

(19) (KR)  
(12) (B1)

(51) 。 Int. Cl.7  
H01J 29/48

(45)  
(11)  
(24)

2004 07 03  
10-0438505  
2004 06 23

(21) 10-2001-0081581 (65) 10-2002-0052943  
(22) 2001 12 20 (43) 2002 07 04

(30) JP-P-2000-00395296 2000 12 26 (JP)  
JP-P-2001-00347692 2001 11 13 (JP)

(73) 가 가 1 1 1

(72) 가 가 50 가 가

가 가 8 가 가  
가 가

(74)

:

(54) , , ,

(40) 가 2 가 1 (41) 1 (32) (41) (40) ,  
(44) 가 2 (44) (41) , (44) (32) 1 (41) (41) 2  
(44) 가 1 (41) 2 (44) (43)

3

1 가

2  
 3 1  
 4 1  
 5 1  
 6 2  
 7 2  
 8 2  
 9 3  
 10 3  
 11 3  
 12  
 13 3 11

\* \*  
 20: 21:  
 22: 23:  
 24: 25G:  
 25B, 25R: 26:  
 27: 28:  
 29: 30:  
 32: 32-1: 1  
 32-2: 2 35: 가  
 40, 50, 60: 41, 51, 61: 1  
 42, 52, 62: 42-1, 52-1, 62-1: 1  
 42-2, 52-2, 62-2: 2 43:  
 43A: 1 43B: 2  
 43C: 3 44, 54, 64: 2  
 45, 55, 65: 46, 56, 66:  
 47: 53, 63:  
 54P: 54A: 1  
 54B: 2 54C: 3  
 71A, 71B, 72A, 72B: 3

가

가

가

가

, (2)

(Joul)

(1)

가

, (3)

가  
가

, (4)

가

가

가

(trimming)

가



(21) (27)가 (21) (26) (21) 3 (25B, 25G, 25R) (28)  
 (21) (29)가 (29) (29)  
 (H) (V) (22) (26) 3 (25B, 25G, 25R) (22) (29)가  
 2 (26) (H) (22) 3 (K(B, G, R)) (Z)  
 G3), 4 (G4), 5 ( ) (G5), 1 (Gm1), 2 1 (G1), 2 (G2), 3 ( )  
 )(G6) (shield) (SC) (K(R, G, B)) (G1) 6 (G6) 1 2 (Gm2), 6 ( 가  
 3 (K(B, G, R)), 1 (G1) (V) (G6) 1 2 (Gm1, Gm2) (SC)  
 6 (G6) 가 3 (G3),  
 1 (G1) 2 (G2) 가 , 3 (G3),  
 4 (G4), 5 (G5) 6 (G6) 가 , 3 (G3),  
 m2) 가 5 (G5) 6 (G6) 1 (Gm1) 2 (G  
 3 가 3 (K(R, G, B))  
 , (26) (32)가 (32) (A) 6 (G6)  
 tem pin) , (32) (B) 가 (35) (stem) , (32)  
 (A) (B) 1 (32-1) 1 (Gm1) ,  
 2 (32-2) 2 (Gm2) ,  
 (26) 가 , 1 (G1)  
 (K(B, G, R)) 190V 가 , 1 (G1)  
 2 (G2) 4 (G4) , 800V 가  
 3 (G3) 5 (G5) , 8 9kV 가  
 6 (G6) 30kV (27) 가 , (21)  
 (27), (28), (SC) (27) 가 , (28)  
 (bulb spacer) (SC) 6 (G6) (28)  
 , 1 (Gm1) 6 (G6) 가 (32)  
 40% 가 2 (Gm2)  
 65% 가  
 2 (G2) 가 , 2 (G2) (K(B, G, R)), 1 (G1)  
 3 (G3), 4 (G4) (pre-focus) 3 (G3)  
 5 (G5) 1 (Gm1), 2 (Gm2) 6 (G6)  
 (22)  
 , (32)  
 ( 1 )  
 , 3 12 (32) (40) (40)  
 1 (41) 1 (41) 2 (44)  
 (40) (32) (45), (46) 1 (41)  
 (borosilicate) ( ) 1 (41)  
 1kΩ/? (41)  
 1 (41) (42(-1, -2, ...)) , (43) (42)  
 (40) (47) (43)  
 (42(-1, -2, ...)) , 1 (41) (4)  
 2) (43) (42) (43)  
 , (43) 1 (41) 2 (44) 가 1 (41)  
 2 (44) , 1 (41) 2 (44)  
 ) 2 , 2 (44) 1 (41) (43) ( ) 가 (44)  
 2 1 (41) 2 (44) 가 1



