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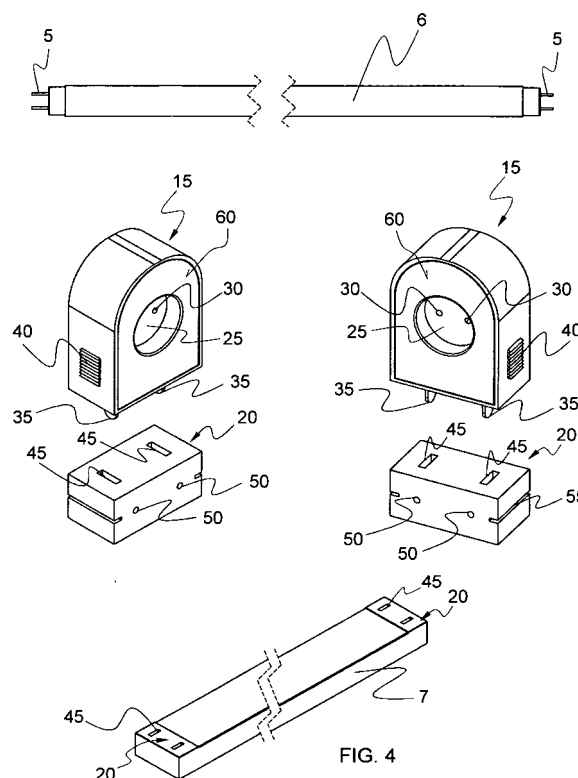
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(54) **Fluorescent lamp holder assembly**

(57) The invention discloses a fluorescent lamp holder assembly (10) comprising a lamp holder (15) and a socket (20) for receiving said lamp holder (15). The lamp holder (15) has a body which houses a pair of electrical terminals. The body includes a pair of openings (30) on one wall. The openings (30) located at a position that corresponds to the position of the electrical terminal such that each opening (30) leads to one respective terminal. The lamp holder (15) includes a pair of parallel spaced-apart legs (35) of which one end of each leg (35) is connected to terminal and the free end of each leg (35) protrudes from said body. The socket (20) has a pair of spaced-apart electrical terminals, each having an opening (45) capable of receiving one leg (35) of the lamp holder (15). The socket (20) includes a pair of insertion holes (50) for wire connection and a horizontal recess (55) on the external walls for coupling to the luminaire (7). The lamp holder (15) is coupled to the socket (20) by means of inserting a corresponding leg (35) of the lamp holder (15) to the corresponding terminal of the socket (20).



Description

Field of the invention

[0001] The present invention relates to electrical engineering, in particular to a lamp holder and more particularly to a tubular fluorescent lamp holder according to the preamble of claim 1.

State of the art

[0002] Fluorescent bulbs are widely known and used in our daily lives including in households and industrial plants. In general, fluorescent bulbs are available in various sizes and lengths, and usually in a bi-pin tubular form. The bulb has two ends and at each end, there is a pair of pins used to connect the bulb to an electrical source. Each pair of the pins on each end of the bulbs are aligned in the same direction and at the identical position wherein in installation, the pins are inserted into the slit and in between two electrical terminals of the lamp holder, allowing electrical current to pass through to the lamp.

[0003] One known lamp holder called "twisted type," as shown in Fig. 1, comprises a base and a body integrally formed thereto. Inside the body there is a pair of electrical terminals, usually made of copper plate or other electrically-conductive metals. The body includes a slit wherein the copper terminal extending from the base is naked and visible through the slit. During installation, the pins on one end of the bulb are inserted first, and then the other end follows the same way. The bulb is then twisted or rotated allowing the pins to come in contact with the copper plate terminal and allowing the current to pass through and light the lamp, while at the same time securing the bulb to the lamp holder. The disadvantages of the known lamp holder is that during installation of the bulb to the lamp holder it is essential to insert the pins of the bulb into the slit of the lamp holder precisely so that the pins on both ends of the bulbs are properly inserted into the slit at the same time. This proves to be rather difficult for some persons, especially when the pin and the slit are very small, and in particular when such installation is performed on a step ladder. Breaking of the pins or falling from a step ladder is not uncommon for non-skilled persons.

[0004] Another known type of a lamp holder is called a "spring type" as shown in Fig. 2 wherein such lamp holder includes a pair of spaced-apart electrical terminals connected to a wire through a pair of openings on the lower base of the body. A pair of through holes is prepared on the central region on one wall of the lamp holder wherein the pin of the bulbs may be inserted through this hole to engage with the terminal so that the current may pass through to the bulbs. The main characteristic of this type of lamp holder is that the central region of the wall where the through holes are located are separate from the larger wall and situated on a spring, enabling such

area to move when the spring is exerted. During installation of a bulb, the pins on one end of the bulb are inserted first, while pressing the spring inward, and the other end follows the same way. The exertion of the springs on each end of the bulb holds the bulb in place. Similarly with the "twisted type" lamp holder, the disadvantage is that the installation of the pins of the bulb to the small opening on the lamp holder has to be done precisely, and prove to be difficult for some persons. Breaking the bulb or pins is not uncommon, in particular when the person does not know the strength of the spring and presses the bulb against the spring too hard.

