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(54) **Outdoor light fixture**

Außenleuchte

Dispositif d'éclairage extérieur

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## Description

### Object of the invention.

[0001] The object of this invention is an outdoor lighting fixture, which comprises a housing that is intended to be mounted in a recess of a structure or supporting surface, and which has a plurality of LEDs that are connected to at least one control unit, such lighting fixture having some features that provide significant innovations and advantages regarding manufacturing, operation and maintenance.

### Application field of the invention.

[0002] This invention is applicable in the field of lighting and more specifically in the manufacturing of lighting fixtures.

### State of the art.

[0003] Currently it is a standard practice to use LEDs or light emitting diodes in indoor and outdoor lighting fixtures and lighting elements, due to the advantages that they involve both economically and in terms of energy efficiency.

[0004] Outdoor lighting fixtures, which usually are arranged at a significant distance from the ground, must necessarily incorporate a large number of LEDs and said LEDs must be properly oriented so that the light projected by them provides suitable lighting for a certain space.

[0005] This involves different problems among which it's worth highlighting the following: overheating of the power circuits of the LEDs due to the heat that is dissipated by them; the need to install the LEDs in a more or less wide surface and with a curvature or form suitable to orient the light they project towards a certain direction; and the difficulty in carrying out maintenance and repair works of the lighting fixture as they are in a raised position.

[0006] The applicant of the present invention is not aware of the existence of earlier devices, which successfully solve the problems lying in these outdoor lighting fixtures; so the technical problem posed is the development of an outdoor lighting fixture that allows solving the aforementioned drawbacks.

### Description of the invention.

[0007] The outdoor lighting fixture object of the present invention has been developed with the aim of solving the aforementioned drawbacks, providing apparent advantages in the manufacturing, repair and maintenance of the lighting fixture.

[0008] One of the objectives of the invention is to simplify the assembly and subsequent disassembly of the LEDs in the lighting fixture, using for this purpose removable racks, which are mounted in a frame, each rack incorporating several sealed lighting modules constituting

independent spare units, so that the task of repairing the light becomes greatly simplified as it is suffice to just remove the affected rack and replace the whole thereof, or any of the modules incorporated in that particular rack.

[0009] Another objective of the invention is the use of flat and sealed lighting modules, each of which including a string of LEDs connected to a printed circuit housed inside the module, these modules having lenses of complex surface to guide the light that is provided by the LEDs towards a particular direction, despite the fact these LEDs are laid out flat.

This outdoor lighting fixture, comprising a housing intended to be mounted in a recess of a structure or supporting surface, which has a plurality of LEDs as lighting elements, presents the characteristics defined in claim 1 and is focused to achieve the proposed aims.

[0010] Specifically, said housing comprises a peripheral frame that is closed by a translucent plate at its front, and by a rear plate at its rear end having a plurality of openings that are suitable for the assembly and fixing of removable watertight racks, which frontally have a plurality of straight surfaces, on which are mounted the respective sealed lighting modules, constituting independent spare units.

[0011] Each lighting unit comprises at least one row of LEDs connected to a common printed circuit and frontally covered by lenses of complex surface that are suitable to guide the light emitted by the LEDs towards a particular direction; said racks have at the rear area heat sinks for dissipating the heat generated by the LEDs of the lighting modules.

[0012] In one embodiment of the invention, the housing has, at one of its sides, hinges for being rotatably mounted about a vertical axis relative to a supporting structure or surface, between a closed position and an open position, in which the removable racks are accessible from the rear of the housing.

[0013] This hinged installation of the housing allows access to the racks carrying the lighting modules from the rear area of the housing when the lighting fixture is installed in a blind hole or does not have a rear access for operators.

[0014] To improve the dissipation of the heat generated by the LEDs, especially in cases where the lighting fixture has a large number of LEDs, said lighting fixture comprises, at the rear area of the housing, a back hinged cover, which can swing relative to the housing and is vertically arranged and open at the front as well as the upper and lower ends, said back cover defining, together with the housing, a convection exhaust duct for the heat released by the heat sink when said housing is in the closed position.