(44) 1 (42-1) 2 (42-2) 2 (44) 3 가 .  
 , 2 (44) 3 1.0mm , 2  
 , 3 25MΩ 가 .  
 , 1 (42-1) 2 (42-2) 가 . , 1 (42-1)  
 2 (42-2) 2 (44) 가 .  
 , 5 -0.8mm , 2 2 (44) (44) Y (41) (43)  
 ) 3 (43C) . , 1 (41) (41) (43)  
 , 1 (42-1) 2 (42-2) 2 (44) 3  
 (44) 2 (44) 3 2.0mm , 2  
 1 (41) 3 43MΩ (42) (46)  
 , 2 3 , (42-1)가 (32)  
 (A)~ (32-1) (42-2)가 (32-2) , (32-1)~ (32) (B)  
 (32-2) "R1", (32-1)~ (32-2) "R2", (32-1)~ (RD2)  
 "R3" , (32-1) (RD1) (32-2)

RD1={ (R2+R3)/(R1+R2+R3) } × 100  
 RD2={ R3/(R1+R2+R3) } × 100

(42-1) 13 (46) 4 3 (RD1) 0.6% 가 , 2 1 (42-2)  
 (46) (RD2) 0.4% 가 , 5  
 3 (RD1) 1.2% , (RD2) 1.0% .  
 , 가 . 가  
 , 가 가  
 , 가 가  
 2 15μm , 가 1μm , 가  
 , 가 가 . ,  
 4) 1 (41) (43) 1 (43A) 2 (4)  
 , (40), 1 (41), 2 (44) (45)  
 , 150 (32) , 550 700 (32) (46) (47)  
 가 . (4)  
 3) , 가 . , 1 (42-1)  
 2 (42-2) 가 2 (44) 가 . (40)  
 40) , 1 (41) , 2 (44) , 1 (41) (43)  
 ) 4 2 (43B) , 2 (44) , 1 (41) (43)  
 , (42-2) 2 가 (44) 가 . , 1 (42-1) 2 (40)

) 5 1 (41) , 2 (44) . 1 (41) (43)  
 3 (43C) 2 (44)  
 2 , 1 1 ( )  
 가 2 가 1 2 가  
 2 가 1 3 , 2 가  
 2 가 2  
 , 2 1 (43A), 2  
 (43B) 3 (43C) (32)  
 1 ,  
 가 가 가  
 가 , 1 4 가 , 2 5 1  
 가 , 0 가 . 5  
 , 1000 2 , 1  
 , 1 2 , 가 3  
 ( 2 )  
 , 6 12 (32) (50), (50)  
 1 (51), 1 (51) 2 (54),  
 (55), (56) (32) 1  
 1 (51) , 1 (51) 2 (54) 1  
 (51) (52(-1, -2, ...)) , (53) (53) (52) (52) (5)  
 3) (52) (53) 1 (51) (52) (52)  
 2 (54) 2 (54P) , (54P) (54A, 54B, 54C)  
 (53) 2 (54) 1 (51)  
 (54P) (54A, 54B, 54C) 가 1 (51) 2 (54)  
 2 (54) (54P) 2 (54)  
 (54P) 0.4mm (54A, 54B, 54C)  
 (54) (X) , 0.8mm (Y ) 2  
 1 (54A) 2 (54B) 1.0mm  
 (53) (54B) 1 (54A) 3 (52-1) (5)  
 4C) 3 (54C) 2 (52-2) (53) 1 (52-1)  
 , 2 (54B) 3 (54C) X 1 (52-1)  
 (53) 2 (52-2) (53) X  
 (54A, 54B, 54C) (54P) (54P)  
 (54P)  
 , 2 (54) 1 (51)  
 (54A) 6 , 2 (54) 1  
 1 (52-1) (53)  
 2 (54) 2 (54B) 1 (52-1) 2 (52-2)  
 (54C) 1 (52-1) 2 (52-2)  
 2 (52-2) (53) (54P) , 2 (54)

