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(54) Display table

(57) The invention relates to a display table for presenting objects like cars and boats. The display table comprises a first, fixed frame (1), a second, adjustable frame(2) onto which an object to be presented may be placed and a system of hydraulic cylinders (5,6a,6b,7) for adjusting the position of the second frame (2) with respect to the first frame (1).

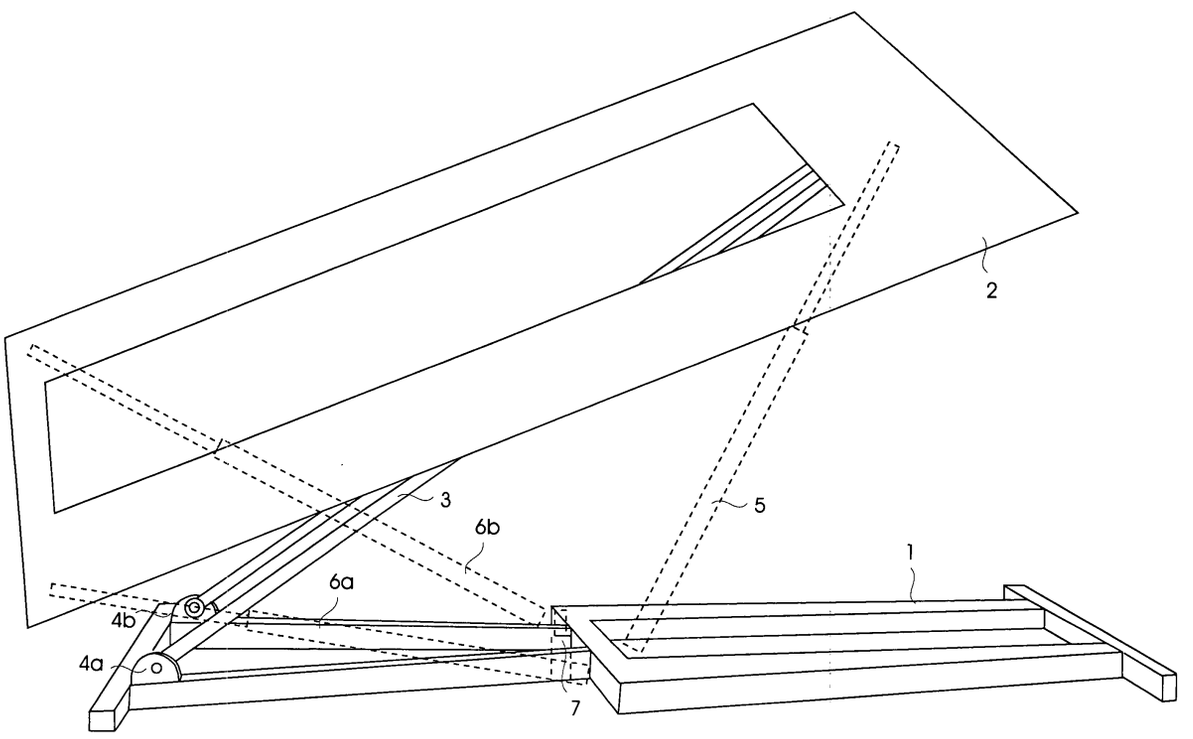

Fig. 1

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Description

[0001] The invention relates to a display table for presenting objects like cars and boats, comprising a first, fixedly mounted frame, a second, adjustable frame onto which an object to be presented may be placed and adjusting means for adjusting a position of the second frame with respect to the first frame.

[0002] Display tables of this type are known. These known display tables are normally brought into a previously determined position, after which the object to be presented is placed onto it. When the object to be presented is a car, a position is normally chosen for which car may be driven independently onto the display table, in order to save costs. For other objects, a hoisting device must normally be used for placing the object onto the display table.

[0003] The display table according to the invention makes it possible to present objects in almost every position and is characterised in that the adjusting means are arranged for adjusting the second frame after an object to be presented has been placed onto it. More precisely, the second frame can be brought into a lowest position, then the object can placed onto it and subsequently the object can be brought into the desired position.