[0015] To facilitate the assembly and disassembly of the racks carrying the lighting modules in the housing, these racks have handles, at their rear area, for their gripping and handling.

[0016] These and other features of the invention will become better understood in view of the embodiment

shown in the accompanying figures.

### Description of figures.

[0017] In order to complement the description that is being carried out and with the purpose of facilitating the understanding of the characteristics of the invention, the present description is accompanied by a set of drawings wherein, by way of a non-limiting example, the following has been represented:

- Figure 1 shows a front elevational view of an embodiment example of the outdoor lighting fixture according to the invention.
- Figure 2 shows a profile view of the outdoor lighting fixture in the previous figure partially assembled in which part of the lighting fixture racks can be seen on a lower portion of the housing.
- Figure 3 shows an enlarged detail of a portion of the profile view of the lighting fixture, sectioned along a vertical plane and in which three racks in the assembled position on the chassis and a rack removed therefrom can be seen.
- Figures 4 and 5 show respective views in front elevation and back elevation of one of the removable racks, in which the lighting modules and heat sinks can be respectively seen.

### Preferred embodiment of the invention.

[0018] As can be seen in the embodiment shown in the accompanying figures, this lighting fixture comprises a housing (1) with a peripheral frame (2) which is frontally closed by a translucent plate (3) and at its rear end by a rear plate (4) provided with a plurality of openings (41).

[0019] The lighting fixture has removable racks (5) to support the lighting elements, intended to be installed from the rear area through the openings (41) of the rear plate (4) of the lighting fixture.

[0020] These racks (5) have, at their front area, a plurality of straight surfaces (51) on which sealed lighting modules (6), constituting independent spare units, are installed.

[0021] These racks (5) have, on their perimeter, a side flap (52) for their installation and fixing to the back plate (4) and heat sinks (53) at their rear area.

[0022] The watertight and exchangeable lighting modules (6) comprise a row of LEDs connected to a printed circuit that is housed in the corresponding lighting module (6), said LEDs being frontally covered by lenses (62) of complex surface calculated for guiding the light emitted by the LEDs towards a certain direction.

[0023] As can be seen in the attached figures, the lighting modules (6) and the respective rows of LEDs are flat, thus avoiding the installation of the LEDs on curved sur-

faces and in different orientations.

[0024] As schematically shown in Figure 1, the housing (1) has hinges (11) for being attached to a supporting surface or construction rotatably about a vertical axis allowing the housing (1) to swing towards the front area for providing access to the racks (5) during repair or maintenance works.

[0025] The racks (5) have handles (54) at their rear area to facilitate their gripping.

[0026] In order to facilitate the evacuation of the heat released by the LEDs through the heat sinks (53), the lighting fixture comprises, at the rear area of the housing (1), a hinged back cover (7) vertically arranged and defining a passage (71) for exhausting the heat by convection.

[0027] Once the nature of the invention as well as an example of preferred embodiment have been sufficiently described, it is stated for all pertinent purposes that the materials, form, size and arrangement of the elements described are susceptible to changes, provided these do not involve any alteration of the essential characteristics of the invention that are claimed subsequently.

### Claims

1. Outdoor lighting fixture comprising a housing (1) intended to be mounted in a recess of a structure or supporting surface and a plurality of LEDs that are connected to at least one control unit; **characterized in that:** the housing (1) comprises a peripheral frame (2), closed at its front by a translucent plate (3) and at its rear end by a rear plate (4) having a plurality of openings (41) that are suitable for mounting and fixing removable racks (5) provided frontally with a plurality of straight surfaces (51) on which respective sealed lighting modules (6) constituting independent spare units are mounted; each lighting module (6) comprising at least one row of LEDs connected to a printed circuit and frontally covered by lenses (62) of complex surface suitable to direct the light emitted by the LEDs in a particular direction; said racks (5) being provided at their rear area with heat sinks (53) for dissipating the heat generated by the LEDs of the lighting modules (6).
2. Lighting fixture according to claim 1, **characterized in that** the housing (1) has, at one of its sides, hinges (11) for being rotatably mounted about a vertical axis relative to a structure or supporting surface between a closed position and an open position wherein the removable racks (5) are accessible from the rear of the housing.
3. Lighting fixture according to claim 1, **characterized in that** it comprises, at the rear of the housing (1), a back cover (7) hingable relative to the housing (1) vertically arranged and open at the front and at the

