FIG.1

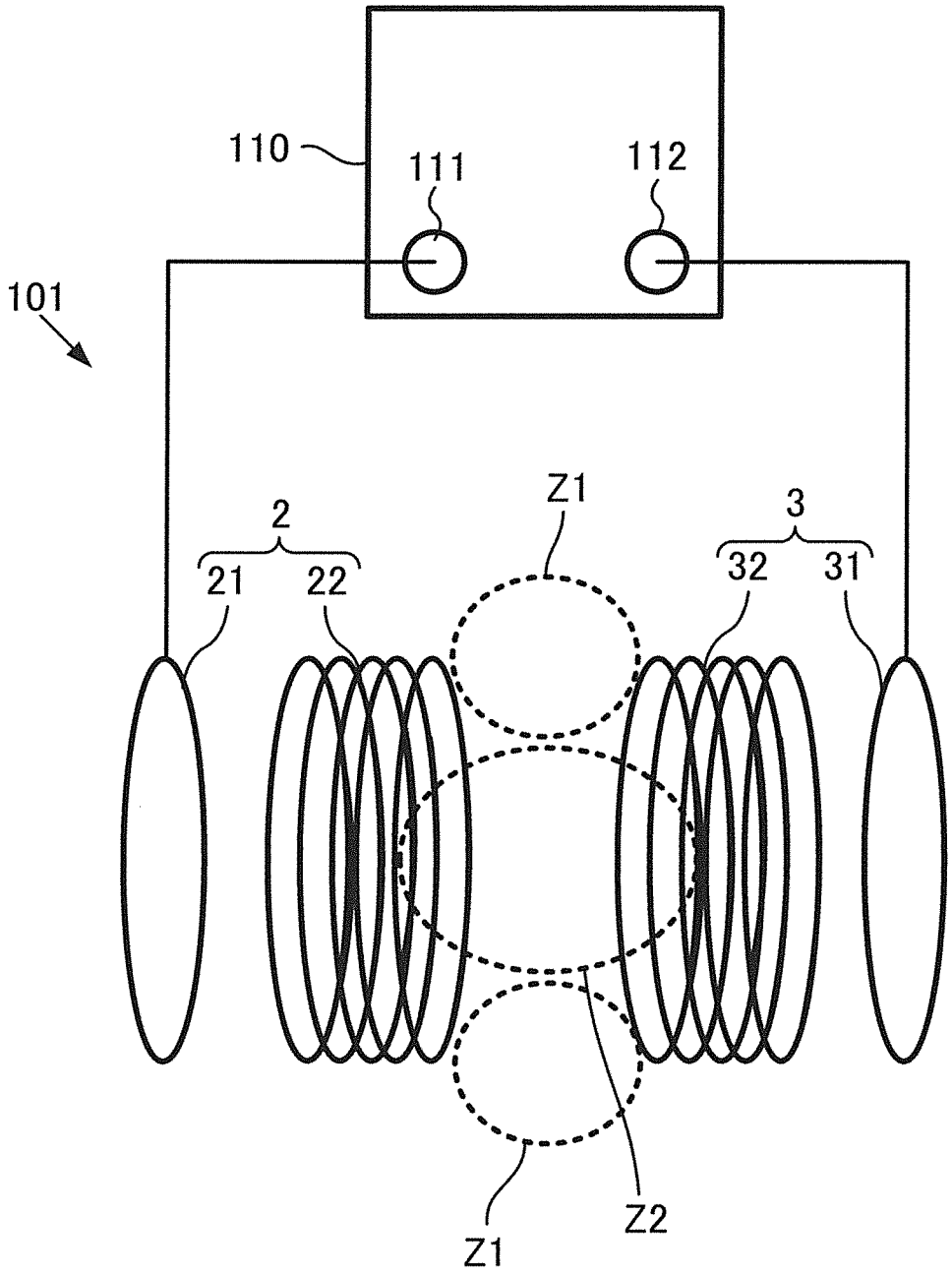


FIG.2

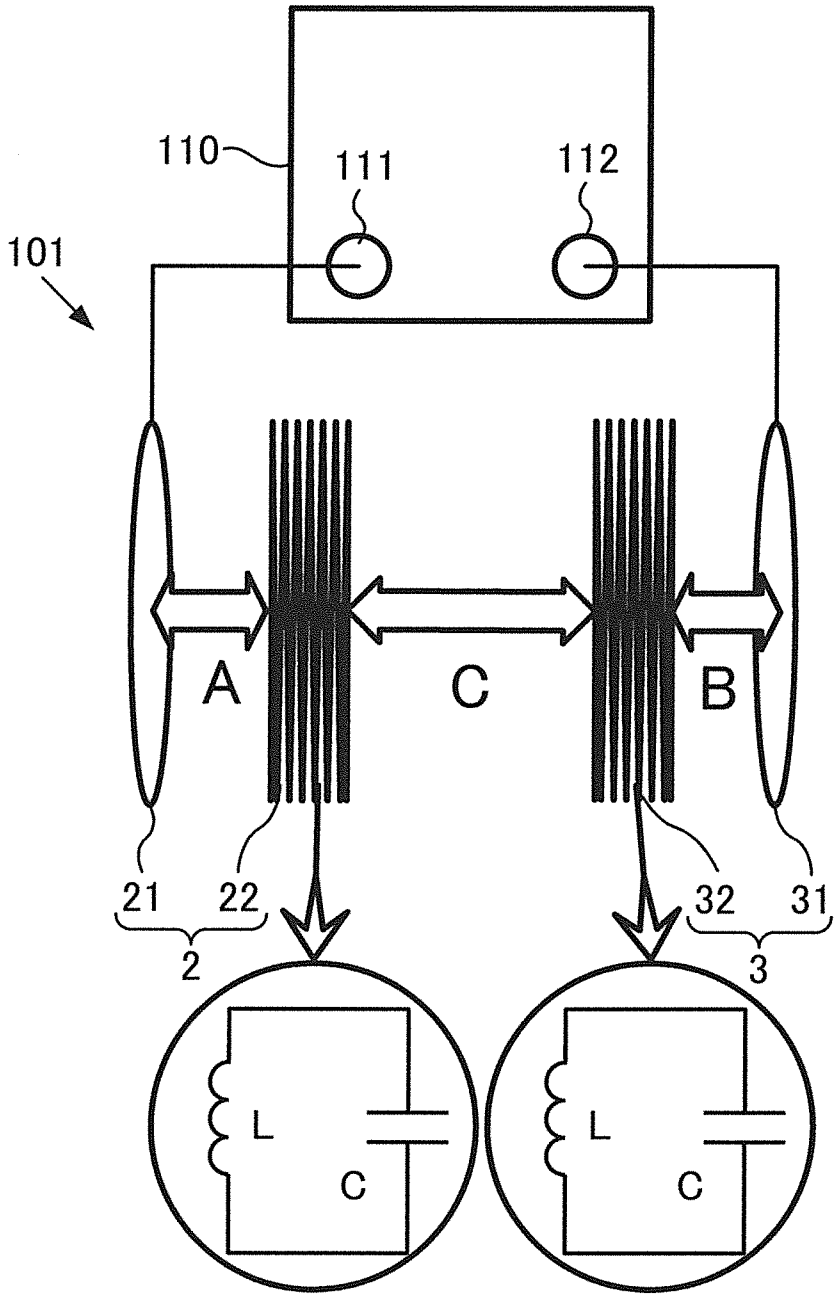


FIG.3

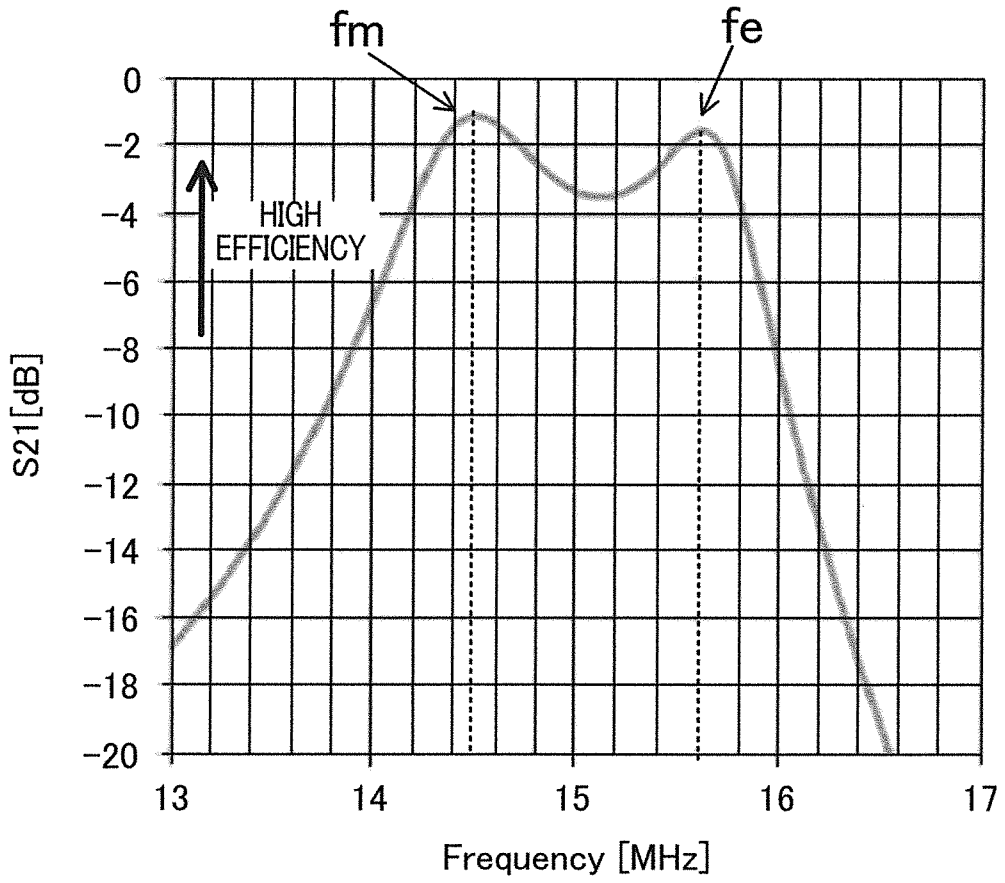

fm
fe
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
HIGH
EFFICIENCY
S21[dB]
13
14
15
16
17
Frequency [MHz]

FIG.4(A)

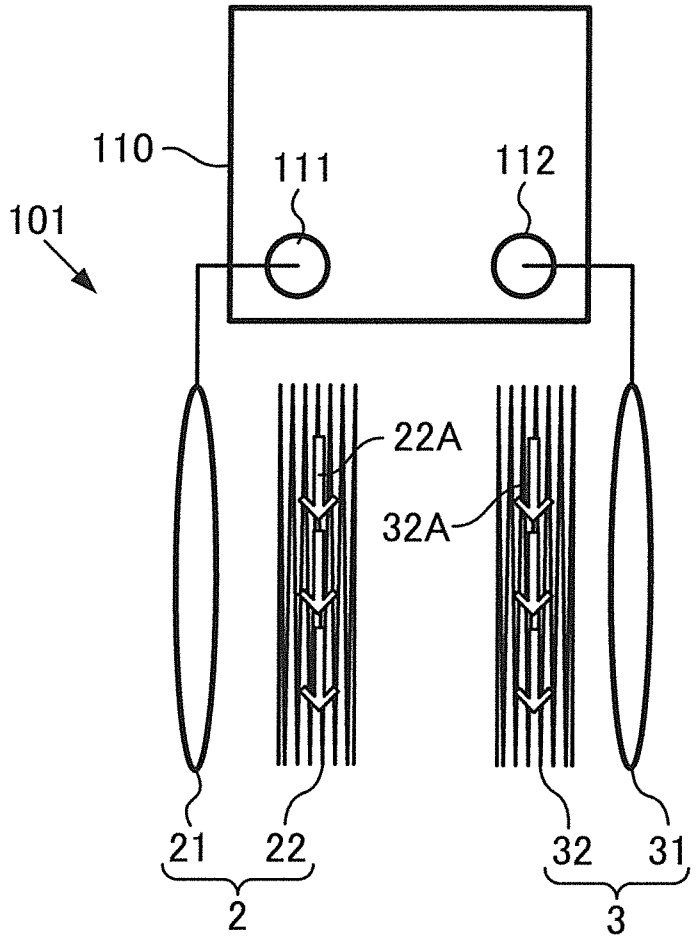


FIG.4(B)

