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ENTRADA EN FASE NACIONAL

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☒ Patente de Invención		☐ Patente de Modelo de Utilidad	
☐ Capítulo I		☒ Capítulo II	
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6 Título (54) <u>MEJORAMIENTO EN ESTRUCTURA METALICA PARA LA CONSTRUCCION DE CUADROS/ARMARIOS ELECTRICOS</u>			
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Instrucciones para el diligenciamiento del presente formulario, ver reverso de esta página.			

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ANEXOS

- ☒ Comprobante de pago de la tasa de presentación de la solicitud.
- ☐ Documento que acredita la existencia y representación legal cuando el solicitante sea persona jurídica.
- ☐ Poderes, si fuere el caso.
- ☐ Documento de cesión del inventor al solicitante o a su causante.
- ☐ Declaraciones
- ☒ Copia de la solicitud internacional (Resumen, descripción, reivindicaciones, dibujos)
- ☒ Traducción de la solicitud internacional al castellano. (Resumen, descripción, reivindicaciones, dibujos)
- ☒ Copia del examen preliminar internacional efectuado por la Autoridad Internacional de Examen Preliminar (IPEA).
- ☒ Traducción del examen preliminar internacional efectuado por la IPEA.
- ☐ De ser el caso, copia del contrato de acceso.
- ☐ De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas.
- ☐ De ser el caso, certificado de depósito del material biológico
- ☒ Arte final 12X12 cm.
- ☐ De ser el caso, información de otras solicitudes de patente o títulos obtenidos en el extranjero por el mismo titular o su causante, relacionadas total o parcialmente con la invención de esta solicitud.
- ☐ De ser el caso, modificaciones efectuadas a la solicitud internacional, Nuevas Reivindicaciones
- ☒ Otros: Informe de Búsqueda de Antecedentes Internacional junto con la traducción

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FIGURA CARACTERÍSTICA

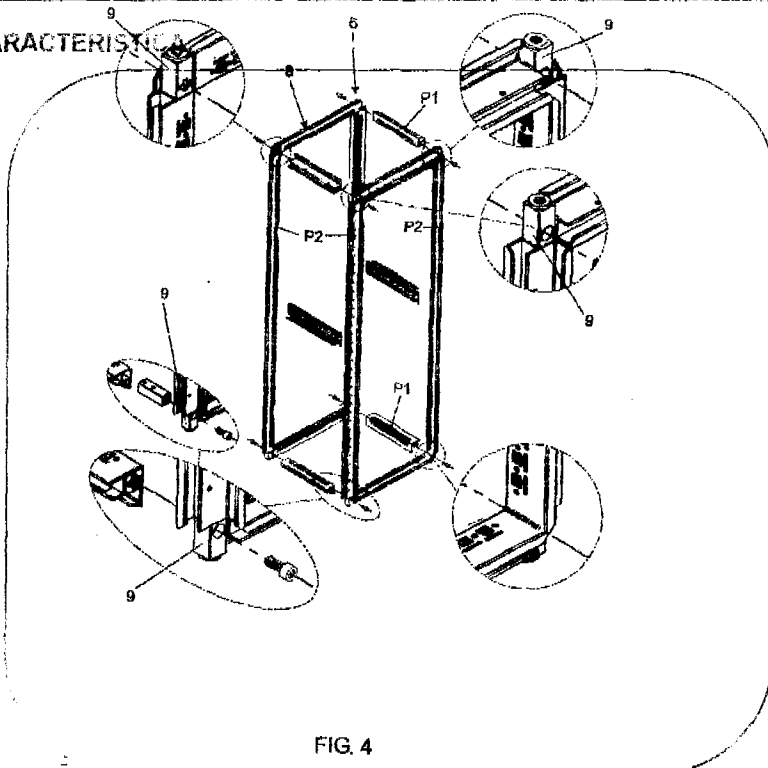


FIG. 4

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Solicito la concesión de la patente.

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Documentos anexos a la solicitud:

1. **Solicitud PCT/BR04/000194 tal como fue presentada el 7 de Octubre de 2004 con petitorio, descripción, reivindicaciones, resumen y dibujos. (43 folios).**
2. **Notificación del Informe de la Búsqueda Internacional del 9 de Marzo de 2005 junto con la opinión escrita y traducción (14 folios)**
3. **Copia de la Publicación Internacional en la Gaceta Oficial del PCT No. WO 2005/034302 A2 del 14 de Abril de 2005. (2 folios).**
4. **Copia de la Publicación Internacional en la Gaceta Oficial del PCT No. WO 2005/034302 A3 del 14 de Abril de 2005. (4 folios).**
5. **Notificación del Informe Preliminar Internacional sobre Patentabilidad del 31 de Enero de 2006, junto con opinión escrita y traducción (8 folios)**
6. **Traducción al español de la solicitud PCT/BR04/000194 junto con dibujos (41 folios)**
7. **Tarjeta Archivo Temático y Tarjeta Propietarios.**
8. **Extracto para la publicación.**

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METALLIC STRUCTURE IMPROVEMENT FOR MANUFACTURING ELECTRICAL CABINETS/PANELS.

Field of Invention.

This invention refers to a metallic structure assembled
5 with a combination of different components, including special cross sections,
notably of the type formed in an extruder, defining the structure with a
constructively differentiated concept from which some technical and practical
improvements are obtained, including quality with cost reduction.

This type of structure in a general manner is normally
10 used in the most varied of cabinet types also known as electrical panels,
which in reality are cabinets with doors and closed off sides used to house a
very large variety of electrical and electronic components and devices.

State of the technique.

As it is common knowledge of those qualified in this
15 technique, currently there are different types of electrical panels also called
frames or cabinets, designed to house the most varied of components in the
most varied of activity fields also including the telephony sector.

Therefore under different electrical distribution
conditions or assembly of electrical or electronic components and devices, the
20 use of a cabinet or panel is extremely important.

Although currently there are a very large variety of
electrical panels, these are normally metallic boxes with appropriate
enclosure, including one or more doors depending on its dimensions. Such
enclosures including the doors are normally manufactured from substantially
25 thin metallic plates. In this manner all electrical panels internally have a
metallic cross section structure. This structure as the name itself says
constitutes the supporting means for the parts that make-up the external walls
from folded sheets the door assembly and its respective hinges, and still, this
same structure, although, on the inside, also configures the necessary
30 mountings for distribution and assembly of the different electrical and

electronic components and devices.

It is logically fundamental that any electrical panel has an internally substantially resistant structure to characterize a cabinet suitable to the equipment to be installed internally.

5 Currently there are different types of structures all of them made from metallic cross sections, within which in most of the cases are formed by sheet steel bending presses, which makes the production process difficult besides presenting a few technical difficulties. there are also other types of structures made from metallic cross sections shaped in extruders,
10 such as those show in the following documents:

a) **PI 8406283** – mounting framework for a distribution cabinet deposited on 07/12/84;

b) **PI 9509578-0** – published on 23/12/1997 - mounts for a distribution cabinet;

15 c) **PI 9713114-8A** - published on 11/04/2000 – framework with a back structure and a covering structure from a drilled foil;

d) **PI 9509594-2** - published on 30/09/1997 – framework for a distribution cabinet;

20 e) **PI 9708041-1** - published on 27/07/1999 – distribution cabinet with a framework structure;

f) **PI 9712774-4A** - published on 26/10/1999 – distribution cabinet with and aluminium square frame;

g) **PI 9713518-6A** – panel framework for a distribution cabinet: and

25 h) **PI 9713515-1A** – panel framework set with corner connections for the panel's vertical cross sections.

It is important to highlight that the electrical distribution panels and cabinets are designed to affect two TYPES of commercially defined applications, such as: INDOOR type (sheltered use) and OUTDOOR
30 type (unsheltered use – exposed to the elements). The difference between the

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two types basically consists of the DEGREE OF MECHANICAL PROTECTION AND SEALING of the side enclosures and doors consequently we can say that the those defined as the outdoor type presents a greater degree of mechanical protection as well as sealing.

5 Traditionally the indoor type is considered suitable to be used in an enclosed environment closed and protected from the elements, whilst the other type defined as outdoor is ideal to be used in open locations or open air, such as is the case for example with some cabinets used in telephony sector. Nevertheless the outdoor type due to its greater degree of
10 sealing is also advantageously used in closed environments but with hostile activities, not only due to the presence of pollutants suspended in the air but also due to the presence of humidity, such as is the case for example in industries, processing environments for various products notably so in the chemical sector, industrial kitchens and or other similar locations.

15 **Inconveniences of the technique.**

 There currently are as has been said various types of structures and in most cases the structural effect obtained is reasonably satisfactory, nevertheless, with reference to seals, special technical operations are needed for its application, as well as presenting complicated industrial
20 manufacturing in some cases due to the absence of technology, in others due to the need of complementary accessories as it happens for example in PI 8406283 – mounting framework for a distribution cabinet deposited on 07/12/1984, where the junction of the corners are obtained by a Zamak connection cast under pressure with three connection points (supposedly with
25 the function of facilitating the assembly of the unit or maybe to offer better stability), nevertheless this type of solution has elevated costs and it also makes it impossible for the cross sections to be welded to the connectors as they are different materials, so welding is restricted to the points where the cross sections meet, which results in a lower mechanical stability for the
30 structure although it is of the structurally welded type. We could also cite the

PI 9.713.518-6A – panel framework for a distribution cabinet, the PI 9.713.114-8A – framework for a back structure and a covering structure with a drilled foil. In these and other cases it is noted that the corners consist of a single piece made from steel, which enables welding between the connectors and cross sections, nevertheless this solution utilises two different cross sections for constructing the structure, one in the vertical assembly and the other on the horizontal, which is evidently, besides adding to the cost also interferes with the manufacturing of the unit, making it complicated.

In the first usual instance we may say that structures obtained from metallic cross sections shaped in extruders are normally of the structurally welded type (ready frame), that is a structure with parallel sides which cannot be taken apart, where all the cross section junctions at the corners are welded, this supposedly so to guarantee better rigidity and stability. Nevertheless this assembly concept competes to characterize various technical and practical disadvantages among which we may highlight: adds to the increased manufacturing cost; its transport and storage become substantially more difficult, seeing that the assembled structure requires a considerable amount of space to be occupied.

Under a second usual condition we may say that there are other types of disassembled structures, that is, structurally assembled with screws, where each one represents its respective construction characteristic, nevertheless, these existing solutions do not present satisfactory rigidity or mechanical stability for the destined applications.

Therefore in summary we can say that the inconveniences of the structures under the condition of the techniques are generated as a result of the manufacturing complexity, inefficiency for the more stringent applications, such as: Telecommunication and Medium Voltage, which requires the outdoor type (unsheltered use), incompatible mechanical stability and rigidity especially in the disassembled types.

The Invention's Objectives.

In the face of the abovementioned circumstances and with the objective of overcoming them the current invention was created, which in its final form defined a perfected structure where under one selfsame constructive characteristic it was possible to make the assembled version (structurally welded internally and externally throughout the perimeter's joints and corners) or the semi disassembled version (partially welded structure welded internally and externally at the cross section junctions for the width and height as well as the complementary assembly of the depth cross sections by means of screws), using a single cross section and still being able to support the mounting elements for the internal components with flexibility and safety, both for the assembly of the indoor and outdoor type electrical panels, including with a series of technical and practical advantages, among which these stand out:

a) the corner joints are characterised by their simple construction, technical efficiency and versatility, seeing that the connection that makes the joining of the two cross sections consists of a single piece (a square dowel from square steel), and it being used in the assembled as well as the semi-assembled version, and it may be easily manufactured from other materials, such as forged or cast steel etc.;

b) the use of a single cross section for the structure or, that is, the same cross section for the width as for the height and depth, besides facilitating manufacture also significantly reduces cost;

c) the manner of assembly in question associated to the transversal geometry of the cross section made it possible for a new technical effect of extreme importance, that is, all of the structure's assembled sides are symmetrically equal, which in a way favours the interlinking of one structure to the other on any of the other sides, including the top and bottom, consequently the current structure is modular and may be increased or decreased at any desired moment;

d) the outside of the structure is completely sealed in

relation to the inside, this seal is naturally obtained with the said transversal geometry of the cross section in conjunction with the extrusion details, also as well as this seal is possible with the perfect joining of all the cross sections on each of the corners;

5 To understand these objectives the current improvement foresees a first constructive version as defined by the joining of the corners by two dowels in such a manner that on the one side one dowel may present details so that two cross sections at right angles on the one corner of the structure may be rigidly welded, as what happens to all the other corners, forming the first part of the structure in the shape of a rectangular frame. Each structure has two rectangular frames which are interlinked with the other four completely loose cross sections, therefore, its ends are fitted with other dowels, all of them with details to be coupled by means of screws and fittings with the other dowels welded to the referred to frames, thus finalizing the means so that the said structure may be supplied completely disassembled, consequently, all the other technical and practical advantages previously commented on arise.

Finally, for some cases where the structure needs to be in one piece and not disassembled, the present improvement foresees a simplified and efficient constructive manner to achieve the aim, where only one steel dowel (connection for joining the corners) affords the means for welding on all the edges of the cross sections which are to be found on each corner of the structure, this welding is also extended to the corresponding faces of the referred to dowel, in such a manner that it comes to be an integral part of all the cross sections which are to be found in each corner, thus finalizing a constructive manner which considerably increases the rigidity of the structure.

Description of the drawings.

To better understand the current Invention the following description is made in detail, making references to the attached drawings,

where:

FIGURE 1 represents a view in perspective exemplifying a completely enclosed electrical panel and obtained with the current improvement;

5 FIGURE 2 is an exploded view of the electrical panel showed in the previous figures, highlighting its structure obtained with the current cross section;

FIGURE 3 shows a view in perspective of a structure obtained with the cross section in question;

10 FIGURE 4 shows a view in perspective of a structure obtained with the cross section in question, this structure is partially exploded and still in this same view are shown the amplified details of all the corners of the said structure;

15 FIGURE 5 shows an amplified and exploded view, highlighting the assembly components of one of the structure's corners;

FIGURE 6 is an exploded view equal to the previous one but at a different angle, showing other construction details of the components, which make up each corner of the structure;

20 FIGURE 7 is an exploded view of the same corner as shown in figures 5 and 6, but, in this case the said corner is semi-assembled highlighting the fact that the assembly makes a rectangular frame;

FIGURE 8 is a view showing one corner of the structure completely assembled;

25 FIGURE 9 is an exploded view showing the components which make up one corner of the structure according to a first construction variation;

FIGURE 10 shows a view of the same corner illustrated in figure 9, but, in this case it is semi-assembled;

30 FIGURE 11 is a view in perspective of the corner shown in figures 9 and 10, but, in this case it is completely assembled;

FIGURE 12 Illustrates a view in perspective of the structure obtained with the cross section in question, this structure is partially exploded and, still, in this same view are shown amplified details of all corners, where the junction of the cross sections are obtained according to a construction variation;

FIGURE 13 shows a view from an exploded perspective of one of the structure's corners, highlighting the referred to construction variation and in this case the component used for interlinking by welding the three cross sections which make up the referred to corner;

FIGURE 14 represents a view from a totally assembled perspective of the corner shown in the previous figure;

FIGURE 15 illustrates a view in perspective of the partially exploded structure, highlighting the use of a crossbeam for complementary locking and assembly of the panel's internal components;

FIGURE 16 is a view in perspective showing the constructive details of the crossbeam;

FIGURES 17 to 22 are the views from different angles, highlighting the joints and coupling between the referred to cross beam and the vertical cross sections of the structure.

Detailed description of the invention.

According to these illustrations and its details the current improvement to the metallic structure was particularly developed for mounting electrical cabinets or panels (1), generically shown in figures 1 and 2, where only one type of example can be seen, which may be either indoor or outdoor, but, in both cases, the same is shown in the form of a metallic box with enclosed sides (2), including one or more tilting doors (3) with a lock (4). Such enclosures including the doors are normally manufactured from substantially thin metallic plates. In this manner, also as illustrated in figure 2, all electrical panels have an internal metallic cross section structure (5), through which can be seen that this structure, as the name itself says,

constitutes the supporting means for the parts that make up the external walls from folded sheets, as it also constitutes the supporting and assembly means for the doors and its respective hinges as well as other accessories, such as: upper (6) and lower enclosures with the base (7) and other components which are not shown, still being that the same structure, although on the inside, also has a configuration of the necessary fittings to distribute and mount the different electrical and electronic components and devices (not shown).

Still in relation to figure 2 it is logical and fundamental that any electrical panel has an internal structure (5) substantially resistant enough to characterise a cabinet fitted with the internal equipment to be installed. This illustrated structure may be obtained with different metallic cross sections nevertheless the current improvement is aimed at perfecting the junctions of the cross sections on the corners of the structures.

In relation to figures 3 and 4, in a first construction version the current improvement is characterized by the fact of the said structure (5) shown semi assembled, where four of its uprights or four of its cross sections (P1) are completely free whilst all the other cross sections are rigidly integrated in two equal rectangular frames (8) which make up the two opposite sides of the said structure (5) and therefore at the corner junction point of each rectangular frame (8) there exists a complementary device (9) cooperative for interlinking at 90° between two adjacent cross sections (P2) and (P3) of each frame (8), also as this same device presents the means so that the extremities of the other cross sections (P1) may be coupled between the corners of the rectangular frames (8), thus forming the structure (5).

As is also shown in figures 5, 6, 7 and 8, the complementary device (9) is made up of a dowel of a square transversal section (10), is sized so that its lower end can penetrate in a tight fitting manner inside the tubular part (T) of the cross sections (P2), whilst its upper extremity, besides including a vertically threaded hole (F), usually, remains sufficiently exposed according to a height compatible to the adjacent cross

section (P3), in such a manner that the said point and the two cross sections (fig. 7) may be joined by welding (11), thus forming that substantially rigid rectangular frame (8) and at the same time, the four corners of each frame (8) also have the configuration for the means of coupling to the cross sections (P1) which in the same manner receive the other dowels (12), having one end fitted into the tubular part (T) of cross section (P1), where the said end is fastened by screws in the side, whilst the other end presents a longitudinal threaded hole (13) and a self locking fitting from the top (14), in cooperation to be to be inserted into the other (15) existing on the side face of the other dowel (10), where there is a through hole (16), aligned with the said fittings (14-15) and with the threaded hole (13) so that the two dowels can be joined with a screw (17), thus completing the assembly of the said structure (5).

In this first assembly, illustrated in an expanded manner in figures 7 and 8, it is noted that each frame (8) is rigidly mounted, transforming it into a single piece after it is welded (11) and with this, its four sides with the device (9) confer means so that two equal frames (8) may be interlinked by the cross sections (P1), which are attached only by screws (17), where fastening is completed with anti-rotational locking afforded by the top fittings (14-15), which also function as self-centring elements for the said screws (17) which after being inserted finalize the assembly of a structure (5) which is really very rigid and stable.

In another illustrated constructive variation in figures 9, 10 and 11, the pre-fitting between two dowels is carried out by an off center pin (18) which on the one end penetrates and is attached to a suitable hole existing on the top of the dowel (12'), whilst the other end penetrates equally in another existing guide hole in the side of the dowel (10'), in a way characterising a pre-adjustment between the two parts before inserting the screw (17'), which penetrates into a threaded hole (13') and a smooth hole (16') existing in the dowels (12') and (10'), respectively, completing the fastening of the unit, just as in the previous constructive version.

The second constructive version above presents the same advantages of the previous one as in this case as shown in figure 10, the pre-assembly takes place to form the frame (8) following which the assembly of the set is completed by fastening the cross sections (P1).

