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(54) **LIGHTING APPARATUS COMPRISING A DIRECTED LIGHT BEAM**

(57) A lighting apparatus (1) provided with a light source (20) having a directed light beam, comprising a lamp body (10) extending along a longitudinal axis X, in which body the light source (20) is housed and which is supported by a support (50). The lighting apparatus (1) is characterized in that the lamp body (10) is fixed to the

support (50) by means of a releasable tensioning system, which is operable between a locked configuration in which the lamp body (10) cannot rotate with respect to the longitudinal axis (X), and a released configuration in which the lamp body (10) can rotate with respect to the longitudinal axis (X).

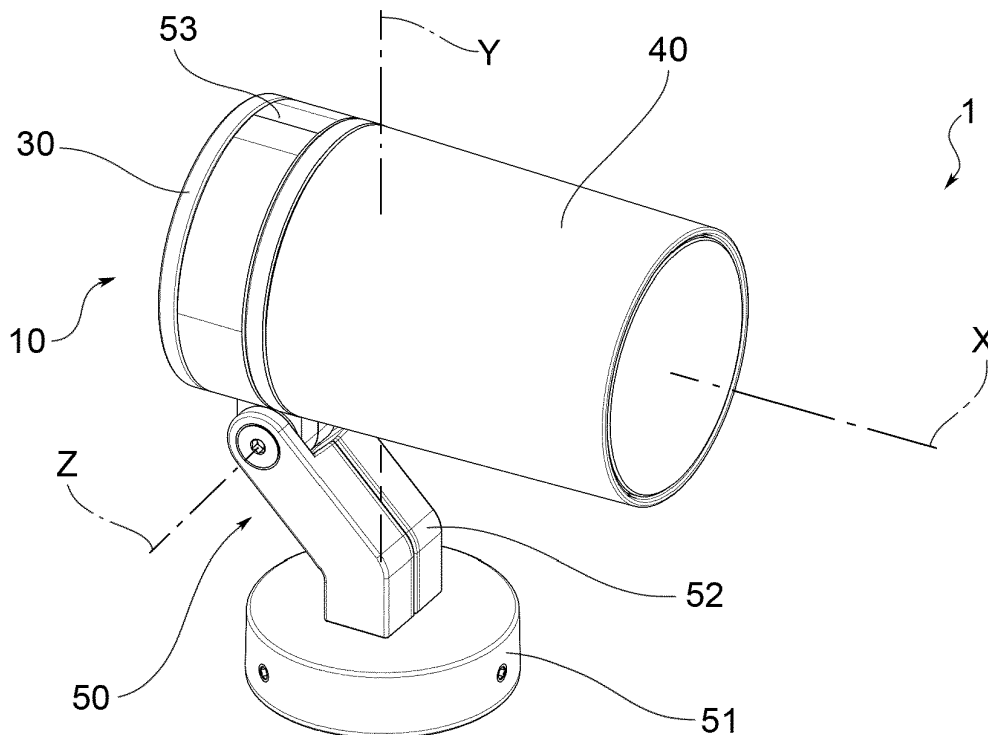


FIG.1a

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Description

[0001] The object of the present invention is a lighting apparatus provided with a light source comprising a focused (directed) light beam.

[0002] Within the field of lighting, light blade lighting devices, which are therefore provided with a light beam having a preferential plane, are becoming more and more widespread. These devices therefore need to be directed in the correct manner.

[0003] The object of the present invention is to provide a lighting apparatus that can be easily directed and can meet the requirements discussed above.

[0004] This object is achieved by a lighting apparatus as per claim 1.

[0005] The features and the advantages of the lighting apparatus according to the present invention will become clear from the description given below by way of nonlimiting example and in accordance with the attached drawings, in which:

- Fig. 1A and 1B show a lighting apparatus according to the present invention in an axonometric front view and an axonometric rear view, respectively;
- Fig. 2A and 2B show a lighting apparatus according to the present invention in an exploded front view and in an exploded rear view;
- Fig. 3 shows the lighting apparatus as per the present invention in an assembled configuration; and
- Fig. 4 shows the lighting apparatus according to the present invention in a final use configuration.

[0006] With reference to the attached drawings, reference numeral 1 represents a lighting apparatus provided with a light source 20.

[0007] The light source 20 emits a focused (directed), in other words not scattered, light beam, which is therefore provided with a preferential axis and/or plane. In other words, by directing the light source 20, it is possible to direct the light beam.

