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(54) **REINFORCED PALLET FOR STEEL COILS**

(57) Reinforced pallet comprising two identical halves joined at the middle and are made of recycled polystyrene, inside which are provided reinforcement bars (4) and (5). Each half (12) is identical and is provided with radial ribs (3) with a raised core, forming a panel with a top face (1) and a bottom face (2), con-

structed so that it allows its transport by a forklift and chains or slings, for which there are recesses (7) provided on the top face, which together with the undersized lower face allows its transportation by chains.

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Description**OBJECT OF THE INVENTION**

[0001] The object of the present invention is a reinforced pallet for steel coils constructed so that it can be used as a support and base in the storage and transport, respectively, of the aforementioned steel coils.

[0002] The present pallet is characterised by its construction, which makes it particularly well suited for raising and transporting steel coils by means of a fork lift, slings or chains.

[0003] Likewise, the pallet construction makes it possible to transport it in the absence of a load using specifically provided hooks or clamps.

[0004] The pallet of the invention comprises two parts joined at the middle, inside which are placed steel I-bars meant for reinforcement and to allow transportation by chains or slings.

[0005] Therefore, the present invention lies in the field of pallets for transportation, and more specifically for storage, which can be used for stacking steel coils.

BACKGROUND OF THE INVENTION

[0006] Pallets are known for cylindrical coils of steel or any other material, such as the one described in Spanish Utility Model no.1045286, which describes a pallet for coils that lacks a bottom surface, with a shape allowing stacking so that the bottom surface of the coil rests on the corner piece of the coil below. Additionally, the pallet reinforcements consist of tubes instead of an I-bar, thereby allowing greater creep strength. The pallet is also made in a single piece, which implies a high cost, and does not present any configuration that allows lightening its overall weight, which is an important characteristic from the point of view of the material employed and of the extra weight to be transported.

[0007] Spanish Utility Model no. 1041904 describes a pallet comprising two halves coupled to each other, with a number of aligned orifices that allow handling by a forklift. This model has the drawback of lacking any means of reinforcement. In addition, the coils are centred on the pallet by a perimeter lip. Furthermore, it is not possible to use chains or slings as the aligned orifices are designed for a forklift or slings passing through said orifices, and the pallet would not withstand the loads involved in hanging it from a chain.

[0008] Patent EP 242454 describes a pallet for transporting steel coils, which lacks any reinforcement beams whatsoever, but is provided with aligned orifices for transport using a forklift. Raising and transport with chains or slings is also impossible. The coil is centred by a perimeter lip.

[0009] Therefore, the object of this invention is to provide a pallet that allows its transportation when loaded by a forklift or by slings and chains. In addition, it is provided with internal reinforcement beams to allow in-

creasing the load and a central raised area for centring the coils, as well as a shape of the bottom surface so that when piling the pallets with the coils said bottom surface of the pallet rests on the corner piece of the coil below.

DESCRIPTION OF THE INVENTION

[0010] The reinforced pallet for steel coils of the invention comprises two identical parts joined at the middle made of recycled polystyrene, with a number of reinforcement beams inside.

[0011] Each of these identical parts of the pallet is provided with a projecting lug and an orifice in each of its sides, so that the two identical parts can be coupled to each other and perfectly joined.

[0012] Each half of the pallet is provided with a radial rib and a raised core. After the pallet is formed the top surface has a central raised area that aids in centring the coils on the pallet. From this central area emerge or arrive radial arms that join the centre of the pallet to its frame, forming an enlightened structure.

[0013] On the top and bottom surfaces are provided grooves with metal strips inside meant to secure the coil to the pallet.

[0014] In addition, there is a recess on the corners of the top surface, which is aligned with the edge of the top of the reinforcement I-bar in order to avoid damaging the pallet when it is handled by chains or slings, as these chains are passed through said recess.

[0015] On its inside the pallet has a number of orifices through which pass the reinforcement bars, which are attached to the pallet by rivets, welding or any other conventional means.

[0016] Once formed, the bottom surface of the pallet is shorter than the top one at the ends of the bars so that the bar withstands the loads transmitted by the chain when the pallet is suspended by chains or slings.