5 In relation to figures 12, 13 and 14, in a last constructive variation a dowel is fitted (19) geometrically equal to the previous ones but only with a threaded hole (F), as this dowel also (19) presents a compatible dimensioning so that its lower end may penetrate the tubular part (T) of the cross section (P2), whilst its upper point remains positioned between the ends
10 of the other two cross sections (P1-P3), where the said dowel configures a joining knot between the three cross sections, being that this join is made as shown in figure 14, by welds (11') applied to all the edges of the said cross sections, including those that are in contact with the referred to dowel (19).

Reporting on figures 1 and 2, the threaded holes (F)
15 serve only for fastening the usual hoisting eyes (I).

In relation to the figures from 15 to 21, this is an integral part of the set for at least one pair of internal crossbeams (20), folded from sheets, presenting a transversal section ordinarily in "U", which are positioned at any point along the height of the cross sections (P2), logically on the same
20 plane, that is, the one side is aligned with the opposite side. Such crossbeams serve for complementary locking of the structure (5) and also serve mainly for the mounting of the internal components to be installed inside the cabinet nevertheless these also add a considerable effect to the structure of the unit.

In conventional panels the said crossbeams exist for the
25 same finality, also inclusively with the effect of improving the structural resistance of the unit, its ends also have wings (21) to be fastened down with screws on the corresponding vertical cross sections (P2) and for this end the said cross sections, have rows of different openings (22).

To fasten conventional crossbeams the assembler is
30 obliged to remain holding it in the same assembly position with at least one

hand, so that with the other hand he is able to insert the screws and give it the final tightening to it.

In the current invention the said crossbeams (20) were modified to improve its utilisation even more, as is shown in figure 16, at the two ends there are two sets of anchoring grips, one set is provided for on one of the wings (21) or more precisely on its vertical border where the grips are presented in the form of two pairs of "L" shaped teeth (23) designed perpendicularly and inwardly, whilst on the side opposing the grips, presented in the form of two small shafts (24), these are the grips (23), as illustrated in figures 17 to 21, and penetrate the corresponding openings (22), permitting a firm coupling of the cross beam (20), keeping it positioned so that its fastening may be completed with the use of screws in other openings (25) existing in the wings (21) and in the metallic cross sections (P2), thus concluding another construction detail, which besides the advantage of affording a considerable increase to the structure's resistance, it also speeds up and facilitates the mounting of the said crossbeams, seeing that they themselves have their own resources to be pre-positioned inside the structure, in a way also this resource facilitates the choice of the exact assembly point of the said crossbeams, as, has already been said these may also be positioned along the entire height of the cross sections (P2), where a variation from one point to another are a few millimetres, consequently the pre-fastening afforded by the grips facilitate in a way the positioning of the said crossbeams.

In relation to figure 22, at least one crossbeam (20) may be positioned vertically between the other two vertical crossbeams (20), as all of them are equally equipped with different and cooperating openings for the fitting of the grips (23) and of the ends (24), thus offering one more mounting option for the said crossbeams (20), logically with the objective of increasing even more the efficiency of the internal anchoring layout and fastening of the electrical and electronic devices to be mounted inside the panel.

CLAIMS

- 1) **IMPROVEMENT TO THE METALLIC STRUCTURE FOR MANUFACTURING ELECTRICAL FRAMES / CABINETS**, generically recommended for (1), indoor or outdoor type although in both cases it is presented in the form of a metallic box with side enclosures (2), including one or more tilting doors (3) with a lock (4); said enclosures include the doors, normally manufactured from substantially thin metallic plates and in this manner all electrical panels have an internal metallic cross sections structure (5), with the means for supporting the parts making up the external walls from folded sheets, as well as constituting the means for supporting and mounting the doors and its respective hinges, as well as other accessories, such as: the upper (6) and lower enclosure with a base (7) and other components, being that even with this selfsame structure although on the inside also has a configuration for the necessary mounts for distributing and mounting the different electrical and electronic components and devices characterised by the fact of the first constructed version, the said structure (5) is presented semi-assembled, where four of its uprights or four of its cross sections (P1) are completely free whilst all the other cross sections are rigidly integrated into two equal rectangular frames (8) which form the two opposite sides of the said structure (5) and therefore at the corner point of the junction of each rectangular frame (8) there is a complementary device (9) cooperating for the interlinking at 90° between two adjacent cross sections (P2) and (P3) of each frame (8), as also this selfsame device presents the means so that the extremities of the other cross sections (P1) may be coupled between the corners of the rectangular frames (8), thus forming the structure (5).
- 2) **IMPROVEMENT TO THE METALLIC STRUCTURE FOR MANUFACTURING ELECTRICAL PANELS / CABINETS**, according to claim 1, characterised by the fact of complementary device (9) is made up of a square transversal section dowel (10), is sized so that its lower end can penetrate in a tight fitting manner inside the tubular part (T) of the cross sections (P2),

whilst its upper extremity, besides including a vertically threaded hole (F), usually, remains sufficiently exposed according to a height compatible to the adjacent cross section (P3), in such a manner that the said point and the two cross sections may be joined by welding (11), thus forming that substantially rigid rectangular frame (8) and at the same time, the four corners of each frame (8) also have the configuration for the means of coupling to the cross sections (P1) which in the same manner receive the other dowels (12), having one end fitted into the tubular part (T) of the cross section (P1), where the said end is fastened by screws in the side, whilst the other end presents a longitudinal threaded hole (13) and a self locking fitting from the top (14), in cooperation to be to be inserted into the other (15) existing on the side face of the other dowel (10), where there is a through hole (16), aligned with the said fittings (14-15) and with a threaded hole (13) so that the two dowels can be joined with a screw (17).

3) **IMPROVEMENT TO THE METALLIC STRUCTURE FOR MANUFACTURING ELECTRICAL PANELS / CABINETS**, according to claim 1, characterized by the fact that in another construction variation, the pre-fitting between two dowels is carried out by an off center pin (18) which on the one end penetrates and is attached to a suitable hole existing on the top of the dowel (12'), whilst the other end penetrates equally in another existing guide hole in the side of the dowel (10'), in a way characterising a pre-adjustment between the two parts before inserting the screw (17'), which penetrates into a threaded hole (13') it is a smooth hole (16') existing in the dowels (12') and (10'), respectively.

4) **IMPROVEMENT TO THE METALLIC STRUCTURE FOR MANUFACTURING ELECTRICAL PANELS / CABINETS**, according to claim 1, characterized by the fact that in another construction variation, a dowel will be fitted (19) geometrically equal to the previous ones but only with a threaded hole (F), as this dowel also (19) presents a compatible dimensioning so that its lower end may penetrate the tubular part (T) of the cross section

(P2), whilst its upper point remains positioned between the ends of the other two cross sections (P1-P3), where the said dowel configures a joining knot between the three cross sections, being that this join is made by welds (11') applied to all the edges of the said cross sections, including those that are in contact with the referred to dowel (19).

5) IMPROVEMENT TO THE METALLIC STRUCTURE FOR MANUFACTURING ELECTRICAL PANELS / CABINETS, according to claim 1,

this is an integral part of the set for at least one pair of internal crossbeams (20), folded from sheets, presenting a transversal section ordinarily in "U", its ends have wings (21) to be fastened down with screws on the corresponding vertical cross sections (P2) and for this end the said cross sections, have rows of different openings (22); said crossbeams (20) are positioned along any point of the height of the cross sections (P2), logically on the same plane, that is, the one side is aligned with the opposite side and serves a complementary locking of the structure (5) as well as serving to mount the components to be installed inside the cabinet, nevertheless, these also confer a considerable increase to the unit's structural effect; characterised by the fact that at the two ends of the crossbeams (20) two sets of anchoring grips will be provided, one set is fitted to one of the wings (21) or more precisely to its vertical edge, where the grips are presented in the form of two "L" shaped teeth (23) designed perpendicularly inwards, whilst the opposite side of the grips are presented in the form of two small shafts (24), these and the grips (23) penetrate the corresponding openings (22).

6) IMPROVEMENT TO THE METALLIC STRUCTURE FOR MANUFACTURING ELECTRICAL PANELS / CABINETS, according to claim 1,

characterised by the fact that at least one crossbeam (20) is positioned vertically between the other two vertical crossbeams (20), as all of them are equally equipped with different and cooperating openings to fit the grips (23) and the ends (24).

ABSTRACT

IMPROVEMENT TO THE METALLIC STRUCTURE FOR MANUFACTURING ELECTRICAL PANELS / CABINETS, enclosing a structure of metallic cross sections (5), with the means for supporting the parts making up the external walls from folded sheets, as well as constituting the means for supporting and mounting the doors with its respective hinges and other accessories, such as: the upper (6) and lower enclosure with the base (7) and other components, being that, still, same structure, although, on the inside, also configures the necessary mounts for distributing and assembling the different electrical and electronic components and devices; in the first construction version, the said structure (5) presented semi-assembled, where four of its uprights or four of its cross sections (P1) are completely free whilst all the other cross sections are rigidly integrated into two equal rectangular frames (8) which form the two opposite sides of the said structure (5) and therefore at the corner point of the junction of each rectangular frame (8) there is a complementary device (9) cooperating for the interlinking at 90° between two adjacent cross sections (P2) and (P3) of each frame (8), as also this selfsame device presents the means so that the extremities of the other cross sections (P1) may be coupled between the corners of the rectangular frames (8), thus forming the structure (5).

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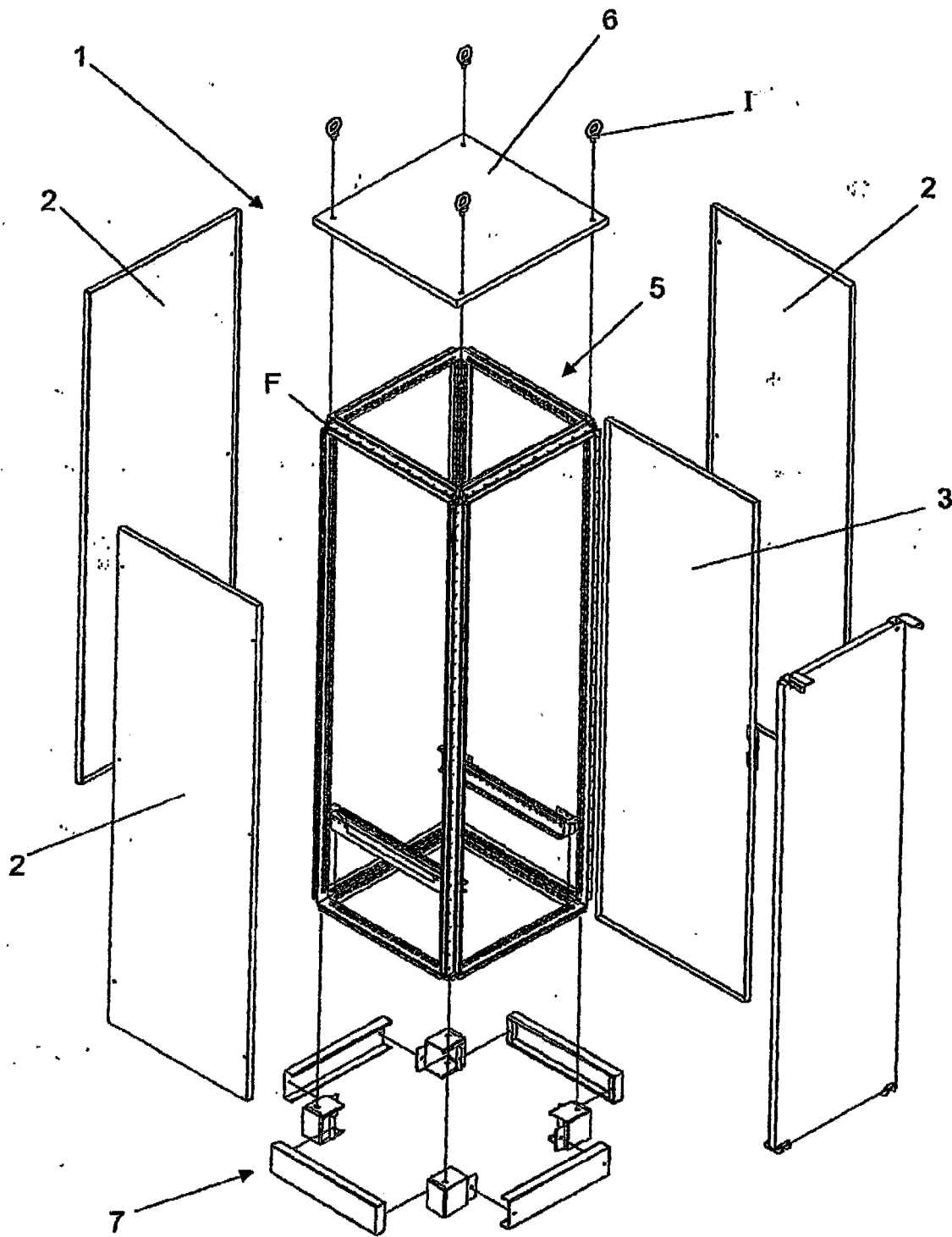


