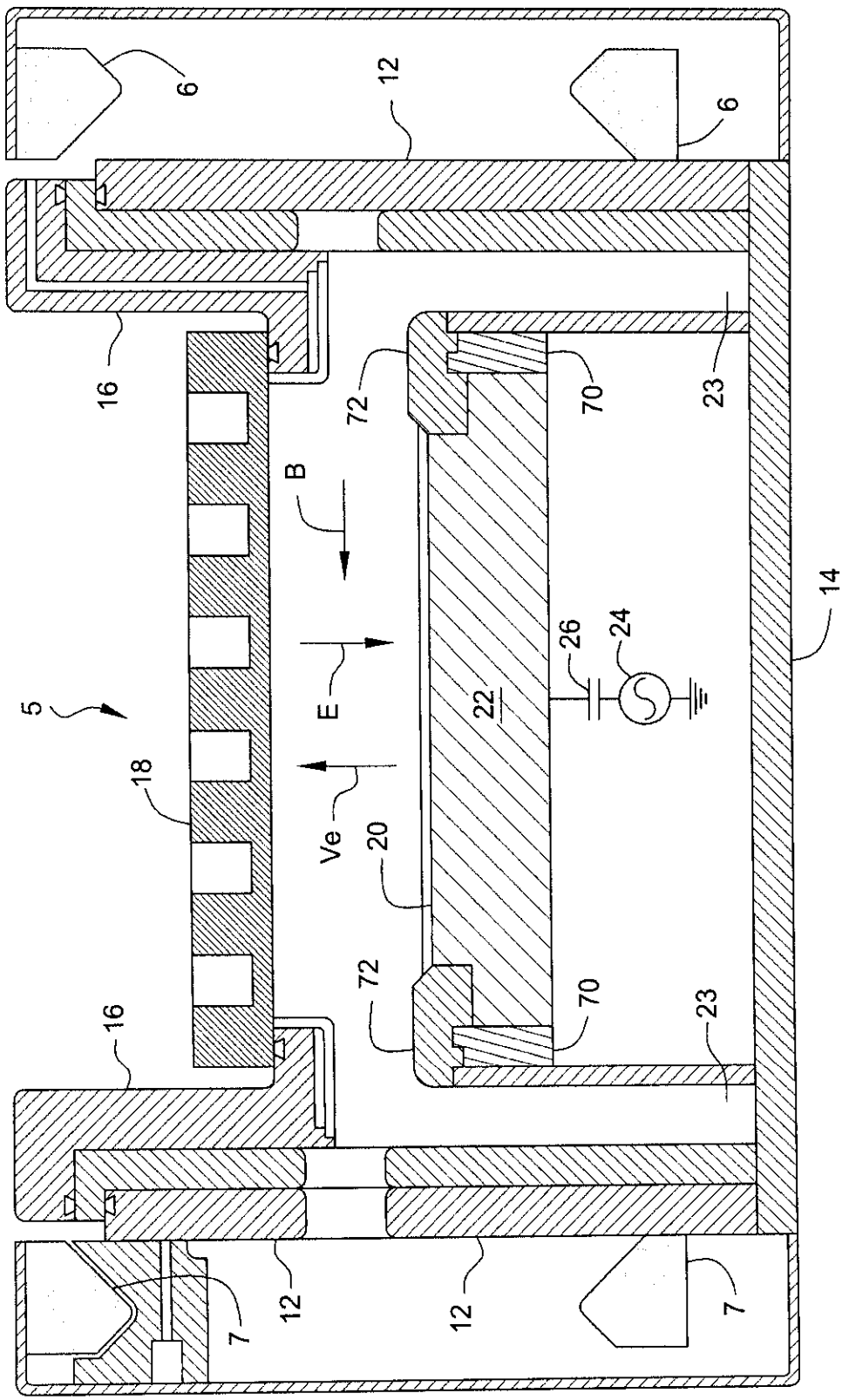


FIG. 1
(PRIOR ART)