[0017] The panel can be constructed with two or three internal bars. Always present are the end bars, as these are not only for reinforcement but are also used for passing the chains under them. If an additional bar is provided it is placed in the centre, providing functions of reinforcement and for transport and attachment, as each sling or chain will pass under this third bar.

DESCRIPTION OF THE DRAWINGS

[0018] The characteristics and advantages of the present invention will be better understood in view of the accompanying drawings, where for purposes of illustration only the main details of the invention are shown.

[0019] Figure 1 shows a perspective view of the top of the pallet with 3 reinforcement bars.

[0020] Figure 2 shows a perspective view of the bottom of the pallet with 3 reinforcement bars.

[0021] Figure 3 shows a top perspective view of the two halves that form the pallet with 3 bars.

[0022] Figure 4 shows a bottom perspective view of the two halves that form the pallet with 3 bars.

[0023] Figure 5 shows a perspective view of the top of the pallet with 2 reinforcement bars.

[0024] Figure 6 shows a perspective view of the bottom of the pallet with 2 reinforcement bars.

[0025] Figure 7 shows a top perspective view of the two halves that form the pallet with 2 bars.

[0026] Figure 8 shows a bottom perspective view of the two halves that form the pallet with 2 bars.

PREFERRED EMBODIMENT OF THE INVENTION

[0027] A description is now given of a preferred embodiment of the invention, made with reference to the above-described figures and providing a greater description of these figures.

[0028] Figures 1 and 2 shows the pallet formed by two identical halves (12), made from recycled polystyrene. Each half has a radial rib (3) with a raised core. When the two halves (12) are joined they form a panel having a top face (1) and a bottom face (2), between which faces are provided the end reinforcement bars (4) and a central reinforcement bar (5).

[0029] The top face is provided with a raised area (6) for centring the coils, and in the middle of each half (1) and (2) is a groove (8) meant to allow the passage of strips that secure the coils to the pallets.

[0030] The size of the bottom face (2) of the pallets is less than the total length of the reinforcement bars (4) and (5), so that chains or slings can pass under the reinforcement bars and it is these bars that support the loads transmitted by the chains. The positioning of the chains or slings at the four corners of the top face (1), there are four recesses (7) which are aligned with the ends of the crosspiece of the reinforcement I-bars (4).

[0031] The top face (1) is provided with a number of radial arms that allow enlightening the total weight of the structure. In addition, the size and shape of the bottom face is such that it allows stacking the pallet and coil assemblies so that the lower face rests on the corner piece of the coil beneath it.

[0032] The bars are attached to the structure by riveting, welding or any other means. Inside the panel there remains enough space to allow raising it by means of a forklift.

[0033] Figures 3 and 4 show the two halves (12) that form the panel before being joined. Each half (12) has a lug (10) and an orifice (11) on either side of the halves (12), such that when the two halves (12) are placed opposite each other they can be joined.

[0034] Figures 5 and 6 show the same panel, except that two bars are used instead of three. These bars also provide reinforcement and allow transport and raising by slings or chains.

[0035] The pallets are designed such that they can be transported without a load using specific hooks or clamps. In addition, they are provided with means (13)

which consist of two projections for a perfect fitting of the machinery used for strapping or overturning in the loading or unloading operations, attaching the coil to the pallet, etc.

[0036] Figures 7 and 8 show the same as figures 3 and 4, with each half (12) which form the panel being provided with a lug (10) and a recess (11) on either side of the part (12) such that when the two halves (12) are placed opposite each other they can be joined.

[0037] The essence of this invention is not affected by changes in the materials, shape, size and arrangement of its components, which are described in a non-limiting manner that should allow its reproduction by an expert in the field.

