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(54) Device to permit rocking and rotating of armchairs

(57) The device permits the rotation around the vertical axis V of the armchair and rocking movements in respect to the transversal axis that passes across the vertical axis.

The device facilitates the rocking movements of the armchair independently of the weight of the person sitting on the armchair.

The device is also characterized by its simple construction and for the low noise due to the collar bearing constituted by an anti friction disc made by suitable sound proof material.

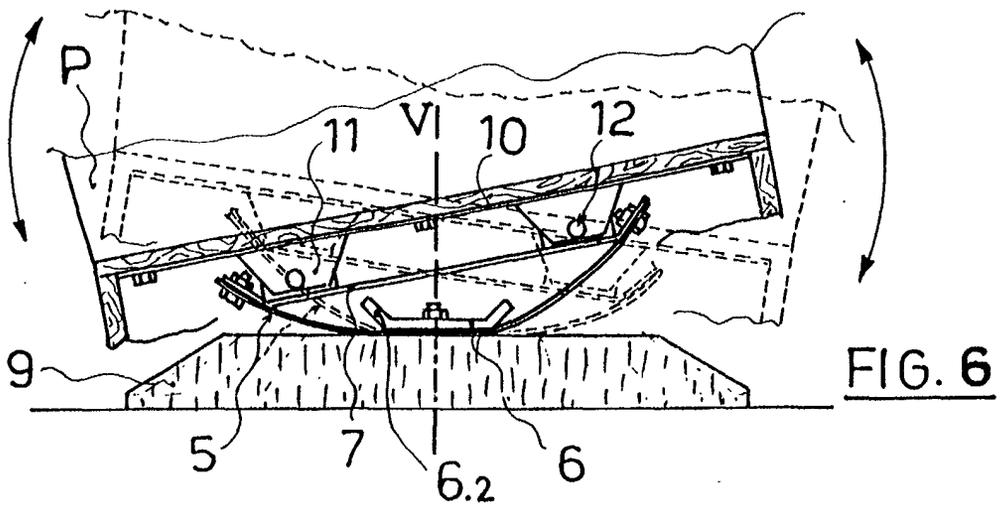


FIG. 6

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Description

[0001] The invention refers to a device to be applied to an armchair with a view to allowing its rotation around a vertical axis while at the same time, if necessary, rocking similar to the movements of a rocking chair. (rocker).

[0002] The state of the art comprises numerous devices which permit both rotation of an armchair around the axis normal to the seated plane and its rocking so as to function as a rocking chair.

[0003] Such devices have a significant importance in the production and sale of leather armchairs, or those in fabric or other suitable material, since easier to apply and to use. (rendering application and use easier).

[0004] To this end the above mentioned devices are generally furnished with a fifth wheel which permits rotation of the armchair around a vertical axis and with a mechanism placed between the fifth wheel and the same armchair which permits rocking around the axis normal to that of rotation.

[0005] On the other hand, a medium or large armchair, having a significant weight, requires a solid and robust/resistant device which permits rotation or rocking while at the same time, due to its simplicity, may be realised using material lighter in weight than steel-like materials and therefore requiring minimum maintenance.

[0006] Moreover, such devices must not significantly affect the cost of the same armchair.

[0007] Among the most known, functional, efficient and used devices included in the state of the art, we quote, as an example, the types of mechanisms which are adaptable to an armchair in order to obtain rocking and rotation, in which the device permitting rocking is solid to the upper plate of a fifth wheel and is constituted by two supporting elements preferably "V-shaped" of a virtual plane on which the base of the armchair is applied; such supports may solidly carry out angular rotations around the axis of a tubular element soldered to a frame which in turn is riveted to the upper plate of the fifth wheel.

[0008] The angular rocking movements of the above mentioned supporting elements are actioned by two helicoidal springs , below the fifth wheel, on a transversal axis fixed to the horizontal axis around which rock the said supporting elements.

[0009] The above mentioned devices, though being the most functional , present various drawbacks, such as:

- interpositioning between the plates of the fifth wheel, functioning as a suspension support, of a large diameter ball-bearing whose movement, during rotation of the device, causes noise disturbance due to the impossibility of carrying out an efficient lubrification;
- notable friction of the mechanism which permits rocking of the device during function;
- elastic device built in general of helicoidal springs requiring significant deformation, also having the function of limiting the range of rocking;
- the necessity, due to the above mentioned deformation of the elastic device, of a significant thrust to cause rocking of the armchair in line with an individual of medium-heavy weight and therefore scarcely functional for an individual of minimum weight;
- significant bulk of the device compared to the support base of a normal-sized armchair and the significant weight of the same device.

