

(19)



(11)

**EP 2 067 460 A1**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**10.06.2009 Bulletin 2009/24**

(51) Int Cl.:  
**A61G 7/053 (2006.01)**

(21) Application number: **07122183.2**

(22) Date of filing: **03.12.2007**

(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 MT NL PL PT RO SE SI SK TR**  
 Designated Extension States:  
**AL BA HR MK RS**

• **Borup, Carsten**  
**4200 Slagelse (DK)**

(74) Representative: **Ganguillet, Cyril et al**  
**ABREMA**  
**Agence Brevets & Marques**  
**Ganguillet & Humphrey**  
**Avenue du Théâtre 16**  
**Case postale 5027**  
**1002 Lausanne (CH)**

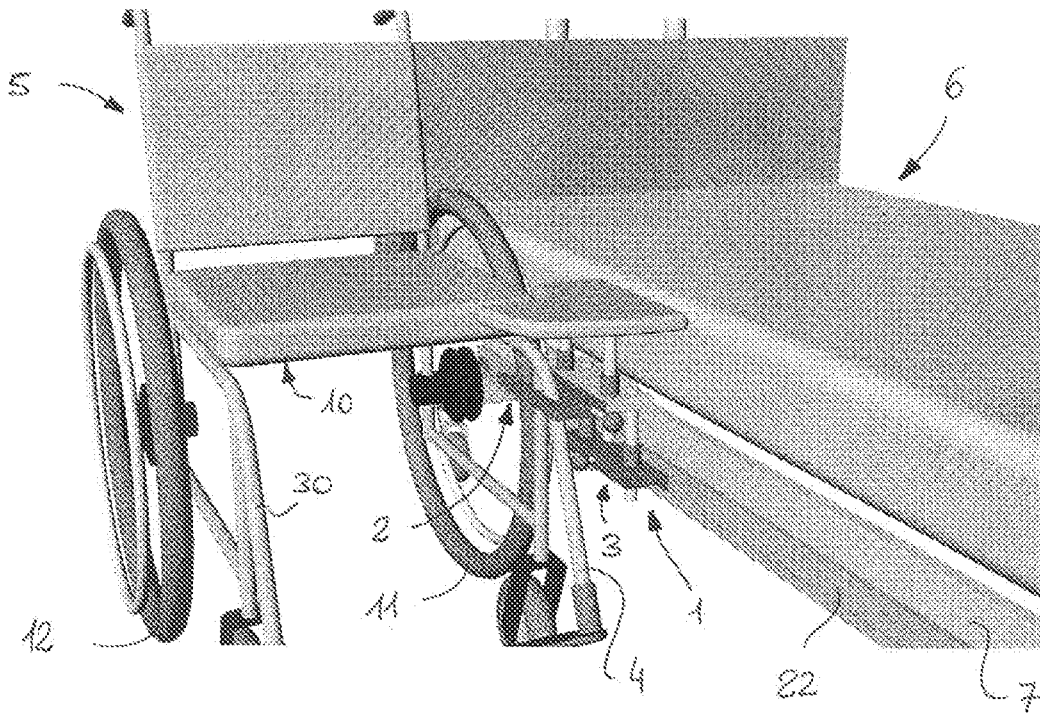
(71) Applicant: **Invacare International Sàrl**  
**1196 Gland (CH)**

(72) Inventors:  
 • **Dauw, Dirk**  
**1184 Vinzel (CH)**

**(54) Device for Docking a Wheelchair to a Bed**

(57) The present invention relates to a device (1) for assisting disabled persons to move between a wheelchair (5) and a bed (6) or the like. The device is attached

to the bed and comprises a height-adjustable transfer plate (9). Furthermore, the device comprises a locking means (2) for locking the wheelchair to the bed.



**FIG.1**

**EP 2 067 460 A1**

## Description

### Technical Field of the Invention

[0001] The present invention relates to ancillary devices for allowing elderly or disabled persons having difficulties in the limbs to easily move from a wheelchair to the bed or the like or vice-versa without or with minor support of a care worker.

