



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
17.03.2010 Bulletin 2010/11

(51) Int Cl.:
F21V 15/01^(2006.01) F21Y 103/00^(2006.01)

(21) Application number: **09425355.6**

(22) Date of filing: **16.09.2009**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO SE SI SK SM TR**
Designated Extension States:
AL BA RS

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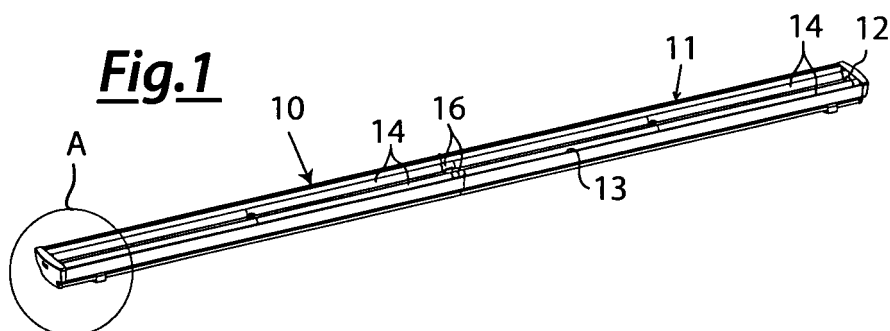
(30) Priority: **16.09.2008 IT VI20080216**

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(54) **A compact lighting equipment**

(57) A compact lighting equipment, especially used for illuminating large commercial and/or industrial areas, comprising a structure, made of rolled and painted steel, which is suspended from ceiling by means of steel cables and proper fastening brackets (15) present between the

structure and cables; according to the invention, the structure includes at least two bodies (10, 11), joined together by a hinge system (16), which allows, in a closed position of the equipment, to obtain a product length substantially equal to half the length of the products currently on the market.



Description

[0001] The present invention relates to compact lighting equipment.

[0002] Lamps or apparatus for the direct lighting are widely used for artificial lighting of civil and industrial use buildings, both as a main source of light, and as source of emergency or security.

[0003] Among the most widespread lighting apparatus of large areas of buildings, especially intended for an industrial use, there is a kind of product consisting of a body made of rolled and painted steel, which is suspended from ceiling through steel cables and proper fastening brackets present between the body and cables.

[0004] The body is typically built internally in order to house, at the bottom, the light sources (typically consisting of fluorescent tubes) and, at the top, the feeder of the light sources, the electrical wiring of the apparatus and the power terminals.

[0005] Given the type of plants in which these apparatus are usually used, the top of the apparatus is often used as housing for the electrical wiring of other utilities, such as auxiliary lights, wired wireless, etc.; therefore, the body of the apparatus acts also as conduit for the electrical communication.

[0006] Application fields of these electrical appliances are typically large commercial areas (supermarkets, wholesale markets, etc.) and large industrial areas (assembly lines, production departments, etc.) and, in order to facilitate and hasten the implementation of a lighting plant with equipment of this type, the external structures are usually built with an overall length equal to the sum of the lengths of two light sources. Since the light sources used usually consist of two fluorescent tubes (each having a power of 58 W), placed in series, one following the other, or two pairs of fluorescent tubes (each tube having a power of 58 W), placed in series, the total linear lengths reached are in the order of 3 meters.

[0007] According to this typical installation, the lighting apparatus are also mechanically connected each other by means of appropriate linear connection or L, T or X connection brackets.

[0008] Similarly, the electrical connection is achieved using these pre-wired connectors arranged at the ends of the product.

[0009] In respect of these lighting apparatus of traditional type, a particular felt problem is that one related to the sizes and the resulting overall dimensions which present such supporting structures of the light sources.

[0010] Indeed, if, from one hand, having so long apparatus allows the installer to reduce the number of apparatus to be assembled and installed, on the other hand, this forces the entire supply chain, from the manufacturer to the installer, passing through the wholesalers or dealers, to handle extremely cumbersome lighting apparatus, which lie outside the standards currently used in terms of sizes of the warehouses, sizes of the pallets for handling and/or sizes of transport means normally used by

an electrician.

[0011] The purpose of the present invention is, therefore, to eliminate the complained drawbacks, creating a compact lighting equipment which allows to save storage spaces.

