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(54) **LED LIGHT ASSEMBLY**

(57) An LED light assembly has at least one frame (20), at least one first LED string (30), and at least one second LED string (40). Each frame (20) has a first side (21) and a second side (22) opposite the first side (21). The at least one first LED string (30) is capable of emitting light in a first color. Each first LED string (30) is attached on the first side (21) of one of the at least one frame (20). The at least one second LED string (40) is capable of emitting light in a second color different from the first color emitted by the at least one first LED string (30). Each second LED string (40) is attached on the second side (22) of one of the at least one frame (20).

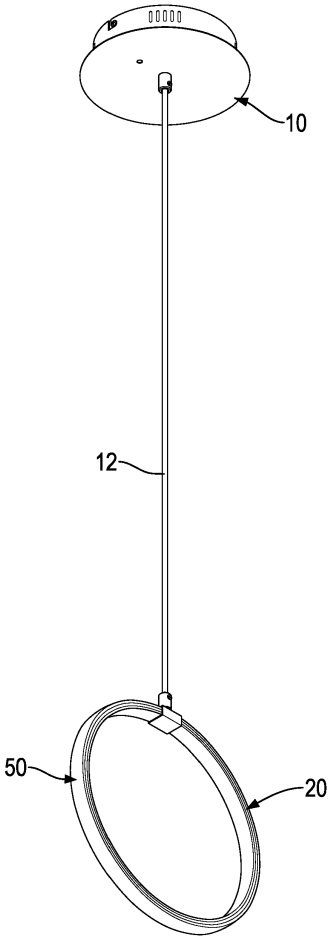

FIG.1

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Description

1. Field of the Invention

[0001] The present invention relates to a light assembly, and more particularly to an LED light assembly having two LED strings to emit lights in different colors.

2. Description of Related Art

[0002] A conventional light assembly substantially comprises a base and an illuminating element. The illuminating element is mounted on the base to emit light. The illuminating element may be a bulb or an LED (light emitting diode). However, the illuminating element of the conventional light assembly can only emit light in one color, so the conventional light assembly is not versatile in use.

[0003] To overcome the shortcomings, the present invention tends to provide an LED light assembly to mitigate or obviate the aforementioned problems.

[0004] The main objective of the invention is to provide an LED light assembly that can emit light in different colors.

[0005] The LED light assembly has at least one frame, at least one first LED string, and at least one second LED string. Each one of the at least one frame has a first side and a second side opposite the first side. The at least one first LED string is capable of emitting light in a first color. Each one of the at least one first LED string is attached on the first side of one of the at least one frame. The at least one second LED string is capable of emitting light in a second color. Each one of the at least one second LED string is attached on the second side of one of the at least one frame. The first color emitted by the at least one first LED string is different from the second color emitted by the at least one second LED string.

[0006] Other objects, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

IN THE DRAWINGS

[0007]

Fig. 1 is a perspective view of a first embodiment of an LED light assembly in accordance with the present invention;

Fig. 2 is an enlarged perspective view of the LED light assembly in Fig. 1;

Fig. 3 is an enlarged cross sectional side view of the LED light assembly in Fig. 1;

Fig. 4 is an enlarged partially exploded perspective side view of the LED light assembly in Fig. 1;

Fig. 5 is a perspective view of a second embodiment of an LED light assembly in accordance with the present invention;

Fig. 6 is a perspective view of a third embodiment of an LED light assembly in accordance with the present invention;

Fig. 7 is a perspective view of a fourth embodiment of an LED light assembly in accordance with the present invention;

Fig. 8 is a perspective view of a fifth embodiment of an LED light assembly in accordance with the present invention; and

Fig. 9 is a perspective view of a sixth embodiment of an LED light assembly in accordance with the present invention.

[0008] With reference to Figs. 1 to 4, an LED (light emitting diode) light assembly in accordance with the present invention comprises a base 10, at least one frame 20, at least one first LED string 30, and at least one second LED string 40. The base 10 may be attached to a ceiling and may comprise a transformer and a controller inside. The at least one frame 20 is connected to the base 10, and each one of the at least one frame 20 has a first side 21 and a second side 22 opposite the first side 21. The at least one first LED string 30 is capable of emitting light in a first color and is attached on the first side 21 of the at least one frame 20. The at least one second LED string 40 is capable of emitting light in a second color and is attached on the second side 22 of the at least one frame 20. The first color emitted by the at least one first LED string 30 is different from the second color emitted by the at least one second LED string 40. Preferably, the first color emitted by the at least one first LED string 30 is white, and the second color emitted by the at least one second LED 40 string is at least one of RGB (red, green and blue). Each LED string 30, 40 comprises an elongated substance and multiple LED chips mounted on the substance for emitting light.

[0009] In addition, each frame 20 further comprises two lampshades 50 attached respectively to the first and second sides 21, 22 of the frame 20 to cover the first LED string 30 and the second LED string 40 respectively. Each frame 20 has two side faces 23, 24 being opposite each other and respectively adjacent to the first and the second sides 21, 22. Two engaging grooves 26 are defined respectively in the two side faces 23, 24. Each lampshade 50 has two bent side edges 52 engaging respectively with the engaging grooves 26 in the side faces 23, 24 of the frame 20.

