



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
09.04.2008 Bulletin 2008/15

(51) Int Cl.:
A63G 27/00 (2006.01) A63G 27/02 (2006.01)
A63G 27/04 (2006.01) A63G 27/08 (2006.01)

(21) Application number: **07100464.2**

(22) Date of filing: **12.01.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

(71) Applicant: **Acha S.r.L.**
40137 Bologna (IT)

(72) Inventor: **Bonfiglioli, Giancarlo**
40137, Bologna (IT)

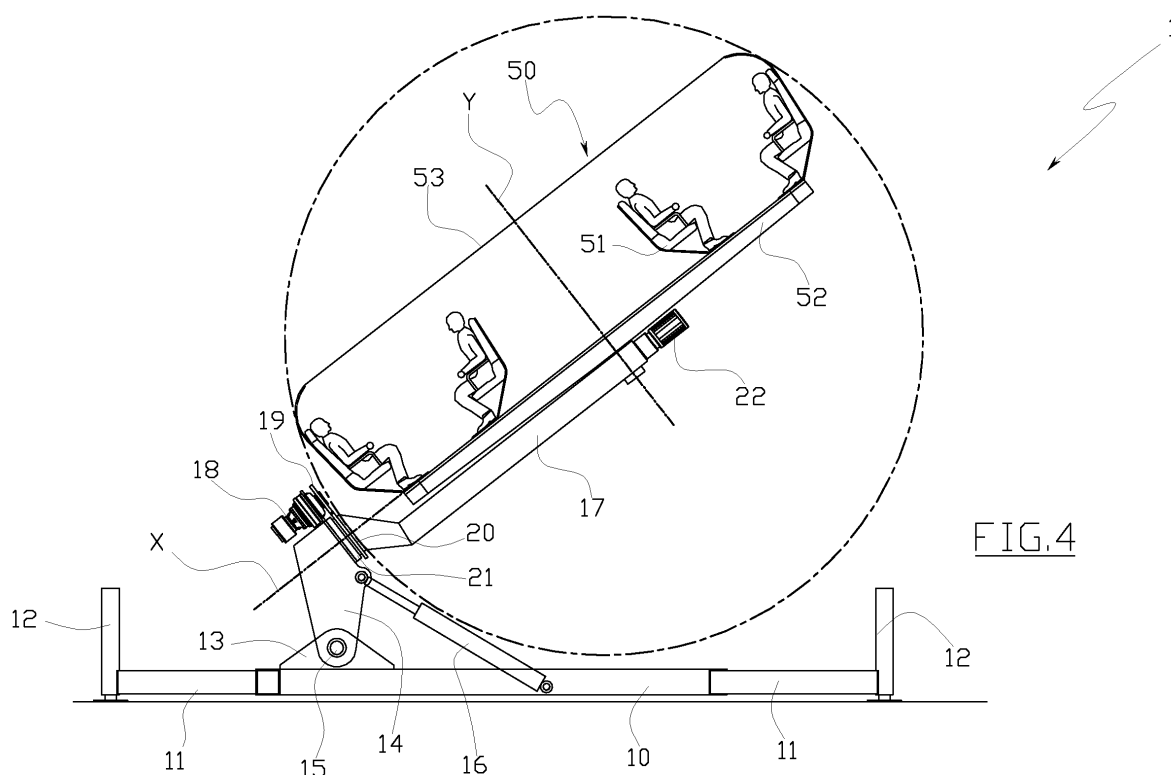
(74) Representative: **Corradini, Corrado et al**
Ing. C. Corradini & C. S.R.L.
Via Dante Alighieri 4
42100 Reggio Emilia (IT)

(30) Priority: **05.10.2006 IT RE20060115**

(54) **Equipment for funfair**

(57) An equipment (1) for a funfair comprises:
- a rigid body (5) provided with at least a place (51) for a passenger;
- a frame (10) for supporting the body (50), through
- means for supporting (14, 17, 52) which enable the body (50) to rotated with respect to a first rotation axis (X) and

a second rotation axis (Y) located perpendicular to one another and being solidly mobile in rotation with respect to a fixed third rotation axis (Z);
- means (16, 18, 22) for rotating the body (50) with respect to the first rotation axis (X), the second rotation axis (Y) and the third rotation axis (Z), independently of one another.



