

"CONNECTOR BLOCK FOR LIGHTING SYSTEMS USING BUSBARS"

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5 Field of Invention

This invention concerns electric current distribution ducts and refers in particular to a connector block for a busbar electric lighting system.

State of the Technique

The electric distribution systems using busbars for, but not only, lighting
10 systems include electric conductors which are enclosed in an insulating sheath and housed in a trunk or profile equipped both with means for connecting to other elements and means for laying. Usually, in order to tap current from the user points, along at least one wall of the busbar frame there are one or more indents or windows, and in line with each of these there is a
15 connector block or socket prepared to connect an electric plug. The connector block is facing the indent or opening in the wall of the trunk and has some alveoli to receive the round or flat pins of the plug which must come into contact with the corresponding bare parts of the electric conductors passing in the bus bar.

20 According to the well known and widespread methods of realisation, the connector block or socket is placed inside the busbar held in position using means of anchoring, and for the degree of sealing required it must be associated with a seal to be positioned and fixed on the external face of the busbar on a level with the relative indent or window. The assembly of each
25 connector block is however difficult and not easy.

Objectives and Summary of the Invention

Starting from this introduction, one of the objectives of this invention is to propose and provide a connector block or electric socket for lighting systems which can be easily inserted into the trunk of the busbar together with
5 the electric conductors and which is able to fit in and lock automatically in position on a level with the respective indent or window of the trunk as soon as it is in line with it.

Another objective of the invention is to provide a busbar connector block for distribution of electric current also equipped with an efficient sealing
10 system which acts against the wall of the trunk, from the inside of the latter, as soon as the box fits into position, therefore without any need either for seals or manual intervention.

These objectives and implicit advantages deriving from them are achieved, according to the invention, by means of a connector block which
15 can be inserted, together complete with electric conductors into a trunk or profile of a busbar electric distribution system, which includes a base body and at least one plate complete with alveoli for the pins of an electric plug, and where said plate is associated with said body with the possibility of movement limited to the direction of its length and perpendicular to the plane on which it
20 is lying, that is at right angles to the plane containing the electric conductors, so that the plate can take up a lowered position to enable the box to slide in the trunk and a raised position for fitting and locking the box in a respective indent or window of the trunk when in line with it.

In order to be able to carry out the above movements, the plate is
25 equipped with lateral guide pins sliding in corresponding slanting slots, that is

cams, provided in two opposite sides of the base body, said pins occupying the lower part of said slots when the plate is in the lowered position. Furthermore, the plate has a seal which rests against the internal surface of the trunk around the indent or window when the plate is in the raised position.

- 5 In order to lock it in the trunk, the plate has, on its external face, a relief or frame housed in the respective indent or window and, on the inside, a stop lug interacting with a stop placed in the base body.

Brief Description of Drawings

- The invention will however be described in more detail in the
10 description that follows made with reference to the attached indicative and not limiting drawings, in which:

Fig.1 is a face on view of a part of a straight trunk or profile for a busbar;

Fig.2 is a side view of the connector block;

- 15 Fig.3 is a plan view of the connector block in Fig. 2

Fig.4 is a cross-section according to arrows F-F in Fig. 3;

Fig. 5 is a longitudinal section according to arrows G-G in Fig.3;

Fig. 6 is a cross section according to arrows H-H in Fig.3.

Detailed Description of the Invention

- 20 In these drawings there are represented a busbar 11 for the distribution of electric power and a connector block 12 to be associated with it.

The busbar 11 includes a trunk or profile 13 and a group of electric conductors 14, enclosed in an insulating sheath 15 and which can be inserted lengthwise in the trunk or profile, for example according to arrow F in Fig.2.

Along the trunk 13, in at least one of its walls – Fig. 1, one or more indents or windows 16 are provided, each one for a connector block 12.

The connector block includes a base body 17 and moving plate 18, positioned on opposite sides of the electric conductors 14 and associated
5 between them. The base body 17 for example, attaches itself to the insulating sheath in line with the bare parts 14' of the electric conductors 14, by means of a pairs of harpoon type hooks 19 with hooks facing in opposite directions. The plate 18 is positioned basically parallel to the plane containing the electric conductors and has alveoli 20 to receive the pins of a plug – not shown –
10 which must come into contact with the bare parts 14' of said electric conductors and possibly means 20' for blocking the plug to it. In other words, the electric conductors and the connector block are attached to each other and move together when inserted into the trunk or profile 13

The base body 17 has two side walls 21, on either side of the group of
15 conductors and they are parallel to each other and the F insertion direction of the conductors and of the connector block of the trunk. The moving plate 18 is positioned and can move between these two lateral walls 21 of the base body 17 and has, on its external side, a relief or frame 21 the same shape and size as those of the indent or window 16 in the trunk 11 and, around said relief or
20 frame, housing for a seal 23.

