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(54) **System for connecting storage and commercial shelves**

(57) System for connecting storage and commercial shelves, of the type used in shopping centres, warehouses, distribution centres, etc. in order to make compatible the use of both types of shelves, characterised by the use of an additional connecting section that performs the mechanical adaptation between the coupling system used in the storage shelves and the different coupling system used in the commercial shelves.

The present invention presents the principal advantage that, in using an additional section, no type of modification or mechanical adaptation of the storage or commercial shelves is necessary, and conventional shelves can be used.

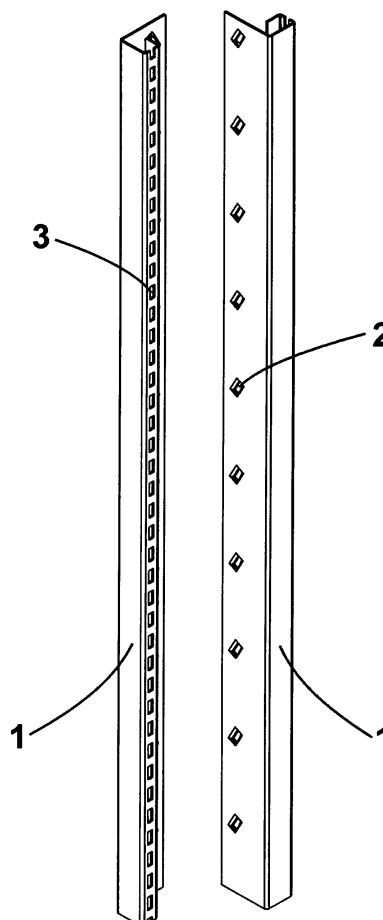


Fig. 1

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Description

[0001] The present description relates, as its title indicates, to a system for connecting storage and commercial shelves, of the type used in shopping centres, warehouses, distribution centres, etc. in order to make compatible the use of both types of shelves, characterised by the use of an additional connecting section that performs the mechanical adaptation between the coupling system used in the storage shelves and the different coupling system used in the commercial shelves.

[0002] At present multiple and various types of storage shelves, also known as pallet shelves due to the fact that their dimensions and strength are usually specifically adapted to the storage of pallets or large boxes or quantities of product, are widely known. Examples of some of these are described in Utility Model 275782 "*Estantería de paletización*" ("Pallet Shelves"), and in Utility Model 170908 "*Estantería de ensamblaje rápido para paletización*" ("Quick Assembly Shelves for Pallets"). The vast majority of these storage shelves are made up of a group of strong vertical struts, of considerable height, which are connected to back panels acting as cross members by tongue-and-groove-type couplings to enable a quick and sturdy assembly. Panels for supporting pallets or materials are positioned on this structure to make up the shelves. It is common for these types of structures to be connected together to form complex shelves of great height and length, enabling in this way maximum use of the storage space and normally requiring fork lift trucks, hoists or mechanical lifting systems to access the goods stored due to the great height and weight they can reach.

[0003] Multiple and various types of commercial shelves of smaller size and proportions than the aforementioned ones, as they are usually used to display small quantities of goods to the customer so that these goods can be accessed and removed manually without the need for mechanical lifting means, are also known. These commercial shelves are usually not as high and as deep as shelves used for storage and sometimes also comprise back panels, or simply plate brackets and other supporting elements only on the struts or side racks.

[0004] On many occasions the bottom part of storage shelves is commonly used to install one or more commercial shelves, either to re-employ a storage space as a commercial space or simply to optimise the storage space for small quantities of packaged products. In these cases the installation of the commercial shelves can be conducted independently of the storage shelves, although this presents the drawback of having to double the number of struts, in addition to the fact that in some cases the commercial shelves must be attached to a wall in order to make them stable, with the added problem of additional labour.