Claims

1. Reinforced pallet for steel coils, **characterised in that** it comprises two identical halves (12) that are joined at the middle and are made of recycled polystyrene, with each half being provided with radial ribs (3) with a raised core. When these halves are joined the pallet has a top face (1) and a bottom face (2), between which are provided reinforcement bars. The top face is provided with radial arms that allow to reduce the weight of the pallet, while the bottom face has a size and shape that allow to stack the pallet on the corner piece of the coil below it.
2. Reinforced pallet for steel coils, as claimed in claim 1, **characterised in that** each of the halves (12) which form the pallet are identical and are provided with a lug (10) and an orifice (11) on either sides of the halves, so that when these halves are placed opposite each other the lugs and orifices are also opposite each other and the halves may be joined.
3. Reinforced pallet for steel coils, as claimed in claim 1, **characterised in that** the top face (1) is provided with a raised area (6) for centring the coil.
4. Reinforced pallet for steel coils, as claimed in claim 1, **characterised in that** the lower and top face have a number of grooves (8) located in the middle of their sides in order to facilitate the passage of the strips that secure the coils to the pallets.
5. Reinforced pallet for steel coils, as claimed in claim 1, **characterised in that** the lower face (2) is smaller than the total length of the reinforcement bars, with the corners of the top face having recesses (7) aligned with the ends of the crossbar of each reinforcement I-bar, in order to facilitate raising the pallets with chains or slings.
6. Reinforced pallet for steel coils, as claimed in claim 1, **characterised in that** the pallet is provided with

two reinforcement bars (4) placed on its ends, which in addition facilitate raising the pallet with chains or slings, and which pallet may additionally be provided with a central reinforcement bar (5).

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7. Reinforced pallet for steel coils, as claimed in claim 1, **characterised in that** the pallet may be transported without a load by specific hooks or clamps, and is provided with means (13) that allow to attach machinery such as strappers, over-turners etc. used in the loading and unloading operations or when attaching the coil to the pallet, etc.

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FIG. 1

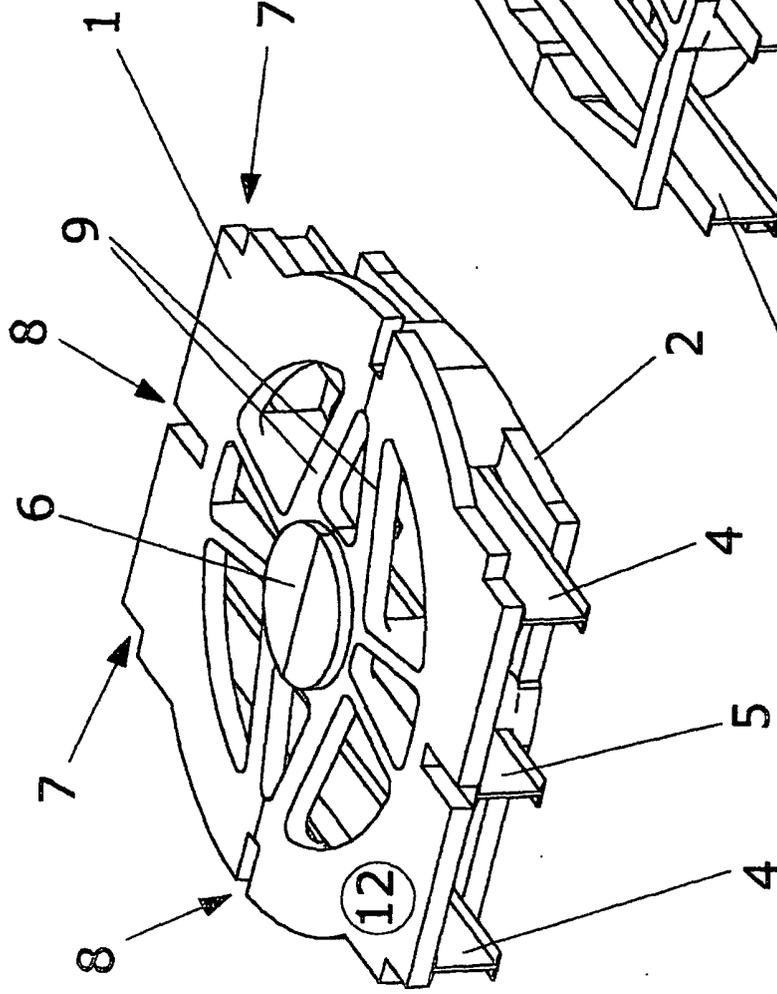
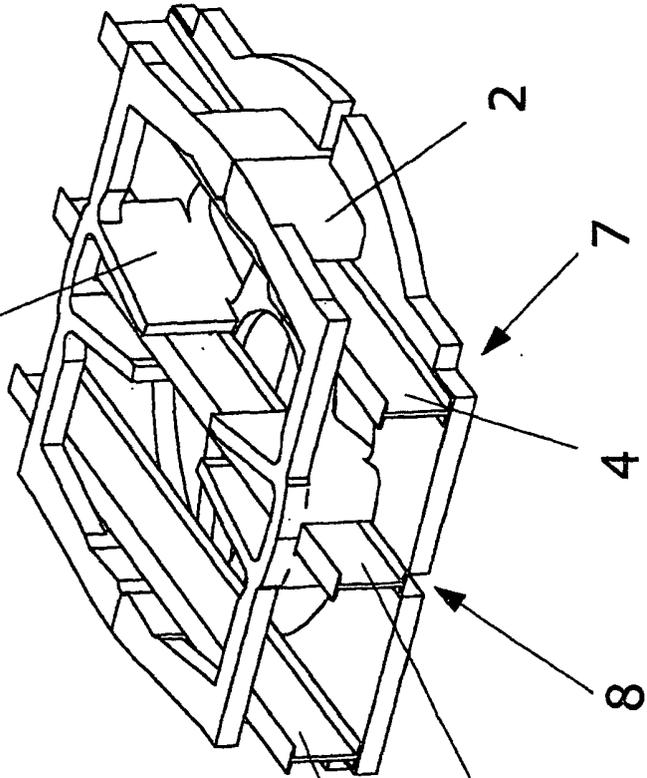


