

Title: **Conductive plate particularly of a junction block of busbars and junction block comprising said conductive plate**

DESCRIPTION

Technical field

In its most general aspect, the present invention refers to the sector of prefabricated electrical conduits, and it particularly concerns a conductive plate for a junction block of the type used in electrically connecting busbars.

The invention also concerns a junction block for busbars and comprising a conductive plate of the above-mentioned type.

State of the art

As is known, in the field of prefabricated electrical conduits, the formation of an unbroken electrical path along a desired path is realized through the connection of a number of conductive elements, which are also known as busbars, and which comprise conductor bars that extend within a casing. In particular, the busbars are consecutively joined to each other by means of electrical junction blocks, also known as monoblocs, that comprise conductive copper plates interposed between the conductor bars of two contiguous busbars, and that are mechanically clamped in a pack by means of a clamping bolt that passes transversely in the junction block and ensures close contact between the conductor bars of the busbars and the conductive plates of the respective junction box. Examples of conductive plates for junction blocks for busbars are described in patent documents CN 203871491U, CN 203445560U, CN 203398677U and US 4842533A. In these documents, the conductive plates are obtained by shaping and working flat plates or sheets of copper so as to realize central portions that are not aligned with respect to the lateral portions and that are intended for coming into contact with adjacent plates so that the lateral portions are wider apart and allow for insertion of the conductive plates to be connected.

Although they have advantages, junction blocks of the above-mentioned type are not without drawbacks, and in particular they are subject to high overheating of the copper plates and limited maximum short-circuit current levels.

The above-mentioned drawbacks are caused, or, in any case, aggravated by the fact that the central portion of each conductive plate of a junction block necessarily has a hole passing through it for the above-mentioned clamping bolt, a hole which in fact constitutes a lack of conductive material precisely in the portion of the copper plate that most contributes to realizing the bridge for the electrical connection between two consecutive busbars.

The hole in each copper plate, which basically takes on the form of an actual through channel in the junction block, determines structural weakening of the copper plates and thus of the overall junction block, and also negatively influences the flow of current passing through the copper plates, in particular altering the flow lines thereof in an undesirable manner, with increased overheating of the conductive plates in the portion around the hole, greater dissipation of heat and lower yield in terms of the transmission of electric power, in addition to a greater risk of short circuits and high electrodynamic stress.

Summary of the invention

The technical problem on which the present invention is based is that of making available a junction block of the type comprising a plurality of conductive plates for electrically connecting busbars, and having structural and functional characteristics that are such as to overcome the drawbacks cited hereinabove with reference to the prior art, and in particular a junction block of the above-mentioned type that is capable of providing a connection between two consecutive busbars that is more efficient and electrically safer and structurally more solid, minimizing in particular the overheating of the conductive plates, the risk of short circuits, electrodynamic stress and bending of the conductive plates.

In accordance with the invention, the above-mentioned problem is resolved by a conductive plate for a junction block for busbars that has a pair of faces opposite each other and at least one through hole extending between the above-mentioned faces in a preferably central position thereon, and that is characterized in that on one of the above-mentioned faces, it comprises a protruding portion, that is to say, a projecting portion, through which the above-mentioned at least one hole passes. The above-mentioned protruding portion is preferably a band or strip fashioned integrally in the above-mentioned

conductive plate and more preferably, it is a median strip that extends from one edge of the conductive plate to an opposite edge of the conductive plate.

The width of the above-mentioned protruding portion is preferably greater than the above-mentioned at least one hole. At the above-mentioned protruding portion, the thickness of the above-mentioned conductive plate is preferably about twice the thickness of the remaining portion of the conductive plate.

The above-mentioned conductive plate is preferably made of copper or aluminium or of a copper alloy or aluminium alloy.

The above-mentioned conductive plate preferably comprises beveled edges, more preferably a pair of beveled edges parallel to the above-mentioned protruding portion.