Description

[0001] The invention relates to equipment for a funfair.

[0002] More in particular, the invention relates to an equipment for a funfair which houses a plurality of passengers, solidly anchored internally of a moving environment.

[0003] As is known, this type of equipment allows passengers to follow unordered and unpredictable trajectories in space.

[0004] The passengers' enjoyment consists in being subjected to centrifugal forces and accelerations which vary continuously in direction and sort.

[0005] The aim of the invention is to make available an equipment for funfairs which realises the above unordered movements with rotations about various axes in order to perform movements on a continuous trajectory which varies irregularly and at random, and all with a simple and rational construction solution.

[0006] The aim is attained by an equipment for funfairs in which the structure housing the passengers is made to rotate with respect to a pair of rotation axes located perpendicular to one another and reciprocally mobile in rotation with respect to a fixed third axis, as described in appended claim 1.

[0007] The dependent claims delineate preferred and particularly advantageous embodiments of the equipment for a funfair of the invention.

[0008] Further characteristics and advantages of the invention will emerge from a reading of the following description, provided by way of non-limiting example, with the aid of the figures of the appended drawings, in which:

- figure 1 is a view from above of the equipment for funfairs according to the present invention;
- figure 2 is a view in direction A of figure 1, showing the inside of the body;
- figures 3, 4 and 5 are a lateral view of the equipment with the inside of the body in view;
- figure 6 is a lateral view of the equipment during transport thereof;
- figure 7 is a view in direction B of figure 6.

[0009] With reference to the figures of the drawings, 1 denotes in its entirety the equipment for funfairs of the present invention.

[0010] The equipment 1 comprises, in a general description, a rigid body 50 provided with places 51 for passengers and associated to a support frame by special means of supporting, of which a fuller description will be given herein below.

[0011] In the present invention, the body 50 is made to rotate about three rotation axes, denoted by X, Y and Z, of which the first two X and Y are perpendicular to one another and are solidly mobile with respect to the third axis Z, which is fixed.

[0012] The invention will now be described in greater detail.

[0013] The frame is constituted by a flat platform 10 provided with four retractable legs 11 located at the four corners, at the end of each of which legs 11 a foot 12 is fixed for resting on the ground, which foot 12 is vertically commanded by a jack.

[0014] Two parallel tabs 13 rise from the platform 11, on which tabs 13 a support element 14 is rotatably mounted with respect to the horizontally lying fixed axis Z.

[0015] In particular, an end of the support element 14 is hinged to the tabs 13 by means of a rotation pivot 15 located horizontally and coaxially to the axis Z (figures 3-5).

[0016] The rotation of the support element 14 is guaranteed by two identical cylinder-piston groups 16 pivoted at an end thereof to the platform 10 and at the other end thereof to the support element 14.

[0017] By activating the cylinder-piston groups 16, the support element 14 can oscillate about the pivot 15.

[0018] Naturally the arc of oscillation which the support element 14 can describe is comprised between two points corresponding to the minimum and maximum lengths that the cylinder-piston groups 16 can attain, which in the illustrated embodiment is about 90°.

[0019] At the opposite end of the support element 14 to the pivoted end thereof, a rotating arm 17 is fixed, with a fifth wheel 21 interposed which can rotate with respect to the axis X.

[0020] In the illustrated embodiment, the rotation of the arm 17 is performed by a motor 18 fixed on the support element 14 and also fixed to the shaft on which a pinion 19 is keyed, which pinion 19 meshes with a cogwheel 20 fashioned on the arm 17.

[0021] The arm 17 extends parallel to the rotation axis X forming an elbow in proximity of the fifth wheel 21.

[0022] In substance, by rotating the pinion 19, the arm 17 rotates about the axis X with respect to the support element 14 which remains still due to the presence of the fifth wheel 21.

[0023] A circular flat base 52 is fixed to the free end of the arm 17, with a further fifth wheel interposed, perimetrically of which base 52 a wall 53 is fixed in order to form the body 50 for the passengers.

[0024] In particular the base 52 lies on a parallel plane to the rotation axis X of the arm 17 and is destined to rotate about the axis Y, perpendicular to the axis X and thus perpendicular to the base 52.

[0025] In the illustrated embodiment, the base 52 is set in rotation by means of a pair of conical wheels, not visible in the figures, which are respectively keyed on the shaft of a motor 22 and on a shaft centrally departing from the base 52, and is fixed to the rotating element of the fifth wheel.