[0005] In most cases the preferred course of action is to attach or fix the commercial shelves to the larger and more stable storage shelves so that together they form a more solid and stable unit, using for this purpose com-

mon fixing means such as bolts, nuts, rivets, etc. with this system presenting the problem, on the one hand, of more labour and time being required assemble them, thereby making the process more expensive and, on the other, machining being required in the form of through holes performed on site. In addition, it should be pointed out that if these commercial shelves need to be dismantled at a later stage, the reverse dismantling process must be conducted. All this results in this system being very inflexible and expensive to install, making it particularly unsuitable for large installations.

[0006] Alternative solutions have been sought. For example, Patent 87112890 "*Estantería para mercancías*" ("Shelves for Goods") presents a shelving system based on struts with triple machining: at the rear, machining with large openings in order to connect the cross members and back panels characteristic of storage shelves, whereas the front comprises a smaller double machining, suitable for holding commercial shelving elements. This type of shelving based on combined struts presents a series of drawbacks and problems, among which we can point out that the triple machining causes a structural weakening in the strut, with the result that it supports smaller storage loads than conventional struts. In addition, the need for a triple machining necessitates a more complex die-cutting and stamping production process, with the subsequent higher cost passing on to the shelves. Furthermore, the problem that the intrinsic weakening of the machined strut necessitates, in some cases, that the thickness of the material used be increased should be highlighted and causes, on the one hand, an additional increase in costs and, on the other, leads to problems in fixing the auxiliary elements (plate brackets, back panels, racks, etc.) characteristic of commercial shelves, as their coupling systems are normally prepared for thicknesses of material that are much smaller than those used in these machined and reinforced struts.

[0007] In order to overcome the problems currently posed by the mechanical coupling between shelves of different types, the system for connecting storage and commercial shelves that is the object of this present invention has been designed, and which is based on the use of an additional connecting section that performs the mechanical adaptation between the coupling system used in the storage shelves and the different coupling system used in the commercial shelves without the need for special machining on any of the struts of the shelves, and with special tools not being required to conduct this process in some cases.

[0008] This connecting section takes the form of a laminar part made of a resistant material, preferably metallic, of variable length and considerably greater than its width disposed, on any of the walls of the appropriate types of machining, in the form of spurs, die-cut folds, through holes, etc. so that this section can fit perfectly, as another part, into the struts of the storage shelves and parallel to them, with these types of machining being formed in such

a way that when the connecting section is fitted into the strut both elements form a solid unit that is easy to assemble and dismantle, with no type of special tool being required in the majority of cases.

[0009] Optionally, the assembly can be carried out using through holes and any other conventional fixing method such as bolts, rivets, etc. to enable its arrangement and mechanical fixing on any face of the strut.

[0010] On the same wall or on another of the walls of the connecting section are formed the appropriate types of machining in the form of periodically spaced sequences of rectangular or any other type of openings, so that they can hold the appropriate elements that make up the commercial shelves such as plate brackets, back panels, shelves, racks, etc. also with no special tool being required.

[0011] This system for connecting storage and commercial shelves presented herein contributes numerous advantages over the systems currently available, the most important of which is that it does not cause any alteration to the struts in the storage shelves, as a result of which their solidity and strength is not affected, in addition to the fact that no special machining is required on these struts, therefore preventing them from becoming more expensive.

[0012] Furthermore, it is an undoubted advantage that it can be used with common conventional shelves on the market, including those already installed, with no preparation or modification to them being required.

[0013] Another important advantage is that it can be assembled and dismantled easily and rapidly without, in the majority of cases, special tools being required, enabling storage needs to be adapted to any particular requirement quickly.

[0014] Another advantage of the present invention is that it allows an easy adaptation to any of the existing shelving systems on the market, both commercial and storage shelves, regardless of the manufacturer and system, by simply adapting the appropriate types of machining or spurs on its walls to the measurements, spacing and specific characteristics of each shelving system, thus enabling the interconnection even of shelves of different manufacturers that are incompatible with each other in principle.

[0015] It is also noteworthy that this invention enables the arrangement and mechanical fixing on any of the faces of the strut, of any conventional fixing method such as bolts, rivets, etc., thereby enabling complete versatility in the distribution of commercial shelves.