[0004] A favourable embodiment of the inventive display table with which the objects may be brought in practically every position practically without any effort is characterised in that the adjusting means comprise a system of actuators for translating the second frame in a vertical direction and for rotating the second frame round a longitudinal axis and a transverse axis.

[0005] A further favourable embodiment of the inventive display table is characterised in that the system of actuators comprises at least three hydraulic cylinders, with which all-possible positions within given limit values may be realised.

[0006] A favourable embodiment that makes it possible to lower the adjustable frame to a very low height is characterised in that the system of actuators comprises four hydraulic cylinders. In this embodiment, the actual adjusting means consist of three relatively long cylinders, while a relatively very short cylinder is arranged for initially lifting up the second frame, to such a height that the three relatively long cylinders are no longer in a substantially horizontal position and can exert a sufficiently large force in a vertical direction.

[0007] A favourable embodiment according to a further aspect of the invention is characterised in that the display table is provided with an at least substantially A-shaped between-frame, placed between the first and the second frame, provided with a first leg, a second leg and a top. The between-frame forms a stable mechanical connection between the first and the second frame and increases in this way the lateral stability of the display table.

[0008] A very favourable embodiment according to a further aspect of the invention, for which it remains possible to realise all possible positions within given limit values, notwithstanding the use of the between-frame, is characterised in that the first frame and the second frame comprise at least substantially corresponding first side edges and opposite second side edges, that ends of the first leg and the second leg are each hingedly connected near the first side of the first frame and that the top is connected near the second side edge of the second frame with a universal joint or a ball joint.

[0009] A further favourable embodiment, for which the actuators may be situated completely inside the first frame, is characterised in that a first actuator is connected between an at least substantially central point of the first frame and the top of the between-frame and that a second and a thirds actuator are connected between two points, situated on the first frame on both sides of the central point and two points near the first side edge of the second frame. Preferably, a fourth actuator is mounted on an at least substantially central point of the first frame, in such a manner that it may move the topside of the between-frame in a substantially vertical direction. Once the topside of the between-frame has been moved sufficiently into a vertical direction, the first actuator can move this top further into a vertical direction. Now the angle between the second and third actuator on one side and the second frame on the other side has increased, which means that also the second and third actuator may be switched on. When the second frame has to be lowered again, things happen in the reverse order, with the fourth actuator taking care of the very last part.

[0010] A favourable embodiment according to a further aspect of the invention, with which the lateral stability may be further increased, is characterised in that the display table is provided with stabilisation means, mounted between the second frame and the between-frame.

[0011] A further favourable embodiment of the invention is characterised in that the actuators are provided with mechanical stop means, which may keep the display table in a simple way in a desired position once it has been brought there, so that the supply means for the actuators may be switched off or even removed.

[0012] The invention will now be further explained with a reference to the following figures, in which:

- Fig. 1 schematically shows a possible embodiment of the display table in perspective;
- Fig. 2 schematically shows a possible embodiment of the first frame in top view;
- Fig. 3 schematically shows a possible embodiment of the between-frame in top view;
- Fig. 4 schematically shows a possible embodiment of the second frame in bottom view;
- Fig. 5 schematically shows a possible embodiment of the stabilisation means in top view.

