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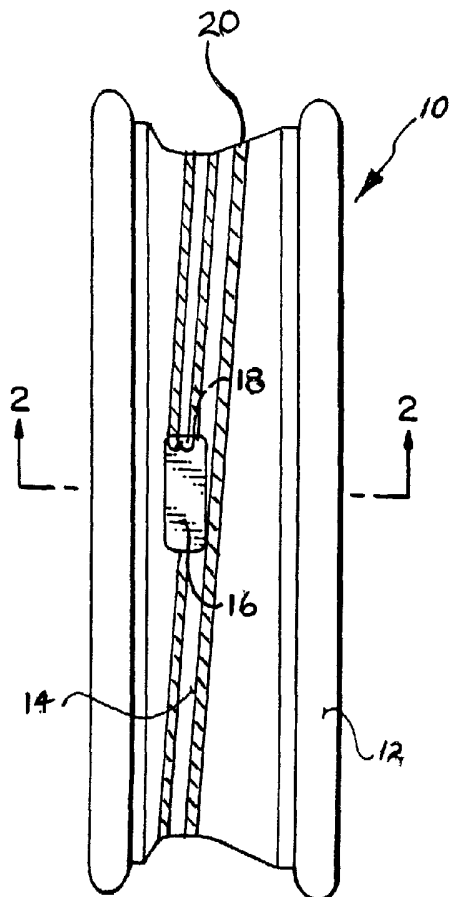
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[Continued on next page]

(54) Title: TIRE SENSOR



(57) Abstract: A tire monitoring device (10) for monitoring various tire conditions of a tubeless tire mounted on a vehicle wheel having a recessed portion of the wheel and a wheel rim (12) defining the recessed portion, including a composite wheel having at least one wire free transmitter and a receiver incorporated into and embedded into the surface of the composite wheel in the recessed portions of the wheel. The transmitter and the receiver will monitor, transmit and receive signals about the tire condition, including tire pressure and temperature. Also included is an embedded antenna (20) permanently incorporated into the recessed portion of the composite wheel, such that the antenna (20) becomes part of the wheel, with an antenna winding length of from about 0.5 to about 5.0 meters long. Other embodiments include the use of a toroidal antenna in the recessed portion of the wheel.



WO 03/000509 A3



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Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations 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, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, 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, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations 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, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, 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, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

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US CL : 340/447, 445, 442; 73/146.5

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

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none

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
aps (tire and alarm) and saw and torroidal and encapsulated

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,541,574 A (LOWE ET AL) 30 JULY 1996, Figure 1, col. 3, lines 20-65, col. 4.	1-12
X	US 5,218,861 A (BROWN ET AL) 15 JUNE 1993, cols. 5 and 6.	1-12
X	US 4,507,956 A (SCHLESINGER ET AL) 02 APRIL 1985, Figures 1-3, cols. 3 and 4.	1-12
X	US 4,160,234 A (KARBO ET AL) 03 JULY 1979, Figures 1-3, cols. 2-6.	1-12



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"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		

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