FIG. 2

2d

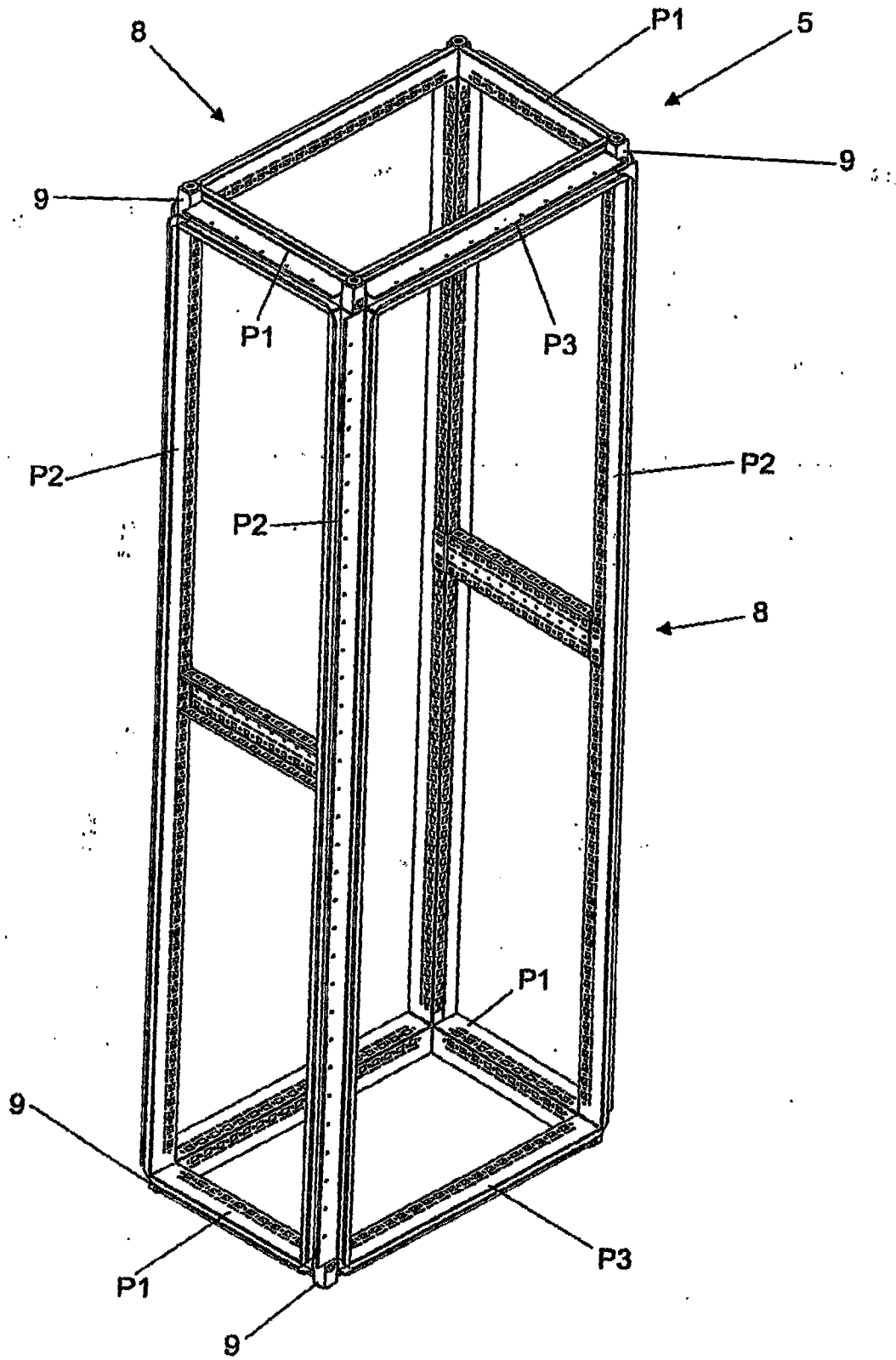


FIG. 3

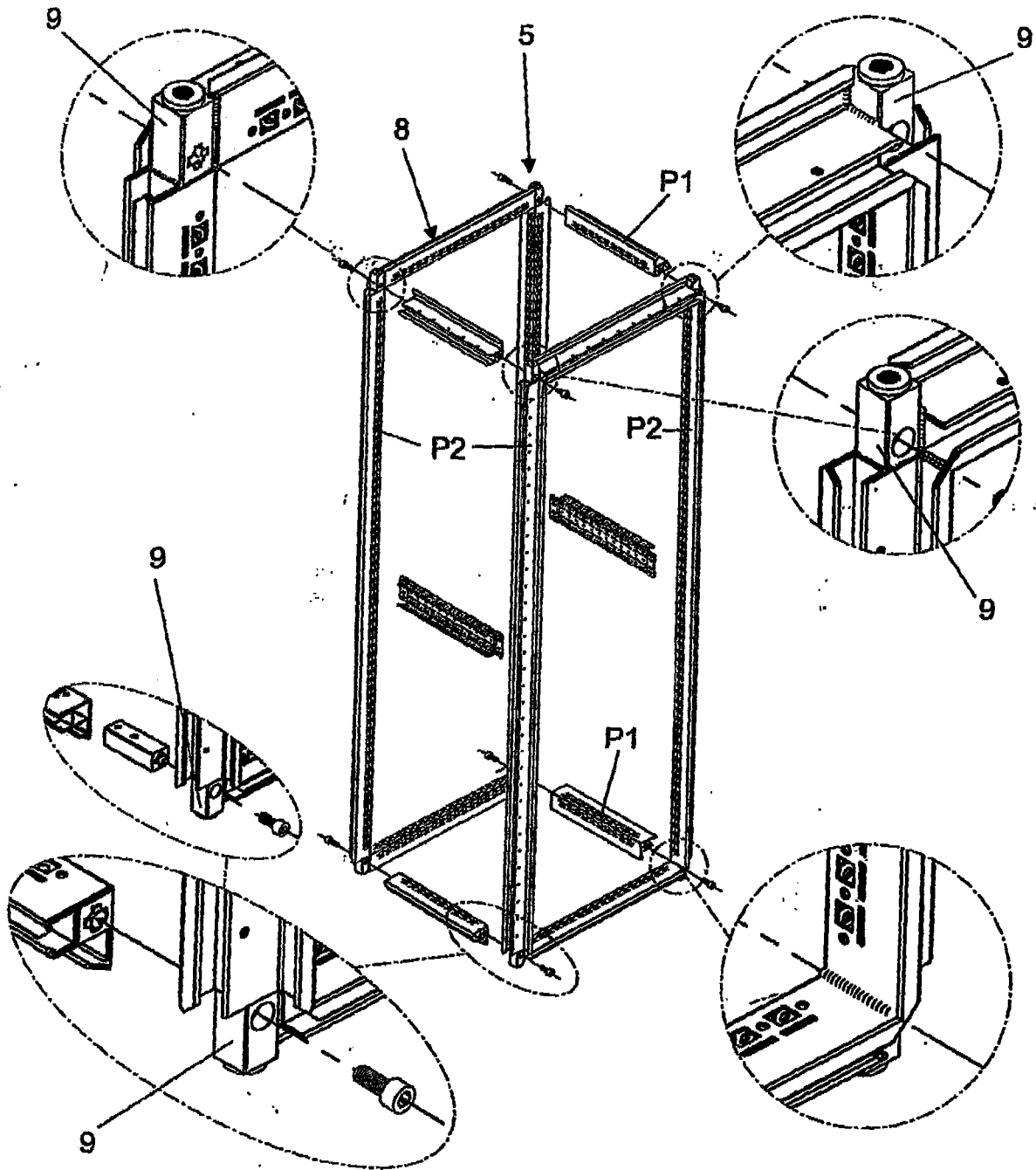


FIG. 4

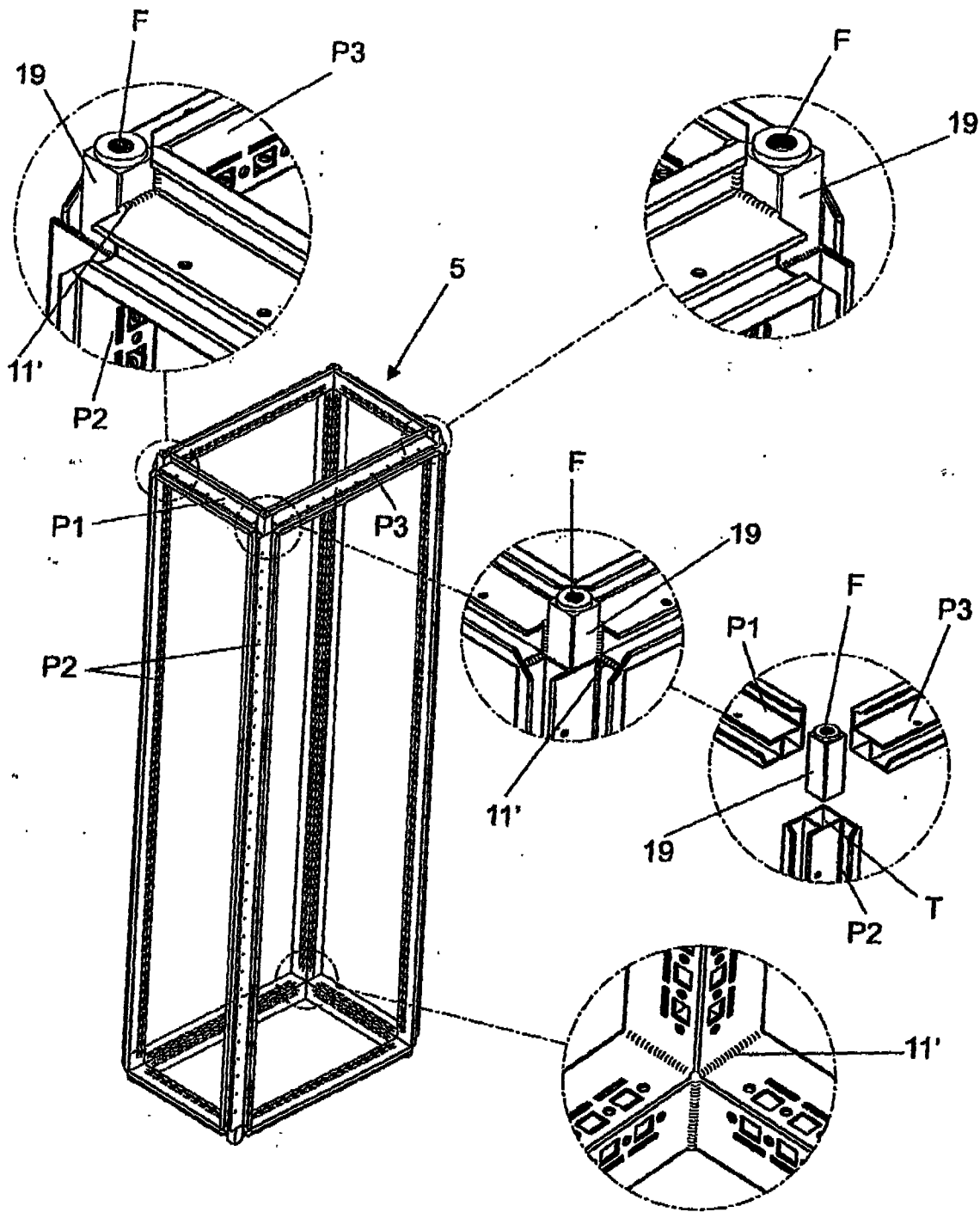


FIG. 12

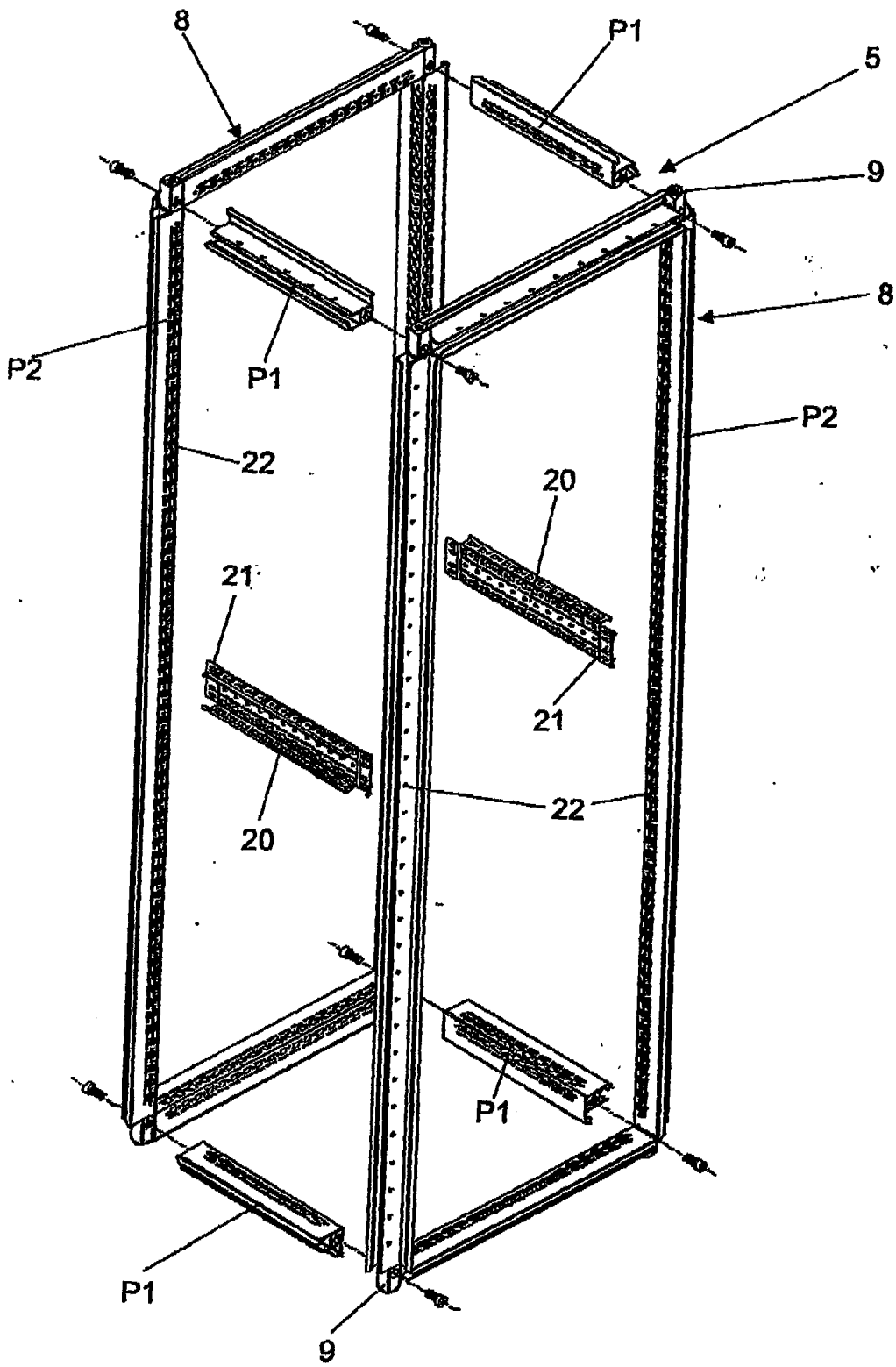


FIG. 15

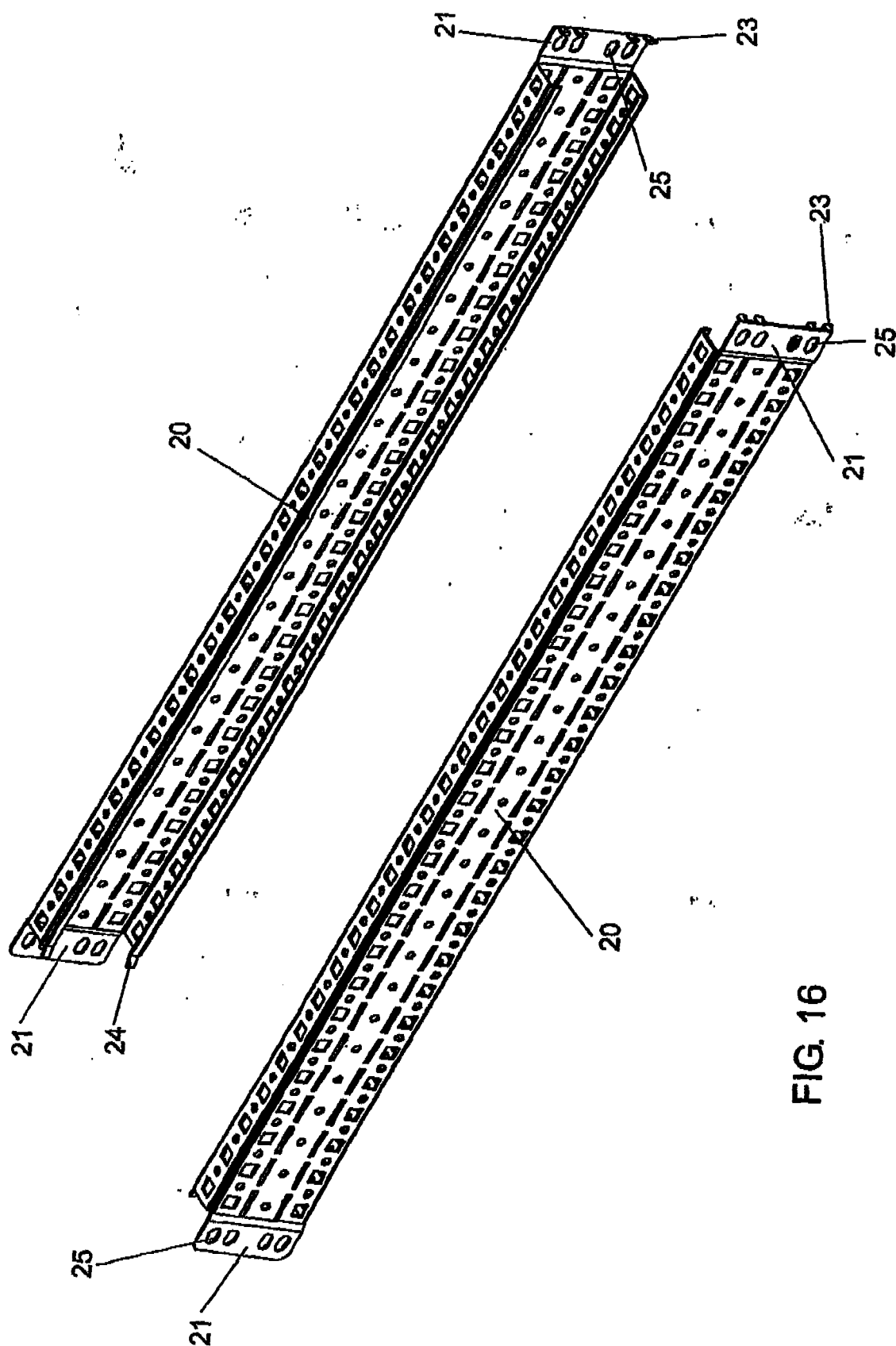


FIG. 16

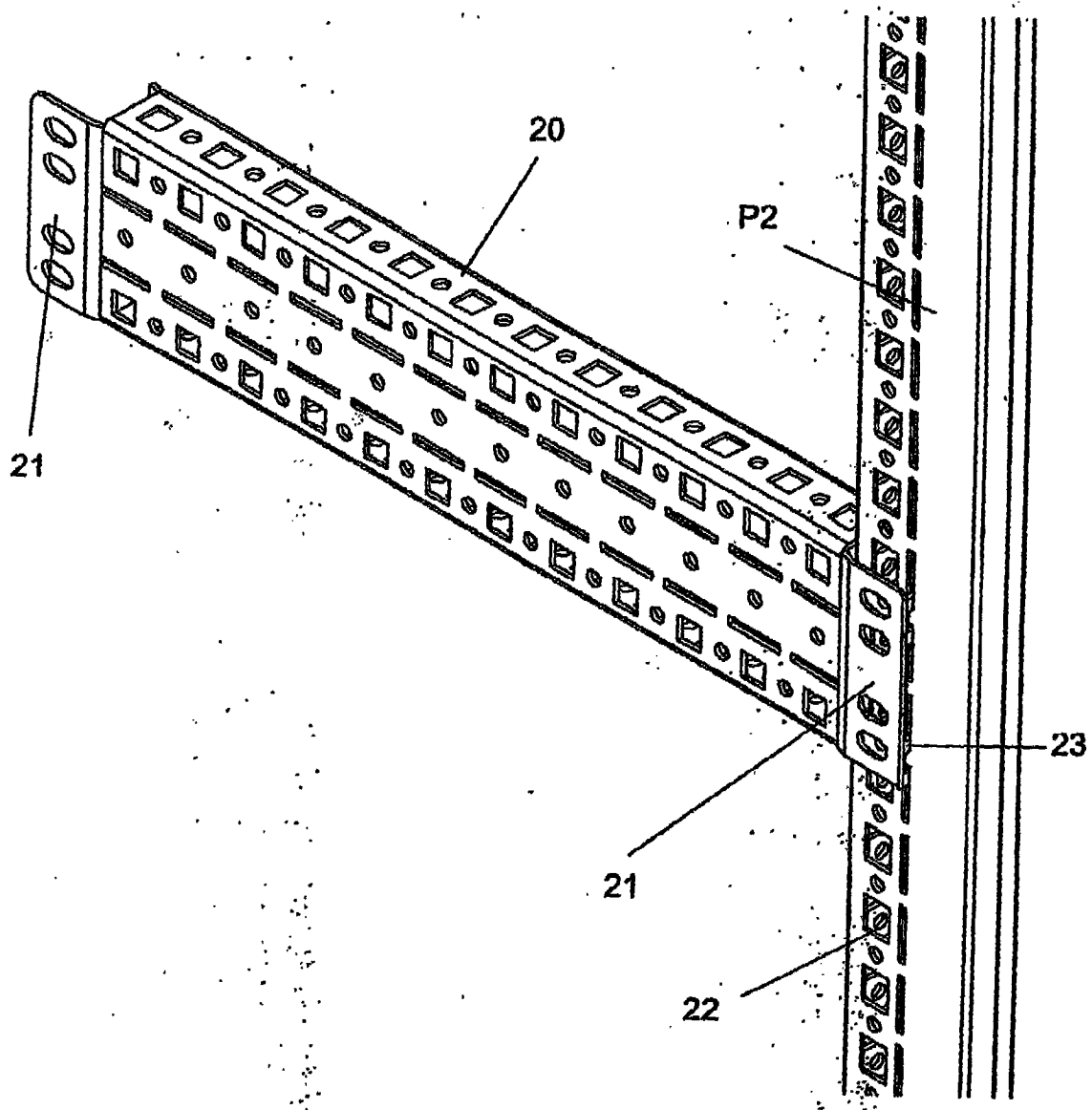


FIG. 18

83 44

100

19/22

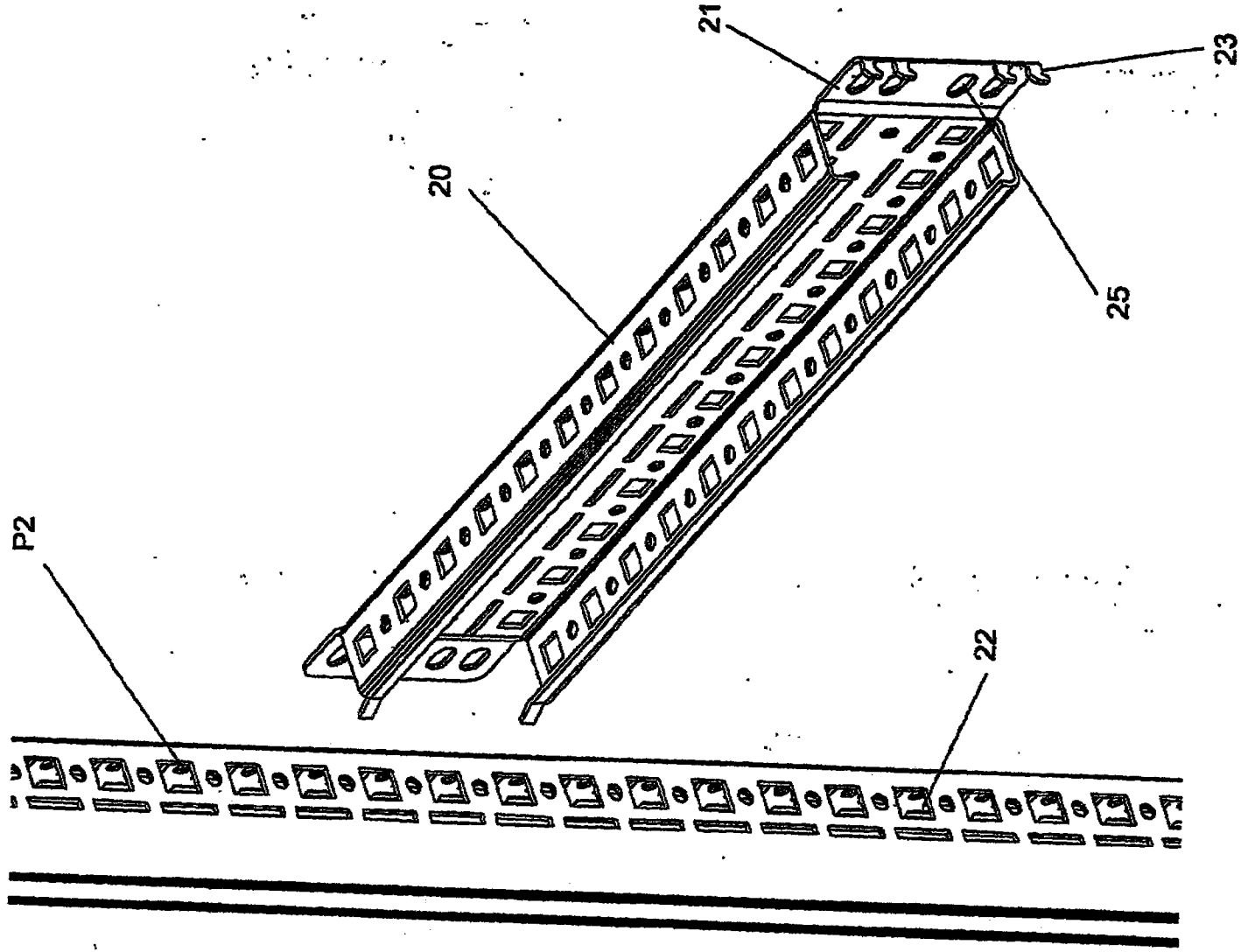


FIG. 19

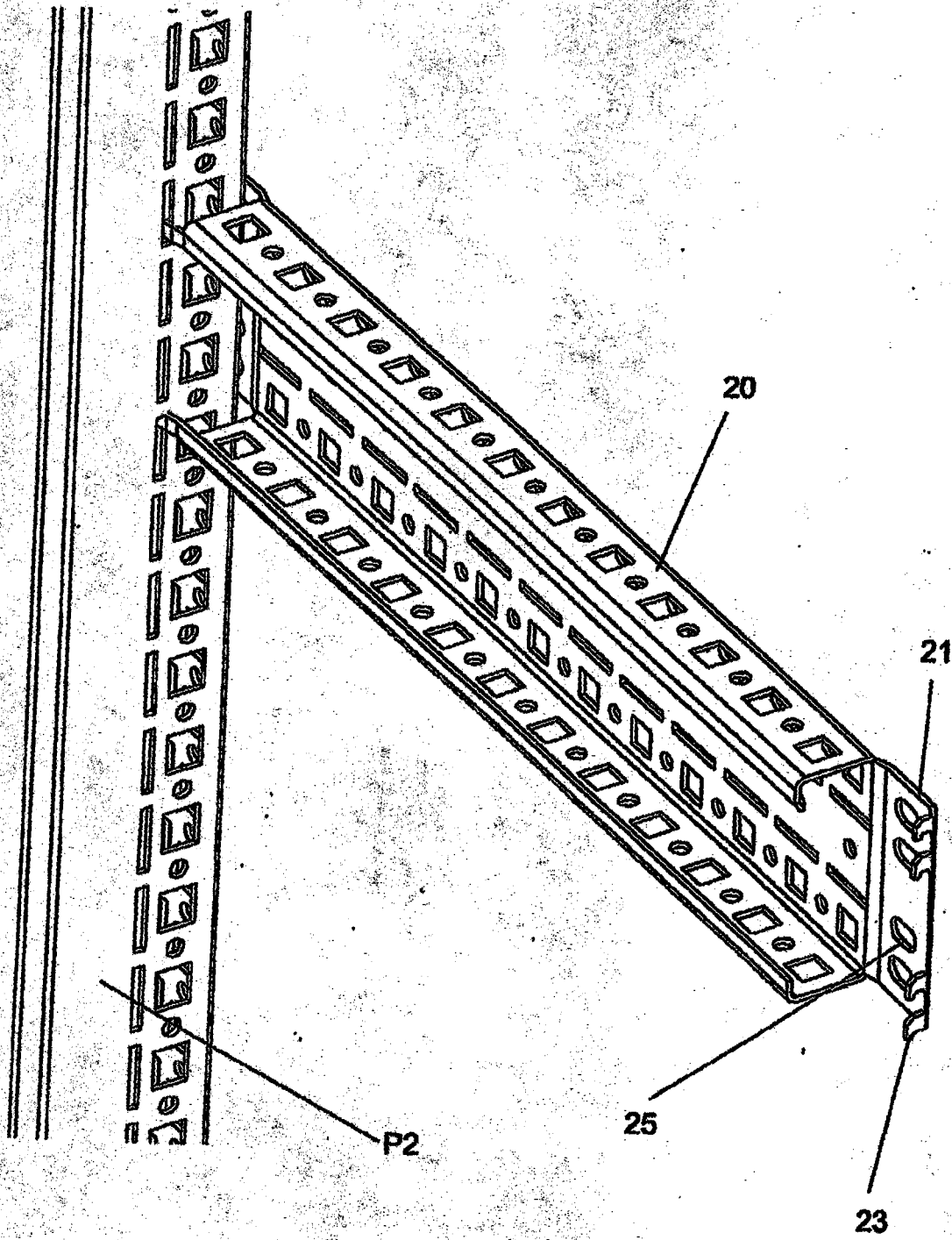


FIG. 20

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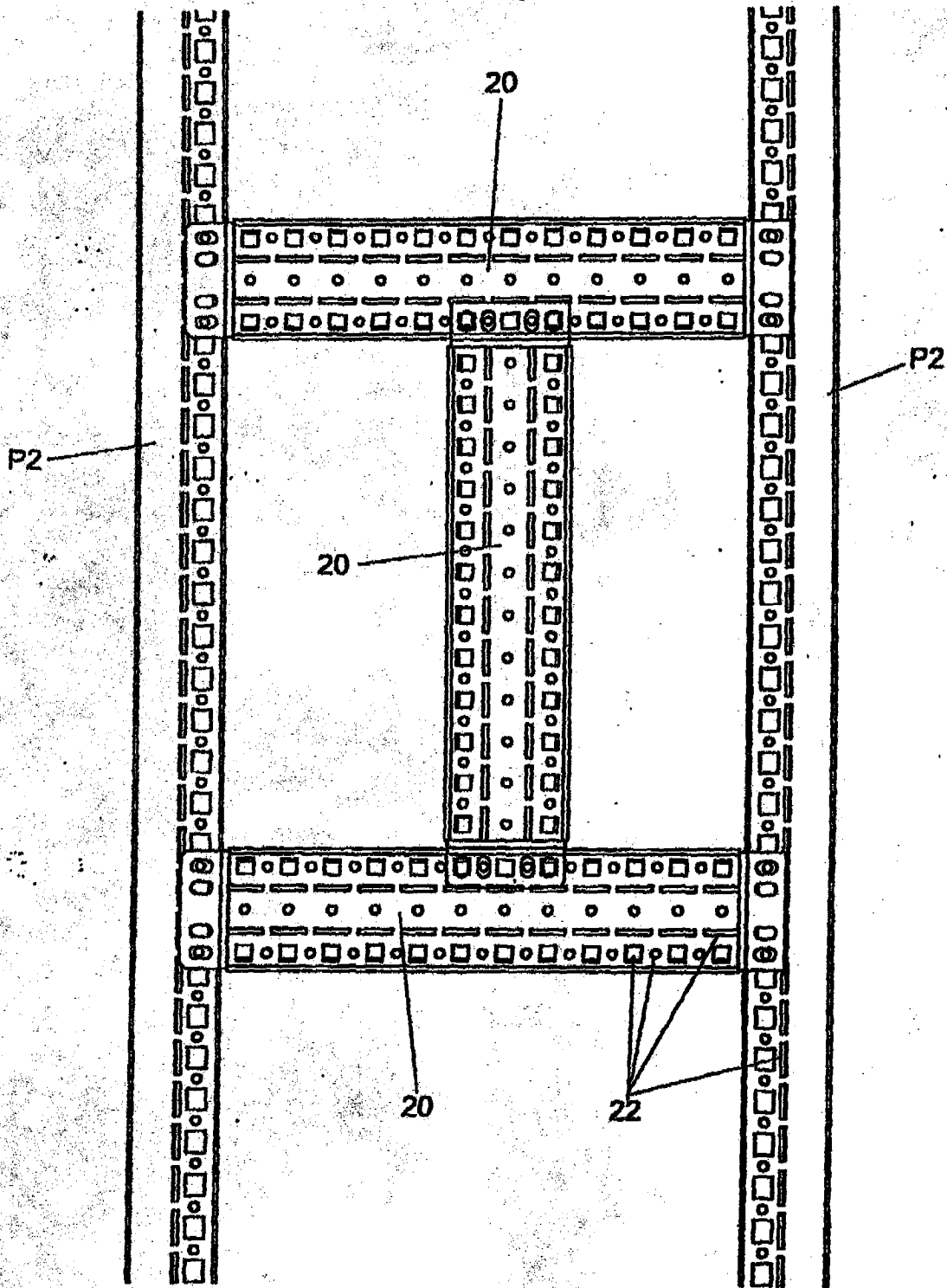


FIG. 22

PATENT COOPERATION TREATY

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From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

To:
SIMBOLO MARCAS E PATENTES
LTDA.
Rua Tabapua, 627, 4º andar,
cj. 44, Itaim Bibi
04531-012 São Paulo - SP
BRASIL

(PCT Rule 44.1)

Date of writing
(day/month/year)

09/03/2005

Applicant's or agent's file reference

0303969

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.

PCT/BR2004/000194

International filing date
(day/month/year)

07/10/2004

Applicant

FRANCISQUINI, Helguisedec

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland. Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

Shortly after the expiration of 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the PCT Applicant's Guide, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority

Authorized officer

European Patent Office, P.O. 5518 Patensaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-2016

Amandine Huniak

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NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 26 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

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NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether:

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]
"Claims 1 to 20, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers, claims 30, 33 and 36 unchanged, new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]
"Claims 1 to 6 and 14 unchanged, claims 7 to 13 cancelled, new claims 15, 16 and 17 added," or
"Claims 7 to 13 cancelled, new claims 15, 16 and 17 added, all other claims unchanged."
4. [Where various kinds of amendments are made]
"Claims 1-10 unchanged, claims 11 to 13, 16 and 19 cancelled, claims 14, 15 and 18 replaced by amended claim 14, claim 17 subdivided into amended claims 15, 16 and 17, new claims 20 and 21 added."

"Statement under Article 19(1)" (Rule 48.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of this PCT Applicant's Guide.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 6381969	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, Item 5 below.	
International application No. PCT/EP2004/000194	International filing date (day/month/year) 07/10/2004	(Earliest) Priority Date (day/month/year) 08/10/2003
Applicant FRANCISQUINI, Helmut/edec		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. 1.

2. ☐ Certain claims were found unsearchable (See Box II).

3. ☐ Unity of invention is lacking (see Box III).

4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

METALLIC STRUCTURE IMPROVEMENT FOR MANUFACTURING ELECTRICAL CABINETS

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 30.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

A. The figure of the drawings to be published with the abstract is Figure No. 4.

☐ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☒ as selected by this Authority, because this figure better characterizes the invention.

B. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/BR2004/000194

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Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

Improvement to the metallic structure for manufacturing electrical panels / cabinets, enclosing a structure of metallic cross sections (5), with the means for supporting the parts making up the external walls from folded sheets, as well as constituting the means for supporting and mounting the doors with its respective hinges, the upper (6) and lower enclosure with the base (7) and other electrical and electronic inside of the cabinet components. The said structure (5) can be presented semi-assembled, where four of its uprights or four of its cross sections (P1) are completely free whilst all the other cross sections are rigidly integrated into two equal rectangular frames (8) which form the two opposite sides of the said structure (5) and therefore at the corner point of the junction of each rectangular frame (8) there is a complementary device (9) cooperating for the interlinking at 90° between two adjacent cross sections (P2) and (P3) of each frame (8), as also this selfsame device presents the means so that the extremities of the other cross sections (P1) may be coupled between the corners of the rectangular frames (8), thus forming the structure (5).

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/BR2004/090194

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H02B1/01

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Main patent classification searched (classification system followed by classification symbols)

IPC 7 H02B

Documentation searched other than patent documentation to the extent that such documents are included in the fields searched

Electronic data base searched during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 948 916 A (E.T.A. S.P.A.) 13 October 1999 (1999-10-13) paragraphs '0022', '0027'; figure 1	1,3,4
A		2
X	US 6 315 132 B1 (HARTEL MARC ET AL) 13 November 2001 (2001-11-13) column 3, line 57 - column 4, line 12; figures	1,4
X	US 6 155 434 A (BENNER ET AL) 5 December 2000 (2000-12-05) column 2, line 31 - line 54 column 2, line 65 - column 3, line 13; figures 1,2	1,5,6
X	FR 2 674 581 A (LEGRAND) 2 October 1992 (1992-10-02) figures	1
A		2

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex

Special categories of cited documents

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

I later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular invention; the claimed invention cannot be considered to involve an inventive step when the document is considered with one or more other such documents, each combination being obvious to a person skilled in the art

a document number of the same patent family

Date of the actual completion of the international search

24 February 2005

Date of mailing of the international search report

09/03/2005

Name and mailing address of the ISA

European Patent Office, P.O. Box 2018 Dattwilstrasse 2
NL-3200 HW Dordrecht
Tel: (+31)-70 340-2040, Tx: 31 651 400 81
Fax: (+31)-70 340-3510

Authorized officer

Castanheira Nunes, F

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.

PCT/BR2004/000194

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0948916	A	13-10-1999	EP	0948916 A1	13-10-1999
			DE	69824827 D1	05-08-2004
US 6315132	B1	13-11-2001	DE	19932304 C1	15-02-2001
			EP	1069661 A1	17-01-2001
