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(54) **A RAISED PLATFORM FOR TRANSPORTING AND STORING GOODS**

(57) The invention relates to a raised platform for transporting and storing goods comprising a flat element (1) for stacking goods thereon, and supports (2) connected thereto comprising longitudinal slats (3) and support elements (4), the slats (3) and support elements (4) being connected by means of a dovetail connection, wherein the slats (3) are trapezoidal in cross-section, each support member (4) is formed by two slats (5) arranged so that they form V-shaped arms, the slats (5) having trapezoidal cut-outs (7) on their longer edges facing the flat member (1), wherein each slat (3) is inserted into both trapezoidal cut-outs (7) of the support members (4), wherein there is a locking element (8) between the arms of the "V" of the support members (4), which is attached to the slat (3). The platform is characterised in that the locking element (8) is a shaped piece having a flat bottom (8a) having edges, and on two adjacent edges, of the edges of the bottom (8a), it has two side walls (8b) perpendicular to the bottom (8a), wherein the side walls (8b) terminate in bends in the form of a "U" profile facing outwards from the shaped piece and forming guides (8c), wherein the bottom (8a) is attached to the slat (3) and the guides (8c) receive the edges of the slats (5).

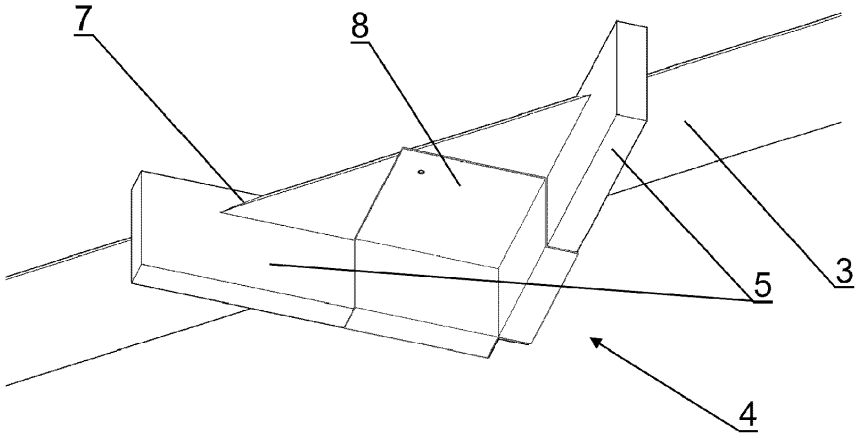


Fig. 2

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Description

[0001] A subject of the invention is a raised platform for transporting and storing goods, comprising a flat element for placing goods on it, and supports connected thereto consisting of longitudinal slats and support elements, the slats and support elements being connected by means of a dovetail connection, the slats being trapezoidal in cross-section, wherein each support member consists of two slats arranged so that they form V-shaped arms, the slats having trapezoidal cut-outs on their longer edges facing the flat member, wherein each slat is inserted into both trapezoidal cut-outs of the support members, with a locking device located between the arms of the "V" support members and fixed to the slat.

[0002] Raised platforms for transporting and storing goods, commonly known as pallets, are well-known in the state of the art. Wooden pallets are the most commonly used, consisting of several (usually three) longitudinal supports and planks provided crosswise on the supports to provide a flat element for stacking goods on it. The supports are connected to the planks by nailing, stapling or gluing. Often, the supports are blocks connected at the bottom by successive planks, which forms the base of the pallet. There are also pallets manufactured from plastic that have similar shape. Such pallets can be manufactured integrally, e.g. by injection moulding. In plastic pallets, often the flat element for stacking goods on it is an openwork construction, which reduces the weight of the pallet. Pallets are also made of cardboard - either made of thick sheets (similar construction to a wooden pallet) or cardboard pulp (pallet extruded as a single piece). There are also steel or aluminium pallets with a similar structure - but due to their high price they are less common.

