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(54) Title: VEHICLE, SUCH AS A CAR, CAMPING CAR OR VAN, AND CARRIER WITH DRIVE MEANS

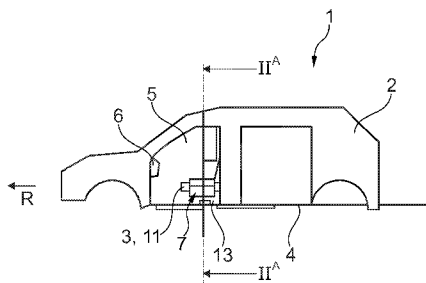


Fig. 1A

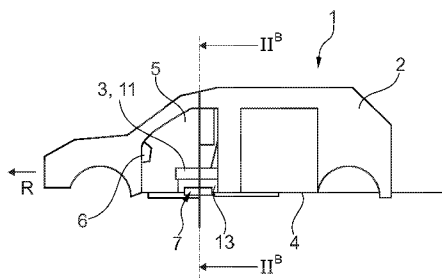


Fig. 1B

(57) Abstract: The invention relates to a vehicle, such as a car, camper or van, further comprising: - a seat, mounted in the vehicle, with a seat surface; - a carrier arranged close to the seat and mounted in the vehicle, and provided with a drive means for adjusting the carrier between a first position, in which an edge of the carrier runs parallel to the main direction of travel of the vehicle and lies in line with and adjoins the seat surface of the seat, and a second position in which, relative to the first position, this edge of the carrier is arranged at a distance from the seat surface in a direction transversely of the seat surface. The invention further relates to a carrier with a drive means.

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Vehicle, such as a car, camper or van, and carrier with drive means

The invention relates to a vehicle such as a car, camper or  
5 van.

Such vehicles are known in various forms and are for instance used for transporting persons and/or goods. When the user of the vehicle, i.e. a passenger or the driver, has a limited mobility, it can be difficult for the user to enter the vehicle. This problem occurs  
10 particularly in vehicles with a raised entrance, wherein the seat surface of the seat in the vehicle lies higher than the seat part of an aid such as a wheelchair used to reach the vehicle.

In order to solve this problem it is known to customize a vehicle when the driver of the vehicle has for instance a limited  
15 mobility, wherein the driver's seat is mounted on the floor of the vehicle such that this seat can rotate around an axis transversely of the floor. The driver can here enter the vehicle via the loading space on the rear side of the vehicle, for instance via a sloping path or ramp, then rotate the seat with the backrest toward the door opening in  
20 the side of the vehicle, take up position on the seat part and rotate the seat back to the starting position. Giving the seat a rotatable form already has drawbacks per se. Taking up position behind the steering wheel in this way takes a lot of time and a lot of effort. In addition, providing access via the rear side has the result that this  
25 space cannot be used, or can be used only in inefficient manner, for other purposes, such as transporting goods or passengers other than the driver, whereby a configuration as camper is also practically impossible. For safety purposes it is moreover desirable for the seat and the seatbelt fastenings arranged adjacently of the seat to be  
30 mounted as far as possible on the original (non-customized) configuration which was tested by the manufacturer. In most cases, the seat and the seatbelt anchoring point will however have to be modified during the customization. It is thus necessary, among other things, to modify the box, in which electronic components are often arranged.  
35 These components are often wired with rigid cable bundles. All in all, the necessity for customization makes the construction more complex and expensive.

The rotatable form usually also results in further modifications having to be made. The parking brake is usually positioned such that the legs are unable to pass it during rotation of the seat. It will often also be desirable for a manual control of brake  
5 pedal and gas pedal to be incorporated in the vehicle. Such a manual control is generally placed on the right-hand side of the steering wheel, and the space for placing is very limited due to the rotation of the seat.

In many cases the door post of the bodywork will generally  
10 prevent a rotation of the seat, whereby it is often necessary to provide a seat which is not only rotatable but also slidable, for which purpose slide rails also have to be placed. This makes the construction complex and expensive. This means that the rotatable and often slidable seat also has to be provided with means for anchoring the seat. This  
15 results in an expensive and unwieldy construction of the seat.