[0016] Another important advantage that should be pointed out is the ease with which it can be manufactured in different lengths and dimensions so it can be adapted to various shelving manufacturers.

[0017] In addition it is noteworthy that its undeniable simplicity means it can be manufactured inexpensively and in large quantities, thus making its economic cost very small.

[0018] To provide a better understanding of the

present invention, the plan attached details a preferred practical embodiment of this system for connecting storage and commercial shelves.

[0019] In said plan, figure 1 shows front and rear views of an example of a connecting section in perspective.

[0020] Figure 2 shows elevated, ground and profile views of an example of the preceding connecting section.

[0021] Figure 3 shows a view in perspective of commercial shelves assembled onto storage shelving posts or struts, representing a detail of the joint between the connecting profile and the storage shelving post or strut.

[0022] Figure 4 shows a detail of the joint between characteristic elements of commercial shelving, in this case plate brackets and the connecting section.

[0023] Figure 5 shows a ground view of commercial shelves assembled onto storage shelving posts or struts, representing a detail of the joint between the connecting profile and the storage shelving post or strut.

[0024] The system for connecting storage and commercial shelves that is the object of this invention, essentially comprises, as the attached plan shows, the use of an additional connecting section (1) that performs the mechanical adaptation between the coupling system (2) used in the storage shelves (4) and the different coupling system (3) used in the commercial shelves (5) without the need for special machining on any of the struts of the shelves, and with special tools not being required to conduct this process in the majority of cases.

[0025] This connecting section takes the form of a laminar part made of a resistant material, preferably metallic, of variable length and considerably greater than its width, as can be seen in figures 1 and 2, disposed, on any of the walls of the appropriate types of machining (2), in the form of spurs, die-cut folds, drill holes, etc. so that this section can fit perfectly, as another part, into the struts of the storage shelves (4) and parallel to them, with these types of machining being formed in such a way that when the connecting section is fitted into the strut of the storage shelves (4) both elements form a solid unit that is easy to assemble and dismantle, with no type of special tool being required in the majority of cases.

[0026] As stated above, this invention also optionally provides for the assembly using through holes and any other conventional fixing method, such as bolts, rivets, etc., to enable its arrangement and mechanical fixing on any face of the strut of the storage shelves (4).

[0027] On the wall or on another of the walls of the connecting section are formed the appropriate types of machining (3), in the form of periodically spaced sequences of rectangular or any other type of openings, so that they can hold the appropriate elements that make up the commercial shelves (5), such as plate brackets, back panels, shelves, racks, etc. also with no special tool being required.

[0028] It was decided to omit a detailed description of the other particular features of the system being disclosed or of the components forming part of it, as it was felt that the rest of said particular features are not the

object of any claims.

[0029] Having described the nature of the present invention in sufficient detail, in addition to a means for putting it into practice, all that remains to be added is that its description is not restrictive, and that variations both in materials and forms and sizes can be made provided that said variations do not alter the essential nature of the characteristics claimed below.

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Claims

1. System for connecting storage and commercial shelves, of the type used in shopping centres, warehouses, distribution centres, etc. in order to make compatible the use of both types of shelves, **characterised by** the use of an additional connecting section (1) that performs the mechanical adaptation between the coupling system (2) used in the storage shelves (4) and the different coupling system (3) used in the commercial shelves. 15 20
2. System for connecting storage and commercial shelves according to the preceding claim wherein the connecting section (1) takes the form of a laminar part made of a resistant material, preferably metallic, of variable length and considerably greater than its width. 25
3. System for connecting storage and commercial shelves according to the preceding claims wherein the connecting section (1) comprises types of machining (2) in the form of spurs, die-cut folds, drill holes, etc. so that this section can fit perfectly, as another part, into the struts of the storage shelves (4) and parallel to them, with these types of machining being formed in such a way that when the connecting section (1) is fitted into the strut of the storage shelves (4) both elements form a solid unit. 30 35 40
4. System for connecting storage and commercial shelves according to the preceding claims wherein the connecting section (1) also comprises types of machining (3) in the form of periodically spaced sequences of rectangular or any other type of openings, so that they can hold the appropriate elements that make up the commercial shelves (5), such as plate brackets, back panels, shelves, racks, etc. 45
5. System for connecting storage and commercial shelves according to the preceding claims wherein the connecting section (1) is secured optionally on any of the sides of the strut of the storage shelves (4) by means of conventional fixing elements, preferably bolts and nuts or rivets. 50 55