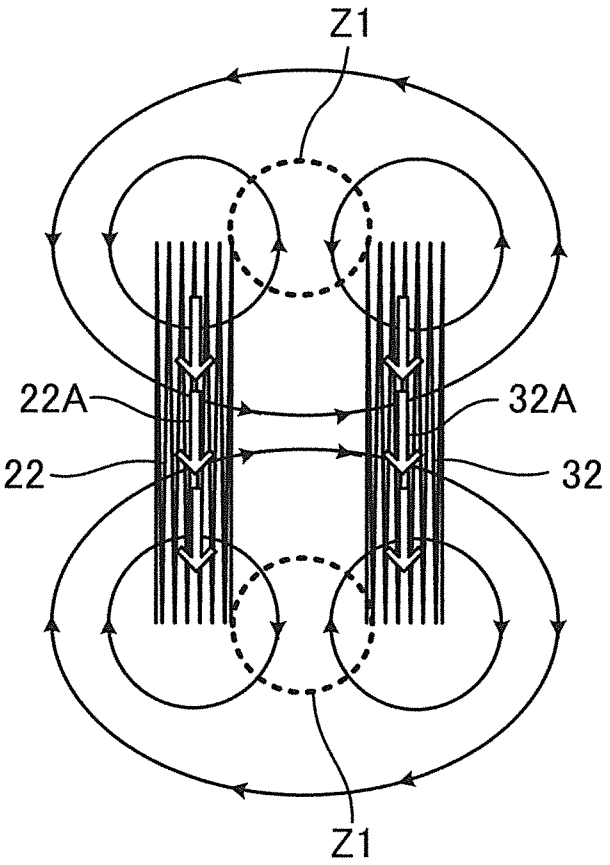


FIG.5

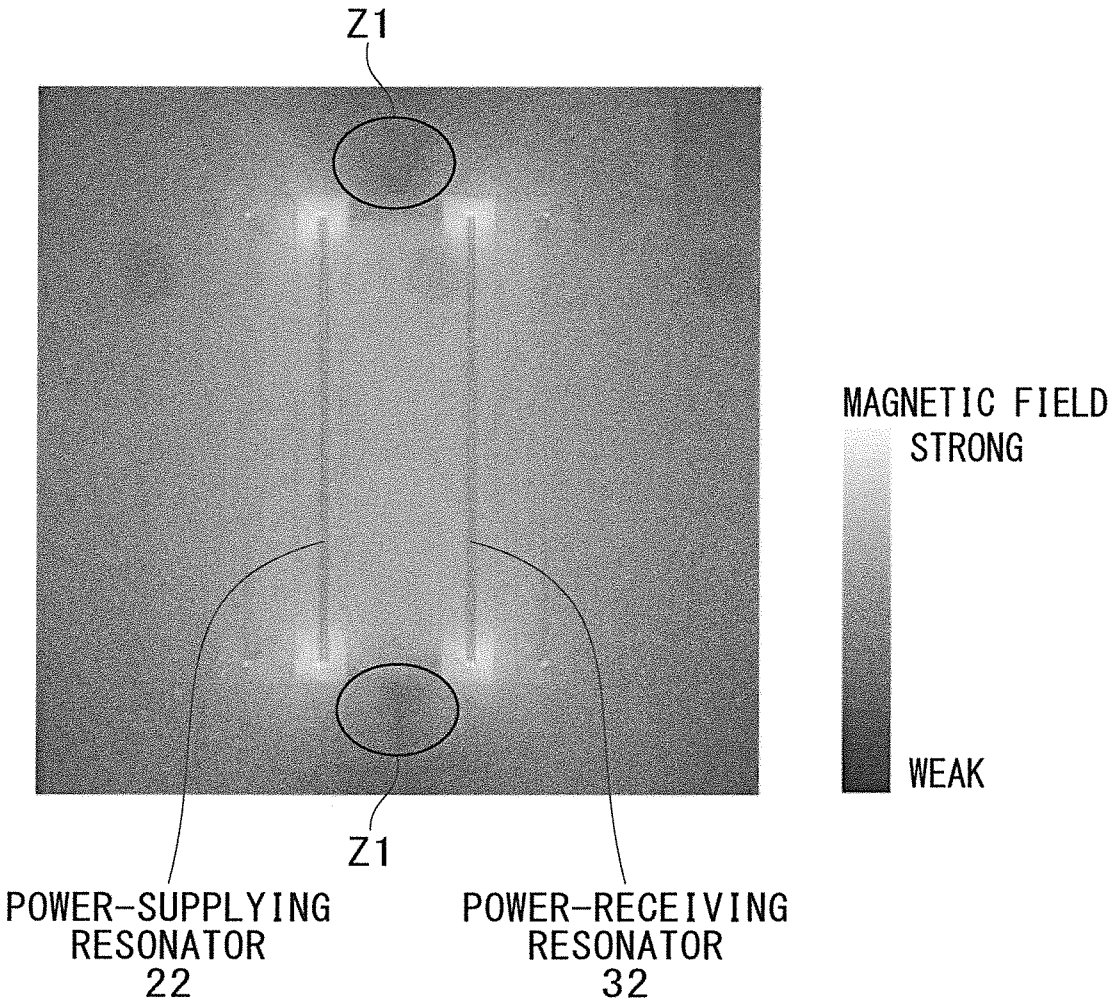

Z1
MAGNETIC FIELD
STRONG
WEAK
Z1
POWER-SUPPLYING
RESONATOR
22
POWER-RECEIVING
RESONATOR
32

FIG.6(A)

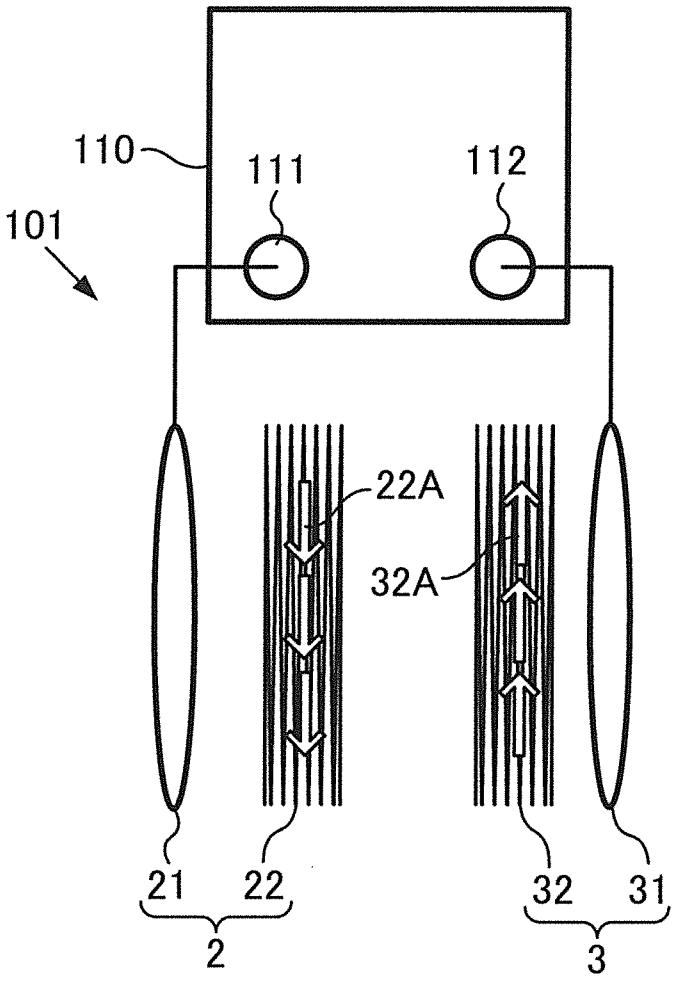


FIG.6(B)

