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(54) **Igniter with printed circuit board which incorporates the complementary device interconnections**

Zündgerät mit Leiterplatte mit Verbindungsleitungen für zusätzliche Geräte

Allumeur comprenant un circuit imprimé incluant les interconnexions pour des appareils supplémentaires

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(73) Proprietor: **Sanchez Jimenez, Rafael
28240 Hoyi de Manzanares,
Madrid (ES)**

(72) Inventor: **Sanchez Jimenez, Rafael
28240 Hoyi de Manzanares,
Madrid (ES)**

(74) Representative: **PROPI, S.L.
C/ Jorge Juan 19, 3°
28001 Madrid (ES)**

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Description

OBJECT OF THE INVENTION

[0001] The present invention refers to a new igniter for igniting sodium vapor lamps, metal halide lamps and the like, which igniter has been designed and structured to considerably aid in the wiring among all the possible elements intervening in the ignition, feed, regulation and control of a sodium vapor lamp, metal halide lamp and the like, said igniter integrating a printed circuit with the majority of the necessary wiring.

BACKGROUND OF THE INVENTION

[0002] For igniting, feeding, regulating and controlling a sodium vapor lamp, a metal halide lamp and the like, different combinations of elements normally intervene, starting from the simplest, such as the case of the igniter, ballast, lamp, network and earth, to more complex cases in which the igniter, ballast, lamp, network, earth, one or more capacitors, one or more timers, a connection strip, etc., can intervene, the suitable wiring among all these elements being necessary for suitably interconnecting them.

[0003] Said wiring is a complex, cumbersome, expensive and relatively reliable task, in the case in which it is carried out by the luminary manufacturer or by the installer, which increases said drawbacks.

[0004] The document EP 0855851 disclosed discharge lamp unit which has a housing provided with a lamp socket fitted thereon and accommodating therein a printed circuit board implemented with a lamp lighting circuit and a high-voltage generating transformer assembly consisting of a coil case containing a secondary-coil-wound bobbin with an core inserted in a hollow center thereof and having a primary coil being a conducting plate spirally wound around the coil case and is formed as a single solid device by potting the inner components in the housing with insulating resin poured in a melted state and solidified therein, also the document US 4527098 shows a discrete type starter for HID lamps uses a ferrite core pulse transformer whose secondary is connected in series with the lamp across a ballast output winding. The primary is formed by mounting one or more sidacs and a resistor astride the core loop and interconnecting them by dadding on the board to make two or three turns around the core. The primary is connected across a capacitor which is connected in series with an impedance across the ballast output winding, this documents does not discloses the interconnections for complementary devices that connects said igniter with the remaining complementary ignition, feed, regulation and control elements, a circuit in which there are at least a pair of connectors suitably coupled and connected to the printed circuit and which project from the wall of resin or the like, normally intended for connecting a ballast.

DESCRIPTION OF THE INVENTION

[0005] The igniter proposed by the invention fully and satisfactorily solves the aforementioned drawback.

[0006] To do so and more specifically, the invention consists of housing the igniter components in the cavity of a casing, of a plastic material or not, which incorporates, in the igniter's printed circuit, the necessary interconnections (tracks) replacing the majority of the wiring (connection) interconnecting all the elements necessary for igniting, feeding, regulating and controlling a sodium vapor lamp, a metal halide lamp and the like, at practically no cost and significantly simplifying the luminary manufacturing or installation works.

[0007] On the other hand, it permits replacing any of the elements individually integrating the assembly, preventing that the replacement of one of the elements implies that of two or more elements of the assembly, thereby optimizing maintenance costs.

[0008] Although, as previously mentioned, there are numerous possible elements to take into account for igniting, feeding, regulating and controlling a sodium vapor lamp, a metal halide lamp and the like, with two or three practical embodiment examples of the invention, practically all the most conventional possibilities would be covered.

[0009] Complementarily, the igniter incorporates at least two connectors, projecting from it through an insulating wall of resin mass or the like, which act as electric connection means between the igniter and, normally, the ballast.