### Background of the Invention

[0002] There is known a multiplicity of systems for moving disabled persons from a wheelchair to the bed and vice versa. However, such systems are either too expensive or too complicate to be used by disabled persons.

[0003] There is thus a need for a simple construction for a device for allowing said patients or users to smoothly move between a bed and a wheelchair.

### Summary of the Invention

[0004] According to the invention, the ancillary device can be locked to a wheelchair and connected to the frame of a nursing bed or fixed to a sub-chassis of the same. The device according to the invention comprises a lock plate which can be changed to fit the actual wheelchair. Further objects and advantages of this ancillary device, which may be considered as a practical docking station, will become apparent from the following disclosure, the claims and the attached drawings.

### Brief Description of the Drawings

#### [0005]

FIG. 1 is a partial perspective of a wheelchair and a bed connected together by means of a device according to the invention,

FIG. 2 shows a perspective view of said device mounted on a portion of a track fixed at the bed,

FIG. 3 is a top view of a preferred embodiment of the invention,

FIG. 4 is a front view of this embodiment,

FIG. 5 shows a first preferred embodiment of a lock plate of said device,

FIG. 6 shows a second preferred embodiment of a lock plate of said device, and

FIG. 7 shows a side view of a device according to the invention.

## Description of Preferred Embodiments

[0006] Referring to the drawings, there is shown in FIG. 1 a perspective view of a preferred embodiment of a device 1 comprising locking means 2 and connecting means 3. As shown in FIG. 1 said device 1 is locked to a preferably tubular side frame 4 of the wheelchair 5 by said locking means 2 and connected to a bed 6 by said connecting means 3. In use, the device 1 may be fixed to the bed either at the bed-frame 7 or with other means, as a sub-chassis or an additional track as illustrated in FIGS.1 and 2. The locking means 2 are provided with a patient release handle 8 (FIGS. 2 -3) which preferably is placed so that it can be easily reached from the wheelchair as well as from the bed. As shown in the figures 1 and 2 the device 1 comprises a transfer or sliding plate 9 (FIG. 2) which may be adjusted to various vertical positions of the bed and the chair heights as well as the chair's horizontal position at the bed side. The wheelchair may be of the type having a tubular frame 4 supporting a seat 10 and two large side wheels 11, 12 for patient self-locomotion.

[0007] Referring to FIGS. 1 and 2, it can be seen that the transfer plate 9 may be provided with a recess 13 to accommodate the position of the transfer plate 9 to a wheel 11 of the wheelchair.

[0008] As shown in FIG. 2 the transfer plate 9, said locking means 2 and said connecting means 3 are preferably horizontally mounted. In particular, the transfer or sliding plate 9 can be moved up/down with respect to the locking means 2 and be locked in a suitable position with the aid of two tubes 14, 141 and respective tube clamps 15, 151 (FIG. 4). The transfer plate 9, which serves as a transit seat for the patient, is equipped with a surface that is suitable for sitting and sliding when in use a person is transferred from the wheelchair 5 to the bed 6 or vice-versa (FIG. 1).

[0009] As shown in FIG. 5 or 6 the locking means 2, which form the wheelchair lock, comprise a base plate 16 firmly fixed to a lock plate 17 (FIG. 5) or to a lock plate 18 (FIG. 6). However, the lock plate 17 or 18 and the base plate 16 may be detachably mounted. The lock plates 17 or 18 as shown in FIGS. 5 and 6 are connected to the respective base plate 16 by any appropriate mounting method according to the state of the art. Both lock plates have a slot 19 made to fit the tube frame of the wheel chair. A bar 20 of a resilient material like rubber (FIG. 5) or a claw 21 (FIG. 6) may be located in the slot 19 of the lock plate 17 or 18, respectively. Said claw 21 can be released by the patient release handle 8. The bar 20 is intended to press against a frame tube 4 of the wheelchair, whereas the claw 21 may be closed behind a tube 4 of the wheelchair frame. The claw 21 may be designed to fit a broad range of wheelchairs, but also be replaced by special locks for wheelchairs outside this range or for other special purposes.