1 (52-1) (53) 2 (54B) 2 (52-2) (53)  
 (54P)

1 (51)  
 1 (52-1) 2 (52-2) 가 1 (52-1)  
 2 (52-2) 2 (54)

7 2 (54) 2 (54) (5)  
 (X) -1.7mm 2 (54) 2 (54)  
 4B) 1 (52-1) (53)

2 (54A) 1 (52-1) 2 (52-2) (54)  
 3 (54C) 2 (52-2) 2 (54B) 2 (52-2)  
 ) (53) 1 (52-1) (53) 2 (54) 6 가  
 3 (54C) 2 (52-2) 2 (54) 6 1.7mm 2  
 1 (52-1) 2 (52-2) 6 10MΩ 가  
 2 (54) 6 (51)

1 (52-1) 2 (52-2) 가 1 (52-1)  
 2 (52-2) 2 (54) 2 (54) 2 (54) (5)  
 (X) 8 +1.7mm 2 (54) 1 (53)

1 (52-1) 2 (54) 2 (54B) 1 (52-1) (52-1)  
 2 (52-2) 3 (54C) 1 (52-1) 2 (52-2)  
 2 (54B) 2 (52-2) (53) 1 (52-1) (53)  
 1 (52-1) 2 (52-2) (53) 2 (54) 6  
 2 (54) 6 1.7mm 2  
 (54) 6 8MΩ

2 (52-1) 13 7 6 (RD1) 1.1% 가 2 1  
 (52-2) (56) (RD2) 0.8% 가 8  
 6 (RD1) 1.2% (RD2) 1.1%

2 가 1 2  
 ( 3 )  
 9 12 (32) (60), (60)  
 1 (61), 1 (61) 2 (64),  
 (65), (66) (32) 1 (64) 1  
 3 1 (61) 2 (64) 1  
 1 (61) (62(-1, -2, ...)) 3 (63) (63) (62) (62)  
 3) (62) (63) 1 (61) (62) (6)  
 2 (64) 1 (61) (63)  
 3 (71A, 71B, 72A, 72B) 1 (61) 1  
 (61) 3 (71A, 71B, 72A, 72B) 1 (61)  
 3 (71A, 71B) 1 (62-1) 3 (71A) 1 (62-1)  
 (63) 2 (62-2) 3 (71B) 1 (6)  
 2-1) (63) 2 (62-2) 가  
 3 (72A, 72B) 2 (62-2) 3 (72A) 2 (62-2)  
 (63) 1 (62-1) 가 3 (72B) 2 (62-2)