[0010] According to another feature of the invention, a connection strip normally provided with seven connectors is arranged on the upper part of the casing, in which strip a pair of lamp connectors, a pair of capacitor connectors, a pair of network connectors and an earthing terminal are normally arranged.

[0011] As previously mentioned, the igniter of the invention incorporates at least two connectors projecting from it through an insulating wall of a resin mass or the like, but which can be more, according to the features and the number of elements to be interconnected, that possible expansion being enabled, during the manufacturing process, because that side is closed and insulated with resin, which permits that the remaining igniter elements, such as the casing, can remain the same. Furthermore, those possible connectors can be placed on that side in the position considered the most suitable, as there are no restrictions by any rigid element, like the casing.

[0012] The aforementioned resin mass, or other electro-insulating material, is intended for closing and insulating the igniter elements assembly, with regard to the outside, as well as the printed circuit incorporating the elements' connection, from heat, electricity, dust, etc.

[0013] As previously mentioned, if the igniter is to have more connectors, these additional connectors will normally be coupled in the area of the insulating wall with

resin mass or the like, however, for various reasons, such as in some assembly types, it may be convenient to place them on the upper part of the casing, after the seven aforementioned connectors, in this case being necessary to modify the elements such as the casing.

DESCRIPTION OF THE DRAWINGS

[0014] To complement the description being made and for the purpose of helping to better understand the features of the invention according to a preferred practical embodiment example thereof, a set of drawings accompanies said description as an integral part thereof, showing, with an illustrative and non-limiting character, the following:

Figure 1 shows a perspective view of an igniter for starting up sodium vapor lamps, metal halide lamps and the like, carried out according to the object of the present invention.

Figure 2 shows the same part as in the previous figure according to a perspective opposite that of said figure.

PREFERRED EMBODIMENT OF THE INVENTION

[0015] In view of the indicated figures, it can be seen how the igniter proposed by the invention is provided with a casing (1), housing in its cavity the conventional elements of an igniter, whose printed circuit (not shown) incorporates the necessary connections (tracks) replacing the majority of the wiring (connection) interconnecting the elements to be used, according to the case, for igniting, feeding, regulating and controlling a sodium vapor lamp, a metal halide lamp and the like; arranging the suitable connections on said printed circuit so that a plurality of outer connectors allow for a simple, quick, reliable and economical connection of the remaining elements that are to intervene, namely the ballast, the lamp, the network, earth and, optionally, the capacitor or capacitors, one or more timers, etc.

[0016] More specifically, the rear side of the casing (1) has at least a pair of connectors (2), suitably coupled and connected to said printed circuit, which emerge from the resin mass (3) or other electro-insulating material, and which will normally be connected to a ballast.

[0017] Obviously from that explained above, the casing (1) housing the igniter in its cavity must have a rear wall initially open and subsequently sealed by means of a resin mass (3) or other electro-insulating material, in order to suitably protect the igniter elements assembly as well as the printed circuit incorporating the elements' connection, from heat, electricity, dust, etc.

[0018] The connectors (2) and other connectors which can exist on this same side, are complemented with a battery normally having seven connectors (4), also arranged on the casing (1) and suitably coupled and con-

nected to the printed circuit, from which connectors, normally two of them, those corresponding to the reference (4) itself, are intended for connecting the sodium vapor lamp, metal halide lamp or the like, the next two connectors (4') are intended for connecting the capacitor, and from the remaining connectors (4''), two connectors for connecting the power feed and one to earth, this battery being able to incorporate a larger number of connectors (4), as needed.

[0019] The igniter can be placed at any point of the luminary, thus being possible to distance it from other elements that may generate negative influences on it, or vice versa, requiring a minimum space for its assembly.

[0020] As a practical embodiment variant to be pointed out, the igniter of the invention will have three connectors on the side with the resin mass (3) or other electro-insulating material, these connectors normally being intended for connecting a complementary device.

[0021] As another possible practical embodiment to be pointed out, the igniter of the invention will have nine connectors arranged on the casing (1), seven of them being normally intended for the connections of the aforementioned elements and the remaining two connectors for connecting an optional element, such as a second capacitor, a timer, etc.

