

(19)



(11)

EP 3 771 306 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
27.01.2021 Bulletin 2021/04

(51) Int Cl.:
H05K 5/02 (2006.01) H01R 4/24 (2018.01)

(21) Application number: **20186926.0**

(22) Date of filing: **21.07.2020**

(84) Designated Contracting States:
AL 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 RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(71) Applicant: **CHK Develop B.V.**
3207 LD Spijkensisse (NL)

(72) Inventors:
• **WANG, Lingyi**
SHANGHAI, Shanghai 200127 (CN)
• **PENG, Ke**
2992 DK BARENDRECHT (NL)

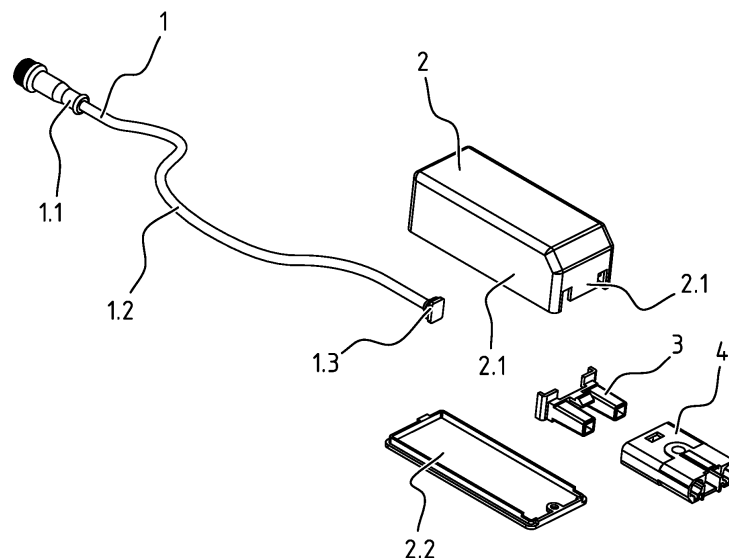
(30) Priority: **22.07.2019 NL 2023551**
22.08.2019 NL 2023687

(74) Representative: **Arnold & Siedsma**
Bezuidenhoutseweg 57
2594 AC The Hague (NL)

(54) **ASSEMBLY OF A HOUSING, AN ELECTRONIC OR ELECTRIC COMPONENT AND A PREFERABLY QUICK-CONNECT CABLE ADAPTER/CONNECTOR**

(57) The present disclosure relates to a kit-of-parts in assembly forming a component housing, comprising: a box (2) configured to accommodate an electrical or electronic component therein, and a plug adapter (3) having plug holes (3.1.1), each configured for introduction therein of a conductor from a group comprising: an electrode plug (4.2); and at least a cable core (5.1), and each comprising an electrode insert (3.2) extending from a re-

spective one of the plug holes into the box to electrically connect the conductor with the electrical or electronic component conductor. A socket adapter (4) is provided, for cases wherein cables are supplied to a construction site with a mains power plug at one end and a standard coupling part at an opposite end. Also, the present disclosure relates to a method of assembling an assembly from the kit-of-parts.

**FIG. 1**

Description

BACKGROUND

[0001] The present disclosure relates to a housing of for example a LED Luminaire Driver Component or other electric or electronic component, that needs to be electrically connected through a wire or cable with for example a power supply. For the sake of understandability and simplicity, reference is made below to a LED driver, but this is by no means to be taken as excluding other components in a housing, where cables or wires need to be connected through the housing.

[0002] Consequently, below, reference is made to a LED luminaire Driver Component compatible with wire direct insertion and EP-Wieland-Adels cable plug connection system quick-connect cable.

[0003] A type of LED lamp drive component for quick plug connection, which is compatible to direct plug-in and EP-Wieland-Adels cable connector.

[0004] The invention according to the present disclosure may thus be applied in the electrical connection field, for example for connecting a driver for luminaires to a mains connection via wires or cables.

[0005] Here, CN-105337117 is acknowledged as prior art, disclosing a housing or box configured to accommodate an electric or electronic component and a terminal block. The terminal block can be extracted from the housing for insertion in plug holes thereof of stripped cable ends. Clamping wrenches are used to secure the cable ends in the terminal block. An electrical connection to the electric or electronic component is established using a jack-type connection between the terminal block and male plugs to be inserted into female jack connections in the terminal block, where the male plugs are in contact with conductors leading to the electric or electronic component.

PROBLEM(S) TO BE SOLVED

[0006] The present invention discloses a structure of a patching adapter device for quick wiring based on an LED lamp driving device. The main design is integrated with the LED lamp driving device, and the multi-function plug structure is modularized and extended on the driver body. The structure is simple and practical, and skillfully realizes the function of direct and quick connection between the driver and European standard EP-Wieland-Adels quick connector as well as other general power connectors and cable ends. The structure has the characteristics of safe use, convenient installation and so on.

TECHNICAL BACKGROUND

[0007] Since the invention of the electric lighting device—electric lamp at the end of the 19th century, the electric lamp has experienced the development process from the incandescent lamp illuminated by the filament

heating principle to the later fluorescent lamp based on the principle of gas discharge, and then to the modern mercury vapor lamp, metal halide lamp, metal sodium lamp and so on, which are based on the excitation effect of electron atoms, as well as the development of LED lamp, which has been widely popularized in the 21st century. As the first generation, the incandescent lamp has the disadvantages of high luminous energy consumption, extremely low efficiency and short service life, while the later fluorescent lamp, mercury vapor lamp and metal halide lamp are still high luminous energy consumptive and not eco-friendly, inevitably causing environmental pollution and other problems. Since the LED lamp has the advantages of high energy consumption, no pollution to the environment and long service life, it has been widely popularized and used throughout the world. However, due to the disunity of measurement units used by countries all over the world, as well as the inconsistency of the safe use of electrical products and the technical requirements of production, many problems have arisen in the promotion of LED luminaire products worldwide. During installation of LED luminaire, when the driver is connected to the power network, there are a variety of wiring modes and interfaces. The present invention mainly provides a quick connection device for connecting the LED lamp driver with the power network line, realizing the function of connecting the LED lamp driver with the standard line connection device of for instance EU countries, as well as the quick and convenient connection of the power cable. This solution is particularly convenient for engineering companies to carry out the installation, construction, maintenance and repair of LED luminaires in batches, so that the efficiency of manual work can be greatly improved accordingly.

TECHNICAL SOLUTIONS FOR EXISTING TECHNOLOGIES

[0008] LED luminaire drivers are generally placed in the drive boxes, through which the LED drivers are connected to the external power supply, which is an essential part of the LED luminaire.

[0009] The connection of wires and cables is not only an important link in the installation of luminaire products, but also an important link to ensure the normal use and safety of the luminaire products. The connector of wire and cable (connecting the plug and the junction box) is one of the electrical accessories, through which the luminaire is connected with the power supply while protecting the wire and cable.

