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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 January 2006 (26.01.2006)

PCT

(10) International Publication Number
WO 2006/010154 A3

(51) International Patent Classification:
B60C 23/00 (2006.01)

(21) International Application Number:
PCT/US2005/025316

(22) International Filing Date: 15 July 2005 (15.07.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/588,910 16 July 2004 (16.07.2004) US

(71) Applicant *(for all designated States except US)*: **LYNXRAIL CORPORATION** [US/US]; 13 Pine Road, Colorado Springs, CO 80906 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **KILIAN, Kryzsztof** [US/US]; 13 Pine Road, Colorado Springs, CO 80906 (US). **MAZUR, Vladimir** [AU/AU]; 24 Glengariff Drive, Floreat, Western Australia 6014 (AU). **RANWALA, Hilary, Gration** [AU/AU]; 44 Abbotswood Drive, Landsdale, Western Australia 6065 (AU).

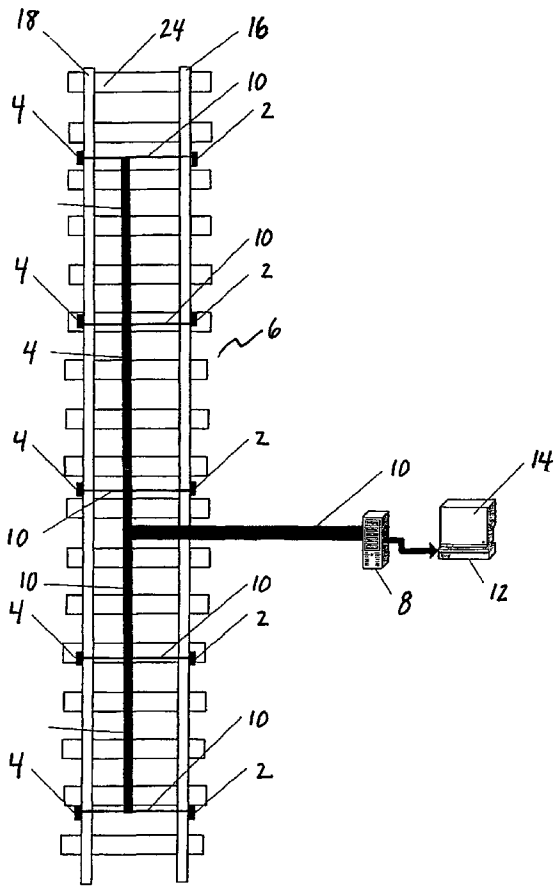
(74) Agents: **HUSSIN, Christopher, J.** et al.; Sheridan Ross P.C., 1560 Broadway, Suite 1200, Denver, CO 80202-5141 (US).

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

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,

[Continued on next page]

(54) Title: APPARATUS FOR DETECTING HUNTING AND ANGLE OF ATTACK OF A RAIL VEHICLE WHEELSET



(57) Abstract: An apparatus and method for estimating the angle of attack of wheels, wheelsets, trucks and railway (6) vehicles traveling over a track employing a wayside system having a plurality of sensors (2 and 4), adjacent to rails of track, for detecting the passing of each wheelset of each truck. Each sensor communicates its moment of activation and length of activation caused by passing wheel to sensor monitoring unit (14) for use in determining the angle of attack of passing wheel to a sensor monitoring unit for use in determining the angle of attack of passing wheel, wheelset, truck and railway vehicle. The estimated angle of attack of the wheelset at different locations along the track may be used to detect a hunting wheelset, truck or railway vehicle.

WO 2006/010154 A3

RO, SE, SI, SK, TR), OAPI (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:
22 February 2007

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.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US05/25316

A. CLASSIFICATION OF SUBJECT MATTER
IPC: **B60C 23/00**(2006.01)

USPC: 73/146
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. : 73/146

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)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 20040095585 A (NAYEBI) 20 May 2004 (20.05.2004), see calim 14	1-15
A	US 6,516,668 A (HAVIRA et al) 11 February 2003 (11.02.2003), see the entrie patent.	1-22
A	US 6,405,141 A (CARR et al) 11 June 2002 (11.06.2002), see the entire patnet.	1-22
A	US 6,377,215 A (HALVORSON et al) 23 April 2002 (23.04.2002), see the entire patnet	1-22

☐ 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
23 October 2006 (23.10.2006)

Date of mailing of the international search report
04 JAN 2007

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. (571) 273-3201

Authorized officer
Max Noori
Telephone No. (571) 272-2800

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US05/25316

Continuation of B. FIELDS SEARCHED Item 3:
East
search term: rail, wheel, angle, attack, monitoring, detecting sesning