[0005] Therefore, it is an objective of the present invention to provide an alternative fluorescent lamp holder wherein installation of a bulb to a lamp holder can be done conveniently and with ease.

Disclosure of the invention

[0006] The objective of the present invention is to provide a fluorescent lamp holder assembly for installation of a bi-pin bulb, enabling the bulb to be installed with ease and little skill. The lamp holder, according to the present invention, may be installed with the existing bulb and luminaries.

[0007] This objective is achieved by means of a fluorescent lamp holder assembly indicated at the beginning, further comprising the features of the characterising portion of claim 1.

[0008] The fluorescent lamp holder assembly, according to the present invention, comprises a lamp holder and a socket assembled together.

[0009] The lamp holder includes a body which houses a pair of electrical terminals similar to the conventional plug. Each terminal is made of a pair of copper plates flexibly facing one another, having a distance for insertion of the pin of the bulb therebetween. The distance between the pair at the terminal corresponds to the distance of the pins at the end of the bulb. At one end of the lamp holder there is a pair of legs. Each leg is connected to the corresponding terminal.

[0010] The socket has a rectangular shape having its size corresponding to the size of the luminaire such that the socket can be assembled into the luminaire. The socket is provided with a pair of insertion inlets similar to the conventional wall socket. The insertion inlet is spaced apart with a distance corresponding to the distance of the legs of the lamp holder. The socket also includes two insertion holes for wire connection.

[0011] The socket is assembled to the luminaire, one on each end. The lamp holder is assembled to the bulb, one on each end of the bulb. The bulb with lamp holders assembled thereto is subsequently assembled to the socket, completing the assembly.

[0012] Further advantageous features of the invention are disclosed in the dependent claims.

Brief description of the drawings

[0013] To assist with understanding of the principles of the invention to be described herein, the description will be made in reference to the accompanying drawings of some preferred non-limiting embodiments of the invention in which:

Fig. 1 shows an embodiment of the conventional "twisted type" lamp holder;

Fig. 2 shows an embodiment of the conventional "spring type" lamp holder;

Fig. 3 shows an embodiment of the fluorescent lamp holder assembly according to the present invention wherein the assembly is already assembled to a bulb and a luminaire;

Fig. 4 shows a blown apart view of an embodiment of the fluorescent lamp holder assembly according to the present invention;

Fig. 5 shows a blown apart view of further embodiment of the fluorescent lamp holder assembly according to the present invention; and

Fig. 6 shows an embodiment of a fluorescent lamp holder assembly according to the invention wherein the lamp holder includes more than one docks with a pair of openings on each dock.

Detailed description of some embodiments of the invention

[0014] Fig. 3 and Fig. 4 show an embodiment of the fluorescent lamp holder assembly 10 according to the principle of the present invention. Preferably the lamp holder 15 and the socket 20 are produced by plastic injection molding. The lamp holder 15 and the socket 20 are two separate pieces which can be assembled together wherein:

[0015] The lamp holder 15 includes a body which houses at least one pair of electrical terminals similar to the conventional plug. Each terminal is made of a pair of copper plates flexibly facing one another, enabling the pins 5 of the bulb 6 to be inserted therebetween. The two terminals are spaced apart and the distance between the pair at the terminal corresponds to the distance of the pins 5 on the end of the bulb 6. The lamp holder 15 is prepared with at least one pair of openings 30 located on at least one of the walls 60 of the body, in particular the wall 60 which will be in contact with the pins 5 of the bulb 6. The said openings 30 are able to receive pins 5 at the end of the bulb 6. Accordingly, it is essential that the openings 30 are spaced apart and the distance between the two openings 30 correspond or, more specifically, are equal to the distance between the pair of pins 5 at the end of the bulb 6. In one embodiment of the lamp holder 15 as shown in Fig. 3, the central region of the wall 60, in particular, where both openings 30 are located, is positioned deep inside the body creating a circular shape dock 25 for the bulb's end. Preferably at least one

