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(54) **Combination sofa structure**

(57) A combination sofa structure is provided. The combination sofa structure includes a seat set, an arm set, a backrest set, and a fastening element. The seat set includes a crossbeam, a first nail hole, and a L-shaped steering fixing-block having two ends which protrudes a square solid thereon and a fourth nail hole set on a vertical plane of the square solid, so that the square solid can be inlaid in the square through hole of the

crossbeam. The vertical plane of the fastening pillar of the arm set are set at the right side and the left side of the seat set and the arm set is connected to the two sides of the seat set through passing the fastening element therethrough. Furthermore, the backrest set is connected to the back side of the seat set via passing the fastening element through the fixing pillar of the backrest set so as to form a stable chair.

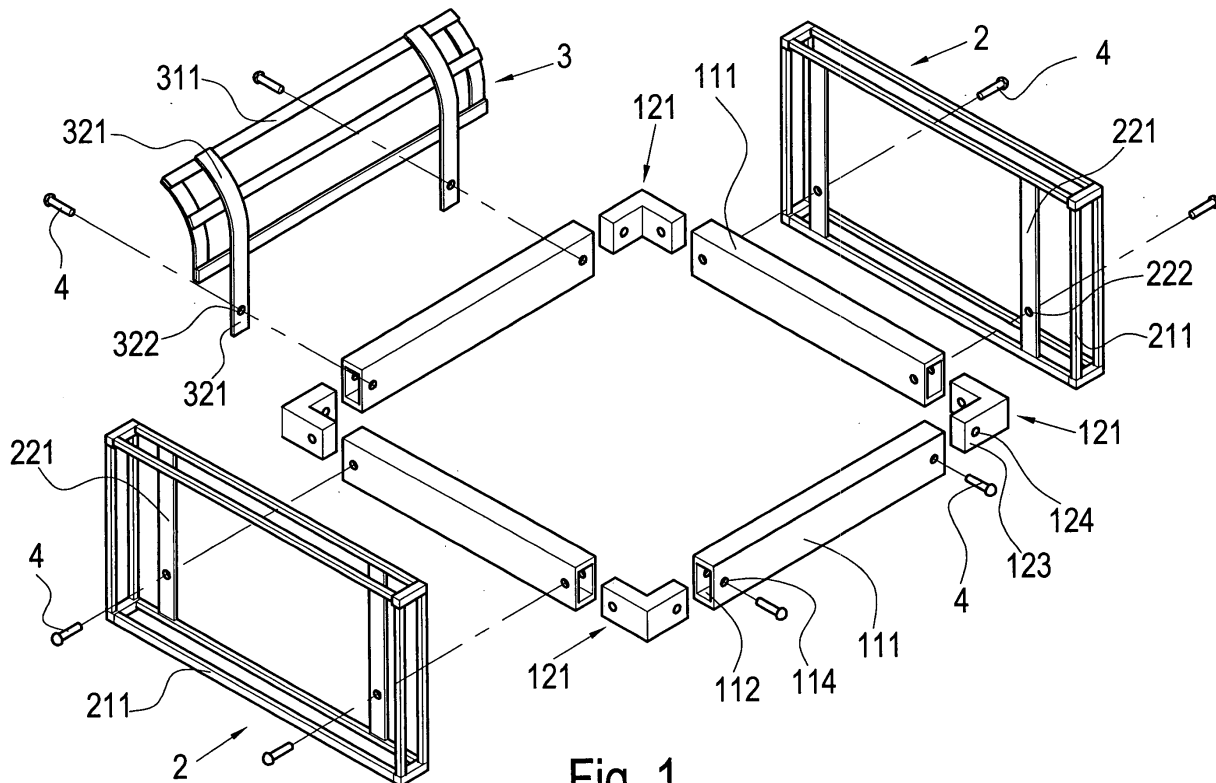


Fig. 1

Description**BACKGROUND OF THE INVENTION****1. Field of the invention**

[0001] The present invention relates to a combination sofa structure, and more particular to a combination sofa structure which has a different combination way. Thus, the present invention utilizes a steering fixing-block to inlay in an inner side of a square through hole of two sets of crossbeams having equivalent and parallel opposite sides for forming a right-angled parallelogram seat set. Then, an arm set is coupled to a right side and a left side of the seat set and a backrest set is coupled to a back side of the seat set, wherein the arm set and the backrest set are both connected to the seat set via a fastening element to pass therethrough so as to form an easily coupled combination sofa structure.