[0003] Such pallets have a fixed size at production, usually standardised (e.g. Euro pallet with dimensions 1200 x 800 mm), which is useful in particular for transport purposes, but it is not possible to change the size of such a pallet or to dismounting it - which is problematic, for example, when stacking goods with different non-standard dimensions on pallets or when transporting with small vehicles (trailers), and when storing the pallets themselves when not in use. Pallets take up quite a lot of storage space.

[0004] To solve these problems, modular pallets have emerged - there are, for example, small pallets that can be joined together to form one larger pallet, but there are also folded pallets that can be stored in parts and assembled as needed.

[0005] Document US2012132114A1 describes a folded pallet that has supports with trapezoidal cut-outs at the bottom and top edges, and planks that have an analogous shape in cross-section, so that the planks can be inserted into these trapezoidal cut-outs (dovetail connection) transversely to the supports, creating a structure very similar to a traditional pallet, but with the ability to be easily dismounted. It is also possible to slide the planks into the cut-outs on the opposite edge of the supports, thus creating a flat pallet base.

[0006] Document WO2012073149A1 also discloses a folded pallet that uses a dovetail method of joining the elements, but has a different design. The pallet has a flat element for stacking goods made of planks arranged in two directions. The lower part of each of the underside planks has an additional element, or is cut so that it has a trapezoidal shape in cross-section, for dovetailing support blocks having a corresponding trapezoidal longitudinal cut-out. The same cut-out is on both sides of each block, with additional planks forming the base of the pallet on the side opposite the flat stacking element.

[0007] The pallet according to document WO2012073149A1 is non-scalable and, in addition, its support elements take up a relatively large amount of space during storage (thick support blocks).

[0008] The pallets according to document US2012132114A1, on the other hand, can be joined together and individual pallets can be scaled to a certain extent - you can make a pallet narrower by cutting the planks and using fewer supports or setting the supports more narrowly, i.e. scaled widthwise. In contrast, a single palette is not scalable in the second horizontal dimension.

[0009] From the patent application P.441154, raised platform is known for transporting and storing goods comprising a flat element for stacking goods on it, and connected supports comprising longitudinal slats and support elements, wherein the slats and support elements are connected by means of a dovetail connection. The slats are trapezoidal in cross-section, each support member consists of two slats forming arms, hinged at one edge, and spaced in a "V" shape, wherein on the edges perpendicular to the hinged edges, on the side of the flat element, the slats have trapezoidal cut-outs, each slat being inserted into both trapezoidal cut-outs of the support elements, and between the arms of the 'V' support elements there is a locking element which is fixed to the slat. This solution is shown in fig. 1 of the drawing of this application.

[0010] One of the objectives of the invention described above is to minimise the space required for storing an unused pallet. In their unfolded state, the individual pallet elements take up little space and can be stored in separate stacks.

[0011] Another objective of the invention is to enable the pallet to be adapted very easily to any surface format (the pallet can be easily scaled, among other things, by changing the number of support elements) and to different loads (by providing more support elements).

[0012] Another benefit of the invention is that the components of the pallet in certain embodiments can be easily and quickly separated (easy disassembly for transport, recyclability, possibility to replace individual parts) by, for example, unscrewing the screws and removing the individual components.

[0013] However, it was found that, although the above

pallet solves many of the problems of the state of the art, it has shortages in terms of stiffness, has insufficient load-bearing capacity and strength of the supports.

[0014] The solution according to the present invention solves the above problem.

[0015] According to the invention, the raised platform for transporting and storing goods comprises a flat element for placing goods on it, and supports connected to it consisting of longitudinal slats and support elements, wherein the slats and support elements are connected by means of a dovetail connection, the slats being trapezoidal in cross-section, each support member consists of two slats arranged so that they form V-shaped arms, the slats having trapezoidal cut-outs on their longer edges facing the flat member, wherein each slat is inserted into both trapezoidal cut-outs of the support members, with a locking device located between the arms of the "V" support members and fixed to the slat; and is characterised in that the locking element is a shaped piece having a flat bottom with edges, and on two adjacent edges, of the edges of the bottom, it has two side walls perpendicular to the bottom, the side walls terminating in bends in the form of a "U" profile facing outwards from the shaped piece and forming guides, the bottom is fixed to the slat and the guides receive the edges of the slats.