FIG. 2



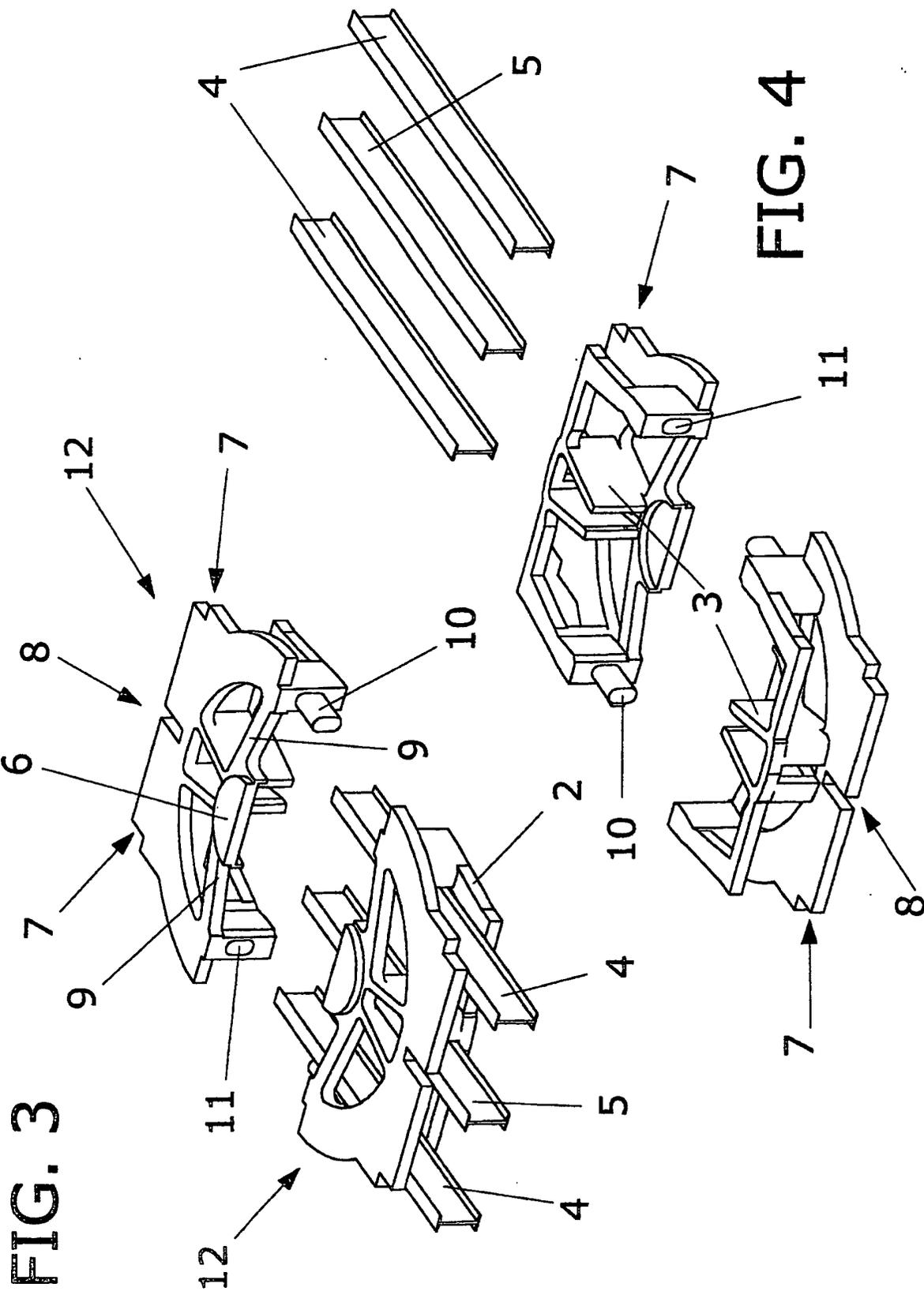


FIG. 5