[0010] For convenience, an additional accessory 22 (FIGS. 1 - 2) may be provided to be mounted between

the bed and the device. According to the embodiment shown in FIG. 2, said accessory may be a C-shaped track 22 fixed at the bed 6, for example by clamps or screws. In FIG. 2 the track 22 is shown as a C-profile having a slot 23, but it may take other forms depending on the needs of the final design, e.g. two cylindrical tubes or prismatic tracks.

**[0011]** The connecting means 3 comprise a slider 24 (FIG. 7), so that inside this slot 23 of the track 22 the slider 24 can be moved horizontally and be locked in any position by a fastener handle 25. According to FIGS. 2 and 4, the slider 24 is fixed to the base plate 16 with aid of two tubes 26, 261 and respective tube locks 27, 271 (FIG. 4) which may contribute to adjust the vertical position of the transfer plate 9. However, this fixing can be of various principles depending on the concrete design of the entire ancillary device. The fastener handle 25 may include e.g. a screw that press against the inner backside of the track or a pin that fits in holes in the back of the profile. The tube clamps 15 and/or 27 may be locks that squeeze against the tubes 14 and/or 26, respectively, as shown in FIGS. 2 and 4, but also be screws or other principles. The planes defined by the tubes 14, 141 and 26, 261 are preferably parallel. The height adjustment between the locking means 2 and the transfer plate 9 is here illustrated by means of tubes 14, 26, but other principles may be used depending of the needs of the final design.

**[0012]** The two lock plates 17 and 18 shown in FIGS. 5 - 6 are examples of alternative embodiments suitable for locking the chair to the bed. As has already been said, a preferred embodiment of the invention comprises a rubber bar 20 (FIG. 5) pressed against the frame 4 of the wheelchair or a lock claw 21 (FIG. 6) which closes behind a frame tube 4 of the wheel chair frame. In this way the design of the lock plate can be changed to fit any specific wheel chair, so that the rest of the device can fix the majority of indoor wheelchairs by perhaps 2 or 3 different lock plates only, and the parameters which must be changed are simply the claw and possibly the dimension and shape of the slot (19). The ends 28 of the tubes 14, 141 (FIG. 4) protrude more or less through holes 29, 291 in a plate 16 in order to adjust the vertical distance between the plate 16 and the transfer plate 9. The plate 16 and/or the slider 24 may be provided with holes of this type such that the ends (not shown in the figures) of the tubes 26, 261 protrude more or less through at least one of said holes in order to adjust the distance between the plate 16 and the slider 24.

**[0013]** The invention allows the realization of a diversity of further embodiments. To give just one example, the transfer or sliding plate 9 may have a horizontal narrow prolongation having a border intended to abut against the horizontal front edge of the seat 10 of the wheelchair, so that the other end of this prolongation could rest against a preferably horizontal portion of the other side frame 30 (FIG. 1) of the wheelchair, and this would drastically reduce the torque stress on the area of

the connecting means 3. Alternatively, further locking means, similar to the locking means 2, could be provided for this purpose. Preferably this narrow horizontal prolongation is detachably mounted but it may also be a simple bar. This embodiments could also shaped to facilitate the patients to move themselves from the bed into the wheelchair or from the chair into the bed.

## Labels

### [0014]

device 1  
locking means 2  
connecting means 3  
tubular side frame 4  
wheelchair 5  
nursing bed 6  
bed-frame 7  
patient release handle 8  
transfer or sliding plate 9  
tubular frame 4  
seat 10  
two large side wheels 11, 12  
recess 13  
tubes 14, 141  
tube clamps 15, 151  
base plate 16  
lock plate 17 or 18  
slot 19  
bar 20  
claw 21  
track 22  
slot 23  
slider 24  
fastener handle 25  
tubes 26, 261  
tube locks 27, 271  
end 28 of tubes 14, 141  
holes 29, 291  
tubular side frame 30

## Claims

1. Device for assisting disabled persons to move between a wheelchair and a bed or the like, comprising a transfer plate (9), locking means (2) for locking said wheelchair to the bed (5) and connecting means (3) for attaching the device at the bed (6), said locking means (2) comprising a lock plate provided with a slot (19) suitable to receive a frame portion (4) of the wheelchair.
2. Device in accordance with claim 1, wherein the locking means (2) are provided with a patient release handle (8) which preferably is placed so that it can be easily reached from the wheelchair (5) as well as

from the bed (6).