2. DESCRIPTION OF THE PRIOR ART

[0002] The conventional combination sofa structure is disclosed by TW patent No. 371869. The main characters thereof includes: a chair frame which is a square frame, wherein the frame body has a front plate and a back plate which are parallel to each other, two side plates are perpendicularly set between the front and the back plates, at least two first pivot holes are set at the front plate, and at least two second pivot holes are set at the two side plates, a chair seat set at the top of the chair frame, wherein an orientation piece which is downward extended from the two sides of the seat fixed with the side plates of the chair frame, a back of the chair having a backrest frame which stays close to the back of the back plate of the chair frame, wherein the backrest frame comprises a third pivot hole corresponding to the first pivot axle of the chair frame, the backrest frame and the chair frame are connected to each other through at least a pivot which has two plugging sticks for respectively passing through axially connected first and second pivot holes, a spiral fixing element is respectively set on each plugging stick after plugging, the backrest is covered by a backrest cushion, and the plugging stick of the pivot is protruded out of the backrest cushion after covering, two arms set at two side of the chair frame, wherein each arm comprises an arm frame which stays close to the outside of the side plate of the chair frame, the arm frame has a fourth pivot hole corresponding to the second pivot hole of the chair frame, the second and the fourth pivot holes are provided for being plugged by the two plugging sticks of a pivot, a spiral fixing element is set on each plugging stick and the arm frame is covered by an arm cushion which allows the protrusion of the two plugging sticks, and four foot seats which are two couples and are set at the bottom of the two arms. Through coupling the chair seat on the chair frame, setting the back of the chair and the two arms respectively

on the back plate and the two side plates, a sofa can be formed, and the chair frame is composed by a welding method. However, the structure described above has some disadvantages as follows:

1. It is not easy to obtain a welding seam with high quality.
2. After welding, the welding area can not freely expand and shrink owing to the limitation from the main body of the chair frame, and thus the welding stress and deformation will be easily formed after cooling.
3. When welding, it will be easy to cause the air pollution.
4. The sequential powder spread will take a lot of time because it is necessary to remove the rust for preventing or the chair frame from corrosion or reducing the corrosion. If it adopts the chair frame which is fully welded to process an immersed rust-removing process, after immersion, it will not be easy to drain the water and the cost of welding will be increased, too. On the other hand, the size of the immersing trough must be big enough for putting the whole chair frame therein to process the rust-removing process.
5. If it adopts the sprinkling way to remove the rust, after welding, although it will not need an immersing trough, the removing of the rust will be uncompleted via this method.

[0003] Thus it can be seen, the prior art described above still has some defects, is not a good design, however, and is urgently to be improved.

[0004] Because of the technical defects of described above, the applicant keeps on carving unflaggingly to develop the combination sofa structure wholeheartedly experience and research.

SUMMARY OF THE INVENTION

[0005] An object of the present invention is to provide a combination sofa structure which is not necessary to consider the stress deformation after combination and the limitation of the combination condition when combining a seat set.

[0006] Another object of the present invention is to provide a combination sofa structure whose individual components can be easily combined.

[0007] The combination sofa structure for achieving the purposes described above includes:

a seat set includes: a crossbeam which is a hollow square tube with a thickness and has at least two first nail holes set at a vertical plane of the square tube, a steering fixing-block which is a L-shaped square solid having at least a fourth nail hole at a vertical plane thereof for aiming the fourth nail hole of the square solid at the first nail hole of the cross-

beam when the square solid is inlaid in a square through hole of the crossbeam so as to couple two non-adjacent crossbeams, wherein two sets of crossbeams having equivalent and parallel opposite sides are coplanar and assembled as a right-angled and parallelogram seat frame through the steering fixing-block;

an arm set which is set at two sides of the seat set and comprising an arm frame which is a square frame and is connected to at least two strengthened pillars at an appropriate area of one side thereof, and a strengthened pillar having two ends perpendicularly extended and fixed at the arm frame and having at least a second nail hole set at a vertical plane thereof, wherein the arm set and the seat set are coupled through plugging a fastening element in the second nail hole of the arm set and the first and the fourth nail holes of the seat set;

a backrest set which is set at a back end of the seat set and comprising: a backrest frame which is a quadrilateral frame and is connected to at least two fixing pillars at an appropriate area of one side thereof, a fixing pillar which is a hollow pillar with a thickness, is perpendicularly fixed at the backrest frame and has at least a third nail hole set at an area perpendicularly extended from the fixing pillar, wherein the backrest set and the seat set are coupled through plugging the fastening element in the third nail hole of the backrest set and the first and the fourth nail holes of the seat set;

a fastening element which is one of a rivet and a thread connecting element, wherein the rivet can be connected to the connecting element to be an irremovable connection and the thread connecting element can be connected to the connecting element to be a removable connection; and