[0026] In the illustrated embodiment, the motor 22 is fixed to the free end of the arm 17.

[0027] In substance, by activating the motor 22, the base 52 and therefore the body 50 formed together with the base 52 rotate about the axis Y with respect to the arm 17 which remains still due to the presence of the fifth

wheel 22.

[0028] In particular, the rotations of the shafts of the motors 18 and 22 are controlled by a respective encoder, not illustrated, and are commanded, according to a determined program, by an electronic control system, which also manages the activation of the cylinder-piston group 16.

[0029] Alternatively, the random activation of the motors 18 and 22 and/or the cylinder-piston group 16 can be manually performed.

[0030] In the illustrated embodiment, the places 51, provided with belts for constraining the passenger in his or her place 51, are located side-by-side in two circular rows having the respective seats facing one another, as in figure 1.

[0031] Naturally, any other arrangement of the places can be realised.

[0032] To afford the passengers access to the places 51 and to leave the body 50 at the end of the cycle, two openings are afforded on the perimeter wall 53, respectively an entrance and exit, denoted by 54 for the entrance and 55 for the exit (figure 1).

[0033] Operatively, before the cycle begins, the body 50 is located in a position (see figure 3) in which the passengers can enter the body 50 through the entrance opening 53, for example by means of a removable set of steps.

[0034] Once the passengers have reached the places 51 and buckled the belts, the body 50 is made to rotate about the axes X, Y and Z, by activating the two motors 16 and 18 and the cylinder-piston group 16 independently of one another.

[0035] The base 52, and therefore the body 50, rotate with respect to all three axes X, Y and Z, the arm 17 rotates with respect to the axes X and Z, the support element rotates only with respect to the axis Z.

[0036] The rotations are managed by the electronic control system, in order to enable the body 50 to perform random rotations about the two perpendicular axes X and Y and about the fixed axis Z.

[0037] Naturally the rotations about the axes X and Y can be complete 360° rotations, while those about the axis Z are limited to an arc of circumference, as previously mentioned of about 90° in the illustrated embodiment.

[0038] Further, the rotation direction about the axes X, Y and Z can be varied during the cycle.

[0039] At the end of the cycle, the passengers reach the exit opening 55, which is conveniently brought in proximity of a descent ramp 60 in order to facilitate an easier exit, as shown in figure 5.

[0040] With the aim of enabling easier transport of the entire equipment 1 on a trailer 70 drawn by a truck 80, the wall 53 and the places 51 are removed. Further, in order to reduce the dimensions, the base 52 is made in such a way as to be foldable.

[0041] In the illustrated embodiment, the base 52 is formed by two portions of lateral circle 52a which are equal and opposite one another, and which are hinged

together at a central portion 52b, in order to be foldable towards the central portion 52b, as can be seen in figure 7.

[0042] With the aim of facilitating the operation, a pair of jacks 90 are used, which jacks 90 are fixed at an end thereof to the central portion 52b and at the other end thereof to the respective lateral portion 52a.

[0043] As can be appreciated from the foregoing description, the equipment for funfairs of the present invention is able to satisfy the needs and obviate the drawbacks mentioned in the introductory part of the present description with reference to the prior art.

[0044] Indeed, the equipment for funfairs of the present invention enables a multiplicity of random movements due to the rotation of the body about the three axes X, Y and Z, with an extremely compact structure, which is safe and easy to realise.

[0045] Obviously, an expert in the sector, with the aim of satisfying contingent needs and specifications, could bring numerous modifications and variations to the above-described equipment for funfairs, without its forsaking the sought ambit of protection of the invention, as defined in the following claims.

Claims

1. Equipment (1) for a funfair, comprising:

- a rigid body (50) provided with at least a place (51) for a passenger;
- a frame (10) for supporting the body (50), through
- means for supporting (14, 17, 52) which enable the body (50) to rotate with respect to a first rotation axis (X) and a second rotation axis (Y) located perpendicular to one another and being solidly mobile in rotation with respect to a fixed third rotation axis (Z);
- means (16, 18, 22) for rotating the body (50) with respect to the first rotation axis (X), the second rotation axis (Y) and the third rotation axis (Z), independently of one another.

