



(51) International Patent Classification:

G01V 3/08 (2006.01) G01V 3/12 (2006.01)
G01V 3/10 (2006.01)

(21) International Application Number:

PCT/US2013/041006

(22) International Filing Date:

14 May 2013 (14.05.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/646,892 14 May 2012 (14.05.2012) US
61/781,889 14 March 2013 (14.03.2013) US

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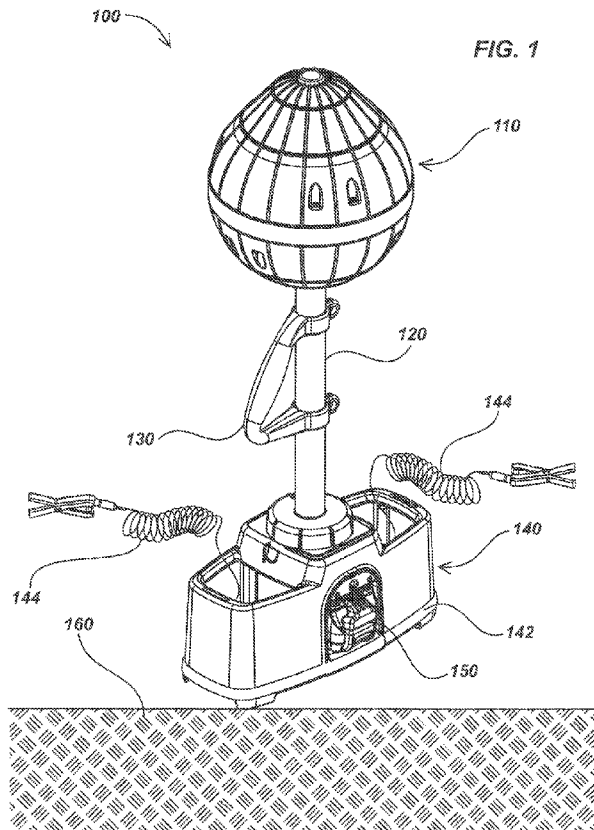
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD,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

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,

[Continued on next page]

(54) Title: OMNI-INDUCER TRANSMITTING DEVICES AND METHODS



(57) Abstract: Omnidirectional electromagnetic signal inducer (omni-inducer) devices are disclosed. The omni-inducer device may include a housing, which may include a conductive base for coupling signals to ground, and an omnidirectional antenna node including a plurality of antenna coil assemblies, where the node may be disposed on or within the housing. The omni-inducer device may further include one or more transmitter modules for generating ones of a plurality of output signals, which may be generated at ones of a plurality of different frequencies, and one or more control circuits configured to control the transmitters and/or other circuits to selectively switch the ones of the plurality of output signals between ones of the plurality of antenna coil assemblies.

WO 2013/173379 A3



UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, 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))

(88) Date of publication of the international search report:

22 May 2014

Published:

— with international search report (Art. 21(3))

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/041006

A. CLASSIFICATION OF SUBJECT MATTER
INV. G01V3/08 G01V3/10 G01V3/12
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)
G01V
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		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/081615 A1 (QRSCIENCES PTY LTD [AU]; CHISHOLM WARRICK PAUL [AU]; HAYES PETER ALARI) 10 August 2006 (2006-08-10)	1-3,12, 13, 16-18, 21,22, 27,28, 36,37, 45,48, 49,54
Y	page 2, line 15 - page 3, line 9 page 5, line 18 - line 21 page 8, line 27 - page 9, line 15 page 19, line 3 - line 5 page 21, line 18 - line 24 page 27, line 3 - line 13 figures 4,5,10 ----- -/--	4,29

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	"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
"E" earlier application or patent but published on or after the international filing date	"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
"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)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 14 February 2014	Date of mailing of the international search report 30/04/2014
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 Breccia, Luca

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/041006

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 7 809 421 B1 (GOVARI ASSAF [IL]) 5 October 2010 (2010-10-05) column 7, line 15 - line 35 figure 2	4,29
A	----- US 7 443 154 B1 (MEREWETHER RAY [US] ET AL) 28 October 2008 (2008-10-28) column 16, line 1 - column 18, line 20 figures 17-19	1,17,18, 45
A	----- US 2009/009410 A1 (DOLGIN BENJAMIN P [US] ET AL) 8 January 2009 (2009-01-08) paragraph [0040] - paragraph [0041] figure 10	4,29

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/041006

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.:

1-4, 12, 13, 16-18, 21, 22, 27-29, 36, 37, 45, 48, 49, 54

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: 1-4, 12, 13, 16-18, 21, 22, 27-29, 36, 37, 45, 48, 49, 54

Multi-directional inducer device comprising single antenna coils configured in a spherical shape about a support structure assembly.

2. claims: 5-10, 30-35

Multi-directional inducer device including a primary antenna coil and a secondary antenna coil.

3. claim: 11

Multi-directional inducer device including a housing with a conductive base coupling an output signal to the ground.

4. claims: 14, 15, 19, 20, 23-26, 46, 47, 50-53

Multi-directional inducer device selectively applying two different frequencies to two different coils at the same time.

5. claims: 38-44, 55-61

Multi-directional electrical inducing method including synchronizing a transmission from a timing system receiver device.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2013/041006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006081615	A1	10-08-2006	NONE

US 7809421	B1	05-10-2010	AU 782593 B2 11-08-2005
			AU 5444101 A 24-01-2002
			CA 2353247 A1 20-01-2002
			EP 1184684 A2 06-03-2002
			IL 144271 A 24-07-2007
			JP 4977295 B2 18-07-2012
			JP 2002107107 A 10-04-2002
			KR 20020008775 A 31-01-2002
			US 7809421 B1 05-10-2010

US 7443154	B1	28-10-2008	US 7443154 B1 28-10-2008
			US 7733077 B1 08-06-2010
			US 8106660 B1 31-01-2012

US 2009009410	A1	08-01-2009	CA 2719200 A1 17-12-2009
			EP 2269086 A1 05-01-2011
			KR 20100131501 A 15-12-2010
			US 2009009410 A1 08-01-2009
			WO 2009151699 A1 17-12-2009