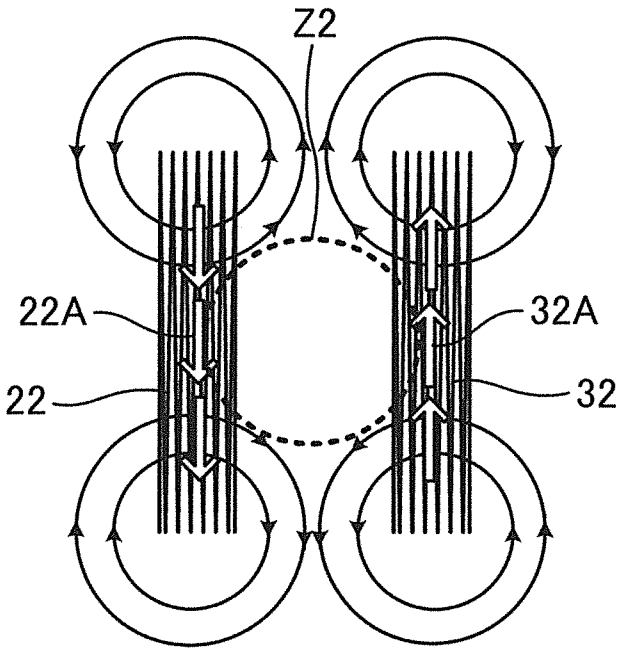


FIG.7

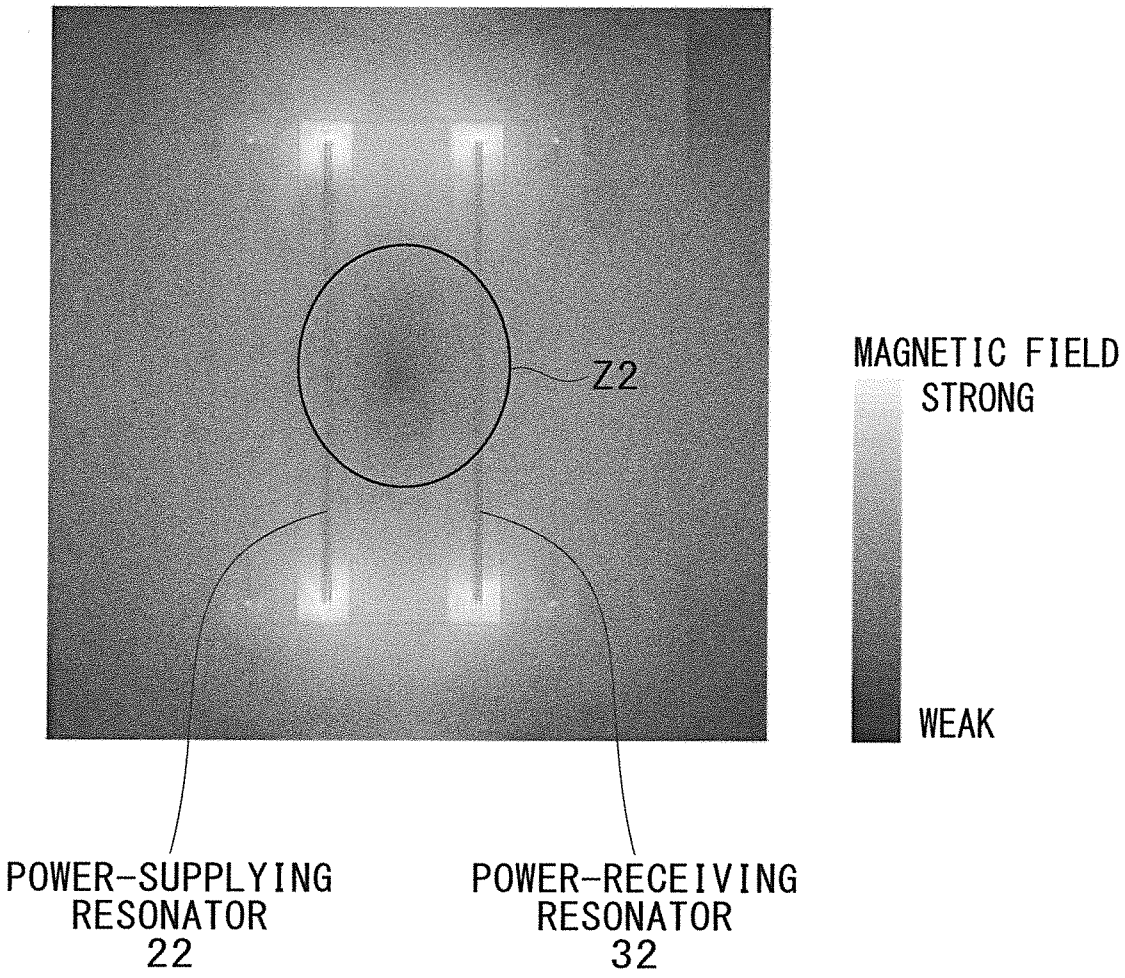

Z2
MAGNETIC FIELD
STRONG
WEAK
POWER-SUPPLYING
RESONATOR
22
POWER-RECEIVING
RESONATOR
32

FIG.8

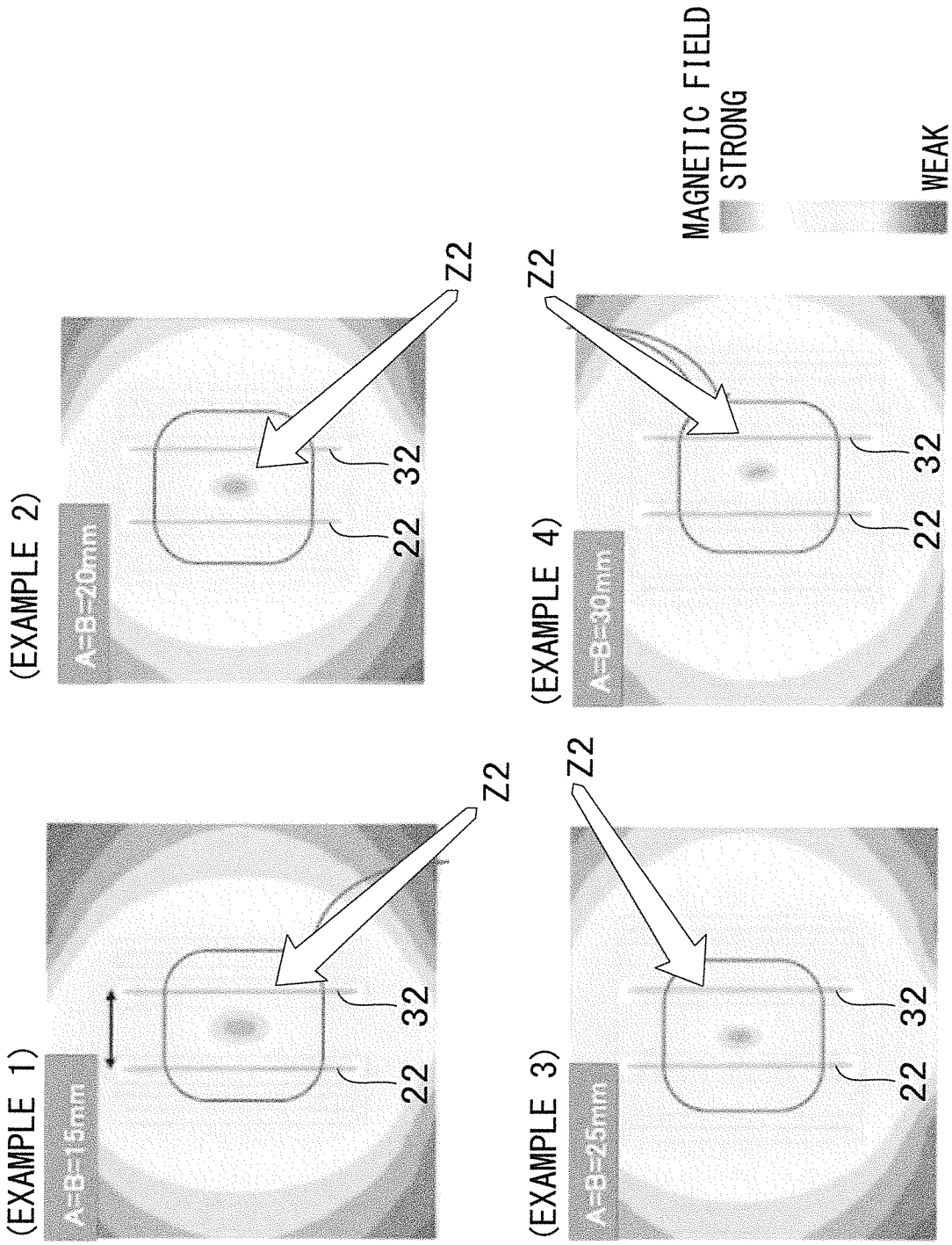

(EXAMPLE 1)
A=B=15mm
Z2
32
22
(EXAMPLE 2)
A=B=20mm