[0008] In one embodiment shown in Fig. 2A, the light source 20 comprises a diffuser globe 21 that extends along one plane; in this example, the diffuser globe 21 is semicircular or semi-discoidal. Therefore, the light beam emitted by the light source 20 has a preferential plane that corresponds to the plane of the diffuser globe 21. In this embodiment, the light source 20 emits a light blade beam.

[0009] In another embodiment, the light source 20 is provided with a plurality of diffuser globes and therefore emits a light beam that is not scattered, in other words that is provided with a preferential axis and/or plane.

[0010] Preferably, the light source 20 is an LED.

[0011] The lighting apparatus 1 is an LED spotlight, for example.

[0012] The lighting apparatus 1 comprises a lamp body 10 that is supported by a support 50.

[0013] The lamp body 10 comprises a main body 30,

which houses the light source 20 and is covered by an outer body 40, at least in part.

[0014] The main body 30 extends along a longitudinal axis X.

5 **[0015]** The main body 30 comprises a front portion 31 in which the light source 20 is fixed, and a rear portion 32 from which a power supply cable (not shown) leaves.

[0016] The main body 30 also houses the printed circuit board 22 for the light source 20.

10 **[0017]** A cable grommet 34 for the power supply cable is arranged in the rear portion 32, preferably in the back wall 33.

[0018] The outer body 40 is a casing intended to cover the main body 30, at least in part, in particular in order to conceal the light source 20 from the user's view, while letting out the light beam.

15 **[0019]** The outer body 40 also extends along a longitudinal axis X.

[0020] The outer body 40 defines a compartment 43 on the inside, into which at least part of the main body 30 is inserted.

[0021] The outer body 40 is provided with a front opening 41 and with a rear opening 42; the front 41 and rear 42 openings allow access to the compartment 43.

25 **[0022]** Preferably, the outer body 40 and the main body 30 are integrally joined for conjoint rotation by coupling means 44, 35. In fact, the outer body 40 acts as a handle for the user intending to direct the light beam emitted by the light source 20 of the lighting apparatus 1. The user therefore grasps the outer body 40 and rotating it about the longitudinal axis X: due to the coupling means, the rotational movement of the outer body 40 is transmitted to the main body 30 that houses the light source 20. Therefore, the lamp body 10 can rotate about the longitudinal axis X.

30 **[0023]** For example, the coupling means are at least one tab 44, which protrudes into the compartment 43 and can engage in a suitable groove 35 (or in a compartment or a depression or a channel) arranged in the main body 30.

40 **[0024]** The coupling means 44, 35 preferably also extend along a longitudinal axis X. During mounting of the lamp body 10 of the lighting apparatus 1, the main body 30 is inserted into the outer body 40 along the longitudinal axis X such that the tab 44 is inserted and slides in the groove 35.

45 **[0025]** The coupling means preferably comprise a pair of tabs 44 and a relative pair of grooves 35. The tabs 44 are preferably arranged symmetrically on the main body 30.

50 **[0026]** The outer body 40 and the main body 30 are preferably fixed to one another by locking means 36. The locking means advantageously prevent the main body 30 from leaving the outer body 40, via the front opening 41, by sliding along the longitudinal axis X.

55 **[0027]** In one embodiment, the locking means comprise a screw 36 that is associated with the main body 30 and can be screwed into a suitable abutment arranged

on the outer body 40.

[0028] The screw 36 is preferably inserted from the back wall 33 of the rear portion 32, through the main body 30, and exits in the front portion 31.

[0029] Two locking screws 36 are preferably provided.

[0030] The lighting apparatus 1 also comprises a support 50.

[0031] The support 50 comprises a bearing base 51 from which a stem 52 extends that bears a bracket 53 that can support the lamp body 10.

[0032] The bearing base 51 comprises a stand 511 on which an outer body 512 is arranged such that it can rotate about a vertical axis Y. By fixing the bracket 53 to the outer body 512, the lamp body 10 can also rotate about the vertical axis Y.

[0033] The bearing base 51 preferably comprises anti-rotation means 514, for example screws or grub screws, which lock the outer body 512 with respect to the stand 511 in order to prevent any unwanted rotational movements about the vertical axis Y.

[0034] The bracket 53 is fixed to the stem 52 by means of a hinge 54 that allows said bracket to rotate about a transverse axis Z. Therefore, the lamp body 10 can rotate about the vertical axis Y.

[0035] The bracket 53 comprises a substantially annular body 531, which defines a support compartment 532 into which the lamp body 10 can be inserted.

[0036] The body 531 is preferably obtained from a strip of flexible material folded back on itself to form a ring.