2) (63) 1 (62-1)  
 3 (71A, 71B, 72A, 72B) 1 (61) 2 (64)  
 가 1 (61) 2 (64) 3 (71B)  
 (71A, 72A, 72B) 1.0mm×1.0mm  
 2.0mm×1.0mm  
 3 (71A, 71B, 72A, 72B) 2 (64)  
 3 1  
 , 2 (64) 1 (61)  
 9 2 (64)  
 1 (62-1) (63) 3 (71B)  
 2 (64) 2 (62-2) 1 (61) (63)  
 3 (71A, 72A, 72B) , 2 (64) 1  
 (62-1) (63) 3 (71B) 2 (62-2) (63)  
 , 1 (61)  
 1 (62-1) 2 (62-2) 가 , 1 (62-1)  
 2 (62-2) 2 (64) 가 , 2 (64)  
 , 10 Y , 2 (64)  
 (X) 1 (62-1) (63) 3 +1.0mm (64)  
 1 (71A)  
 2 (64) 2 (62-2) 1 (61) (63)  
 3 (71B, 72A, 72B) , 2 (64) 1  
 (62-1) (63) 2 (62-2) (63)  
 1 (62-1) 2 (62-2) 2 (64)  
 , 2 (64) 9 9 가  
 2 (64) 2 (64) 9 1.0mm , 2  
 (64) 9 23MΩ 가  
 1 (61)  
 1 (62-1) 2 (62-2) 가 , 1 (62-1)  
 2 (62-2) 2 (64) 가 , Y  
 , 11 (64) 1 (62-1)  
 (63) 3 -1.0mm  
 (71B, 72A, 72B)  
 2 (64) 2 (62-2) (63) , 3 (7)  
 1A) 3 (71B) 2 (62-2) (63) 1 (62-1) (63)  
 1 (62-1) 2 (62-2) 2 (64) 9  
 , 2 (64) 9 1.0mm , 2  
 (64) 9 19MΩ  
 , 3 13 10 9 1  
 (62-1) (66) (RD1) 1.0% 가 , 2  
 (62-2) 9 (66) (RD2) 0.9% 가 , 11  
 9 (RD1) 1.0% , (RD2) 1.0%  
 , 3 3 1 1  
 , 3 , 3  
 , 가 1 , 1  
 , 2  
 , 1 , 2 , 3  
 , 가 ,

가  
 1 2 3  
 2 1 2  
 3  
 (32-2) 2 (B) (32) (A) (32-2) (32-1)  
 (32-1)  
 2  
 가 가 가  
 1 2 1  
 2 2 가 1  
 가 가  
 가 가  
 가 가  
 가 가  
 가 가

(57)

1. (26) 가 (32)  
 (40, 50, 60), 1 (41, 51, 61),  
 1 2 (44, 54, 64)  
 1 2 가 1 2  
 (43, 54A, 54B, 54C, 71A, 71B, 72A, 72B)
- 1 (43, 54A, 54B, 54C)  
 1 (41) (43)
4. (26) 가 (32)  
 (40, 50, 60), 1 (41, 51, 61),  
 1 2 (44, 54, 64)  
 1 2 가 1 2  
 (43, 54A, 54B, 54C, 71A, 71B, 72A, 72B)
- 1 (43, 54A, 54B, 54C)  
 2 (54) (54A, 54B, 54C)
5. (26) 가 (32)

(40, 50, 60),  
 1 1 (41, 51, 61), (44, 54, 64)  
 1 2 가 1 2  
 (43, 54A, 54B, 54C, 71A, 71B, 72A, 72B)  
 1 2 (43, 54A, 54B, 54C)  
 3 (71A, 71B, 72A, 72B)  
 ) 가  
 6.  
 3 5  
 1 (41, 51, 61) 2 (44, 54, 64)  
 7.  
 8.  
 9.  
 (26) 가 (32)  
 (40, 50, 60) 1 (41, 51, 61)  
 1 2 (44, 54, 64)  
 1 2 가 1 2  
 1 2  
 (43, 54A, 54B, 54C)  
 1 (41) (43)  
 10.  
 (26) 가 (32)  
 (40, 50, 60) 1 (41, 51, 61)  
 1 2 (44, 54, 64)  
 1 2 가 1 2  
 1 2  
 (43, 54A, 54B, 54C)  
 2 (54) (54A, 54B, 54C)  
 11.  
 (26) 가 (32)  
 (40, 50, 60) 1 (41, 51, 61)  
 1 2 (44, 54, 64)  
 1 2 가 1 2  
 1 2  
 (43, 54A, 54B, 54C)  
 3 (71A, 71B, 72A, 7  
 2B) 가  
 12.  
 9 11  
 1 (41, 51, 61) 2 (44, 54, 64)  
 13.  
 9 11  
 1 2

14.