2. The equipment (1) of claim 1, wherein the frame for supporting the body (50) comprises a platform (10) provided with means for fixing (12) the platform (10) to the ground.

3. The equipment (1) of claim 1, wherein the means for supporting comprise a support element (14) having a first end which is rotatably associated to the frame (10) in such a way as to be able to oscillate with respect to the fixed third rotation axis (Z).

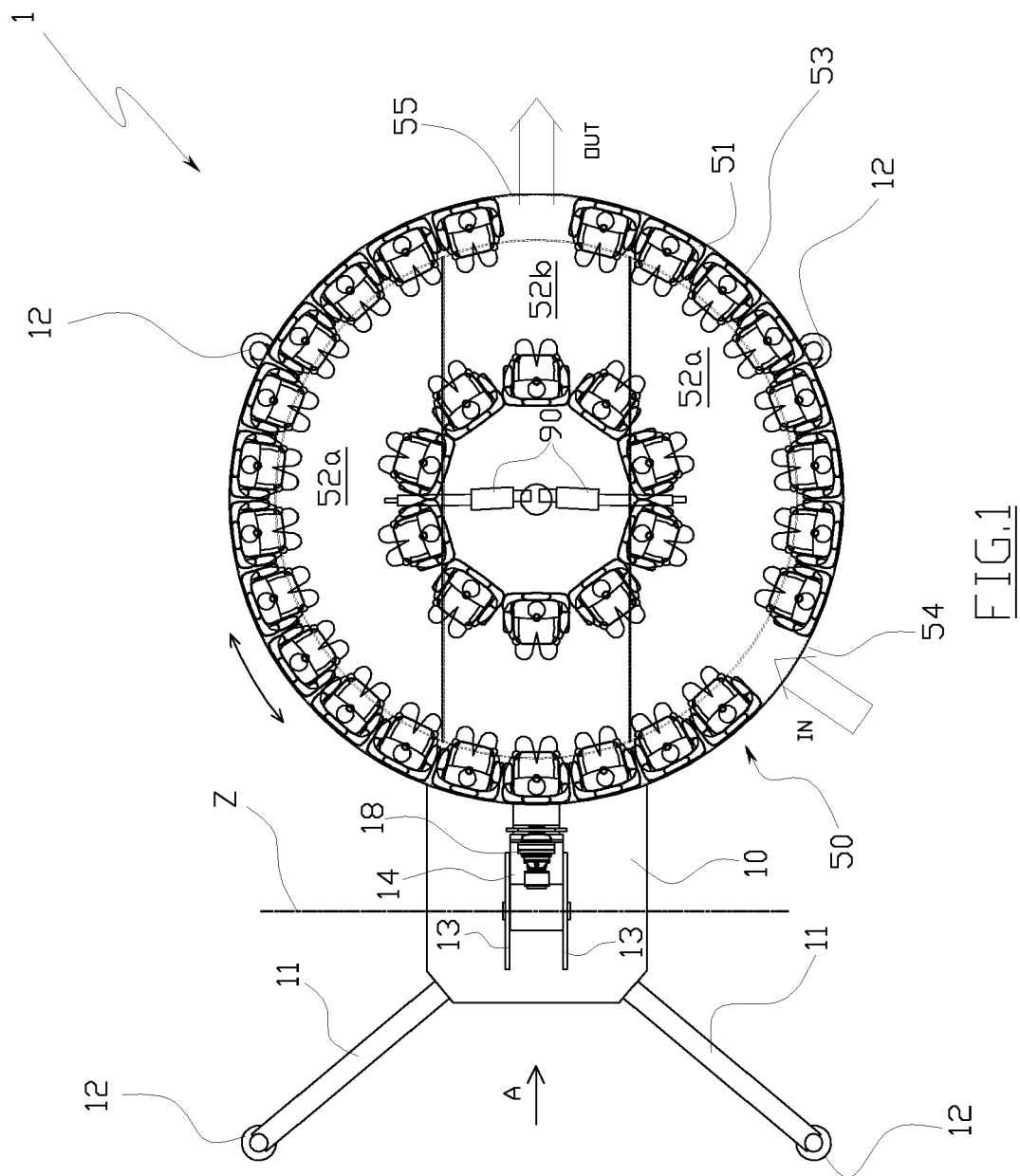
4. The equipment (1) of claim 3, wherein the support element (14) is set in rotation with respect to the fixed third rotation axis (Z) by means of a cylinder-piston

group (16) pivoted at an end thereof to the frame (10) and at another end thereof to the support element (14).