Z2
32
22
(EXAMPLE 3)
A=B=25mm
Z2
32
22
(EXAMPLE 4)
A=B=30mm
Z2
32
22
MAGNETIC FIELD
STRONG
WEAK

FIG.9

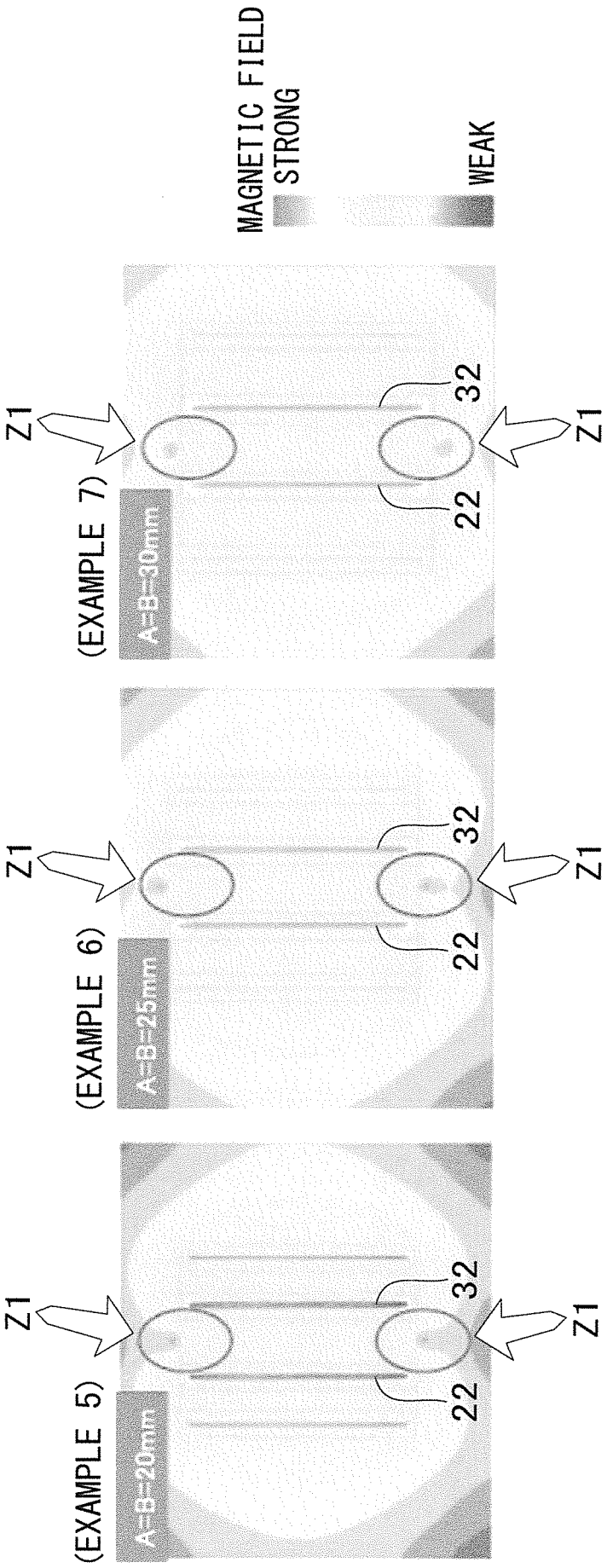

MAGNETIC FIELD
STRONG
WEAK
(EXAMPLE 5)
A=B=20mm
(EXAMPLE 6)
A=B=25mm
(EXAMPLE 7)
A=B=30mm
Z1
Z1
Z1
Z1
Z1
Z1
22
22
22
32
32
32