13

2

(X)

(Y)

15.

(25R, 25G, 25B)

(G1, G2, G3, G4, G5, Gm

1, Gm2, G6)

가

(32)

(26)

(32)

(40, 50, 60),

1

(41, 51, 61),

(44, 54, 64)

1

1

2

가

1

2

(43, 54A, 54B, 54C, 71A, 71B, 72A, 72B)

1

2

(43, 54A, 54B, 54C)

1

(41)

(43)

16.

(25R, 25G, 25B)

(G1, G2, G3, G4, G5, Gm

1, Gm2, G6)

가

(32)

(26)

(29)

(40, 50, 60),

1

(41, 51, 61),

(44, 54, 64)

1

1

2

가

1

2

(43, 54A, 54B, 54C, 71A, 71B, 72A, 72B)

1

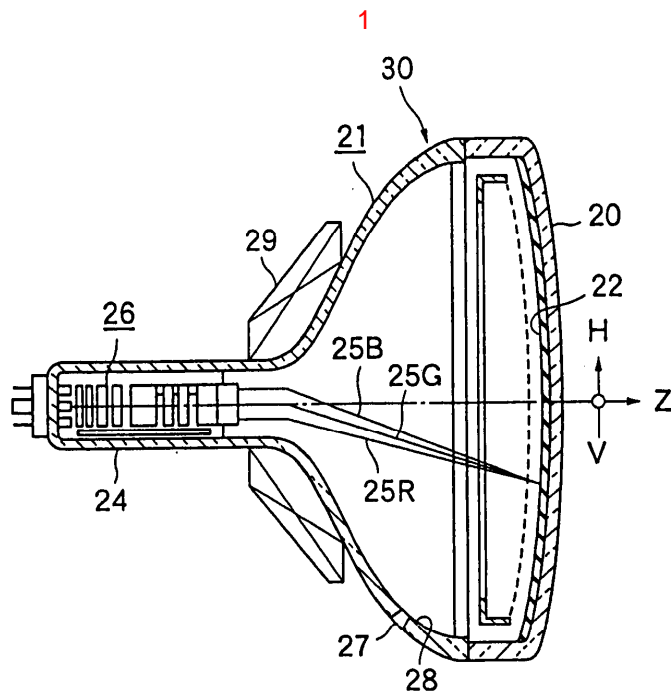
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(43, 54A, 54B, 54C)

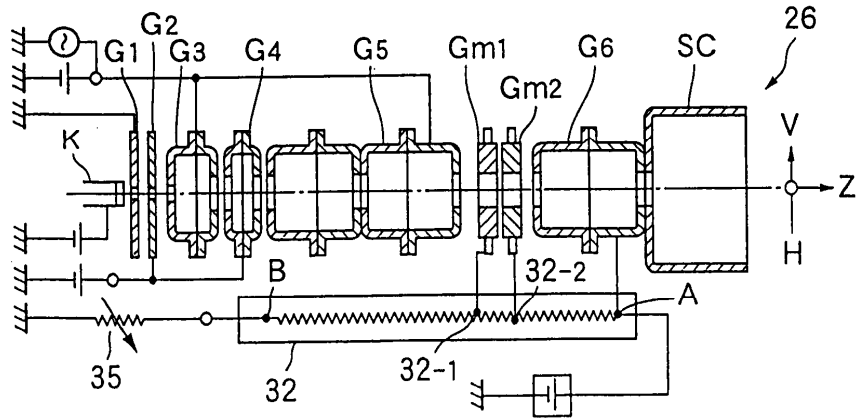
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(41)