			JP	2001054213 A	23-02-2001
US 6155434	A	05-12-2000	DE	19647802 C1	22-01-1998
			AU	734973 B2	28-06-2001
			AU	5319298 A	10-06-1998
			BR	9713364 A	25-01-2000
			CN	1233351 A	27-10-1999
			NO	9823001 A1	28-05-1998
			EP	0939981 A1	08-09-1999
			JP	2000509600 T	25-07-2000
			JP	3391804 B2	31-03-2003
FR 2674581	A	02-10-1992	FR	2674581 A1	02-10-1992

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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43b(5.1))

Date of mailing:
day/month/year see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/IB2004/000194

International filing date (day/month/year)
07.10.2004

Priority date (day/month/year)
08.10.2003

International Patent Classification (IPC) or both national classification and IPC
H02B1/01

Applicant
FRANCISQUINI, Melquisedec

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 65.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA



European Patent Office - P.O. 5518 Patentlaan 2
NL 2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Telex 21 651 epo nl
Fax: +31 70 340 - 3016

Authorized Officer

Gasianheira Nunes, F

Telephone No. +31 70 340-4297



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/BR2004/000194

Box No. 1 Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed
☐ filed together with the international application in computer readable form
☐ furnished subsequently to this Authority for the purposes of search
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/BR2004/000194

**Box No. V Reasoned statement under Rule 43bis 1(a)(i) with regard to novelty, inventive step or
industrial applicability; citations and explanations supporting such statement**

I. Statement

Novelty (N)	Yes: Claims	2
	No: Claims	1,3-6

Inventive step (IS)	Yes: Claims	2
	No: Claims	1,3-6

Industrial applicability (IA)	Yes: Claims	1-6
	No: Claims	

Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/BR2004/000194

1. The following documents are referred to in this communication:

D1 : EP 0 948 916 A (E.T.A. S.P.A) 13 October 1999 (1999-10-13)

D2 : US 6 315 132 B1 (HARTEL MARC ET AL) 13 November 2001 (2001-11-13)

D3 : US 6 155 434 A (BENNETT ET AL) 5 December 2000 (2000-12-05)

2. INDEPENDENT CLAIM 1

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT. Document D1 discloses (the references in parentheses applying to this document) a metallic structure with two equal rectangular frames (see fig. 1, paragraphs 22 and 23) having at their corners a complementary device(3) interlinking two adjacent cross sections (2a and 2b).
- 2.2 D2 shows a metallic structure wherein two beams (10.1 and 10.2, figs. 1 and 2) are preassembled together with a corner connector (20). Claim 1 is also not new in view of D2.

3. DEPENDENT CLAIMS 3-6

Dependent claims 3-6 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

Claim 3: see D1, off center pins (17), through (23) and threaded (24) holes, fig.1, paragraph 27.

Claim 4: see D1, paragraph 22, cross members and corner piece welded together.

Claim 5: see D3, internal cross beams (50) with wings (53) with L-shaped teeth/shafts (56) turned inwards into openings (44) of the cross sections (40).

Claim 6: see D3, for similar reasons for claim 5 above, claim 6 lacks inventive step.

4. DEPENDENT CLAIM 2

As far as it can be understood (see clarity objections below), the combination of the features of dependent claim 2 is neither known from, nor rendered obvious by, the available prior art. The use of a square section dowel (10) welded to two cross beams which are then subsequently joined to a cross beam by a square section dowel (12) seems to be new and inventive over the prior art documents. Furthermore the connection system of claim 2 seems to be a simplification over

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/BR2004/000194

the prior art connection systems.

5. Remarks

The following phrases would appear to be unclear in claim 2:

- It is not clear to what the term " , usually," in line 7, refers ;
- "sufficiently exposed", line 7;
- "said point", line 8. The word "point" is mentioned for the first time;
- "the same manner", line 12. It is not clear whether the shape or the connection is referred to;

Claim 6 would appear to be necessarily dependent on claim 5, as it refers to the position of the cross beams mentioned in claim 5.

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**OPINIÓN ESCRITA DE LA AUTORIDAD INTERNACIONAL DE BÚSQUEDA
(HOJA APARTADA)**

Solicitud Internacional No. PCT/BR2004/000194

1. Los siguientes documentos están aludidos en esta comunicación:

D1: EP 0 948 916 A (E.T.A. S.P.A.) 13 de Octubre 1999 (1999-10-13)

D2: US 6 315 132 B1 (HARTEL MARC ET AL) 13 de Noviembre 2001 (2001-11-13)

D3: US 6 155 434 A (BENNER ET AL) 5 de Diciembre 2000 (2000-12-05)

2. **REIVINDICACIÓN INDEPENDIENTE 1**

2.1 La presente solicitud no atiende al criterio del artículo 33 (1) PCT, porque el contenido de la reivindicación 1 no es nuevo en relación al artículo 33 (2) PCT.

El documento D1 se refiere (las referencias en paréntesis se aplican a este documento) a una estructura metálica con dos cuadros rectangulares iguales (ver dibujo 1, párrafos 22 y 23) teniendo en su canto un dispositivo complementario (3) interconectando dos perfiles adyacentes (sección 2a y 2b).

2.2 D2 se refiere a una estructura metálica que contiene dos tacos (10.1 y 10.2, dibujos 1 y 2) que están prefabricados juntos a un conector de canto (20). La reivindicación 1 también no es nueva con relación a D2.

3. **REIVINDICACIONES DEPENDIENTES 3-6**

Las reivindicaciones dependientes 3-6 no contienen ninguna característica que, en combinación con otras características las que se puedan referir, atiendan los criterios del PCT con relación a novedad y/o actividad inventiva (artículo 33 (2) y (3) PCT).

Reivindicación 3: ver D1, tornillos descentralizados (17), por y entre agujeros, dibujo 1, párrafo 27.

Reivindicación 4: ver D1, párrafo 22, perfiladoras y pedazos de canto en un nudo de unión.

Reivindicación 5: ver D3, traviesas internas (50), con lengüetas (53), en forma de dientes en "L" (56), proyectados perpendicularmente en aberturas (44) de los enganches (40).

Reivindicación 6: ver D3, por razones similares a las razones de la reivindicación 5 arriba, la reivindicación 6 no tiene actividad inventiva.

4. **REIVINDICACIÓN DEPENDIENTE 2**

Tanto cuanto se puede entender, (ver esclarecimientos abajo), la combinación de las características de la reivindicación dependiente 2, no es conocida ni empleada por el estado de la técnica. El uso de un taco de sección transversal cuadrangular (10), los dos perfiles unidos por soldadura los cuales son juntados en la continuación a un perfil por una sección transversal cuadrangular (12) que parece ser nueva y con actividad inventiva en el transcurrir del estado de la técnica.

Además, el sistema de conexión de la reivindicación 2, parece ser una simplificación del estado de la técnica de sistemas de conexión.