It is now an object of the invention to reduce or even obviate the above stated problems.

This object is achieved by means of a vehicle, such as a car, camper or van, further comprising:

20           - a seat, mounted in the vehicle, with a seat surface;  
              - a carrier arranged close to the seat and mounted in the vehicle, and provided with a drive means for adjusting the carrier between a first position, in which an edge of the carrier runs parallel to the main direction of travel of the vehicle and lies in line with  
25 and adjoins the seat surface of the seat, and a second position in which, relative to the first position, this edge of the carrier is arranged at a distance from the seat surface in a direction transversely of the seat surface.

A seat is mounted in the vehicle, preferably on the floor of  
30 the vehicle. In the invention a carrier, such as for instance a support beam, is arranged adjacently of the seat and mounted in the vehicle. This carrier is able to bridge a height difference between the first position (the travelling position) and the second position (the entry position). The first and second position can here be the extreme  
35 positions. It is possible that the carrier can also be locked at one or more intermediate positions, for instance with a view to being able to easily take up position on the carrier from the seat of the vehicle.

In the first position the carrier lies in line with the seat part of the seat, so that the user can easily take up position on the seat part from the carrier (and vice versa), while in the second position the carrier lies at a height such that the user can easily get  
5 out of the vehicle and can optionally move or slide over to an aid such as a wheelchair (and vice versa). In reverse direction, in which the carrier is in the second position, the user will get in at a height such that he or she is situated with his or her backside positioned over the carrier, so that he or she will not slide therefrom during  
10 lifting.

The carrier forms a compact and simple solution which can remain present in the vehicle during travel of the vehicle. The carrier does not disrupt the sitting on the seat part, nor does it require the seat being made rotatable and optionally laterally slidable for the  
15 purpose of taking up position on the seat part of the seat.

The drive means can be provided in diverse ways here, for instance electrically, hydraulically or by means of an actuator.

The carrier is here constructed such that it can carry the weight of a user and preferably also such that a user, while seated on  
20 the carrier, can partially disassemble a wheelchair (for instance remove the wheels) outside of the vehicle with a view to transport with the vehicle.

In a first preferred embodiment of the vehicle according to the invention the edge of the carrier extends in the second position  
25 between the seat surface and the floor of the vehicle.

Although the carrier according to the invention can be applied both in vehicles with a lowered and with a raised entrance, it is preferably used according to this preferred embodiment, wherein it bridges a height difference in vehicles with a raised entrance. It is  
30 also possible here for the second position of the carrier to lie even lower than the floor, if the dimensions of the vehicle provide possibilities herefor.

In a second preferred embodiment of the vehicle according to the invention the edge is in the second position further arranged at a  
35 distance from the seat surface in at least two directions transversely of the main direction of travel of the vehicle.

In this case the carrier will not only move relative to the seat part of the seat in vertical direction but, by means of a lateral movement, also in horizontal direction when adjusted between the first and the second position. This further increases the accessibility of the carrier to a user getting into the vehicle from outside.

In a third preferred embodiment of the vehicle according to the invention the edge of the carrier is arranged for tilting around a shaft running parallel to the edge and at a distance from the edge.

This simplifies the construction of the carrier and the drive means when the carrier is adjusted between the first and the second position by tilting.

In a fourth preferred embodiment of the vehicle according to the invention the distance from the edge to the shaft can be set.

In this way the edge can in the second position for instance be shifted further outward so as to further increase the reachability of the carrier from a position outside the vehicle, while this additional distance is in that case not present when the carrier is folded up in the vehicle in the first position.

In a fifth preferred embodiment of the vehicle according to the invention the carrier is a plank, wherein the outer end of the plank is curved away from the seat in the first position of the seat surface.

It is advantageous to embody the carrier as a partially flat plank, as this provides a comfortable seat part during adjustment. The curved outer end makes it possible to shift a user onto the carrier during adjustment from the second position to the first position, i.e. wherein the distance from the edge to the back of the knee is reduced increasingly further. This simplifies moving to the seat part of the seat of the vehicle.