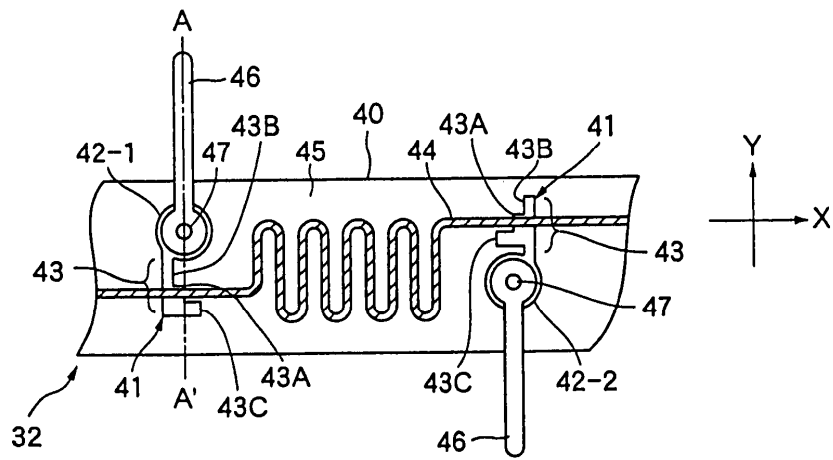
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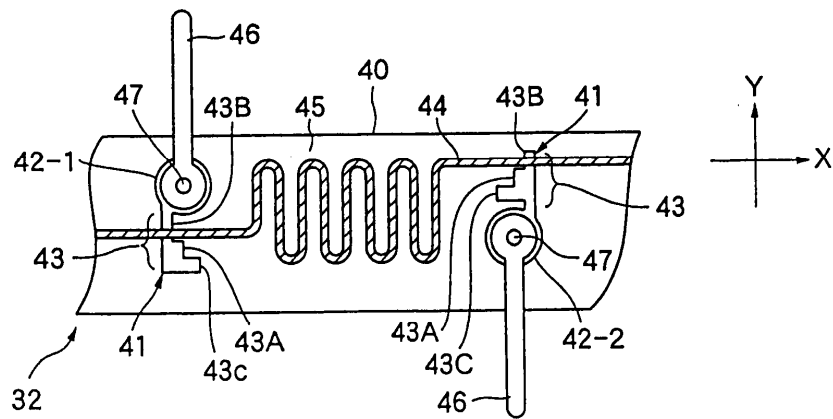
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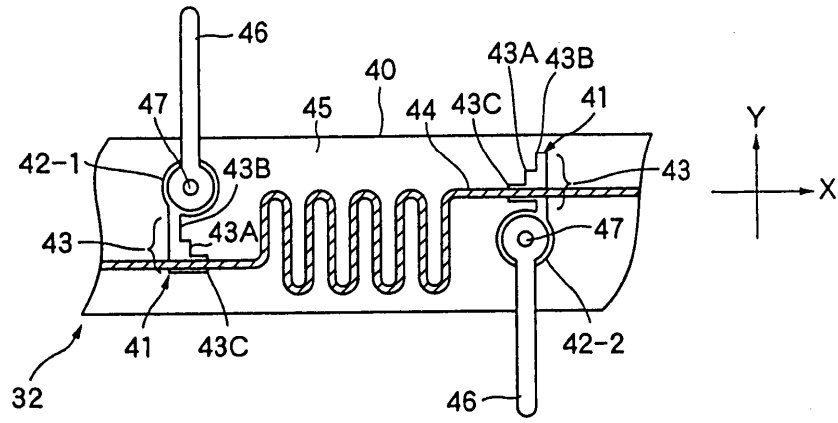
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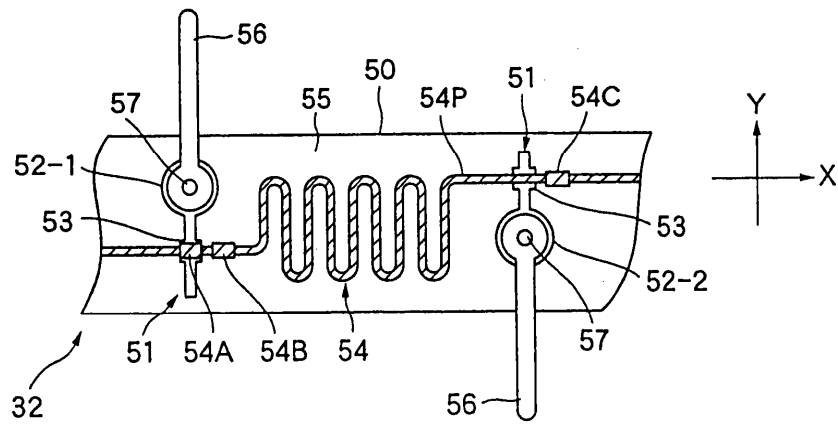
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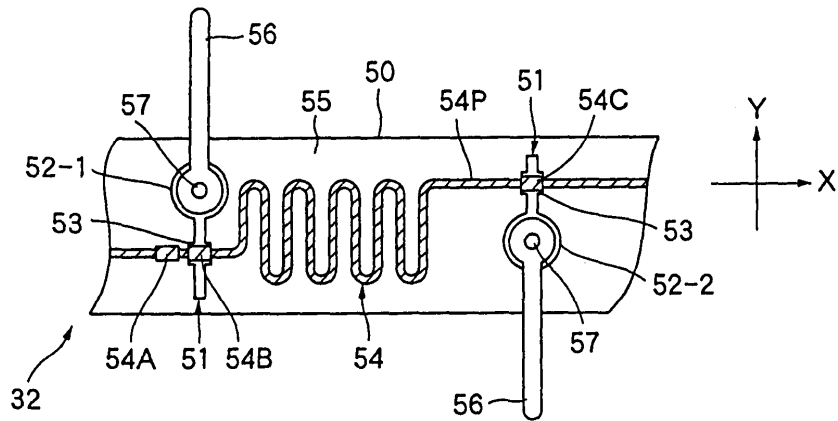