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[illegible]

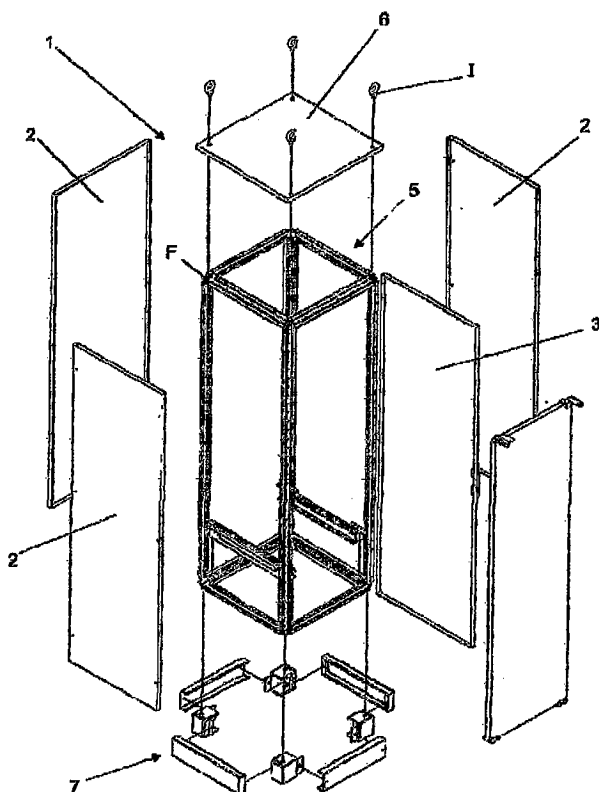
(61) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MY, NA, NL, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

MANUFACTURING ELECTRICAL CABINETS/PANELS

(57) Abstract: Improvement to the metallic structure for manufacturing electrical panels / cabinets, enclosing a structure of metallic cross sections (5), with the means for supporting the parts making up the external walls from folded sheets, as well as constituting the means for supporting and mounting the doors with its respective hinges and other accessories, such as: the upper (6) and lower enclosure with the base (7) and other components, being that, still, same structure, although, on the inside, also configures the necessary mounts for distributing and assembling the different electrical and electronic components and devices; in the first construction version, the said structure (5) presented semi-assembled, where four of its uprights or four of its cross sections (P1) are completely free whilst all the other cross sections are rigidly integrated into two equal rectangular frames (8) which form the two opposite sides of the said structure (5) and therefore at the corner point of the junction of each rectangular frame (8) there is a complementary device (9) cooperating for the interlinking at 90° between two adjacent cross sections (P2) and (P3) of each frame (8), as also this selfsame device presents the means so that the extremities of the other cross sections (P1) may be coupled between the corners of the rectangular frames (8), thus forming the structure (5).



WO 2005/034302 A2

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
14 April 2005 (14.04.2005)

PCT

(10) International Publication Number
WO 2005/034302 A3

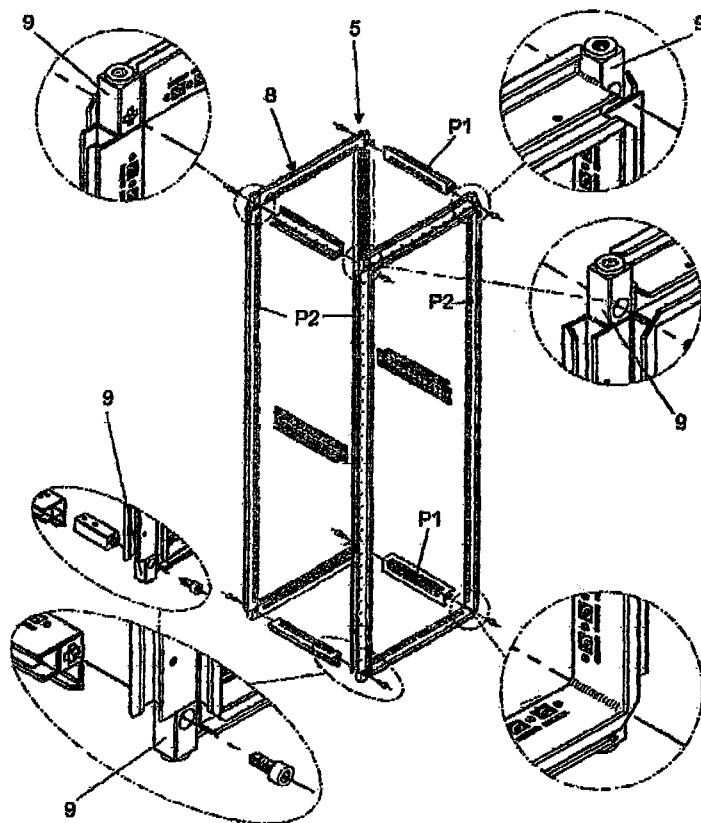
- (51) International Patent Classification²: H02B 1/01
- (21) International Application Number: PCT/BR2004/000194
- (22) International Filing Date: 7 October 2004 (07.10.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
PI 0303969-2 8 October 2003 (08.10.2003) BR
- (71) Applicant and
(72) Inventor: FRANCISQUINI, Melquisedec [BR/BR]; Rua
Dr. Oscar Monteiro de Barros, 580, Apto. 11 - Vila Suzana,
05641-010 Sao Paulo (BR).
- (74) Agent: SIMBOLO MARCAS E PATENTES LTDA.;
Rua Tabapua, 627 - 4. andar - cj.44, Itaim Bibi, 04533-012
Sao Paulo (BR).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: METALLIC STRUCTURE IMPROVEMENT FOR MANUFACTURING ELECTRICAL CABINETS



(57) Abstract: Improvement to the metallic structure for manufacturing electrical panels / cabinets, enclosing a structure of metallic cross sections (5), with the means for supporting the parts making up the external walls from folded sheets, as well as constituting the means for supporting and mounting the doors with its respective hinges, the upper (6) and lower enclosure with the base (7) and other electrical and electronic inside of the cabinet components. The said structure (5) can be presented semi-assembled, where four of its uprights or four of its cross sections (P1) are completely free whilst all the other cross sections are rigidly integrated into two equal rectangular frames (8) which form the two opposite sides of the said structure (5) and therefore at the corner point of the junction of each rectangular frame (8) there is a complementary device (9) cooperating for the interlinking at 90° between two adjacent cross sections (P2) and (P3) of each frame (8), as also this selfsame device presents the means so that the extremities of the other cross sections (P1) may be coupled between the corners of the rectangular frames (8), thus forming the structure (5).

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/BR2004/000194

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H02B1/01		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 H02B		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP 0 948 916 A (E.T.A. S.P.A) 13 October 1999 (1999-10-13) paragraphs '0022!', '0027!; figure 1	1,3,4 2
X	US 6 315 132 B1 (HARTEL MARC ET AL) 13 November 2001 (2001-11-13) column 3, line 57 - column 4, line 12; figures	1,4
X	US 6 155 434 A (BENNER ET AL) 5 December 2000 (2000-12-05) column 2, line 31 - line 54 column 2, line 65 - column 3, line 13; figures 1,2	1,5,6
X A	FR 2 674 581 A (LEGRAND) 2 October 1992 (1992-10-02) figures	1 2
☐ Further documents are listed in the continuation of box C. ☒ Patent family members are listed in annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "Z" document member of the same patent family		
Date of the actual completion of the international search 24 February 2005		Date of mailing of the international search report 09/03/2005
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentplan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3018		Authorized officer Castanheira Nunes, F

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67

INTERNATIONAL SEARCH REPORT

International Application No
PCT/BR2004/000194

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0948916	A	13-10-1999	EP	0948916 A1	13-10-1999
			DE	69824827 D1	05-08-2004
US 6315132	B1	13-11-2001	DE	19932304 C1	15-02-2001
			EP	1069661 A1	17-01-2001
			JP	2001054213 A	23-02-2001
US 6155434	A	05-12-2000	DE	19647802 C1	22-01-1998
			AU	734973 B2	28-06-2001
			AU	5319298 A	10-06-1998
			BR	9713364 A	25-01-2000
			CN	1233351 A	27-10-1999
			WO	9823001 A1	28-05-1998
			EP	0939981 A1	08-09-1999
			JP	2000509600 T	25-07-2000
			JP	3391804 B2	31-03-2003
FR 2674581	A	02-10-1992	FR	2674581 A1	02-10-1992

PATENT COOPERATION TREATY

From the INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

SIMBOLD MARCAS E PATENTES LTDA

Rua Ladapua, 627 - 4. andar - 044

04533-012 Sao Paulo

Brasil

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(PCT Rule 71.1)

Date of mailing

31.01.2006

Applicant or agent: the addressee

0300969

International application No.

PCT/BR2004/010194

Applicant

FRANCISCAINI, Michelodec

IMPORTANT NOTIFICATION

Information being filed (day/month/year)

07.10.2004

Priority date (day/month/year)

09.10.2003

1. The applicant is hereby notified that the International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB6031). Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned. For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purpose of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 32(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.



Name and mailing address of the international preliminary examining authority

European Patent Office - E.P. 2018 Patents 2
MC 2300 HW Altwies - P.O. Box
Tel. +31 70 340 2040 Fax +31 70 340 2041

Form PCT/ISA/416 (January 2004)

Authorized Officer
Mathys, G
Tel. +31 70 340 2040



PCT

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 0303989		FOR FURTHER ACTION		See Form PCT/PEA/408
International application No. PCT/BR2004/000194		International filing date (day/month/year) 07.10.2004	Priority date (day/month/year) 08.10.2003	
International Patent Classification (IPC) or national classification and IPC H02B1/01				
Applicant FRANCISQUINI, Melquisedec				
1. This report is the International preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of 5 sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☐ sent to the applicant and to the International Bureau a total of sheets, as follows: ☐ sheets of the description, claims and/or drawings which have been annexed and are the basis of this report and the sheets containing modifications authorized by the Authority (see Rule 70.10 and Section 607 of the Administrative Instructions). ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box Nos. I and the Supplemental Box. b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 602 of the Administrative Instructions).				
4. This report contains indications relating to the following items: ☒ Box No. I Basis of the opinion ☐ Box No. II Priority ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☐ Box No. IV Lack of unity of invention ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement ☐ Box No. VI Certain documents cited ☐ Box No. VII Certain defects in the international application ☐ Box No. VIII Certain observations on the international application				
Date of submission of the demand 30.03.2005		Date of completion of this report 31.01.2006		
Name and mailing address of the International preliminary examining authority:  European Patent Office - P.O. Box 5010 Patentstr. 2 69228 Heidelberg - P.O. Box Tel: +31 70 340 2040 Fax: +31 70 340 2018		Authorized Officer Castanheira Nunes, F Telephone No. +31 70 340		

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/BR2004/000194

Box No. 1 Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements* of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

Description, Pages

1-13 as originally filed

Claims, Numbers

1-6 as originally filed

Drawings, Sheets

102-2222 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (specify):
- ☐ any table(s) related to sequence listing (specify):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (specify):
- ☐ any table(s) related to sequence listing (specify):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/BR2004/000194

1. The following documents are referred to in this communication:

D1 : EP 0 948 916 A (E.T.A. S.P.A) 13 October 1999 (1999-10-13)

D2 : US 6 315 132 B1 (HARTEL MARC ET AL) 13 November 2001 (2001-11-13)

D3 : US 6 155 434 A (BENNER ET AL) 5 December 2000 (2000-12-05)

2. INDEPENDENT CLAIM 1

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

Document D1 discloses (the references in parentheses applying to this document) a metallic structure with two equal rectangular frames (see fig. 1, paragraphs 22 and 23) having at their corners a complementary device(3) interlinking two adjacent cross sections (2a and 2b).

2.2 D2 shows a metallic structure wherein two beams (10.1 and 10.2, figs. 1 and 2) are preassembled together with a corner connector (20). Claim 1 is also not new in view of D2.

3. DEPENDENT CLAIMS 3-6

Dependent claims 3-6 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

Claim 3: see D1, off center pins (17), through (23) and threaded (24) holes, fig. 1, paragraph 27.

Claim 4: see D1, paragraph 22, cross members and corner piece welded together.

Claim 5: see D3, internal cross beams (50) with wings (53) with L-shaped teeth/shafts (56) turned inwards into openings (44) of the cross sections (40).

Claim 6: see D3, for similar reasons for claim 5 above, claim 6 lacks inventive step.

4. DEPENDENT CLAIM 2

As far as it can be understood (see clarity objections below), the combination of the features of dependent claim 2 is neither known from, nor rendered obvious by, the available prior art. The use of a square section dowel (10) welded to two cross beams which are then subsequently joined to a cross beam by a square section dowel (12) seems to be new and inventive over the prior art documents.

Furthermore the connection system of claim 2 seems to be a simplification over

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**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/BR2004/000194

the prior art connection systems.

5. Remarks

The following phrases would appear to be unclear in claim 2:

- it is not clear to what the term " , usually, " in line 7, refers ;
- "sufficiently exposed", line 7;
- "said point", line 8. The word "point" is mentioned for the first time;
- "the same manner", line 12. It is not clear whether the shape or the connection is referred to;

Claim 6 would appear to be necessarily dependent on claim 5, as it refers to the position of the cross beams mentioned in claim 5.

INFORME PRELIMINAR INTERNACIONAL CON RESPECTO A LA PATENTABILIDAD (HOJA APARTADA)

Solicitud Internacional No. PCT/BR2004/000194

1. Los siguientes documentos están aludidos en esta comunicación:

D1: EP 0 948 916 A (E.T.A. S.P.A.) 13 de Octubre 1999 (1999-10-13)

D2: US 6 315 132 B1 (HARTEL MARC ET AL) 13 de Noviembre 2001 (2001-11-13)

D3: US 6 155 434 A (BENNER ET AL) 5 de Diciembre 2000 (2000-12-05)

2. REIVINDICACIÓN INDEPENDIENTE 1

2.1 La presente solicitud no atiende al criterio del artículo 33 (1) PCT, porque el contenido de la reivindicación 1 no es nuevo en relación al artículo 33 (2) PCT.

El documento D1 se refiere (las referencias en paréntesis se aplican a este documento) a una estructura metálica con dos cuadros rectangulares iguales (ver dibujo 1, párrafos 22 y 23) teniendo en su canto un dispositivo complementar (3) interconectando dos perfiles adyacentes (sección 2a y 2b).

2.2. D2 se refiere a una estructura metálica que contiene dos tacos (10.1 y 10.2, dibujos 1 y 2) que están prefabricados juntos a un conector de canto (20). La reivindicación 1 también no es nueva con relación a D2.

3. REIVINDICACIONES DEPENDIENTES 3-6

Las reivindicaciones dependientes 3-6 no contienen ninguna característica que, en combinación con otras características las que se puedan referir, atiendan los criterios del PCT con relación a novedad y/o actividad inventiva (artículo 33 (2) y (3) PCT).

Reivindicación 3: ver D1, tornillos descentralizados (17), por y entre agujeros, dibujo 1, párrafo 27.

Reivindicación 4: ver D1, párrafo 22, perfiladoras y pedazos de canto en un nudo de unión.

Reivindicación 5: ver D3, traviesas internas (50), con lengüetas (53), en forma de dientes en "L" (56), proyectados perpendicularmente en aberturas (44) de los enganches (40).

Reivindicación 6: ver D3, por razones similares a las razones de la reivindicación 5 arriba, la reivindicación 6 no tiene actividad inventiva.

4. REIVINDICACIÓN DEPENDIENTE 2

Tanto cuanto se puede entender, (ver esclarecimientos abajo), la combinación de las características de la reivindicación dependiente 2, no es conocida ni empleada por el estado de la técnica. El uso de un taco de sección transversal cuadrangular (10), los dos perfiles unidos por soldadura los cuales son juntados en la continuación a un perfil por una sección transversal cuadrangular (12) que parece ser nueva y con actividad inventiva en el transcurrir del estado de la técnica.

Además, el sistema de conexión de la reivindicación 2, parece ser una simplificación del estado de la técnica de sistemas de conexión.

MEJORAMIENTO EN ESTRUCTURA METÁLICA PARA LA CONSTRUCCIÓN DE CUADROS/ ARMARIOS ELÉCTRICOS

5

CAMPO DE LA INVENCIÓN.

La presente Invención se refiere a una estructura metálica montada con la combinación de diferentes componentes, incluyéndose perfiles
10 especiales, especialmente del tipo realizado en perfiladora, definiendo una estructura con una concepción constructiva diferenciada y de la cuál se obtienen algunas mejoras técnicas y prácticas, inclusive de calidad con reducción de costos.

15 Este tipo de estructura, de manera general, se utiliza normalmente en los más variados tipos de cuadros, también conocidos como paneles eléctricos que, en realidad, son armarios con puertas y cierres laterales utilizados para abrigar una gran variedad de componentes y dispositivos eléctricos y electrónicos.

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ESTADO DE LA TÉCNICA.

25 Como es de conocimiento de los expertos en esta técnica, actualmente existen diferentes tipos de paneles eléctricos, también llamados de cuadros, gabinetes o armarios, proyectados para abrigar diversos componentes y dispositivos eléctricos y electrónicos en los más variados ramos de actividades, incluyéndose también el sector de telefonía.

30 Por lo tanto, en diferentes situaciones de distribución eléctrica o montaje de componentes y dispositivos eléctricos y electrónicos, el uso de un armario, gabinete o panel es extremadamente importante.

35 A pesar de que existe actualmente una variedad muy grande de paneles eléctricos, normalmente son cajas metálicas con cierres adecuados,

incluyendo una o más puertas, dependiendo de su tamaño. Tales cierres, incluyendo las puertas, normalmente están confeccionados de chapas metálicas substancialmente finas. De esta manera, todos los paneles eléctricos poseen internamente una estructura de perfiles metálicos. Esta estructura, como su propio nombre dice, constituye el medio de sustentación para las partes que forman las paredes externas de chapas dobladas y el montaje de las puertas y sus respectivas bisagras, y también, esta misma estructura, pero, por el lado de dentro, también configura los montantes necesarios para la distribución y montaje de los diferentes componentes y dispositivos eléctricos y electrónicos.

Lógicamente, es fundamental que cualquier panel eléctrico tenga internamente una estructura substancialmente resistente para caracterizar un gabinete o armario adecuado con los equipamientos internos que se van a instalar.

Actualmente existen diferentes tipos de estructuras, todas ellas obtenidas con perfiles metálicos, entre los que, en la mayoría de los casos, se producen en prensas de doblamiento de chapas, lo que dificulta el proceso productivo, además de presentar algunas restricciones técnicas, existen también otros tipos de estructuras obtenidas con perfiles metálicos realizados en perfiladoras, tales como aquellos mostrados en los siguientes documentos:

- a) **PI 8406283** - cuadro de armazón para un armario de distribución depositado el 07/12/84;
- b) **PI 9509578-0** - publicado el 23/12/1997 - armazón para un armario de distribución;
- c) **PI 9713114-8A** - publicado el 11/04/2000 - armazón con una estructura de fondo y una estructura de cubierta de una lámina perforada;
- d) **PI 9509594-2** - publicado el 30/09/1997 - armazón para un armario de distribución;
- e) **PI 9708041-1** - publicado el 27/07/1999 - armario de distribución con

una estructura de cuadro;

f) **PI 9712774-4A** - publicado el 26/10/1999 - armario de distribución con una escuadra de aluminio;

g) **PI 9713518-6A** - armazón de cuadro para un armario de distribución; y

5 h) **PI 9713515-1A** – conjunto para una armazón de cuadro con conexión de canto para los perfiles verticales de cuadro.

Es importante destacar que los paneles eléctricos, gabinetes o armarios de distribución son diseñados para alcanzar dos TIPOS de aplicaciones, definidos comercialmente como: tipo INDOOR (uso abrigado) y tipo OUTDOOR (uso desabrigado – a la intemperie). La diferencia entre los dos tipos consiste básicamente en el GRADO DE PROTECCIÓN MECÁNICA Y DE ESTANQUEIDAD de los cierres laterales y de las puertas, consecuentemente, podemos decir que aquel definido como tipo outdoor presenta un grado mayor de protección mecánica, así como de estanqueidad.

Tradicionalmente, se considera el tipo indoor adecuado para utilizar en ambiente cerrado y protegido de intemperies, mientras que el otro tipo definido como outdoor es ideal para utilizar en locales abiertos o al aire libre, tal como sucede, por ejemplo, con algunos armarios utilizados en el sector de telefonía. Entre tanto, el de tipo outdoor, debido a su mayor grado de estanqueidad, también se utiliza ventajosamente en ambientes cerrados, pero, con actividades hostiles, no solamente por la presencia de contaminantes suspensos en el aire como también por la presencia de humedad, tal y como sucede, por ejemplo, en industrias, ambientes de procesamiento de diversos productos, de forma destacada en el sector químico, cocinas industriales y/u otros locales semejantes.