5. The equipment (1) of claim 3, wherein the fixed third rotation axis (Z) extends horizontally. 5
6. The equipment (1) of claim 3, wherein the means for supporting comprise an arm (17) which rotates with respect to the first rotation axis (X), which first rotation axis (X) is extended parallel to a longitudinal extension of the arm (17) and transversally with respect to the fixed third rotation axis (Z), the arm (17) being fixed to a second end of the support element (14) with a fifth wheel (21) interposed there-between. 10 15
7. The equipment (1) of claim 6, wherein the arm (17) is set in rotation about the first rotation axis (X) by a pinion/cogwheel system (19, 20), the pinion (19) being keyed on a shaft of a first motor (18) and the cogwheel (20) being fashioned circumferentially on the arm (17). 20
8. The equipment (1) of claim 7, wherein the first motor (18) is fixed on the support element (14) in proximity of a second end thereof. 25
9. The equipment (1) of claim 6, wherein the means for supporting comprise a flat base (52) which rotates about the second rotation axis (Y), which second rotation axis (Y) extends perpendicular to the base (52), the base (52) being fixed to a free end of the arm (17) with interpositioning of a fifth wheel, the body (50) being formed by the base (52) and by a removable perimeter wall (53). 30 35
10. The equipment (1) of claim 9, wherein the base (52) is set in rotation about the second rotation axis (Y) by a pair of conical wheels, respectively keyed on a shaft of a second motor (22) and on a shaft departing centrally from the base (52). 40
11. The equipment (1) of claim 10, wherein the second motor (22) is fixed on the arm (17) in proximity of the free end thereof. 45
12. The equipment (1) of claim 9, wherein the body (50) is provided respectively with an entrance opening (54) for passengers to accede to the places (51) and with an exit opening (55) for passengers to evacuate the body (50), the openings being afforded on the perimeter wall (53). 50
13. The equipment (1) of claim 9, wherein the base (52) exhibits a circular conformation and is formed by two lateral circular portions (52a) which are equal and opposite one another and which are hinged to a central portion (52b), the lateral portions (52a) being 55

foldable towards the central portion (52b).

14. The equipment (1) of claim 13, wherein the lateral portions (52a) are raised by means of a pair of jacks (90) fixed at an end to the central portion (52b) and at another end to the respective lateral portion (52a).
15. The equipment (1) of claim 1, comprising an electronic control system which independently commands the rotations of the body (50) with respect to the first rotation axis (X), the second rotation axis (Y) and the third rotation axis (Z) according to a random program.