[0010] In the process of installation of luminaires, it is necessary to connect the output wire lead of the luminaire drive power supply to the power supply line of the construction site. During technicians' performing wire connection, they will encounter a variety of power wires and cables in different specifications, and there are a variety of wiring methods as well. At present, the commonly used direct connection methods include stranded connection,

tight connection, welding, terminal connection, etc. This part of the work often requires professional construction personnel to carry out rather tedious operation on site, which is time-consuming and the connection may be unreliable. If the connection is unsound, it will pose a safety hazard. Another common connection method is to configure a connection plug or junction box for wire connection. When it comes to cables with standard connectors, such as EP-Wieland-Adels connectors (the most commonly used lighting engineering power distribution connection system in Europe), the output wires of luminaires are often unable to match directly and can only be connected externally by construction personnel's additional wiring and accessories. However, in case of a wiring terminal according to the above mentioned prior art disclosure of CN-105337117, when power supply cables are encountered at an assembly site which are equipped with such standard connectors, like EP-Wieland-Adels connectors, these standard connectors need to be cut from the power supply cables, and cores thereof must be stripped, to establish a connection. Conversely, power supply cables are often not equipped with any standard connector, and stripped core ends thereof need to be connected to the electronic or electric component in the box, for instance using a terminal block as in the prior art disclosure of CN-15337117. In both cases the advantages of the standard connectors, like EP-Wieland-Adels connectors, when provided at ends of power supply cables, are lost in terms of safety, reliability and the like.

DISADVANTAGES OF EXISTING TECHNOLOGIES

1. Disadvantages of existing technologies

[0011] In the current installation of LED luminaires, cables with special connectors, such as EP-Wieland-Adels connectors, can only be connected outside the housing of the drive box or junction box. As a result, there may be unreliable connection, poor corrosion and oxidation resistance, and even electrical insulation cannot be effectively guaranteed, which pose a certain safety hazard.

[0012] The present application solves the problem of the irregular and unreliable wiring modes of the construction personnel under such circumstances. When connecting the ordinary electric wires, as long as the wire is inserted directly into the drive box to form a tight connection, there is no need for any redundant operation. And when power supply cables are equipped with standard connectors, such as the EP-Wieland-Adels connectors, a quick plug connection can be formed by matching the plug adapter to the standard connector at the cable end, using the socket adapter.

[0013] To sum up, the disadvantages of existing technologies, that are improved if not resolved by the present disclosure, are as follows:

- i. The versatility is weak. It is difficult to apply the different standard connection methods of different

countries;

- ii. The reliable connection is poor. It is apt to cause such problems as poor contact, loosening, high contact resistance, heating, etc.

- iii. The work efficiency is low. The connection modes are too tedious, and the installation efficiency of luminaires is relatively low.

- iv. Additional costs are burdened. Based on the non-uniform connection modes, it is inevitably need additional connection devices and workload for line connections.

2. Purpose of the present invention

[0014] The present invention provides a quick power connection connector structure mode of a universal LED lamp driver, which integrates power connection, device connection, device connection & fixture and other mechanisms, and has the advantages of simple structure, quick and convenient connection, simple maintenance, reliable structure, etc.

BRIEF INTRODUCTION

[0015] A structure of driving box component, comprising a driving box, a wiring frame and a adapter plug, wherein one side of the driving box is provided with a sliding slot, and two sides of the wiring frame are designed with a sliding bar, respectively, which can be fixed in the sliding slot. One end of the adapter plug is matched with the wiring frame connector, and the other end is matched with the EP-Wieland-Adels cable connector.

[0016] Inside the adapter plug, there is designed a metal copper rod which is pressed at one end to the metal conductive elastic piece in the wiring frame, and the other end is matched with the metal structure inside the EP-Wieland-Adels cable connector.

[0017] Inside the wiring frame cavity is designed a metal conductive elastic piece; one end of the metal conductive elastic piece can be welded to the driver circuit board in the driving box, and the other end is used for tightly connecting the metal copper rod in the adapter plug.

[0018] The length, width and height of the driving box can be selected as needed to adapt to the drive of different sizes, which improves the flexibility of assembly. The wiring frame and adapter plug can be selected according to the wiring needs of different drivers to adapt to the 2-core and 5-core wirings.

[0019] In summary, the present disclosure allows easier installation of component housings, such as LED driver boxes, by allowing cable ends to be inserted into plug holes of the plug adapter, if cables having cable ends without a standard connector thereon are provided at installation sites. In contrast, when cables having standard connectors at cable ends thereof are available at instal-

lation sites, socket adapters may be mounted on plug adapters and establish electrical contact in the plug holes of the plug adapters, to allow quick and easy installation of the standard connectors at the cable ends onto the socket adapters.

BRIEF DESCRIPTION OF THE APPENDED DRAWING

[0020] Embodiments according to the present disclosure will be described hereinbelow on the basis of preferred embodiments thereof in and with reference to the appended drawing, wherein various embodiments are shown only by way of example, and are therefore not limitative on the scope of the present disclosure. In the embodiment description, the same reference numerals may be used for the same or similar parts, components and features, and in which:

fig. 1 shows an exploded view of a system according to the present disclosure;

fig.'s 2 - 4 show perspective views of selected components of the system of figure 1;

fig.'s 5 and 6 exhibit mutually different modes of deployment of the system of figure 1;

fig. 7 shows an inward view into a component housing;

fig. 8 shows details of connections steps; and

fig.'s 9 - 13 show a system of a component housing assembly accommodating an alternative electrical or electronic component or circuit.

DETAILED EMBODIMENT DESCRIPTION

[0021] A system shown in Figure 1 extends between an armature, potentially accommodating LED light sources requiring a driver, and a power source in the form of for example a mains or power socket. This LED lamp drive component system for quick connection, which is compatible to direct plug-in of cable conductors or of an EP-Wieland-Adels cable connector or any other standard coupling connector part, comprises four parts as shown in Figure 1, including: Lamp wire 1, Driver box 2, Plug adapter 3, and Socket adapter 4. An EP-Wieland-Adels cable connector 6 is referred to here as an example of a standard coupling connector, which may be pre-arranged on an end of a power cable. If, at a construction site, cables are supplied with a mains power plug to be inserted into a mains power supply socket at one end and such a standard coupling connector part at the other end, the Socket adapter 4 may be easily and conveniently be clicked onto the plug adapter 3. Thereafter, the standard coupling connector part on the cable, such as the EP-Wieland-Adels cable connector 6 may be just as eas-

ily and conveniently be coupled onto the socket adapter 4. However, if cables are supplied with a mains power plug to be inserted into a mains power supply socket at one end and no connector part at the other end to expose a free cable end, the Socket adapter 4 may be omitted and cable 5 may be stripped and inserted onto the plug adapter 3 to be fixedly clamped therein. Alternatively a blade may engage unstripped cable end.

[0022] This LED lamp drive component system for quick connection is compatible to direct plug-in of power cable conductors or of an EP-Wieland-Adels cable connector.