[0010] In the first embodiment as shown in Figs. 1 and 2, the at least one frame 20, the at least one first LED string 30, and the at least one second LED string 40 are respectively implemented as one in amount. The frame 20 is annular and is connected with the base 10 with a cable 12. The cable 12 electrically connects the LED strings 30, 40 with the controller/transformer in the base 10. Preferably, the first side 21 is the outer side of the annular frame 20, and the second side 22 is the inner side of the annular frame 20. Accordingly, the first LED string 30 emitting white light is mounted on the outer side

of the annular frame 10, and the second LED string 40 emitting RGB light is mounted on the inner side of the annular frame 20. Alternatively, the first side 21 is the inner side of the annular frame 20, and the second side 22 is the outer side of the annular frame 20, such that the first LED string 30 emitting white light is mounted on the inner side of the annular frame 10, and the second LED string 40 emitting RGB light is mounted on the outer side of the annular frame 20.

[0011] With such an arrangement, the LED light assembly in accordance with the present invention can emit light in different colors respectively from the sides 21, 22 of the frame 20, such that the visual effect provided by the LED light assembly can be improved. In addition, the second color emitted by the second LED string 40 can be controlled to switch between the RGB in a gradual change mode or a jumpy mode by the controller in the base 10. Accordingly, the LED light assembly is versatile in use.

[0012] In the second embodiment as shown in Fig. 5, the at least one frame 20A, the at least one first LED string 30, and the at least one second LED string 40 are respectively implemented as three in amount. The frames 20A are annular and are connected with the base 10A each with a respective cable 12A. The cables 12A may have different lengths.

[0013] In the third embodiment as shown in Fig. 6, the at least one frame 20B, the at least one first LED string 30, and the at least one second LED string 40 are respectively implemented as four in amount. The frames 20B are annular and are each connected with the base 10B with a respective connection arm 14. A cable is mounted in each connection arm 14 to electrically connect the LED strings with the controller/ transformer in the base 10B.

[0014] In the fourth embodiment as shown in Fig. 7, the at least one frame 20C, the at least one first LED string 30, and the at least one second LED string 40 are respectively implemented as one in amount. The frame 20C is conically spiral and has an end attached to the base 10C.

[0015] In the fifth embodiment as shown in Fig. 8, the at least one frame 20D, the at least one first LED string 30, and the at least one second LED string 40 are respectively implemented as multiple in amount. The frames 20D are curved and respectively have an end attached to the base 10D.

[0016] In the sixth embodiment as shown in Fig. 9, the at least one frame 20E, the at least one first LED string 30, and the at least one second LED string 40 are respectively implemented as one in amount. The frame 20E is spiral and has two free ends and two connection segments being apart from the free ends and attached to the base 10E.

Claims

1. An LED (light emitting diode) light assembly, **characterized in that** the LED light assembly comprises:

   at least one frame (20), each one of the at least one frame (20) having a first side (21) and a second side (22) opposite the first side (21);
   at least one first LED string (30) being capable of emitting light in a first color, each one of the at least one first LED string (30) attached on the first side (21) of one of the at least one frame (20); and
   at least one second LED string (40) being capable of emitting light in a second color, each one of the at least one second LED string (40) attached on the second side (22) of one of the at least one frame (20), wherein the first color emitted by the at least one first LED string (30) is different from the second color emitted by the at least one second LED string (40).

2. The LED light assembly as claimed in claim 1, wherein
   the first color emitted by the at least one first LED string (30) is white; and
   the second color emitted by the at least one second LED string (40) is at least one of RGB (red, green and blue).

3. The LED light assembly as claimed in claim 1 or 2, wherein each one of the at least one frame (20) further comprises two lampshades (50) attached respectively to the first and second sides (21, 22) of the frame (20) to cover the first LED string (30) and the second LED string (40) on the frame (20) respectively.

4. The LED light assembly as claimed in claim 3, wherein each one of the at least one frame (20) has
   two side faces (23, 24) being opposite each other and respectively adjacent to the first and the second sides (21, 22); and
   two engaging grooves (26) defined respectively in the two side faces (23, 24); and
   each lampshade (52) of each one of the at least one frame (20) has two bent side edges (52) engaging respectively with the engaging grooves (26) in the side faces (23, 24) of the frame (20).

5. The LED light assembly as claimed in any one of claims 1 to 4 further comprising a base (10) to which the at least one frame (20) is connected.

6. The LED light assembly as claimed in claim 5, wherein
   the at least one frame (20), the at least one first LED string (30), and the at least one second LED string

(40) are respectively implemented as one in amount; the frame (20) is annular and is connected with the base (10) with a cable (12).

7. The LED light assembly as claimed in claim 5, wherein
the at least one frame (20A), the at least one first LED string (30), and the at least one second LED string (40) are respectively implemented as multiple in amount;
each frame (20A) is annular and is connected with the base (10A) with a cable (12A).

8. The LED light assembly as claimed in claim 5, wherein
the at least one frame (20B), the at least one first LED string (30), and the at least one second LED string (40) are respectively implemented as multiple in amount;
the frames (20B) are annular and are each connected with the base (10B) with a respective connection arm (14).