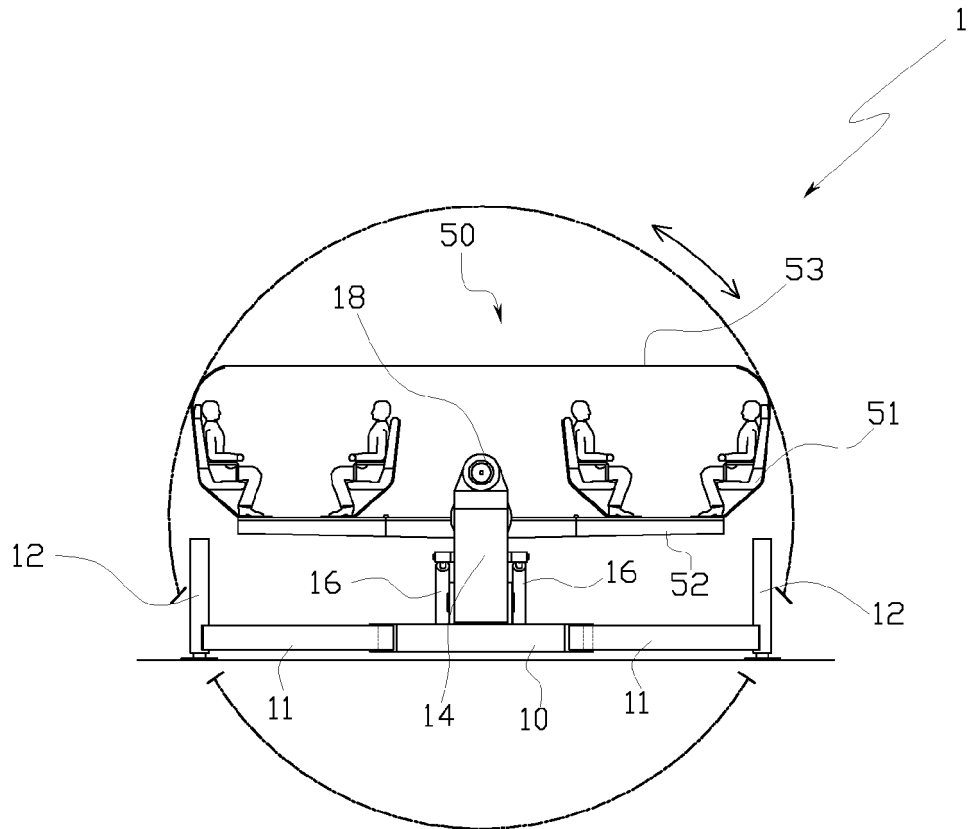


FIG. 2