FIG.10

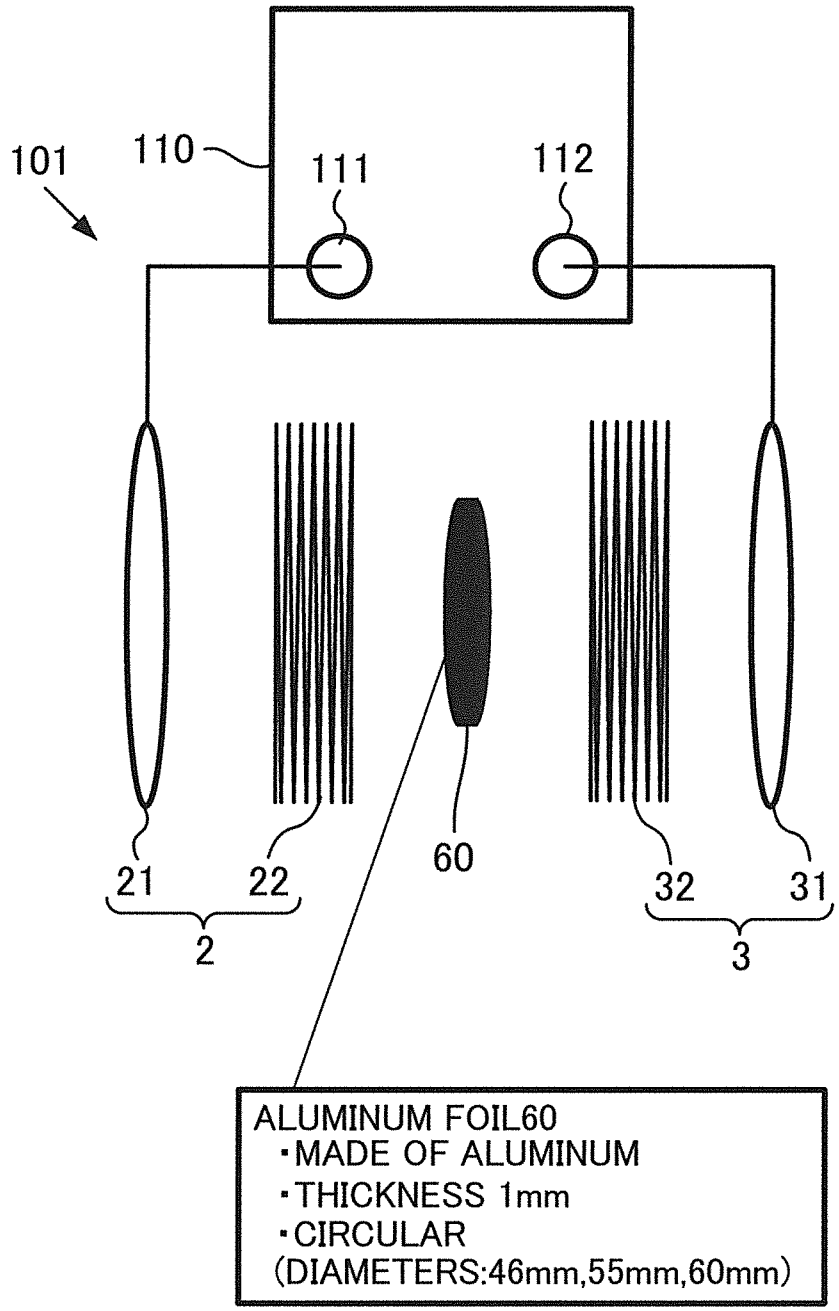

101
110
111
112
21
22
60
32
31
2
3
ALUMINUM FOIL60
・MADE OF ALUMINUM
・THICKNESS 1mm
・CIRCULAR
(DIAMETERS:46mm,55mm,60mm)

FIG.11

	DISTANCE A AND DISTANCE B [mm]	POWER TRANSMISSION EFFICIENCY [%]						
		WITHOUT ALUMINUM FOIL η_o	WITH ALUMINUM FOIL η_m					
			DIAMETER 46mm ϕ	$\Delta\eta$	DIAMETER 55mm ϕ	$\Delta\eta$	DIAMETER 60mm ϕ	$\Delta\eta$
EXAMPLE 8	5	78.2	78.1	0.1	77.5	0.7	77.3	0.9
EXAMPLE 9	10	70.4	70.2	0.2	69.0	1.4	68.8	1.6
EXAMPLE 10	15	51.5	51.0	0.5	49.7	1.8	49.5	2.0
EXAMPLE 11	20	42.3	41.6	0.7	40.3	2.0	40.1	2.2