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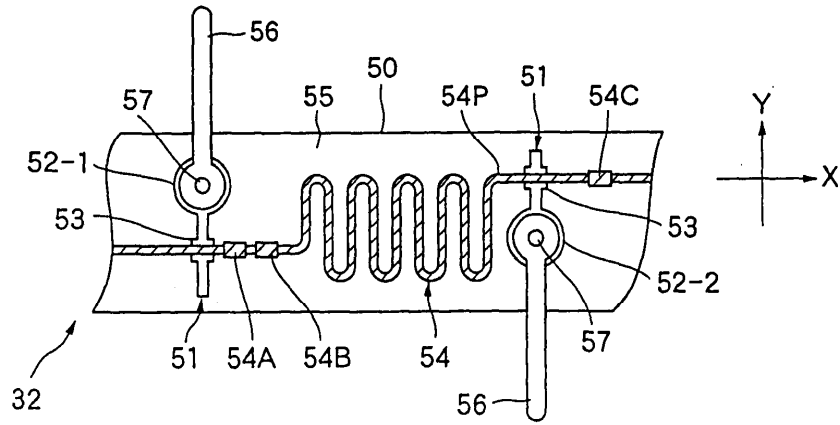
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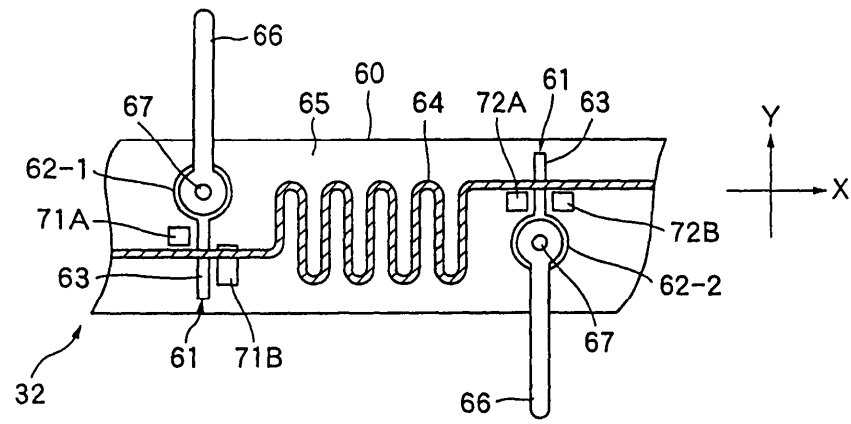
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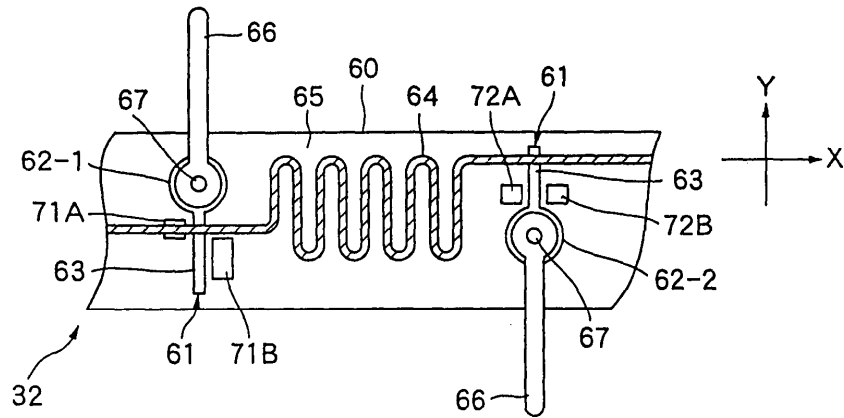
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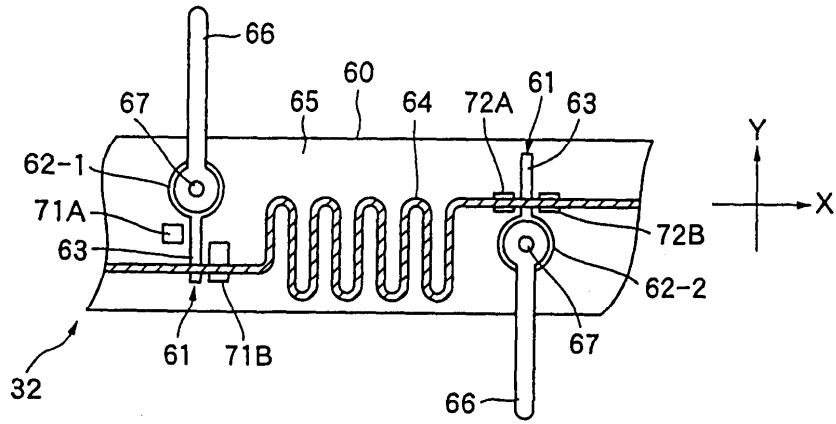