Essentially, the conductive plate according to the present invention comprises a thicker portion at least in proximity to the area of the at least one hole in the conductive plate.

In one aspect, the conductive plate has an internal face (or first face) and an external face (or second face).

In one aspect, the protruding portion extends on (that is, it emerges or protrudes from) said internal face and constitutes a central portion of the conductive plate, through which said hole passes, so as to define two lateral portions extending at the two sides of the central portion.

In one aspect, the conductive plate is formed integrally or as a single piece, that is, the central portion and the lateral portions are formed integrally with each other. In one aspect, the lateral portions lack a protrusion and in these lateral portions, the internal face is closer to the external face, with respect to the protruding central portion.

In one aspect, the lateral portions in the conductive plate are separated from each other by the central portion, that is, the central portion is interposed between, and connects, the lateral portions, along a direction consistent with the direction of connection of the conductor bars, in such a manner that from the side that receives the conductor bar to the opposite side that receives the next conductor bar to be connected, a lateral portion, the central portion and the other lateral portion meet in sequence.

In one aspect, the external face of the conductive plate, opposite the internal face, is preferably substantially flat or lacking protrusions.

In one aspect, the two lateral portions are substantially coplanar, whereas the central portion lies in a distinct plane parallel to the plane of the lateral portions owing to the protrusion.

5 In one aspect, the central portion of the plate – owing to the protruding portion – has a first thickness, and the two lateral portions have a second thickness (preferably constant for both lateral portions).

in one aspect, the first thickness is greater than the second thickness.

in one aspect, the first thickness is at least twice the second thickness.

10 In one aspect, the first thickness is greater than the second thickness by an amount that is at least equal to half the thickness of the conductor bars that the conductive plate is designed to receive and connect.

In one aspect, the increase in thickness determined by the protruding portion is such that the surface area of the vertical section of the conductive plate remains substantially constant in the lateral portions and in the central portion, despite the fact that the hole is found in the latter.

15 In one aspect, said first thickness of the protruding central portion, being greater than said second thickness of the lateral portions, is such that the surface area of the vertical section at the protruding central portion is equal to or greater (e.g. double or more) than the surface area of the vertical section at each lateral portion.

The vertical section makes it possible to observe the thickness of the plate at the lateral portions and at the central portion.

20 In one aspect, the thickness is calculated in a section of the plate orthogonal to the plane of extension of the same plate, that is, in a section that is orthogonal to the first and the second face.

Along its extension from one longitudinal end to the other, the conductive plate according to the present invention exhibits a cross section (or vertical-cross section) that has a substantially constant surface area, that is, a surface area that is not reduced at the central portion with respect to the lateral portions, or that
25 has a surface area that is larger in the central portion with respect to the lateral portions. Essentially, in

the conductive plate according to the present invention, the lack of material caused by the hole is at least compensated for (or more than compensated for) by the material added by the protrusion.

In one aspect, along a direction consistent with the direction of connection of the conductor bars, the protruding portion is of a width that is greater than or equal to the width of the hole, that is, the protruding portion extends laterally, that is, towards the lateral portions of the plate, from the two sides of the hole beyond the volume of the hole itself.

The first face of the conductive plate is intended to face, and be placed in contact with, the respective first face of an adjacent conductive plate, in such a manner that the two conductive plates prove to be electrically connected to each other and also electrically connected - in use - with the conductor bars that they connect (that is, the conductor bars intended to be inserted in the vacant spaces between the spaced lateral portions that face each other).

The present invention also makes available a junction block for electrically connecting busbars that comprises a plurality of conductive plates of the above-mentioned type and that are isolated from each other, packed between two side walls and through which at least one clamping bolt passes.

Preferably, in the above-mentioned junction block, the above-mentioned conductive plates are essentially arranged in pairs, in which, in each pair, the respective protruding portions are arranged one in front of the other.