upper and lower ends, said back cover (7) defining, together with the housing (1), a duct (71) for convection venting of the heat released by the heat sinks (53) when said housing is in the closed position.

4. Lighting fixture according to claim 1, **characterized in that** the racks (5) are provided with handles (54) at their rear area for gripping and handling thereof.

#### Patentansprüche

1. Außenleuchte umfassend ein Gehäuse (1), das für die Anbringung in einer Aussparung eines Bauwerks oder einer Auflagefläche vorgesehen ist, und eine Vielzahl von LEDs, die mit mindestens einer Steuereinheit verbunden sind; **dadurch gekennzeichnet, dass:** das Gehäuse (1) einen Außenrahmen (2) aufweist, der an seiner Vorderseite mit einer lichtdurchlässigen Platte (3) und an seiner Rückseite mit einer Rückplatte (4) verschlossen ist, die eine Vielzahl von Öffnungen (41) aufweist, die für die Anbringung und Befestigung von abnehmbaren Gestellen (5) geeignet sind, die frontal mit einer Vielzahl von geraden Oberflächen (51) angeordnet sind, auf denen jeweils abgedichtete Beleuchtungsmodule (6) angebracht sind, die eigenständige Ersatzeinheiten darstellen; wobei jedes Beleuchtungsmodul (6) mindestens eine Reihe LEDs umfasst, die mit einer gedruckten Schaltung verbunden und frontal von Linsen (62) mit komplexen Oberflächen bedeckt sind, die dafür geeignet sind, das von den LEDs emittierte Licht in eine bestimmte Richtung zu leiten; wobei die Gestelle (5) auf der Rückseite mit Wärmeableitern (53) versehen sind, um die von den LEDs der Beleuchtungsmodule (6) erzeugte Wärme abzuführen.
2. Leuchte nach Anspruch 1, **dadurch gekennzeichnet, dass** das Gehäuse (1) an einer seiner Seiten Scharniere (11) zur drehbaren Befestigung an einer vertikalen Achse relativ zu einem Bauwerk oder einer Auflagefläche zwischen einer geschlossenen Position und einer offenen Position aufweist, wobei die abnehmbaren Gestelle (5) von der Rückseite des Gehäuses zugänglich sind.
3. Leuchte nach Anspruch 1, **dadurch gekennzeichnet, dass** sie an der Rückseite des Gehäuses (1) eine Rückabdeckung (7) aufweist, die drehgelenkig relativ zum Gehäuse (1) bewegt werden kann, vertikal angeordnet ist und an der Vorderseite sowie am oberen und unteren Ende offen ist, wobei die Rückabdeckung (7) gemeinsam mit dem Gehäuse (1) einen Kanal (71) zur Konvektionslüftung der von den Wärmeableitern (53) abgeführten Wärme definiert, wenn sich das Gehäuse in der geschlossenen Position befindet.

4. Leuchte nach Anspruch 1, **dadurch gekennzeichnet, dass** die Gestelle (5) an ihrer Rückseite mit Griffen (54) zum Anfassen und Handhaben versehen sind.