[0010] The aim of the present invention is to eliminate the above mentioned drawbacks.

[0011] At this end the device solves the problem of a greater adaptability of the armchair to the weight of the individual wanting to cause rocking without application of springs requiring significant elastic deformation.

[0012] The invention also solves the problem of reducing friction among the parts constituting the device and the noise of the fifth wheel during its rotation by means of the application of an anti-friction disc realised in teflon or other suitable material in place of the ball bearings.

[0013] Another problem solved is the possibility of building a device of reduced dimension.

[0014] The device according to the invention, in a preferred embodiment, is described in detail with reference to the designs of the tables attached, which illustrate respectively:

figura 1 - an axonometric view of the device;
figura 2 - an enlargement of the device;
figura 3 -- a lateral view of the device in orthogonal projection;
figura 4 - view from above of the plate acting as an interface between the armchair and the device; figure 5 - the armchair connected to the device, illustrated in greater size to make its function easier to view;
figure 6 - rocking movements of the device while it functions as a rocking chair;
figure 7- the application of an helical spring to the bracket fastening the flat bars 5 in order to facilitate the rocking of the chair in the case the user is a light weight person such as a child.

[0015] The device, rocking and rotating on a filth wheel, is applied to a base 9 of the armchair realised in wood or in other suitable materials (figures 3, 5, 6).

[0016] The device, as illustrated in figure 2, is made up of a fixed lower plate 1 upon which is positioned an anti-friction disc 2, preferably circular in shape, and upon this a second rotating upper plate 3 is placed acting as a fifth wheel which rotates around a rotation pin 4 which, with the interposition of a washer 4.2 at the extremity, is blocked (into position) by a split-pin 4.1 or nut if threaded.

[0017] The fixed lower plate 1 of the fifth wheel is laterally shaped so as to form two "C-shaped" profiles 1.4, furnished with holes 1.2 in order to permit insertion of bolts 1.3 so as to fix the armchair P to the base 9 (figure 3).

[0018] The upper rotating plate 3 is also laterally shaped so as to form two counter-positioned "C-shaped" borders 3.3 upon each of which a springy curved flat bar 5 , like that of the base of a rocking chair, is mounted by means of screw bolts 5.3 which, at the same time connects a metallic bracket 6 'V' shaped with the aim of limiting the range of the rocking movements with its extremely 6.2. (figure 5).

[0019] The springy curved flat bars 5 are then fixed to a plate 7 furnished with two bended borders 7.1 and holes 7.2 for their blocking by means of screws 5.4.

[0020] Transversal metal bars 8 are fixed to the plate 7 by means of welds 13, and the metallic bottom 10 is connected to said metal bars by means of bolts 12 screwed into particular threaded holes 8.1. The connection between the metallic bottom 10 of the armchair and the transversal metal bars 8 is achieved by means four wings 11 welded to the metal bottom 10 and bolts 12: i. e. the metal bottom 10 screwed to the wood base base of the armchair by bolts 10.1.

[0021] In order to facilitate the rocking movements of the device, caused by individuals of light weight, the device may be furnished with elastic attachments 6.3 positioned in corrispondence to the bolts 5.3 that block the brackets 6 (figure 7).

[0022] As may be noted in figure 4, the metallic bottom 10 of the armchair may rotate in respect to the support base 9 of the same armchair.

Claims

1. "Device to obtain rocking and rotating armchairs", including a fifth wheel and rocking means to be applied on the outer surface of the bottom of the armchairs, **characterized in that** the fifth wheel includes a collar bearing constituted by an antifriction disc to be positioned between the fixed lower plate (1) and the rotating upper plate (3) of the fifth wheel, the anti-friction disc being made of polythene, teflon or other suitable anti friction and sound-proof materials.

2. Device as claimed in claim 1) **characterized by** the fact that the rocking means consist of two steel springy curved flat bars (5) curved in such a way to permit rocking movements similar to those of rocking chairs, said flat bars being positioned on the borders (3.3) of the rotating upper plate (3) of the fifth wheel by means of screw bolt (5.3) and a metallic bracket (6), applied in corrispondence of the symmetry centre V of said flat bars (5), said flat bars (5) being connected with screw bolts (5.3) to the bended borders (7.1) of plate (7) or alternatively, with the same screw bolts (5.3), to the extremity of the two metal bars (7.3) that subsitutes the entire plate (7), orthogonal to longitudinal symmetry axis of the curved springy flat bars (5).