$\Delta\eta = \eta_o - \eta_m$

η_o : POWER TRANSMISSION EFFICIENCY WITHOUT ALUMINUM FOIL

η_m : POWER TRANSMISSION EFFICIENCY WITH ALUMINUM FOIL

FIG.12

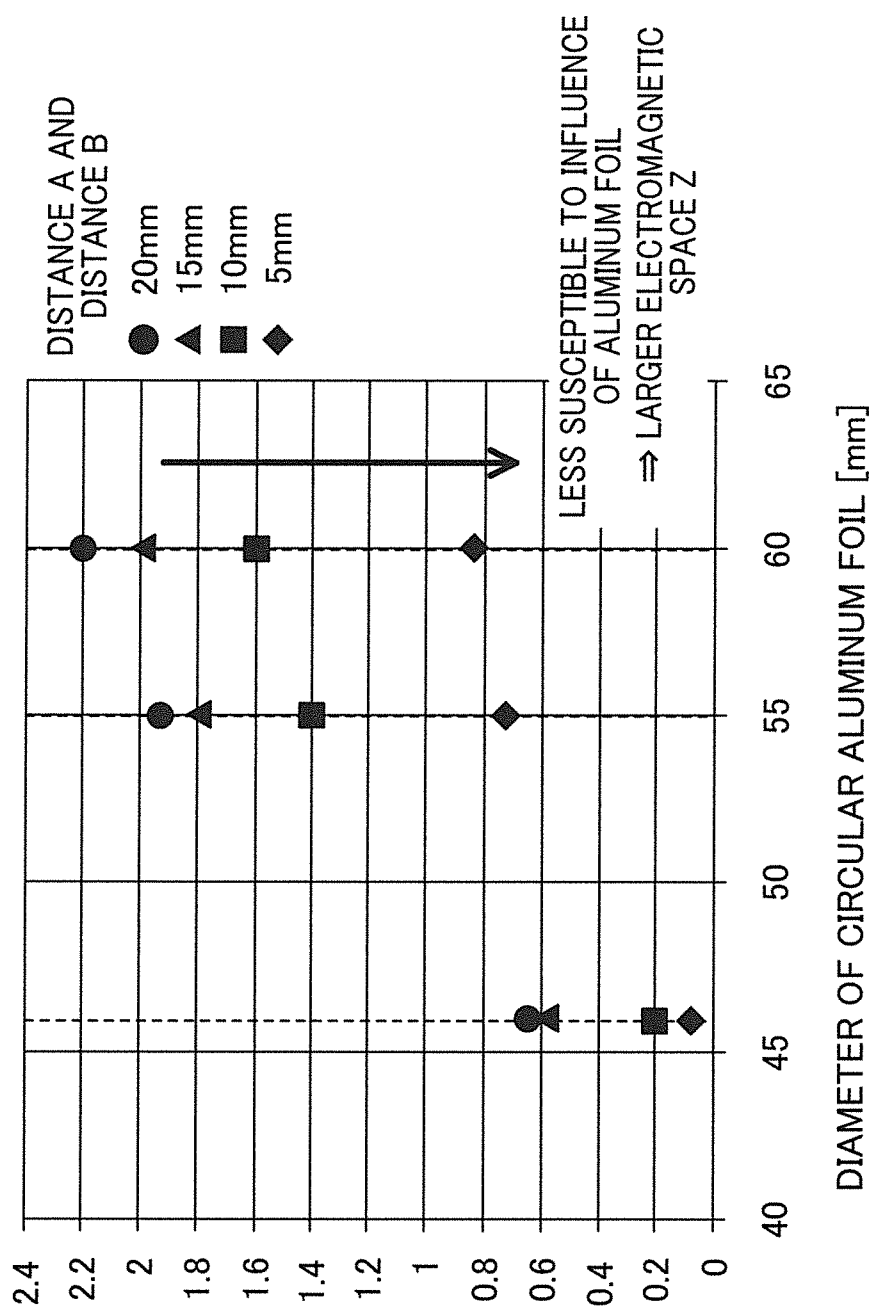

DISTANCE A AND DISTANCE B
20mm
15mm
10mm
5mm
LESS SUSCEPTIBLE TO INFLUENCE OF ALUMINUM FOIL
⇒ LARGER ELECTROMAGNETIC SPACE Z
Δ η [%]
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
40
45
50
55
60
65
DIAMETER OF CIRCULAR ALUMINUM FOIL [mm]

FIG.13

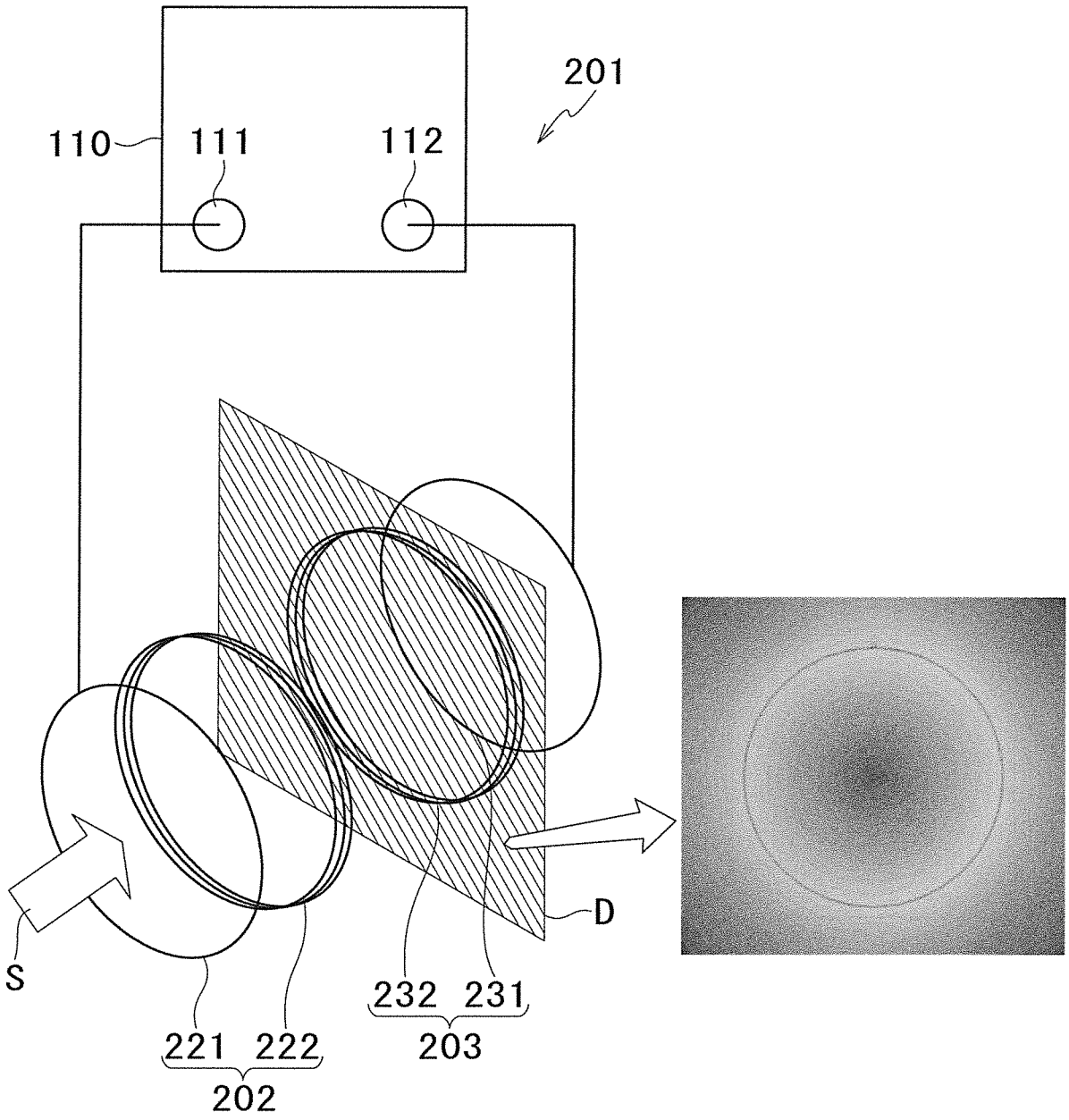
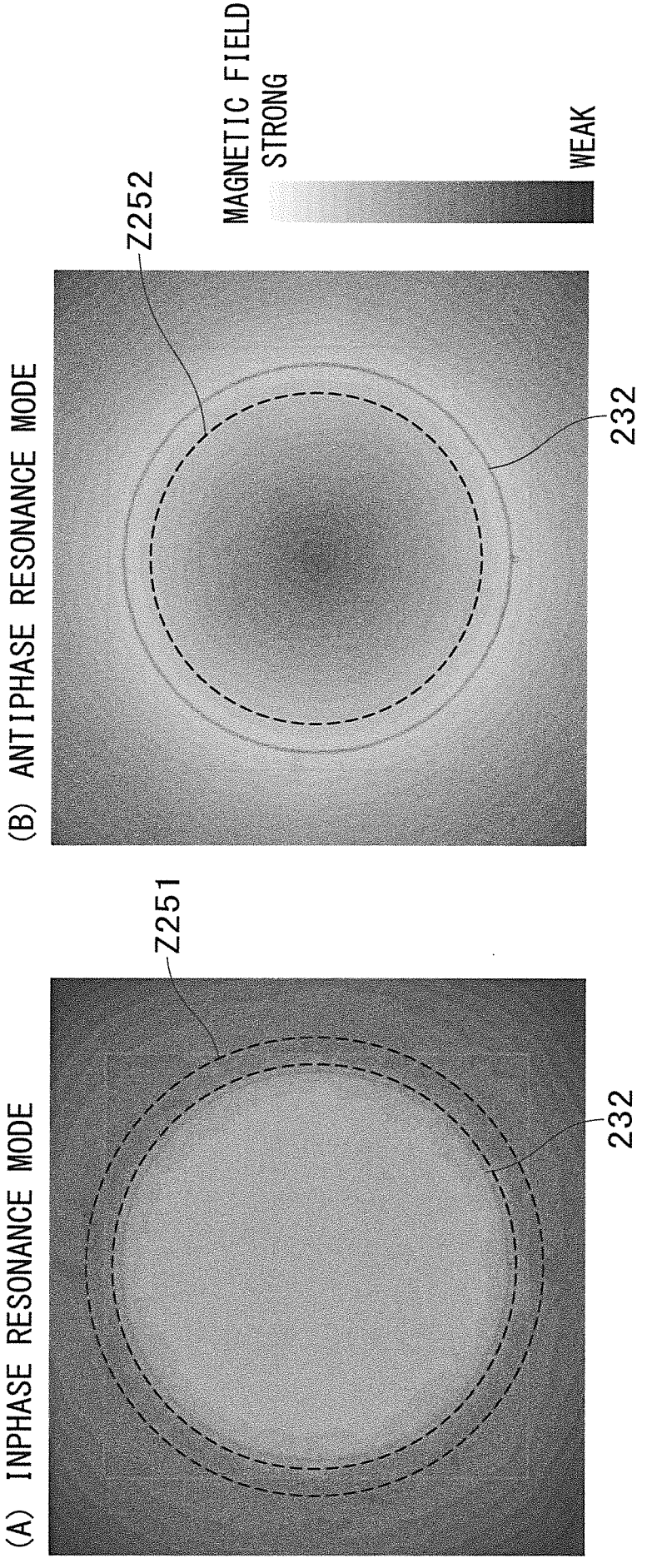