dock 25 is integrally formed on the said wall 60 through injection molding. Preferably, the dock 25 is prepared with a diameter larger than the diameter of the bulb 6, in particular, a tubular bulb so that the bulb's end can be inserted therethrough in order that the pins 5 on the bulb's end are able to engage with the openings 30. As mentioned above, the terminal is made of a pair of copper plates flexibly facing one another, enabling the pins 5 of the bulb 6 to be inserted therebetween. Preferably, the engagement of each copper plate should be made with sufficient force such that once the pin 5 of the bulb 6 is inserted between said copper plates, the pin 5 is securely held in position, securing the bulb 6 to the lamp holder 15. On one end of the body, in particular the end which will be in contact with the socket 20, a pair of spaced apart legs 35 protrude from the body. Preferably the legs 35 are prepared in the same manner as a conventional (attachment) male plug and may be a plate type or a pin type or any other shape whose shape and size corresponds to the shape and size of the insertion inlets 45 on the socket 20. One end of each leg 35 is connected to the copper plates of the terminal, leaving the free end to be inserted into the insertion inlet 45 of the socket 20. Preferably the wall of the body of the lamp holder 15, at least on the external sidewalls, is prepared with a surface texture or patterns 40 that enhance finger grip for better handling of the article while assembling and/or disassembling the assembly.

[0016] Fig. 5 shows another embodiment of the lamp holder 15. In this embodiment, the lamp holder 15 does not include a dock 25 as with the earlier described embodiment. In this embodiment, the central region of the wall 60, in particular, where the openings 30 are located level with the rest of other region of the wall surface.

[0017] Yet a further embodiment of the lamp holder 15 includes more than one pair of openings 30. As shown in Fig. 6, this embodiment of the lamp holder 15 includes a second pair of the openings 30 on the wall where the first of pair of openings 30 are located and where each pair of the opening (30) is located inside each dock (25). In an alternative embodiment, not shown in the figures, the lamp holder 15 includes a second set of pairs of the openings 30 on the wall opposite to the wall where the first set of pairs of openings 30 are located. These embodiments allow respectively a binary fixture, single file, or multidirectional fixture of the bulb 6 using a shared lamp holder 15.

[0018] In yet another embodiment of the lamp holder 15 (not shown), the lamp holder 15 includes an electronic ballast within its body.

[0019] The socket 20 forms part of the assembly according to the present invention and includes a body configured to correspond to the shape and size of the luminaire 7 such that the socket 20 can be fitted inside the luminaire 7. The socket 20 houses an electrical conductive metal plate and wiring as in the conventional socket. According to one embodiment of the socket 20, as shown in Fig. 4 and Fig. 5, the socket 20 has a rectangular shape

and is provided with a pair of insertion inlets 45 similar to the conventional wall socket. The said pair of insertion inlets 45 are spaced apart, separating each insertion inlet 45 with a distance corresponding to the distance of the legs 35 of the lamp holder 15. Preferably the shape and size of the opening of the insertion inlet 45 corresponds to the shape and size of the leg 35 of the lamp holder 15, enabling the leg 35 of the lamp holder 15 to be inserted into the insertion inlet 45 while maintaining a tight coupling of the lamp holder 15 to the socket 20. The socket 20 also includes two insertion holes 50 for wire connection with the electrical source. A recess 55 is prepared on the external wall of the socket 20 for coupling the socket 20 to the flange position inside the luminaire 7. Accordingly, the position of the recess 55 should correspond with the position of the flange inside the luminaire 7, whereby the flange of the luminaire is able to latch to the recess 55 of the socket 20.

[0020] Fig. 3 shows a complete assembly of the fluorescent lamp holder assembly 10 according to the present invention. For one bulb lighting fixture, at least a pair of the lamp holder assemblies 10 (including a pair of sockets 20) is needed. Preferably, a pair of the sockets 20 is first fitted into the luminaire 7 via a coupling mechanism of the recess 55 on the socket 20 and the flange of the luminaire 7, one on each end of the luminaire 7. A pair of lamp holders 15 is fitted to the bulb 6, in a similar manner, one on each end of the bulb 6, whereby the pins 5 of the bulb 6 are inserted into the openings 30 of the lamp holder 15. The bulb 6 having lamp holders 15 fitted on each end is subsequently fitted to the socket 20 by simply inserting the legs 35 of the lamp holder 15 into the insertion inlet 45 of the socket 20. As can now be appreciated, the fact that fluorescent lamp holder assembly 10 according to the invention is prepared with the lamp holder 15 and the socket 20, the fitting of bulb 6 into the lighting fixture can be done with ease.