[0022] The different connectors mentioned throughout the description can obviously be replaced by any other conventional connection element, such as cables, pins or the like, with these alternatives in no way affecting the scope of the invention.

Claims

1. An igniter with a printed circuit incorporating the interconnections for complementary devices, of the type intended to be connected to a sodium vapor lamp, a metal halide lamp or the like, and to a ballast, and also, optionally, with other ignition, feed, regulation and control elements; the igniter and its corresponding printed circuit are arranged in the cavity of a casing (1) provided with a sealing and insulating wall (3) of resin or other electro-insulating material, **characterized in that** the igniter's printed circuit incorporates the necessary interconnection that connects said igniter with the remaining complementary ignition, feed, regulation and control elements, a circuit in which there are at least a pair of connectors (2) suitably coupled and connected to the printed circuit and which project from the wall (3) of resin or the like, normally intended for connecting a ballast, said casing (1) further incorporating a battery normally having seven connectors (4), (4'), (4'') suitably coupled and connected to the printed circuit, from which connectors, two of them (4) are normally intended for connecting the lamp, two other connectors (4') for connecting a capacitor, and from the remaining connectors (4''), two for connecting the net-

work and one for the earth connection.

2. An igniter with a printed circuit incorporating the interconnections for complementary devices according to claim 1, **characterized in that** three connectors project from the wall (3) of resin or the like, which connectors are suitably coupled and connected to the printed circuit, connectors normally intended for connecting a complementary device.
3. An igniter with a printed circuit incorporating the interconnections for complementary devices according to claim 1, **characterized in that** the upper part of the casing (1) incorporates a battery with nine connectors (4) suitably coupled and connected to the printed circuit, from which connectors, two of them (4) are normally intended for connecting the lamp, two other connectors (4') for connecting a capacitor, three other connectors (4''), two of which are for connecting the network and one for the earth connection, and the last two connectors are for connecting an optional element such as a second capacitor, one or more timers, etc.

Patentansprüche

1. Ein Zünder mit einem gedruckten Schaltkreis, der die Zwischenverbindungen für ergänzende Vorrichtungen einschließt, des Typs, der dazu vorgesehen ist, an eine Natriumdampflampe, eine Halogenmetalllampe oder dergleichen angeschlossen zu werden, und an ein Vorschaltgerät, und ebenso, optional, an andere Elemente zur Zündung, Speisung, Regulierung und Steuerung; der Zünder und sein entsprechender gedruckter Schaltkreis sind in dem Hohlraum eines Gehäuses (1) angeordnet, das ausgestattet ist mit einer Wand zur Versiegelung und Isolierung (3) aus Harz oder einem anderen elektrisch isolierenden Material, **dadurch gekennzeichnet, dass** der gedruckte Schaltkreis des Zünders die notwendige Zwischenverbindung einschließt, die besagten Zünder an die übrigen ergänzenden Elemente zur Zündung, Speisung, Regulierung und Steuerung anschließt, einen Schaltkreis, in welchem es zumindest ein Paar von Anschlüssen (2) gibt, die geeigneter Weise an den gedruckten Schaltkreis gekoppelt und angeschlossen sind und welche von der Wand (3) aus Harz oder dergleichen hervorspringen, normalerweise dazu vorgesehen, ein Vorschaltgerät anzuschließen, besagtes Gehäuse (1) schließt außerdem eine Batterie ein, die normalerweise sieben Anschlüsse (4), (4'), (4'') hat, die geeigneter Weise an den gedruckten Schaltkreis gekoppelt und angeschlossen sind, Anschlüsse, von welchen zwei davon (4) normalerweise dazu vorgesehen sind, die Lampe anzuschließen, zwei andere Anschlüsse (4'), um einen Kondensator anzuschließen, und von den

übrigen Anschlüssen (4'') zwei, um das Netzwerk anzuschließen, und einer für den Erdungsanschluss.

