

(19) (KR)
(12) (A)

(51) 。 Int. Cl.⁷ (11) 10-2004-0103415
A61B 5/00 (43) 2004 12 08

(21) 10-2004-0038187
(22) 2004 05 28

(30) 10/448,291 2003 05 29 (US)

(71) 91765 3333

(72) , 34400 1

(74)

:

(54)

가 가
가 가
가
, (a) , (b)
, (c)
, (d) , (e)
, (f)

2 가 .

3a, 3b 3c 가

* *

18: 20:

34: 40:

50:

가'

(object)

(moving, magnetic field-responsive article)

(locating) , (target sighting),

X-

가

- (Ben-Haim) 5,391,199 5,443,489

3 가 (ra

diator coil)

- (Ben-Haim) PCT WO 96/05768

6 가 (six-dimensional)

6 가

(Doron) 6,239,724 가

1 ; (a)

(c) ; (b) (positioning field signal) 2 ;

3

[illegible]

가

(Hansen) 5,767,669 ,

(Blood) 4,945,305 4,849,692 , D

C . DC

(Blood) 5,600,330 , 가

(Dumoulin) EP 0-964,261 A2

(calibrate), 1

2 , 가

5,831,260 ,

(Sliwa, Jr.) 6,122,538 ,

가

1934

(763,861)

가

(non-linear hysteresis loop) (i

nterrogating frequency)

aver) 4,622,542 , 4,309,697 , (Klein) 가 가 , (We

6,373,387 가 , 5,008,649 , (Qiu)

(Brooks) 4,791,412 ,

(Roybal) 6,150,810 , (Ramsden) 6,127,821 , (Guich

ard) 5,519,317 , (Candy) 5,506,506

(Johnson)

4,868,504 ,

(Dobmann) 5,028,869 ,

<http://www.ndt.net/article/ecndt98/nulcear/245/245.htm> 2002 5 가 N

DT.net, Vol. 3, 10 (1998) (Feiste KL)

(nodular cast iron)

가

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가

- /

- /

가

가

, 가

가

가

가

(subtraction)

가

가

가

가

가

가

(fingerprint)'

가

가

가 1

1

1

가 2²

2

1

2

가

가

가

가

가 , 3 (offsite) 가가

(repository) (library) / 가

가 (onsite) 가 ()

가

2

가

가 , 1 2 가

가

가

2000 7 20 09/621.322

2002 11 22

200 Hz 12kHz

1 2

가 ,

가 가

가 가

가

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가

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가:

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1

(60)

(60)

(40) , (dx),

(24)

(20)

(18)

(18)

, (20)

(50)

(34)

- (Ben-Haim)

PCT

(20)

(

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,

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(

Hall effect device)

가 ,

(20)

(50)

(40)

n algorithm)

,

(20)

(20)

(harmonic correctio

(40)

(parasitic field)

(20)

(cart)

(40)

(40)

,

(40)

1

2

가

(16)

(20)

가

(40)

,

가

(16)

가

(40)

(60)

가

(34)

가

(34)

가

200Hz

12kHz

(20)

(34)

(60)

(22)

(50)

(2

2)

(20)

(60)

(22)

(20)

(22)

)

(22)

(22)

(

)

가

(34)

가

가, (40)가 (60), (22) (34) (40) (22) (50) (hysteresis loop) 가

(22) 3a, 3b 3c 3a (40) (60) $F_0, 3F_0$ $5F_0$ 4.0, 0.0 0.0 3b (40) (60) $F_0, 3F_0$ $5F_0$ 4.3, 2.0 1.0 (50) (clean received signal) $F_0, 3F_0$ $5F_0$ 0.3, 2.0 1.0 가 3 b 3c ;

가, (34) (22)