[0021] When there is a need to replace the bulb 6, both the bulb 6 and the lamp holder 15 can be removed from the socket 20 as just easily. The new bulb 6 and the lamp holder 15 may be assembled together on the floor making it easier to insert the pins 5 of the bulb 6 into the opening 30 of the lamp holder 15, thus avoiding bending or breaking the pins 5. In addition, the fact that the bulb 6 and the lamp holder 15 can be assembled together on the floor, eliminates the need to perform the same on a step ladder as in a conventional method of installation of a bulb to a lamp holder. The present invention helps to reduce injuries associated with falling from the step ladder while trying to insert the pins 5 on the end of the bulb 6 to the openings 30 of the lamp holder 15, which is more difficult than performing the same on the floor, in particular for non-electricians, as the pins 5 and the openings 30 on the lamp holder 15 are quite small. With the present invention, the user can pre-assemble the bulb 6 to the lamp holder 15 and the socket 20 to the luminaire 7 and simply inserting the legs 35 of the lamp holder into the socket 20. It is just as simple as plugging in general electrical

devices.

Claims

1. Fluorescent lamp holder assembly (10) comprising:

- a lamp holder (15) having a body which houses at least one pair of electrical terminals, the said body includes at least one pair of openings (30) on at least one wall, the said openings (30) located at a position corresponding to the position of the electrical terminals such that each opening (30) leads to one respective terminal; the said lamp holder (15) includes at least one pair of parallel spaced-apart legs (35) of which one end of each leg (35) is connected to the terminal and the free end of each leg (35) protrudes from the said body;
- a socket (20) having at least one pair of spaced-apart electrical terminals, each defining an insertion inlet (45) capable of receiving one leg (35) of the lamp holder (15); said socket (20) includes at least one pair of insertion holes (50) for wire connection; the said socket (20) includes a horizontal recess (55) on the external walls;

wherein the distance between the said pair of legs (35) of the lamp holder (15) corresponds to the distance between the said pair of terminals on the socket (20) such that the lamp holder (15) is coupled to the socket (20) by means of inserting a corresponding leg (35) of the lamp holder (15) to the corresponding terminal of the socket (20).

2. Fluorescent lamp holder assembly (10) according to claim 1, wherein the wall (60) of the lamp holder body where the openings (30) are located is flat and level with the rest of the wall surface.
3. Fluorescent lamp holder assembly (10) according to claim 1, wherein the wall (60) of the lamp holder body includes at least one dock (25) integrally formed on the said wall (60); and wherein a pair of openings (30) is located inside the said dock (25); said docks (25) capable of receiving end of a bulb.
4. Fluorescent lamp holder assembly (10) according to claim 3, wherein the said dock (25) has a tubular shape having its diameter greater than a diameter of a bulb (6).
5. Fluorescent lamp holder assembly (10) according to any of the preceding claims, wherein the legs (35) of the lamp holder body is a blade type and/or a pin type.
6. Fluorescent lamp holder assembly (10) according to

any of the preceding claims, wherein the terminals of the socket (20) are spaced-apart with a distance corresponding to the distance between each leg (35) of the lamp holder (15); and wherein the shape and size of the insertion inlet (45) of the terminal of the socket (20) corresponds to the shape and size of the legs (35) of the lamp holder (15) such that a secure coupling of the lamp holder (15) to the socket (20) is achieved.

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7. Fluorescent lamp holder assembly (10) according to any of the preceding claims, wherein the lamp holder (15) includes a grip enhancing surface textures or patterns (40) on the external surface of the body.

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8. Fluorescent lamp holder assembly (10) according to any of the preceding claims, wherein the socket (20) further includes electronic ballast.

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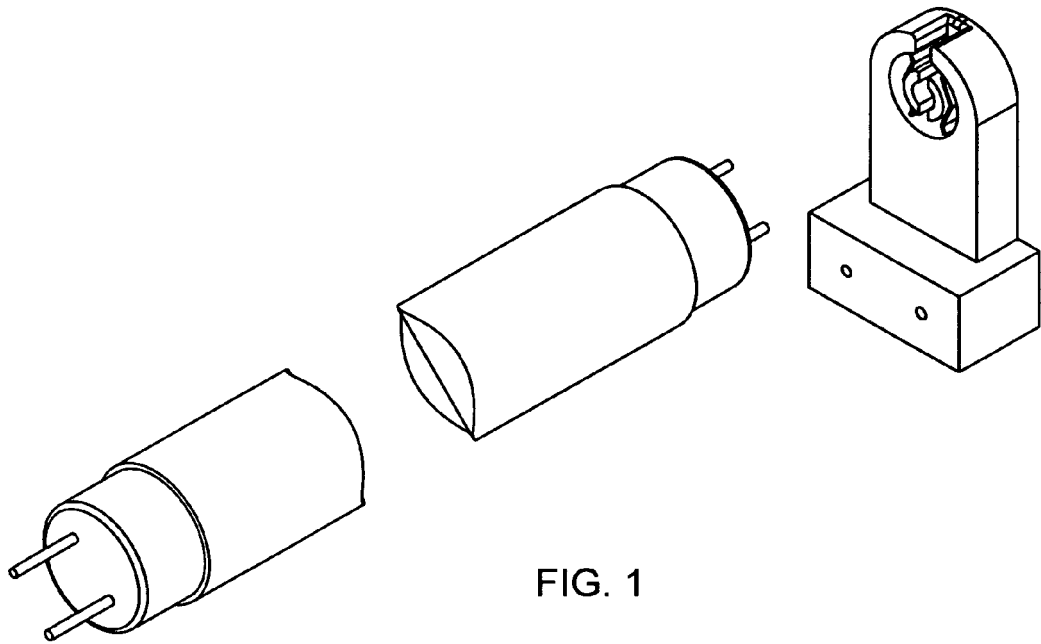