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INCONVENIENTES DEL ESTADO DE LA TÉCNICA.

Actualmente existen, como ya ha sido dicho, varios tipos de estructuras y en la mayoría de los casos el efecto estructural obtenido es

razonablemente satisfactorio, no obstante, en lo que se refiere a las estanqueidades, necesitan de ejecuciones técnicas especiales en función de la aplicación, como también presentan complicada viabilidad industrial, en algunos casos por la ausencia de tecnología, en otros, por la necesidad de accesorios complementares, como sucede, por ejemplo, en el PI 8406283 - cuadro de armazón para un armario de distribución depositado el 07/12/1984, en donde la unión de los cantos se obtiene por una conexión fundida bajo presión en zamack con tres puntos de encaje (supuestamente, con la función de facilitar el montaje del conjunto o, quizás, ofrecer una mejor estabilidad), entretanto, este tipo de solución tiene un costo elevado y también imposibilita que haya soldadura entre los perfiles y la conexión por ser de materiales diferentes, de esta manera, la soldadura queda restringida a los puntos en donde los perfiles se encuentran, lo que resulta en una menor estabilidad mecánica para la estructura, a pesar de ser del tipo estructuralmente soldado. Podemos citar también, el PI 9.713.518-6A – armazón de cuadro para un armario de distribución, el PI 9.713.114-8A – armazón de una estructura de fondo y una estructura de cubierta de una lámina perforada. En estos y en otros casos, se observa que la conexión de los cantos consiste en una pieza única hecha en acero, lo que hace posible la soldadura entre la conexión y los perfiles, entretanto, esta solución utiliza dos perfiles diferentes para la construcción de la estructura, uno en el montaje vertical y otro en el horizontal, lo que evidentemente, además de generar un costo mayor, también interfiere en la viabilidad del conjunto, haciéndola complicada.

En una primera condición usual podemos decir que las estructuras obtenidas a partir de perfiles metálicos producidos en perfiladoras, normalmente son del tipo estructural soldado (cuadro listo), es decir, una estructura con formato paralelepípedo no desmontable, en donde todas las uniones de los perfiles junto a los cantos se realizan por soldadura, esto, supuestamente, para garantizar mejor rigidez y estabilidad. Entretanto, esta concepción de montaje también caracteriza varias desventajas técnicas y prácticas, entre las que podemos destacar:

conlleva un costo elevado de fabricación; el transporte y almacenaje son substancialmente más difíciles, una vez que la estructura montada exige una ocupación considerable de espacio.

- 5 En una segunda condición de uso, podemos decir que existen también estructuras del tipo desmontadas, es decir, estructuralmente montadas por tornillos, en donde cada una presenta su respectiva característica constructiva, entretanto, estas soluciones existentes no presentan rigidez y estabilidad mecánica satisfactorias para las aplicaciones destinadas.

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Por lo tanto, resumidamente, podemos decir que los inconvenientes de las estructuras en el estado de la técnica se generan en función de la complejidad en la fabricación, ineficiencia para aplicaciones más exigentes, tales como Telecomunicaciones y Media Tensión, que requieren el tipo outdoor (uso desabrigado), rigidez y estabilidad mecánica incompatibles principalmente en los tipos desmontados.

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OBJETIVOS DE LA INVENCION.

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Ante las circunstancias arriba mencionadas, objetivando superarlas, ha sido creada la presente invención, que en su concretización final definió una estructura mejorada, en donde, en una misma característica constructiva es posible ejecutar la versión montada (estructuralmente soldada con soldadura interna y externa en todo el perímetro de la unión de los cantos) o versión semimontada (estructura parcialmente soldada con soldadura interna y externa en la unión de los perfiles de anchura y altura y el montaje complementario de los perfiles de profundidad por tornillos), utilizando un perfil único, e inclusive, hacer posible la sustentación de los elementos de fijación de los componentes internos con flexibilidad y seguridad, tanto para el montaje de cuadros eléctricos del tipo indoor cuanto outdoor, inclusive con una serie de ventajas técnicas y prácticas, entre las que se destacan:

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- a) la unión de los cantos se caracteriza por su

simplicidad constructiva, eficiencia técnica y versatilidad, visto que la conexión que hace la unión de los perfiles consiste en una pieza única (taco de viga de acero cuadrado), siendo utilizado tanto en la versión montada cuanto en la versión semimontada, pudiendo ser fácilmente fabricada en otros materiales, tales como acero forjado, fundido etc.;

b) la utilización de un perfil único en la estructura, es decir, el mismo perfil para anchura, altura y profundidad, además de facilitar la fabricación reduce significativamente el costo;

c) la forma de montaje en cuestión asociada con la geometría transversal del perfil, hizo posible un efecto técnico nuevo de extrema importancia, es decir, todos los lados de la estructura montada son simétricamente iguales, lo que favorece mucho la interconexión de una estructura con otra en cualquiera de los lados, incluyendo el lado superior y el lado inferior, consecuentemente, la presente estructura es modular, pudiendo crecer y disminuir en el momento deseado;

d) el lado externo de la estructura es completamente estanco con relación al lado interno, esta estanqueidad se obtiene naturalmente con la propia geometría transversal del perfil en conjunto con los detalles de perfilado, así como también se consigue con una perfecta unión de todos los perfiles en cada uno de los cantos;

Para atender tales objetivos, el presente mejoramiento prevé una primera versión constructiva definida por la unión de los cantos por dos tacos, de modo que, por un lado, un taco pueda presentar detalles para que dos perfiles en ángulo recto de un canto de la estructura puedan soldarse rígidamente, lo que sucede con todos los otros cantos, formando una primera parte de estructura en forma de cuadro rectangular. Cada estructura posee dos cuadros rectangulares, que son interconectados con otros cuatro perfiles completamente sueltos, pero, sus extremidades están equipadas con otros tacos, todos ellos con detalles para acoplar mediante tornillos y encajes con aquellos otros tacos soldados en los referidos cuadros, finalizando así, medios para que dicha estructura se pueda suministrar completamente desmontada, surgiendo, consecuentemente, todas aquellas ventajas técnicas y

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prácticas anteriormente relatadas.

Finalmente, para algunos casos en donde la estructura necesite ser en pieza no desmontable, el presente mejoramiento prevé una forma constructiva simplificada y eficiente para alcanzar tal finalidad, en donde
5 apenas un taco de acero (conexión para la unión de los cantos) proporciona medios para aplicación de soldadura en todos los bordes de los perfiles que se encuentran en cada canto de la estructura, esta soldadura se extiende también para las caras correspondientes del
10 referido taco, de manera que el mismo pasa a ser parte integrante de todos los perfiles que se encuentran en cada canto, finalizando una forma constructiva que aumenta considerablemente la rigidez de la estructura.

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DESCRIPCIÓN DE LAS FIGURAS.

Para una mejor comprensión de la presente Invención, se hace a continuación una descripción detallada de la misma, haciéndose
20 referencias a las figuras anexos, en donde:

La FIGURA 1 representa una vista en perspectiva ejemplificando un panel eléctrico completamente cerrado y obtenido con el presente mejoramiento;

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La FIGURA 2 es una perspectiva detallada del panel eléctrico mostrado en las figuras anteriores, colocando en destaque su estructura obtenida con el presente perfil;

30 La FIGURA 3 muestra una vista en perspectiva de una estructura obtenida con el perfil en cuestión;

La FIGURA 4 muestra una vista en perspectiva de una estructura obtenida con el perfil en cuestión, esta estructura está parcialmente

detallada e, inclusive, en esta misma vista se muestran detalles ampliados de todos los cantos de dicha estructura;

La FIGURA 5 muestra una perspectiva ampliada y detallada, colocando en destaque los componentes de montaje de uno de los cantos de la estructura;

La FIGURA 6 es una perspectiva detallada igual a la anterior, pero, en ángulo diferente, mostrando otros detalles constructivos de los componentes que forman cada canto de la estructura;

La FIGURA 7 es una perspectiva detallada del mismo canto ilustrado en las Figuras 5 y 6, pero, en este caso dicho canto está semimontado, colocando en destaque el hecho de que el montaje forma un cuadro rectangular;

La FIGURA 8 es una perspectiva mostrando un canto de la estructura completamente montado;

La FIGURA 9 es una perspectiva detallada mostrando los componentes que forman un canto de la estructura de acuerdo con una primera variación constructiva;

La FIGURA 10 muestra una perspectiva del mismo canto ilustrado en la Figura 9, pero, en este caso el mismo está semimontado;

La FIGURA 11 es una vista en perspectiva del canto ilustrado en las Figuras 9 y 10, pero, en este caso el mismo está completamente montado;

La FIGURA 12 ilustra una vista en perspectiva de una estructura obtenida con el perfil en cuestión, esta estructura está parcialmente detallada e, inclusive, en esta misma vista se muestran detalles ampliados de todos los cantos, en donde la unión de los perfiles se

obtiene de acuerdo con una variación constructiva;

La FIGURA 13 muestra una vista en perspectiva detallada de uno de los cantos de la estructura, colocando en destaque la referida variación constructiva y, en este caso, se coloca en destaque el componente
5 utilizado para interconexión por soldadura de los tres perfiles que forman el referido canto;

La FIGURA 14 representa una vista en perspectiva totalmente montada
10 del canto mostrado en la figura anterior;

La FIGURA 15 ilustra una vista en perspectiva de la presente estructura parcialmente detallada, colocando en destaque el uso de una traviesa para el trabamamiento complementario y el montaje de los componentes
15 internos del panel;

La FIGURA 16 es una vista en perspectiva mostrando los detalles constructivos de las traviesas;

20 Las FIGURAS 17 a 22 son perspectivas en diferentes ángulos, colocando en destaque el encaje y acoplamiento entre la referida traviesa y los perfiles verticales de la estructura.

25 DESCRIPCIÓN DETALLADA DE LA INVENCION.

De acuerdo con estas ilustraciones y en sus pormenores, el presente mejoramiento en estructura metálica, fue particularmente desarrollado para el montaje de gabinetes, armarios o paneles eléctricos (1),
30 genéricamente ilustrados en las Figuras 1 y 2, en donde se verifica un tipo apenas ejemplar que puede ser indoor u outdoor, pero, en los dos casos, el mismo se presenta en forma de caja metálica con cierres laterales (2), incluyendo una o más puertas basculantes (3) con cerradura (4). Tales cierres, incluyéndose las puertas, normalmente se

producen de chapas metálicas substancialmente finas. De esta manera, tal y como ilustrado también en la Figura 2, todos los paneles eléctricos poseen internamente una estructura de perfiles metálicos (5), en donde se verifica que esta estructura, como su propio nombre dice, constituye los medios de sustentación para las partes que forman las paredes externas de chapas dobladas, como también constituyen los medios de sustentación y montaje de las puertas y sus respectivas bisagras, así como de otros accesorios, tales como: cierre superior (6) e inferior con base (7) y otros componentes no ilustrados, siendo que también, esta misma estructura, más por el lado de dentro, también configura los montantes necesarios para la distribución y el montaje de los diferentes componentes y dispositivos eléctricos y electrónicos (no ilustrados).

Aún con relación a la Figura 2, lógicamente es fundamental que cualquier panel eléctrico tenga internamente una estructura (5) substancialmente resistente para caracterizar un gabinete o armario adecuado con los equipamientos internos que se van a instalar. Esta estructura ilustrada se puede obtener con diferentes perfiles metálicos, entretanto, el presente mejoramiento está orientado para mejoras en las uniones de los perfiles en los cantos de la estructura.

Con relación a las Figuras 3 y 4, en una primera versión constructiva, el presente mejoramiento está caracterizado por el hecho de dicha estructura (5) presentarse semimontada, en donde cuatro de sus vértices o cuatro de sus perfiles (P1) son completamente libres, mientras que todos los otros perfiles están rígidamente integrados en dos cuadros rectangulares iguales (8) que forman dos lados opuestos de dicha estructura (5) y, para ello, en el canto de unión de cada cuadro rectangular (8) existe un dispositivo complementario (9) cooperante para la interconexión a 90° entre dos perfiles adyacentes (P2) y (P3) de cada cuadro (8), como también este mismo dispositivo presenta medios para que las extremidades de los otros perfiles (P1) puedan acoplarse entre los cantos de los cuadros rectangulares (8), formando así la estructura (5).

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Conforme ilustran también las Figuras 5, 6, 7 y 8, el dispositivo complementario (9) está formado por un taco de sección transversal cuadrangular (10), cuyo tamaño es algo menor para que su extremidad inferior pueda penetrar de manera justa en el interior de la parte tubular (T) de los perfiles (P2), mientras su extremidad superior, además de incluir agujero rosqueado vertical (F), usual, queda expuesta lo suficiente y de acuerdo a una altura compatible con el perfil adyacente (P3), de modo que dicha punta y los dos perfiles (Fig. 7) se puedan unir por soldadura (11), formando así aquel cuadro rectangular substancialmente rígido (8) y, al mismo tiempo, los cuatro cantos de cada cuadro (8) también configuran los medios para el acoplamiento de los perfiles (P1) que, de la misma forma, reciben otros tacos iguales (12), teniendo una extremidad encajada en la parte tubular (T) del perfil (P1), en donde tal extremidad se fija por tornillos laterales, mientras que la otra extremidad presenta un agujero longitudinal rosqueado (13) y encaje de tope auto trabante (14), cooperante para ser ajustado con otro (15) existente en la cara lateral del otro taco (10), en donde existe un agujero pasante (16), alineado con dichos encajes (14-15) y con el agujero rosqueado (13) para que los dos tacos se puedan unir con un tornillo (17), completando así el montaje de dicha estructura (5).

En este primer montaje, ilustrado de manera ampliada en las Figuras 7 y 8, se nota que cada cuadro (8) está rígidamente montado, transformándose en una única pieza después de la aplicación de la soldadura (11) y, con eso, sus cuatro cantos con el dispositivo (9) proporcionan medios para que dos cuadros iguales (8) se puedan interconectar por los perfiles (P1), que son fijados apenas por los tornillos (17), en donde la fijación se completa con el trabamiento antirotación proporcionado por los encajes del tope (14-15), que también funcionan como elementos autocentralizadores para dichos tornillos (17) que, después de aplicados, finalizan el montaje de una estructura (5) realmente muy rígida y estable.

En otra variación constructiva ilustrada en las Figuras 9, 10 y 11, el

encaje previo entre los dos tacos se realiza por un vástago descentralizado (18) que, por una extremidad penetra y está fijado en un agujero adecuado existente en lo alto del taco (12'), mientras que por la otra extremidad penetra igualmente en otro agujero guía existente en el lateral del taco (10'), caracterizando una forma de preajuste entre las dos piezas antes de la inserción del tornillo (17'), que penetra en un agujero rosqueado (13') y un agujero liso (16') existentes en los tacos (12') y (10'), respectivamente, completando la fijación del conjunto, tal como en la versión constructiva anterior.

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La segunda versión constructiva de arriba, presenta las mismas ventajas de la anterior, pues, en este caso, tal y como muestra la Figura 10, el premontaje también sucede para formar el cuadro (8) y, enseguida, el montaje del conjunto se completa con la fijación de los perfiles (P1).

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Con relación a las Figuras 12, 13 y 14, en una última variación constructiva, se prevé un taco (19) geométricamente igual a los anteriores, pero, con apenas el agujero rosqueado (F), como también este taco (19) presenta un tamaño compatible para que su extremidad inferior pueda penetrar en la parte tubular (T) del perfil (P2), mientras su punta superior queda situada entre las extremidades de los otros dos perfiles (P1-P3), en donde dicho taco configura un nudo de unión entre los tres perfiles, siendo que esta unión se realiza, tal y como muestra la Figura 14, con soldadura (11') aplicada en todos los bordes de dichos perfiles, inclusive aquellos que están en contacto con el referido taco (19).

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Reportándose a las Figuras 1 y 2, los agujeros rosqueados (F) sirven apenas para la fijación de ojales usuales de izamiento (I).

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Con relación a las Figuras 15 a 21, forma parte integrante del conjunto por lo menos un par de traviesas internas (20), dobladas de chapas, presentando sección transversal ordinariamente en "U", que se colocan en cualquier punto a lo largo de la altura de los perfiles (P2), lógicamente

en el mismo plano, es decir, la de un lado está alineada con la del lado opuesto. Tales traviesas, sirven como trabamiento complementario de la estructura (5) y sirven también principalmente para el montaje de los componentes internos que se instalarán en el interior del gabinete, 5
entretanto, las mismas también proporcionan un considerable aumento en el efecto estructural del conjunto.

En los paneles convencionales, tales traviesas existen para la misma finalidad, inclusive también con el efecto de mejorar la resistencia 10
estructural del conjunto, como también sus extremidades poseen lengüetas (21) para fijar con tornillos en los correspondientes perfiles verticales (P2) y, para ello, dichos perfiles, poseen hileras de diferentes aberturas (22).

15 Para la fijación de las traviesas convencionales, el montador está obligado a sujetar la misma en la posición de montaje, con al menos una de las manos, de manera que, con la otra mano, pueda aplicar los tornillos y, después de eso, dar el apriete final en los mismos.

20 En la presente invención, dichas traviesas (20) han sido modificadas para mejorar aún más su utilización, tal y como muestra la Figura 16, en sus dos extremidades existen dos conjuntos de enganches de anclaje, un conjunto está previsto en una de las lengüetas (21) o más exactamente en su borde vertical, en donde los enganches se presentan 25
en forma de dos pares de dientes en "L" (23) proyectados perpendicularmente hacia adentro, mientras del lado opuesto los enganches se presentan en forma de dos pequeñas astas (24), estas y los dientes (23), conforme ilustran las Figuras de 17 a 21, penetran en las correspondientes aberturas (22), permitiendo un encaje firme de la 30
traviesa (20), manteniéndola en posición para que su fijación se pueda completar con el uso de tornillos en otras aberturas (25) existentes en las lengüetas (21) y en los perfiles metálicos (P2), concluyendo así otro detalle constructivo que, además de la ventaja de proporcionar un considerable aumento de la resistencia estructural, también agiliza y

facilita la colocación de dichas traviesas, ya que las mismas poseen recursos propios para ser previamente colocadas en el interior de la estructura, inclusive este recurso facilita mucho la elección del punto exacto de montaje de dichas traviesas, pues, como ya ha sido dicho, las mismas se pueden colocar a lo largo de toda la altura de los perfiles (P2), en donde la variación de un punto para otro son algunos milímetros, consecuentemente, la prefijación proporcionada por los enganches facilita mucho la colocación de dichas traviesas.

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- 10 Con relación a la Figura 22, por lo menos una traviesa (20) se puede colocar verticalmente entre otras dos traviesas verticales (20), pues todas ellas están igualmente provistas de aberturas diferentes y cooperantes para el encaje de los dientes (23) y de las puntas (24), ofreciendo así una opción más de montaje para dichas traviesas (20),
- 15 lógicamente con el objetivo de aumentar aún más la eficiencia del diseño interno de anclaje y fijación de los dispositivos eléctricos y electrónicos que se montarán en el interior del panel.

- 20 Como se puede percibir, después de lo expuesto e ilustrado, el presente mejoramiento concretiza todas aquellas ventajas anteriormente citadas y suma otras no encontradas en las estructuras convencionales, es decir, además de mejorar significativamente la resistencia de la estructura (5), permite que, en una primera y segunda versión constructiva, la misma sea suministrada desmontada, consecuentemente, el almacenaje y
- 25 transporte del conjunto se facilita, pues, la reducción de espacio favorece y reduce el costo final del transporte.