9. The LED light assembly as claimed in claim 5, wherein
the at least one frame (20C), the at least one first LED string (30), and the at least one second LED string (40) are respectively implemented as one in amount;
the frame is conically spiral (20C) and has an end attached to the base (10).

10. The LED light assembly as claimed in claim 5, wherein
the at least one frame (20D), the at least one first LED string (30), and the at least one second LED string (40) are respectively implemented as multiple in amount;
the frames (20D) are curved and each one of the frames (20D) has an end attached to the base (10D).

11. The LED light assembly as claimed in claim 5, wherein
the at least one frame (20E), the at least one first LED string (30), and the at least one second LED string (40) are respectively implemented as one in amount;
the frame (20E) is spiral and has two free ends and two connection segments being apart from the free ends and attached to the base (10E).

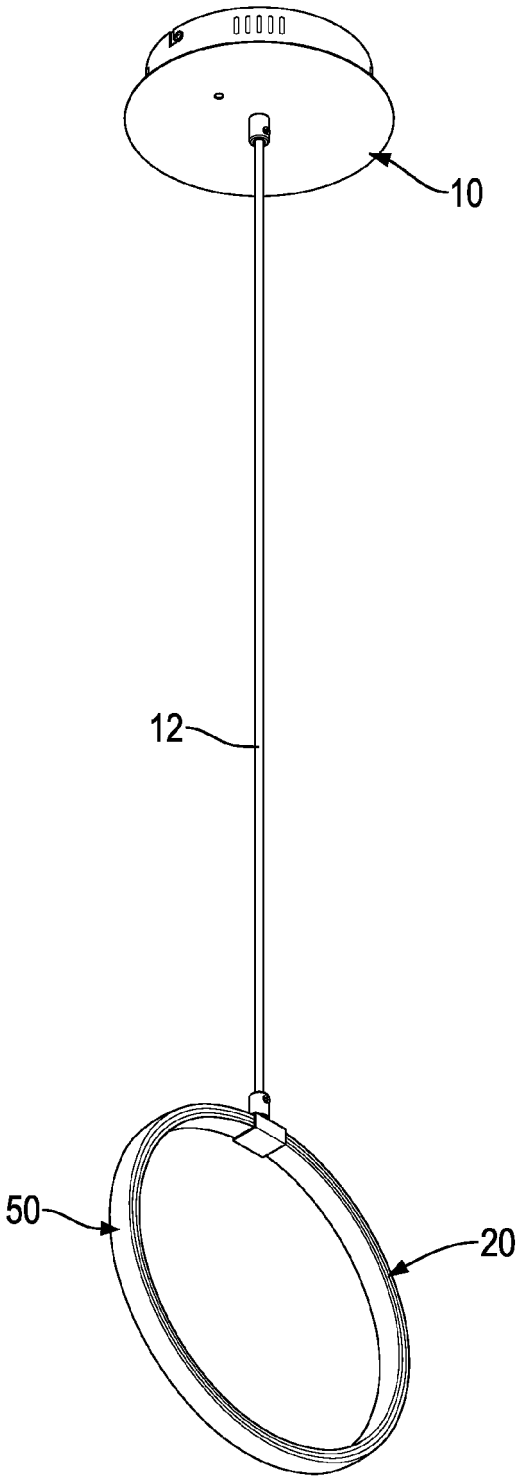

FIG.1

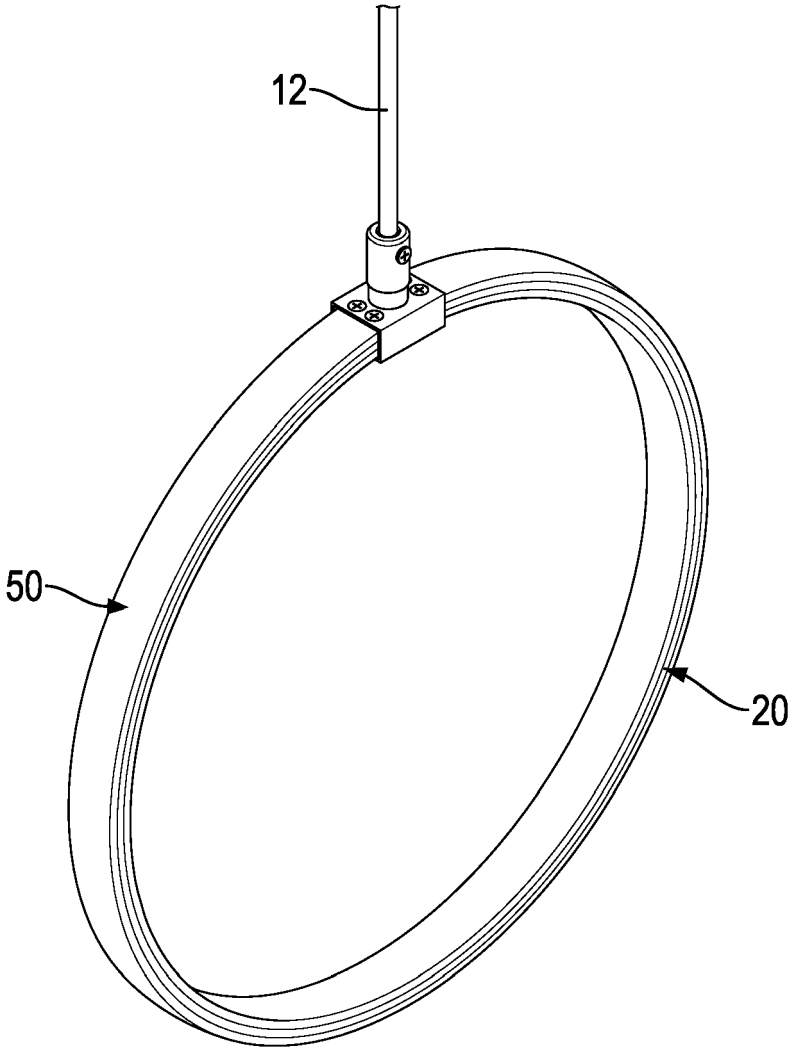

FIG.2

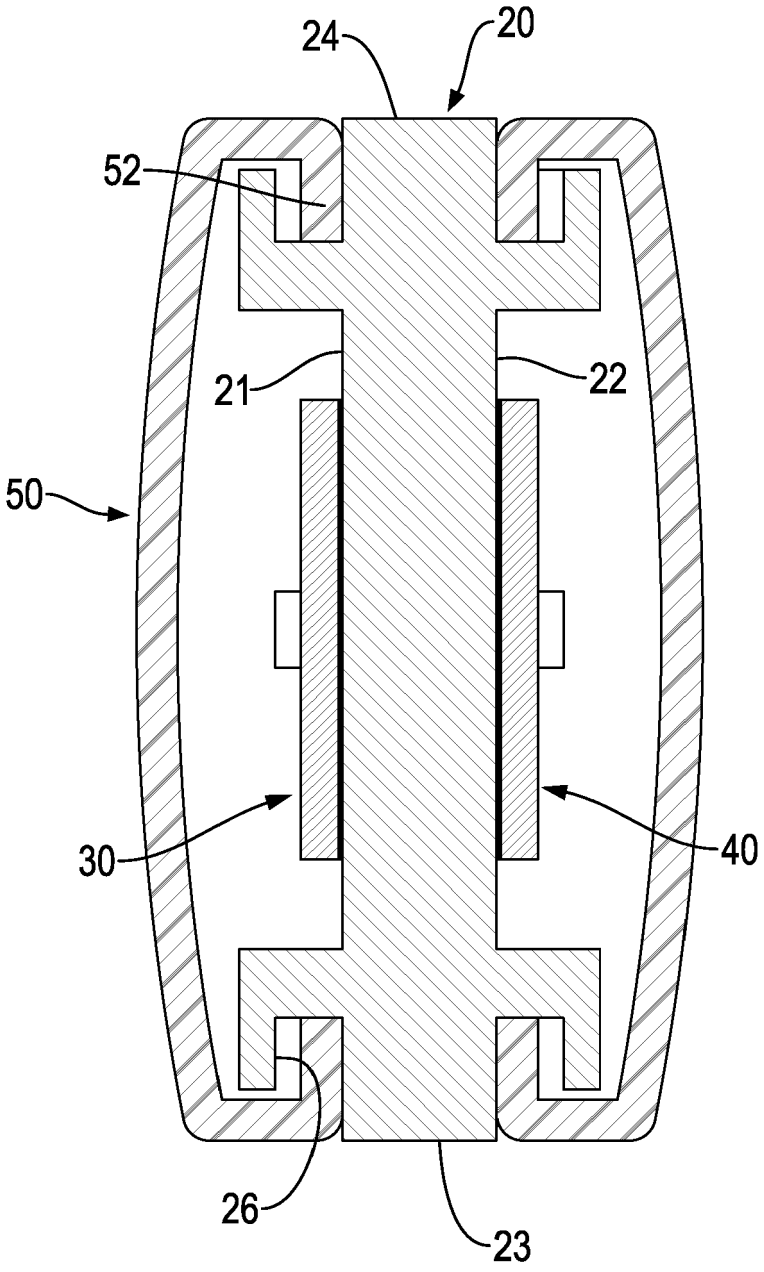

FIG.3

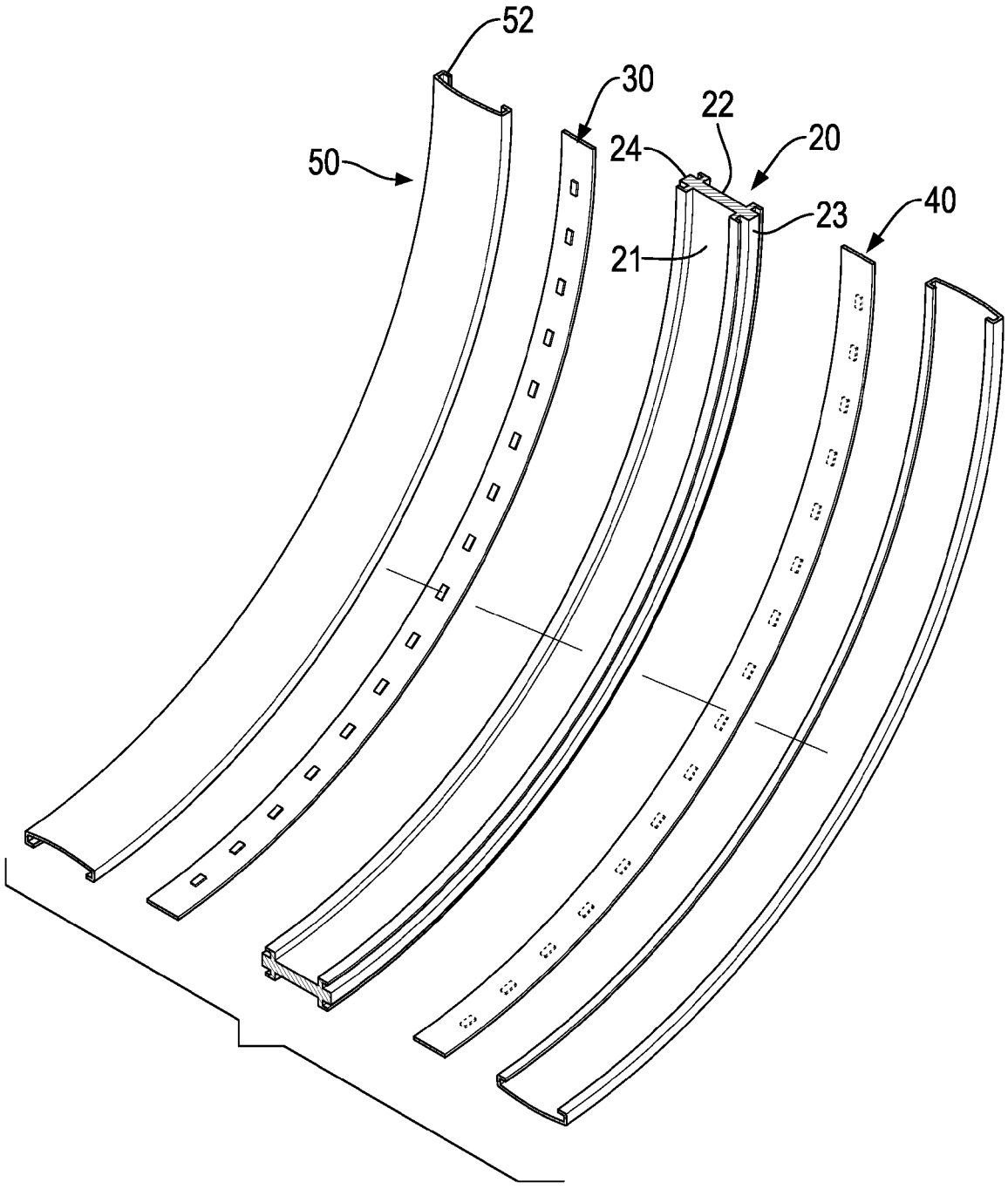

FIG.4

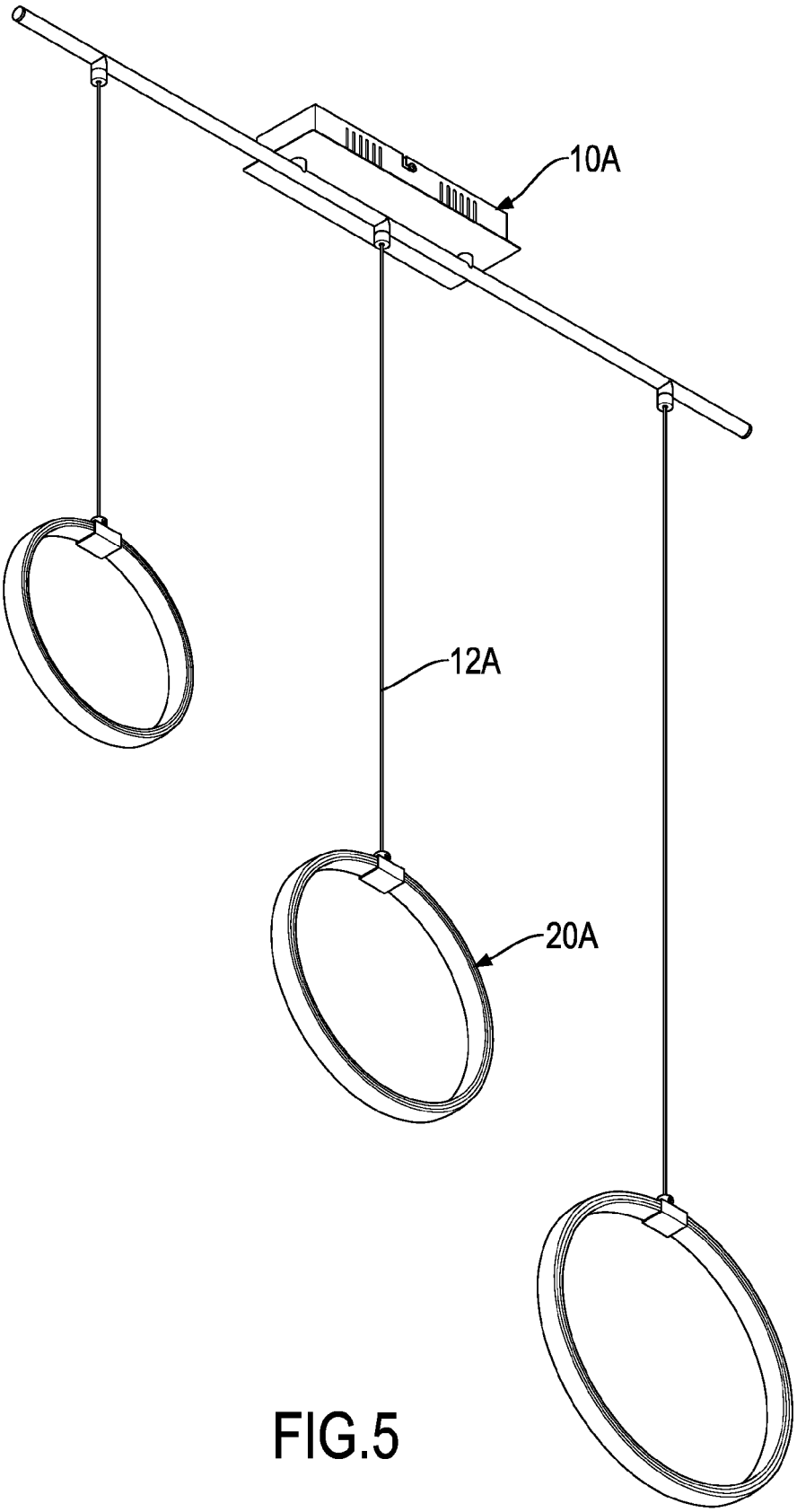

FIG.5