[0037] The body 531 preferably comprises two ends 533 that are joined to one another to form the annular body 531 by means of a bushing-screw system, which is preferably formed by a screw 556 inserted into a bushing 557. Each end 533 comprises a hole 539 into which the screw 556 or the bushing 533 is inserted.

[0038] The two ends 533 are preferably externally folded with respect to the circumference of the ring to form a socket portion 538.

[0039] The socket portion 538 of the bracket 53 is held in a particular seat 539 arranged in the stem 52. The seat 539 is defined between two facing walls 570, each of which is provided with a through-hole 571.

[0040] The socket portion 538 of the bracket 53 is fixed inside the seat 539 arranged in the stem 52 by means of a pin 555. The pin 555 is preferably formed by the screw 556 and by the bushing 557 as per the bushing-screw system that closes the annular body 531 of the bracket 53.

[0041] In particular, the screw 566 is inserted into the hole 571 in the first facing wall 570 of the stem 52, passes through a first end 533 of the bracket 53 and meets, inside the seat 539, the bushing 557 that has, in turn, firstly been inserted into the hole 571 in the second facing wall 570 of the stem 52 and then passes through a second end 533 of the bracket 53.

[0042] The socket portion 538 of the bracket 53, the seat 539 of the stem 52 and the pin 555 advantageously form the hinge 54 that allows said bracket to rotate about

the transverse axis Z. In particular, the seat 539 of the leg 52 represents the female component of the hinge that receives the male component represented by the socket portion 538 of the bracket 53, which are fixed for conjoint rotation by the pin 555 that defines the transverse axis of rotation Z.

[0043] The seat 539 of the stem 52 is preferably dimensioned such that it comfortably receives the socket portion 538 of the bracket 53; that is to say that the seat 539 has a greater width than the width of the socket portion 538 (when this is completely closed by the bushing-screw system). In other words, the seat 539 is provided with a space 549 that can also accommodate the socket portion 538 when the bushing-screw system is released and the two ends 533 of the annular body 531 move away from one another.

[0044] It should be noted that the lamp body 10, in particular the main body 30, is provided with a support seat 39 defined between a front abutment 391 and a rear abutment 392, into which the bracket 53 of the support 50 is inserted.

[0045] The support seat 39 is preferably an annular groove arranged in the rear portion 32 of the main body 30.

[0046] When fixing the lamp body 10 to the support 50, the annular body 531 of the bracket 53 is widened, separating the two ends 533 such that the lamp body 10 can be inserted into the particular support compartment 532, as shown in Fig. 3.

[0047] The annular body 531 of the bracket 53 is then closed, coupling the two ends 533 to one another, and inserted into the support seat 39 of the lamp body 10 positioned between the front abutment 391 and the rear abutment 392 of the main body 30.

[0048] The socket portion 538 of the bracket 53 is then inserted into the particular seat 539 arranged in the stem 52.

[0049] The screw 566 and the bushing 557 are therefore inserted into the particular hole 571 in the stem 52, and then cross the particular end 533 of the bracket 53.

[0050] The bushing-screw system is therefore operated by screwing the screw 566 into the bushing in order to completely close the annular body 531 of the bracket 53 around the lamp body 10 by fixing it in position with respect to the support 50 such that it does not rotate about the longitudinal axis X.

[0051] When the user needs to orient the light beam emitted by the light source 20, they will proceed to release the bushing-screw system such that the two ends 533 slightly separate from one another and the annular body 531 of the bracket 53 releases, that is widens, thus allowing the lamp body 10 to rotate in the interior thereof.

[0052] Therefore, the lamp body 10 is advantageously fixed to the support 50 by means of a releasable tensioning system (bushing-screw system), which is operable between a locked configuration in which the lamp body 10 cannot rotate with respect to the longitudinal axis X, and a released configuration, in which the lamp body 10

can rotate with respect to the longitudinal axis X.

[0053] The rotation of the lamp body 10 inside the bracket 53 of the support 50 is preferably circumferentially limited by abutment means. The abutment means advantageously limit the rotational movement by slightly less than 360° (for example approximately 358°) such that the electric cables inside the lamp body 10 do not get tangled up.

[0054] The abutment means comprise an abutment 562, which projects from the main body 30 of the lamp body 10 and can abut a particular stop 561 that projects from the annular body 531 of the bracket 53.

[0055] In particular, the abutment 562 protrudes externally from inside the support seat 39 of the main body 30 of the lamp body 10; the stop 561 protrudes into the support compartment 532 of the annular body 531 of the bracket 53.