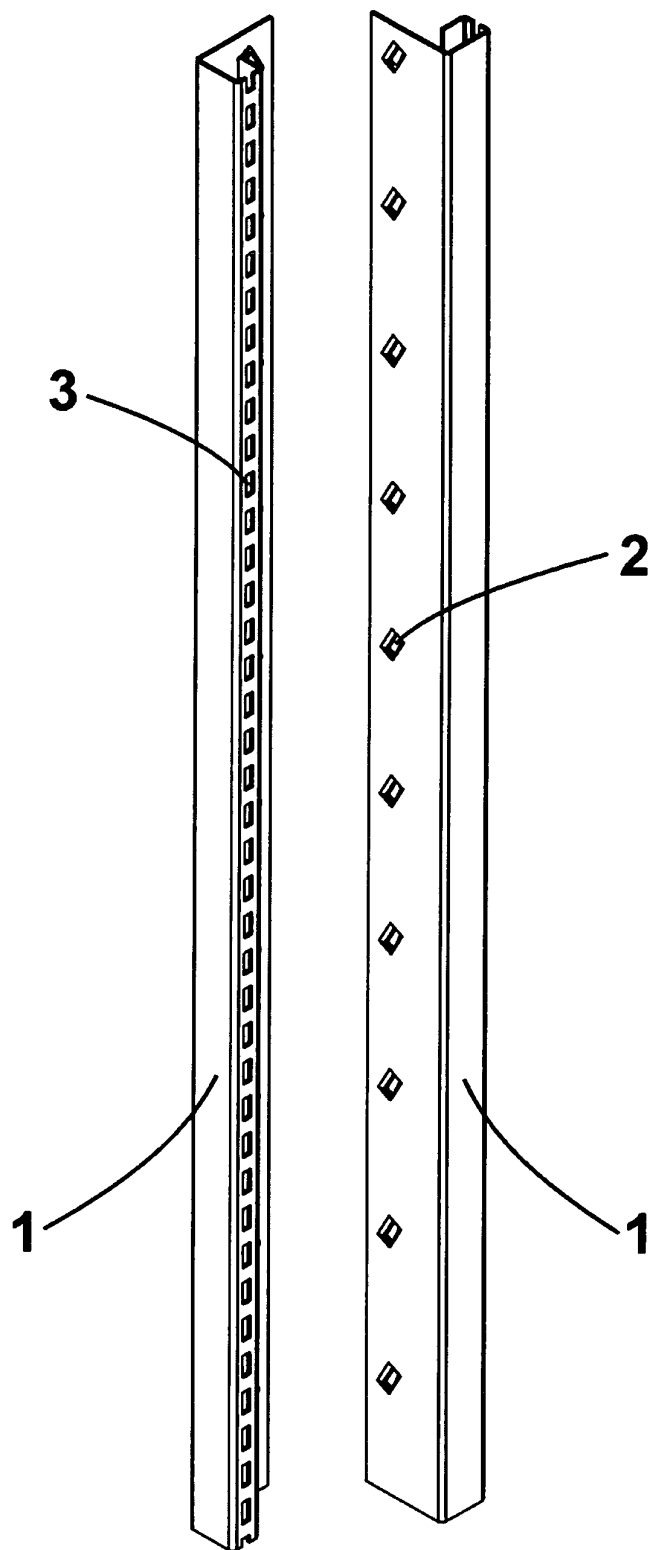


Fig. 1

