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(54) Lighting appliance with reduced space requirement

(57) A lighting appliance with a reduced space requirement comprising a shaped body (10), delimited by two headpieces (11), in which the light sources are contained, consisting, in particular, of fluorescent lamps, and

above which a grid reflector (13) is positioned for an adequate light diffusion; the body (10) of the lighting appliance is equipped with two foldable flaps (14) which allow the overall space requirement of the appliance to be reduced.

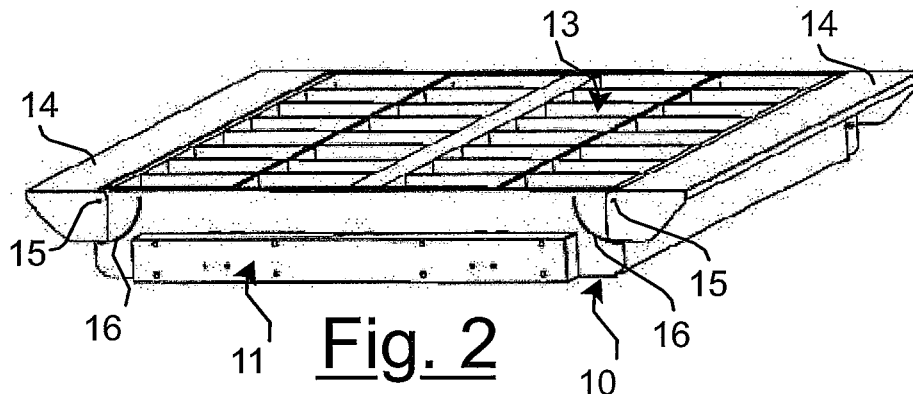


Fig. 2

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Description

[0001] The present invention relates to a lighting appliance with a reduced encumbrance.

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

[0003] These appliances generally comprise a hollow body in which a fluorescent tube can be housed, connected to terminals which allow the power supply.

[0004] The body can be closed by means of grid reflectors or transparent protection shields, which are connectable and can be dismantled to allow constant access to the tube and terminals.

[0005] A particularly strongly-felt problem, especially on the part of wholesalers of electric material, relating to lighting appliances of the traditional type, concerns the overall encumbrance of the supporting structures of light sources.

[0006] The construction of lighting appliances of the known type do not in fact allow an effective reduction in the encumbrance; for example, in the case of ceiling lighting appliances which can be installed, in particular, in offices and commercial buildings in general, the encumbrance dimension of the structure of 60 x 60 cm is a kind of standard associated with the dimensions of a particular type of paneling for false ceilings.

[0007] An objective of the present invention is therefore to eliminate the reported drawbacks, by providing a lighting appliance with a reduced encumbrance, which allows the saving of storage space.

[0008] A further objective of the present invention is to provide a lighting appliance with a reduced encumbrance, which allows a substantial reduction in warehouses, materials referring to raw materials and packaging, as well as in transport and storage costs.

[0009] Another objective of the invention is to provide a lighting appliance with a reduced encumbrance, which allows good performances to be obtained, as a result of optimized production processes.

[0010] An additional objective of the invention is to provide a lighting appliance with a reduced encumbrance for industrial environments, which has an excellent quality/price ratio and which can be easily installed and maintained.

[0011] These and other objectives, according to the present invention, are achieved by providing a lighting appliance with a reduced encumbrance, according to the enclosed claim 1.

[0012] The characteristics and advantages of a lighting appliance with a reduced encumbrance, according to the invention, will appear more evident from the following illustrative and non-limiting description, referring to a preferred embodiment, and to the enclosed drawings, in which:

- figure 1 is a perspective view of the lighting appliance

with a reduced encumbrance, according to the present invention, in an embodied packaging version;

- figure 2 is a perspective view of the lighting appliance with a reduced encumbrance, according to the present invention, in an embodied installation version;
- figure 3 is a side view of the lighting appliance, according to the present invention, as per figure 1;
- figure 4 is a side view of the lighting appliance, according to the present invention, as per figure 2;
- figure 5 is a partial exploded view of the lighting appliance with a reduced encumbrance, according to the present invention.

[0013] With reference to the above figures, the lighting appliance with a reduced encumbrance, object of the present invention, comprises a body 10, generically U-shaped, at whose ends two headpieces 11 are fixed, and above which a grid reflector 13 is positioned, in correspondence with the central housing 12, for a suitable external light diffusion.