(60) 2 (40) (60) 1 가 1 (40) 1 가 2 (40) 2 (50) 1 2 (40) (40) (40) 가 (40)) (40)가 1 ($F_0, 3F_0$ $5F_0$ 1 2 () 4.6, 4.0 2.0 (40)가 2 가 2 $F_0, 3F_0$ $5F_0$ 0.3, 2.0 1.0 가 1 2 가 1 2 가 3 #1 3a, 3b 3c 1 #2, #3 f_0 f_0

[1]

	f_0	$2f_0$	$3f_0$	$4f_0$	$5f_0$	$5f_0/3f_0$	$3f_0/f_0$
#1	0.2	--	2.0	--	1.0	0.5	10.0
#2	0.3	--	1.5	--	1.2	0.8	5.0
#3	0.1	--	1.0	--	0.6	0.6	10.0

' ' 1 , 가가 f₀ , 가
 , (50) (가) , 가
 / / . 가
 가 가 / . (.)
 / , (50) , .
 , (repository),
 , 가 , 가 가
 가 , 가 (34)
 가 (50)
 가 , 가 3 (party) (offsite) 가
 , (library) . (.)
 (50) (50) (50) (onsite)
 가 (50) (18) 가
 (40) 가
 .
 , 1 가 (40)가 (60)
 (20) (40) (20)
 (50) (40) (40)가 가 /
 , (50) (40) , /
 (50) (20) 가 (40)
 가 (40) (20)
 (50) (20)
 .
 ' ' 1 (20) , f₀ , f₀
 4.1 , 3f₀ 1.0 , 5f₀ 0.5 가 . 5f₀ 3f₀ (40)
 0.5 . 1 , (50) (40)
 가 #1 . 0.1 f₀ (4.1)
 , 3f₀ (1.0) 3f₀ / f₀ (10.0) , 4.0
 . #1 (20)
 , (40) (identity) 가
 , (40)가
 가
 , (40)가 (60) , (5
 0) (40) , (40) (40) 가
 .

(40)가
가
(18)
(34)가
(20)가
(18)가

(invasive medical technique)

가,
가
(40), (41)
(50)

CD-ROM

(50)

가

가 - /

- /

- /

(57)

1.