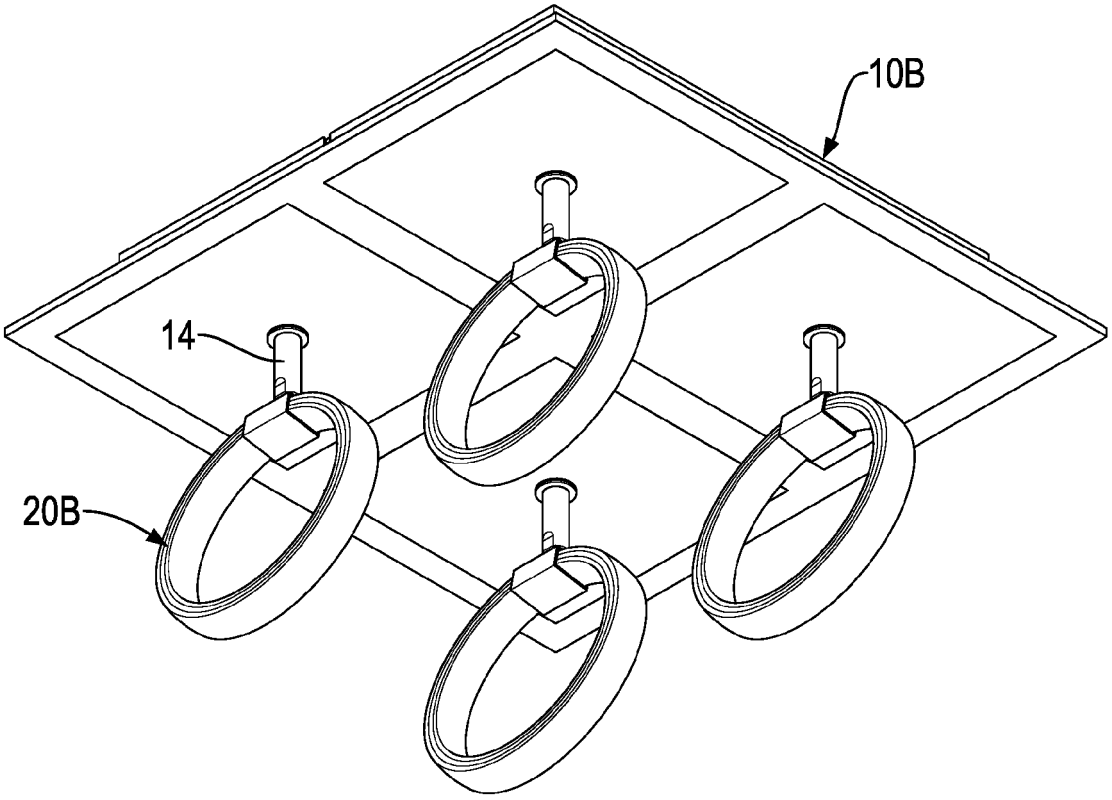

FIG.6

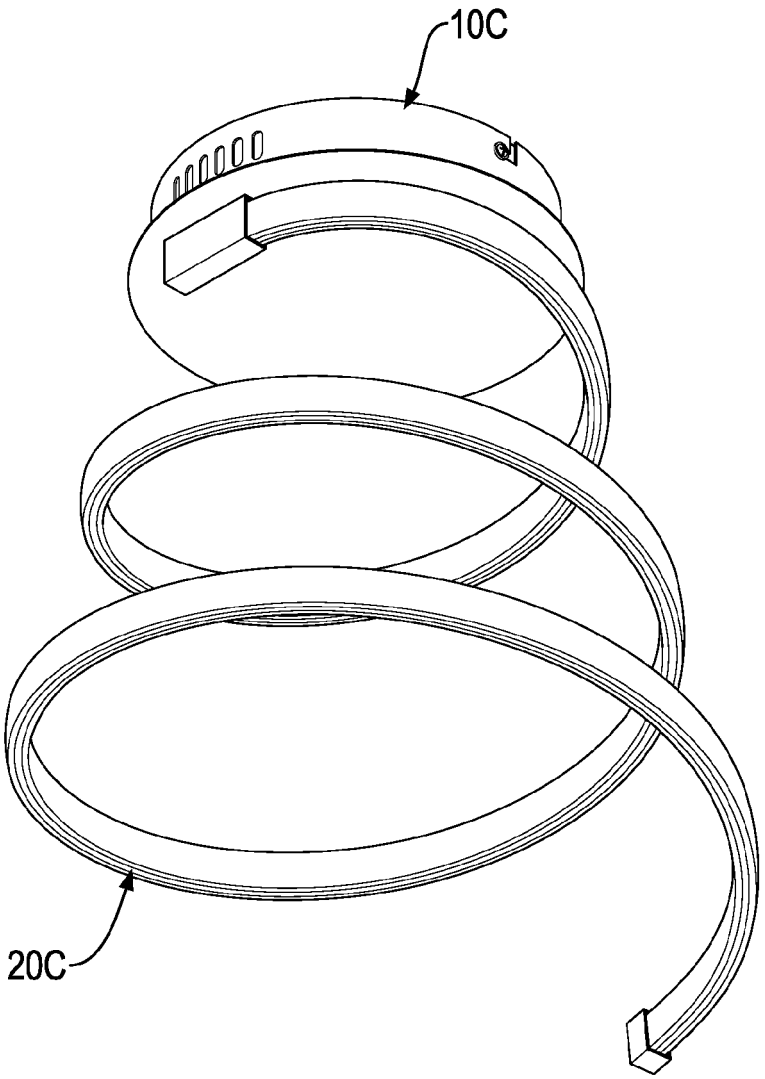

FIG.7

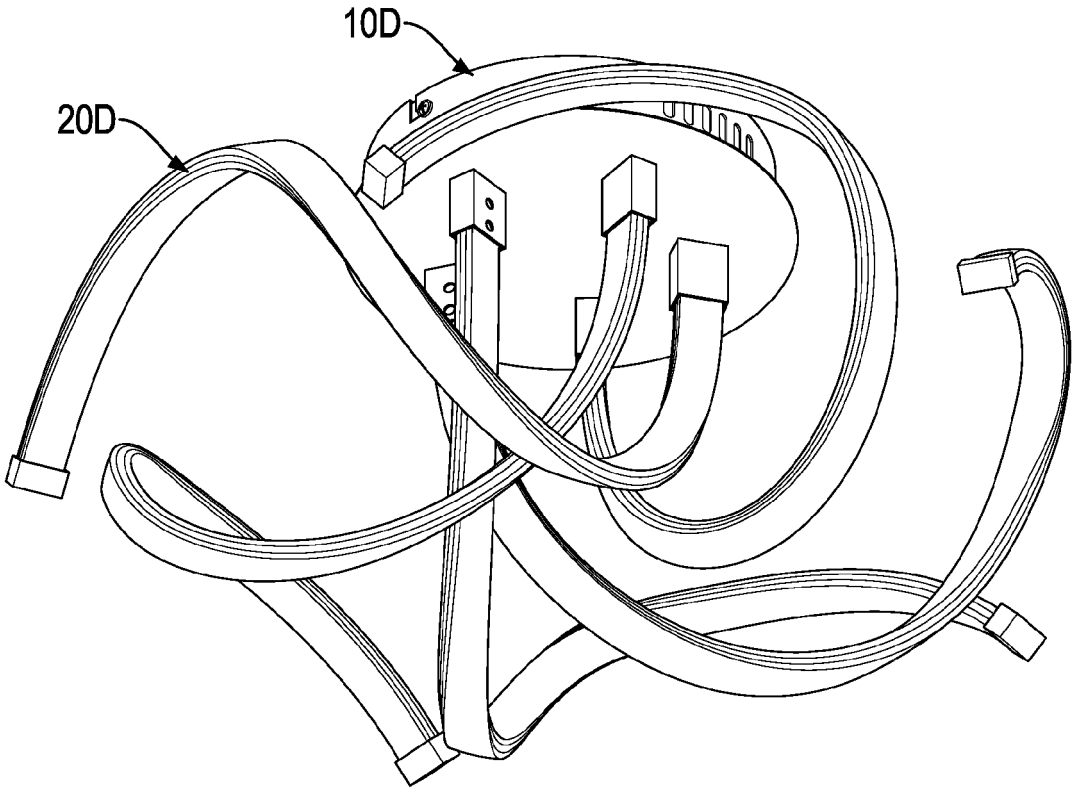

FIG.8

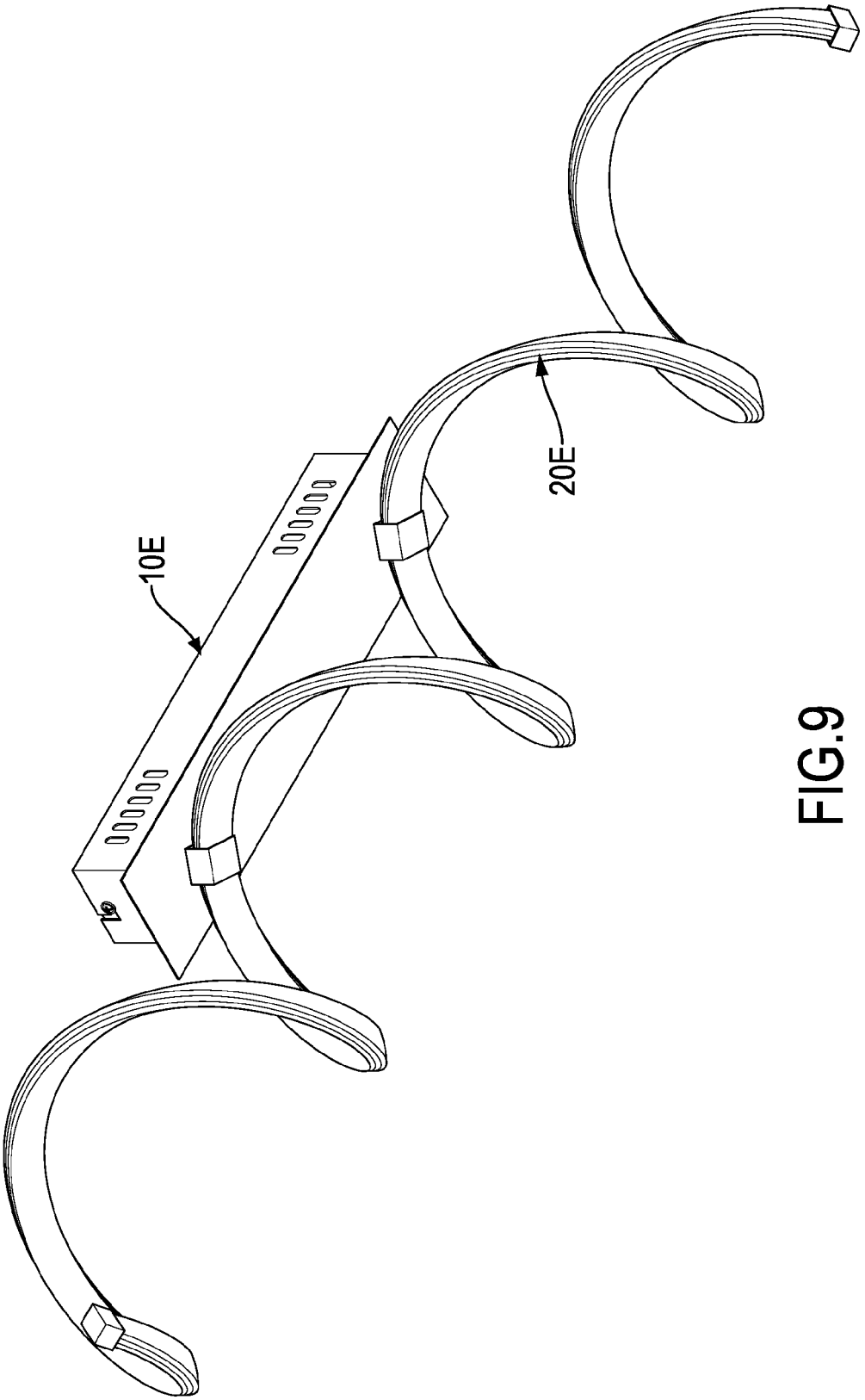

FIG.9

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EUROPEAN SEARCH REPORT

Application Number
EP 15 19 4304

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	EP 2 261 553 A1 (ILEDS GMBH [DE]) 15 December 2010 (2010-12-15) * figures 1-7 * * paragraph [0027] - paragraph [0073] *	1-5 6-11	INV. F21S8/06 F21V21/03 F21S2/00
Y	EP 2 615 365 A2 (FLOS SPA [IT]) 17 July 2013 (2013-07-17) * figure 1 * * paragraph [0001] - paragraph [0014] *	6-8	
Y	US 6 379 021 B1 (SHIEH WHITER [TW]) 30 April 2002 (2002-04-30) * figure 1 *	9,11	
Y	US 2013/135857 A1 (CHEN CHIA-CHIN [TW] ET AL) 30 May 2013 (2013-05-30) * figure 4 *	10	

TECHNICAL FIELDS SEARCHED (IPC)

F21S
F21V
F21Y

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	27 January 2016	Sacepe, Nicolas

CATEGORY OF CITED DOCUMENTS

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2261553 A1	15-12-2010	EP 2261553 A1	15-12-2010
		WO 2010142763 A1	16-12-2010
EP 2615365 A2	17-07-2013	NONE	
US 6379021 B1	30-04-2002	NONE	
US 2013135857 A1	30-05-2013	NONE	

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