[0012] Another purpose of the present invention is to achieve a compact lighting equipment which allows to achieve a substantial reduction of storage facilities, materials, intended as raw materials and packaging, as well as transport and storage costs.

[0013] Another purpose of the invention is to provide a compact lighting equipment which allows to achieve good performances, in connection with an optimization of the production processes.

[0014] Further purpose of the invention is to achieve a compact lighting equipment which has an excellent quality/price ratio and presents ease of installation and maintenance.

[0015] These and other purposes, according to the present invention, are achieved by implementing a compact lighting equipment, according to the enclosed claim 1.

[0016] Other specific and detailed technical features are contained in the dependent claims.

[0017] Advantageously, the lighting equipment according to the invention comprises two main bodies, joined together by a hinge system, which allows, in closed position, to obtain a length of the overall structure equal to half the structures typically available on the market.

[0018] Such a positioning allows an easy handling of the equipment by a single person, something not possible with the existing lighting equipment, allows the storage on pallets and allows the road haulage with small vans.

[0019] In this way, it is sufficient that the electrician, upon receipt of the equipment, removes the two bodies which make up the structure, rotating them of 180° around the hinge fulcrum.

[0020] Upon reaching the final position which perfectly aligns the two bodies, a snap, double spring, security system assures the maintenance of the position.

[0021] Additional features and advantages of a compact lighting equipment, according to the present invention, will result greatly evident from the following description, referring to an illustrative and preferred, but not limited to, embodiment and from the attached drawings in which:

- figure 1 is a perspective view from the top of the compact lighting equipment, according to the present invention;
- figure 2 is an enlarged view of the detail indicated with A in figure 1;
- figure 3 is a first side view of the compact lighting equipment, according to the present invention;
- figure 4 is a partial plan view from the top of the compact lighting equipment, according to the invention;
- figure 5 is a second partial side view of the compact lighting equipment, according to the invention;

- figure 6 is a partial plan view from the bottom of the compact lighting equipment, according to the invention;
- figures 7, 8 and 9 show as much perspective views from the bottom of construction details of the compact lighting equipment, according to the present invention;
- figure 10 is a perspective view from the bottom of the compact lighting equipment, in open version and installable on ceiling, according to the invention;
- figure 11 is a perspective view from the bottom of the compact lighting equipment, in closed position, according to the invention;
- figure 12 is a perspective view from the bottom of the compact lighting equipment, in closed version for the transport, according to the present invention.

[0022] With reference to the mentioned figures, the compact lighting equipment, object of the present invention, mainly comprises a first body 10 and a second body 11, made of rolled and painted steel and joined together at a central symmetry axis K, at the ends of which two heads 12 are fixed and over which, at a seat or central compartment 13, light sources are arranged, preferably consisting of one or two pairs of fluorescent tubes 14, over which a reflector is possibly located, for example of the grid type, for a more effective diffusion of light to the outside.

[0023] The lighting equipment so constructed can be advantageously used in large commercial and/or industrial areas and is mounted typically suspended from the ceiling, by means of steel cables and proper fastening brackets 15, placed between each body 10, 11 and the cables.

[0024] In particular, according to the invention, the bodies 10, 11 are joined together, at the symmetry axis K of the lighting equipment, through one or more hinges 16 or a similar joint system, in order to fold them one on the other.

[0025] More specifically, as shown in detail in the sequence of figures 10, 11 and 12, the hinge 16 allows to fold in closed position (figure 12) the lighting equipment, obtaining a length of the product equal to about half the length of the lighting equipment of this type currently on the market.

[0026] The folded position of the bodies 10 and 11 one on the other allows an easy handling of the equipment, even by a single person, the storage on pallets and the comfortable road haulage, also by means of small vans.

[0027] After storing and transporting, upon receipt of the equipment, for the electrician it is sufficient to open the bodies 10, 11, removing and rotating them of 180° one relative to the other, around the fulcrum 16A of the hinge 16 (as shown in detail in figure 11, where the lighting equipment is shown in the opening stage).

