(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
4 December 2003 (04.12.2003)

PCT

(10) International Publication Number
WO 2003/100462 A3

(51) International Patent Classification[7]: G08B 13/26

(21) International Application Number:
PCT/US2003/016045

(22) International Filing Date: 21 May 2003 (21.05.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/153,378 21 May 2002 (21.05.2002) US

(71) Applicant: **AUTOMOTIVE SYSTEMS LABORATORY, INC.** [US/US]; 27200 Haggerty Road, Suite B-12, Farmington Hills, MI 48331 (US).

(72) Inventors: **STANLEY, James, G.**; 21945 Daleview Drive, Novi, MI 48374 (US). **STOPPER, Robert, A., Jr.**; 40949 Crabtree Lane, Plymouth, MI 48170 (US).

(74) Agents: **BEGIN, laurance, C.** et al.; DINNIN & DUNN, P.C., 2701 Cambridge Court, Suite 500, Auburn Hills, MI 48326 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.

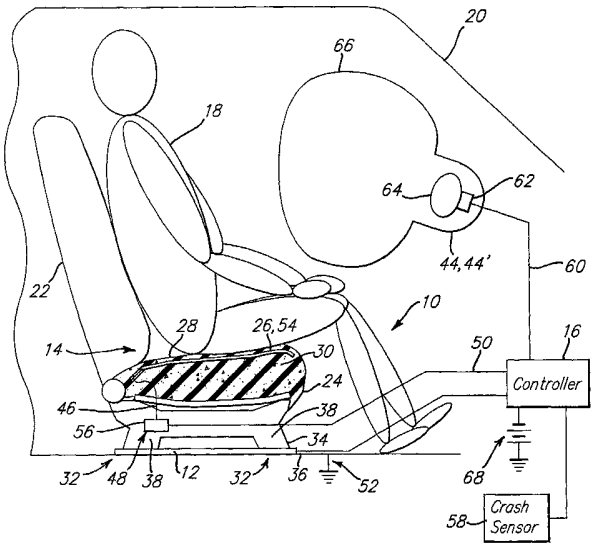
(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

(88) Date of publication of the international search report:
8 April 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: OCCUPANT DETECTION SYSTEM



(57) Abstract: An occupant detection system (10) comprises a weight sensor (12) and an electric field sensor (14), each operatively coupled to a seat (22). The electric field sensor (14) generates an electric field from at least one electrode (26) in the seat bottom of the seat, generates a response to an influence of the occupant (18) thereupon, and discriminates from the response a seated infant or child seating condition from another seating condition. If an output from the weight sensor (12) is less than a threshold, or if a seated child condition is detected, then a signal processor (U2) provides for disabling an associated restraint actuator (44). The electric field sensor (14) may comprise a plurality of electrodes (26, 26.1, 26.2) over separate first and second regions of differing proximity to a seated infant or child, or at least one electrode (26) in cooperation with a shield or void.

WO 2003/100462 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/16045

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : G08B 13/26
US CL : 340/561,562,667; 280/735; 701/45
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)
U.S. : 340/561,562,666,667,870.37; 280/735; 701/45; 307/10.1; 180/271,274,282,290

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)
EAST (vehicle,car,seat,electrode,overlap,surround,shield,weight,load)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/0038947 A1 (BABA et al) 04 April 2002, Figs. 1-3, 6 and 7D-7F, and paragraphs 41, 48 and 80-82.	1-2,4-6,15
X	US 6,283,504 B1 (STANLEY et al) 04 September 2001, Fig. 6, col. 9, lines 7-18, and claims 7 and 9.	10-14
A	US 6,378,900 B1 (STANLEY et al) 30 April 2002, Abstract and Fig. 3.	1-15
A	US 6,348,862 B1 (McDONNELL et al) 19 February 2002, Abstract and Fig. 1	1-15
A	US 5,948,031 A (JINNO et al) 07 September 1999, Abstract and Fig. 4.	1-15

☐ 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 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
04 September 2003 (04.09.2003)

Date of mailing of the international search report
18 DEC 2003

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (703)305-3230

Authorized officer
Thomas J. Mullen, Jr.

Telephone No. 703-305-3900

Form PCT/ISA/210 (second sheet) (July 1998)