In a sixth preferred embodiment of the vehicle according to the invention the vehicle further comprises a bodywork with a door opening, wherein in the first position the carrier extends wholly inside the bodywork and wherein the carrier protrudes at least partially out of the bodywork through the door opening.

This makes the carrier easily accessible from the outer side of the vehicle when the carrier is mounted on the vehicle between the door opening and the seat.

In the first position the carrier will not prevent closing of the door of the vehicle in that the carrier extends inside the bodywork. In the second position the carrier lies at least partially outside the bodywork. The carrier is hereby easily accessible in the  
5 second position.

In a seventh preferred embodiment of the vehicle according to the invention the seat is the driver's seat of the vehicle.

By arranging the carrier close to the driver's seat the carrier provides possibilities for a driver of a vehicle who has  
10 limited mobility to enter this vehicle independently, wherein he or she is less or even not at all dependent on help from third parties. It is however also possible to additionally or exclusively provide a separate carrier for one or more of the possible other seats.

In an eighth preferred embodiment of the vehicle according  
15 to the invention the seat comprises a box on which the seat surface is arranged, which box is mounted on the floor of the vehicle, wherein the drive means comprises a winch.

A drive means which functions by means of a winch has advantages relative to other, above stated types of drive means which  
20 are optionally also possible. The overall space required is relatively limited, and such a drive means can be easily arranged on the seat, for instance on the side opposite the side where the carrier is mounted. This is advantageous, among other reasons, with a view to the electronics arranged in the box.

25 In a ninth preferred embodiment of the vehicle according to the invention the drive means is connected to a remote control for controlling the drive means.

In order to prevent being dependent for the control it is recommended for the drive means to be provided with a remote control  
30 for adjusting the carrier between the first and the second position. This remote control can be a separate remote control but can optionally also be integrated into the dashboard of the vehicle, or for instance be operable via a mobile telephone such as a smart phone.

In a tenth preferred embodiment of the vehicle according to  
35 the invention the seat is mounted non-rotatably on the floor of the vehicle.

Because of the chosen construction of the carrier it is no longer necessary but merely optional to provide a rotation option of the seat. For this reason the seat can be fixedly mounted on the vehicle in non-rotatable manner, which further increases the safety of the seat.

In an eleventh preferred embodiment of the vehicle according to the invention the vehicle comprises a loading space, wherein the vehicle is further provided with a remotely controllable bracket for lifting a wheelchair into the loading space.

A user having limited mobility will often make use of a wheelchair to move outside and to the vehicle. In order to enable the wheelchair to be stored in the vehicle after the user has entered the vehicle, it is recommended to provide the vehicle with a preferably electronically controlled bracket whereby the wheelchair can be lifted into the loading space. Trunk hoists and ceiling lifts suitable for this function are per se known.

The invention further relates to a carrier with a drive means, this carrier being suitable for arranging close to a seat in a vehicle, adjustable between a first position and a second position, wherein relative to the first position an edge of the carrier is arranged at a distance from the first position, wherein the drive means is suitable for adjusting the carrier between the first and the second position.

The carrier according to the invention can preferably be placed in a vehicle in the above described manner and, where applicable to the carrier, the preferred embodiments of the vehicle can for similar reasons also be advantageously applied to the carrier.

These and other features of the invention are further elucidated with reference to the accompanying drawings.

Figures 1A and 1B show a side view of a vehicle according to the invention with the support beam in respectively the first and second position.

Figures 2A and 2B show a detail in rear view along the lines II-II (respectively A and B) in figures 1A and 1B in respectively the first and second position.

Figures 1 and 2 show a vehicle 1 with a bodywork 2. In bodywork 2 a driver's seat 3 is mounted on the floor 4 of bodywork 2

close to a door opening 5 in bodywork 2. The driver's seat is directed toward dashboard 6 of vehicle 1. A carrier 7 is arranged between door opening 5 and driver's seat 3.