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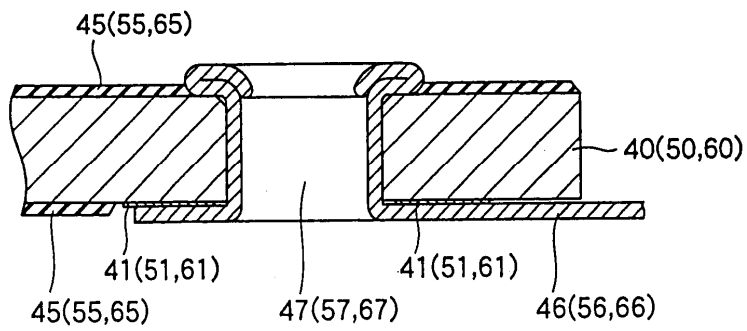
10



11



12





13

	도3	도4	도5	도6	도7	도8	도9	도10	도11
지향변화량	기준값	+25M $\Omega$	-43M $\Omega$	기준값	+10M $\Omega$	-8M $\Omega$	기준값	+23M $\Omega$	-19M $\Omega$
RD1	기준값	+0.6%	-1.2%	기준값	+1.1%	-1.2%	기준값	+1.0%	-1.0%
RD2	기준값	+0.4%	-1.0%	기준값	+0.8%	-1.1%	기준값	+0.9%	-1.0%