a fastening bolt set which is set at the side of the first nail hole and is positioned corresponding to the fixing pillar of the backrest set, wherein the fastening bolt set further comprises: an upper inclined-plane block having an inside thread which is set at a vertical center thereof and correspondingly positioned on an inclined plane of a bottom inclined plane block; a bottom inclined-plane block having a hollow circular hole set at a vertical center thereof, wherein after contacting with an inclined plane of the upper inclined-plane block through an inclined plane thereof, the bottom inclined-plane block is fixed at a back end of the seat set through one side thereof; and a screw bolt passed through an inner side of the hollow circular hole of the bottom inclined-plane block and connected to the upper inclined-plane block through the inside thread of the upper inclined-plane block and a thread thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The drawings disclose an illustrative embodi-

ment of the present invention which serves to exemplify the various advantages and objects hereof, and are as follows:

5 Fig. 1 shows a three-dimensional decomposition view of a combination sofa structure according to the present invention;

10 Figs. 2~3 show three-dimensional decomposition view of a seat set and a arm set of the combination sofa structure according to the present invention;

15 Fig. 4 shows a three-dimensional combination view of the combination sofa structure according to the present invention; and

20 Fig. 5 shows a magnified view of a fastening bolt set of the combination sofa structure according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

25 [0009] Please refer to Fig. 1. The combination sofa structure according to the present invention includes: a seat set 1, an arm set 2, a backrest set 3, and a fastening element 4, wherein a strengthened pillar 221 of the arm set is connected to a right side and a left side of the seat set 1 via vertical planes of the strengthened pillar and the arm set is connected to the seat set 1 through passing the fastening element 4 therethrough, and a fixing pillar 321 of the backrest 3 is connected to a back side of the seat set 1 and the backrest 3 is connected to the seat set 1 through passing the fastening element 4 therethrough.

30 [0010] For more clearly describing the present invention, please further refer to Fig. 2. The seat set 1 is inlaid in an inner side of a square through hole 112 of two sets of crossbeam 111 which have equivalent and parallel opposite sides through a square solid 123 of a steering fixing-block 121 so as to aim a fourth nail hole 124 of the steering fixing-block 121 at a first nail hole 114 of the crossbeam 111, wherein the crossbeam 111 can be processed by punching, drilling or punching following drilling. Furthermore, when two non-adjacent crossbeams 111 are inlaid through the steering fixing-block 121, the parallelogram seat set 1 with four right angles can be formed on a same plane.

35 [0011] After the seat set 1 is coupled and completed, the arm set 2 which is formed by an arm frame 211 and a strengthened pillar 221 is set at two sides of the seat set 1. In addition, the arm set 2 is fixed on the arm frame 211 through a perpendicular extension from the two ends of the strengthened pillar 221. And, at least a second nail hole 222 is set at a vertical plane of the strengthened pillar 221 so as to coupling the arm set 2 and the seat set 1 through plugging the fastening element 4 in the second nail hole 222 of the arm set 2 and the first nail hole 114 and the fourth nail hole 124 of the seat set 1. If the fastening element is a rivet, one end of the rivet will be a prefabricated head and the other end will be

plugged in a nail hole of a connecting element, so that the stretched end will be pressed to be a rivet head so as to complete the connection. If the fastening element 4 adopts a thread connection, the connecting element will not need to form a thread and the material of the connecting element will not be limited. It only needs to plug one end of the fastening element which has the thread in the nail hole of the connecting element and assembles the nut and the bolt head, the arm of the seat will be formed.

[0012] Please refer to Fig. 3. Additional, the seat set 1 can also be connected to the arm set 2 through plugging the fastening element 4 in the second nail hole 222 of the arm set 2 and the first nail hole 114 and the fourth nail hole 124 of the crossbeam 111 after the steering fixing-block 121 is inlaid in the square through hole 112 of the two end of the crossbeam 111. Through this method, the seat set 1 can be combined in a different way so as to reduce the volume of the whole product and benefit for packaging.

[0013] After the arm set 2 is coupled with the seat set 1, a backrest set 3 is further provided to set on the back side of the seat set 1. The backrest set 3 comprises a quadrilateral backrest frame 311 and two fixing pillars 321, wherein the fixing pillar 321 has a third nail hole set at a position perpendicularly extended from the fixing pillar 321 and, through plugging the fastening element 4 in the third nail hole 322 of the backrest set 3 and the first nail hole 114 and the fourth nail hole 124 of the seat set 1, the backrest set 3 can be stably connected to the seat set 1.