3. Device in accordance with claim 1 or 2, comprising a transfer plate (9) and adjusting means to adjust the height of the transfer plate. 5
4. Device in accordance with claim 1 or 2, comprising a transfer plate (9) and means to adjust it to various horizontal positions at the bed side relative to a position of the wheelchair. 10
5. Device in accordance with one of the claims 1 to 4, further comprising a base plate (16), wherein the lock plate (17; 18) and said base plate (16) are separate elements which may be detachably fixed together. 15
6. Device in accordance with one of the claims 1 to 5, wherein a locking element (20; 21) is located in said slot (19) of said the lock plate (17; 18). 20
7. Device in accordance with claim 6, wherein said locking element (21) is a lock claw (21) which preferably can be released by the patient release handle (8).
8. Device in accordance with claim 6 or 7, wherein the lock plate (17; 18) and said locking element are designed to fit a broad range of wheelchairs or to be replaced by special locks for wheelchairs outside a given range. 25  
30
9. Device in accordance with one of the claims 6 to 8, wherein said locking element is a bar element (20) of a resilient material, preferably rubber.
10. Device according to any one of the preceding claims, wherein the lock plate is exchangeable and/or may be selected so as to temporarily attach the wheelchair to the bed. 35
11. Device according to any one of the preceding claims, wherein the connecting means (3) are suitable to rigidly connect the device to the frame of the bed. 40
12. Device according to any one of the preceding claims, wherein the height of the lock plate (17, 18) is adjustable. 45
13. Device according to any one of the preceding steps, which is designed to be rigidly attached to a bed. 50
14. Device in accordance with one of the claims 3 to 13, wherein said adjusting means comprise tubes (14, 141; 26, 261) and tube clamps (15, 151) and/or tube locks 27, 271). 55