[0016] Preferably, the bottom is essentially square in shape.

[0017] Preferably, the locking element is made of metal, more preferably steel.

[0018] Preferably, the locking element is formed from a blank made of a single piece of material, shaped so as to form a permanent spatial form, the bottom after the locking element is formed by two triangular parts.

[0019] The subject of the invention is depicted in embodiments on the drawings in which fig. 1 shows a perspective view from below of a pallet according to the prior art in an dismounted view, fig. 2 shows the supports of the raised platform according to the invention in perspective view from below from the inside of the support element, fig. 3 shows the supports of the raised platform according to the invention in perspective view from the outside of the support element, fig. 4 shows the supports of the raised platform according to the invention in top perspective view, fig. 5 shows the locking element in perspective view from top, fig. 6 shows the locking element in perspective view from below, fig. 7 shows the locking element according to the embodiment in the form of a partially bent blank, fig. 8 shows schematically the possible support arrangements for the different pallet variants.

[0020] According to the invention, a raised platform for transporting and storing goods, i.e. a pallet, has an essential structure similar to that of the pallet of application P.441154 shown in fig. 1. The pallet therefore comprises a flat element 1 for stacking goods on it, and supports 2 connected thereto. The supports consist of longitudinal slats 3 and support elements 4. The slats 3 and support elements 4 are connected by means of a dovetail connection. Slats 3 are trapezoidal in cross-section. Each of the support members 4 consists of two slats 5 arranged so that they form V-shaped arms, wherein the slats 5 have trapezoidal cut-outs 7 on their longer edges facing the the flat member 1. Each slat 3 is inserted into both trapezoidal cut-outs 7 of the support members 4, wherein a locking element 8 is provided between the "V" arms of the support members 4, which is attached to the slat 3.

[0021] In fig. 2-4 it can be seen that the pallet according to the invention has similar supports 2, comprising support elements 4 of slats 5 with trapezoidal cut-outs 7 into which the slat 3 is inserted, and a locking element 8. The main difference between the palette according to the art shown in fig. 1 and the pallet according to the invention consists in the fact that in the pallet according to the invention the slats 5 are not connected at their shorter ends, which is the case in the art. Only the locking element 8, which is specially designed for this purpose, is used to connect them and fix them in the intended mutual position.

[0022] In fig. 5-6 you can best see the locking element 8, which is a special shaped piece. It has a flat bottom 8a having edges. On two adjacent edges, of the edges of the bottom 8a, the shaped piece has two side walls 8b perpendicular to the bottom 8a. The side walls 8b are finished with U-shaped bends facing outwards from the shaped piece and forming guides 8c. Fig. 2-4 show the location and attachment of the shaped piece. In fig. 2 it can be seen that its bottom 8a is attached to the slat 3 while the guides 8c receive the edges of the slats 5 (this feature is even better seen in fig. 3). This ensures that the spacing of the slats 5 is fixed, while the support elements 4 gain in rigidity and durability.

[0023] In a preferable embodiment shown in the figures of the drawing, the bottom 8a has a substantially square shape, causing the angle between the slats 5 to be 90°, but it is clear that it can have any other shape to fit the given angle between the slats 5.

[0024] The locking element 8 is preferably made of metal, most preferably steel, but it may equally well be another suitable material that will enable the geometry of the element to be maintained after assembly.

[0025] In a preferable embodiment, the locking element 8 is formed from a blank made of a single piece of material, shaped to form a permanent spatial form, wherein the bottom 8a is formed by two triangular parts 8t after the locking element 8 has been formed. This form of locking element 8 makes it easier to manufacture and reduces production costs. Fig. 7 shows just such a component in the transitional stage during bending.