[0056] Therefore, a lighting apparatus according to the present invention can advantageously be directed in a particularly simple manner.

[0057] The releasable tensioning system advantageously also constitutes the hinge 54 that allows the lamp body 10 to rotate with respect to the support 50.

[0058] It is clear that an expert in the field would be able to make modifications to the lighting apparatus according to the present invention, all of which are covered by the scope of protection as defined by the following claims.

Claims

1. A lighting apparatus (1) equipped with a light source (20) with a directed light beam, comprising a lamp body (10), extending along a longitudinal axis X and wherein the light source (20) is housed, supported by a support (50),
characterized in that the lamp body (10) is fixed to the support (50) by means of a releasable tensioning system, operable between a locked configuration wherein the rotation of the lamp body (10) relative to the longitudinal axis (X) is prevented, and a released configuration wherein the rotation of the lamp body (10) relative to the longitudinal axis (X) is allowed.
2. Lighting apparatus (1) according to claim 1, wherein the releasable tensioning system is a bushing-screw-type system consisting of a screw (556) inserted into a bushing (557).
3. Lighting apparatus (1) according to claim 1 or 2, wherein the support (50) comprises an annular body (531) defining a support compartment (532) wherein the lamp body (10) is inserted, said body (531) being equipped with two parts (533) joined together by the releasable tensioning system.
4. Lighting apparatus (1) according to claim 3, wherein the two parts (533) form a socket portion (538) housed in a seat (539) arranged in the support (50), said seat (539) being sized so as to accommodate easily the socket portion (538) of the bracket (53).
5. Lighting apparatus (1) according to claim 4, wherein the seat (539) is wider than the width of the socket portion (538) when the releasable tensioning system is in the locked configuration.
6. Lighting apparatus (1) according to claim 4 or 5, wherein the socket portion (538) is fixed inside the seat (539) by means of a pin (555), said pin being the releasable tensioning system.
7. Lighting apparatus (1) according to claim 6, wherein the socket portion (538), the seat (539) and the pin (555) form a hinge (54) that allows the rotation of the lamp body (10) around the transverse axis Z.
8. Lighting apparatus (1) according to any one of the preceding claims, wherein, when the releasable tensioning system is in a released configuration, the rotation of the lamp body (10) relative to the longitudinal axis (X) is limited by abutment means in the form of at least one abutment (562), arranged protruding from the lamp body (10), suitable to abut against at least one respective stop (561) arranged protruding from the support (50).
9. Lighting apparatus (1) according to any one of the preceding claims, wherein the light source (20) is an LED with diffuser globe (21) extending along a plane parallel to the longitudinal axis X.
10. Lighting apparatus (1) according to any one of the preceding claims, wherein the lamp body (10) comprises a main body (30), housing the light source (20), inserted at least partially into the compartment (43) defined by an outer body (40), and wherein the outer body (40) and the main body (30) are joined together in rotation by coupling means comprising at least one tab (44), protruding inside the compartment (43), inserted into a groove (45) provided on the main body (30).
11. Lighting apparatus (1) according to claim 10, wherein the outer body (40) and the main body (30) are fixed together by locking means (36) in the form of at least one screw (36), associated with the main body (30), which may be screwed into a special abutment arranged in the outer body (40).