3. Device as claimed in the previous claims, **characterized by** metallic brackets (6) having the function to limit the rocking movements of the springy curved flat bars (5), the brackets (6) being 'V' shaped and being fastened at the same time, to the curved flat bars (5) on to the border (3.3) of the rotating upper plate (3),

4. Device as claimed in previous claims, **characterized by** the presence of two metal bars (8) to connect the device to the outer lower surface of the metallic bottom (10), of the armchair, the two metal bars (8) being connected by means of welds (13) to plate (7) or alternatively to the bars (7.3) only

5. Device as claimed in previous claims **characterized by** the fact that the border (1.4) and (3.3) of the two plates (1) and (3) forming the fifth wheel, are 'C' shaped to allow respectively the fastening on the base (9) of the armchair and at the same time to block the springy curved flat bars (5) which permit the rocking movements of the armchair

6. Device as claimed in previous claims **characterized by** the fact that the rocking movements of the armchair causes elastic deformation of the springy curved flat bars (5), said deformation being limited by the inclined borders (6.2) of the fastening metallic bracket against the plate (7) supporting the bars (8) or alternatively against the bars (7.3) that substitutes the plate (7) applied to the outer surface of the bottom of the armchair.

7. Device as claimed in previous claims **characterized by** further application of springs (6.3) acting as elastic supports concentrical to the screw bolt (5.3) which fasten the bracket (6) to the springy curved flat bars (5), to facilitate the movements of the armchair in the case of use of the armchair by a light weight person or child