- Lógicamente el mejoramiento alcanzó diferentes objetivos, no solamente en lo referente al costo final de fabricación y transporte, más también en
- 30 los medios para agilizar el proceso de fabricación y el montaje del conjunto, tanto en la fábrica, como también con el usuario final.

REIVINDICACIONES

1. Mejoramiento en Estructura Metálica para la construcción de cuadros/
5 armarios eléctricos, genéricamente indicado por (1), del tipo indoor u
outdoor, más en los dos casos, el mismo se presenta en forma de caja
metálica con cierres laterales (2), incluyendo una o más puertas
basculantes (3) con cerradura (4); dichos cierres, incluyendo las puertas,
normalmente se fabrican de chapas metálicas substancialmente finas y,
10 de esta manera, todos los paneles eléctricos poseen internamente una
estructura de perfiles metálicos (5), con medios de sustentación para las
partes que forman las paredes externas de chapas dobladas, como
también constituyen los medios de sustentación y montaje de las puertas
y sus respectivas bisagras, así como de otros accesorios, tales como:
15 cierre superior (6) e inferior con base (7) y otros componentes, siendo
que, también, esta misma estructura, pero, por el lado de dentro, también
configura los montantes necesarios para la distribución y montaje de los
diferentes componentes y dispositivos eléctricos y electrónicos
CARACTERIZADO PORQUE en una primera versión constructiva, dicha
20 estructura (5) se presenta semimontada, en donde cuatro de sus vértices
o cuatro de sus perfiles (P1) están completamente libres, mientras que
todos los otros perfiles están rígidamente integrados en dos cuadros
rectangulares iguales (8) que forman dos lados opuestos de dicha
estructura (5) y, para ello, en el punto canto de unión de cada cuadro
25 rectangular (8) existe un dispositivo complementario (9) cooperante para
la interconexión a 90° entre dos perfiles adyacentes (P2) y (P3) de cada
cuadro (8), como también este mismo dispositivo presenta medios para
que las extremidades de los otros perfiles (P1) puedan acoplarse entre
los cantos de los cuadros rectangulares (8), formando así la estructura
30 (5).

2. Mejoramiento en Estructura Metálica para la construcción de cuadros/
armarios eléctricos, de acuerdo con la reivindicación 1,
CARACTERIZADO PORQUE el dispositivo complementario (9) estar

formado por un taco de sección transversal cuadrangular (10), cuyo tamaño es algo menor para que su extremidad inferior pueda penetrar de manera justa en el interior de la parte tubular (T) de los perfiles (P2), mientras que su extremidad superior, además de incluir agujero rosqueado vertical (F) usual, queda expuesta lo suficiente y de acuerdo a una altura compatible con el perfil adyacente (P3), de modo que dicha punta y los dos perfiles se puedan unir por soldadura (11), formando así aquel cuadro rectangular substancialmente rígido (8) y, al mismo tiempo, los cuatro cantos de cada cuadro (8) también configuran los medios para el acoplamiento de los perfiles (P1) que, de la misma manera, reciben otros tacos iguales (12), teniendo una extremidad encajada en la parte tubular (T) del perfil (P1), en donde tal extremidad se fija por tornillos laterales, mientras la otra extremidad presenta un agujero longitudinal rosqueado (13) y encaje de tope autotrabante (14), cooperante para encajar con otro (15) existente en la cara lateral del otro taco (10), en donde existe un agujero (16), alineado con tales encajes (14-15) y con el agujero rosqueado (13) para que los dos tarugos se puedan unir con un tornillo (17).

3. Mejoramiento en Estructura Metálica para la construcción de cuadros/armarios eléctricos, de acuerdo con la reivindicación 1, **CARACTERIZADO PORQUE** en otra variación constructiva, el encaje previo entre los dos tacos se realiza por un vástago descentralizado (18) que, por una extremidad penetra y está fijado en un agujero adecuado existente en lo alto del taco (12'), mientras que por la otra extremidad penetra igualmente en otro agujero guía existente en el lateral del taco (10'), caracterizando una forma de preajuste entre las dos piezas antes de la inserción del tornillo (17'), que penetra en el agujero rosqueado (13') y el agujero liso (16') existentes en los tacos (12') y (10'), respectivamente.

4. Mejoramiento en Estructura Metálica para la construcción de cuadros/armarios eléctricos, de acuerdo con la reivindicación 1, **CARACTERIZADO PORQUE** en otra variación constructiva, estar

previsto un taco (19) geométricamente igual a los anteriores pero apenas con el agujero rosqueado (F), como también este taco (19) presenta un tamaño compatible para que su extremidad inferior pueda penetrar en la parte tubular (T) del perfil (P2), mientras su punta superior se sitúa entre las extremidades de los otros dos perfiles (P1-P3), en donde dicho taco configura un nudo de unión entre los tres perfiles, siendo que esta unión se realiza con soldadura (11') aplicada en todas las bordas de dichos perfiles, inclusive aquellas que están en contacto con el referido taco (19).

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5. Mejoramiento en Estructura Metálica para la construcción de cuadros/armarios eléctricos, de acuerdo con la reivindicación 1, forma parte integrante del conjunto por lo menos un par de traviesas internas (20), dobladas de chapas, presentando sección transversal ordinariamente en "U", sus extremidades poseen lengüetas (21) para fijar con tornillos en los correspondientes perfiles verticales (P2) y, para ello, dichos perfiles, poseen hileras de diferentes aberturas (22); dichas traviesas (20) se colocan en cualquier punto a lo largo de la altura de los perfiles (P2), lógicamente en el mismo plano, es decir, la de un lado está alineada con la del lado opuesto y sirven como trabamamiento complementario de la estructura (5) y sirven también para el montaje de los componentes internos que se instalan en el interior del gabinete, mientras, las mismas también proporcionan un aumento considerable en el efecto estructural del conjunto; **CARACTERIZADO PORQUE** que en las dos extremidades de las traviesas (20) están previstos dos conjuntos de enganches de anclaje, un conjunto esta previsto en una de las lengüetas (21) o más exactamente en su borda vertical, en donde los enganches se presentan en forma de dos pares de dientes en "L" (23) proyectados perpendicularmente hacia adentro, mientras del lado opuesto a los enganches se presentan en forma de dos pequeñas astas (24), estas y los enganches (23) penetran en las correspondientes aberturas (22).

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6. Mejoramiento en Estructura Metálica para la construcción de cuadros/armarios eléctricos, de acuerdo con la reivindicación 1,

RESUMEN

- 5 Mejoramiento en Estructura Metálica para la construcción de cuadros/
armarios eléctricos, comprendiendo estructura de perfiles metálicos (5),
con medios de sustentación para las partes que forman las paredes
externas de chapas dobladas, como también constituyen los medios de
sustentación y montaje de las puertas y sus respectivas bisagras, así
10 como otros accesorios, tales como: cierre superior (6) e inferior con base
(7) y otros componentes, siendo que, aún, esta misma estructura, pero,
por el lado de dentro, también configura los montantes necesarios para
distribución y montaje de los diferentes componentes y dispositivos
eléctricos y electrónicos; en una primera versión constructiva, dicha
15 estructura (5) se presenta semimontada, en donde cuatro de sus vértices
o cuatro de sus perfiles (P1) son completamente libres, mientras que
todos los otros perfiles se integran rígidamente en dos cuadros
rectangulares iguales (8) que forman dos lados opuestos de dicha
estructura (5) y, para ello, en el punto canto de unión de cada cuadro
20 rectangular (8) existe un dispositivo complementario (9) cooperante para
la interconexión a 90° entre dos perfiles adyacentes (P2) y (P3) de cada
cuadro (8), como también este mismo dispositivo presenta medios para
que las extremidades de los otros perfiles (P1) se puedan acoplar entre
los cantos de los cuadros rectangulares (8), formando de esta manera la
25 estructura (5).

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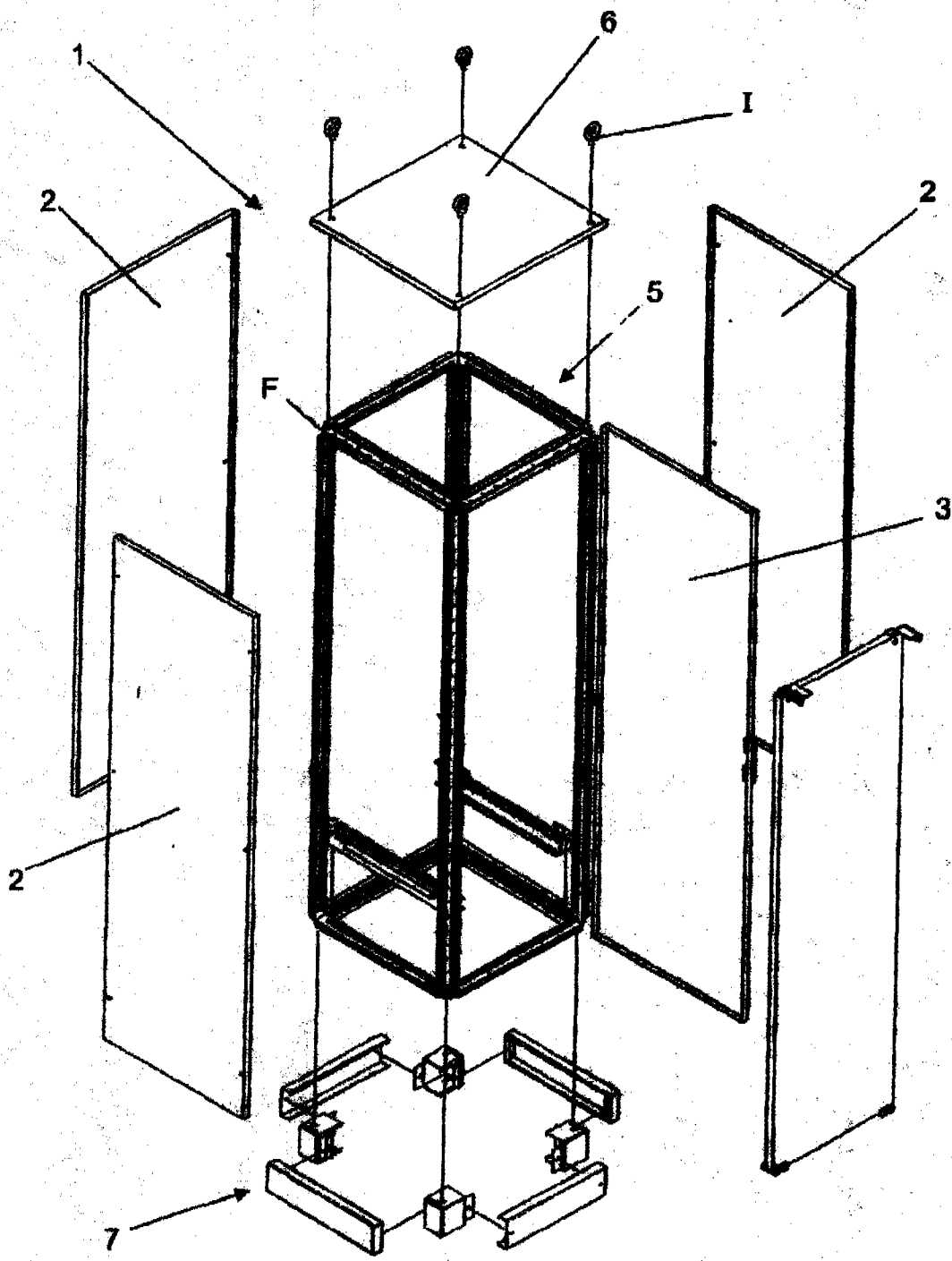


FIG 2

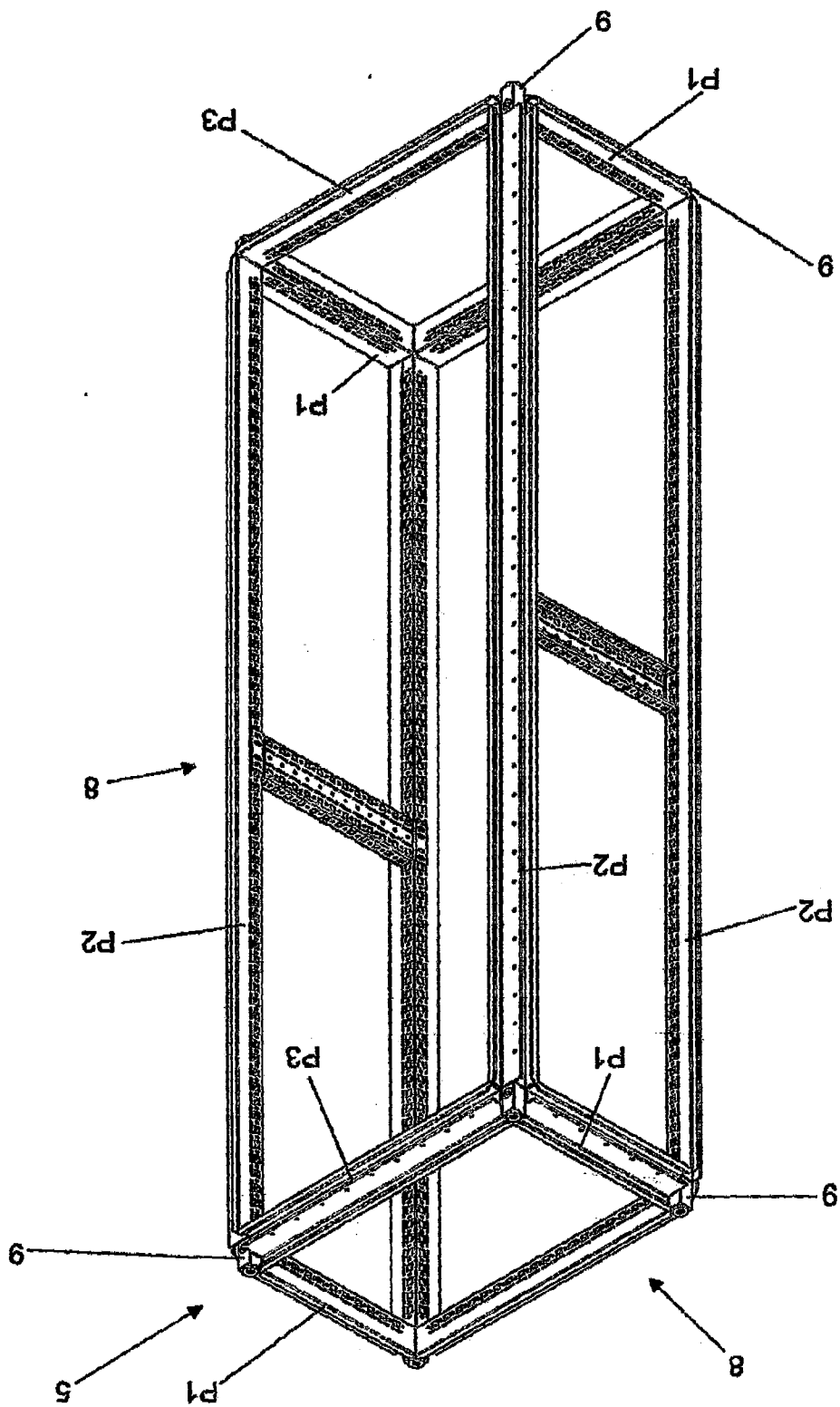


FIG. 3

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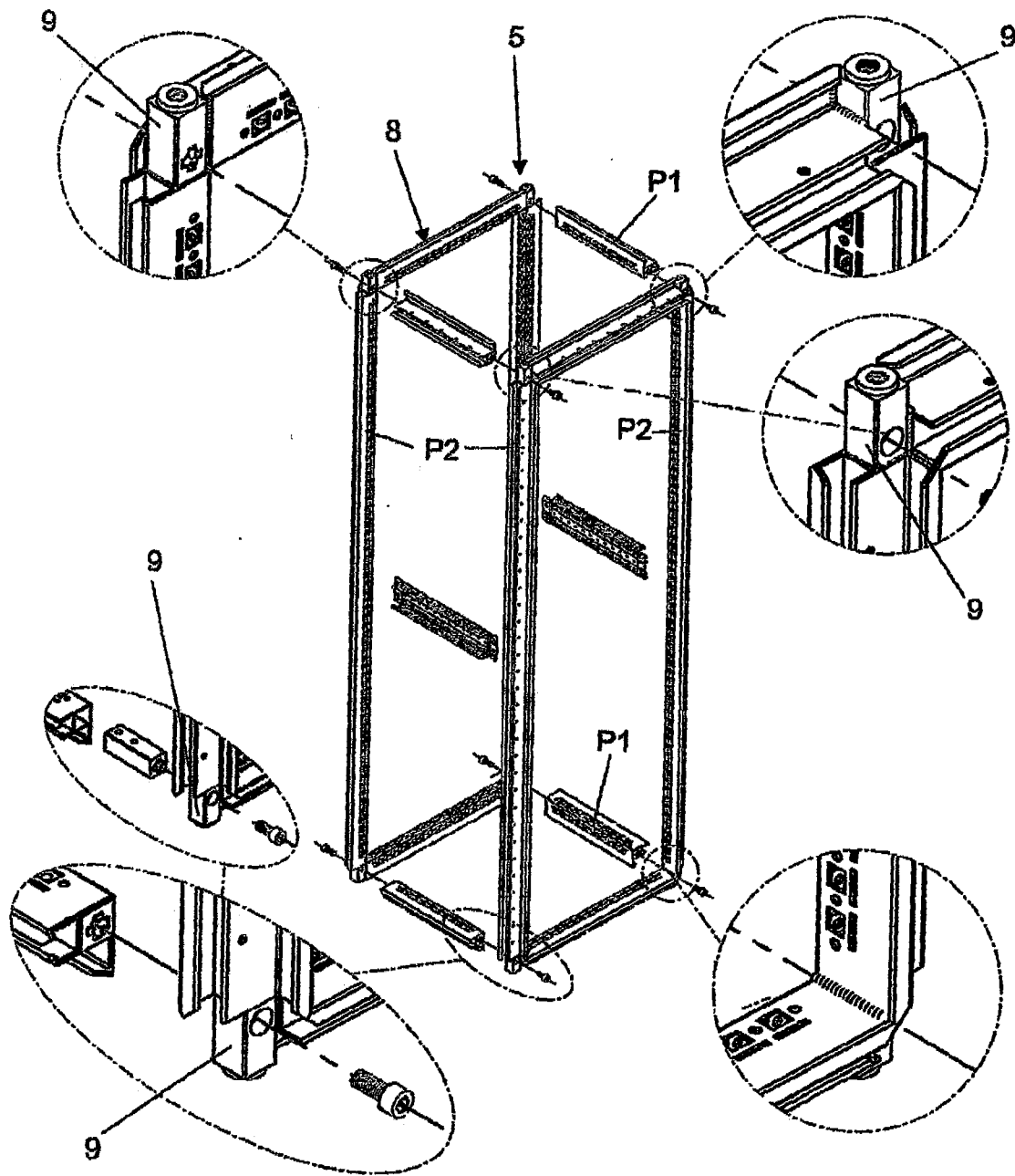