4. 1, 200 Hz, 12kHz, 1

5. $\frac{1}{1}$, $\frac{2}{1}$, $\frac{1}{2}$, $\frac{3}{1}$, $\frac{2}{2}$, $\frac{1}{3}$, $\frac{4}{1}$, $\frac{3}{2}$, $\frac{2}{3}$, $\frac{1}{4}$, $\frac{5}{1}$, $\frac{4}{2}$, $\frac{3}{3}$, $\frac{2}{4}$, $\frac{1}{5}$, $\frac{6}{1}$, $\frac{5}{2}$, $\frac{4}{3}$, $\frac{3}{4}$, $\frac{2}{5}$, $\frac{1}{6}$, $\frac{7}{1}$, $\frac{6}{2}$, $\frac{5}{3}$, $\frac{4}{4}$, $\frac{3}{5}$, $\frac{2}{6}$, $\frac{1}{7}$, $\frac{8}{1}$, $\frac{7}{2}$, $\frac{6}{3}$, $\frac{5}{4}$, $\frac{4}{5}$, $\frac{3}{6}$, $\frac{2}{7}$, $\frac{1}{8}$, $\frac{9}{1}$, $\frac{8}{2}$, $\frac{7}{3}$, $\frac{6}{4}$, $\frac{5}{5}$, $\frac{4}{6}$, $\frac{3}{7}$, $\frac{2}{8}$, $\frac{1}{9}$, $\frac{10}{1}$, $\frac{9}{2}$, $\frac{8}{3}$, $\frac{7}{4}$, $\frac{6}{5}$, $\frac{5}{6}$, $\frac{4}{7}$, $\frac{3}{8}$, $\frac{2}{9}$, $\frac{1}{10}$, $\frac{11}{1}$, $\frac{10}{2}$, $\frac{9}{3}$, $\frac{8}{4}$, $\frac{7}{5}$, $\frac{6}{6}$, $\frac{5}{7}$, $\frac{4}{8}$, $\frac{3}{9}$, $\frac{2}{10}$, $\frac{1}{11}$, $\frac{12}{1}$, $\frac{11}{2}$, $\frac{10}{3}$, $\frac{9}{4}$, $\frac{8}{5}$, $\frac{7}{6}$, $\frac{6}{7}$, $\frac{5}{8}$, $\frac{4}{9}$, $\frac{3}{10}$, $\frac{2}{11}$, $\frac{1}{12}$, $\frac{13}{1}$, $\frac{12}{2}$, $\frac{11}{3}$, $\frac{10}{4}$, $\frac{9}{5}$, $\frac{8}{6}$, $\frac{7}{7}$, $\frac{6}{8}$, $\frac{5}{9}$, $\frac{4}{10}$, $\frac{3}{11}$, $\frac{2}{12}$, $\frac{1}{13}$, $\frac{14}{1}$, $\frac{13}{2}$, $\frac{12}{3}$, $\frac{11}{4}$, $\frac{10}{5}$, $\frac{9}{6}$, $\frac{8}{7}$, $\frac{7}{8}$, $\frac{6}{9}$, $\frac{5}{10}$, $\frac{4}{11}$, $\frac{3}{12}$, $\frac{2}{13}$, $\frac{1}{14}$, $\frac{15}{1}$, $\frac{14}{2}$, $\frac{13}{3}$, $\frac{12}{4}$, $\frac{11}{5}$, $\frac{10}{6}$, $\frac{9}{7}$, $\frac{8}{8}$, $\frac{7}{9}$, $\frac{6}{10}$, $\frac{5}{11}$, $\frac{4}{12}$, $\frac{3}{13}$, $\frac{2}{14}$, $\frac{1}{15}$, $\frac{16}{1}$, $\frac{15}{2}$, $\frac{14}{3}$, $\frac{13}{4}$, $\frac{12}{5}$, $\frac{11}{6}$, $\frac{10}{7}$, $\frac{9}{8}$, $\frac{8}{9}$, $\frac{7}{10}$, $\frac{6}{11}$, $\frac{5}{12}$, $\frac{4}{13}$, $\frac{3}{14}$, $\frac{2}{15}$, $\frac{1}{16}$, $\frac{17}{1}$, $\frac{16}{2}$, $\frac{15}{3}$, $\frac{14}{4}$, $\frac{13}{5}$, $\frac{12}{6}$, $\frac{11}{7}$, $\frac{10}{8}$, $\frac{9}{9}$, $\frac{8}{10}$, $\frac{7}{11}$, $\frac{6}{12}$, $\frac{5}{13}$, $\frac{4}{14}$, $\frac{3}{15}$, $\frac{2}{16}$, $\frac{1}{17}$, $\frac{18}{1}$, $\frac{17}{2}$, $\frac{16}{3}$, $\frac{15}{4}$, $\frac{14}{5}$, $\frac{13}{6}$, $\frac{12}{7}$, $\frac{11}{8}$, $\frac{10}{9}$, $\frac{9}{10}$, $\frac{8}{11}$, $\frac{7}{12}$, $\frac{6}{13}$, $\frac{5}{14}$, $\frac{4}{15}$, $\frac{3}{16}$, $\frac{2}{17}$, $\frac{1}{18}$, $\frac{19}{1}$, $\frac{18}{2}$, $\frac{17}{3}$, $\frac{16}{4}$, $\frac{15}{5}$, $\frac{14}{6}$, $\frac{13}{7}$, $\frac{12}{8}$, $\frac{11}{9}$, $\frac{10}{10}$, $\frac{9}{11}$, $\frac{8}{12}$, $\frac{7}{13}$, $\frac{6}{14}$, $\frac{5}{15}$, $\frac{4}{16}$, $\frac{3}{17}$, $\frac{2}{18}$, $\frac{1}{19}$, $\frac{20}{1}$, $\frac{19}{2}$, $\frac{18}{3}$, $\frac{17}{4}$, $\frac{16}{5}$, $\frac{15}{6}$, $\frac{14}{7}$, $\frac{13}{8}$, $\frac{12}{9}$, $\frac{11}{10}$, $\frac{10}{11}$, $\frac{9}{12}$, $\frac{8}{13}$, $\frac{7}{14}$, $\frac{6}{15}$, $\frac{5}{16}$, $\frac{4}{17}$, $\frac{3}{18}$, $\frac{2}{19}$, $\frac{1}{20}$, $\frac{21}{1}$, $\frac{20}{2}$, $\frac{19}{3}$, $\frac{18}{4}$, $\frac{17}{5}$, $\frac{16}{6}$, $\frac{15}{7}$, $\frac{14}{8}$, $\frac{13}{9}$, $\frac{12}{10}$, $\frac{11}{11}$, $\frac{10}{12}$, $\frac{9}{13}$, $\frac{8}{14}$, $\frac{7}{15}$, $\frac{6}{16}$, $\frac{5}{17}$, $\frac{4}{18}$, $\frac{3}{19}$, $\frac{2}{20}$, $\frac{1}{21}$, $\frac{22}{1}$, $\frac{21}{2}$, $\frac{20}{3}$, $\frac{19}{4}$, $\frac{18}{5}$, $\frac{17}{6}$, $\frac{16}{7}$, $\frac{15}{8}$, $\frac{14}{9}$, $\frac{13}{10}$, $\frac{12}{11}$, $\frac{11}{12}$, $\frac{10}{13}$, $\frac{9}{14}$, $\frac{8}{15}$, $\frac{7}{16}$, $\frac{6}{17}$, $\frac{5}{18}$, $\frac{4}{19}$, $\frac{3}{20}$, $\frac{2}{21}$, $\frac{1}{22}$, $\frac{23}{1}$, $\frac{22}{2}$, $\frac{21}{3}$, $\frac{20}{4}$, $\frac{19}{5}$, $\frac{18}{6}$, $\frac{17}{7}$, $\frac{16}{8}$, $\frac{15}{9}$, $\frac{14}{10}$, $\frac{13}{11}$, $\frac{12}{12}$, $\frac{11}{13}$, $\frac{10}{14}$, $\frac{9}{15}$, $\frac{8}{16}$, $\frac{7}{17}$, $\frac{6}{18}$, $\frac{5}{19}$, $\frac{4}{20}$, $\frac{3}{21}$, $\frac{2}{22}$, $\frac{1}{23}$, $\frac{24}{1}$, $\frac{23}{2}$, $\frac{22}{3}$, $\frac{21}{4}$, $\frac{20}{5}$, $\frac{19}{6}$, $\frac{18}{7}$, $\frac{17}{8}$, $\frac{16}{9}$, $\frac{15}{10}$, $\frac{14}{11}$, $\frac{13}{12}$, $\frac{12}{13}$, $\frac{11}{14}$, $\frac{10}{15}$, $\frac{9}{16}$, $\frac{8}{17}$, $\frac{7}{18}$, $\frac{6}{19}$, $\frac{5}{20}$, $\frac{4}{21}$, $\frac{3}{22}$, $\frac{2}{23}$, $\frac{1}{24}$, $\frac{25}{1}$, $\frac{24}{2}$, $\frac{23}{3}$, $\frac{22}{4}$, $\frac{21}{5}$, $\frac{20}{6}$, $\frac{19}{7}$, $\frac{18}{8}$, $\frac{17}{9}$, $\frac{16}{10}$, $\frac{15}{11}$, $\frac{14}{12}$, $\frac{13}{13}$, $\frac{12}{14}$, $\frac{11}{15}$, $\frac{10}{16}$, $\frac{9}{17}$, $\frac{8}{18}$, $\frac{7}{19}$, $\frac{6}{20}$, $\frac{5}{21}$, $\frac{4}{22}$, $\frac{3}{23}$, $\frac{2}{24}$, $\frac{1}{25}$, $\frac{26}{1}$, $\frac{25}{2}$, $\frac{24}{3}$, $\frac{23}{4}$, $\frac{22}{5}$, $\frac{21}{6}$, $\frac{20}{7}$, $\frac{19}{8}$, $\frac{18}{9}$, $\frac{17}{10}$, $\frac{16}{11}$, $\frac{15}{12}$, $\frac{14}{13}$, $\frac{13}{14}$, $\frac{12}{15}$, $\frac{11}{16}$, $\frac{10}{17}$, $\frac{9}{18}$, $\frac{8}{19}$, $\frac{7}{20$