FIG. 1

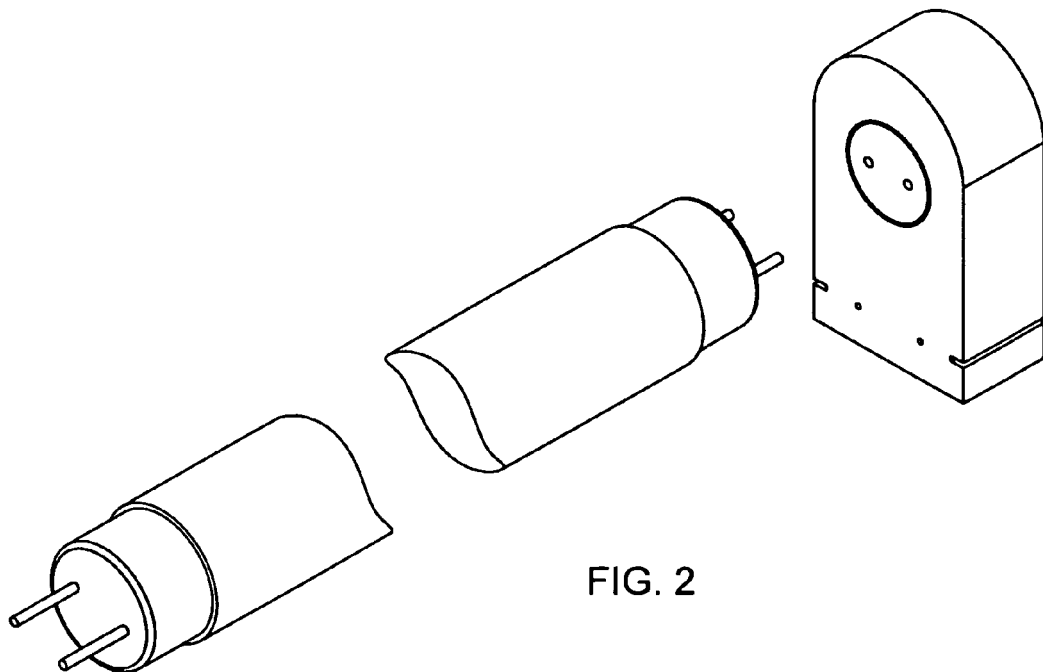


FIG. 2