[0014] The appliance thus constructed can be advantageously used inside certain panels forming the false ceilings of civil and/or industrial buildings.

[0015] In particular, according to the invention, at the upper ends of the arms of the U, the body 10 has two moveable flaps 14, which, under rest conditions, i.e. during transportation and storage of the lighting appliance, can be folded along the profile of the grid reflector 13; under operating conditions, on the contrary, i.e. when the appliance has been installed, the flaps 14 can be extended until they reach standard dimensions of the panel used.

[0016] This specific functionality is illustrated in detail in figures 1-2 and, even more clearly, in figures 3-4, which show that the flaps 14 have their fulcrum in 15 on the body 10 of the lighting appliance and can thus be extended and folded, thanks to the movement of the outer profile of the flap 14, which can move along the guide 16, extending and remaining fixed in a horizontal position, thanks to a stop, and subsequently folded again inside the profile of the body 10, in a blocked position, thanks to the presence of the counterpart 17 at the side of the body 10.

[0017] The overall encumbrance of the lighting appliance, when the product is packaged, i.e. during moving and storage, is therefore limited to the dimensions of the grid reflector 13, as the flaps 14 are folded onto the body 10 (as illustrated in figures 1 to 3); for the installation of the product, on the other hand, the flaps 14 are extended outside the grid reflector 13 (figures 2 and 4), so that the appliance has the standard dimension of panels for false ceilings and can therefore be installed in the pre-established housing of the ceiling.

[0018] The innovative design of the shaped body 10 consequently allows the overall encumbrance of the lighting appliance to be minimized.

[0019] The body 10 is also equipped with a rear door 17 for effecting the wiring of the lighting appliance, which can therefore be installed without having to entirely dismantle the product; in particular, the door 17 has a terminal board inside the body 10, to which the feeding wires coming from the reactor are connected, thus allowing a simple and rapid wiring of the appliance.

[0020] On the side portions of the body 10, below the flaps 14, it is also possible to install the emergency modulus, which is also pre-wired, for using the device in emergency versions of the lighting appliance; also in this case, the optimization of the space which can be used in correspondence with the shaped body 10, is evident.

[0021] Finally, the photometric performances of the appliance according to the invention are substantially the same, as far as average lighting is concerned, as those of traditional appliances, with an overall optical yield of over 52%.

[0022] Thanks to the particular configuration of the structure, with respect to a ceiling lighting appliance of the known type, comprising the same number and type of fluorescent lamps, the appliance according to the invention has a lesser height and a substantial saving in raw materials, such as the plate of the body 10 and aluminum of which the grid reflector 13 is made.

[0023] The reduced encumbrance of the appliance therefore allows a saving in storage space, thus allowing a greater number of packagings (stackable) on top of a pallet and/or inside a container having a predefined volume, to be contained.

[0024] It can therefore be verified how a compact design of the lighting appliance creates reduced dimensions, with respect to traditional appliances, of the end-product and packaged product; a considerable saving is also obtained, with respect to traditional appliances having the same functionality, in the production of the shield, in the production of the casing and in the development of the reflector, together with a considerably simplified assembly.

[0025] The technical characteristics of the lighting appliance with a reduced encumbrance, according to the present invention, appear evident from the above description, as also the advantages.

[0026] In particular, among these, the following can be mentioned:

- reduction in the encumbrance;
- reduction in the warehouses;
- reduction in the materials (raw materials and packagings);
- reduction in the transportation and storage costs;
- innovative design;
- performances equal to market references;
- easy installation and maintenance;
- excellent quality/price ratio;
- optimization in the production processes.

[0027] Finally, numerous other variants can obviously

be applied to the lighting appliance in question, all included in the novelty principles inherent in the inventive idea. In the practical embodiment of the invention, the materials, forms and dimensions of the details illustrated can also obviously vary according to the demands and can be substituted with other technically equivalent alternatives.

