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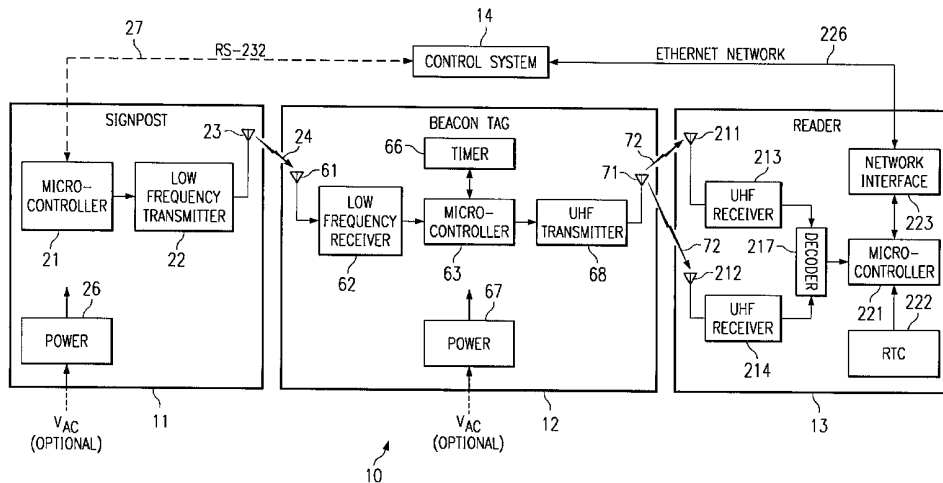
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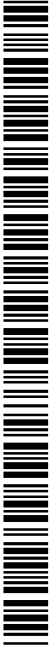
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[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR TRACKING DEVICES USING TAGS



(57) Abstract: An apparatus (10, 240, 300) includes a signpost (11, 241-256, 322, 612, 623, 626-628, 652, 661, 682, 686, 703) which transmits relatively low frequency signpost signals that contain a signpost code and are fundamentally magnetic, a beacon tag (12, 271-275, 301-316, 395-397, 616-618, 641-643, 653, 656-657, 662-664, 679, 708, 711) which receives the signpost signals and transmits radio frequency signals containing the signpost code (42, 93), and a reader (13, 261, 319, 521-530) which receives the radio frequency signals. One of the signpost and tag is mounted on a moveable item to be tracked, and the other is mounted on a similar item or is stationary. A sensor (32) can be provided to detect the presence of an item and cause the signpost to change its transmitted signpost code. The tag can vary the duration, transmission rate, and/or transmission power of its beacon signals. A control system (14, 500) responsive to the reader can cause the signpost to vary its signpost signal in a manner which causes the tag to shift between normal and low power modes, or which causes the tag to vary at least one operational characteristic, such as transmission rate, transmission power, a transmitted password, or various transmitted codes.



WO 02/021429 A3



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).

**Declarations under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

**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:**

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INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 01/28033

<p><b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 G06K19/07 G06K7/00</p>		
<p>According to International Patent Classification (IPC) or to both national classification and IPC</p>		
<p><b>B. FIELDS SEARCHED</b></p>		
<p>Minimum documentation searched (classification system followed by classification symbols) IPC 7 G06K</p>		
<p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p>		
<p>Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data</p>		
<p><b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b></p>		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 5 804 810 A (WEIMAR JAMES H ET AL) 8 September 1998 (1998-09-08) column 16, line 21 - line 67 column 18, line 57 -column 20, line 6 column 21, line 26 -column 28, line 61 figures 2,5,6</p>	1-122
X	<p>--- US 5 627 517 A (WANT ROY ET AL) 6 May 1997 (1997-05-06) column 3, line 47 - line 64 column 7, line 42 - line 67 figures 3,3A</p>	1-122
X	<p>--- US 5 347 274 A (HASSETT JOHN J) 13 September 1994 (1994-09-13) column 4, line 11 - line 28; figure 3</p> <p>--- -/--</p>	1-122
<p><input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.      <input checked="" type="checkbox"/> Patent family members are listed in annex.</p>		
<p>° Special categories of cited documents :</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"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</p> <p>"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</p> <p>"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.</p> <p>"&amp;" document member of the same patent family</p>		
<p>Date of the actual completion of the international search 24 April 2002</p>		<p>Date of mailing of the international search report 27 05. 2002</p>
<p>Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016</p>		<p>Authorized officer Bhalodia, A</p>

INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 01/28033

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 686 902 A (MIHOVILOVIC DOMINGO ANTONIO ET AL) 11 November 1997 (1997-11-11) column 3, line 37 - line 49 ---	1-122
A	WO 98 32092 A (COLE PETER HAROLD ;INTEGRATED SILICON DESIGN PTY (AU)) 23 July 1998 (1998-07-23) page 7, line 25 -page 8, line 5 -----	1-122

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 01/28033

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 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.: **1-122**  
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:  
**see FURTHER INFORMATION sheet PCT/ISA/210**
  
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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

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 fee, this Authority did not invite payment of any additional fee.
  
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.:

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1-122

In view of the large number and also the wording of the claims presently on file, which render it difficult, if not impossible, to determine the matter for which protection is sought, the present application fails to comply with the clarity and conciseness requirements of Article 6 PCT (see also Rule 6.1(a) PCT) to such an extent that a meaningful search is impossible. Consequently, the search has been carried out for those parts of the application which do appear to be clear and concise, and that appear to represent the heart of the invention, namely figure 1 and the accompanying description.

For practical reasons the cited documents are cited against all the claims.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

## INTERNATIONAL SEARCH REPORT

International Application No

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5804810	A	08-09-1998	AU 3593297 A	14-01-1998
			CA 2259000 A1	31-12-1997
			WO 9750057 A1	31-12-1997
-----				
US 5627517	A	06-05-1997	JP 9208016 A	12-08-1997
-----				
US 5347274	A	13-09-1994	US 5144553 A	01-09-1992
			US 5406275 A	11-04-1995
			US 5289183 A	22-02-1994
			AU 4857993 A	12-04-1994
			WO 9407225 A1	31-03-1994
			US 5805082 A	08-09-1998
			AU 7901691 A	10-12-1991
			EP 0530271 A1	10-03-1993
			JP 5508492 T	25-11-1993
			WO 9118354 A1	28-11-1991
			US 5751973 A	12-05-1998
			AU 4539493 A	24-01-1994
			WO 9400830 A1	06-01-1994
-----				
US 5686902	A	11-11-1997	US 5640151 A	17-06-1997
			US 5528232 A	18-06-1996
			US 5973613 A	26-10-1999
			AT 134044 T	15-02-1996
			DE 69116946 D1	21-03-1996
			DE 69116946 T2	20-06-1996
			DK 467036 T3	11-03-1996
			EP 0467036 A2	22-01-1992
			ES 2082885 T3	01-04-1996
			GR 3019842 T3	31-08-1996
			JP 4232488 A	20-08-1992
-----				
WO 9832092	A	23-07-1998	AU 737367 B2	16-08-2001
			AU 5469298 A	07-08-1998
			WO 9832092 A1	23-07-1998
			EP 0953181 A1	03-11-1999
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