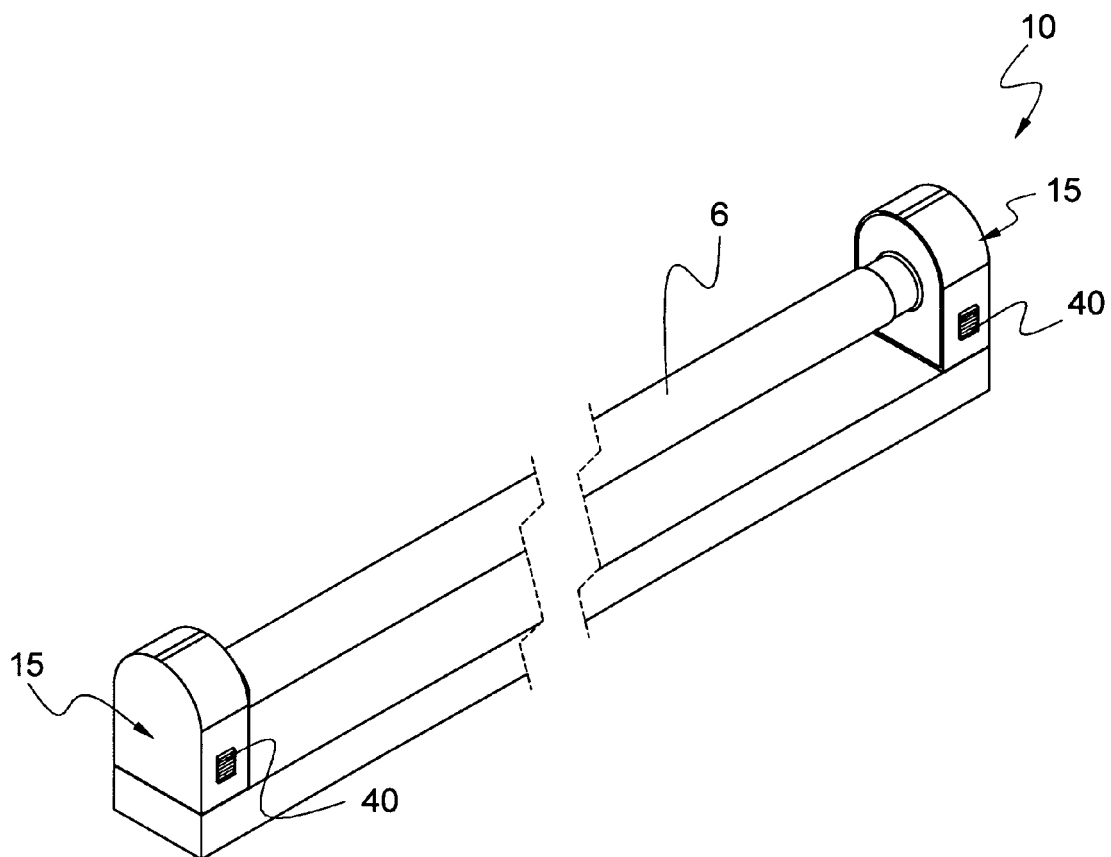


FIG. 3