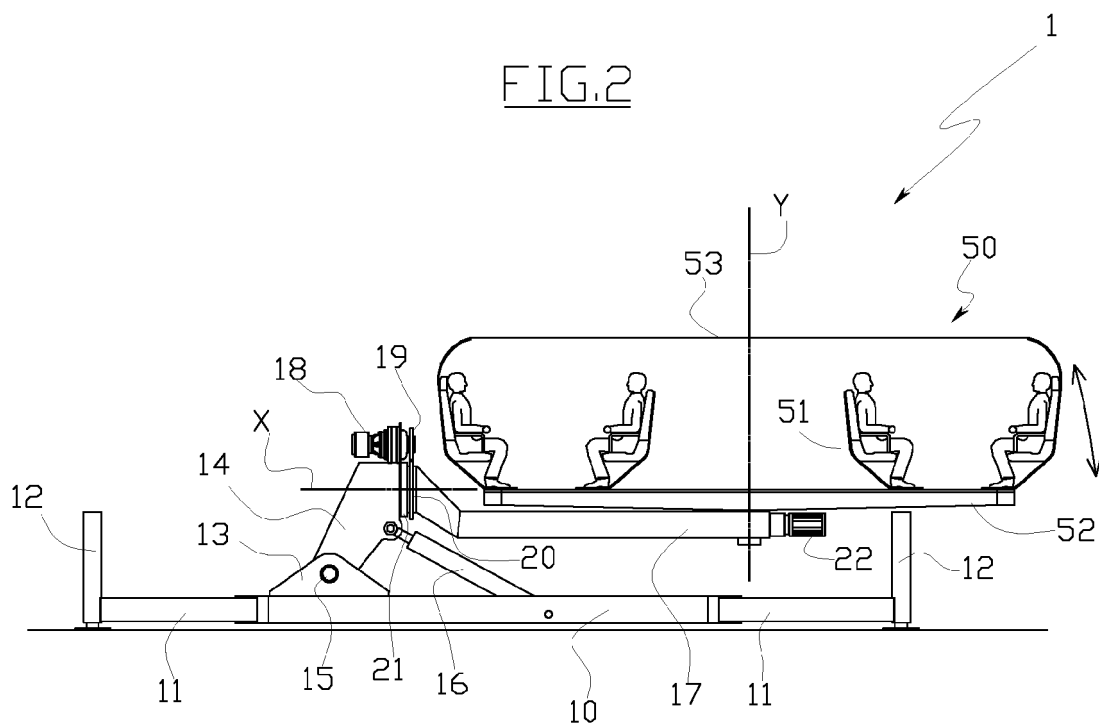
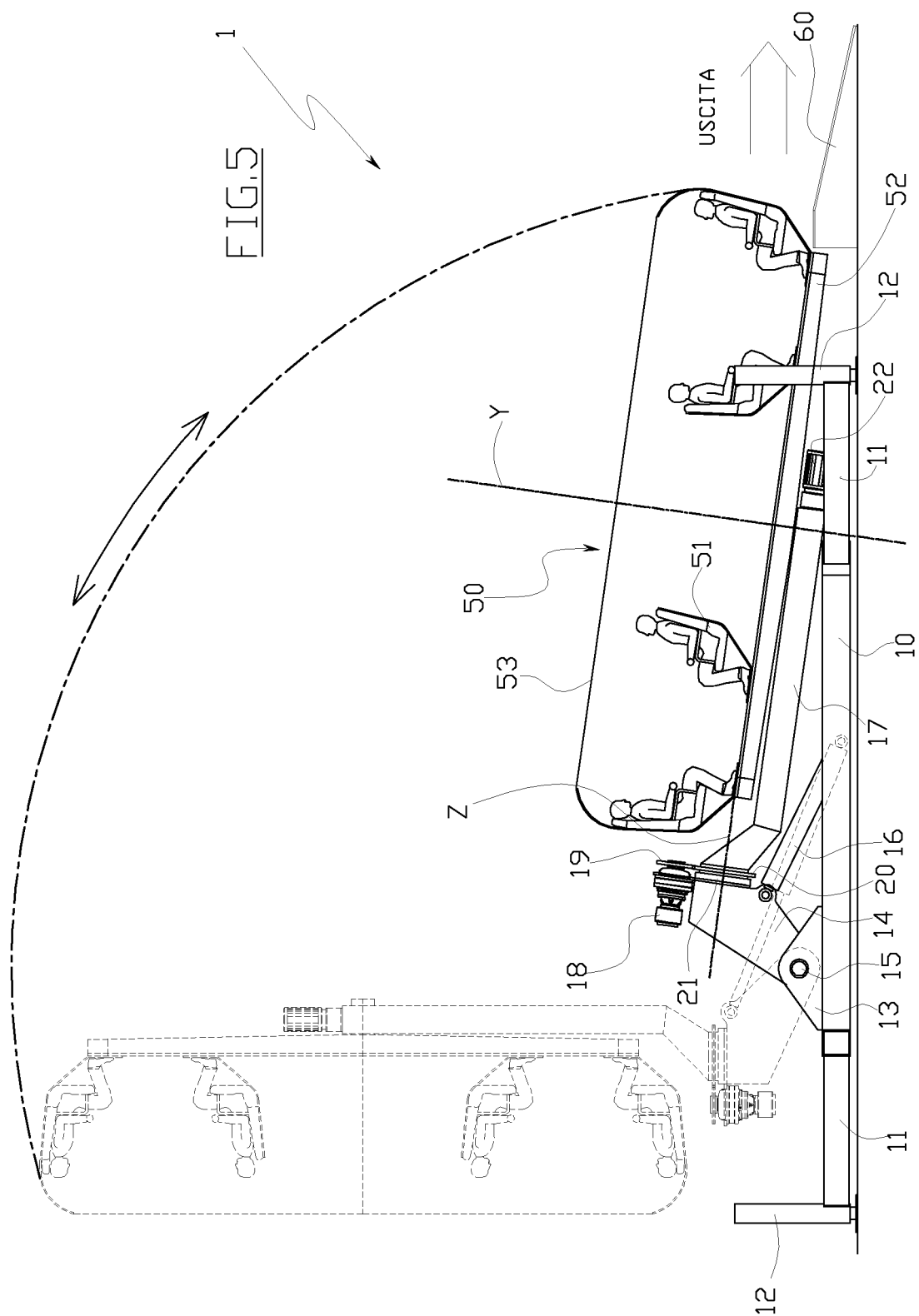