2. Ein Zünder mit einem gedruckten Schaltkreis, der die Zwischenverbindungen für ergänzende Vorrichtungen einschließt, nach Anspruch 1, **dadurch gekennzeichnet, dass** drei Anschlüsse von der Wand (3) aus Harz oder dergleichen hervorspringen, Anschlüsse, welche geeigneter Weise an den gedruckten Schaltkreis gekoppelt und angeschlossen sind, Anschlüsse, normalerweise dazu vorgesehen, eine ergänzende Vorrichtung anzuschließen.
3. Ein Zünder mit einem gedruckten Schaltkreis, der die Zwischenverbindungen für ergänzende Vorrichtungen einschließt, nach Anspruch 1, **dadurch gekennzeichnet, dass** der obere Teil des Gehäuses (1) eine Batterie mit neun Anschlüssen (4) einschließt, die geeigneter Weise an den gedruckten Schaltkreis gekoppelt und angeschlossen sind, Anschlüsse, von welchen zwei davon (4) normalerweise dazu vorgesehen sind, die Lampe anzuschließen, zwei andere Anschlüsse (4'), um einen Kondensator anzuschließen, drei andere Anschlüsse (4''), von welchen zwei dazu da sind, das Netzwerk anzuschließen, und einer für den Erdungsanschluss, und die letzten zwei Anschlüsse sind dazu da, ein optionales Element anzuschließen, wie einen zweiten Kondensator, einen oder mehr Zeitgeber, usw.

Revendications

1. Un igniteur avec un circuit imprimé comportant les interconnexions pour des dispositifs complémentaires, du type de ceux qui sont destinés à être connectés à une lampe à vapeur de sodium, à une lampe aux halogénures métalliques ou similaires, et à un ballast, et aussi, en option, avec d'autres éléments d'amorçage, d'alimentation, de régulation et de commande ; l'igniteur et son circuit imprimé correspondant sont disposés dans la cavité d'un boîtier (1) constitué d'une paroi d'étanchéité et d'isolation (3) en résine ou autre matériau d'isolation électrique, **caractérisé en ce que** le circuit imprimé de l'igniteur comporte l'interconnexion nécessaire qui connecte ledit igniteur avec les autres éléments d'amorçage, d'alimentation, de régulation et de commande, un circuit dans lequel il y a au moins une paire de connecteurs (2) couplés et connectés de façon appropriée au circuit imprimé et qui dépassent de la paroi (3) en résine ou matériau similaire, généralement destinés à être connectés à un ballast, ledit boîtier (1) comportant en outre une batterie possédant généralement sept connecteurs (4), (4'), (4'') couplés et connectés de façon appropriée au circuit imprimé, parmi ces connecteurs, deux d'entre eux (4) sont généralement destinés à être connectés à la lampe,

deux autres connecteurs (4') sont destinés à être connectés à un condensateur, et parmi les autres connecteurs (4''), deux sont destinés à être connectés au réseau et un est prévu pour la connexion à la terre.

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2. Un igniteur avec un circuit imprimé comportant les interconnexions pour des dispositifs complémentaires selon la revendication 1, **caractérisé en ce que** trois connecteurs dépassent de la paroi (3) en résine ou matériau similaire, ces connecteurs sont couplés et connectés de façon appropriée au circuit imprimé, connecteurs qui sont généralement destinés à être connectés à un dispositif complémentaire.

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3. Un igniteur avec un circuit imprimé comportant les interconnexions pour des dispositifs complémentaires selon la revendication 1, **caractérisé en ce que** la partie supérieure du boîtier (1) comporte une batterie avec neuf connecteurs (4) couplés et connectés de façon appropriée au circuit imprimé, parmi ces connecteurs, deux d'entre eux (4) sont généralement destinés à être connectés à la lampe, deux autres connecteurs (4') sont destinés à être connectés à un condensateur, trois autres connecteurs (4''), dont deux sont destinés à être connectés au réseau et un est prévu pour la connexion à la terre, et les deux derniers connecteurs sont destinés à être connectés à un élément optionnel comme par exemple un second condensateur, une ou plusieurs minuteries, etc.