10 Claims

1. A lighting appliance with a reduced encumbrance comprising, a shaped body (10), delimited by at least one headpiece (11), inside which the light sources are contained, and above which at least a grid reflector (13) is positioned, in correspondence with at least one central housing (12), for an adequate light diffusion, **characterized in that** said shaped body (10) is equipped with at least one flap (14), moveable and foldable inside the encumbrance of said grid reflector (13), which allows the overall encumbrance surface of the appliance to be reduced.
2. The lighting appliance according to claim 1, **characterized in that** it can be used inside panels forming the false ceilings of civil and/or industrial buildings.
3. The lighting appliance according to claim 1, **characterized in that** said body (10) is substantially U-shaped and said at least one flap (14) is situated in correspondence with at least one of the upper ends of the arms of the U, said flap (14) being folded during transportation and storage of the lighting appliance and extended when the appliance is installed.
4. The lighting appliance according to claim 1, **characterized in that** at least two flaps (14) situated at opposite sides of the grid reflector (13) are envisaged.
5. The lighting appliance according to claim 1, **characterized in that** said at least one flap (14) has its fulcrum on the body (10) of the lighting appliance and is moveable along respective guides (16) envisaged on said body (10), so that it can be extended and remain fixed in a horizontal position, thanks to at least one stop, and folded along the profile of the body (10), in a blocked position, thanks to the presence of a counterpart element (17) situated at the side of the body (10).
6. The lighting appliance according to claim 1, **characterized in that** said body (10) has at least one door (17), equipped with a terminal board, envisaged inside the body (10), suitable for the wiring of the lighting appliance.
7. The lighting appliance according to claim 1, **characterized in that**, on the side portions of the body (10),

below said at least one flap (14), at least one emergency modulus is installed for the use of the appliance as an emergency lighting appliance.