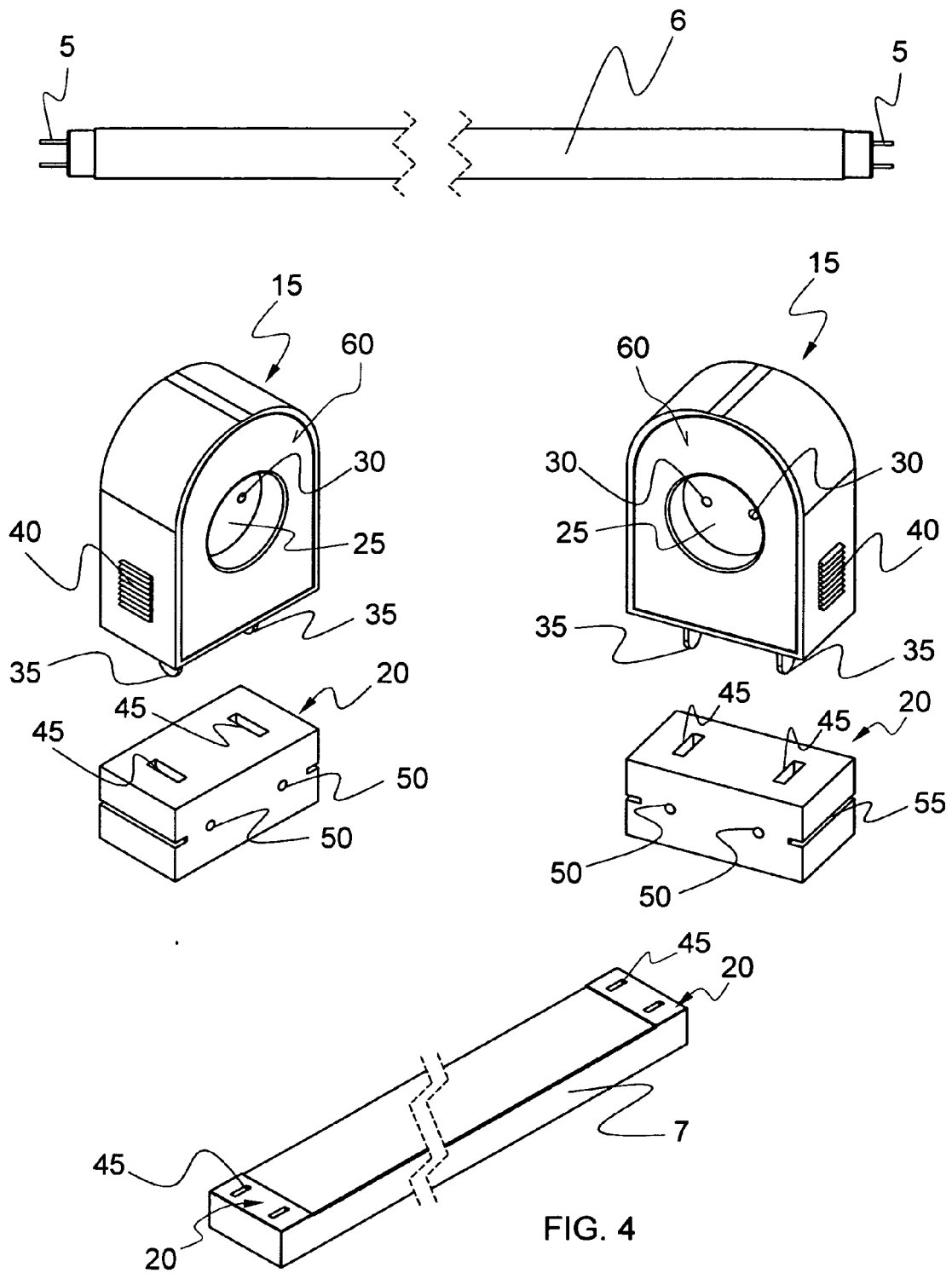
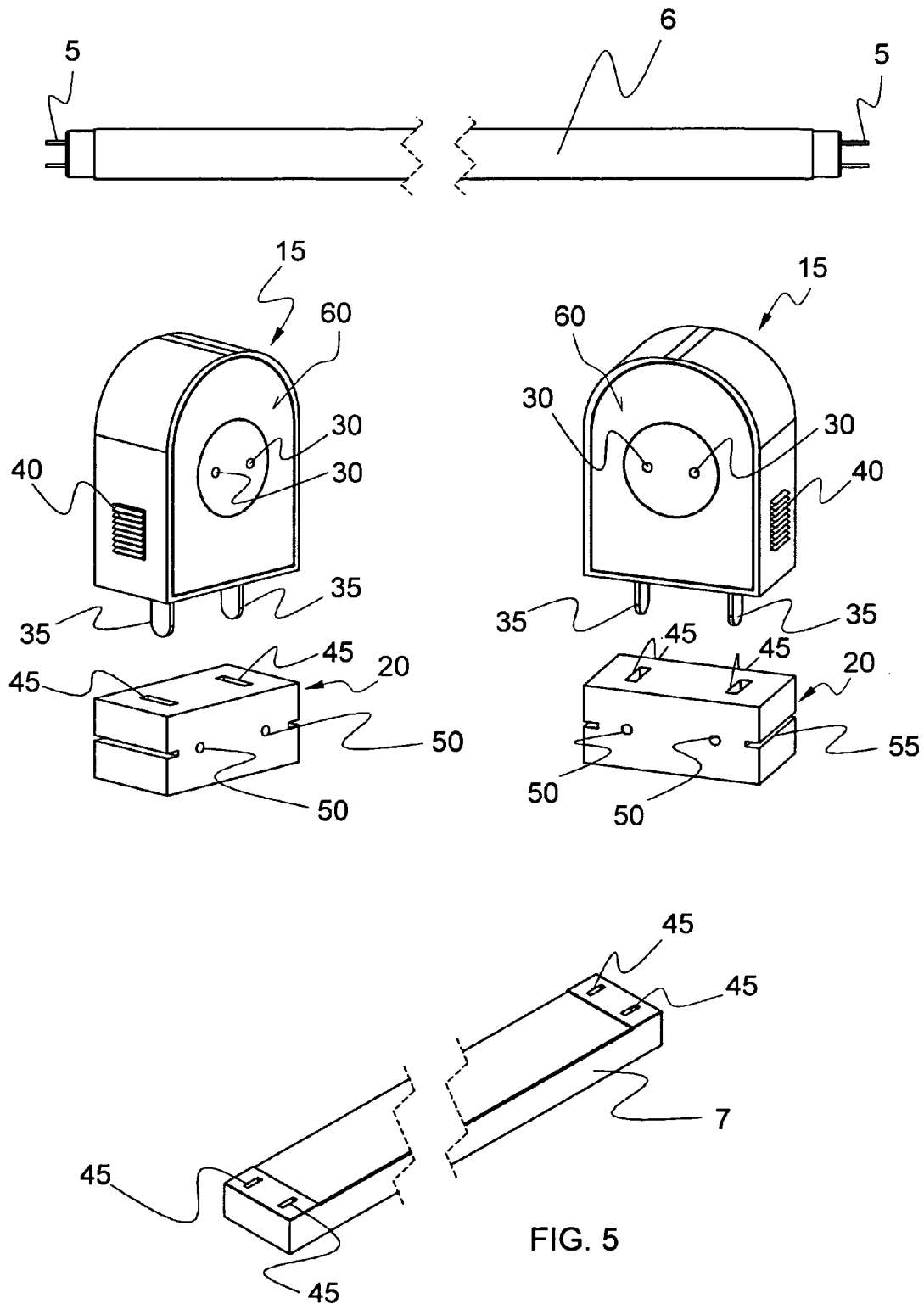