Each pair of plates is designed to cooperate so as to realize the connection of two paired conductor bars, that is, bearing the same electrical line (or phase) in two consecutive busbars.

In the present invention, realizing a "junction" or "connecting" means physically and electrically connecting two conductor bars, in such a manner as to establish electrical continuity, that is, a flow of current between one conductor bar and the corresponding subsequent conductor bar (that is, of a subsequent module) along the busbar.

In the junction block, the conductive plates are preferably arranged laterally in succession according to an alternation comprising two internal faces facing each other, of a pair of matched conductive plates, and two external faces facing each other, of two plates belonging to different, subsequent pairs.

The above-mentioned junction block preferably comprises a plurality of partitioning elements, packed between the above-mentioned side walls and alternated with the above-mentioned conductive plates, alternated particularly with the above-mentioned pairs of conductive plates. The partitioning elements are typically made of electrically insulating material. The partitioning elements are preferably interposed between two adjacent
5 pairs of conductive plates that face each other, in such a manner as to realize an alternation of one pair of conductive plates and one partitioning element, that is, in such a manner that each pair of conductive plates facing each other proves to be interposed between two subsequent partitioning elements.

Advantageously, conductive plates of the above-mentioned type, shaped with a thicker portion in the hole area, offer greater structural stability to the junction block according to the present invention, particularly by
10 preventing undesirable bending of the conductive plates, and they also realize an improved electrical bridge with the conductor bars of two busbars to be connected electrically by means of the present junction block, minimizing overheating and the risk of short circuits, and increasing yield in terms of electrical conduction.

The two conductive plates of a pair of plates are arranged with the internal faces facing each other and the protruding portions in contact with each other, in such a manner that the lateral portions, which face each
15 other, of the two plates prove to be spaced apart from each other (that is, they are widened with respect to the protruding portions), creating two vacant spaces, or compartments, shaped so as to receive by insertion the conductor bars to be connected.

In this manner, the conductor bars can be inserted axially in the spaces created by the pair of conductive plates until reaching the protruding portions of the two conductive plates, the protruding portions being, in
20 contact with each other.

Preferably, the thickness of the protruding portion is substantially equal to half the thickness of the conductor bars which they are designed to connect.

Essentially, the thickness of the protruding portion is such that when two contiguous plates are positioned facing each other and in contact with each other in a junction block, two vacant spaces are created between
25 them, the spaces being equal to the thickness of the conductor bars, so as to house them properly and place

them in contact, laterally, with the faces of the pair of conductive plates from which the protruding portions project.

In general, the present invention comprises a thicker protruding portion, at the central hole in the conductive plate. By contrast, in the prior art, the conductive plates are bent in such a manner as to create a central portion that protrudes with respect to the lateral portions. In this manner, the central portions of two adjacent coupled conductive plates prove to be in contact with each other, whereas the lateral portions prove to be spaced apart so as to house a respective conductor bar. The plates according to the prior art exhibit a constant thickness, in both the protruding central portion and the lateral portions, and the shape is obtained by bending.

The solution found in the present invention, however, provides for a change in the thickness between the lateral portions and the protruding central portion, the latter being thicker, typically twice the thickness of the lateral portions or half the thickness of the bar to be housed and electrically connected (joined). The greater thickness is in the central portion, where the hole is found, and it makes it possible to compensate for the lack of material caused by the hole with new material obtained by increasing the thickness.

Brief description of the figures

Further characteristics and advantages of the invention will prove to be clearer from an examination of the following detailed description of a preferred, but not exclusive, embodiment illustrated by way of approximate and non-limiting example, with the support of the attached drawings, of which:

- Figure 1 is a schematic top view of a junction block comprising a plurality of conductive plates for electrically connecting busbars, in accordance with the present invention.
- Figure 2 is a schematic perspective view of two conductive plates of the junction block appearing in Figure 1, with an enlarged detail thereof;
- Figure 3A schematically illustrates section 3A-3A of the conductive plate of Figure 2;
- Figure 3B schematically illustrates section 3B-3B of the conductive plate of Figure 2.