[0023] The Lamp wire 1 comprises a lamp connector 1.1, a cable 1,2 and a Tail buckle 1.3. Tail buckle 1.3 is installed in a tail buckle mount slot 2.1.3 (see Figure 7) between Driver box body 2.1 and Driver box cover 2.2, together forming driver box 2. As shown in Figure 1 and Figure 2, Plug adapter 3 is installed in an adapter slot 2.1.1 (see Figure 1) between Driver box body 2.1 and the Driver box cover 2.2 through a straight side port 3.1.3. On the Plug adapter 3, an Adapter jack 4.1.1 of Socket adapter 4 may be mounted, as shown in Figure 5, through a Plug intubation part 3.1.2 of Plug body 3.1.

[0024] As shown in Figure 1, the Drive box 2 comprises Driver box body 2.1 and Driver box cover 2.2, which may be fixed to one another by a screw, but also any other connection may be employed. A Stator on Driver box body 2.1 may be used for connecting with and fixing Plug adapter 3. As shown in Figure 7, the Driver box body 2.1 comprises adapter slot 2.1.1 and Tail buckle mount slot 2.1.3, which arranged at respective positions where respectively Plug adapter 3 and Lamp wire 1 are to be connected to the Driver box 2. The slots 2.1.1 and 2.1.3 may be arranged at other than shown positions in the Driver box body 2.1, and / or may even pierce through the Driver box cover 2.2.

[0025] As shown in Figure 2, Plug adapter 3 mainly comprises Plug body 3.1 and Electrode insert 3.2 mounted inside thereof. A straight side port 3.1.3, which is left-right symmetrical, extends up from a front of Plug body 3.1. Further, straight side port 3.1.3 is connected with a plug intubation tube 3.1.2, which is hollow to define plug hole 3.1.1. Two Electrode inserts 3.2 are respectively mounted inside left and right plug holes 3.1.1. Plug slot structures 3.1.4 are arranged at straight side ports 3.1.3, which are symmetrically distributed left and right, in correspondence with the plug intubation tubes 3.1.2 and plug holes 3.1.1. A plug reverse buckle 3.1.5 is adjacent to plug slot 3.1.4, which is arranged between straight side ports 3.1.3, which in turn are symmetrically distributed left and right.

[0026] As shown in Figure 6, cables 5 with ends from which insulator 5.2 is stripped, may be introduced into the left and right plug holes 3.1.1, to be engaged by electrode insert 3.2.

[0027] Alternatively, the hollow structure of Plug holes 3.1.1 may optionally comprise blades 3.3 or knives or cutters, which are tiltable on a swivel shaft 3.4, to allow

cables 5 or wires to be inserted with mantle 5.2 or insulator layer left on cores 5.1, and without beforehand stripping mantle 5.2 or insulator layer from conductive cores 5.1 of the wires 5 or cables. The cable 5 is then, with the mantle 5.2 left on the conductive core 5.1, as shown in figure 8B, inserted into a trough comparably with or forming one of the plug intubation tubes 3.1.2 in the direction of arrow A. After having been inserted over to a sufficient distance in the direction of arrow A as depicted in Figure 8B, movement of the cable 5 is reversed, as indicated with arrow B in Figure 8C. At this time, blade 3.3 engages and cuts into mantle 5.2, penetrates therein as the movement in the direction of arrow B progresses, while the blade 3.3 tilts to penetrate deeper into the mantle 5.2 until blade 3.3 electrically contacts core 5.1, as shown in Figure 8D, to establish electrical contact between core 5.1 and electrically conductive blade 3.3, thus reducing the number of actions required for installation crews to perform even more.

[0028] As shown in Figure 3, Socket adapter 4 includes Socket body 4.1 and Electrode plug 4.2. Socket body 4.1 internally has left and right symmetrically distributed Adapter jacks 4.1.1. Further, a plug lock hole 4.1.2 is arranged at a front end of Socket body 4.1, for mating with the plug reverse buckle 3.1.5 of adapter 3. Electrode plugs 4.2 are respectively mounted inside Adapter jacks 4.1.1, which are symmetrically arranged on opposite sides. As shown in Figure 4, Electrode plug 4.2 has a flat incision at its front part, which constitutes Flat insert structure 4.2.3, for creating an electrically conductive coupling with electrode insert 3.2. In the middle of Electrode plug 4.2, a groove incision is provided forming Fixing port 4.2.2. At the back of Electrode plug 4.2, a cylindrical-shaped Round plug 4.2.1 is provided with a chamfer at one end. Electrode plug 4.2 is fixed in the card slot device inside Adapter jack 4.1.1 through Fixing port 4.2.2.

[0029] By mounting Socket adapter 4 on Plug adapter 3 and securing the connection using the combined Socket body 4.1 for mating with the plug reverse buckle 3.1.5 of adapter 3, an EP-Wieland-Adels cable connector 6 may be quickly and conveniently mounted onto Socket adapter 4.

[0030] As shown in Figure 5 and 6, Lamp wire 1 and Driver box 2 are assembled together with Plug adapter 3, which is coupled with Stator 2.1.2 of Driver box 2 through Straight side port 3.1.3 and Plug slot 3.1.4. Plug intubation 3.1.2 of Plug adapter 3 is inserted into Adapter jack 4.1.1 of Socket adapter 4. Electrode insert 3.2 in Plug adapter 3 is in contact with Flat insert 4.2.3 of Socket adapter 4. The upper portion of Electrode insert 3.2 is connected to a drive circuit inside Drive box 2. The plug of EP-Wieland-Adels cable connector 6 is inserted into Adapter jack 4.1.1 of Socket adapter 4 from the bottom. Round plug 4.2.1 of Electrode plug 4.2 is inserted into a jacks inside the EP-Wieland-Adels cable plug 6 and contacts with conductive pads (not shown) in the jack.

[0031] This system for quick connection is compatible to direct plug-in of power cable conductors or of an EP-

Wieland-Adels cable connector 6, using the click-on Socket adapter 4. Therefore, if the lamp needs not be connected to the EP-Wieland-Adels cable connector, the connecting method for this LED lamp drive component for quick plug connection, which is compatible to direct plug-in of power cable conductors and not an EP-Wieland-Adels cable connector 6, the Socket adapter 4 may be omitted, as shown in the Figure 6. However, to directly connect the EP-Wieland-Adels cable connector 6, the Socket adapter 4 may be conveniently mounted onto the Plug adapter 3, as shown in Figure 5. For cable connection, cables 5 may be directly inserted into Plug hole 3.1.1 of Plug adapter 3, and the cable 5 will be directly contacted by Electrode insert 3.2 of Plug adapter 3. Then Electrode insert 3.2 is capable of tightly pressing and hooking the core 5.1 of the cable 5 in Plug hole 3.1.1 by its deformation resilience and a reverse hook 3.2.1 at its end.

[0032] The compatible wires and cables are inserted directly into the driver box 2 to form a tight connection, and the driving box component that is matched with the EP-Wieland-Adels cable plug connection system through the combination of adapter plug 3 and socket adapter 4 to form a quick plug connection. This component covers the ordinary drive (2-core wiring), 1-10 V dimming driver and DALI dimming driver (5-core wiring) used in luminaires.