[0028] Then, upon reaching the final position, which perfectly aligns the two bodies 10, 11 (position shown in detail in the attached figure 12, where the lighting equip-

ment is shown completely open), it is provided the use of a snap, double spring, security system in order to assure the maintenance of the position.

[0029] At this point, the lighting equipment is ready to be installed. Therefore, it is clear that the overall dimensions of the lighting equipment, when the product is packaged, that is during handling and storage, results limited to half the sizes of a traditional lighting equipment for large commercial and/or industrial areas, while for the installation of the lighting equipment is sufficient to rotate in opening one of the two bodies 10, 11, so that the equipment presents the traditional standard sizes and can be installed on ceiling according to prefixed modes.

[0030] The use of the hinge 16 between the bodies 10 and 11 allows thus to minimize the overall dimensions of the equipment.

[0031] Finally, while keeping the photometric performances of the equipment according to the invention substantially equal, as average lighting, to those ones of the traditional equipment, the lower overall dimensions allows to save storage spaces and, consequently, contain a substantially greater number of packaging (stackable) on a pallet and/or within a container of specified volume.

[0032] Thus, it has been noted that a compact design of the lighting equipment according to the invention leads to reduced sizes, compared to the traditional equipment, of the finished product and packaged product; it is also obtained a significant saving, compared to the traditional equipment of the same functionality, in the production of the envelope and a high simplification of the assembly.

[0033] From the description made the technical features of the compact lighting equipment, according to the present invention, as well as the resulting advantages, are clear.

[0034] In particular, among them we mention the following:

- containment of overall dimensions;
- reduction of warehouses;
- reduction in materials (raw materials and packaging);
- transport and storage costs reduction;
- innovative design;
- performances equal to the market references;
- ease of installation and maintenance;
- excellent quality/price ratio;
- production processes optimization.

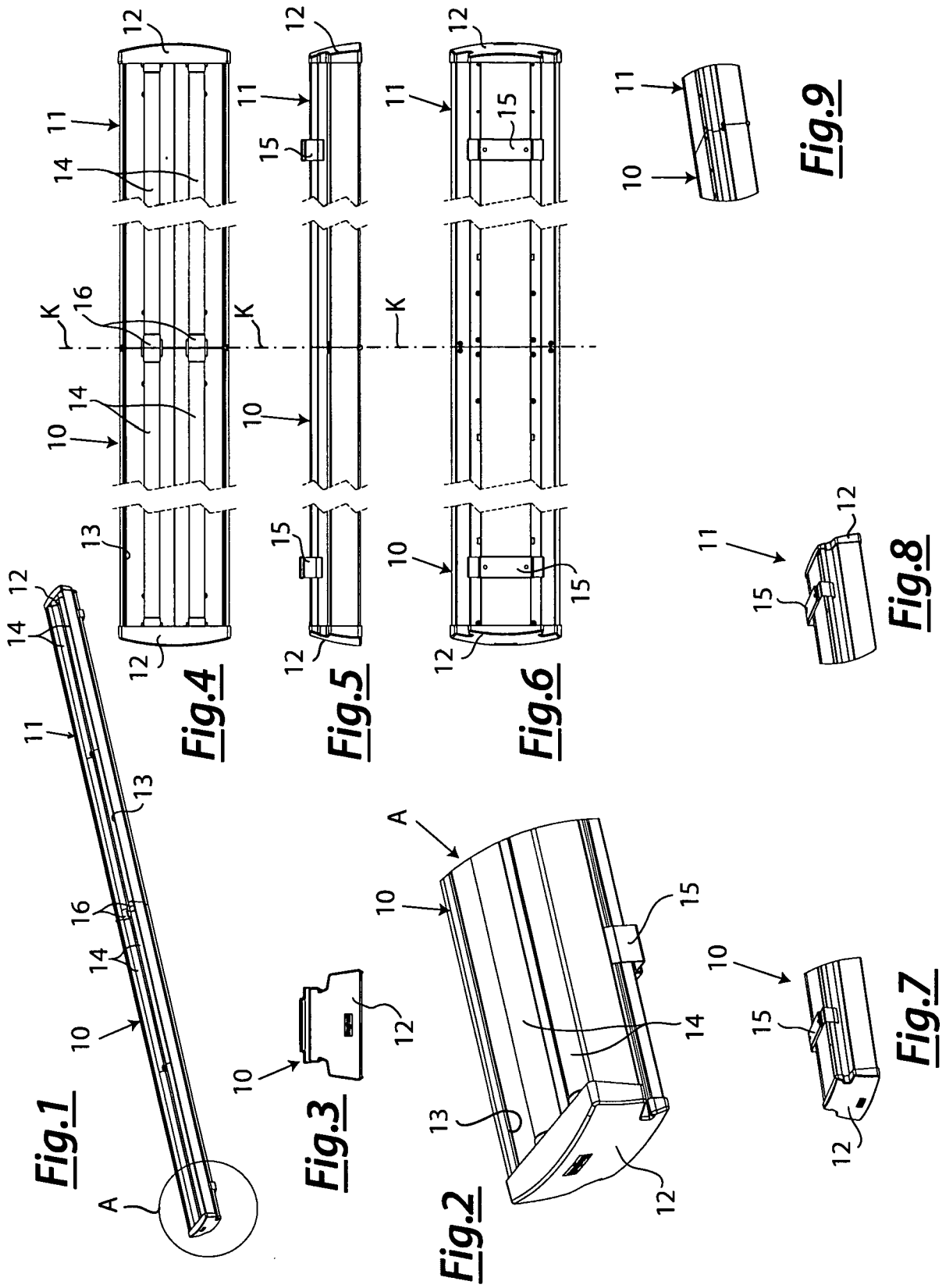
[0035] It is, finally, clear that many other variations can be made to the lighting equipment in question, without for this reason going out of the novelty principles inherent to the inventive idea, as it is clear that, in the practical implementation of the invention, materials, shapes and sizes of the illustrated details may be any, depending on the requirements, and the same may be replaced with others technically equivalent.