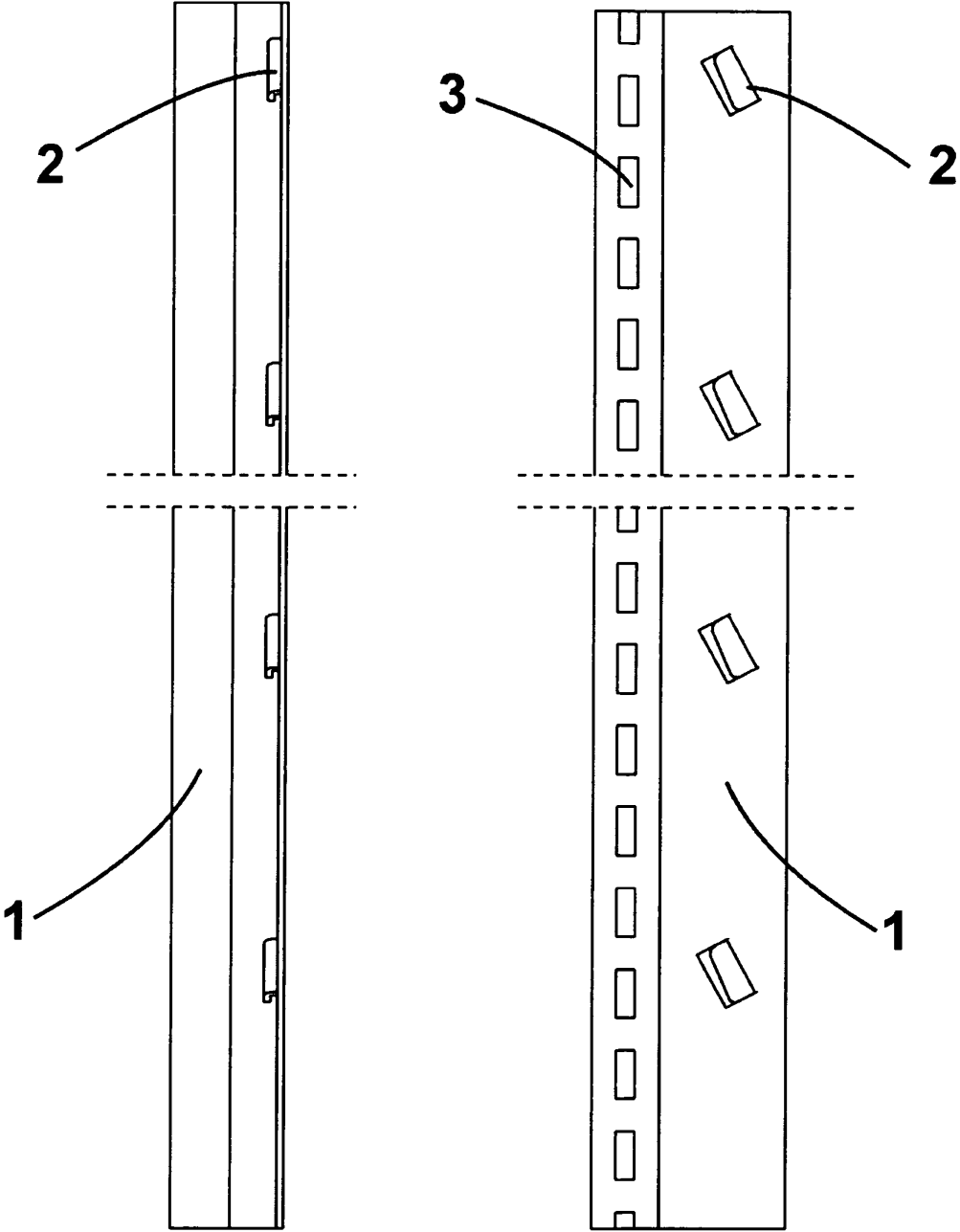
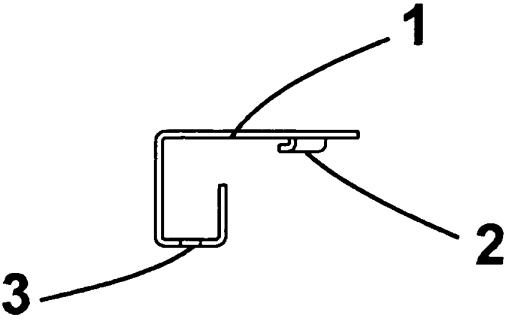