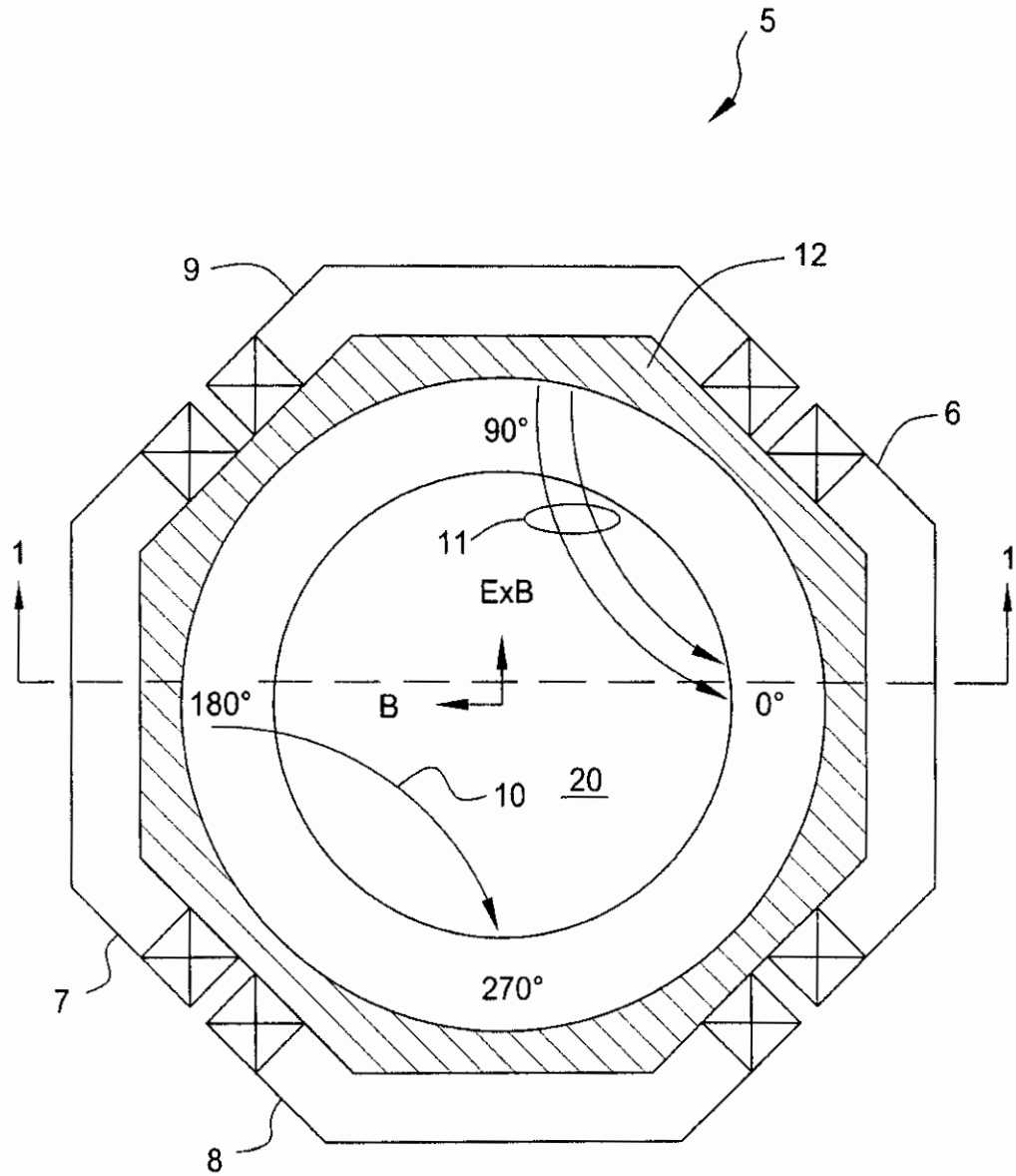


FIG. 2
(PRIOR ART)