Claims

1. A compact lighting equipment used for lighting commercial and/or industrial large areas comprising a containment structure of at least one light source (14), of power supply devices and of electrical wirings, said containment structure being hanging from the ceiling of the commercial and/or industrial area by means of cables and suitable mounting brackets (15) which are applied to the containment and which are placed between said containment structure and said cables, **characterized in that** said containment structure includes at least two bodies (10, 11) which are joined together through by at least one articulated joint or hinge (16), so that said two bodies (10, 11) can rotate around an axis (K). 5 10 15
2. Lighting equipment according to claim 1, **characterized in that** said two bodies (10, 11) have equal lengths and **in that** said axis (K) is a central axis of symmetry of the containment structure. 20
3. Lighting equipment according to claim 1, **characterized in that** each of said bodies (10, 11) has at least one opening (13), in which one or more fluorescent tubes (14) are housed. 25
4. Lighting equipment according to claim 1, **characterized in that** each of said bodies (10, 11) has at least one head (12) which contains pre-wired electrical connectors. 30
5. Lighting equipment according to claim 1, **characterized in that** said bodies (10, 11) are folded one over the other, in a closed position of said lighting equipment. 35
6. Lighting equipment according to claim 1, **characterized in that** said bodies (10, 11) are movable and rotatable of 180°, one with respect the other, around a pivot (16A) of said articulated joint or hinge (16). 40
7. Lighting equipment according to claim 1, **characterized in that** an elastic and/or triggering closure system of the equipment is provided, once said bodies (10, 11) are lined up one after the other. 45