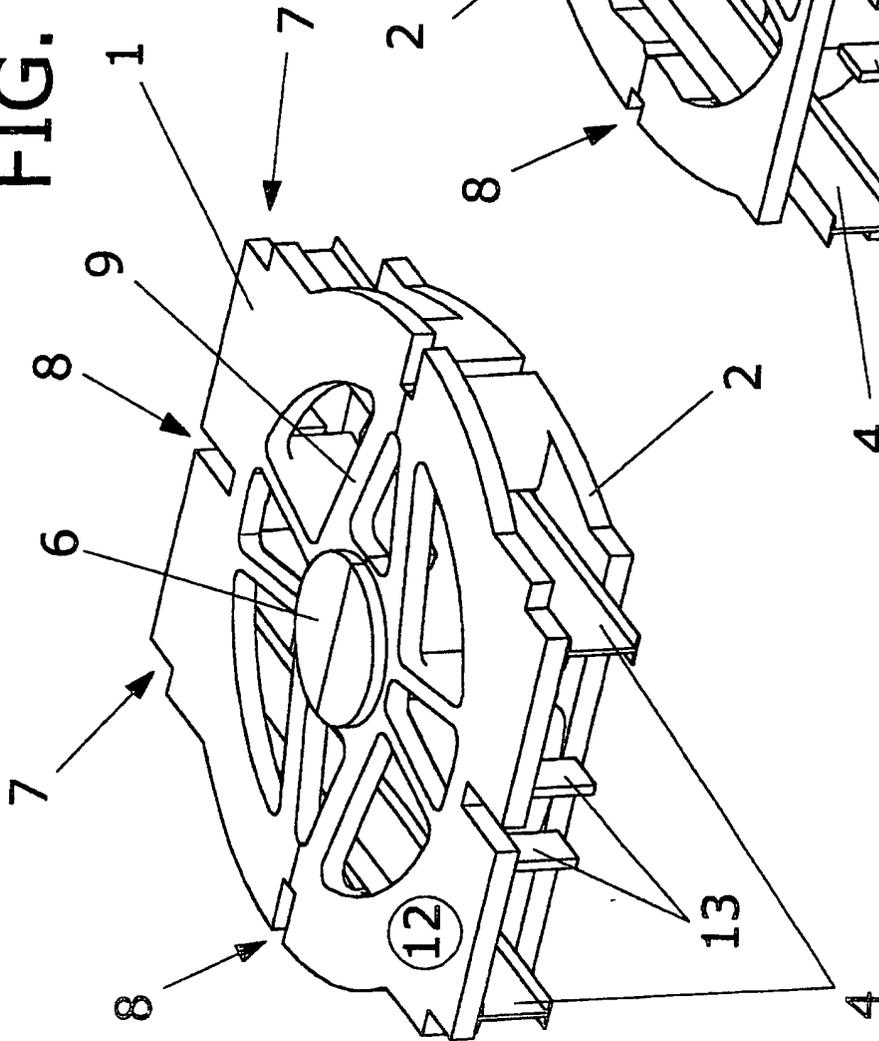
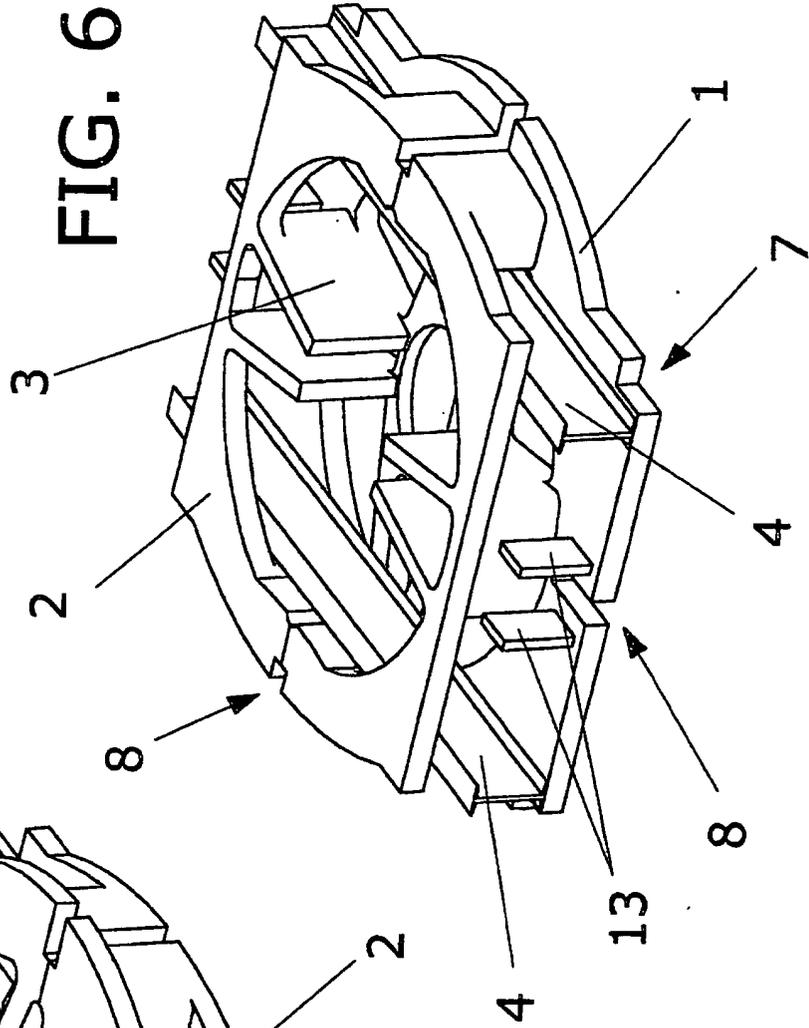