[0026] It should be noted that, according to the present invention, the supports 2 can be arranged in relation to the flat element 1 in a rather differentiated manner, depending on the size and use of the pallet. An example of the arrangement of the supports 2 in the different pallet variants is shown in fig. 8.

[0027] Of course, the invention is not limited to the embodiments described above, and the features indicated

in the claims can be combined in any combination appropriate to the particular application of the solution.

Claims

1. A raised platform for transporting and storing goods, comprising a flat element (1) for stacking goods thereon, and supports (2) connected thereto consisting of longitudinal slats (3) and support members (4), the slats (3) and support members (4) being connected by means of a dovetail connection, wherein the slats (3) are trapezoidal in cross-section, each support member (4) has two slats (5) arranged so that they form V-shaped arms, the slats (5) having trapezoidal cut-outs (7) on their longer edges facing the flat member (1), wherein each slat (3) is inserted into both trapezoidal cut-outs (7) of the support members (4), wherein a locking element (8) is positioned between the arms of the "V" of the support members (4), which is fixed to the slat (3), **characterised in that** the locking element (8) is a shaped piece having a flat bottom (8a) having edges, and on two adjacent edges of the edges of the bottom (8a), having two side walls (8b) perpendicular to the bottom (8a), wherein the side walls (8b) terminate in bends in the form of a "U" profile facing outwards from the shaped piece and forming guides (8c), wherein the bottom (8a) is attached to the slat (3) and the guides (8c) receive the edges of the slats (5).

2. Platform according to claim 1, **characterised in that** the bottom (8a) is substantially square.

3. Platform according to claim 1, **characterised in that** the locking element (8) is made of metal.

4. Platform according to claim 3, **characterised in that** the locking element (8) is steel.

5. Platform according to claim 1, **characterised in that** the locking element (8) is formed from a blank made of a single piece of material, shaped to form a solid spatial form, wherein the bottom (8a) is formed by two triangular parts (8t) after forming the locking element (8).