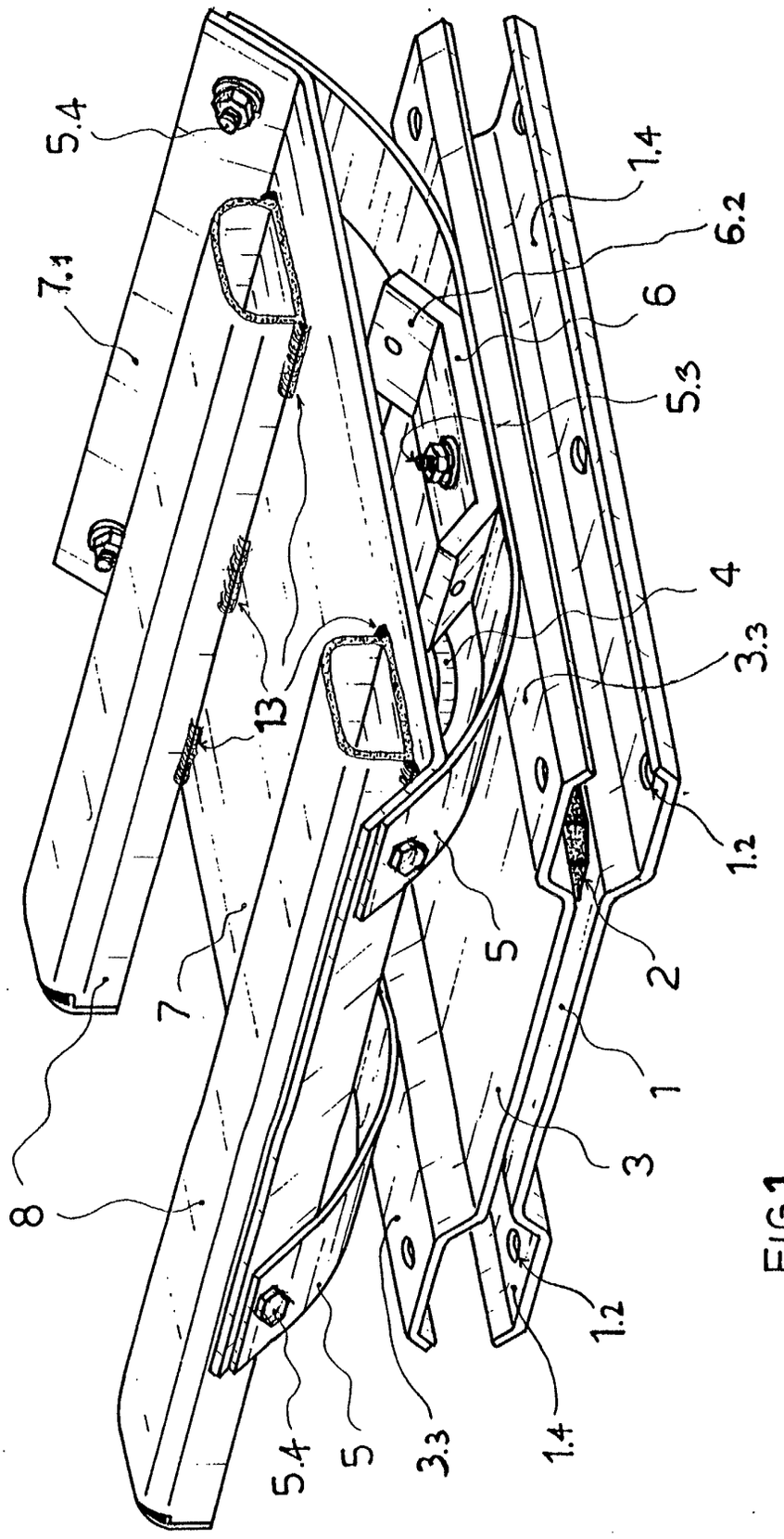


FIG.1

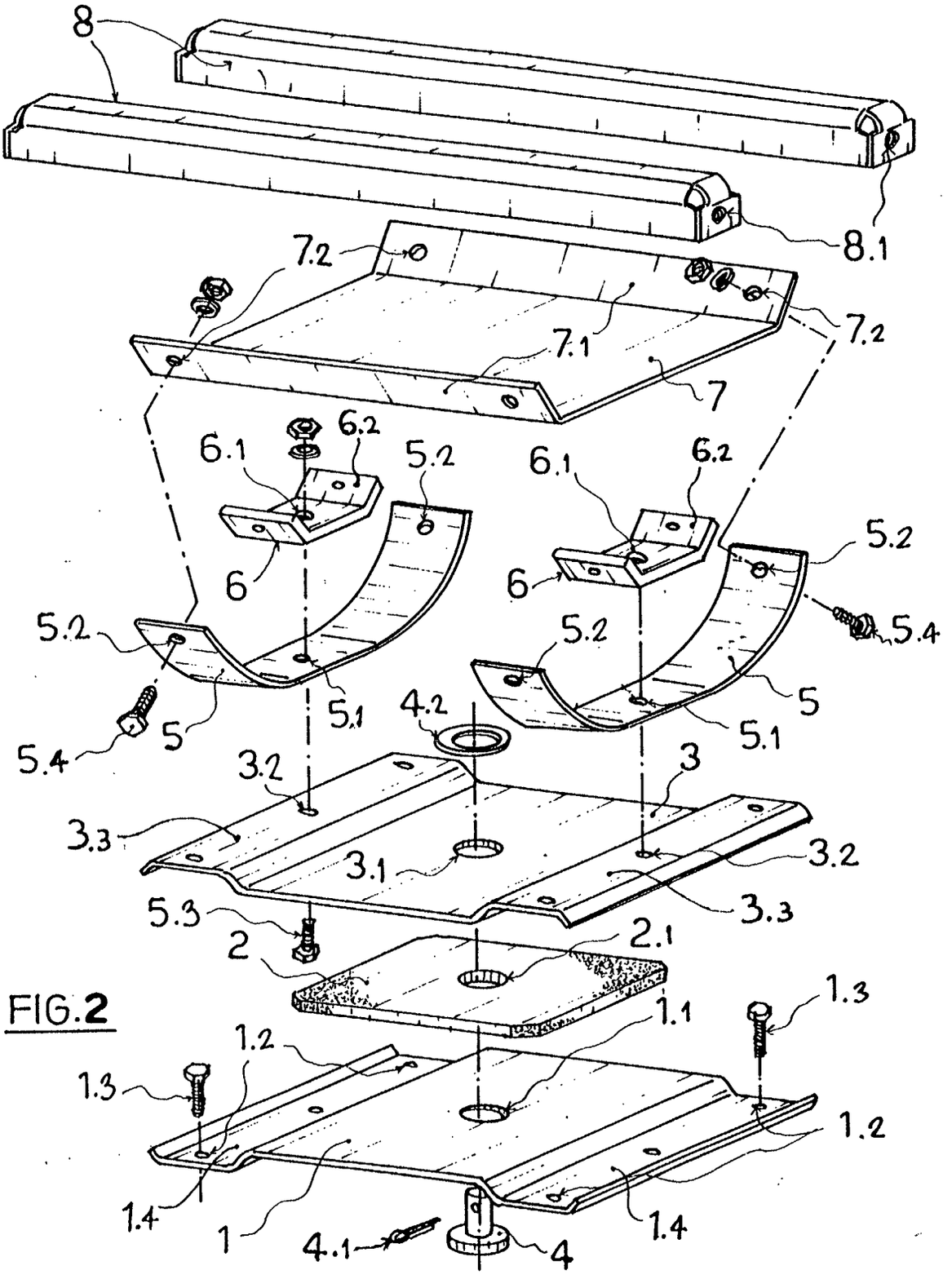


FIG.2

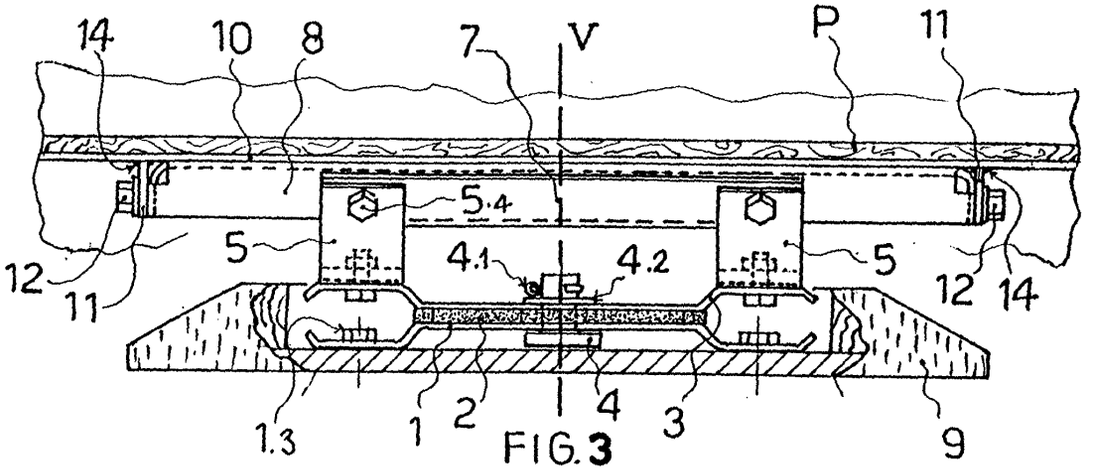

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FIG. 3

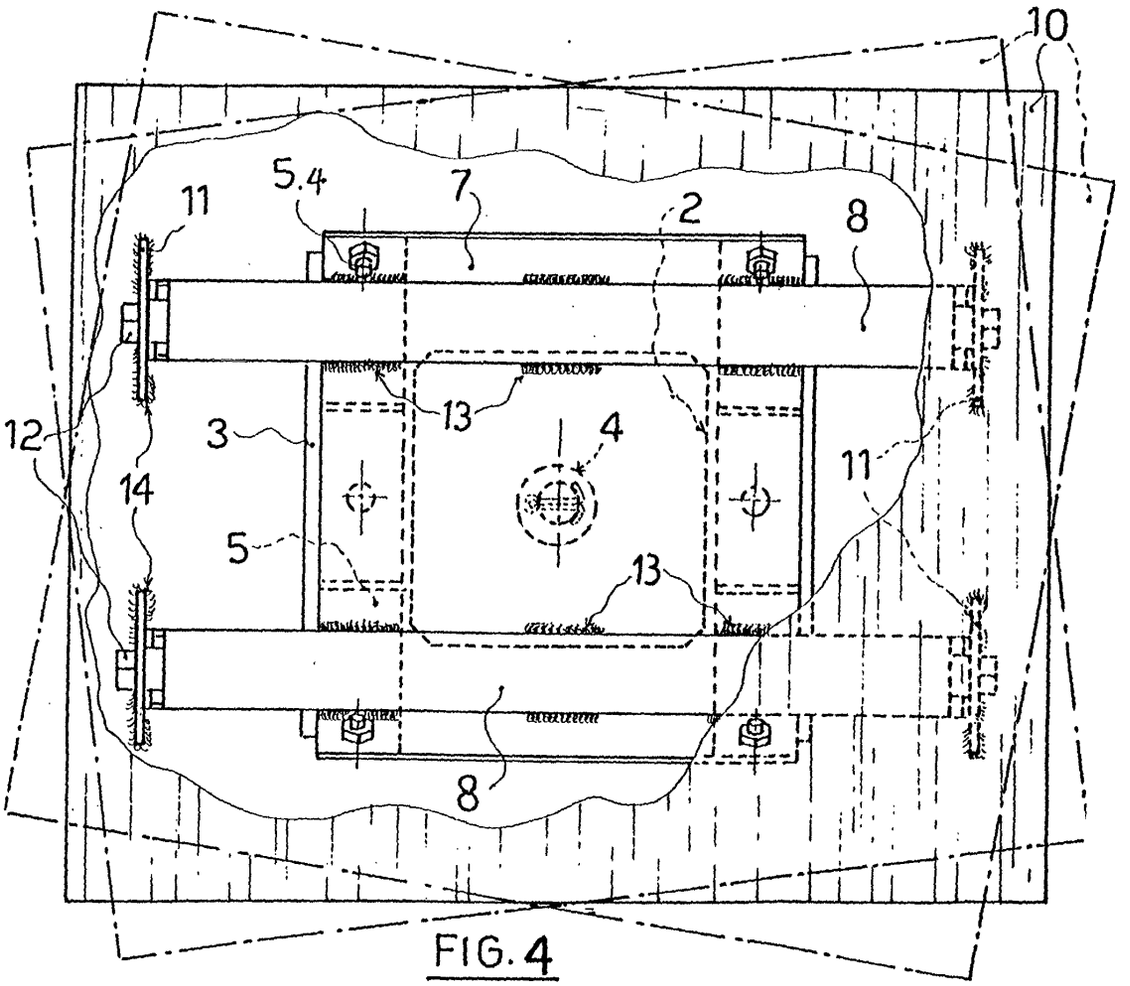

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FIG. 4

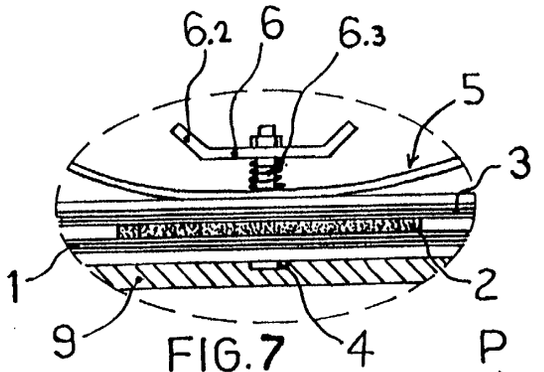


FIG.7

FIG.5

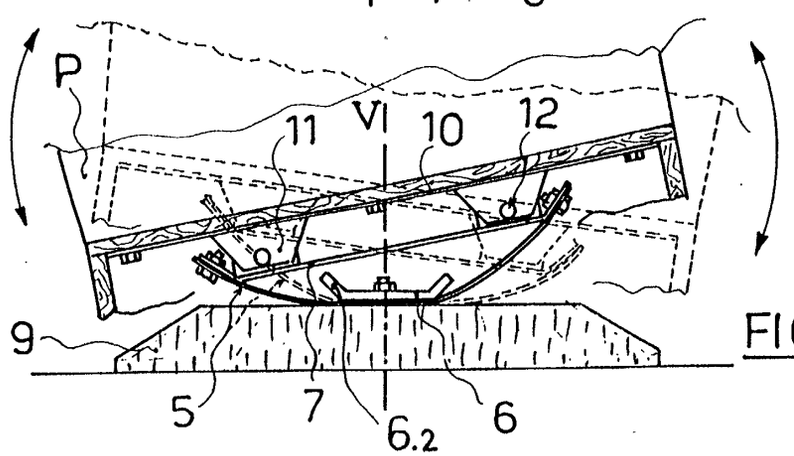


FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 02 42 5292

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 3 840 205 A (FAULL J) 8 October 1974 (1974-10-08) * column 2, line 13-15; figures 2,3 *	1	A47C3/02
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A	US 3 829 157 A (LANGE C) 13 August 1974 (1974-08-13) * abstract; figure 2 *		

A	US 4 736 984 A (TACKER BILL D) 12 April 1988 (1988-04-12) * figure 2 *		

A	US 3 938 857 A (CRAIG CHARLES H) 17 February 1976 (1976-02-17) * figures 1,5 *		

			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A47C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	31 October 2002	van Bilderbeek, H.

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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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31-10-2002

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