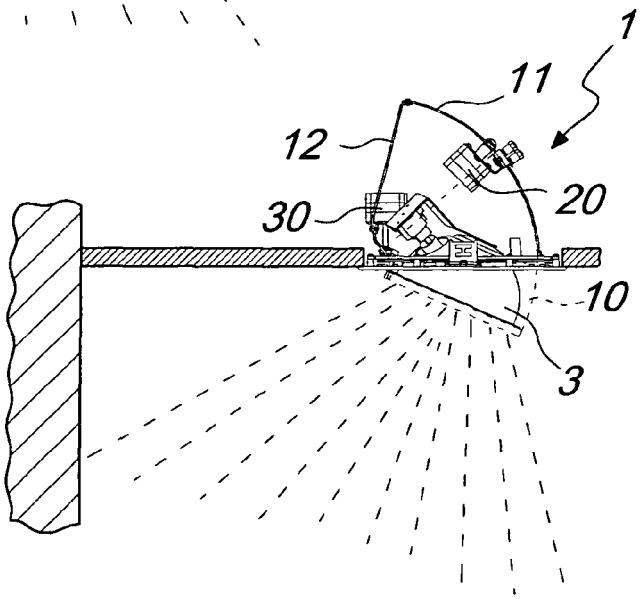


Fig. 7

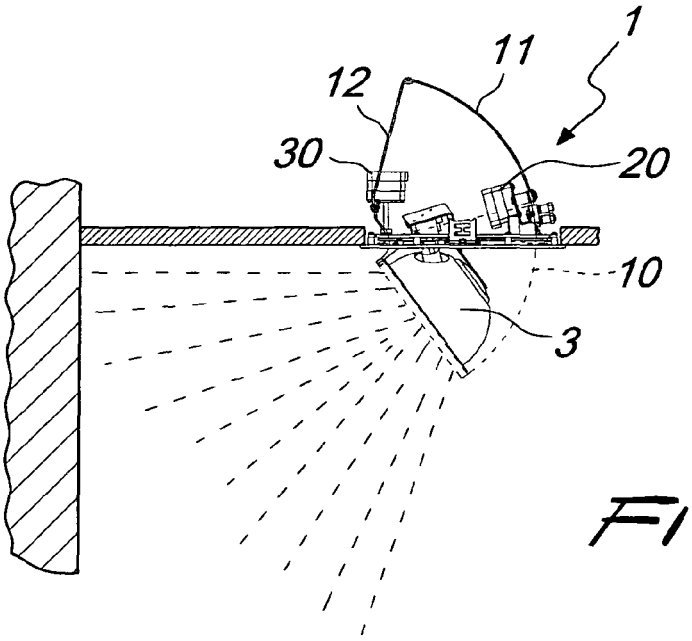


Fig. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 05 02 3783

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 Y	US 4 306 279 A (COHEN ET AL) 15 December 1981 (1981-12-15) * column 1, line 35 - column 2, line 15; figures 1-14 *	1-3,8,9 4,7	F21S8/02 F21V14/04
A	DE 102 07 542 A1 (ZUMTOBEL STAFF GMBH & CO) 4 September 2003 (2003-09-04) * paragraph [0007] - paragraph [0009] * * paragraph [0014] * * paragraph [0024] - paragraph [0029]; figures 5-8 *	1-8	
A	US 3 778 609 A (LIBERMAN M,US) 11 December 1973 (1973-12-11) * column 1, line 2 - column 2, line 43; figures 1-6 *	1-8	
Y	US 4 623 956 A (CONTI ET AL) 18 November 1986 (1986-11-18) * column 2, line 19 - line 35; figures 1-3 *	4,7	

TECHNICAL FIELDS SEARCHED (IPC)

F21S
F21V

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	1 February 2006	HERNANDEZ, R

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 02 3783

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01-02-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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DE 10207542 A1	04-09-2003	NONE	
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82