Detailed description of the invention

With reference to Figure 1, the number 1 indicates, in its entirety, a junction block for electrically connecting busbars of the type equipped with a plurality of conductive plates 2, in accordance with the present invention.

In particular, the junction block 1 also comprises two side walls 3, between which the conductive plates 2 are packed and isolated from each other, and a clamping bolt 4 that passes transversely in the block 1, and thus
5 in the conductive plates 2 and the side walls 4, and it serves to clamp the conductive plates 2 together, without any clearance.

Moreover, in the use of the present junction block, that is, in electrically connecting the busbars, the clamping bolt 4 serves to ensure close contact between the conductive plates 2 and the conductor bars of two consecutive busbars.

10 In this regard, in the example appearing in Figure 1, the junction block 1 is shown clamped on conductor bars of two contiguous busbars, particularly with the conductive plates 2 interposed between the divergent ends of the conductor bars, which, in the above-mentioned figure, are indicated by the letter b and illustrated using a dashed line.

The junction block 1 further comprises a plurality of partitioning elements 5, which are also packed between
15 the side walls 3 and alternating with the conductive plates 2, alternating particularly with pairs of conductive plates 2.

As specifically regards the conductive plates 2, which are shown in greater detail in the example appearing in Figure 2, it should be added that in accordance with the description hereinabove, they are perforated; more specifically, each one is provided with a centrally located through hole 6, which is engaged by the clamping
20 bolt 4 and in accordance with the invention, each one of them comprises a protruding portion 7 on one face through which the hole 6 passes.

Basically, the protruding portion 7 of each conductive plate 2 is a thicker portion provided in the area of the hole 6.

In accordance with the examples provided in the figures, the protruding portion 7 is a strip or band
25 fashioned integrally in the respective conductive plate 2, and thus a type of thicker strip extending

through one end to the other of the conductive plate and thus from one edge to an opposite edge of the conductive plate, in a middle position.

Again, in accordance with the invention, in each conductive plate 2, the width of the protruding portion 7 is greater than the respective hole 6, whereas at the same protruding portion 7, the thickness of each conductive plate 7 is about twice the thickness of the remaining portion of the same conductive plate.

In accordance with the invention, the thickness of the conductive plates 2 is therefore within the range of 5.5 mm to about 6.5 mm in the thicker portion of the conductive plates 2, thus at the protruding portion 7, and within the range of about 2.5 mm to about 3.5 mm in the remaining portion of the conductive plates 2, thus in the portions lateral to the protruding portion 7.

Therefore, the protruding portion 7 is of a height ranging between about 2 mm and about 4 mm, preferably within the range of about 2.5 mm to 3.5 mm.

Therefore, in accordance with the description provided hereinabove and according to a preferred embodiment, at the respective protruding portion 7 the thickness of each conductive plate 2 is about twice the thickness of the remaining portion of the conductive plate.

The conductive plate 2 preferably has an internal face 11 (or first face) and an external face 12 (or second face), as illustrated in the figures.

Preferably, the protruding portion 7 extends on (that is, it emerges or protrudes from) said internal face 11 and constitutes a central portion of the conductive plate, through which the hole 6 passes, so as to define two lateral portions 9 (or external portions) extending at the two sides of the central portion.

The conductive plate 2 is preferably formed integrally or as a single piece, that is, the central portion (with the protruding portion 7) and the lateral portions 9 are formed integrally with each other.

Preferably, the lateral portions lack a protrusion and in these lateral portions, the internal face 11 is closer to the external face 12, with respect to the protruding central portion.

Preferably, the lateral portions in the conductive plate are separated from each other by the central portion (on which the protruding portion is defined), that is, the central portion is interposed between, and connects, the lateral portions, along a direction consistent with the direction of connection of the

conductor bars, in such a manner that from the side that receives the conductor bar to the opposite side that receives the next conductor bar to be connected, a lateral portion, the central portion and the other lateral portion meet in sequence.