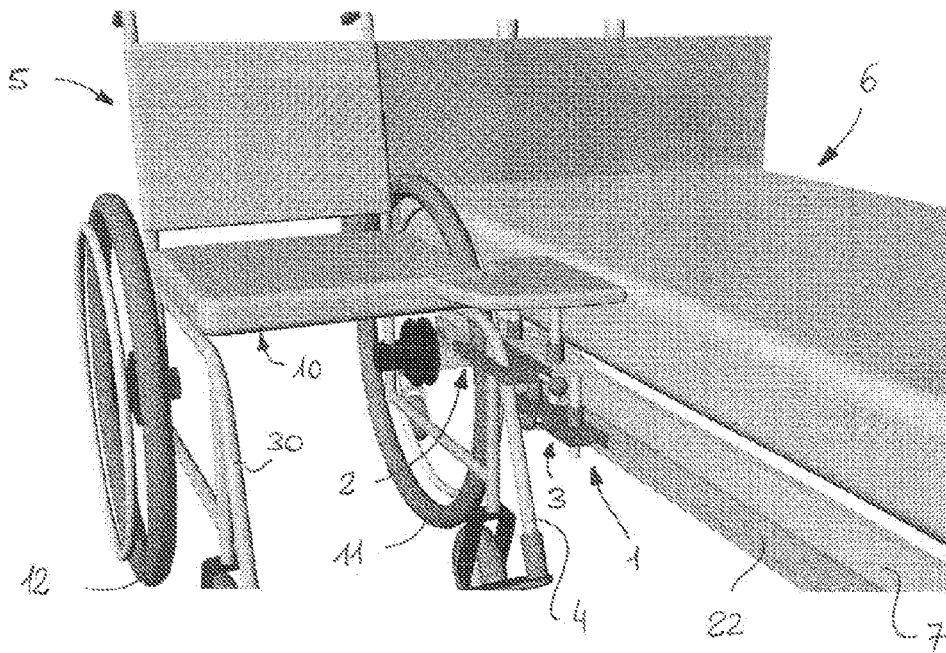


FIG.1

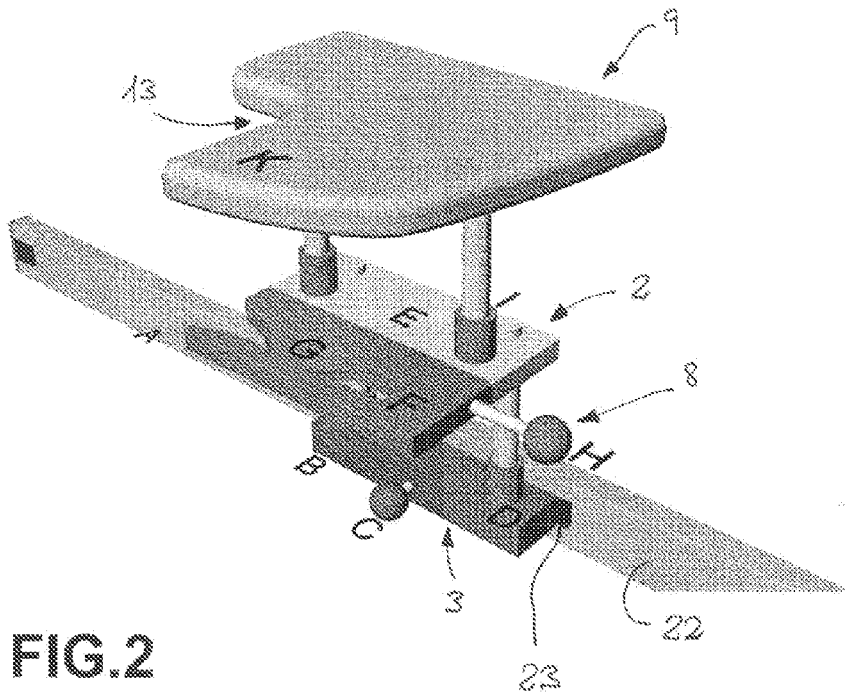


FIG.2

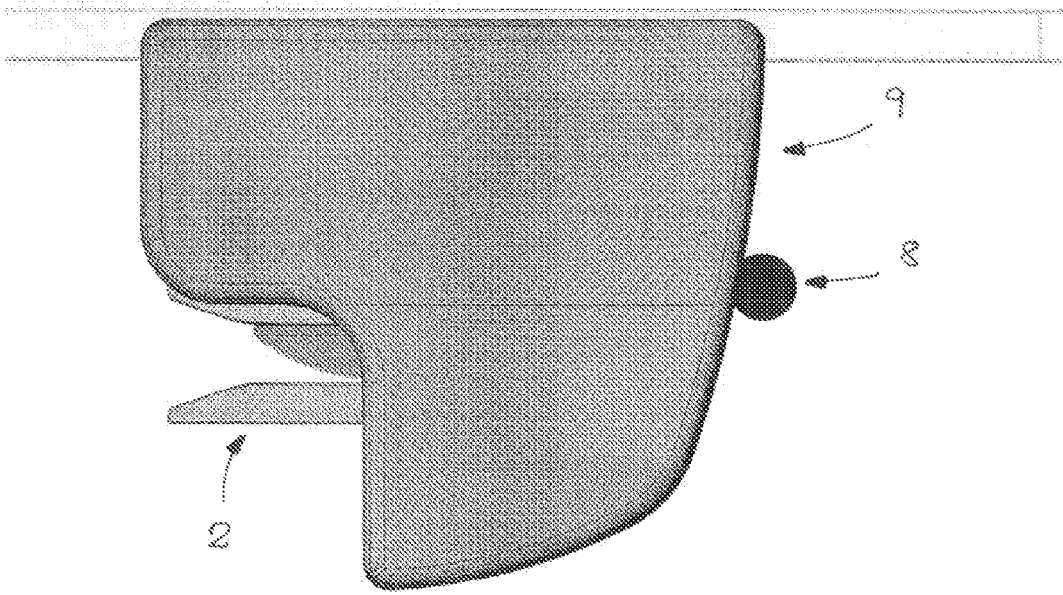


FIG. 3

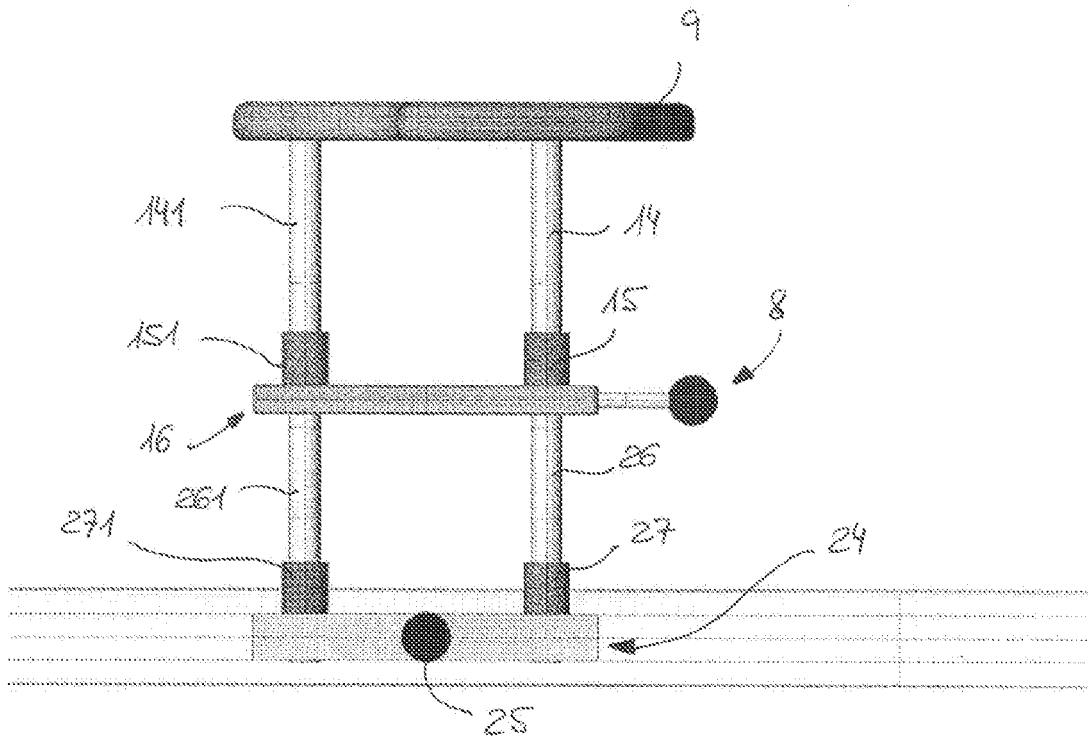


FIG. 4

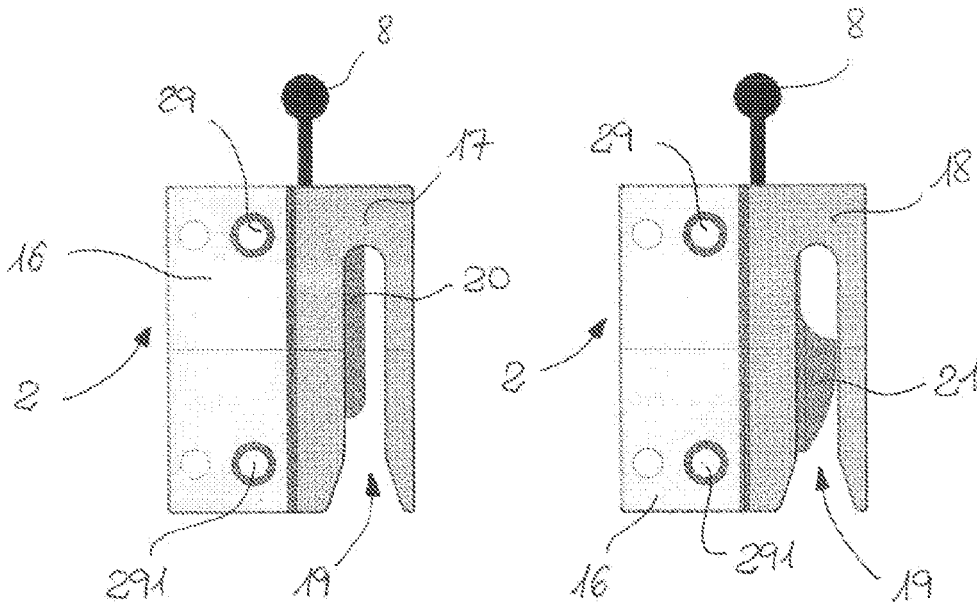


FIG. 5

FIG. 6

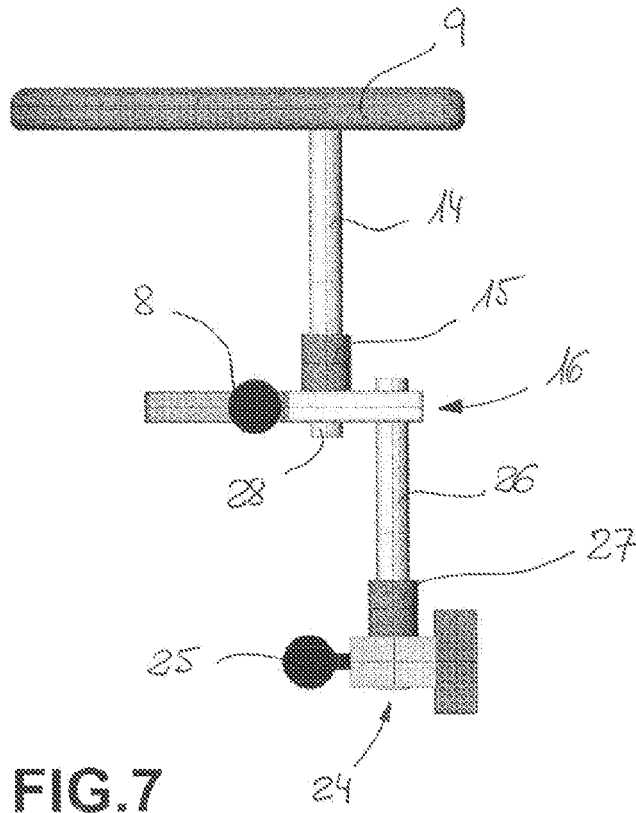


FIG. 7



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	JP 2003 250838 A (ROUDOU FUKUSHI JIGYODAN) 9 September 2003 (2003-09-09) * abstract; figures *	1,10,11	INV. A61G7/053
A	----- US 4 796 313 A (DIMATTEO PAUL [US] ET AL) 10 January 1989 (1989-01-10) * column 4, lines 7-21; figures 1a-1f *	1	
A	----- US 1 635 575 A (EDWIN COLE) 12 July 1927 (1927-07-12) * the whole document *	1,3,4,11	
A	----- US 6 361 267 B1 (CHUANG CHING-SHAN [TW]) 26 March 2002 (2002-03-26) * figures 4,5 * * column 2, lines 6-20 * * column 2, line 55 - column 3, line 15 * -----	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			A61G
Place of search		Date of completion of the search	Examiner
The Hague		19 May 2008	Mammeri, Damya
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	

1  
EPC FORM 1503 03 82 (P04/C01)

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

EP 07 12 2183

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.

19-05-2008

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 2003250838	A	09-09-2003	JP 4074766 B2	09-04-2008
US 4796313	A	10-01-1989	NONE	
US 1635575	A	12-07-1927	NONE	
US 6361267	B1	26-03-2002	TW 434008 B	16-05-2001

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82