#### Revendications

1. Dispositif d'éclairage extérieur comprenant un boîtier (1), destiné à être monté dans un évidement d'une structure ou d'une surface de support, et une pluralité de DEL qui sont connectées à au moins une unité de commande ; **caractérisé en ce que** : le boîtier (1) comprend un châssis périphérique (2), fermé sur sa face frontale par une plaque translucide (3) et sur son extrémité arrière par une plaque arrière (4) ayant une pluralité d'ouvertures (41) qui sont appropriées pour le montage et la fixation de casiers amovibles (5) dotés frontalement d'une pluralité de surfaces plates (51) sur lesquelles des modules d'éclairage scellés respectifs (6) constituant des unités de rechange indépendantes sont montés ; chaque module d'éclairage (6) comprenant au moins une rangée de DEL connectées à un circuit imprimé et recouvertes frontalement par des lentilles (62) ayant une surface complexe appropriée pour diriger la lumière émise par les DEL dans une direction particulière ; lesdits casiers (5) étant dotés sur leur zone arrière de dissipateurs thermiques (53) pour dissiper la chaleur produite par les DEL des modules d'éclairage (6).
2. Dispositif d'éclairage selon la revendication 1, **caractérisé en ce que** le boîtier (1) a, sur un de ses côtés, des articulations (11) destinées à être montées rotatives autour d'un axe vertical relativement à une structure ou à une surface de support entre une position fermée et une position ouverte dans laquelle les casiers amovibles (5) sont accessibles par l'arrière du boîtier.
3. Dispositif d'éclairage selon la revendication 1, **caractérisé en ce qu'il** comprend, à l'arrière du boîtier (1), un couvercle de fond (7) articulable relativement au boîtier (1) agencé verticalement et ouvert sur l'avant et sur les extrémités supérieure et inférieure, ledit couvercle de fond (7) définissant, conjointement avec le boîtier (1), un conduit (71) pour l'aération par convection de la chaleur dégagée par les dissipateurs de chaleur (53) lorsque ledit boîtier est dans la position fermée.
4. Dispositif d'éclairage selon la revendication 1, **caractérisé en ce que** les casiers (5) sont dotés de poignées (54) sur leur zone arrière pour leur saisie et manipulation.