[0033] This system, which is compatible to direct plug-in of power cable conductors or of an EP-Wieland-Adels cable connector, as shown in Figure 1 and 7, has Driver box body 2.1 of Drive box 2 with Stator 2.1.2 at its bottom. At the time of assembly, Stator 2.1.2 will be inserted into Plug slot 3.1.4 of Plug adapter 3, and Straight side port 3.1.3 will be clipped into Driver box body 2.1. The external end plane of Straight side port 3.1.3 would then abut against Fixing buckle 2.1.2 of Driver box body 2.1. After assembling Driver box cover 2.2 and Driver box body 2.1 together, Plug adapter is fixed inside Drive box 2.

[0034] In this system, which is compatible to direct plug-in of power cable conductors 5 or of an EP-Wieland-Adels cable connector 6, Tail mount slot 2.1.3 is provided at the assembly position of Driver box 2 and Lamp wire 1. At the time of installation, Tail buckle 1.3 Lamp wire 1 will be clipped into Tail mount slot 2.1.3, and then, Driver box cover 2.2 can be installed on Drive box body 2.1, and Tail buckle 1.3 will be fixed to Drive box 2.

[0035] This system, which is compatible to direct plug-in of power cable conductors 5 or of an EP-Wieland-Adels cable connector 6, is featured in that: as shown in Figure 5 and 7, plug reverse buckle 3.1.5 structure is arranged at a rear side of Plug slot 3.1.4 of Plug adapter 3. The Plug lock hole structure 4.1.2 is arranged at a rear side of Socket body 4.1 of Socket adapter 4. When Plug adapter 3 is inserted into Socket adapter 4, Plug reverse buckle 3.1.5 will be buckled into and engage Plug lock hole 4.1.2. Further, Plug reverse buckle 3.1.5, which is inserted into Plug lock hole 4.1.2, can prevent loosening of Socket adapter 4 and Plug adapter 3 by its reverse buckle struc-

ture.

[0036] As shown in Figure 2 and 5, Electrode insert 3.2 of Plug adapter 3 is a sheet metal with bending structure and resilience characteristics. When Flat insert 4.2.3 of Electrode plug 4.2 of Socket adapter 4 is inserted into Plug hole 3.1.1, the bending portion of Electrode insert 3.2 will tightly contact with Flat insert 4.2.3 by its resilience characteristics.

[0037] As shown in Figure 3, Socket body 4.1 of Socket adapter 4 is composed of two upper and lower structural pieces. There is an edge existing between the upper and lower structural devices of Socket body 4.1. Further, a groove-shaped structure of Fixing port 4.2.2 in the middle of Electrode plug 4.2 is thus provided between the upper and lower structural devices of Socket body 4.1. When the upper and lower structural devices of Socket body 4.1 are combined, the Fixing port 4.2.2 will be blocked by the edge structure in the middle of Socket body, thus to guarantee that Electrode plug 4.2 is firmly fixed inside Socket body 4.1. Electrode plug 4.2 is also featured in the two chamfers respectively arranged at each of its ends. When Socket adapter 4 is inserted into Plug adapter 3 and the EP-Wieland-Adels cable connector 6, the chamfer structure can serve as a guiding device ensure smooth plugging.

[0038] This LED lamp drive component for quick connection, which is compatible to direct plug-in of cable conductors or of an EP-Wieland-Adels cable connector, is also featured in flexible configuration mode in actual use, as shown in Figure 5 and 6. For connecting the EP-Wieland-Adels cable connector, Plug adapter 3 needs to be connected to Socket adapter 4, and then Socket adapter 4 shall be connected to EP-Wieland-Adels cable connector 6. If it is not intended to connect to the EP-Wieland-Adels cable connector 6, Plug adapter 3 can be directly connected to wire and cable 5 without Socket adapter 4.

[0039] Figures 9 - 13 show alternative embodiments of the housing assembly according to the present disclosure to accommodate an electrical or electronic component or circuit for DALI LIM or TOUCH DIM. In Figure 9, the system also comprises a box 2 with a cable 1 running therefrom to a (not shown) armature, from an opposite side relative to an ingoing power supply cable 5. Alternatively, cable 1 to the armature (not shown) and cable 5 from power supply may connect on the same end of box 2, as shown in figures 10, 11, in a configuration where cables are provided without standard coupling parts and therefore free cable ends.

[0040] In figures 12, 13 an EP-Wieland-Adels cable connector 6 with more than 2 poles is employed. This serves to exhibit that the present disclosure is not limited to LED driver housings, nor to EP-Wieland-Adels standard connectors with just two cores.

[0041] Figure 9 shows a housing 2 and a cable 1 on an output side, running to (not shown) armature.

[0042] Figure 10 shows insertion of cables 1, 5 in the direction of the included arrow.

[0043] Figure 11 clarifies how inserted cable ends may be liberated from plug adapter 3, using screw driver 7, to force back Electrode insert 3.2, and release the cable end in one of the plug holes 3.1.1.

[0044] Figure 12 exemplifies how the box 2 and plug adapter 3 are combined for a multipole EP-Wieland-Adels cable connector 6, and Figure 13 shows the release thereof, for which no screw driver or other penetrating element is required.

TECHNICAL ADVANTAGES OF THE PRESENT PROPOSAL

[0045] The driving box of this solution is compatible with direct insertion of wires and cables, as well as the quick insertion of EP-Wieland-Adels cable plugs through the adapter. It ensures the firm and reliable connection, low joint resistance, high crimping strength, good corrosion resistance, oxidation resistance and electrical insulation performance; meanwhile, it greatly reduces the construction time and cost, and it makes the construction personnel and the users more convenient to connect luminaires and the power supplies.

ALTERNATIVES

[0046] An LED lamp drive component for quick plug connection, which is compatible to direct plug-in and EP-Wieland-Adels cable connector, is provided. As a matter of fact, the drive component includes but not limited to the description in the Instruction or Implementation Mode. Therefore, all equivalent changes or modifications made according to the structures, features and principles described in this Model Utility patent application, shall be included into the application scope for this Model Utility Patent.

[0047] The materials of Electrode insert 3.2 of Plug adapter 3 and Electrode plug 4.2 of Socket adapter 4 are not limited to metals like copper, aluminum, iron, other materials like the carbon synthetic materials and graphene, can also be taken as conductive materials.

[0048] Plug reverse buckle 3.1.4 structure of Plug adapter 3 may be in the middle of Plug body 3.1 of Plug adapter 3, or may be located at both or opposing sides of Plug body 3.1. Plug reverse buckle 3.1.5 mechanism may be of 1, 2, 3, or 4 structures of the same functioning principle, and all within the scope of the present disclosure.

[0049] Plug lock hole 4.1.2 on Socket body 4.1 of Socket adapter 4 may be in square, circle, rectangle, polygon, and other structures with the same functioning principle, all within the scope of the present disclosure. Plug lock hole 4.1.2 might be of 1, 2, 3, or more structures of the same functioning principles, all within the scope of the disclosure.