Fig. 2



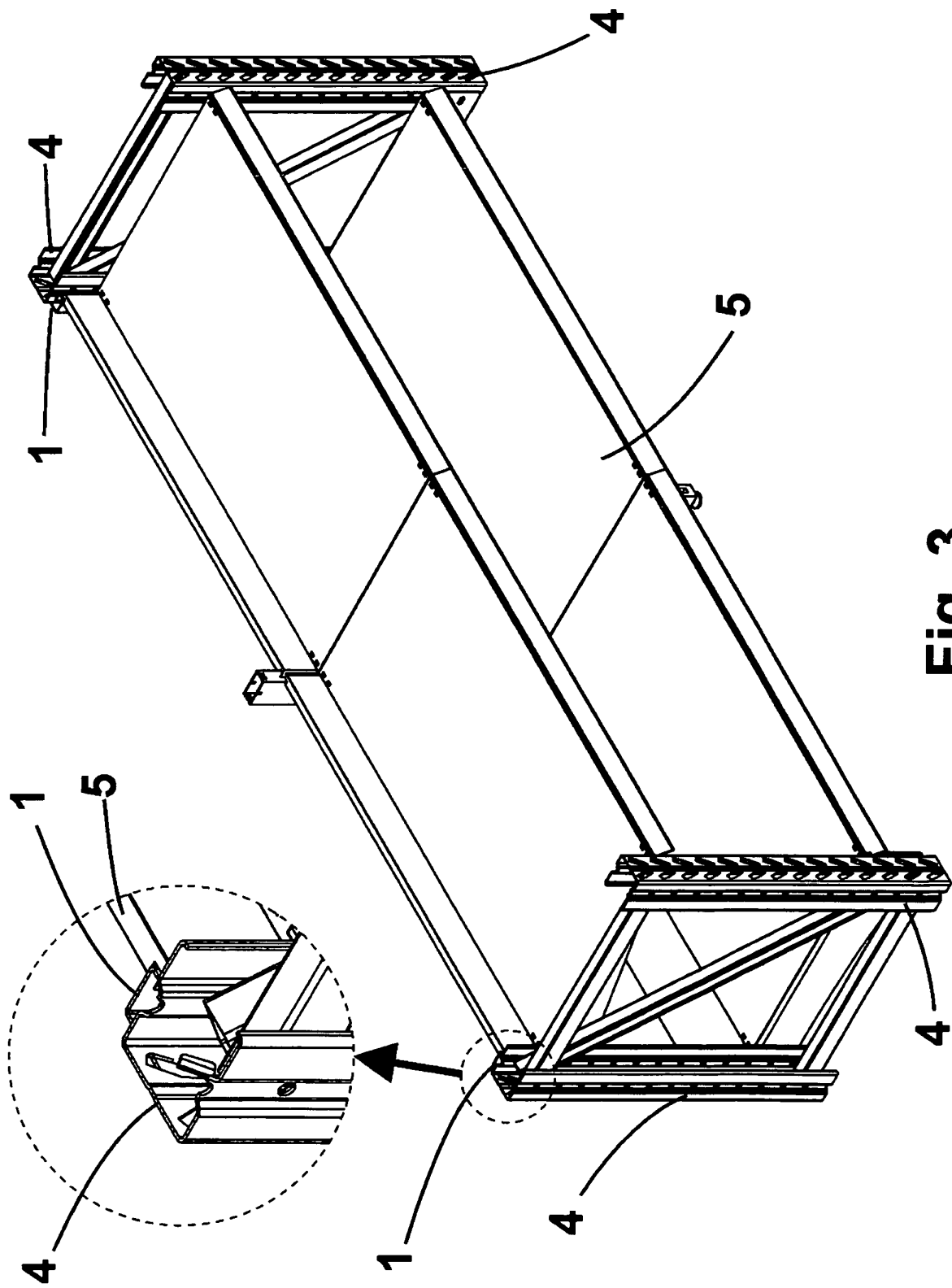