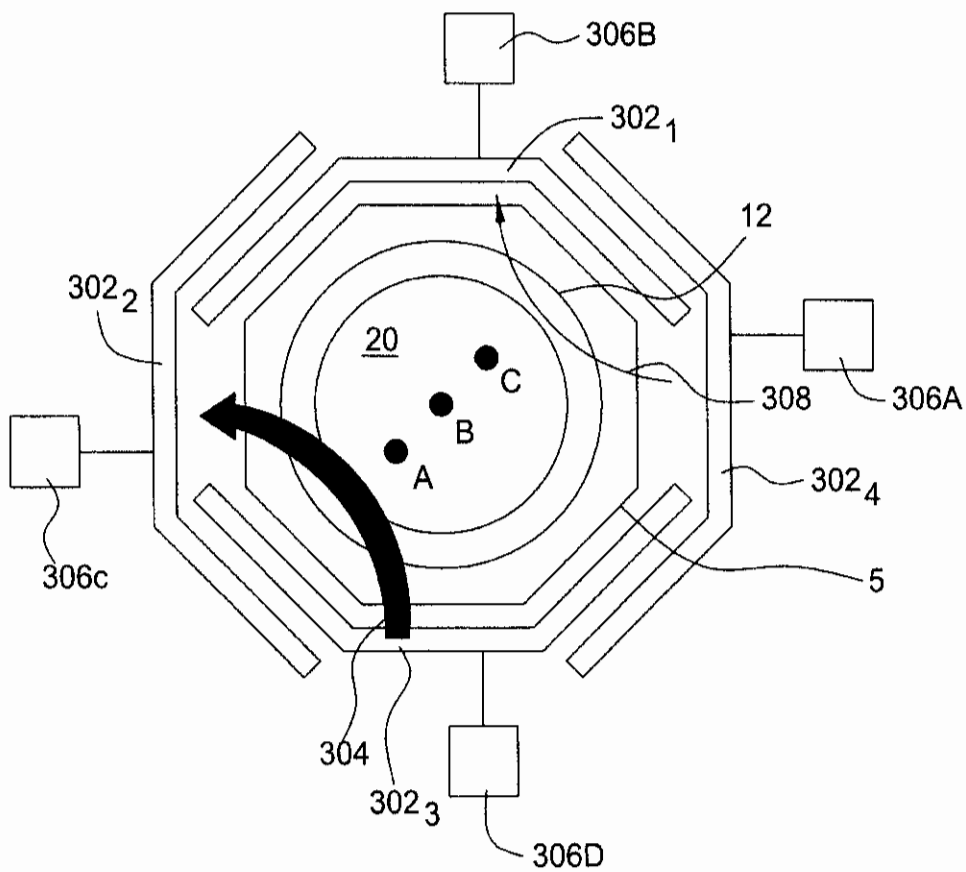


FIG. 3

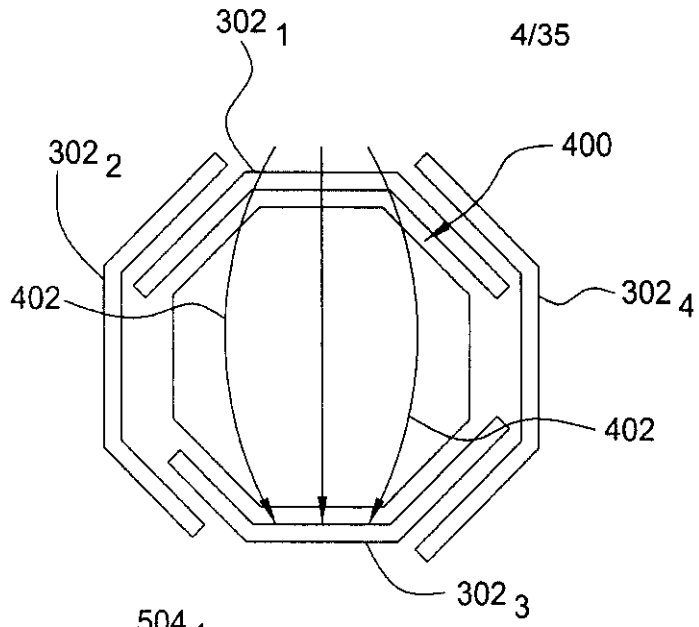


FIG. 4A

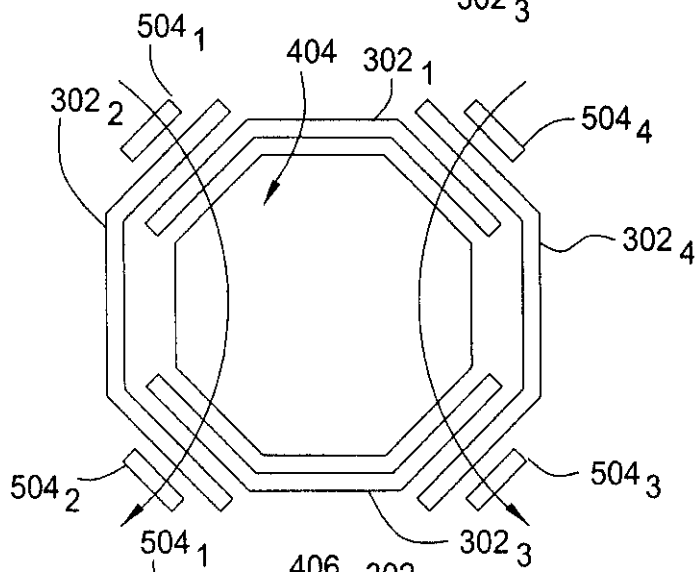