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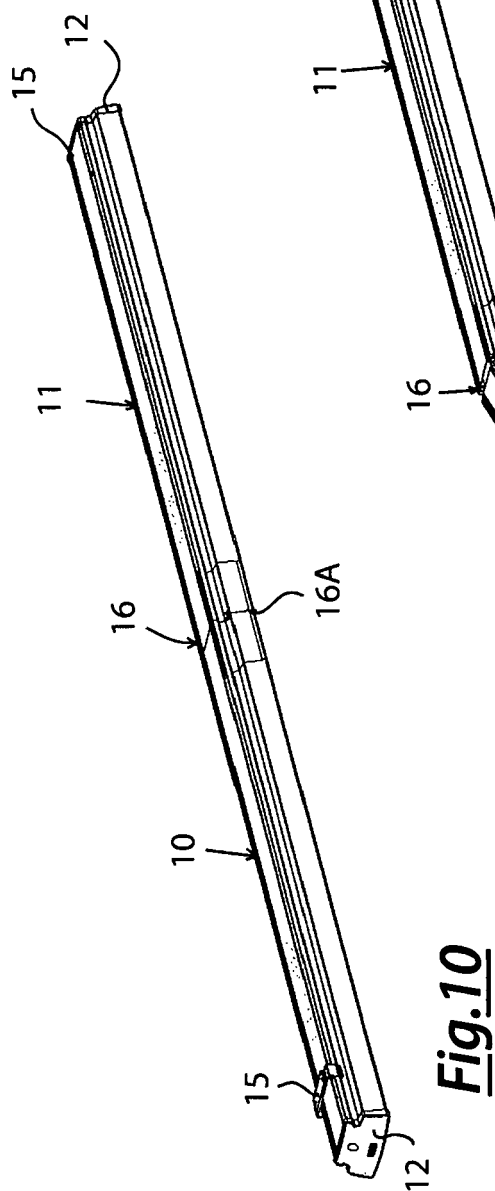


Fig. 10

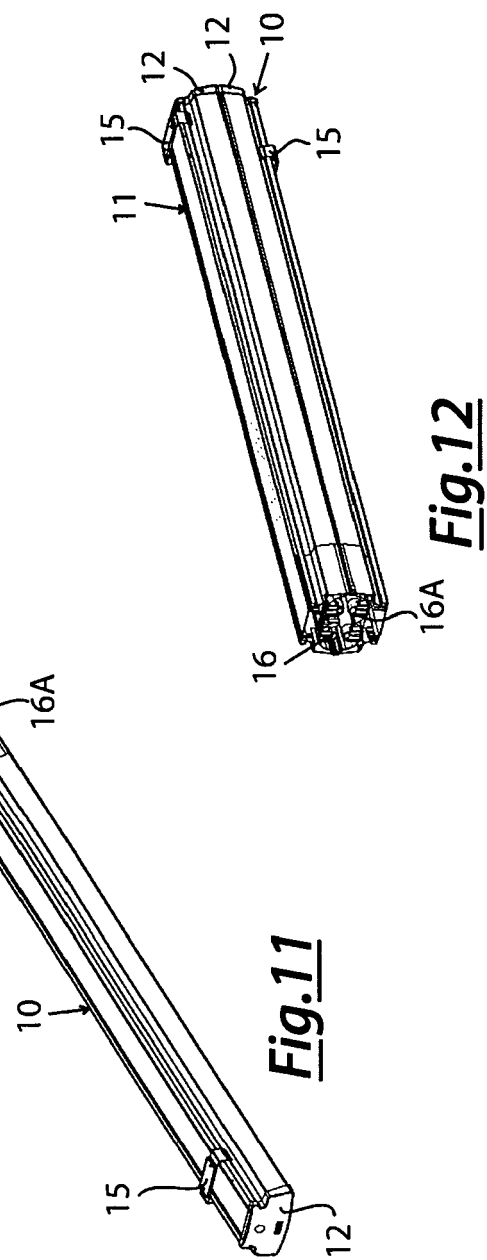


Fig. 11

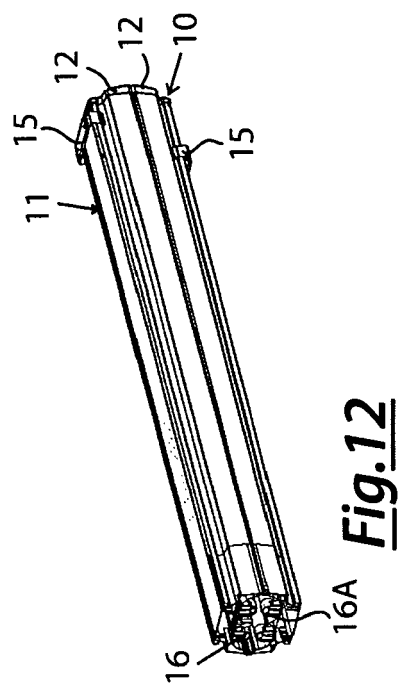


Fig. 12