In each of the side walls 21 of the base body there are two slots 24 and the plate 18 is equipped on each of the two opposite sides with two guide pins 25 housed and sliding in said slots.

The slots 24 are cam shaped, that is sloping, divergent compared to the plane holding the electric conductors in the direction of insertion into the trunk or profile.

Basically, the slots 24 have an initial part 24' closer to the electric
5 conductors 14 and an end section 24'' further away from the conductors themselves. Thanks to the sliding of the guide pins 25 in the slots 23, the plate 18 can move lengthwise and parallel to itself, in relation to the base body and the conductors, between two positions: a first position lowered and alongside the electric conductors 14 when its lateral pins 25 are on a level with the initial
10 part 24' of the slots 24, and a second raised position and away from the electric conductors when its lateral pins 25 are on a level with the end section 24'' of the slots 24.

The plate 18 is placed in the lowered position manually before it is inserted into the trunk 13; the raised position of the plate 18, on the other
15 hand, takes place automatically by means of a raised lug 16' on one side of the indent or window 16 of the trunk in which the connector block must fit into.

With plate 18 in the lowered position, conductors 14 and connector block 12 can be inserted and moved inside the trunk until the connector block is in line with a respective indent or window 16. At this point, a part of the plate
20 18 engages the raised lug 16', whereas the conductors 14 and the base body 17 can still move. In this way, following a short lengthwise movement of the base body, the plate, slots and guide pins 24, 25 interact causing the plate to move from the lowered to the raised position in which the relief or frame on its external face moves to fit into the indent or window of the trunk, placing the
25 connector block in the position to be connected to the plug. In this position, the

seal 23 on the plate 18 rests against the internal surface of the facing wall of the trunk for the required seal. The position of the connector block in the trunk is almost irreversible; in fact, it cannot be changed by accidental or unintentional reasons, but only if intentional. Furthermore, for safe blocking, 5 the plate can be equipped with a locking lug 26 to click onto a flexible stop 27 placed along at least one lateral wall of the base body – Fig. 2 – and sufficient to prevent longitudinal movement of the plate itself.

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CLAIMS

1. A connector block for electric current distribution systems including electric conductors enclosed in an insulating sheath and housed in a trunk or profile, where the connector block includes a base body (17) constrained to the sheath of the electric conductors and a plate (18) equipped with at least
10 alveoli for pins of an electric plug, and where electric conductors and connector block can be inserted together in the trunk or profile so as to position the connector block in line with an indent or window in one wall of the trunk or profile, characterised by the fact that said plate (18) is associated with the base body (17) with the possibility of movement limited to a
15 lengthwise direction and to a perpendicular direction to the plane it lies in, that is to say the plane containing the electric conductors, in order that the plate can take on a lowered position for insertion and sliding of the block in the trunk or profile and a raised position for positioning and blocking it in a respective indent or window of the trunk when it is in line with the latter.

20 2. The connector block according to claim 1, in which the plate is provided laterally with guide pins (25) engaging facing sloping slots (24), that is cam shaped, prepared in two lateral walls of the base body parallel to the insertion direction of the block in the trunk, said slots (24) having an initial section (24') closer to the electric conductors (14) and an end section (24'')
25 further away from the conductors themselves, and said guide pins (25) being

in the initial section of said slots when the plate is in the lowered position and in the end section of said slots when in the raised position.

3. The connector block according to claims 1 and 2, in which the moving plate has a part provided to engage an interception lug (16') in line
5 with the indent or window in the trunk so as to move the plate from the lowered to the raised position.

4. The connector block according to the previous claims, in which the plate has a seal (23) and a relief or frame (22) on its external surface, the same shape and size as the indent or window in the wall of the trunk, this
10 relief or frame fitting into said indent or window when the plate is in the raised position and the seal (23) being around said relief or indent to rest against the internal surface of the trunk around said indent or window.

5. The connector block according to the previous claims, in which the plate has at least one stop lug (26) clicking onto a flexible stop (27) to stabilise
15 the raised position of the plate.

6. The connector block according to the previous claims, in which in the base body means for attaching to the electric conductor sheath are provided, said means being made up of a pair of harpoon type hooks with the hook facing the opposite direction to the hook of the other.