FIG. 4B

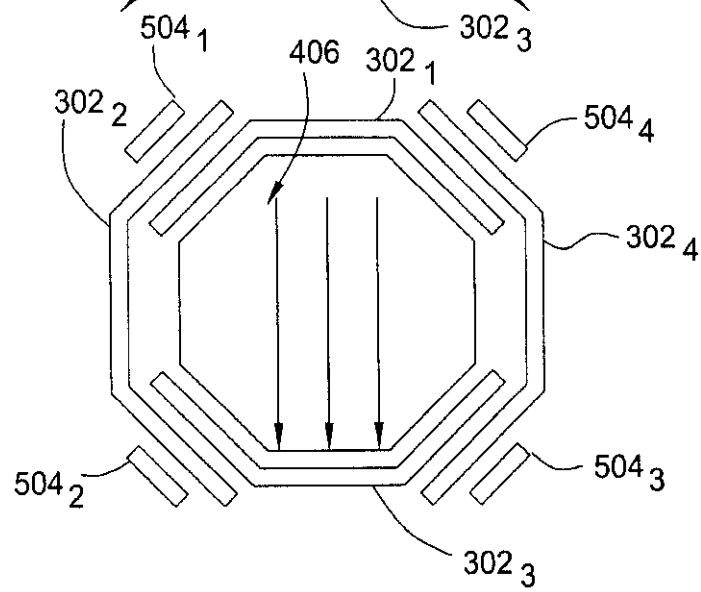


FIG. 4C

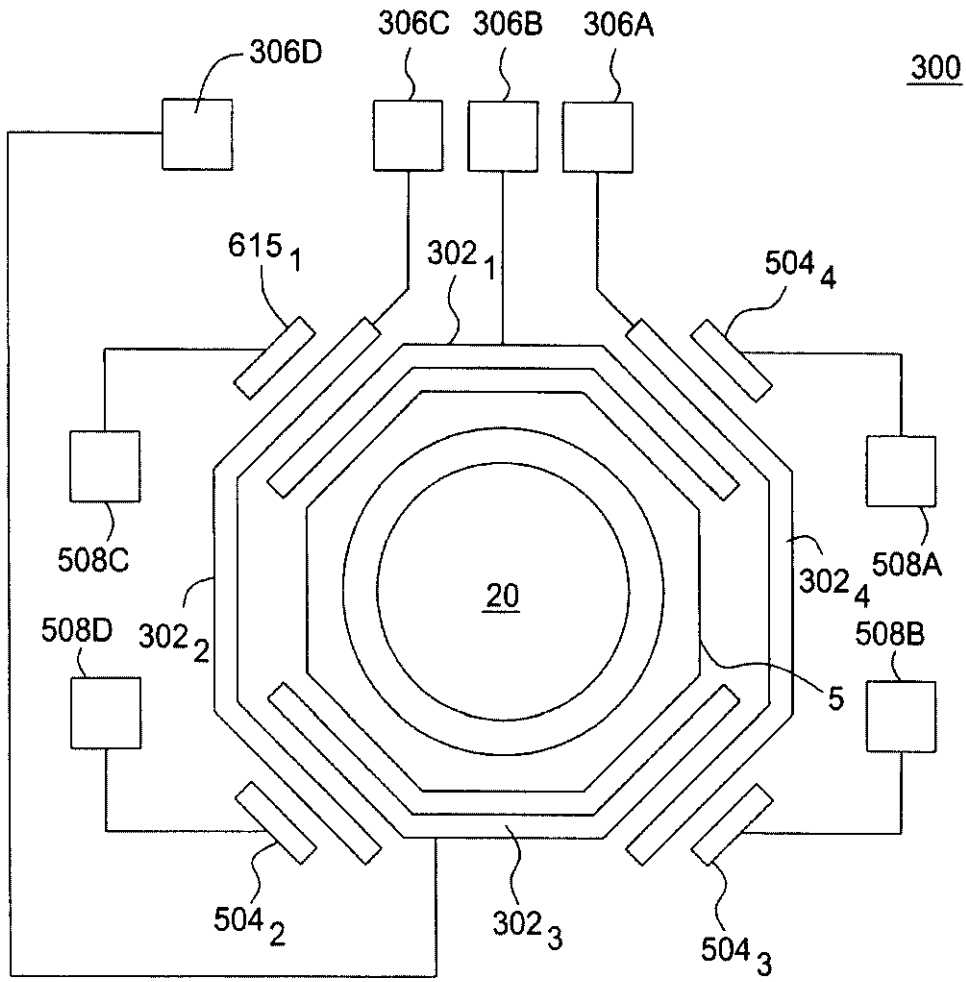

306C
306B
306A
306D
300
615 1
302 1
504 4
508C
508A