[0013] Fig. 1 schematically shows a possible embodiment of the display table in perspective, consisting of a first frame 1 which is for example welded together of profiles or box girders and which operationally lies on the floor of for example a showroom, and a second frame 2 onto which an object to be displayed, like a car or a boat, may be mounted with suitable mounting means, well known in the art. Frame 2 consists of a support structure to which a steel plate is attached, in which a central opening is made in order to save weight and to provide an opportunity for inspecting a bottom side of a car or boat, mounted onto the display table. Between first frame 1 and second frame 2, an A-shaped between-frame 3 is placed, of which the legs are mounted to frame 1 with joints 4a,4b and of which a top is mounted to frame 2 with a universal joint or a ball joint, not visible in the figure. Between the top and frame 1 a first hydraulic cylinder 5 is placed, drawn with dotted lines, and between two corners of frame 2 and frame 1 second and third hydraulic cylinders 6a,6b are placed, also drawn with dotted lines. With frame 2 in the lowest position, between-frame 3 lies onto frame 1. The support structure of frame 2 has been placed in such a way that frame 2 does add practically no height and frame 1 is constructed in such a way that in this position hydraulic cylinders 5,6a,6b completely fall inside the free spaces of frame 1 and between-frame 3, which means that the height of the display table in this position will amount to about 25 cm. As in this lowest position the hydraulic cylinders 5,6a,6b can exert substantially no force in a vertical direction, a fourth hydraulic cylinder 7 is placed in the centre of frame 1, a force of which applies to a cross connection of between-frame 3, not shown in the figure, and which is activated in order to lift the display table out of its lowest position. Subsequently, frame 2 may be brought into practically every position by steering hydraulic cylinders 5,6a,6b in combination, so that when hydraulic cylinders 6a,6b are steered at the same time and in combination with hydraulic cylinders 5, frame 2 will be translated in a vertical direction, while hydraulic cylinders 6a,6b with an opposite steering will rotate frame 2 round the longitudinal axis. It must also be possible for hydraulic cylinders 6a,6b to move in a horizontal direction. For that reason, they are connected to frame 1 and frame 2 with the aid of ball joints. Hydraulic cylinder 5 only needs to move in a vertical direction and may therefore be connected to frame 1 and between-frame 3 with simple joints. When frame 2 is to be lowered, first hydraulic cylinders 6a,6b are brought into a horizontal position, subsequently the top of between-frame 3 is lowered with the aid of hydraulic cylinder 5, until the cross connection of between-frame 3 contacts hydraulic cylinder 7. With the aid of this cylinder, frame 2 is subsequently brought in the lowest position.

[0014] Fig. 2 schematically shows a possible embodiment of the first frame 1 in top view, together with hydraulic cylinders 5,6a,6b, hydraulic cylinder 7 and halves of the joints 4a,4b. Also visible are the ball joints connected to hydraulic cylinders 6a,6b and the simple joint connected to hydraulic cylinder 5.

[0015] Fig. 3 schematically shows a possible embodiment of the A-shaped between-frame 3 in top view, with halves of the joints 4a,4b, the cross connection onto which the force hydraulic cylinder 7 applies, hydraulic cylinder 5, with a simple joint connected to between-frame 3 and a universal joint 8, which may rotate in a brace 9 which is connected to between-frame 3 and of which the two free axles, shown in the figure, may rotate freely in two plates, not shown in the figure, which are connected to a bottom side of frame 2.

[0016] Fig. 4 schematically shows a possible embodiment of the second frame 2 in bottom view, with hydraulic cylinders 6a,6b which are connected by ball joints to two corners of frame 2 and universal joint 8 which may rotate in two plates 10a,10b which are connected to frame 2. Plunger rods of hydraulic cylinders 6a,6b and of hydraulic cylinder 5 are provided with holes 11a, 11b,.., in which pins may be placed during use, so that in case the hydraulic pressure would drop, frame 2 would remain in substantially the same position.

[0017] Fig. 5 schematically shows a possible embodiment of the stabilisation means in top view, which must provide the display table an increased stiffness in a lateral direction. For that purpose a guide rod 12 mounted in a central part of frame 2, on one side connected to frame 2 and on the other side connected to a crossbeam 13. Along guide rod 12 an object 14 may slide and rotate, which is connected to between-frame 3 with the aid of two stabilisation rods 15a,15b. Stabilisation rods 15a, 15b are connected with joints to object 14 and to between-frame 3, which means that object 14 may slide and rotate freely when frame 2 is moved with respect to frame 1 and that it will not hinder the movement of frame 2. When a lateral force is applied to frame 2, a tensile force and a compressive force in stabilisation rods 15a, 15b will resist this lateral force.