FIG.14


(A) INPHASE RESONANCE MODE
Z251
232
(B) ANTIPHASE RESONANCE MODE
Z252
232
MAGNETIC FIELD
STRONG
WEAK

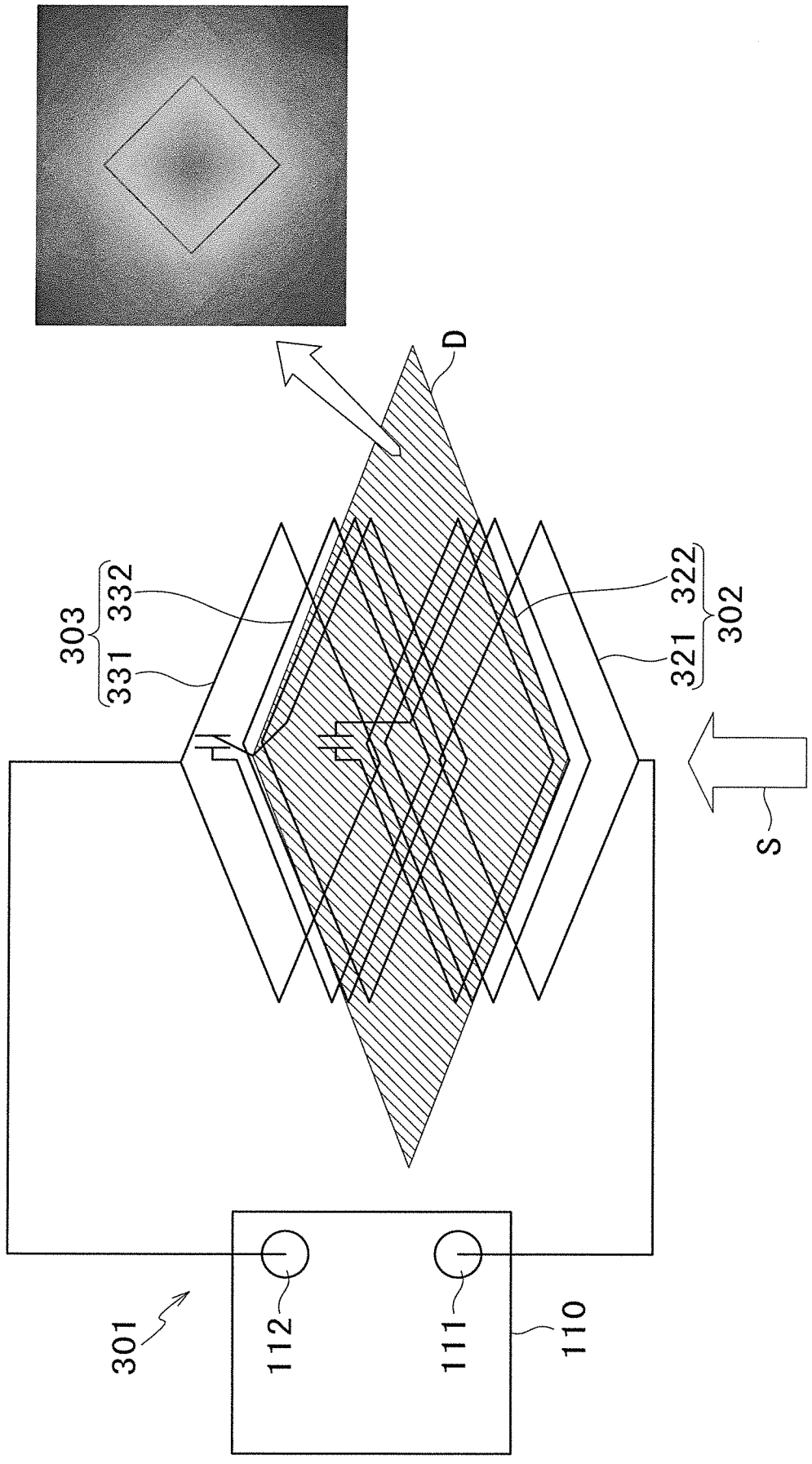


FIG.15

FIG.16

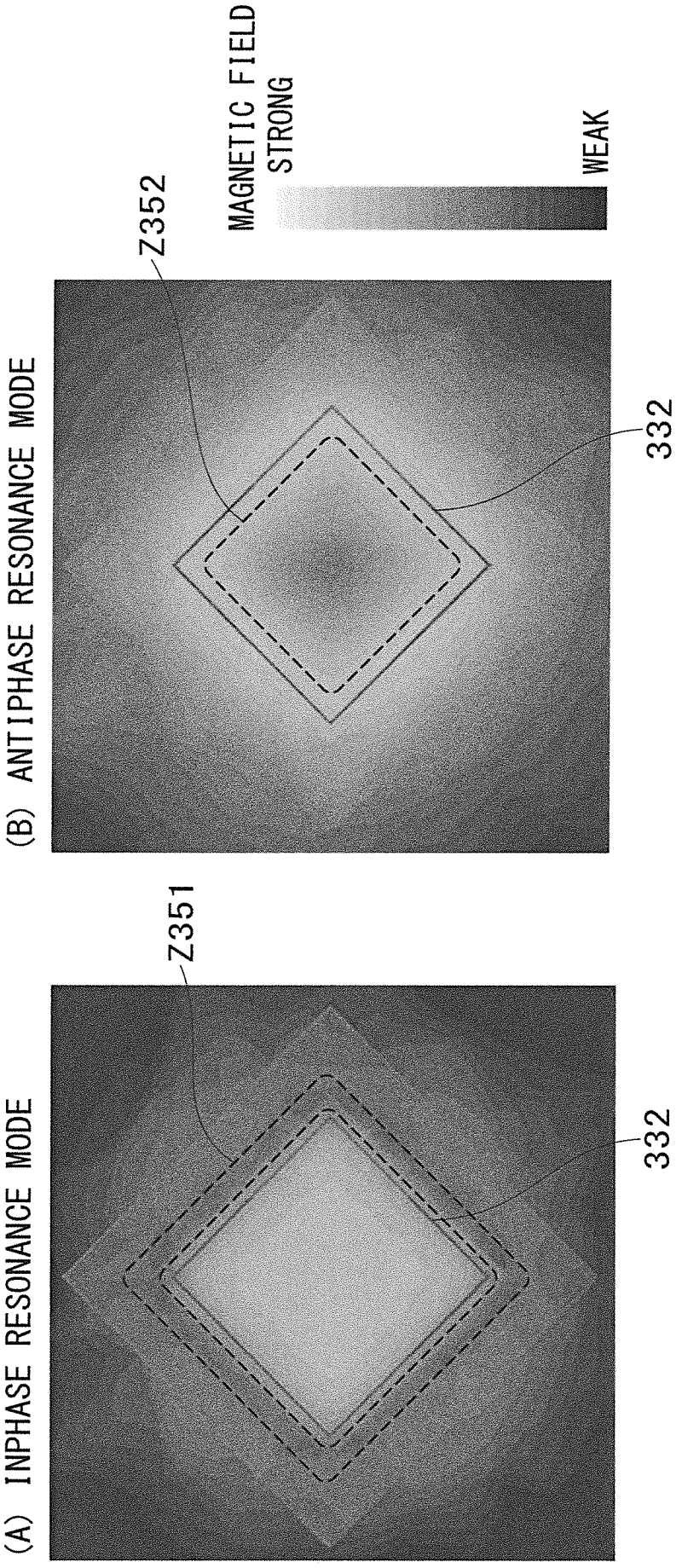

(A) INPHASE RESONANCE MODE
Z351
332