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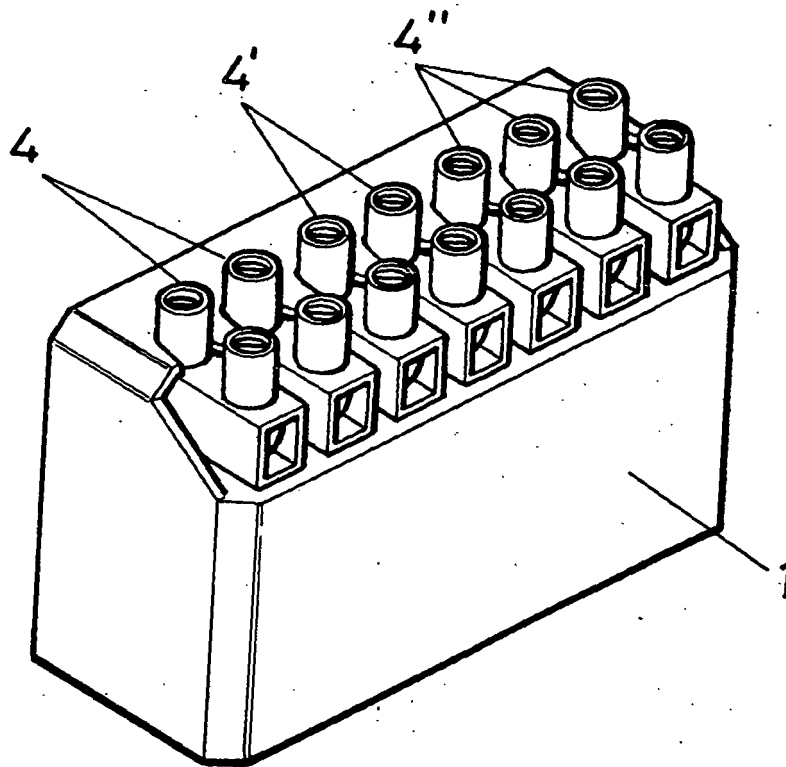


FIG.1

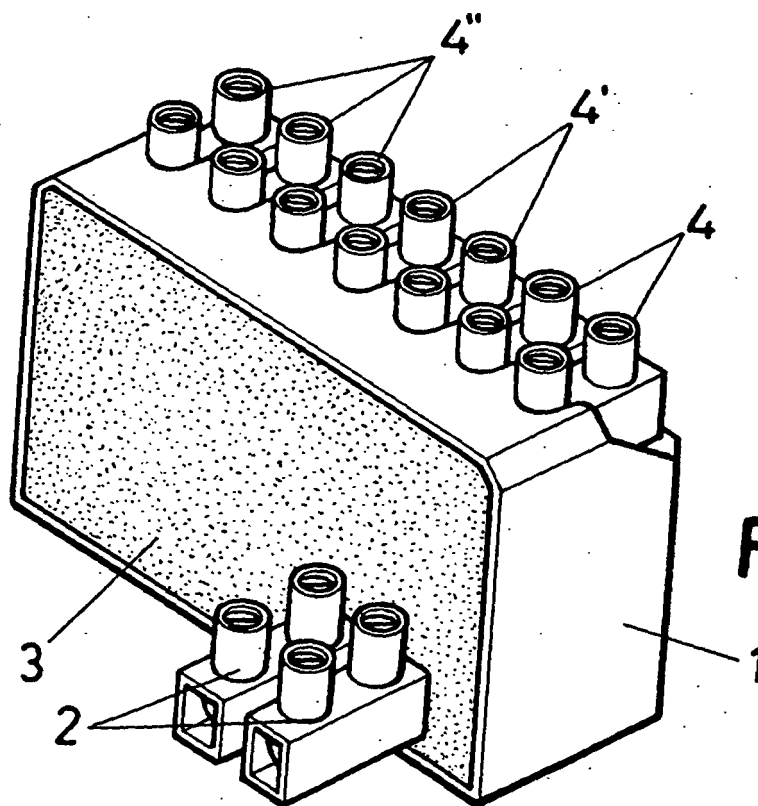


FIG.2

REFERENCES CITED IN THE DESCRIPTION

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