[0050] Plug reserve buckle 3.1.5 structure of Plug adapter 3 and the Plug lock hole 4.1.2 structure of Socket adapter 4 are of matching relation based on a same prin-

iple. The matching relations formed by transplanting Plug reverse buckle 3.1.5 onto Socket adapter 4 and transplanting Plug lock hole 4.1.2 structure onto Plug adapter 3, or mixing use of both structures, is all included within the scope of the present disclosure.

Claims

1. Kit-of-parts, in assembly forming a component housing, comprising:

- a box (2) configured to accommodate an electrical or electronic component or circuit therein; and
- a plug adapter (3) having plug holes (3.1.1), each configured for introduction therein of a conductor from a group comprising: an electrode plug (4.2); and at least a cable core (5.1), and each comprising an electrode insert (3.2) extending from a respective one of the plug holes into the box to electrically connect the conductor with the electrical or electronic component conductor
- a socket adapter (4) comprising the electrode plug (4.2) therein to extend there through in electrical contact with the electrode insert (3.2), wherein the socket adapter (4) is formed on the one hand complementary relative to the plug adapter (3) for coupling therewith and establish electrical contact in the plug holes, and is formed on the other hand complementary relative to a standard coupling connector part, such as an EP-Wieland-Adels cable connector (6), for electrical coupling therewith.

2. Kit-of-parts according to claim 1, wherein the electrode insert (3.2) is configured from resilient sheet metal.

3. Kit-of-parts according to claim 1 or 2, wherein the electrode insert (3.2) comprises a hook (3.2.1) extending in a reversed direction relative to an introduction direction of introducing the conductor.

4. Kit-of-parts according to claim 1, 2 or 3, wherein the electrode insert (3.2) comprises a blade (3.3), a resilient sheet metal, a knife or a cutter configured to penetrate an insulating cable mantle (5.2) around the cable core (5.1).

5. Kit-of-parts according to claim 4, wherein the blade (3.3), knife or cutter is tiltable on a swivel shaft (3.4).

6. Kit-of-parts according to any of the preceding claims, wherein the plug adapter (3) is arranged in a wall of the box (2), which comprises a stator (2.1.2) in the interior thereof to engage the plug adapter (3).

7. Kit-of-parts according to claim 6, wherein the stator (2.1.2) extends, in an assembled state, at least into and possibly through a slot (3.1.4) of plug adapter (3).

8. Kit-of-parts according to any of the preceding claims, further comprising a lock between the socket adapter (4) and the plug adapter (3).

9. Kit-of-parts according to claim 8, comprising a buckle (3.1.5) to matingly locking with a lock hole (4.1.2).

10. Component housing assembly, comprising either in assembly the housing box (2) and the plug adapter (3), or in assembly the housing box (2), the plug adapter (3) and the socket adapter (4) according to any of the preceding claims.

11. A method of assembling an assembly of claim 1, comprising inserting into the plug holes (3.1.1) at least the cable cores (5.1), when power cables are provided at a construction site without a connector part to expose a free cable end, and mounting the socket adapter (4) comprising the electrode plug (4.2) onto the plug adapter (3), when power cables are provided with a connector part.