[0014] Besides, the backrest set 3 can combined in another way. A fastening bolt set 5 of the seat set 1 can be inlaid in the inner side of the through hole which is perpendicularly extended from the bottom of the fixing pillar 321 of the backrest set 3, and a bolt 51 of the fastening bolt set 5 can be rotated. When rotating, an upper inclined-plane block 52 can slide on an inclined plane of a bottom inclined-plane block 53 so as to fasten the inner side of the through hole which is positioned at the bottom of the fixing pillar 321. Thus, this method provides another way to stably fasten the backrest set 3 on the seat set 1.

[0015] The combination sofa structure according to the present invention, when being compared with the other prior arts, further includes the advantages as follows:

1. Simple structure: The improved structure provided by the present invention can easily inlay the steering fixing-block in the inner side of the square through hole of two sets of crossbeams having equivalent and parallel opposite sides and can also provide a tight connection of the fastening element for more easily combining the seat set.
2. Economical and practical: The present invention has simple structure, easy manufacturing process, and low cost, and thus it is beneficial to large indus-

trial production and further owns the practicability.

[0016] Many changes and modifications in the above described embodiment of the invention can, of course, be carried out without departing from the scope thereof. Accordingly, to promote the progress in science and the useful arts, the invention is disclosed and is intended to be limited only by the scope of the appended claims.

Claims

1. A combination sofa structure, comprising:

a seat set comprising: a crossbeam which is a hollow square tube with a thickness and has at least two first nail holes set at a vertical plane of said square tube, a steering fixing-block which is a L-shaped square solid having at least a fourth nail hole at a vertical plane thereof for aiming said fourth nail hole of said square solid at said first nail hole of said crossbeam when said square solid is inlaid in a square through hole of said crossbeam so as to couple two non-adjacent crossbeams, wherein two sets of crossbeams having equivalent and parallel opposite sides are coplanar and assembled as a right-angled and parallelogram seat frame through said steering fixing-block;

an arm set which is set at two sides of said seat set and comprising an arm frame which is a square frame and is connected to at least two strengthened pillars at an appropriate area of one side thereof, and a strengthened pillar having two ends perpendicularly extended and fixed at said arm frame and having at least a second nail hole set at a vertical plane thereof, wherein said arm set and said seat set are coupled through plugging a fastening element in said second nail hole of said arm set and said first and said fourth nail holes of said seat set; a backrest set which is set at a back end of said seat set and comprising: a backrest frame which is a quadrilateral frame and is connected to at least two fixing pillars at an appropriate area of one side thereof, a fixing pillar which is a hollow pillar with a thickness, is perpendicularly fixed at said backrest frame and has at least a third nail hole set at an area perpendicularly extended from said fixing pillar, wherein said backrest set and said seat set are coupled through plugging said fastening element in said third nail hole of said backrest set and said first and said fourth nail holes of said seat set; and a fastening element which is one of a rivet and a thread connecting element.

2. A fastening bolt set, comprising:

an upper inclined-plane block having an inside thread which is set at a vertical center thereof and correspondingly positioned on an inclined plane of a bottom inclined plane block;
 a bottom inclined-plane block having a hollow circular hole set at a vertical center thereof, wherein after contacting with an inclined plane of said upper inclined-plane block through an inclined plane thereof, said bottom inclined-plane block is fixed at a back end of said seat set through one side thereof; and
 a screw bolt passed through an inner side of said hollow circular hole of said bottom inclined-plane block and connected to said upper inclined-plane block through said inside thread of said upper inclined-plane block and a thread thereof.

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- 3. The combination sofa structure according to claim 1, wherein said fixing pillar of said backrest has a through hole set at said fastening bolt set.