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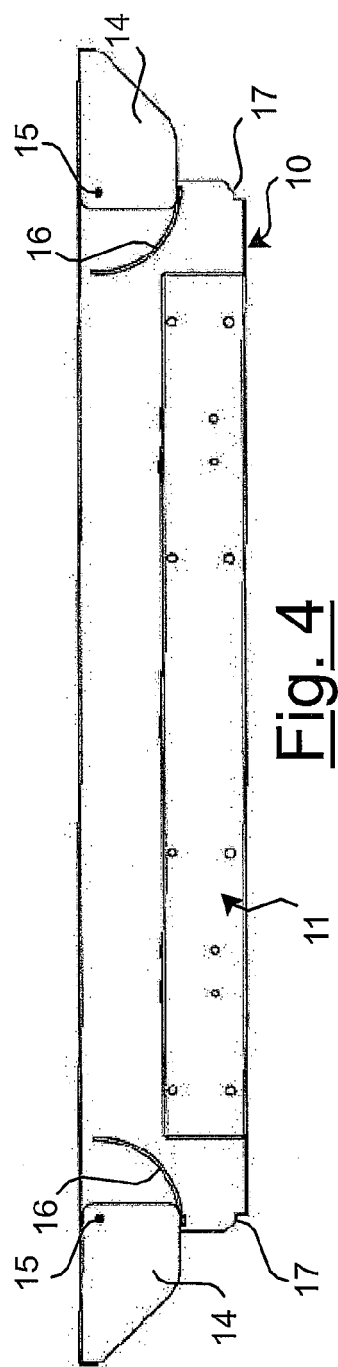
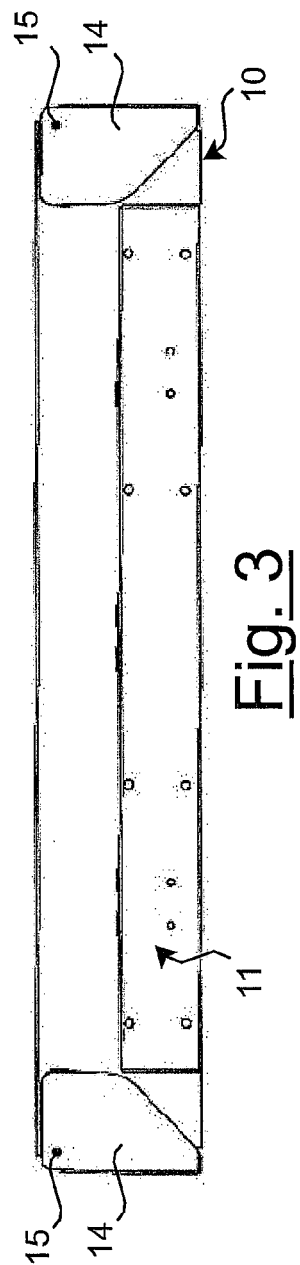
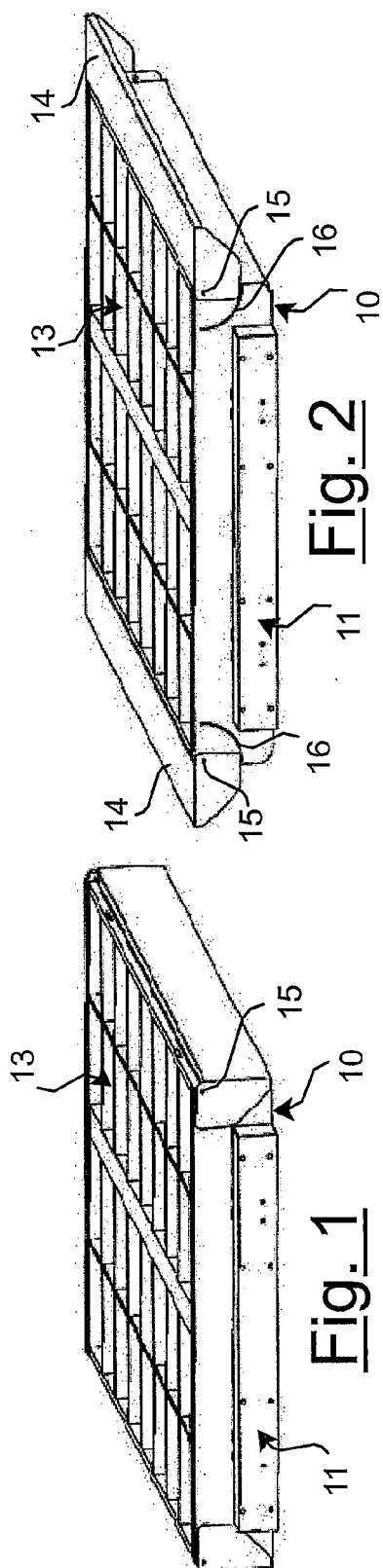
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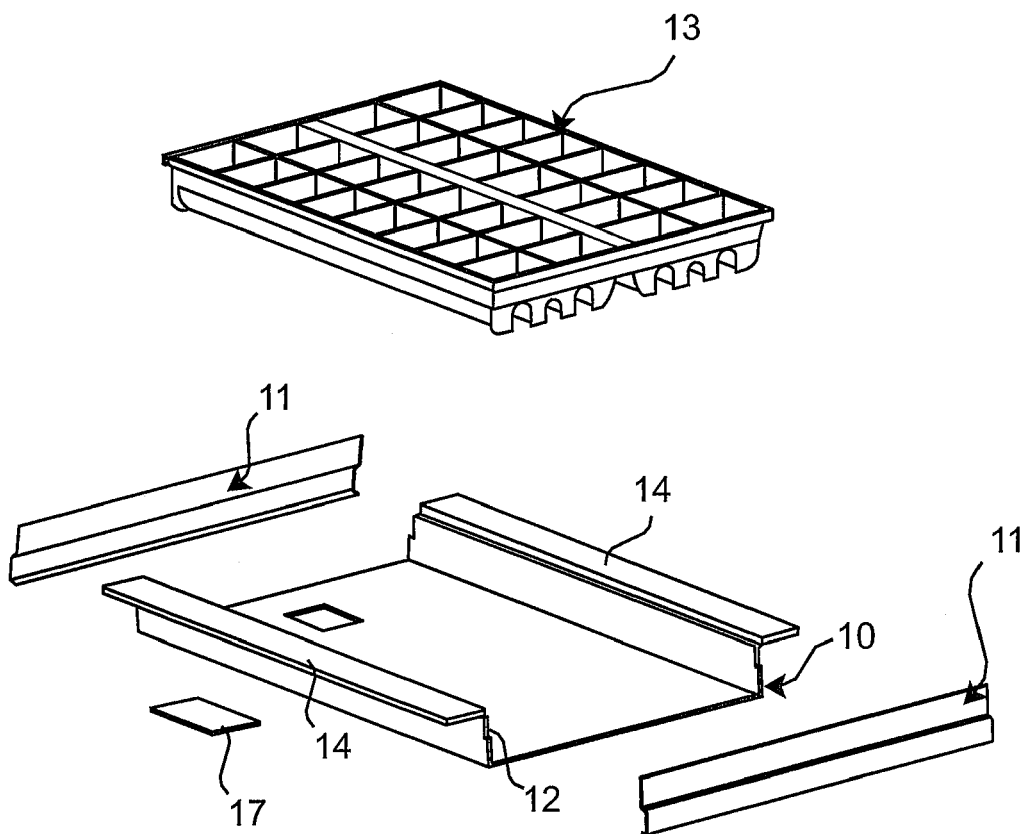


Fig. 5