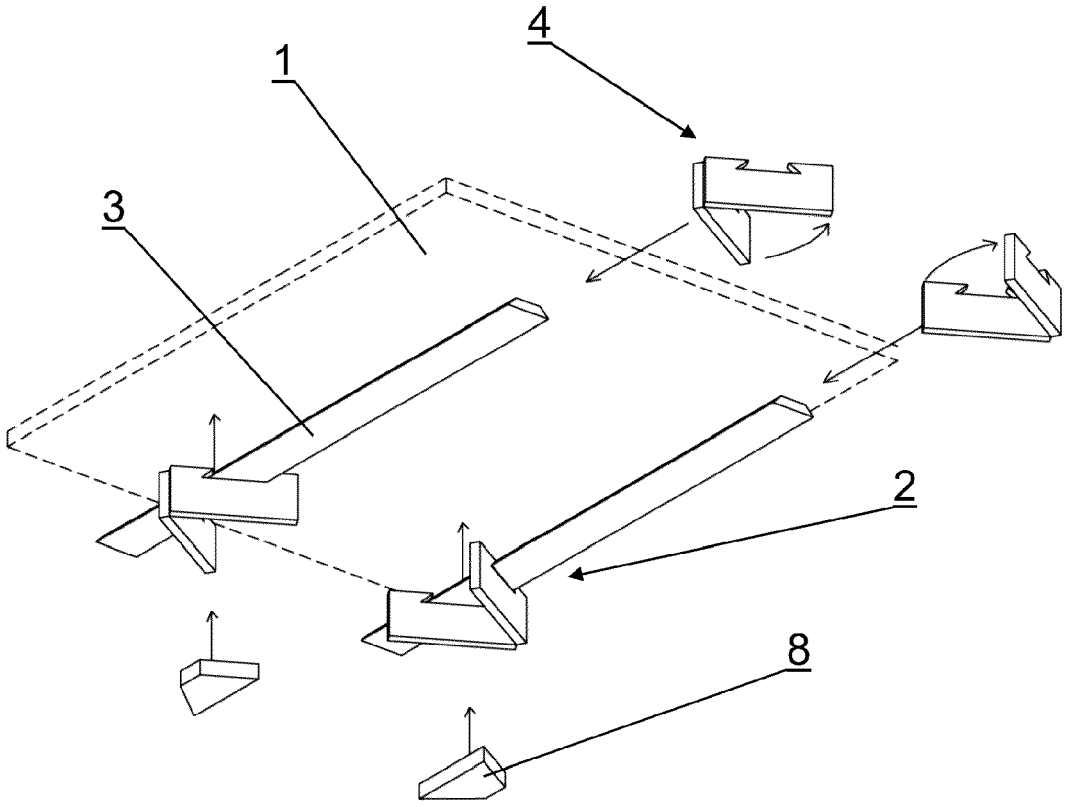


Fig. 1

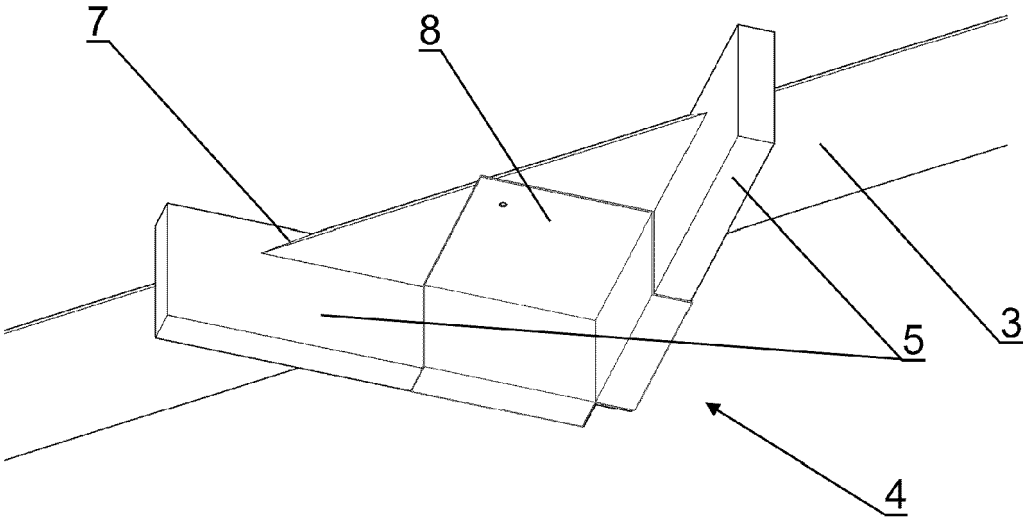


Fig. 2

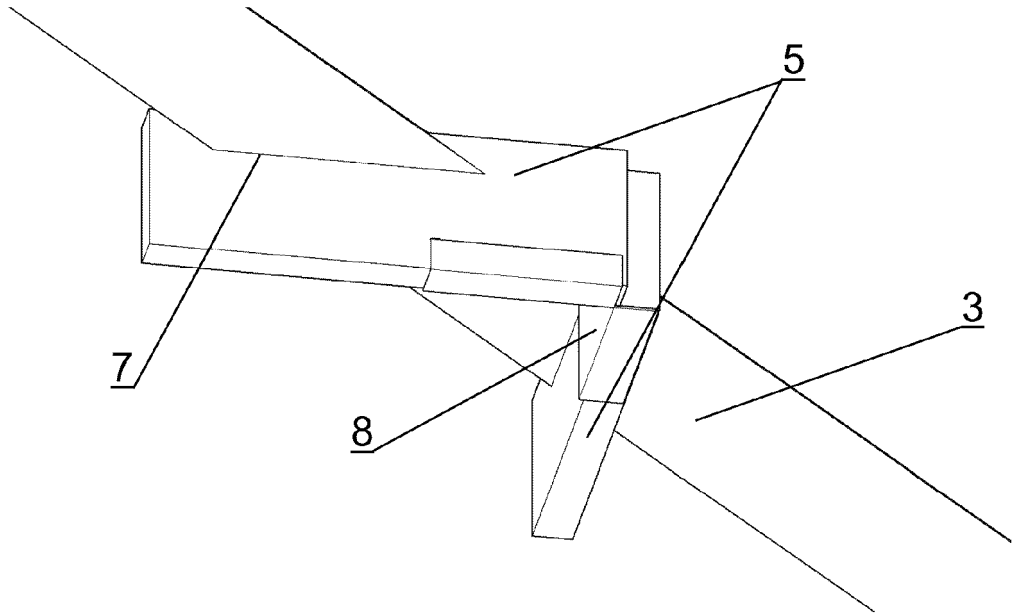


Fig. 3