(B) ANTIPHASE RESONANCE MODE
Z352
332
MAGNETIC FIELD
STRONG
WEAK

FIG.17

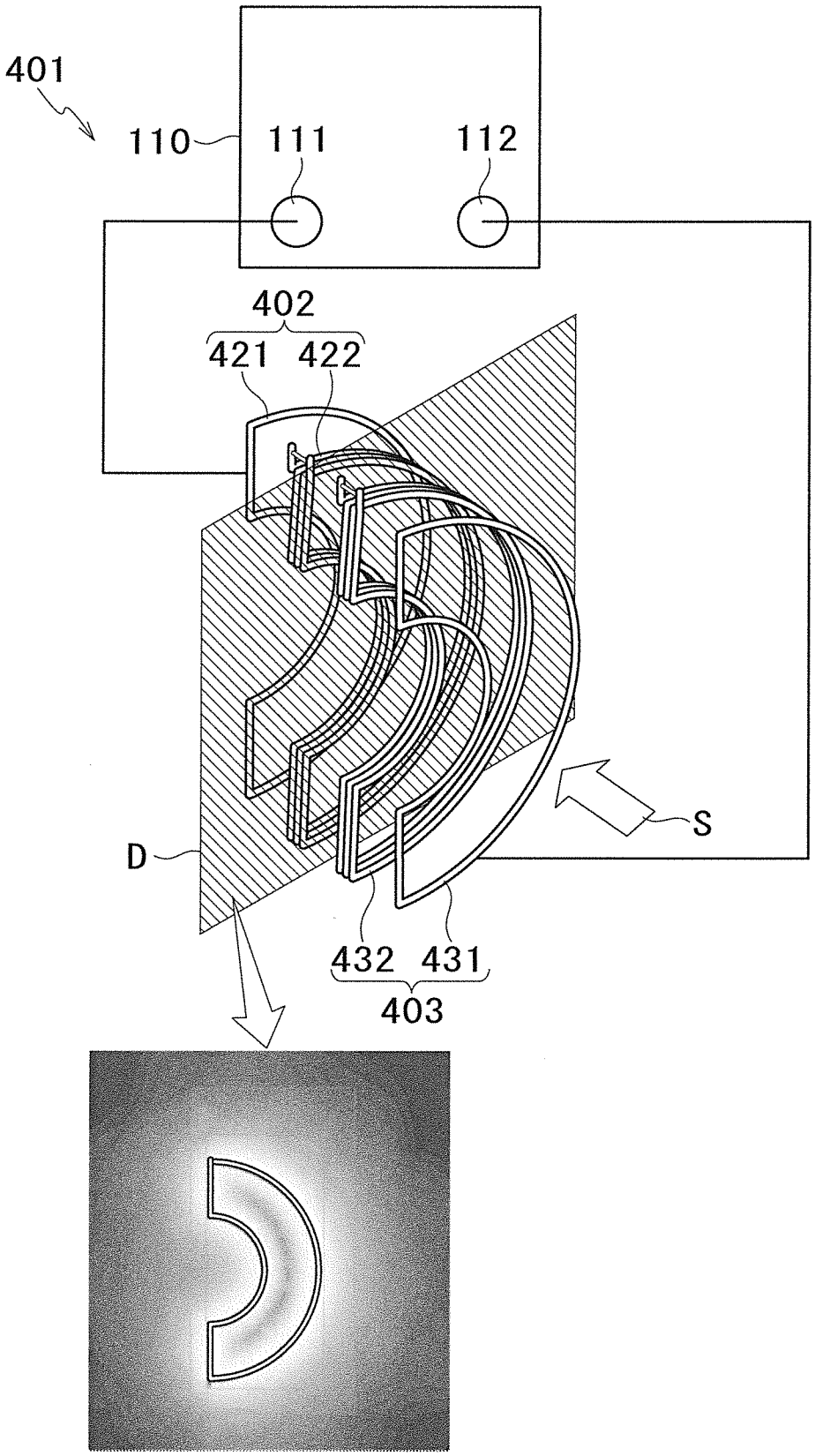
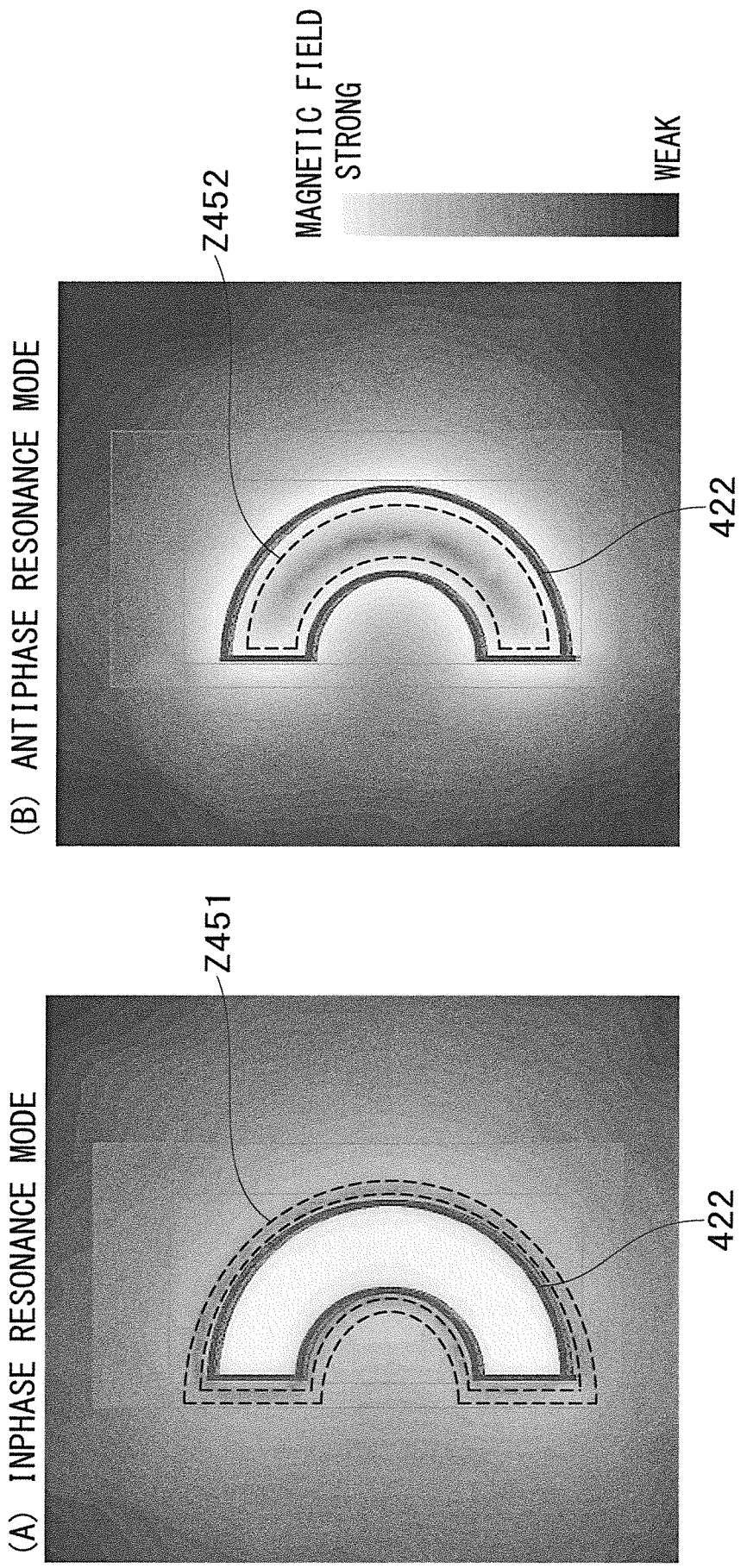


FIG.18


(A) INPHASE RESONANCE MODE
Z451
422
(B) ANTIPHASE RESONANCE MODE
Z452
422
MAGNETIC FIELD
STRONG
WEAK