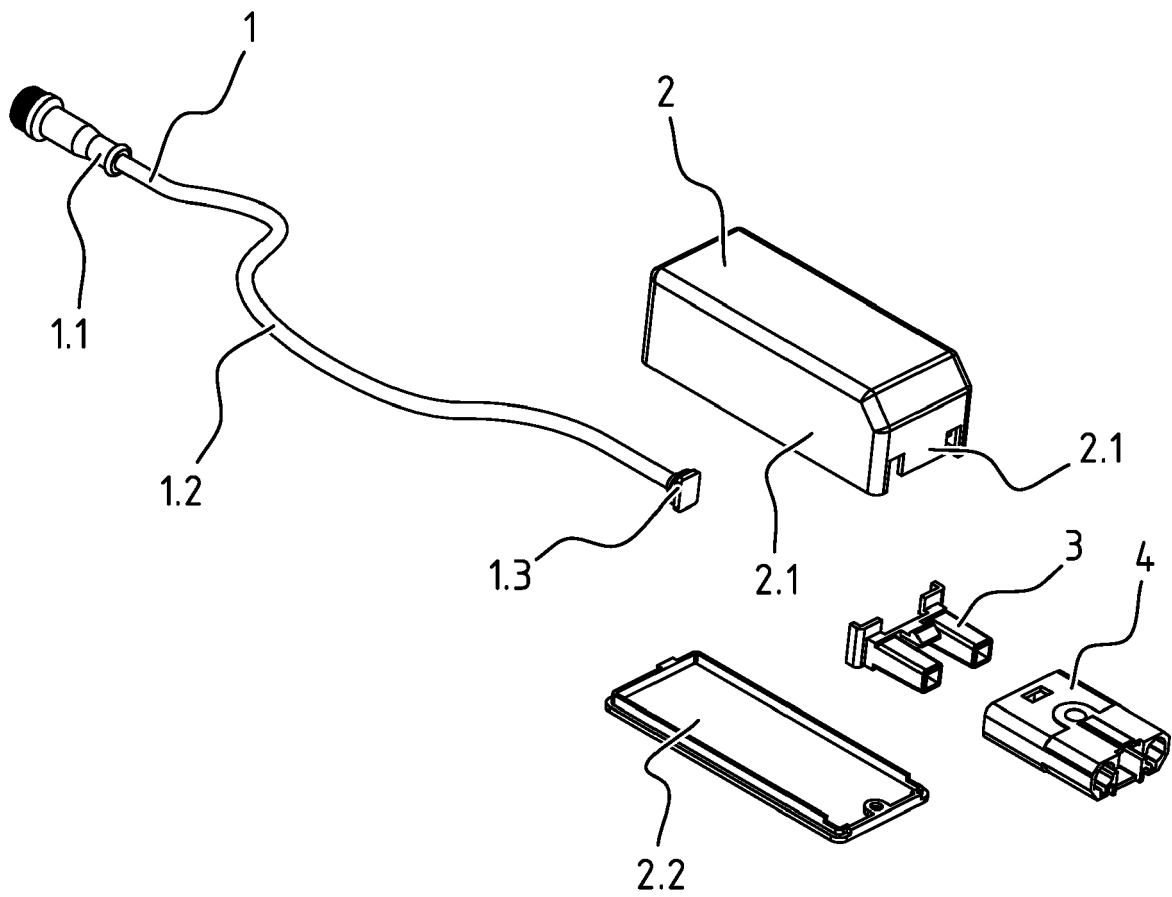
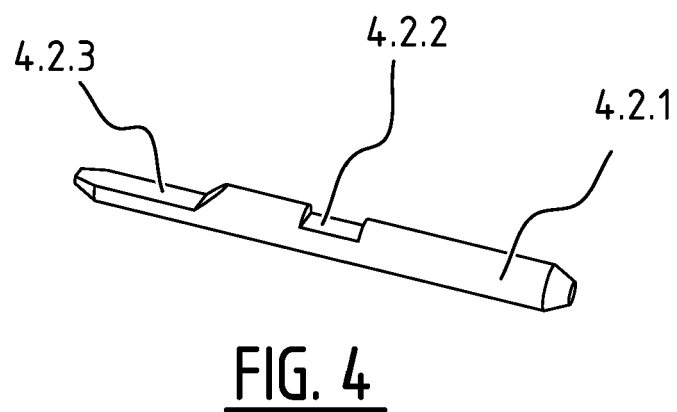
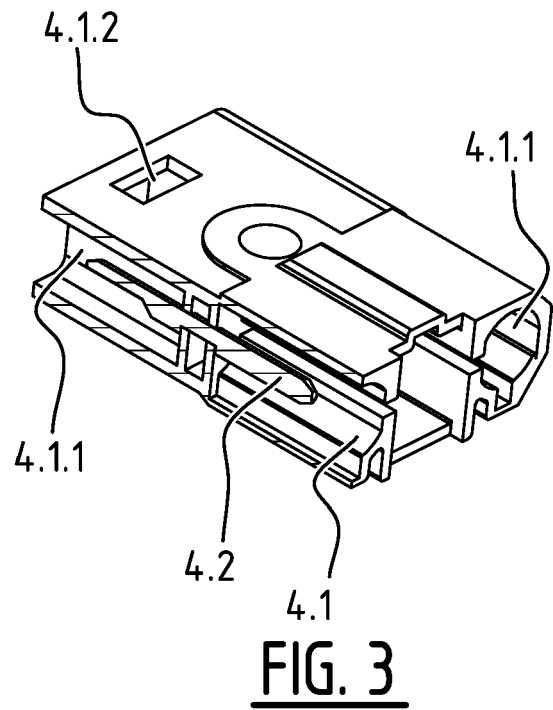
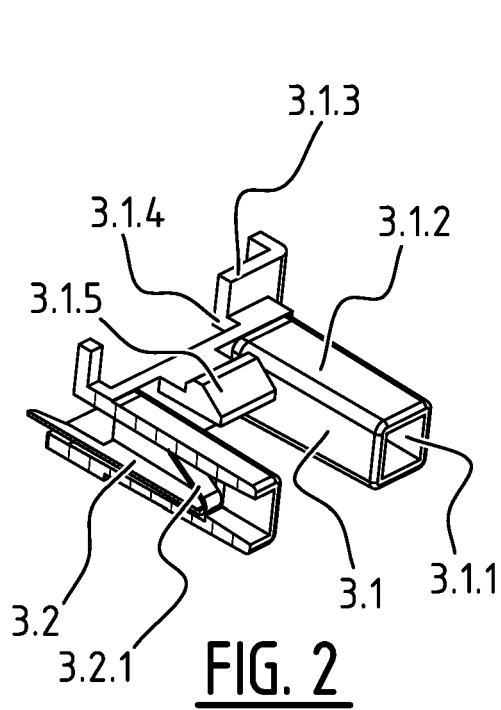
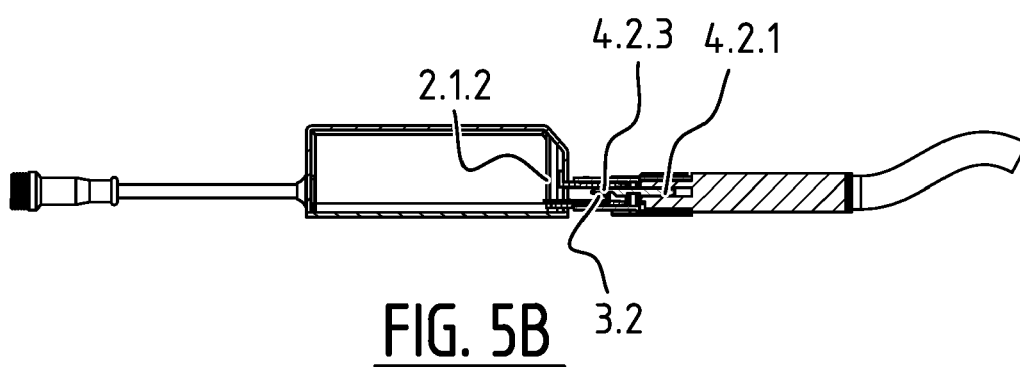
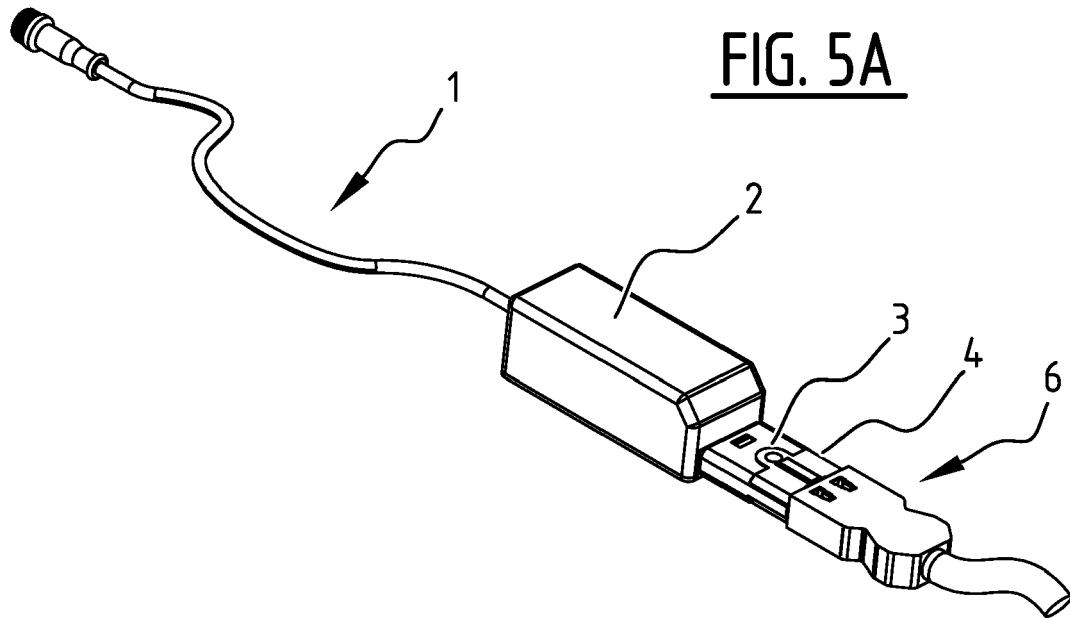