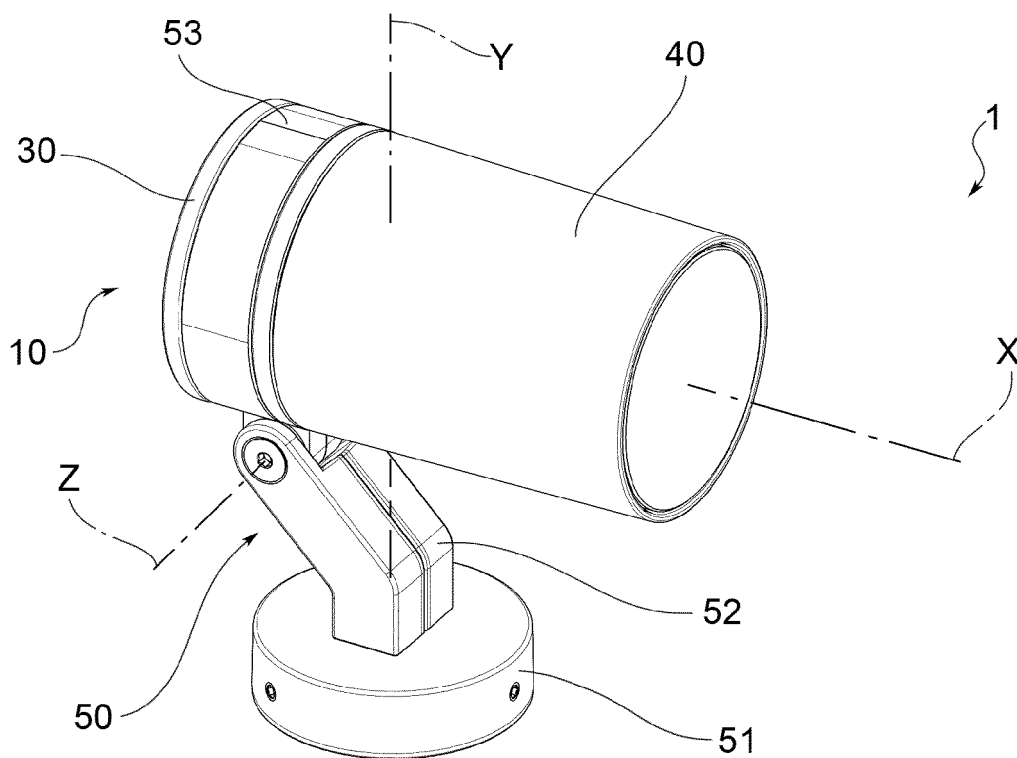


FIG.1a