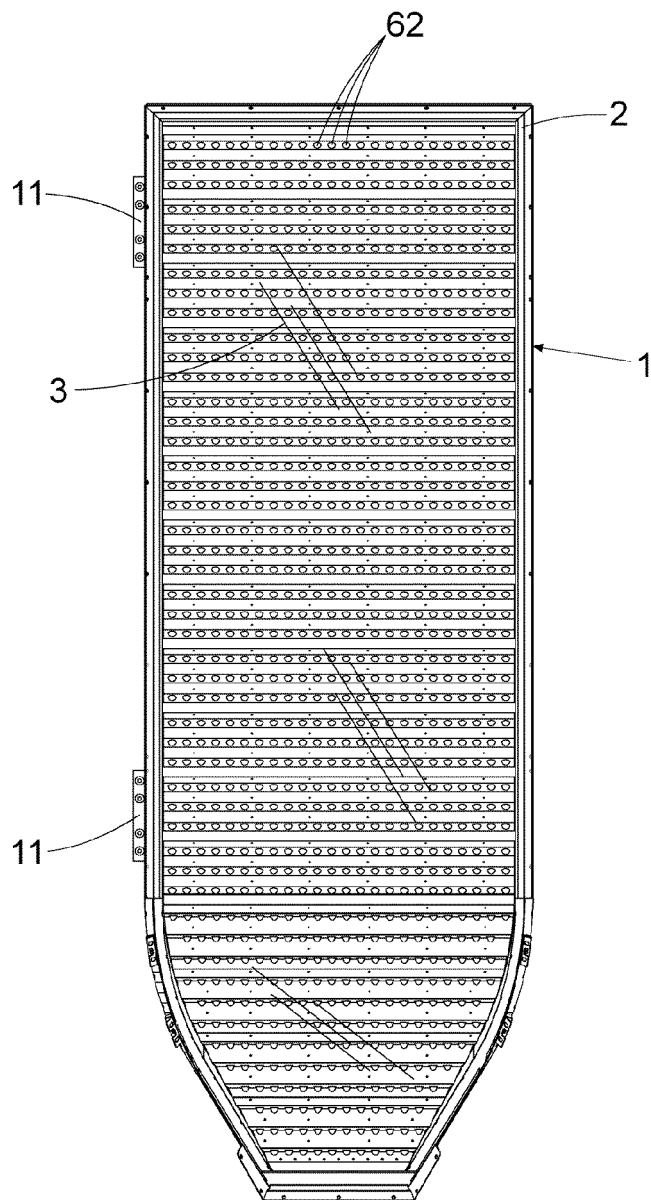


Fig. 1

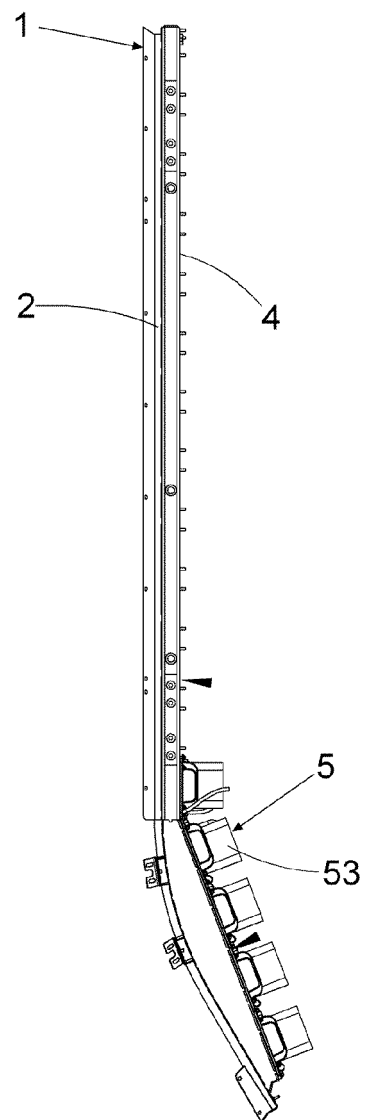


Fig. 2

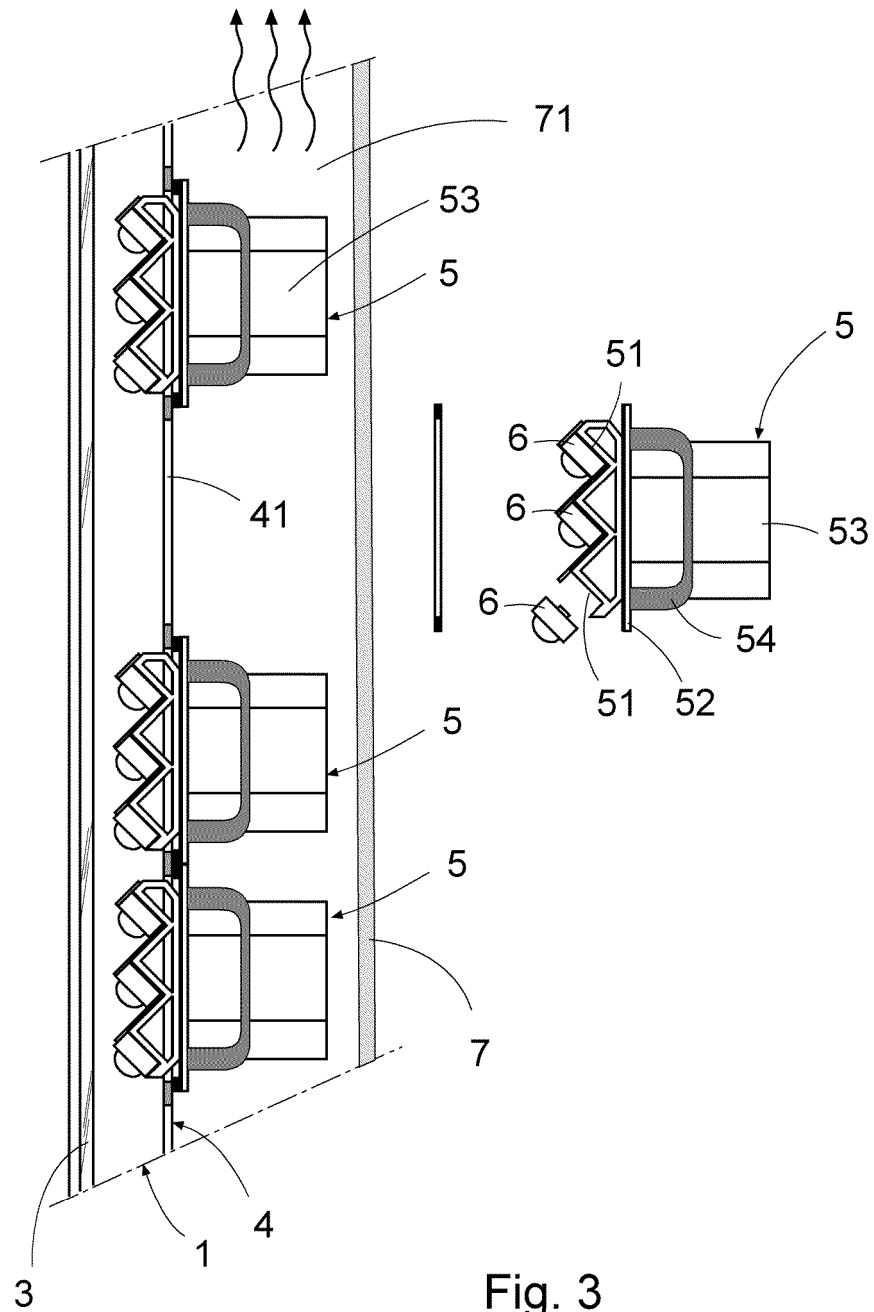