FIG. 3



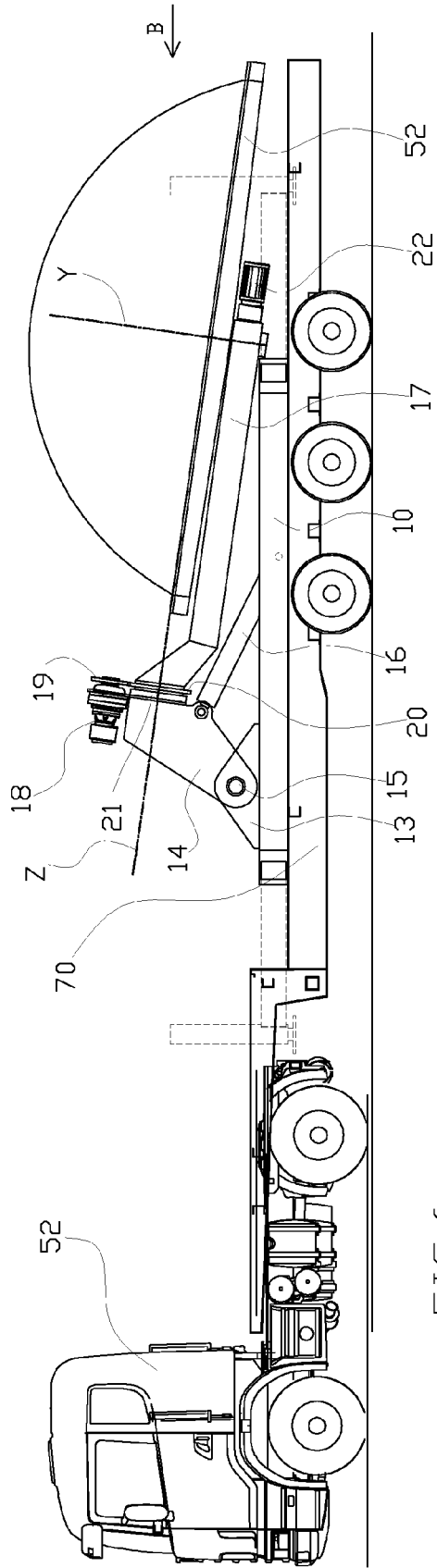


FIG. 6

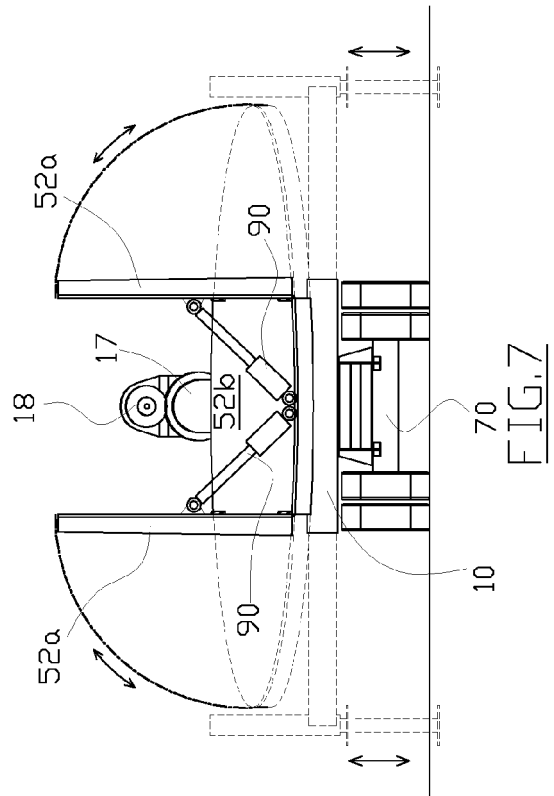


FIG. 7



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 10 0464

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	GB 2 337 944 A (NORTHERN AMUSEMENTS LIMITED [GB] NORTHERN AMUSEMENTS LTD [GB]) 8 December 1999 (1999-12-08) * page 4, line 12 - page 6, line 18; figures 3,4 *	1	INV. A63G27/00 A63G27/02 A63G27/04 A63G27/08
Y	* page 1, line 1 - page 3, line 4; figures 1,2,5 *	2-8,15	
Y	----- WO 2006/052132 A (K I G HEERENVEEN B V [NL]; KNIJPSTRA HETTE [NL]) 18 May 2006 (2006-05-18) * page 4, line 30 - page 7, line 17; figures 1-4 *	2-8,15	
X	----- DE 203 13 840 U1 (K I G HEERENVEEN B V [NL]) 6 November 2003 (2003-11-06) * the whole document *	1	
X	----- EP 1 245 256 A (COBRA BEHEER BV [NL]) 2 October 2002 (2002-10-02) * the whole document *	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC) A63G
Place of search Munich		Date of completion of the search 20 August 2007	Examiner Brumme, Ion
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

2

EPO FORM 1503 03.82 (F04C01)

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

EP 07 10 0464

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-08-2007

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
GB 2337944	A	08-12-1999	NONE		
WO 2006052132	A	18-05-2006	NL	1027510 C1	16-05-2006
DE 20313840	U1	06-11-2003	NONE		
EP 1245256	A	02-10-2002	NL	1017725 C2	08-10-2002
			US	2003027642 A1	06-02-2003