FIG. 1





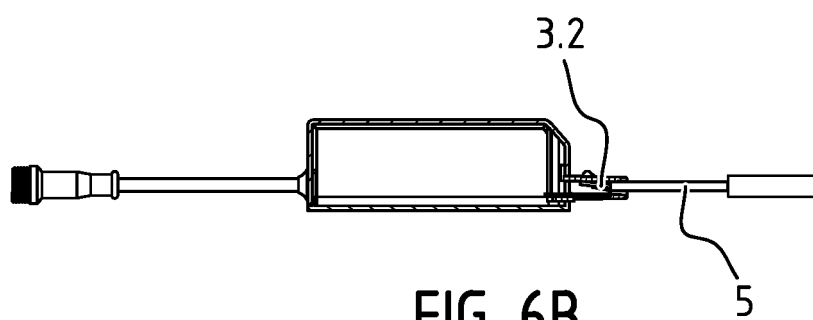
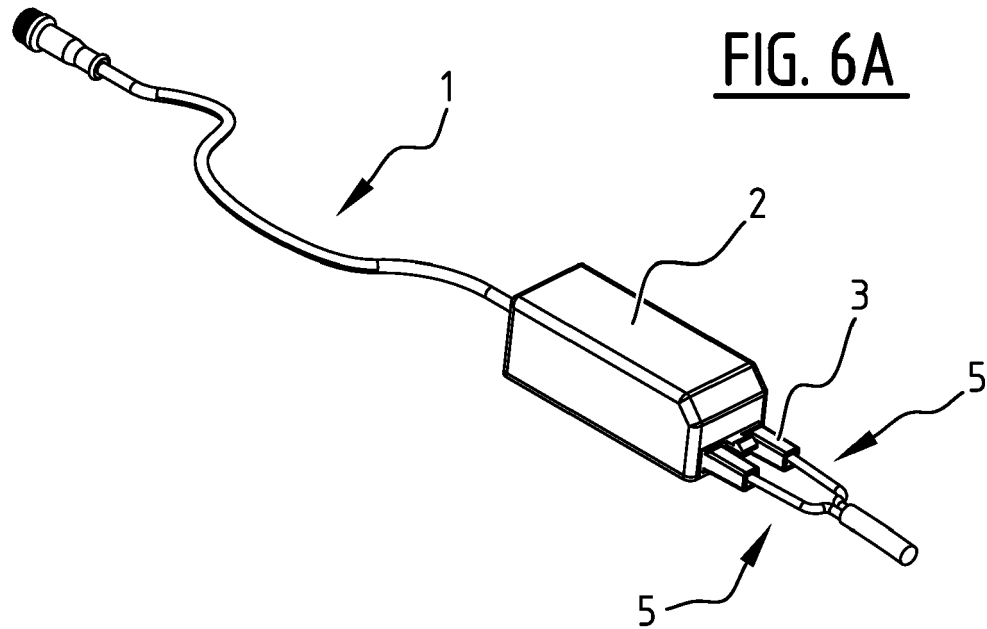


FIG. 7

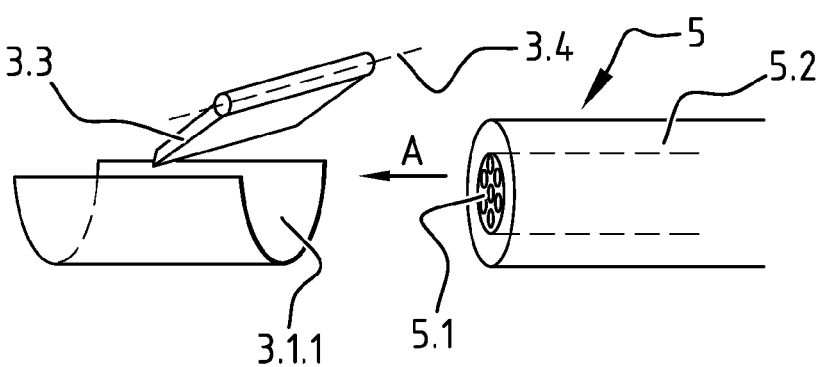
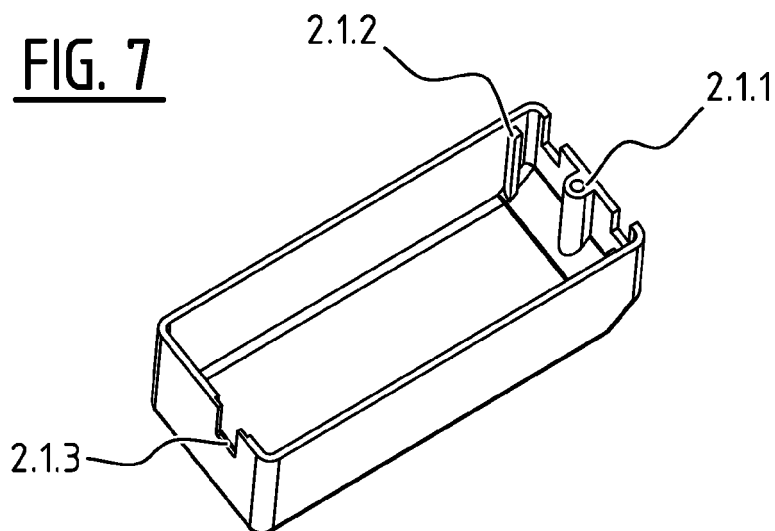