Fig. 3

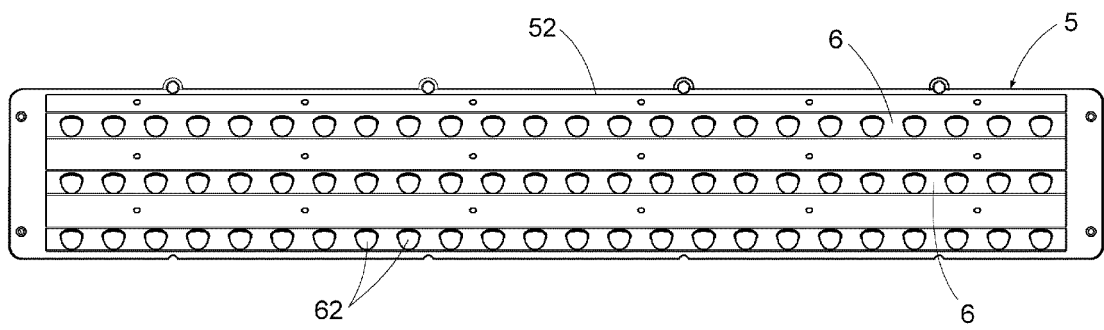


Fig. 4

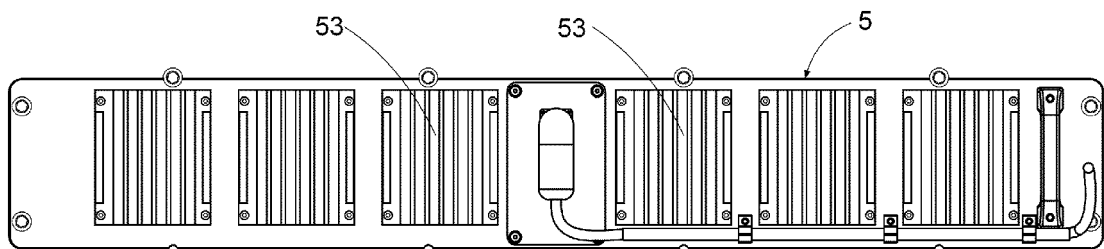


Fig. 5