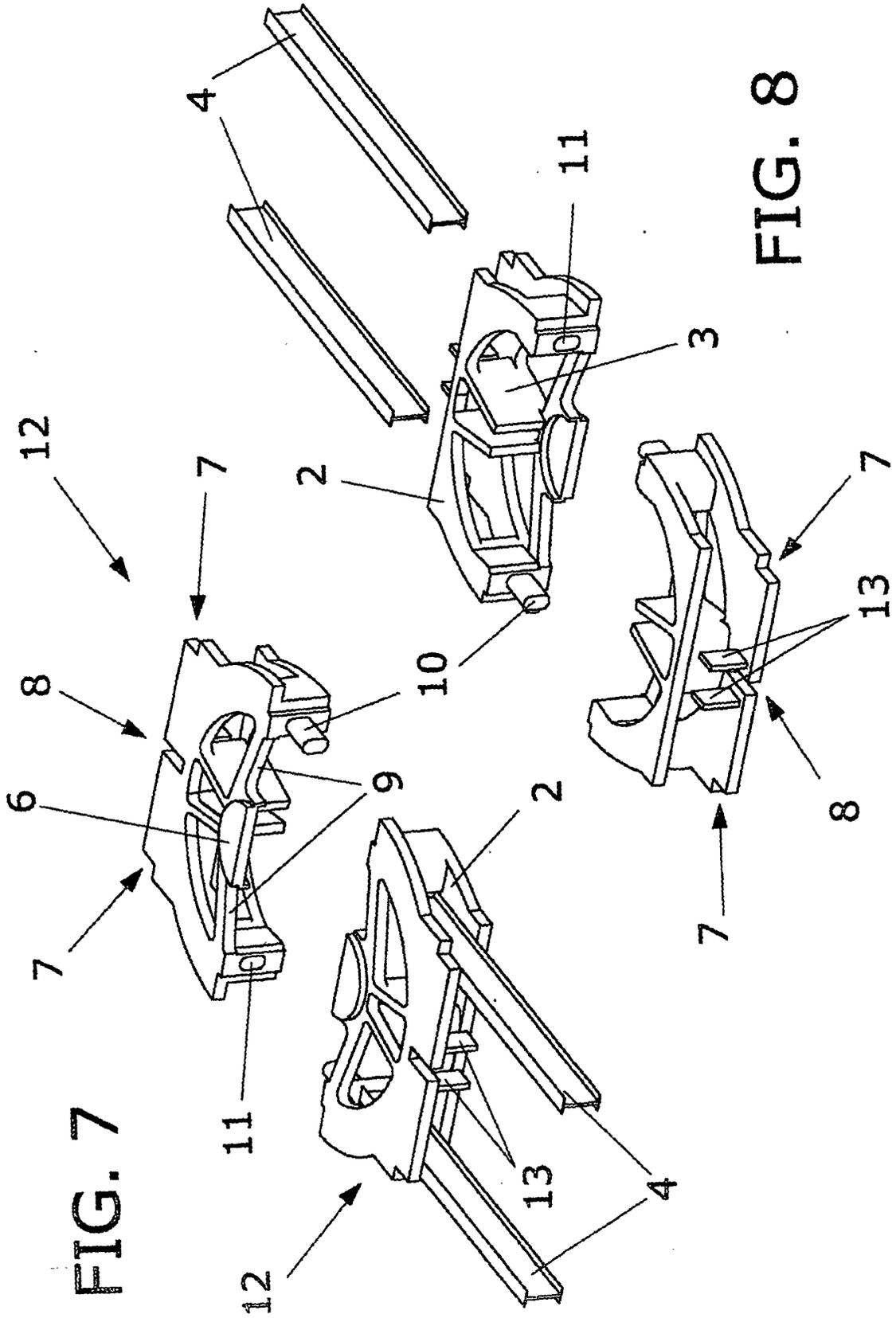