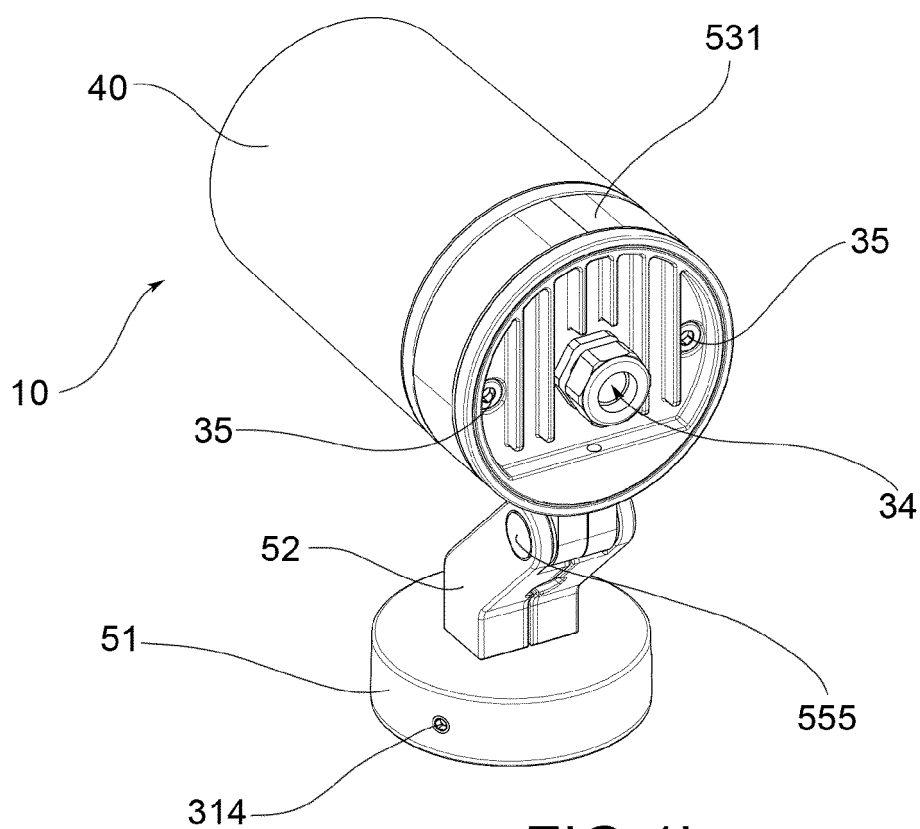
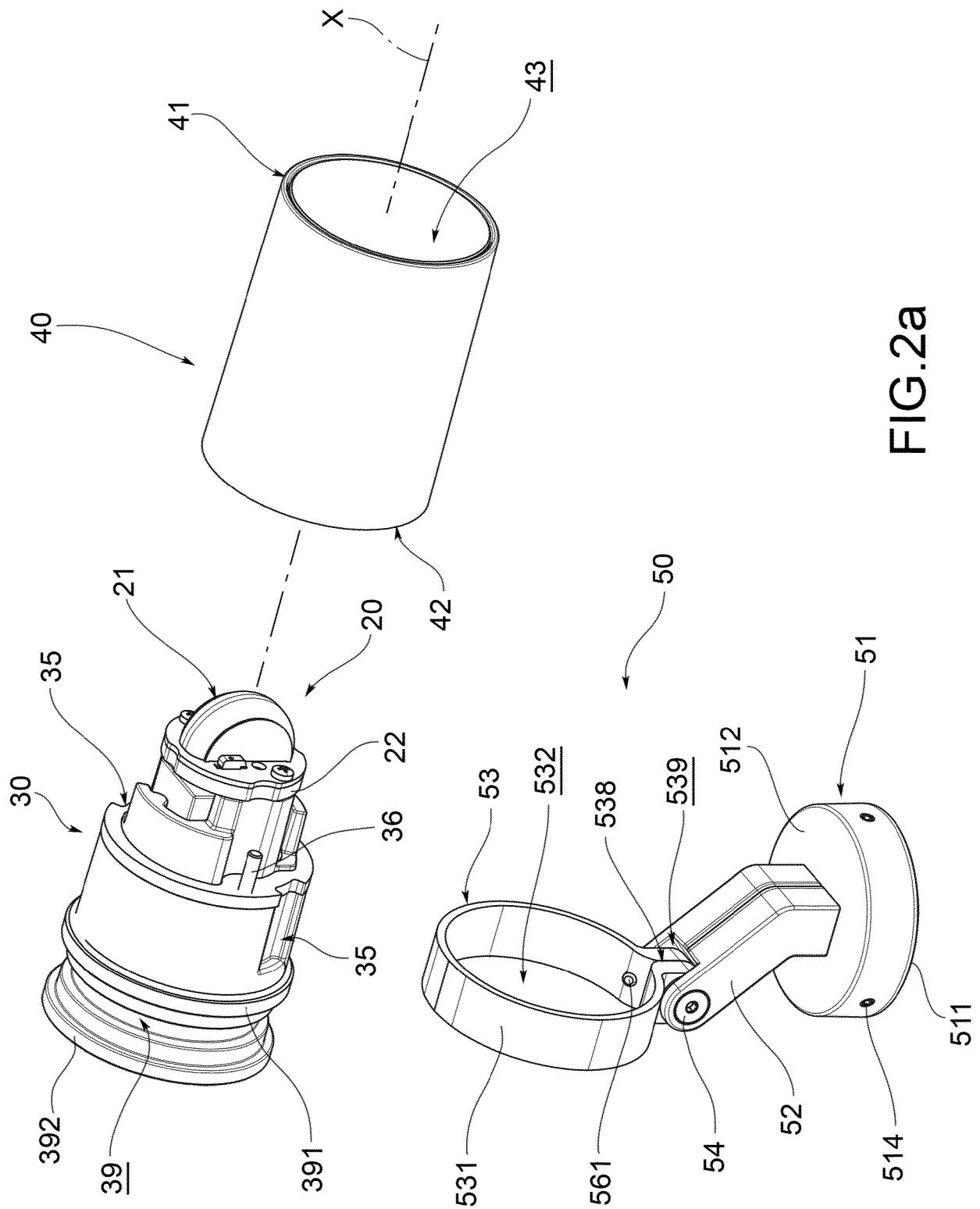