6 7. , .

11.

12.

13.

14.

15.

16.

17.

18.

19.

20.

가 ;

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20 21. , , 가
.

20 22. 200 Hz 12kHz , 가
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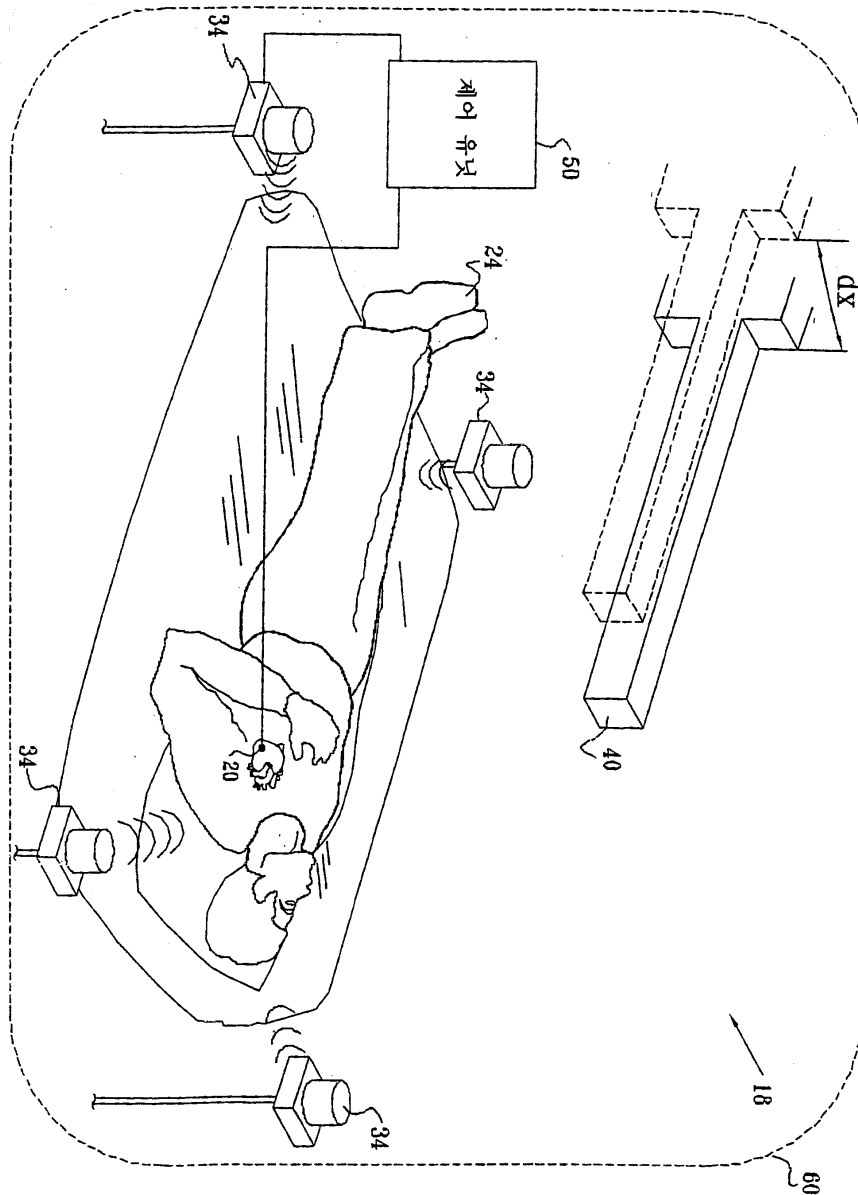
20 23. , 가, 2
1 ,
.