FIG. 8A

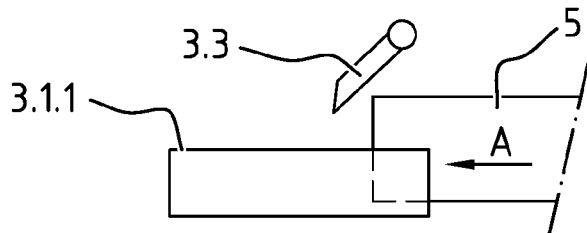


FIG. 8B

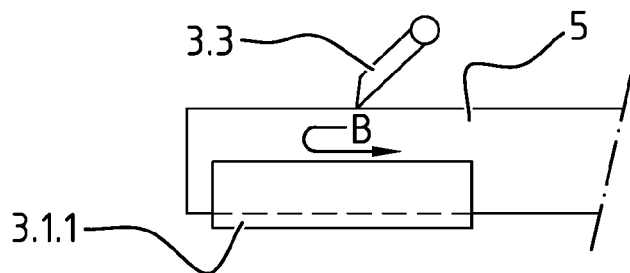


FIG. 8C

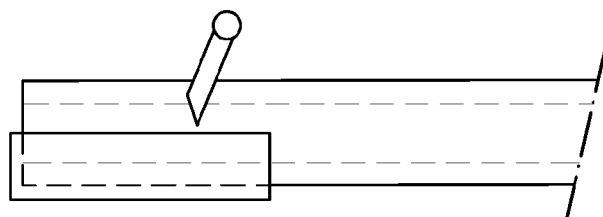


FIG. 8D

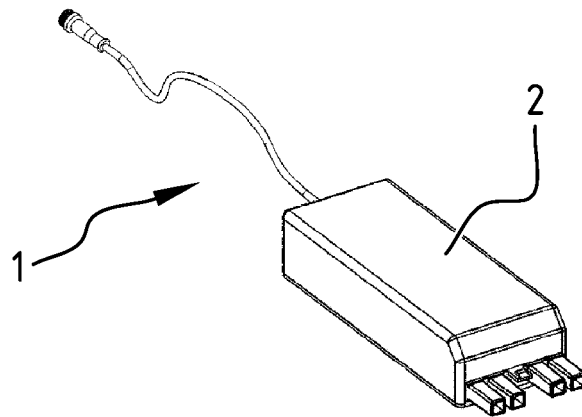


FIG. 9

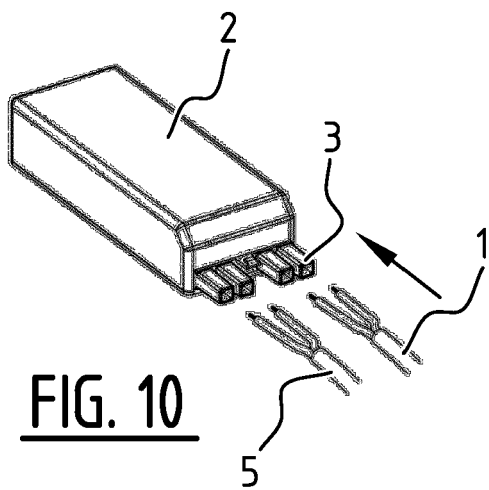


FIG. 10

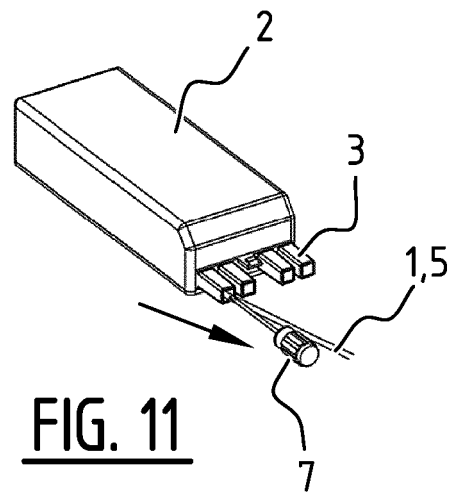


FIG. 11

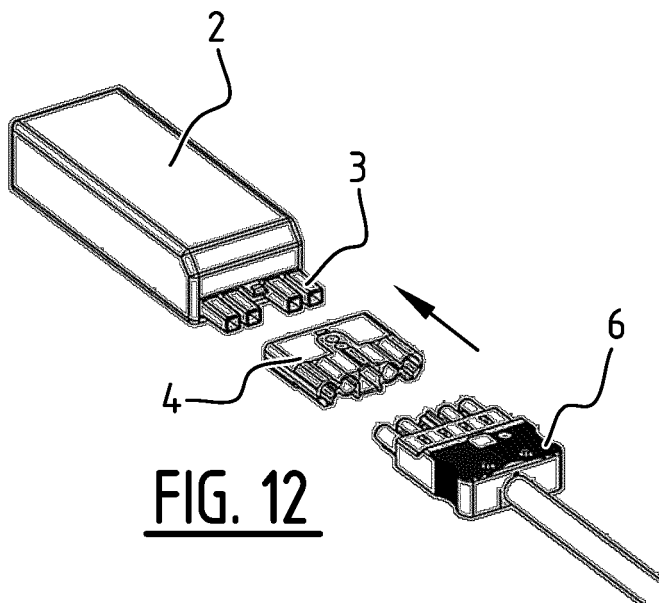


FIG. 12

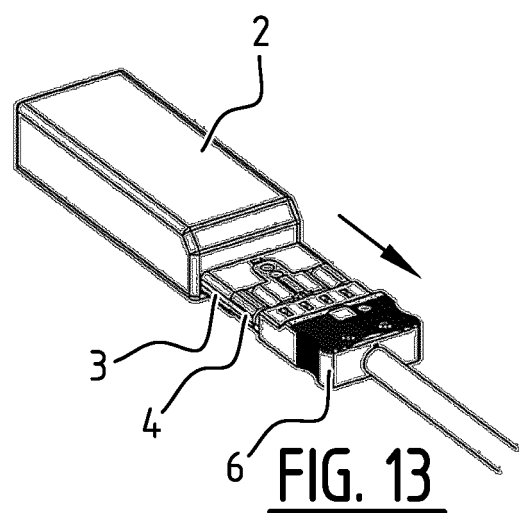


FIG. 13



EUROPEAN SEARCH REPORT

Application Number
EP 20 18 6926

5

10

15

20

25

30

35

40

45

50

55

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	CN 105 337 117 B (GUANGDONG HERON PHOTOELECTRIC CO LTD) 2 October 2018 (2018-10-02)	1,4-11	INV. H05K5/02 H01R4/24
Y	* abstract * * figures 3,6,7,8 * * paragraphs [0009], [0022], [0023], [0025] *	1-3,8-10	
A	----- US 2017/114991 A1 (YANG XIONG [CN] ET AL) 27 April 2017 (2017-04-27) * abstract * * figure 1 * * paragraph [0021] *	1-11	
A	----- CN 207 560 574 U (JIUJIANG MAJOR ELECTRONICS CO LTD) 29 June 2018 (2018-06-29) * abstract * * figure 1 * * paragraph [0026] *	1-11	
A	----- US 2017/156229 A1 (YILMAZ TANER [DE] ET AL) 1 June 2017 (2017-06-01) * abstract * * figure 1 * * paragraphs [0037], [0039] *	1-11	TECHNICAL FIELDS SEARCHED (IPC)
Y	----- US 9 172 163 B2 (IDEAL IND [US]) 27 October 2015 (2015-10-27) * abstract * * figures 3-5 * * column 2, line 62 - column 3, line 8 * * column 4, line 64 - column 5, line 13 * * column 5, line 30 - column 5, line 45 * ----- -/--	2,3	H05K H01R
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 18 November 2020	Examiner Bielert, Erwin
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)



EUROPEAN SEARCH REPORT

Application Number
EP 20 18 6926

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 8 403 702 B2 (LOPES EDNEI [BR]; GOLDSCHMIDT JOSE ROBERTO [BR] ET AL.) 26 March 2013 (2013-03-26) * abstract * * figures 1-4 * * column 2, line 60 - column 3, line 14 * -----	1,8-10	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 18 November 2020	Examiner Bielert, Erwin
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 20 18 6926

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-11-2020

10

15

20

25

30

35

40

45

50

55

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 105337117 B	02-10-2018	NONE	
US 2017114991 A1	27-04-2017	CN 205079196 U US 2017114991 A1	09-03-2016 27-04-2017
CN 207560574 U	29-06-2018	NONE	
US 2017156229 A1	01-06-2017	AU 2016262672 A1 CN 106953245 A DK 3177119 T3 EP 3177119 A1 ES 2700853 T3 HU E040623 T2 KR 20170064472 A PL 3177119 T3 US 2017156229 A1	15-06-2017 14-07-2017 14-01-2019 07-06-2017 19-02-2019 28-03-2019 09-06-2017 29-03-2019 01-06-2017
US 9172163 B2	27-10-2015	CN 103515736 A EP 2865051 A2 TW 201419668 A US 2014154892 A1 WO 2013192418 A2	15-01-2014 29-04-2015 16-05-2014 05-06-2014 27-12-2013
US 8403702 B2	26-03-2013	BR 102012015595 A2 CN 102856724 A US 2012329304 A1	09-07-2013 02-01-2013 27-12-2012

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 105337117 [0005] [0010]
- CN 15337117 [0010]