Carrier 7 comprises a plank 8 with an edge 9 running  
5 parallel to the main direction of travel R of the vehicle. The carrier also comprises an outer end 10 which in the first position is curved away from seat surface 11. Carrier 7 is mounted for tilting around shaft 12, which shaft 12 likewise runs parallel to the main direction of travel R of vehicle 1.

10 In the first position carrier 7 lies here in line with seat surface 11 of driver's seat 3, which seat surface 11 is mounted on floor 4 of vehicle 1 by means of a box 13. A winch (not shown) runs between seat surface 11 and box 13. In the second position carrier 7 protrudes out through door opening 5.

15 The distance from outer end 10 to shaft 12 is variable in that outer end 10 and plank 8 can be extended relative to shaft 12 via a telescopic mechanism.



## Claims

1. Vehicle, such as a car, camper or van, further comprising:

- 5           - a seat, mounted in the vehicle, with a seat surface;  
          - a carrier arranged close to the seat and mounted in the vehicle, and provided with a drive means for adjusting the carrier between a first position, in which an edge of the carrier runs parallel to the main direction of travel of the vehicle and lies in line with  
10 and adjoins the seat surface of the seat, and a second position in which, relative to the first position, this edge of the carrier is arranged at a distance from the seat surface in a direction transversely of the seat surface.

2. Vehicle as claimed in claim 1, wherein the edge of the  
15 carrier extends in the second position between the seat surface and the floor of the vehicle.

3. Vehicle as claimed in claim 1 or 2, wherein the edge is in the second position further arranged at a distance from the seat surface in at least two directions transversely of the main direction  
20 of travel of the vehicle.

4. Vehicle as claimed in claim 1, 2 or 3, wherein the edge of the carrier is arranged for tilting around a shaft running parallel to the edge and at a distance from the edge.

5. Vehicle as claimed in claim 4, wherein the distance from  
25 the edge to the shaft can be set.

6. Vehicle as claimed in claim 4 or 5, wherein the carrier is a plank, wherein the outer end of the plank is curved away from the seat in the first position of the seat surface.

7. Vehicle as claimed in any of the foregoing claims,  
30 further comprising a bodywork with a door opening, wherein in the first position the carrier extends wholly inside the bodywork and wherein the carrier protrudes at least partially out of the bodywork through the door opening.

8. Vehicle as claimed in any of the foregoing claims,  
35 wherein the seat is the driver's seat of the vehicle.

9. Vehicle as claimed in any of the foregoing claims, wherein the seat comprises a box on which the seat surface is arranged,

which box is mounted on the floor of the vehicle, wherein the drive means comprises a winch.

10. Vehicle as claimed in any of the foregoing claims, wherein the drive means is connected to a remote control for  
5 controlling the drive means.

11. Vehicle as claimed in any of the foregoing claims, wherein the seat is mounted non-rotatably on the floor of the vehicle.

12. Vehicle as claimed in any of the foregoing claims, wherein the vehicle comprises a loading space and wherein the vehicle  
10 is further provided with a remotely controllable bracket for lifting a wheelchair into the loading space.

13. Carrier with a drive means, this carrier being suitable for arranging close to a seat in a vehicle, adjustable between a first position and a second position, wherein relative to the first position  
15 an edge of the carrier is arranged at a distance from the first position, wherein the drive means is suitable for adjusting the carrier between the first and the second position.