20 24. , 가,
.

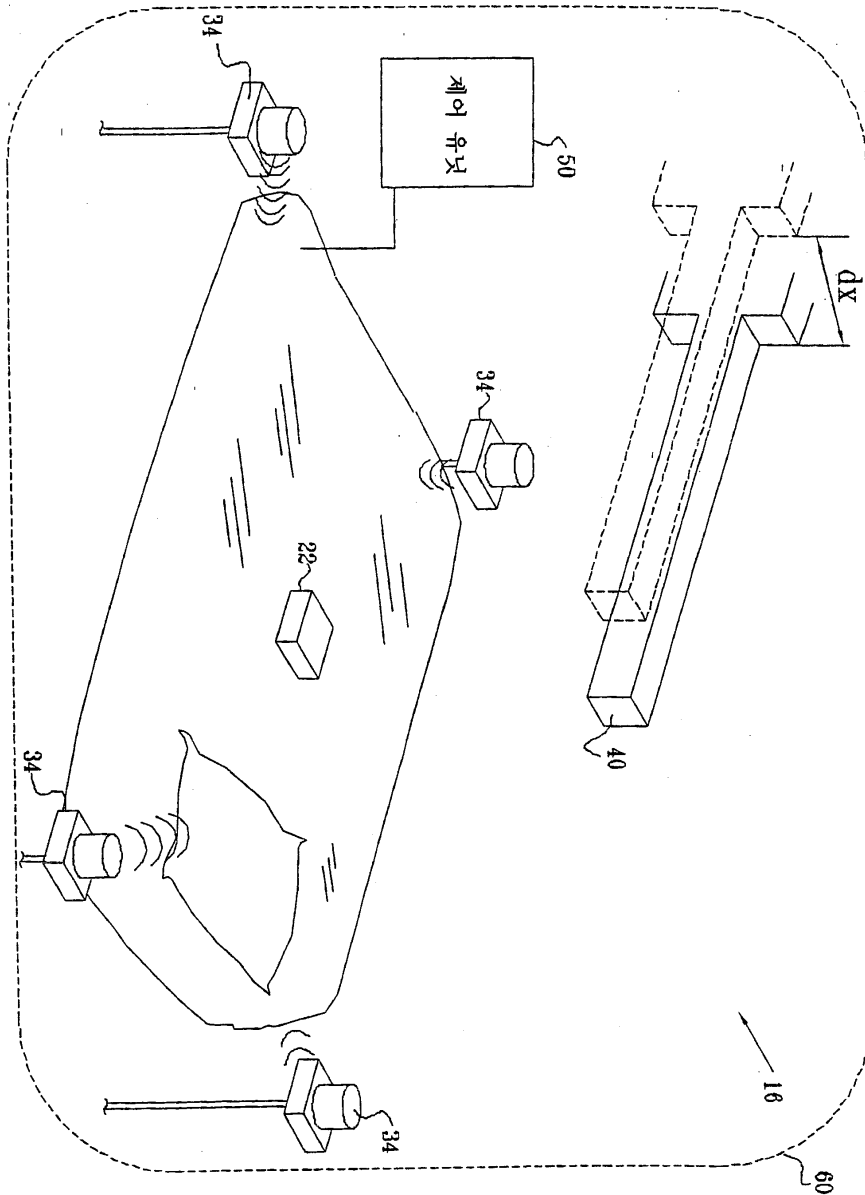
24 25. , 가
.

24 26. , 가,
 ,
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1



2



3a

간섭없는 신호

