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(63) Related by continuation (CON) or continuation-in-part (CIP) to earlier applications:

US	61/458,997 (CIP)
Filed on	3 December 2010 (03.12.2010)
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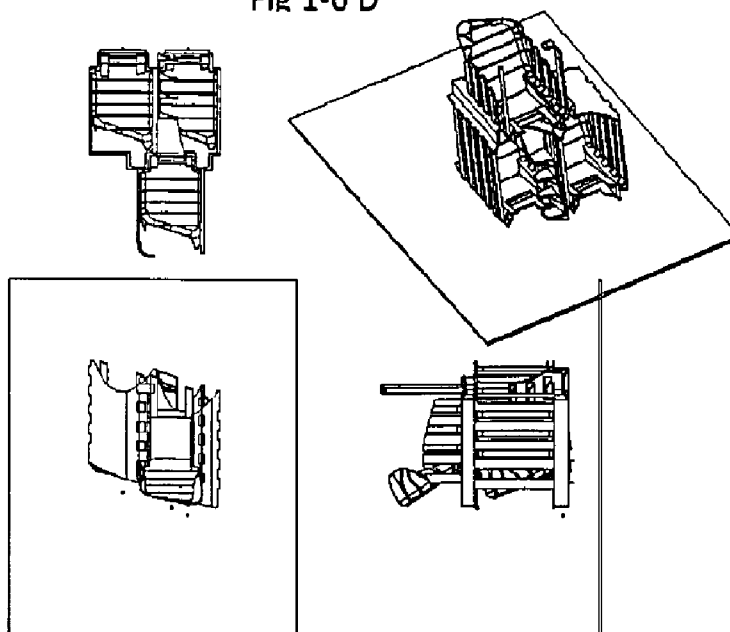
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[Continued on next page]

(54) Title: VEHICLE OCCUPANT SUPPORT

Fig 1-6 D



(57) Abstract: Arrangements for safety and comfort in vehicles.



TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER INV. B60N2/005 B60N2/01 B61D1/06 B61D1/08 B64D11/06 B60N2/26 B60N2/28 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) B60N B61D B64D 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 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Category*</th> <th style="width: 70%;">Citation of document, with indication, where appropriate, of the relevant passages</th> <th style="width: 20%;">Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: top;">A</td> <td>GB 2 350 828 A (DCA DESIGN INT LTD [GB]) 13 December 2000 (2000-12-13) the whole document</td> <td style="text-align: center; vertical-align: top;">1-11</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">A</td> <td>WO 2008/092382 A1 (YU JUN [CN]) 7 August 2008 (2008-08-07) the whole document</td> <td style="text-align: center; vertical-align: top;">1-11</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	A	GB 2 350 828 A (DCA DESIGN INT LTD [GB]) 13 December 2000 (2000-12-13) the whole document	1-11	A	WO 2008/092382 A1 (YU JUN [CN]) 7 August 2008 (2008-08-07) the whole document	1-11
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A	GB 2 350 828 A (DCA DESIGN INT LTD [GB]) 13 December 2000 (2000-12-13) the whole document	1-11									
A	WO 2008/092382 A1 (YU JUN [CN]) 7 August 2008 (2008-08-07) the whole document	1-11									
☐ 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 27 March 2012	Date of mailing of the international search report 31/05/2012										
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 Jazbec, Simon										

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/001547

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

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.

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

Claims 1-11 refer to a system of modular vehicle occupant supports, wherein said modular occupant supports are in two or more tiers and wherein each tier comprises a plurality of modular occupant supports, and wherein the modular occupant supports in the second tier are offset laterally with regard to the modular occupant supports in the first tier, and wherein the first tier of modular occupant support have direct egress and ingress access to occupants, and wherein egress and ingress to each of the modular occupant supports in the second tier requires a means for elevating the occupant, and wherein means for such elevation for each of said modular occupant supports on the second tier is a set of stairs located along a side wall of one of said modular occupant supports on the first tier, thereby providing means for egress and ingress of an occupant in the second tier without limiting space egress and ingress of the occupant in the first tier, said limiting of space being determined by one of both of the extent of offset of the second tier relative to the first tier and the width of the stairs in order to provide an effective arrangement of modular vehicle occupant supports.