Claims

1. Display table for presenting objects like cars and boats, comprising a first, fixedly mounted frame, a second, adjustable frame onto which an object to be presented may be placed and adjusting means for adjusting a position of the second frame with respect to the first frame, **characterised in that** the adjusting means are arranged for adjusting the second frame after an object to be presented has been placed onto it.

2. Display table according to claim 1, **characterised in that** the adjusting means comprise a system of actuators for translating the second frame in a vertical direction and for rotating the second frame round a longitudinal axis and a transverse axis.

3. Display table according to claim 2, **characterised in that** the system of actuators comprises at least three hydraulic cylinders.

4. Display table according to claim 3, **characterised in that** the system of actuators comprises four hydraulic cylinders.

5. Display table according to claim 2, 3 or 4, **characterised in that** the display table is provided with an at least substantially A-shaped between-frame, placed between the first and the second frame, provided with a first leg, a second leg and a top.

6. Display table according to claim 5, **characterised in that** the first frame and the second frame comprise at least substantially corresponding first side edges and opposite second side edges, that ends of the first leg and the second leg are each hingedly connected near the first side of the first frame and that the top is connected near the second side edge of the second frame with a universal joint or a ball joint.

7. Display table according to claim 6, **characterised in that** a first actuator is connected between an at least substantially central point of the first frame and the top of the between-frame and that a second and a third actuator are connected between two points, situated on the first frame on both sides of the central point and two points near the first side edge of the second frame.

8. Display table according to claim 7, **characterised in that** a fourth actuator is mounted on an at least substantially central point of the first frame.

9. Display table according to claim 7 or 8, **characterised in that** the display table is provided with stabilisation means, mounted between the second frame and the between-frame.

10. Display table according to one of the claims 2 to 9, **characterised in that** the actuators are provided with mechanical stop means.

