

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
4 March 2004 (04.03.2004)

PCT

(10) International Publication Number
WO 2004/018242 A3

(51) International Patent Classification⁷: **B62D 33/06**

(21) International Application Number:
PCT/US2003/026319

(22) International Filing Date: 21 August 2003 (21.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/405,136 21 August 2002 (21.08.2002) US
60/465,132 24 April 2003 (24.04.2003) US

(71) Applicant: **DELPHI TECHNOLOGIES, INC.**
[US/US]; Mail Code 480-410-202, P.O. Box 5052,
Troy, MI 48007-5052 (US).

(72) Inventors: **OLIVER, Michael, L.**; 1315 Smith Road, Xenia, OH 45385 (US). **BISHOP, Todd, A.**; 7571 Pelway Drive, Centerville, OH 45459 (US). **JENSEN, Eric, L.**; 165 Manor Lane, Dayton, OH 45429 (US). **KRUCKE-MEYER, William, C.**; 2935 Tara Trail, Beavercreek, OH 45434 (US).

(74) Agent: **McBAIN, Scott**; Delphi Technologies, Inc., P.O. Box 5052, Mail Code: 480-410-202, Troy, MI 48007-5052 (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, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, 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
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
13 May 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: CONTROLLED TRUCK CAB SUSPENSION SYSTEM

(57) Abstract: A suspension system for use between a cab (16) and a truck frame (18, 20), includes a strut module having a strut (52, 54) and an air spring (100), and a control module (68), connected to a source of pressurized air, for sensing a distance between the cab (16) and truck frame (18, 20) and selectively pressurizing the air spring in response to changes in that distance. Preferably, the strut (52, 54) is a McPherson strut and the air spring (100) encloses at least a portion of the strut () to provide a compact assembly and includes a three point connection to the cab (16) and frame (18, 20) to resist relative lateral movement between the cab (16) and frame (18, 20). The strut (52, 54) also preferably is a magnetorheological damper so that the control module can adjust the damping characteristics of the strut to optimize rider comfort.



WO 2004/018242 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/26319

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : B62D 33/06

US CL : 180/89.12, 89.13, 89.14, 89.15

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. : 180/89.12, 89.13, 89.14, 89.15

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
None

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
East

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,299,651 (Wilson) 5 April 1994 (05.04.1994). See entire document.	1-25
A	US 5,779,009 (Iwasaki) 14 July 1998 (14.07.1998). See entire document.	1-25
A	US 6,070,681 (Catanzarite et al) 6 June 2000 (06.06.2000). See entire document.	1-25
A	US 5,299,651 (Wilson) 5 April 1994 (05.04.1994). See entire document.	1-25

☐ 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 March 2004 (04.03.2004)

Date of mailing of the international search report

09 APR 2004

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

Paul Dickson

Telephone No. (703) 308-2089