FIG. 4

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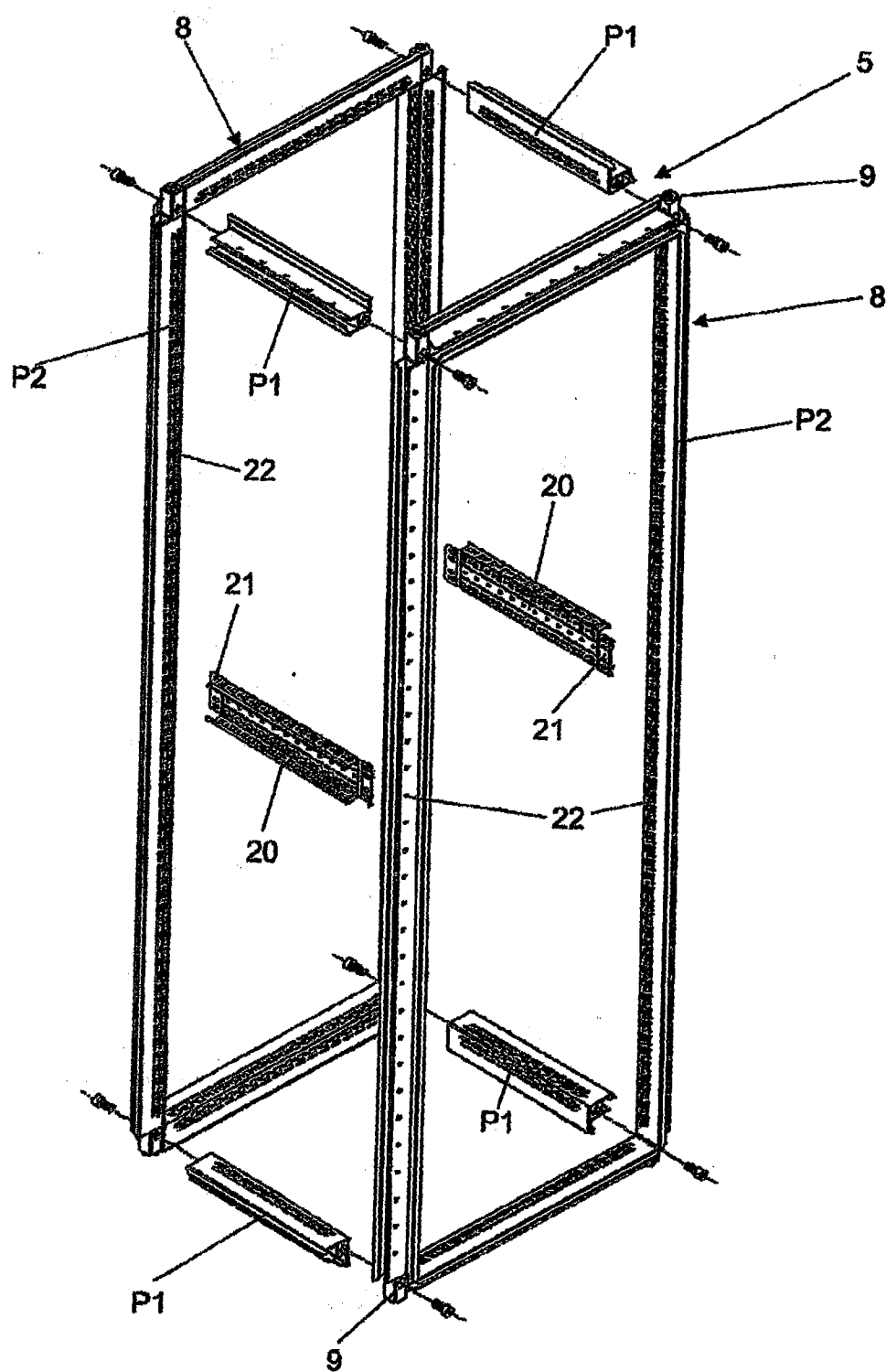


FIG. 15

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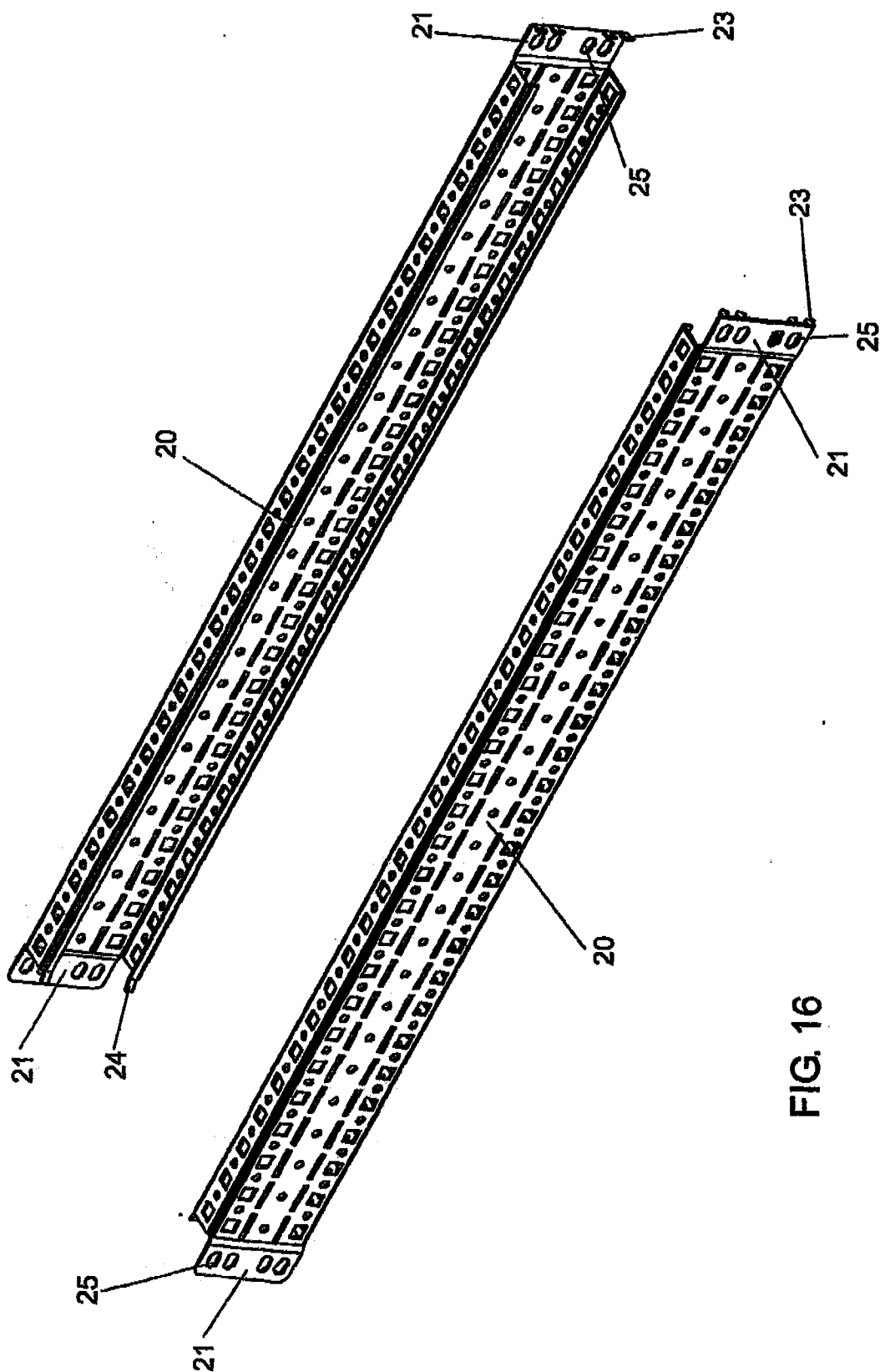


FIG. 16

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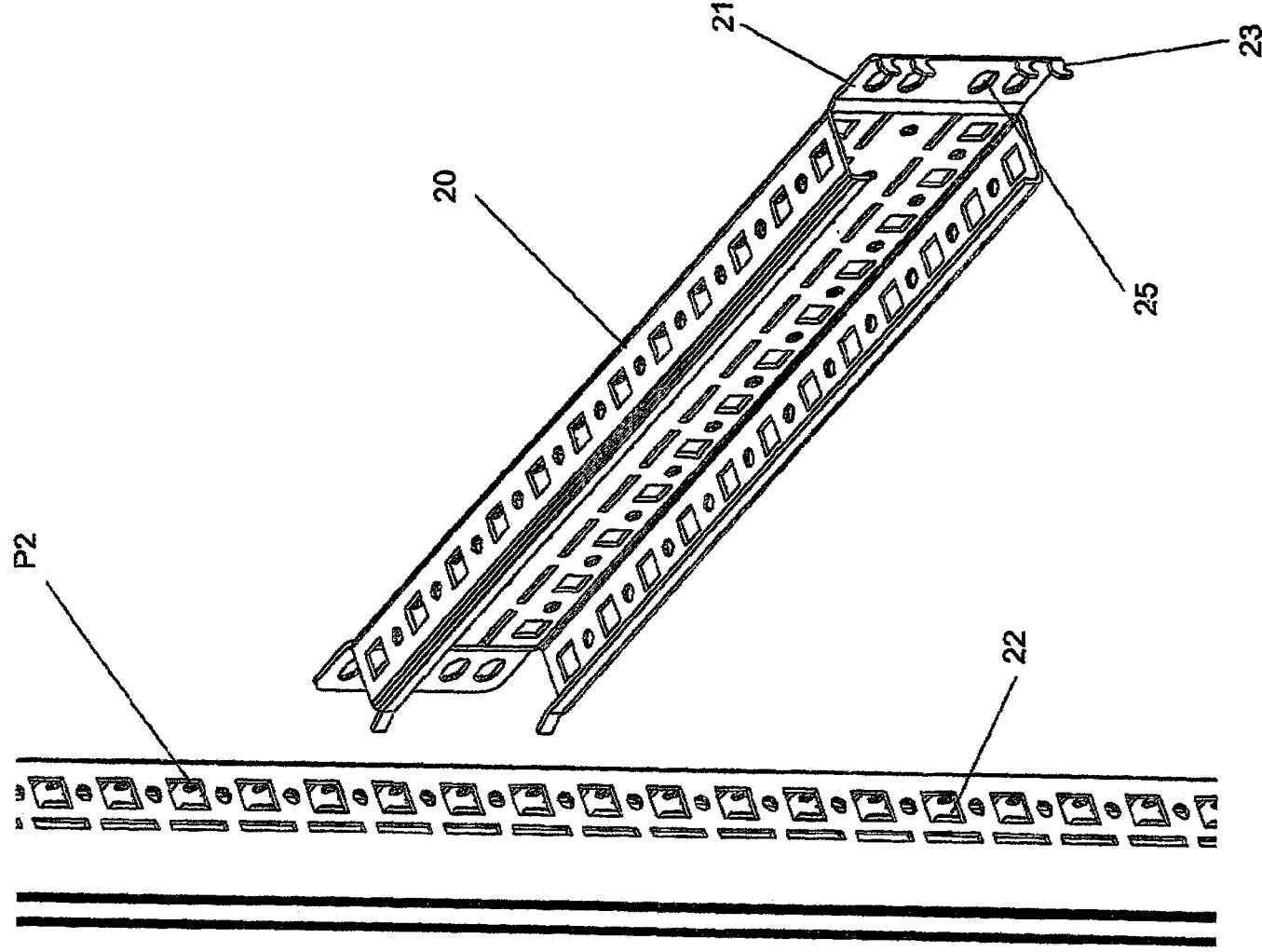


FIG. 19

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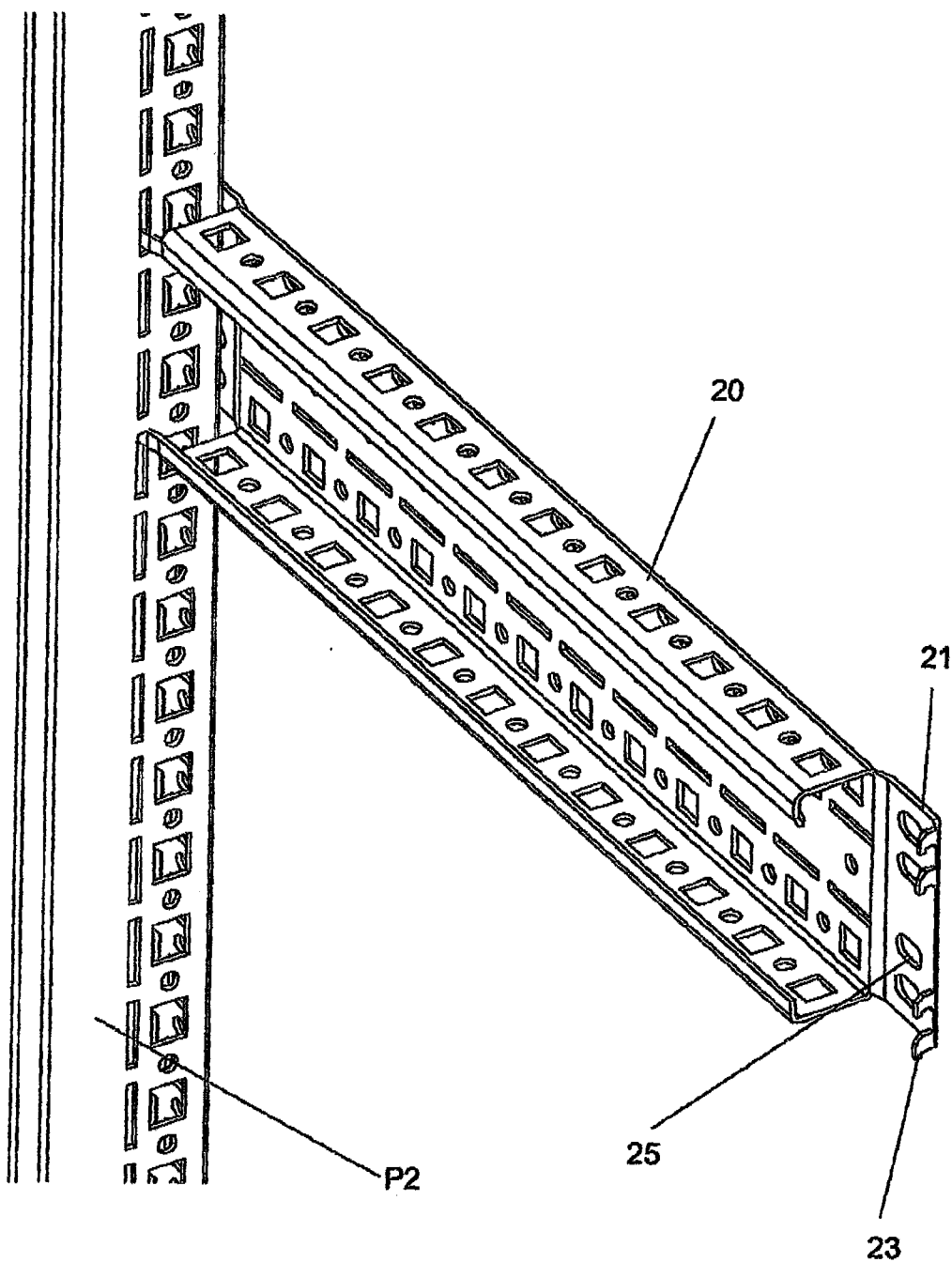


FIG. 20

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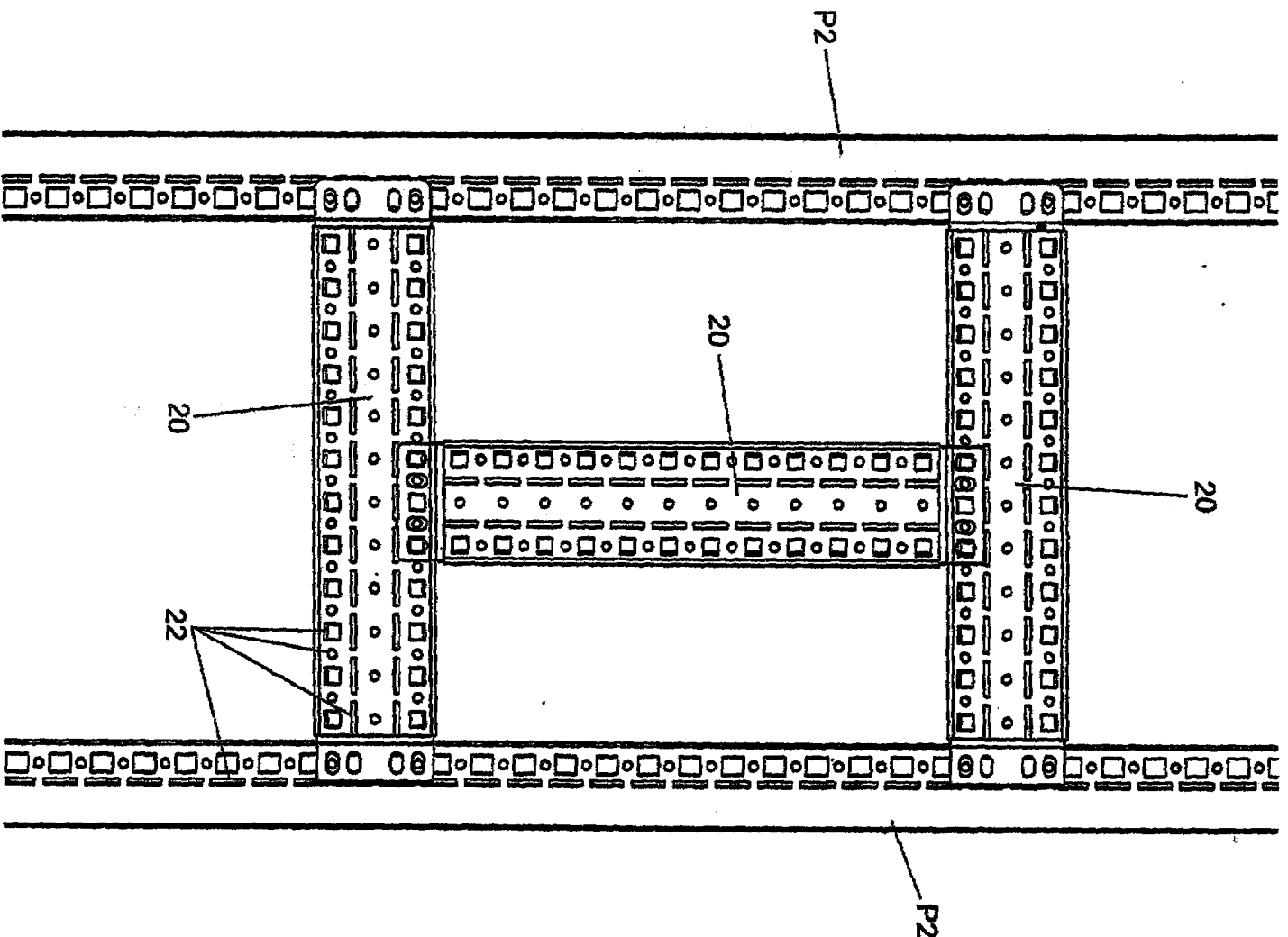


FIG. 22

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REPUBLICA DE COLOMBIA
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

Bogotá,
2020

Doctor(a)
RODRIGUEZ SARMIENTO SANDRA MILENA

REFERENCIA	Radicación No.	6 41947
	Solicitud internacional	BR2004/000194
	Fecha inicio fase nacional	08/05/2006
	Trámite	11
	Evento	379
	Actuación	430
	Oficio No.	

06715

Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, artículo 27 del Tratado de Cooperación en Materia de Patentes (PCT), regla 51 bis del Reglamento y Circular Única de la Superintendencia de Industria y Comercio, se le comunica que:

1. La solicitud no contiene el poder debidamente otorgado, con el lleno de los requisitos exigidos por los artículos 63 y subsiguientes del Código de Procedimiento Civil. Adicionalmente, deberá presentar el documento que acredita la existencia y representación legal de la sociedad solicitante, cuando ésta fuere persona jurídica.

En cumplimiento de lo dispuesto por el artículo 39 de la Decisión 486, se le requiere para que dentro del término de dos meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Unica No.10 de 2001.

ALIX CARMENZA ESPEDES DE VERGEL
Jefe de la división de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista de
fecha 3 JUN. 2006
adpall