FIG.1b



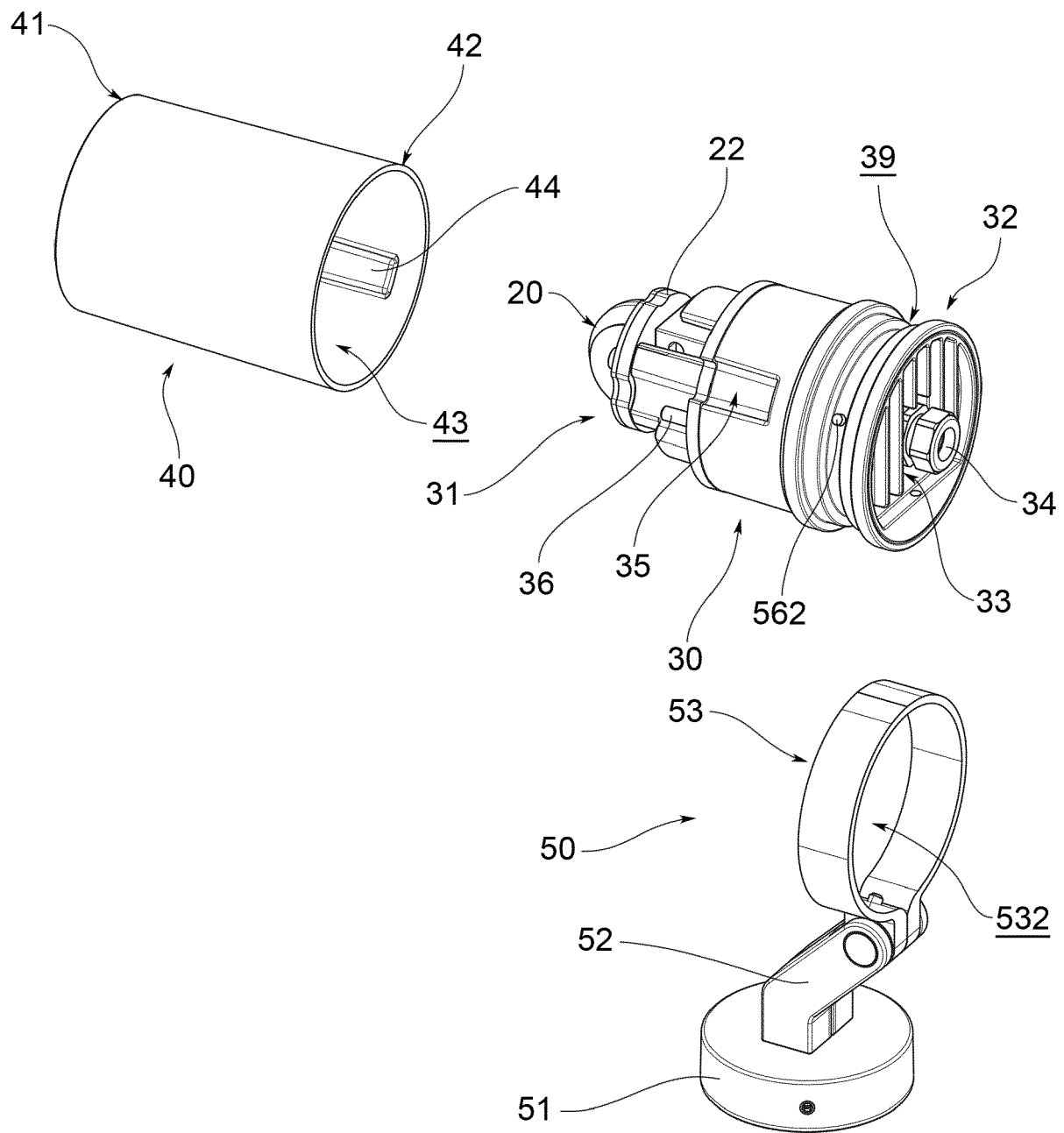


FIG.2b

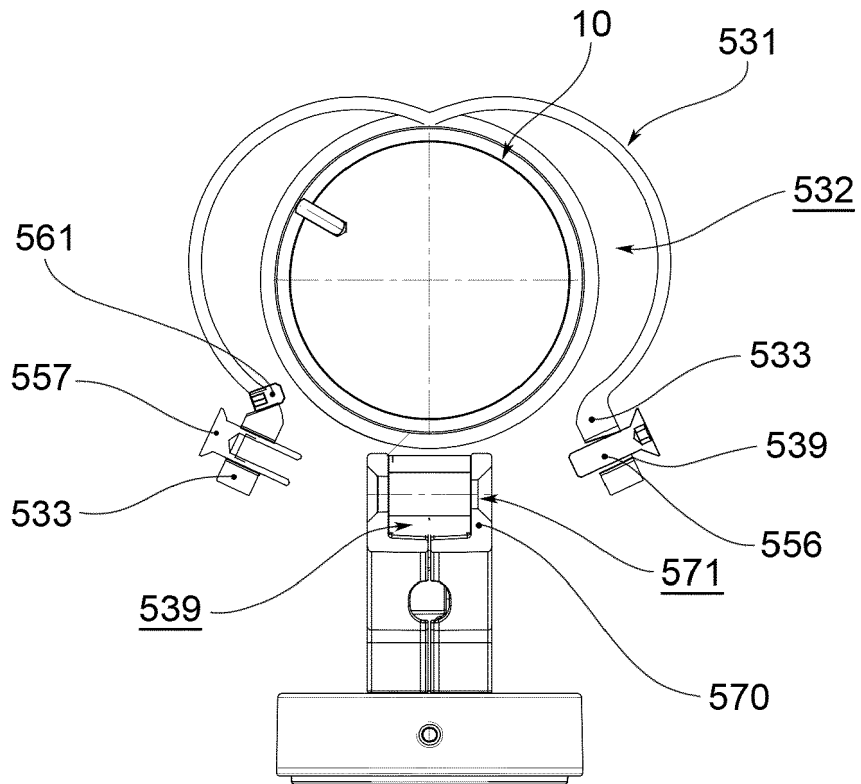


FIG.3

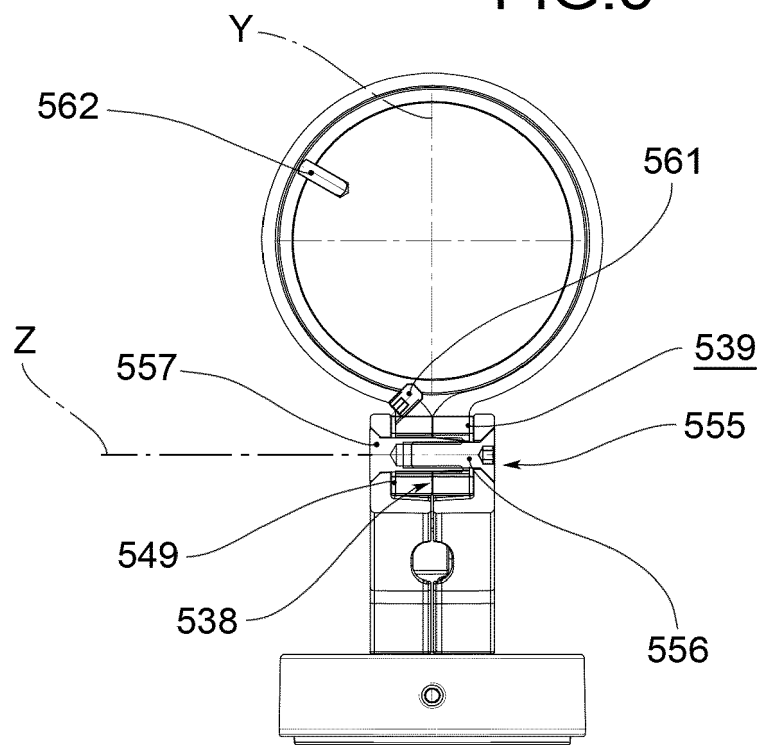


FIG.4



EUROPEAN SEARCH REPORT

Application Number
EP 20 16 5575

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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 A	US 2011/063828 A1 (KU CHIN-LONG [TW] ET AL) 17 March 2011 (2011-03-17) * figures 1-5 *	1,8,9 2-7,10,11	INV. F21S6/00 F21V14/06 F21V17/02 F21V21/30 F21V21/116
X A	GB 1 194 895 A (PHILIPS ELECTRONIC ASSOCIATED [GB]) 17 June 1970 (1970-06-17) * figures 1-3 *	1-3 4-7,10,11	
X	US 10 161 581 B1 (CHIU TSAN-LI [TW] ET AL) 25 December 2018 (2018-12-25) * figures 1-5 *	1	
X	US 2018/172253 A1 (CHUNG FU-CHIN [TW]) 21 June 2018 (2018-06-21) * figures 1-4 *	1	
X	EP 3 336 422 A1 (GEN ELECTRIC [US]) 20 June 2018 (2018-06-20) * figures 1-9 *	1,8,9	
X	US 2007/195520 A1 (O'BRIEN CHARLES D [US]) 23 August 2007 (2007-08-23) * figures *	1,3,8,9	TECHNICAL FIELDS SEARCHED (IPC) F21S F21V F21W F21L
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 13 July 2020	Examiner Kebemou, Augustin
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	

EPO FORM 1503 03.82 (P04C01)

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

EP 20 16 5575

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2011063828 A1	17-03-2011	CN 102022669 A	20-04-2011
		US 2011063828 A1	17-03-2011
GB 1194895 A	17-06-1970	DE 1589258 A1	09-04-1970
		GB 1194895 A	17-06-1970
		NL 6610400 A	24-01-1968
US 10161581 B1	25-12-2018	TW 201910685 A	16-03-2019
		US 10161581 B1	25-12-2018
US 2018172253 A1	21-06-2018	CN 108204574 A	26-06-2018
		US 2018172253 A1	21-06-2018
EP 3336422 A1	20-06-2018	NONE	
US 2007195520 A1	23-08-2007	NONE	