Fig. 3

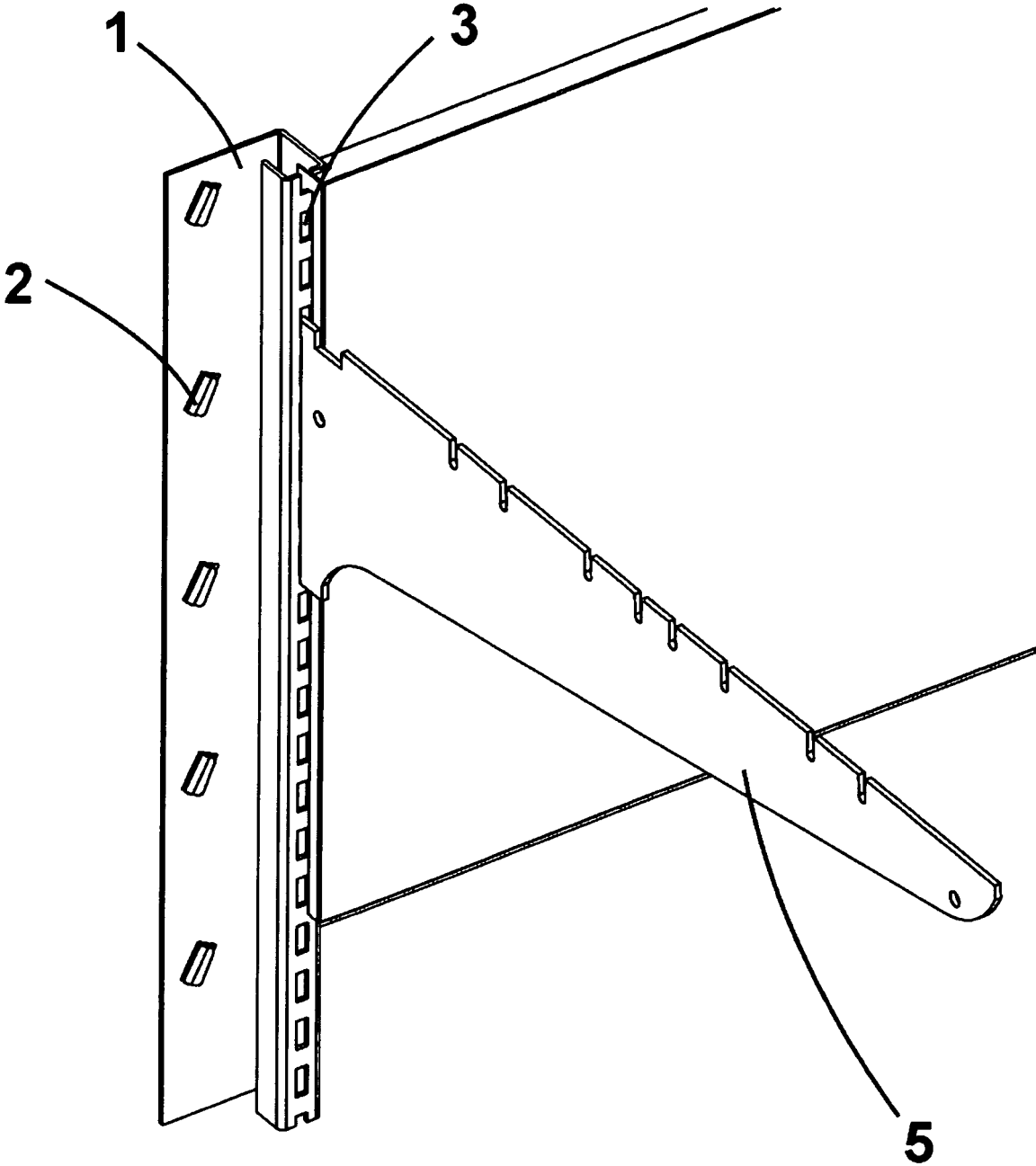