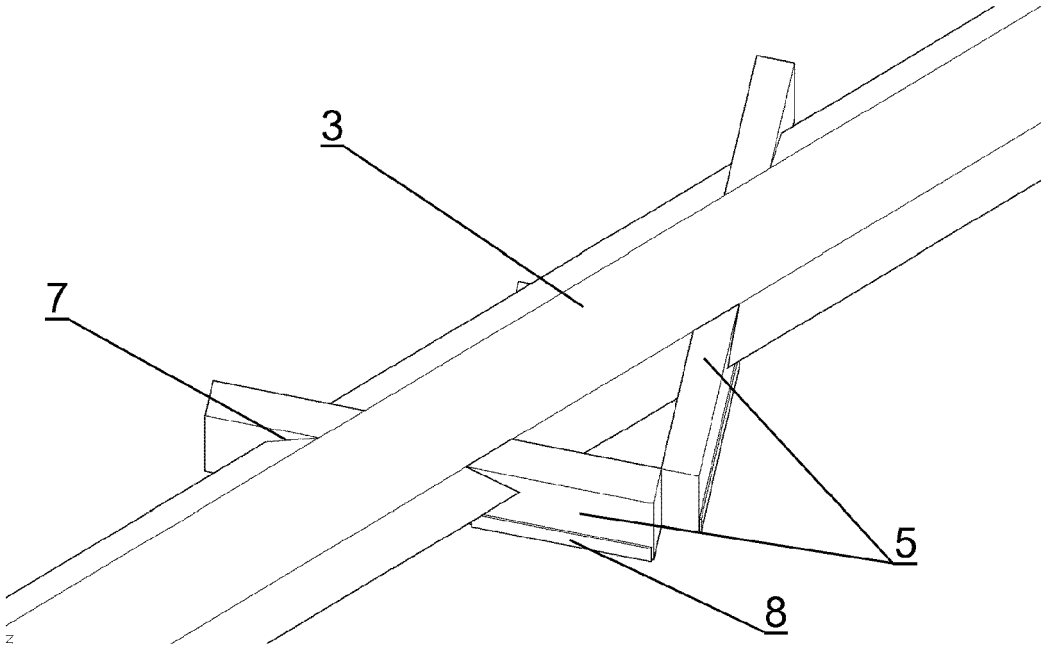


Fig. 4

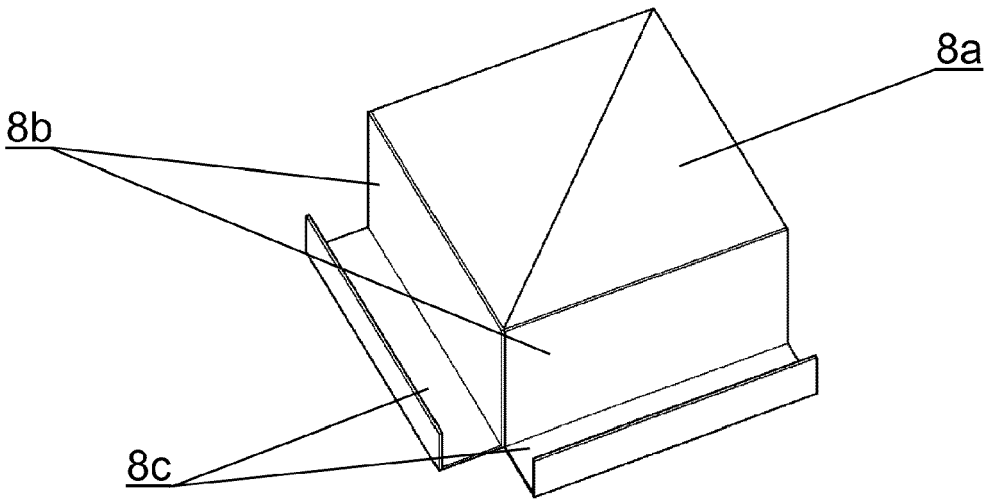


Fig. 5

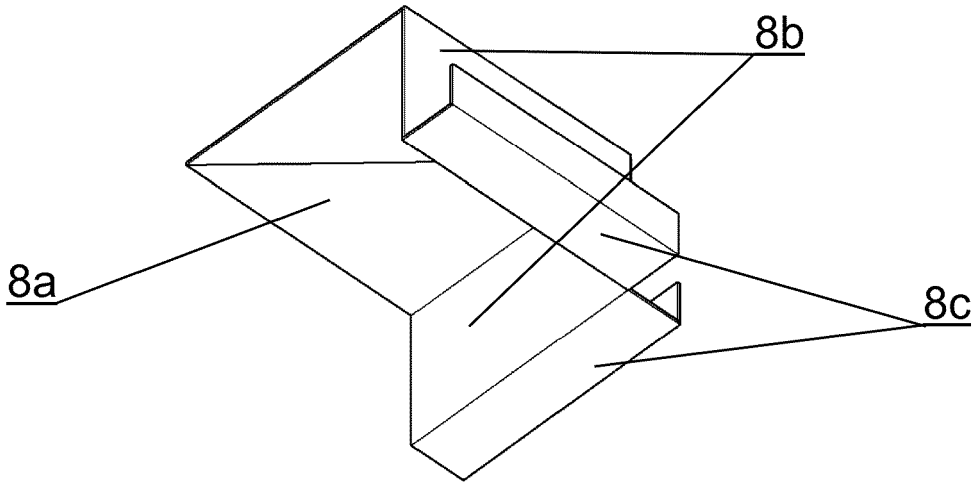


Fig. 6

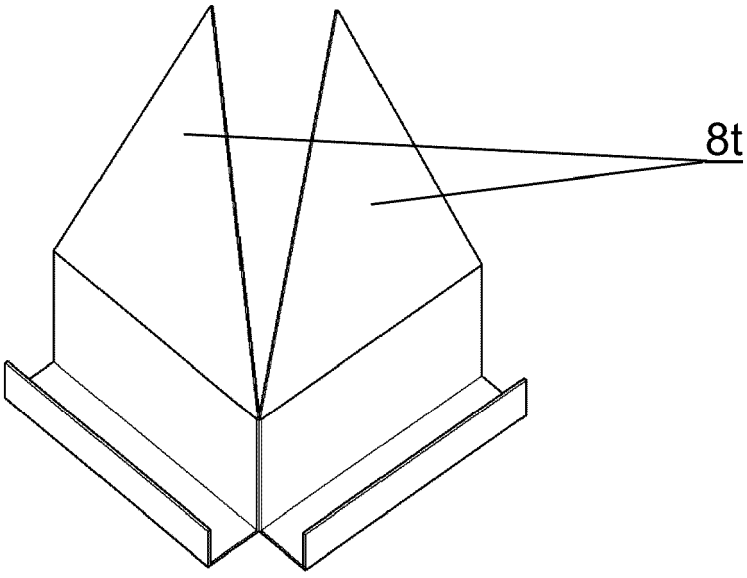


Fig. 7

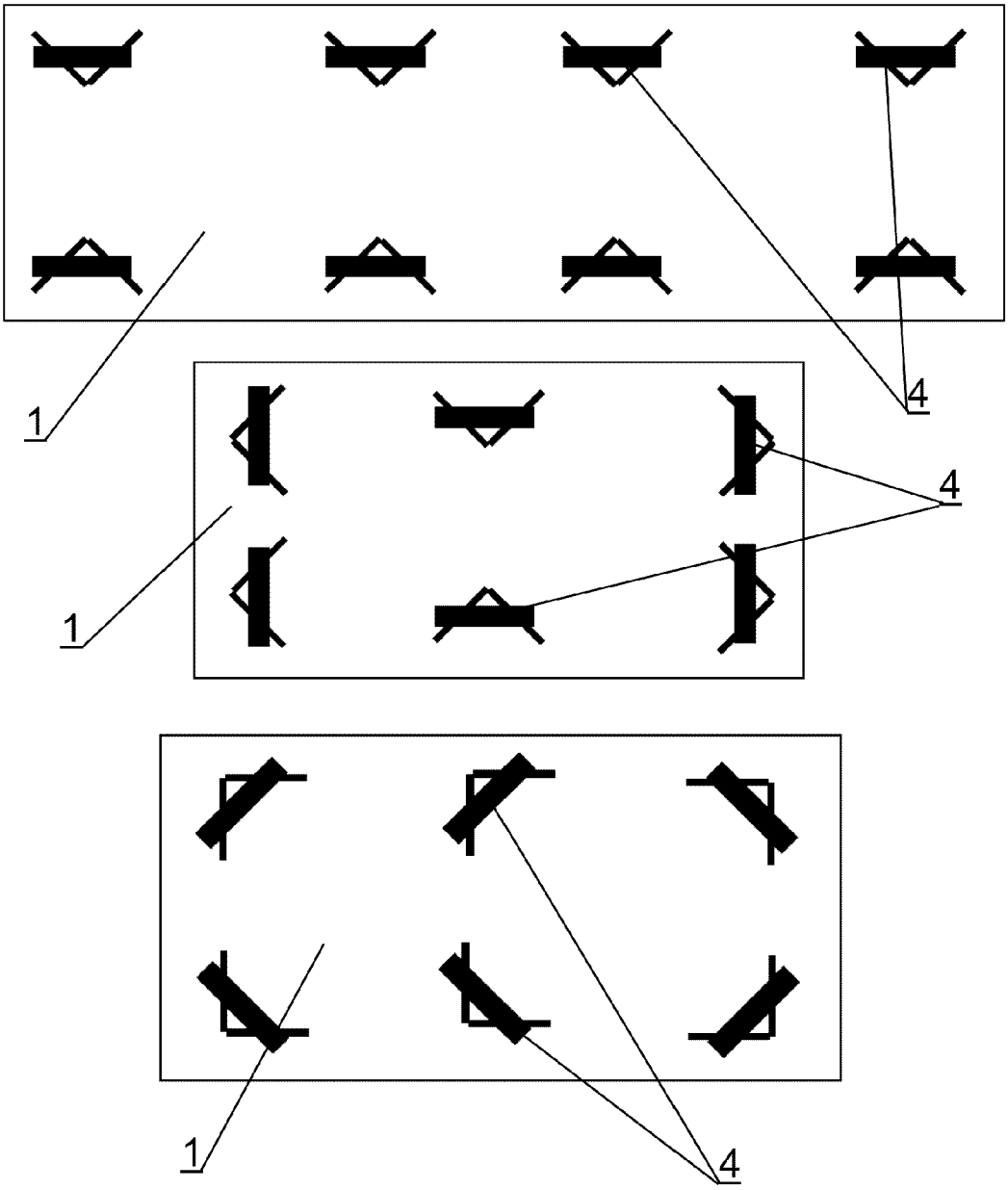


Fig. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 24 16 7484

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	20 September 2024	Jervelund, Niels

CATEGORY OF CITED DOCUMENTS

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