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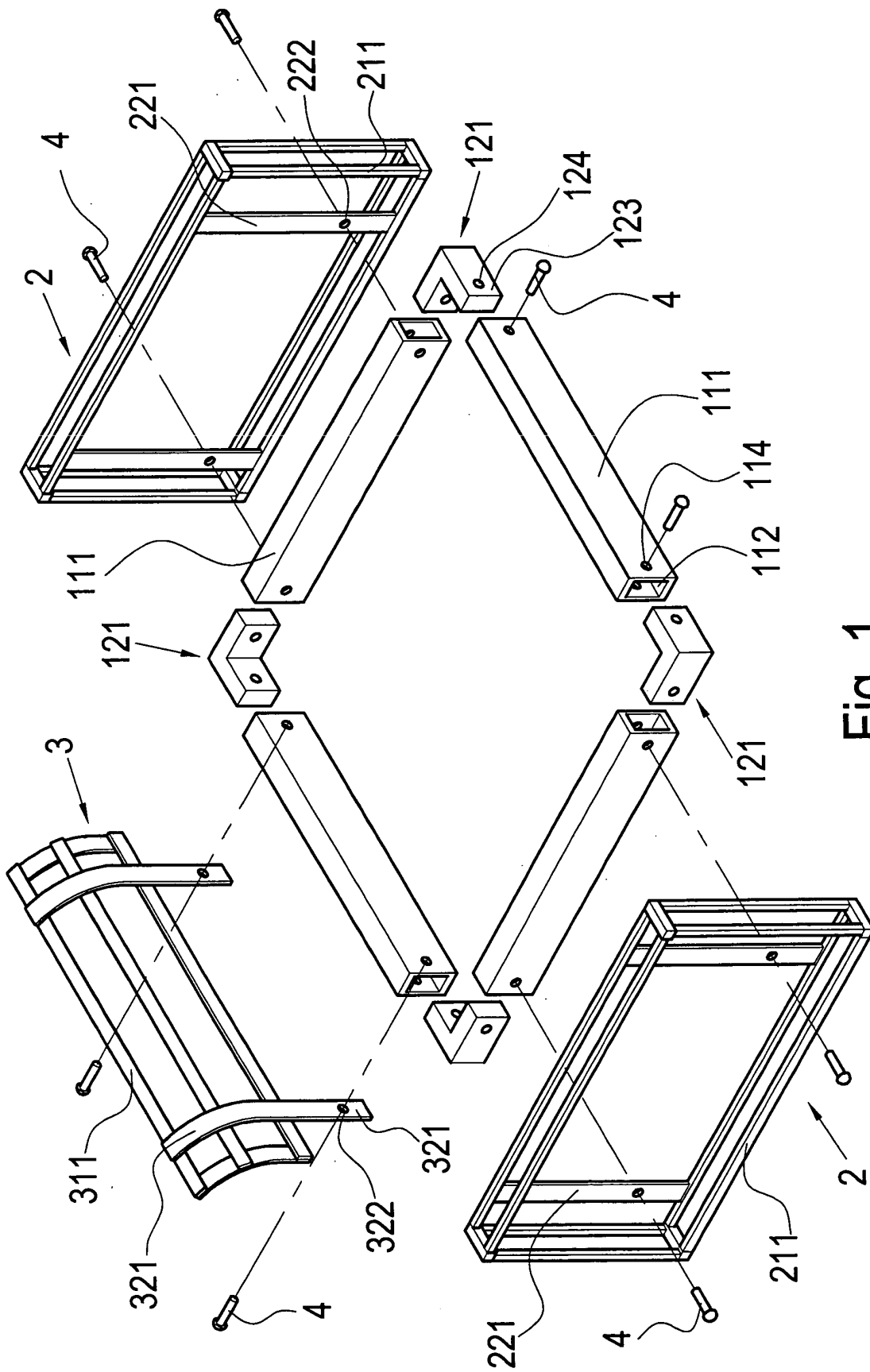