Fig. 4

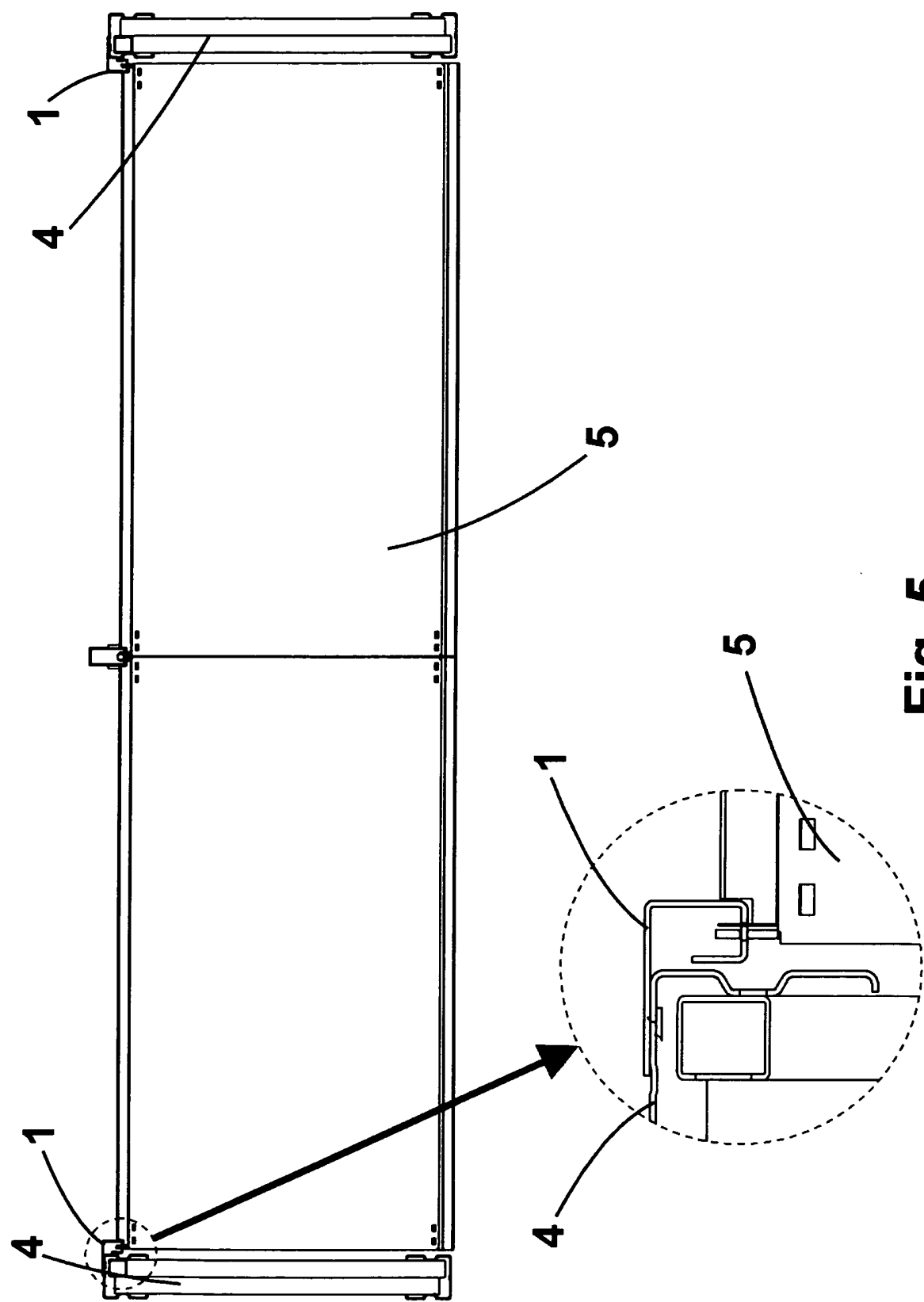


Fig. 5