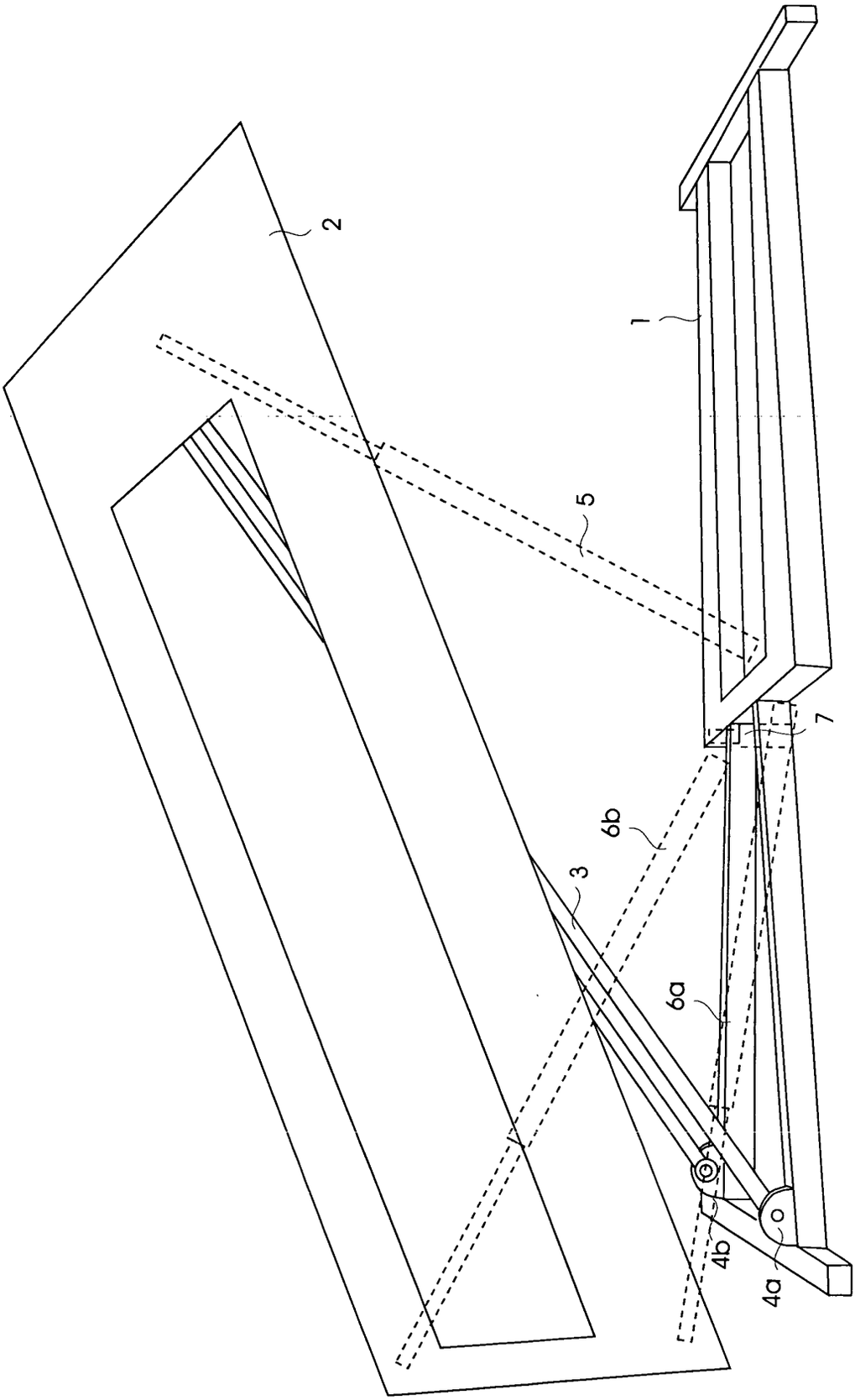

Fig. 1

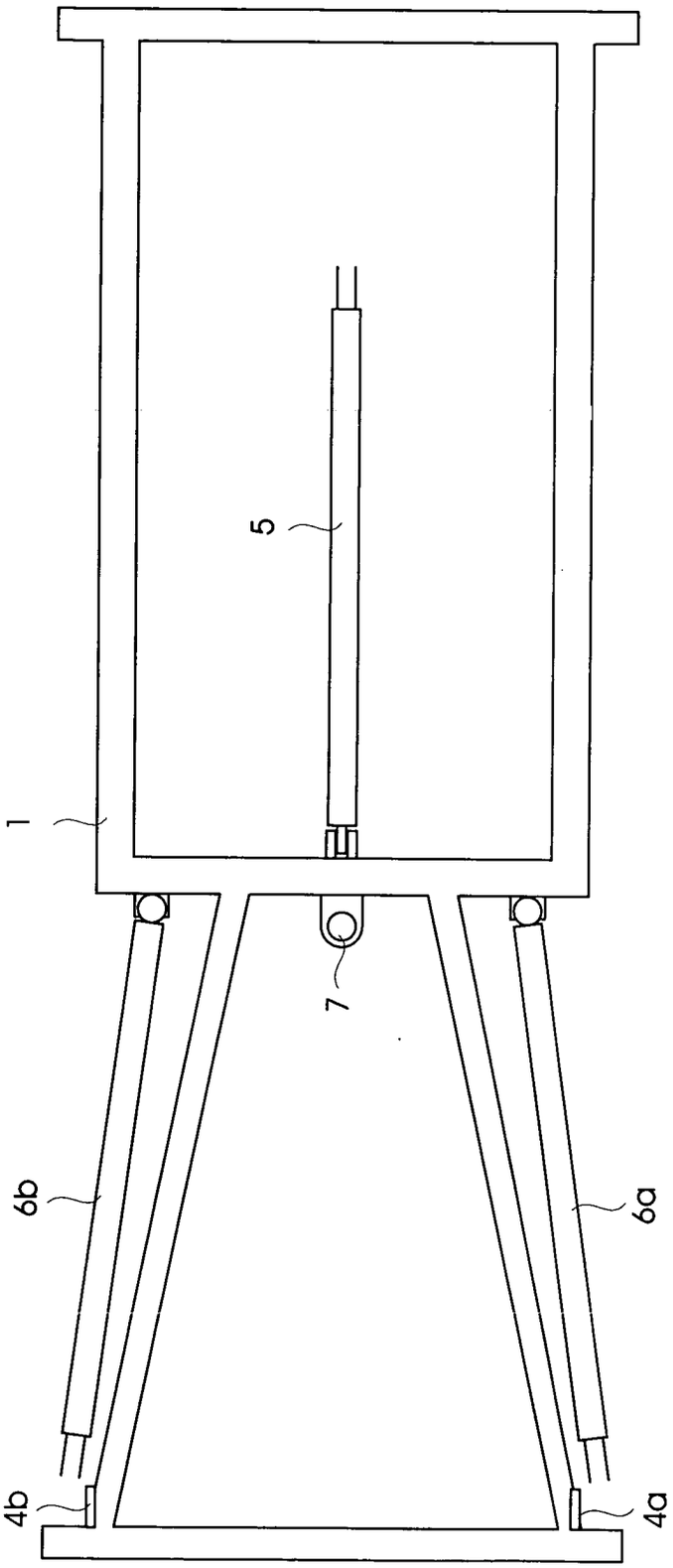

Fig. 2

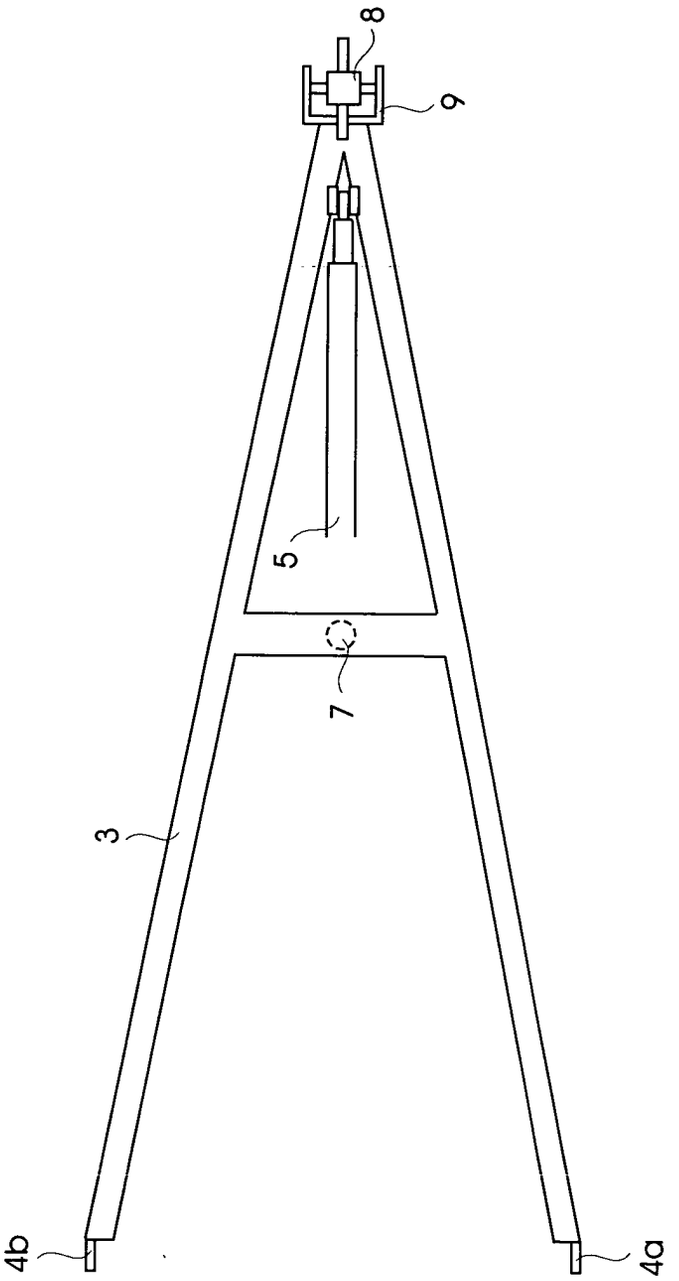

Fig. 3

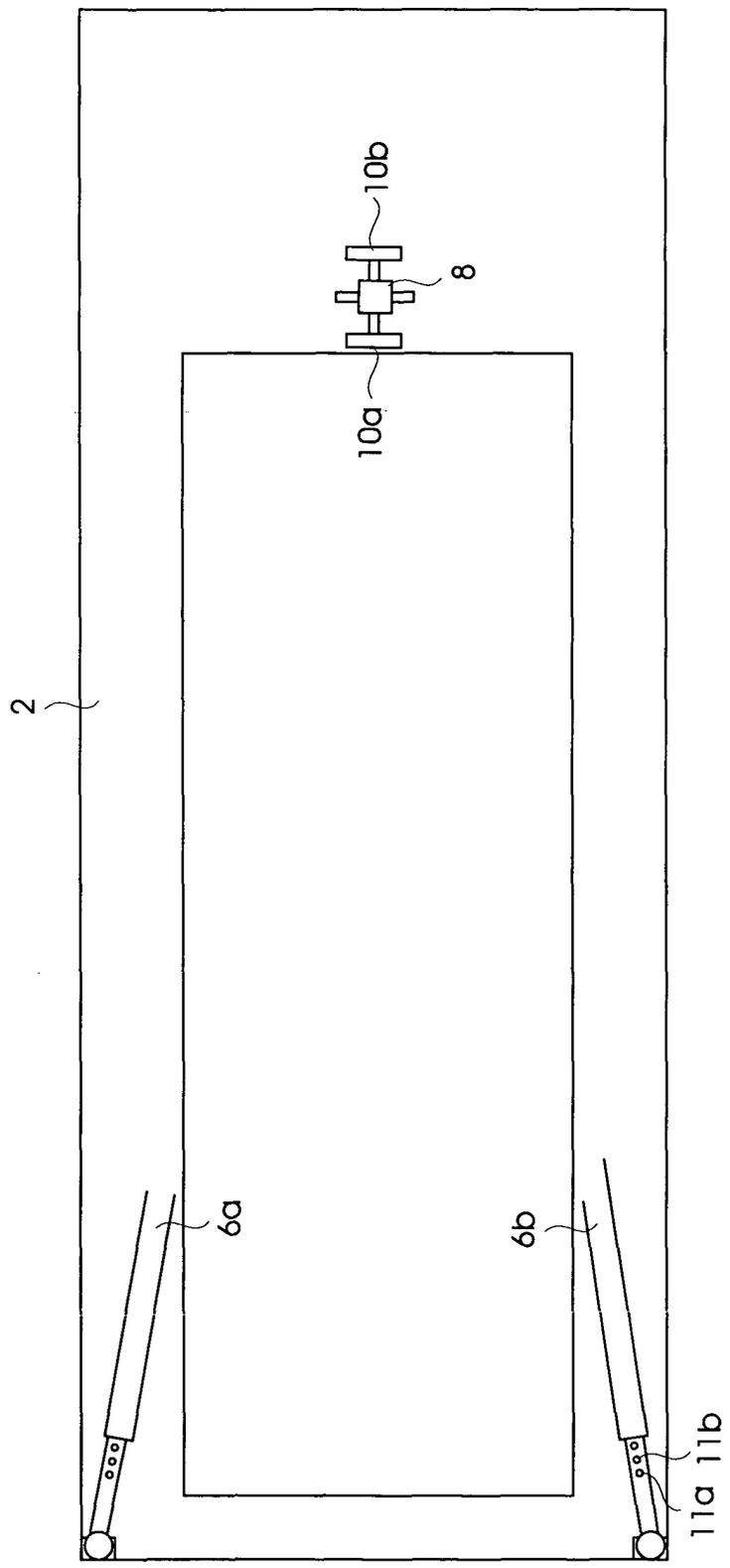

Fig. 4