The external face 12 of the conductive plate, opposite the internal face 11, is preferably substantially flat (that is, lacking protrusions).

Preferably, the two lateral portions 9 are substantially coplanar, whereas the central portion lies in a distinct plane parallel to the plane of the lateral portions owing to the protrusion.

Preferably, the central portion of the plate - owing to the protruding portion - has a first thickness, and the two lateral portions have a second thickness (preferably constant for both lateral portions).

Preferably, the first thickness is greater than the second thickness.

Preferably, the first thickness is at least twice the second thickness.

Preferably, the first thickness is greater than the second thickness by an amount that is at least equal to half the thickness of the conductor bars that the conductive plate is designed to receive and connect.

Preferably, the increase in thickness determined by the protruding portion (with the exception of the part affected by the hole 6) is such that the surface area of the vertical section of the conductive plate remains at least substantially constant between the lateral portions and the central portion, despite the fact that the hole is found in the latter; in other words, "passing through" the plate with a vertical section plane orthogonal to the faces, the surface area of the section obtained is substantially unchanged or it is greater in the protruding central portion and smaller in the lateral portions.

Preferably, the first thickness of the protruding central portion, being greater than the second thickness of the lateral portions, is such that the surface area of the vertical section at the protruding central portion is greater than (e.g. double or more) or equal to the surface area of the vertical section at each lateral portion.

A "vertical section" is to be understood as a cross section obtained through a vertical plane that is orthogonal to a main plane of extension of the conductive plate. The vertical section makes it possible to

observe the thickness of the plate (that is, the amount of material) at the lateral portions and at the central portion.

Preferably, the thickness is calculated in a section of the plate orthogonal to the plane of extension of the same plate, that is, in a section that is orthogonal to the first and the second face.

5 Along its extension from one longitudinal end to the other, the conductive plate according to the present invention exhibits a cross section (or vertical-cross section) that has a substantially constant surface area, that is, a surface area that is not reduced at the central portion (where the hole is found) with respect to the lateral portions, or that has a surface area that is larger in the central portion (which exhibits the hole and the protrusion) with respect to the lateral portions. This means that the amount of material in the
10 section is substantially constant between the lateral portions and the central portion (which exhibits the hole, but also the protrusion), or greater in the central portion. Essentially, in the conductive plate according to the present invention, the lack of material caused by the hole is at least compensated for (or more than compensated for) by the material added by the protrusion.

As is schematically shown in Figures 3A and 3B, the conductive plate has a first vertical section 15 at the
15 lateral portions and a second section 16 at the central portion. The first section 15 has the form of a single rectangle, whereas the second section 16 is made up of – owing to the presence of the central hole – two separate rectangles (preferably identical, when the hole is vertically centred), which overall define the surface area of the section of the central portion.

According to the present invention, the two rectangles indicated by the number 16 and that constitute the
20 surface area of the section of the central portion, have a surface area greater than or equal to the surface area of the rectangle 15 (obtained by sectioning each one of the two lateral portions).

Preferably, along a direction consistent with the direction of connection of the conductor bars, the protruding portion is of a width that is greater than or equal to the width of the hole, that is, the protruding portion extends laterally, that is, towards the lateral portions of the plate, from the two sides of the hole
25 beyond the volume of the hole itself.

The plate preferably has an upper edge and a lower edge, and the protruding portion extends continuously between, and connects, the upper edge and the lower edge.

The upper edge and the lower edge are preferably vertically aligned and extend from a first side (which receives the first bar to be connected) to a second side (which receives the second bar to be connected),
5 along the direction of connection of the two conductor bars.

The protruding portion is preferably a continuous strip extending from said upper edge to said lower edge.