2. claims: 12-15, 20, 22-28, 32, 33

Claims 12-15 refer to a mechanism for protection of the occupant in an impact in a CRS (child restrain system), comprising a LATCH or ISOFIX attachment mechanism that may be pivoted about an axis and deployed for both front and rear facing positions of the CRS, enabled to reorient the latch to be in the same orientation for attachment to the vehicle, in order to provide an effective restraint fixation means.

Claim 20 refer to a mechanism for protection of the occupant in an impact in a CRS, comprising a chin rest/guard attached to the front of the harness.

Claims 22-24 refer to a mechanism for protection of the occupant in an impact in a CRS, comprising a central main shock strip that supports the inner shell supporting the occupant.

Claim 25 refers to a mechanism for protection of the occupant in an impact in a CRS, wherein a support mechanism for the LATCH/ISOFIX assembly is directly attached to a substantially vertical central axle that is attached to the tether.

Claim 26 refers to a mechanism for protection of the occupant in an impact in a CRS, comprising a dynamic innershell supporting the occupant, wherein the head rest and harness support are attached to said dynamic innershell with a adjustment mechanism for raising and lowering the

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

headrest and harness support.

Claims 27-28 refer to a mechanism for protection of the occupant in an impact in a CRS, comprising a headrest adjuster mechanism comprising an adjuster tube sliding in a brace section attached to the outer surface of an innershell, wherein the adjuster tube is attached to the head/harness support with a plurality of staples that straddle the brace section and reach the head/harness support through slots in the inner shell.

Claim 32 refers to a mechanism for protection of the occupant in an impact in a CRS, with an innershell supported by a main shock strip, wherein the shock strip has a support element at the rear bottom to avoid excessive compression during one or both of: severe front impact.

Claim 33 refers to a mechanism for protection of the occupant in an impact in a CRS, with an innershell supported by a main shock strip attached to a pivoting outer shell to enable rotation for egress and ingress relative to a frame attached to a vehicle, a pair of legs on the innershell supported by the frame on a sliding surface on the frame to support the inner shell under lateral impact conditions.

3. claims: 16-19, 21, 29-31

Claim 16 refers to a mechanism for protection of the occupant in an impact in a CRS, comprising a shock absorption mechanism for a CRS for controlling the motion of a support shell for a child in one or both of a front and side impact, condition, comprising a substantially vertically mounted shock absorber with a crushable or spring/damper element and a rotating head to align the restraining tension force to the direction of the loading, in order to absorb an impact during a collision.

Claim 19 refers to a mechanism for protection of the occupant in an impact in a CRS, comprising a harness load limiter adapted to limit the peak load on the harness by one of: friction, compressing a crushable element, compressing a spring damper element; breaking at least one fracture neck at a predetermined force and thereafter deforming a deformable element following the fracture of each neck; deforming deformable fingers at a predetermined force, in order to absorb an impact during a collision.

Claims 17-18 refer to a mechanism for protection of the occupant in an impact in a CRS, comprising a support shell with a layer of compressible foam inside, and a tear resistant membrane attached to the inside surface thereof, wherein the foam is contoured to have a reduced section towards the rear of the CRS thereby inducing rotation of the occupant away from a lateral impact on the CRS, in order to absorb an impact during a collision.

Claim 21 refers to a mechanism for protection of the occupant in an impact in a CRS, comprising a support shell for the occupant pivotally attached about a substantially vertical pivot axis to the support frame attached to the

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

vehicle, wherein the support shell is retained in the normal position with a pair of clasps on either side locked in place with a lock that reinforces engagement upon compressive loads, wherein said clasp is adapted to fracture at a predetermined lateral load on the support shell to enable the occupant to move away from the impact, in order to absorb an impact during a collision.

Claims 29-31 refer to a mechanism for protection of the occupant in an impact in a CRS, comprising a load limiter attached on the load path of a harness, wherein said load limiter is enabled by the bending of a strip of deformable material of a predetermined width and thickness at each point along its length, in order to absorb an impact during a collision.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2011/001547

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2350828	A	13-12-2000	NONE	

WO 2008092382	A1	07-08-2008	CN 101234641 A	06-08-2008
			WO 2008092382 A1	07-08-2008