FIG. 6





INFORME DE BUSQUEDA INTERNACIONAL

Solicitud internacional N°

PCT/ES 01/00431

A. CLASIFICACION DE LA INVENCION		
CIP7 B65D19/32 B65H49/38 B65D85/04		
Según la Clasificación Internacional de Patentes (IPC) o la clasificación nacional y la IPC		
B. SECTORES COMPRENDIDOS POR LA BUSQUEDA		
Documentación mínima consultada (sistema de clasificación seguido de los símbolos de clasificación)		
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Otra documentación consultada además de la documentación mínima, en la medida en que tales documentos formen parte de los sectores comprendidos por la búsqueda		
Base de datos electrónica consultada durante la búsqueda internacional (nombre de la base de datos y, cuando sea aplicable, términos de búsqueda utilizados)		
EPO-Internal, WPI Data, PAJ		
C. DOCUMENTOS CONSIDERADOS PERTINENTES		
Categoría*	Identificación del documento, con indicación, cuando sea adecuado, de los pasajes pertinentes	N° de las reivindicaciones pertinentes
Y	ES 1 045 286 U (HIGUERAS GOMEZ JESUS) 16 Agosto 2000 (2000-08-16) todo documento	1-4
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<input checked="" type="checkbox"/>	En la continuación del Recuadro C se relacionan documentos adicionales.	<input checked="" type="checkbox"/> Véase el Anexo de la familia de patentes.
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		02.05.2002
Nombre y dirección postal de la Administración encargada de la búsqueda internacional	European Patent Office, P.O. 5818 Patentaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Funcionario autorizado
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C (Continuación). DOCUMENTOS CONSIDERADOS PERTINENTES		
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Formulario PCT/ISA/210 (continuación de la segunda hoja) (julio de 1992)

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 Información relativa a miembros de familias de patentes

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