The first face of the conductive plate is intended to face, and be placed in contact with, the respective first face of an adjacent conductive plate, in such a manner that the two conductive plates prove to be electrically connected to each other and also electrically connected - in use - with the conductor bars that
10 they connect (that is, the conductor bars intended to be inserted in the vacant spaces between the spaced lateral portions that face each other).

The conductive plates 2 in the junction block 1 are essentially arranged in pairs, and in each pair the respective protruding portions 7 are arranged one in front of the other, so that the remaining portions of the conductive plates, that is to say, the portions with a reduced thickness, are arranged opposite each other to
15 realize, in turn, opposite housings for the conductor bars of the busbars, as can be seen in the example appearing in Figure 1.

In accordance with the invention, the conductive plates 2 are made of copper, aluminium or of a copper alloy or aluminium alloy.

Referring again to the conductive plates 2, it should be added that each one comprises beveled edges 8, particularly a pair of beveled edges 8 and specifically, the edges parallel to the protruding portion 7 are
20 beveled.

The advantages of the present invention, already made apparent in the course of the description hereinabove, can be summarized by noting that a conductive plate for a junction block for connecting busbars is made available, in addition to a junction block for connecting busbars that comprises a plurality of these conductive
25 plates and is capable of providing greater structural stability to the connection between busbars, as well as an

improved electrical connection between the busbars, in terms of yield as regards electrical conduction owing to a more efficient electrical bridge, and in terms of overheating, short circuits and electrodynamic stress.

A person skilled in the art can introduce numerous changes and modifications to the present invention, in the embodiments illustrated and described, for the purpose of meeting contingent and specific needs, all of which, however, remaining within the scope of protection of the invention as defined by the following claims.

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CLAIMS

1. A conductive plate (2) for a junction block for busbars, having a pair of faces opposite each other and at least one through hole (6) extending between said faces, characterized in that on one of said faces, it comprises a protruding portion (7) through which said at least one hole (6) passes, and wherein, at said protruding portion, the thickness of the plate is greater than the thickness of the remaining portion of said conductive plate.
2. The conductive plate (2) according to claim 1, wherein said protruding portion (7) is a strip fashioned integrally in said conductive plate and extending in a middle position from one edge to an opposite edge of the conductive plate.
3. The conductive plate (2) according to claim 1 or 2, wherein the width of said protruding portion is greater than said at least one hole (6).
4. The conductive plate (2) according to any one of the preceding claims, wherein, at said protruding portion, said thickness is about twice the thickness of the remaining portion of said conductive plate.
5. The conductive plate (2) according to any one of the preceding claims, wherein the conductive plate (2) has an internal face (11) and an external face (12), and wherein the protruding portion (7) extends on said internal face (11), and constitutes a central portion of the conductive plate, through which said hole (6) passes, so as to define two lateral portions (9) extending at the two sides of the central portion, and/or wherein said conductive plate (2) is formed integrally or as a single piece, that is, the central portion and the lateral portions are formed integrally with each other.
6. The conductive plate (2) according to any one of the preceding claims, wherein the lateral portions are separated from each other by the central portion, that is, the central portion is interposed between, and connects, the lateral portions, along a direction consistent with the

direction of connection of the conductor bars, in such a manner that from the side that receives the conductor bar to the opposite side that receives the next conductor bar to be connected, a lateral portion, the central portion and the other lateral portion are met in sequence.

7. The conductive plate (2) according to any one of the preceding claims, wherein the external face (12) of the conductive plate, opposite the internal face (11), is substantially flat.

8. The conductive plate (2) according to any one of the preceding claims, wherein the central portion of the plate - owing to the protruding portion (7) - has a first thickness, and the lateral portions have a second thickness, and wherein said first thickness is greater than said second thickness.

9. The conductive plate according to the preceding claim, wherein said first thickness is at least twice said second thickness, and/or wherein the first thickness is greater than the second thickness by an amount that is at least equal to half the thickness of the conductor bars that the conductive plate is designed to receive and connect.