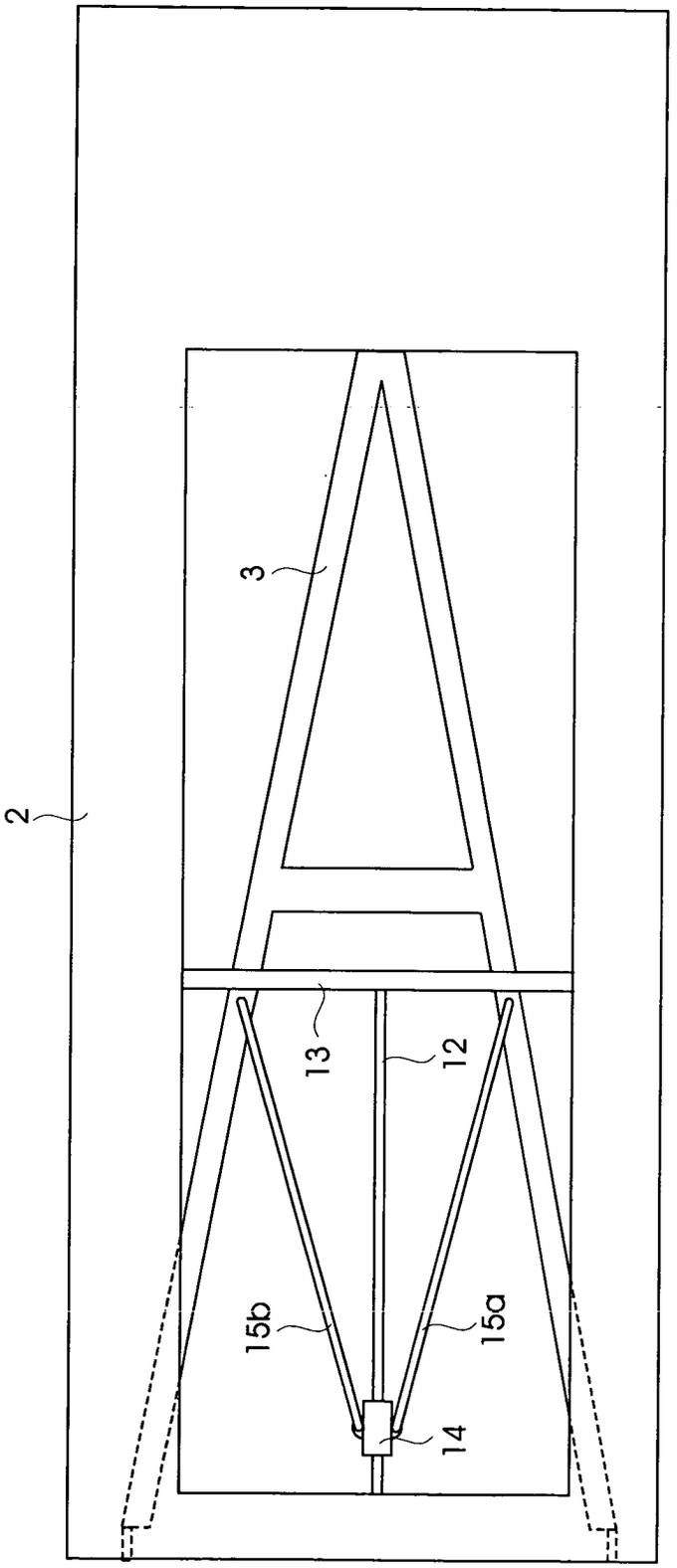

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 04 07 5055

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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)
X	CA 2 209 027 A (EVZELMAN MICHAEL ;TARANENKO ARSENY (CA)) 14 January 1999 (1999-01-14)	1	A47F7/00 A47F5/12 A47F5/16
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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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
THE HAGUE	19 May 2004	Pineau, A

CATEGORY OF CITED DOCUMENTS

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19-05-2004

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