Fig. 1

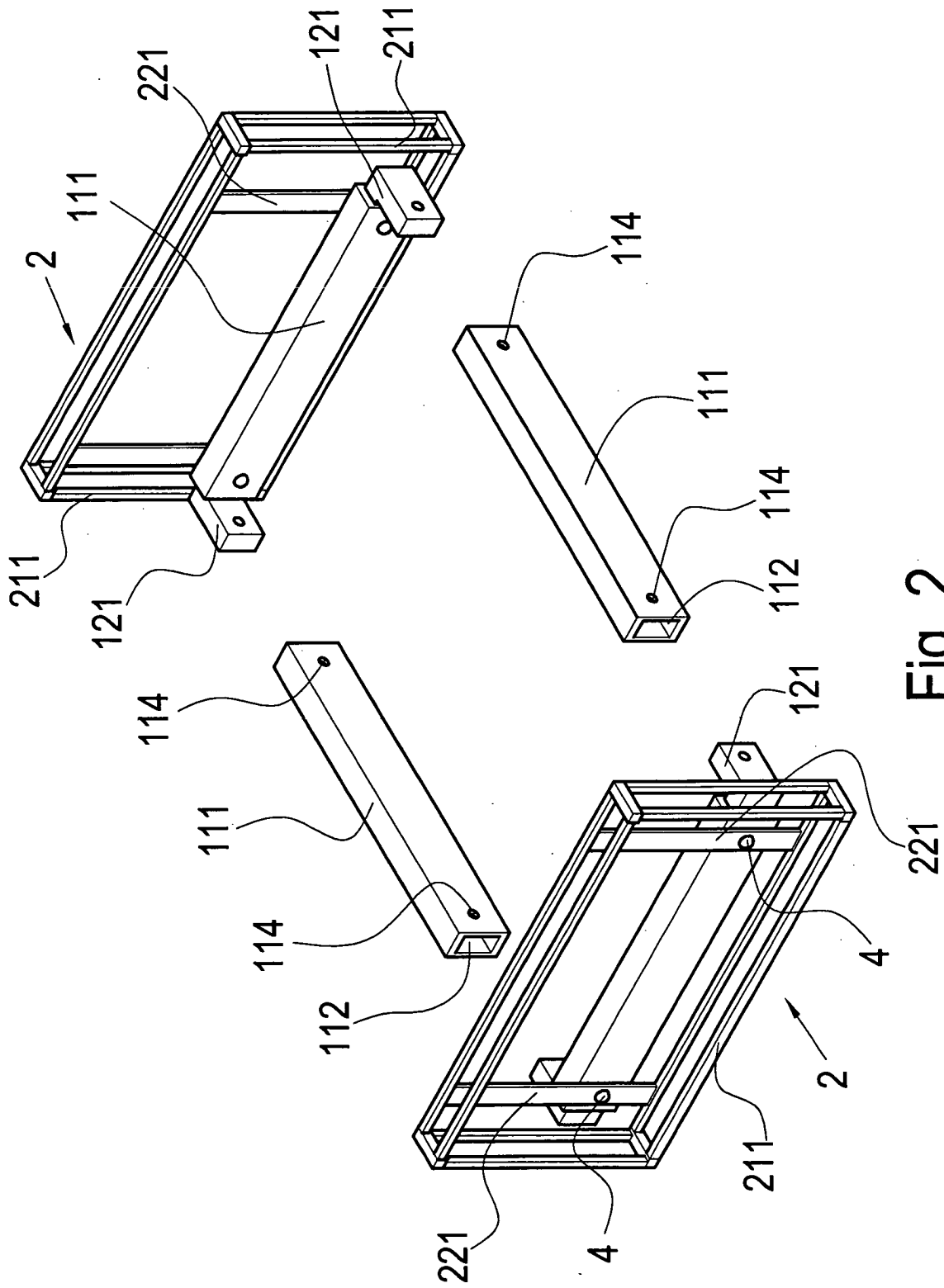


Fig. 2

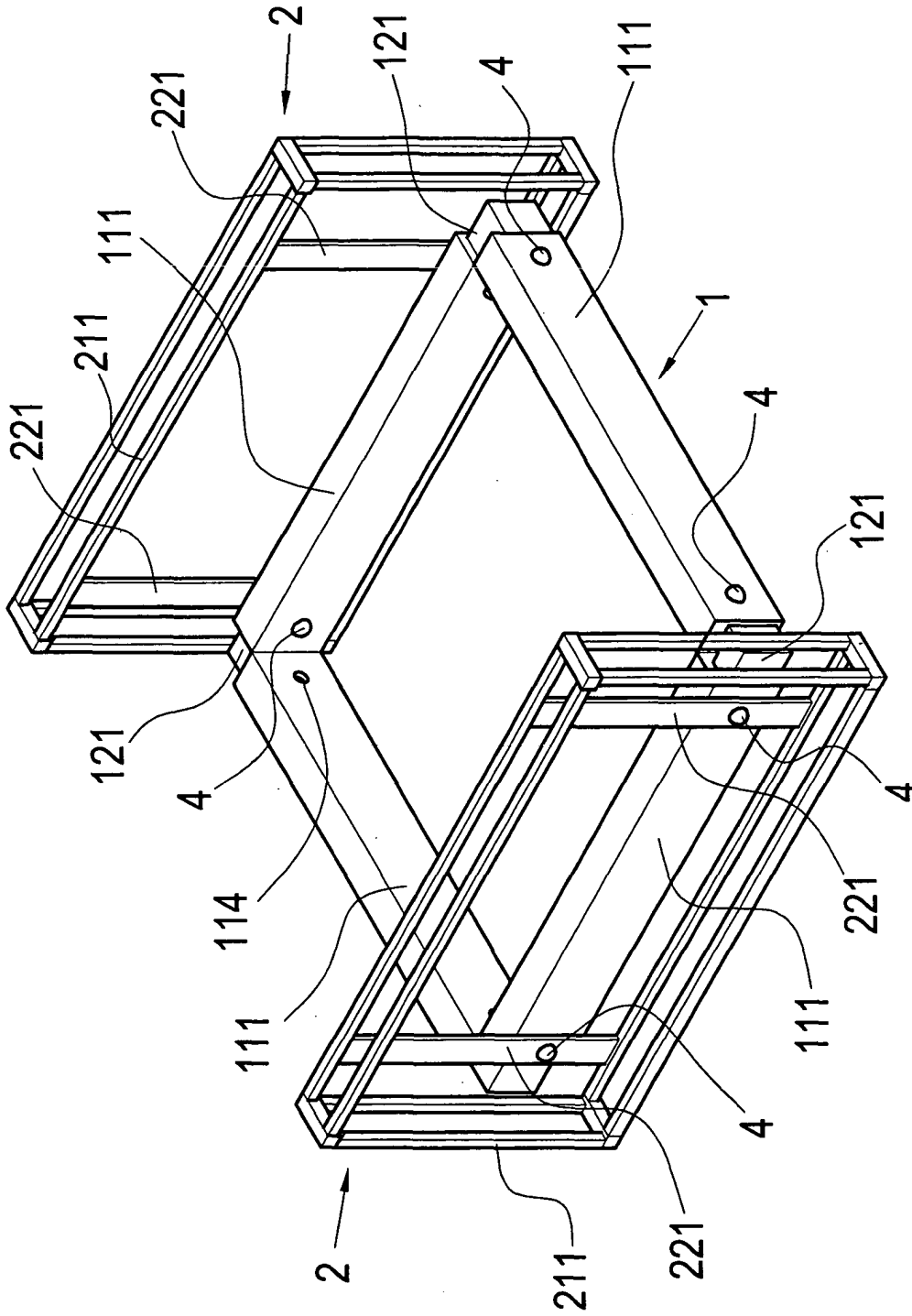


Fig. 3

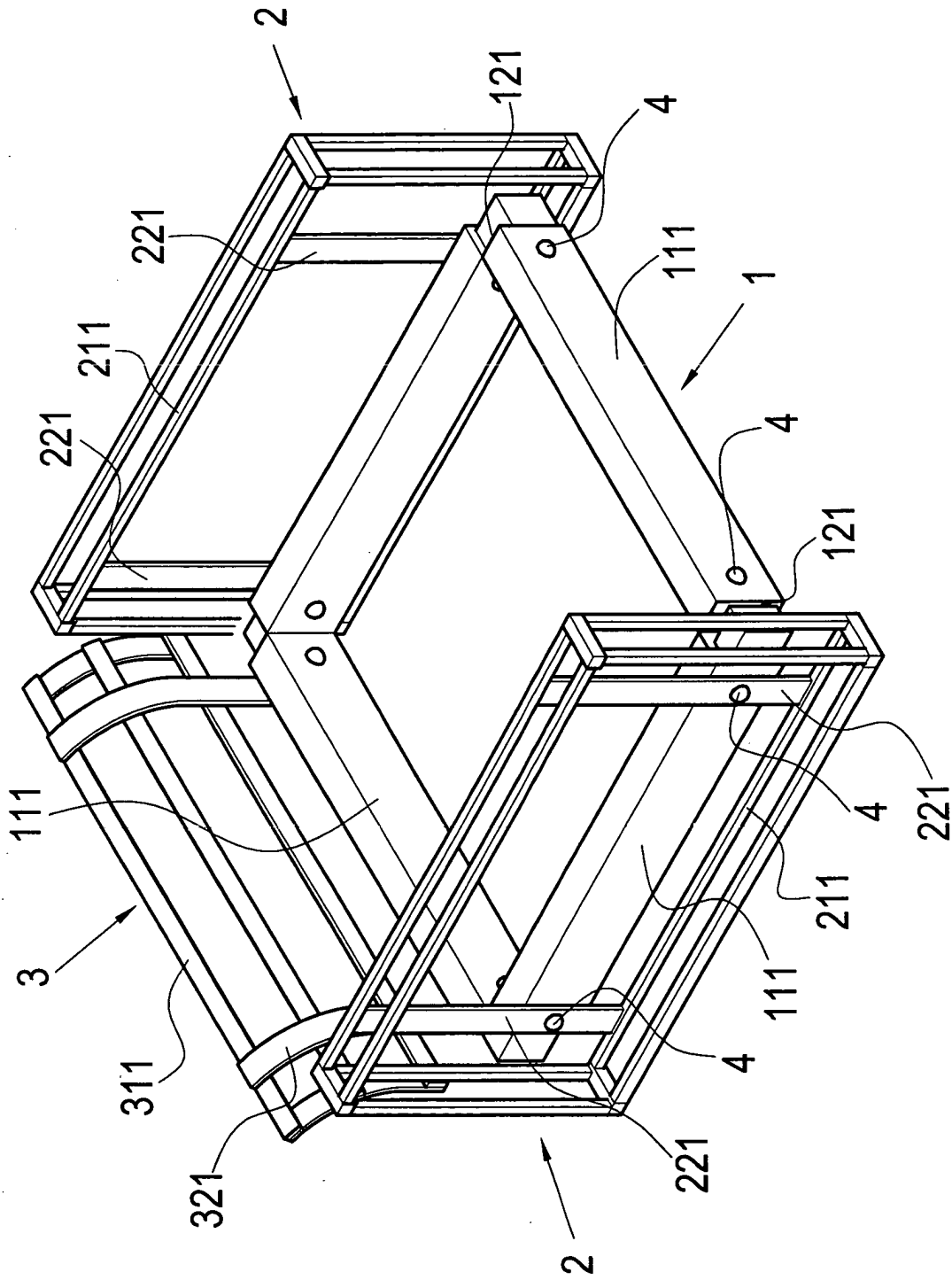


Fig. 4

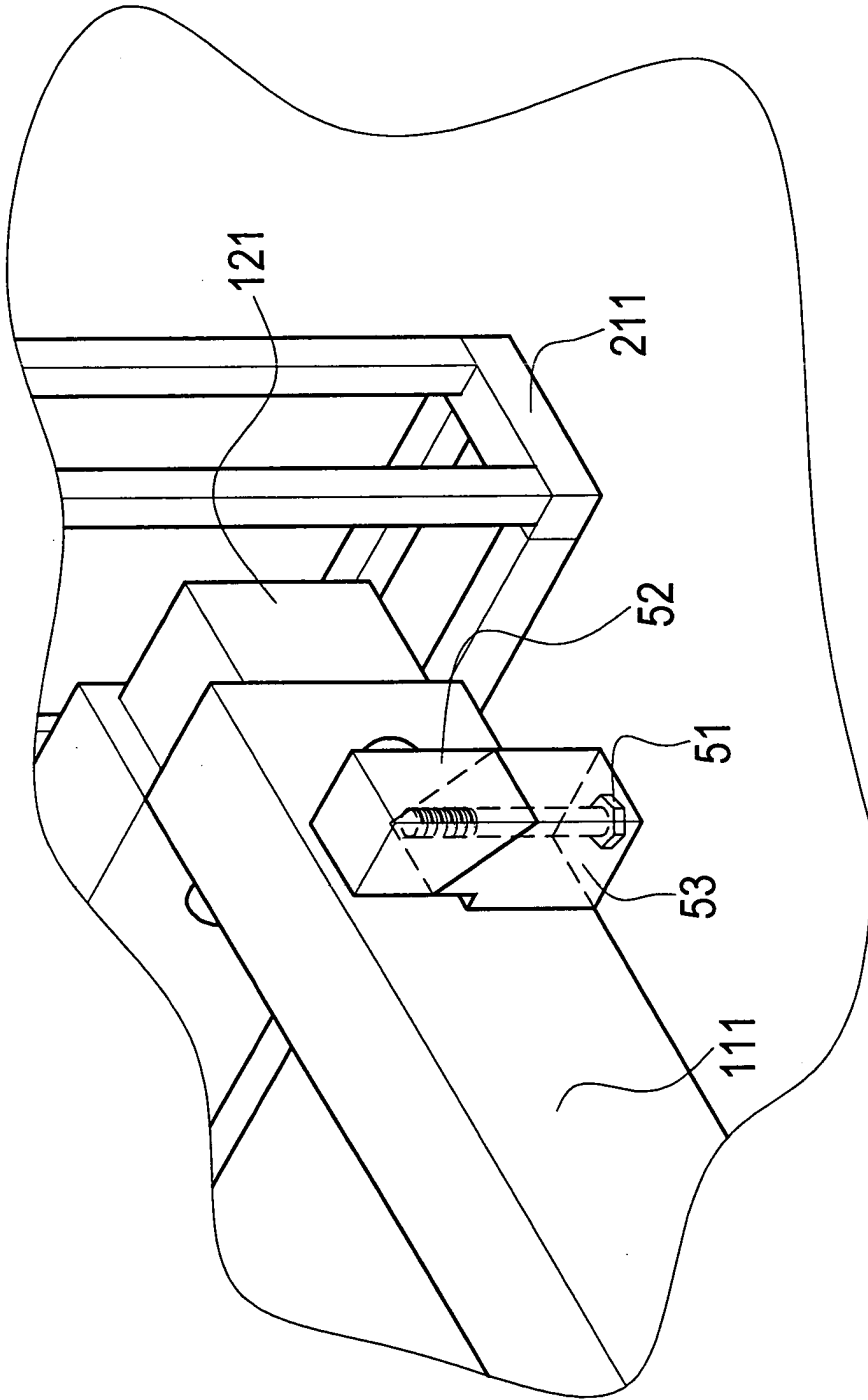


Fig. 5



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 03 00 5492

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20 August 2003	Examiner Joosting, T
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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 03 00 5492

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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20-08-2003

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