10. The conductive plate (2) according to claim 8 or 9, wherein said first thickness of the central portion, being greater than said second thickness of the lateral portions, is such that the surface area of the vertical section at the central portion, or at the protruding portion (7), is greater than or equal to the respective surface area of the vertical section at each lateral portion (9).

11. The conductive plate (2) according to any one of the preceding claims, exhibiting, along its extension from one longitudinal end to the other, a vertical section that has a substantially constant surface area, that is, a surface area that is not reduced at the central portion, or at the protruding portion, with respect to the lateral portions, or that has a surface area that is larger in the central portion with respect to the lateral portions.

12. The conductive plate according to any one of the preceding claims, wherein the amount of material in the section is substantially constant between the lateral portions and the central portion, which exhibits said hole and at the same time said protruding portion, or greater in the central portion, and/or wherein the lack of material in the conductive plate caused by said hole (6) is at least compensated for by the material added by said protruding portion (7).

13. The conductive plate (2) according to any one of the preceding claims, having a first vertical section (15) at the lateral portions (9) and a second vertical section (16) at the central portion, wherein said first section (15) has the form of a single rectangle, whereas the second section (16), owing to the presence of said hole, is made up of two separate rectangles, which overall define the surface area of the section of the central portion, and wherein the surface area of said second vertical section (16) is greater than or equal to the surface area of the first vertical section (15).

14. The conductive plate (2) according to any one of the preceding claims, wherein, along a direction consistent with the direction of connection of the conductor bars, the protruding portion (7) is of a width that is greater than or equal to the width of the hole (6), and/or wherein the protruding portion extends laterally, that is, towards the lateral portions of the plate, from the two sides of the hole beyond the volume of the hole itself.

15. The conductive plate (2) according to any one of the preceding claims, having an upper edge and a lower edge, and wherein said protruding portion extends seamlessly between, and connects, the upper edge and the lower edge.

16. The conductive plate (2) according to any one of the preceding claims, wherein said first face is intended to face, and be placed in contact with, the respective first face of an adjacent conductive plate, in such a manner that the two conductive plates prove to be electrically

connected to each other and also electrically connected - in use - with the conductor bars to be connected.

17. The conductive plate according to any one of the preceding claims, made of copper, of aluminium, of a copper alloy or of an aluminium alloy.

18. The conductive plate according to any one of the preceding claims, comprising a pair of beveled edges (8) substantially parallel to said protruding portion (7).

19. A junction block (1) for electrically connecting busbars and comprising a plurality of conductive plates (2) according to any one of the preceding claims, and further comprising two side walls (3) between which said conductive plates (2) are packed and isolated from each other, as well as a clamping bolt (4) that passes transversely through said junction block.

20. The junction block according to claim 19, wherein said conductive plates (2) are essentially arranged in pairs, wherein, in each pair, the respective protruding portions (7) are arranged one in front of the other.

21. The junction block according to claim 20, further comprising a plurality of partitioning elements (5), packed between said side walls (3) and alternated with said pairs of conductive plates (2).

22. The junction block according to any one of claims 19 to 21, wherein each pair of conductive plates is designed to cooperate so as to realize the connection of two paired conductor bars, that is, bearing the same electrical line in two consecutive busbars.

23. The junction block according to any one of claims 19 to 22, wherein, the conductive plates are preferably arranged in succession according to an alternation comprising two internal faces facing each other, of a pair of matched conductive plates, and two external faces facing each other, of two plates belonging to different, subsequent pairs.

24. The junction block according to any one of claims 19 to 23, wherein the two conductive plates of a pair of plates are arranged with the internal faces facing each other and the protruding portions in contact with each other, in such a manner that the lateral portions, which face each other, of the two plates prove to be spaced apart from each other, creating two vacant spaces, or compartments, shaped so as to receive by insertion the conductor bars to be connected.