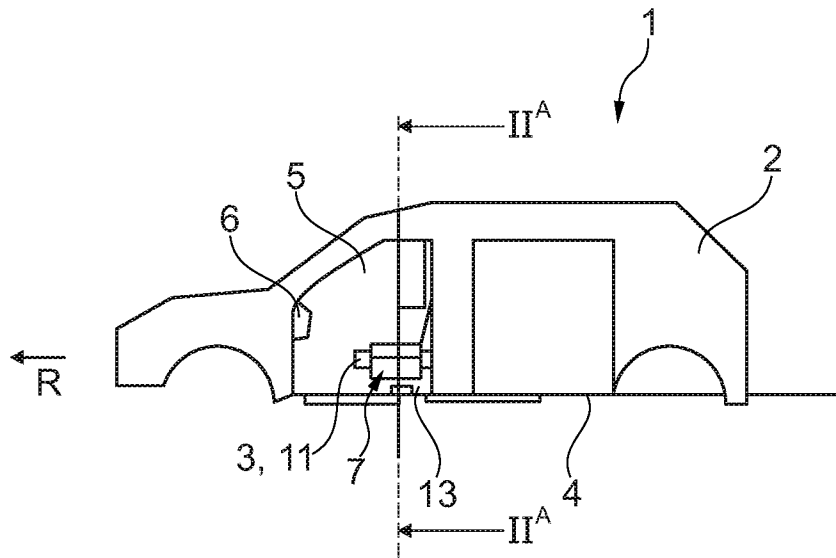


Fig. 1A

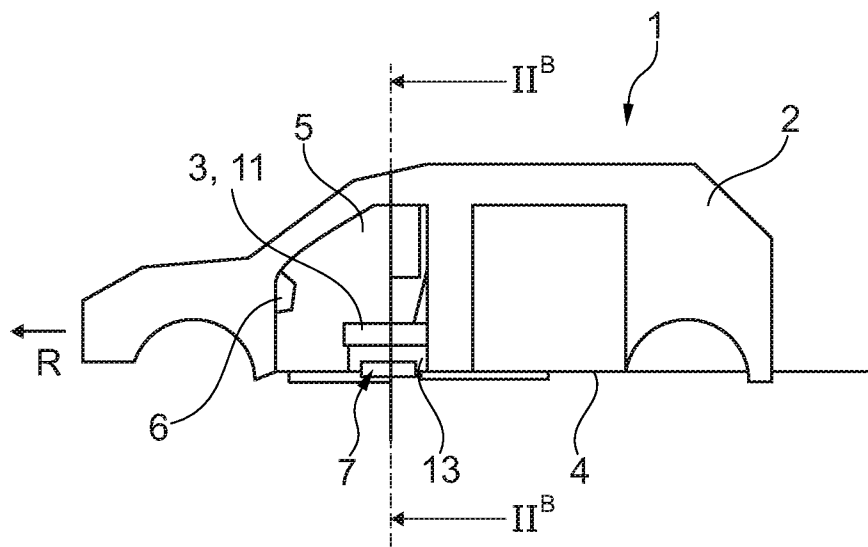


Fig. 1B

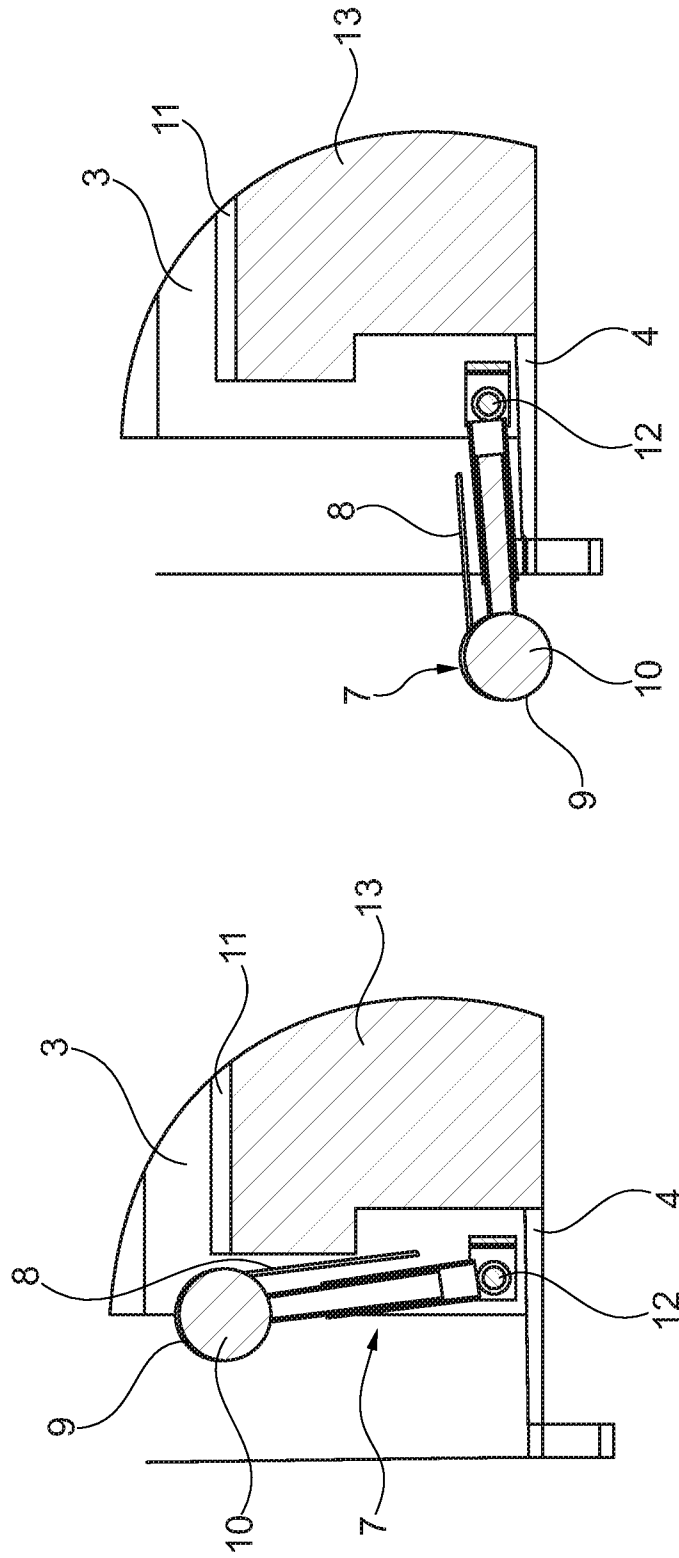


Fig. 2B

Fig. 2A

INTERNATIONAL SEARCH REPORT

International application No  
PCT/NL2017/050188

A. CLASSIFICATION OF SUBJECT MATTER  
INV. A61G3/06 A61G3/02  
ADD.  
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED  
Minimum documentation searched (classification system followed by classification symbols)  
A61G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 7 543 876 B1 (EGAN THOMAS F [US]) 9 June 2009 (2009-06-09) figures 4a-b	1-5, 7-11,13 6
X	US 5 040 832 A (ZALEWSKI WOJCIECH [US]) 20 August 1991 (1991-08-20) figures 4-7	1,3,10, 11,13
X	US 4 306 634 A (SANGSTER GEORGE G) 22 December 1981 (1981-12-22) figure 1	13
X	US 6 283 528 B1 (TOWNSEND STEVEN J [US]) 4 September 2001 (2001-09-04) figures 6, 10,11	1,4,6-8, 11,13
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Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search  29 June 2017	Date of mailing of the international search report  07/09/2017
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Kroeders, Marleen
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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/NL2017/050188

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-11, 13

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/NL2017/050188

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2015/030608 A1 (ABILIQIP LTD [NZ]) 5 March 2015 (2015-03-05) figures 11-15 -----	1-4,6-8, 11,13
Y	US 5 207 549 A (RIVA MATTHEW [US]) 4 May 1993 (1993-05-04) figure 5 -----	6

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/NL2017/050188

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			WO 2015030608 A1 05-03-2015
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US 5207549	A	04-05-1993	NONE
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**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11, 13

Vehicle, comprising:

- A) a seat
  - B) a carrier near the seat,
  - C) a drive for te carrier,
- the arrangement moving the carrier transversely away from the seat  
with further features relating to the exact end position of the barrier (B+)  
solving the problem of moving a person in/out of the vehicle seat

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2. claim: 12

Vehicle, comprising:

- A) a seat
  - B) a carrier near the seat,
  - C) a drive for te carrier,
- the arrangement moving the carrier transversely away from the seat  
with further (undefined!) features of a bracket D) for loading/storing a wheelchair  
solving the problem of loading a wheelchair in/out of the loading space

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