FIG. 4



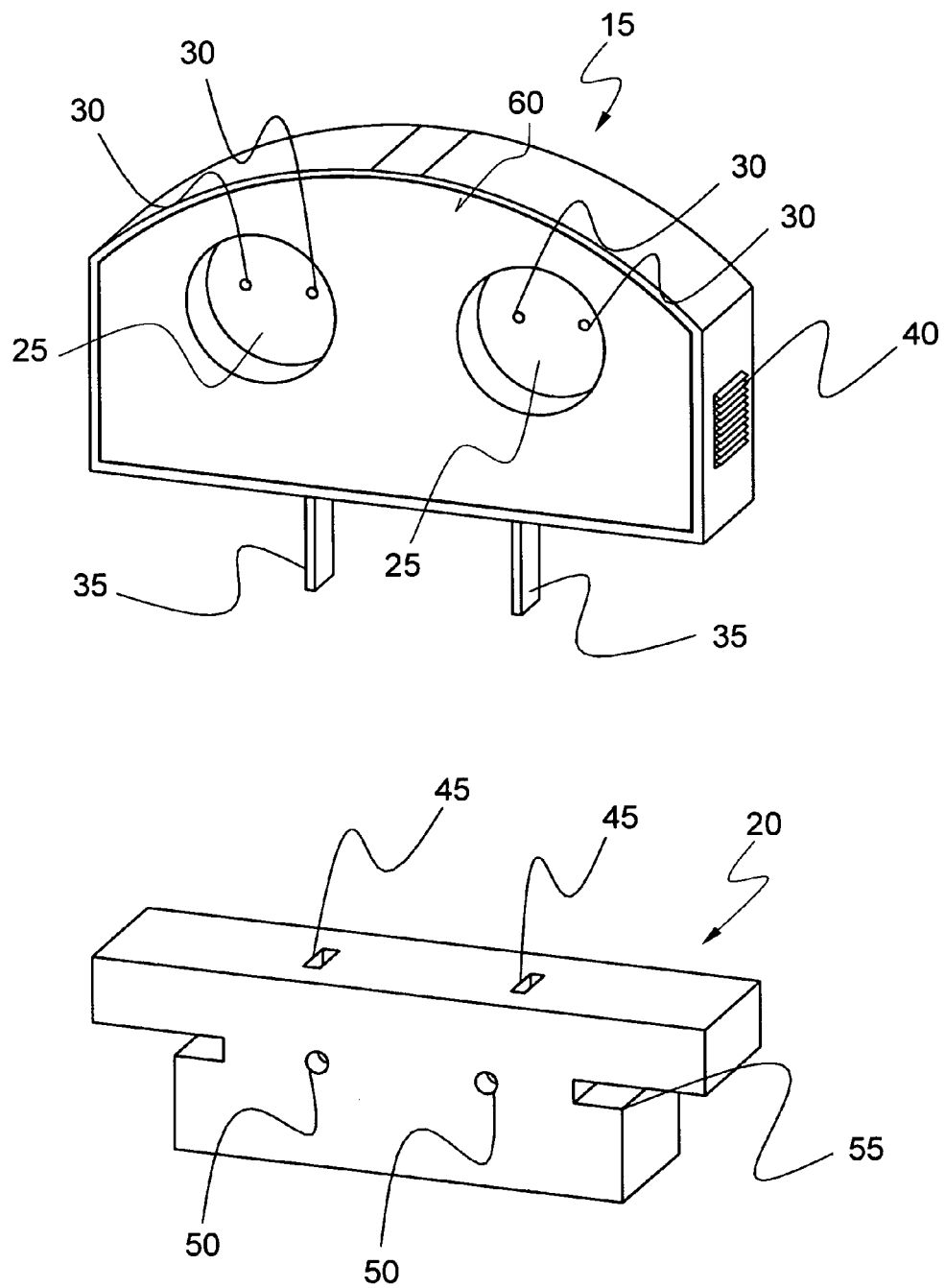


FIG. 6



EUROPEAN SEARCH REPORT

Application Number
EP 09 00 8621

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	US 2 321 851 A (POPE LOUIS A) 15 June 1943 (1943-06-15) * the whole document *	1,2,5,6,8	INV. H01R33/08 H01R33/94
A	GB 630 143 A (GEORGE RIGBY MASON; VICKERS ELECTRICAL CO LTD) 6 October 1949 (1949-10-06) * page 3, column 1, lines 44-65; figures 1-3 *	1,3-6	
A	US 2 449 736 A (SAMUEL BOGEN) 21 September 1948 (1948-09-21) * claim 1; figures 4-6 *	1,3-6	
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			TECHNICAL FIELDS SEARCHED (IPC)
			H01R
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		20 October 2009	Vautrin, Florent
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 00 8621

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The members are as contained in the European Patent Office EDP file on
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20-10-2009

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