20
302 4
508D
302 2
508B
5
504 2
302 3
504 3

FIG. 5

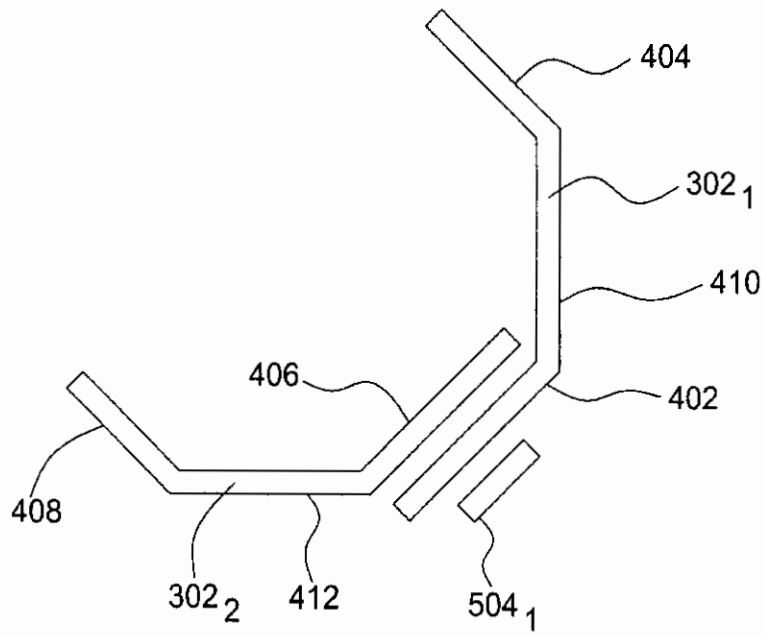

404
302_1
410
406
402
408
302_2
412
504_1

FIG. 6

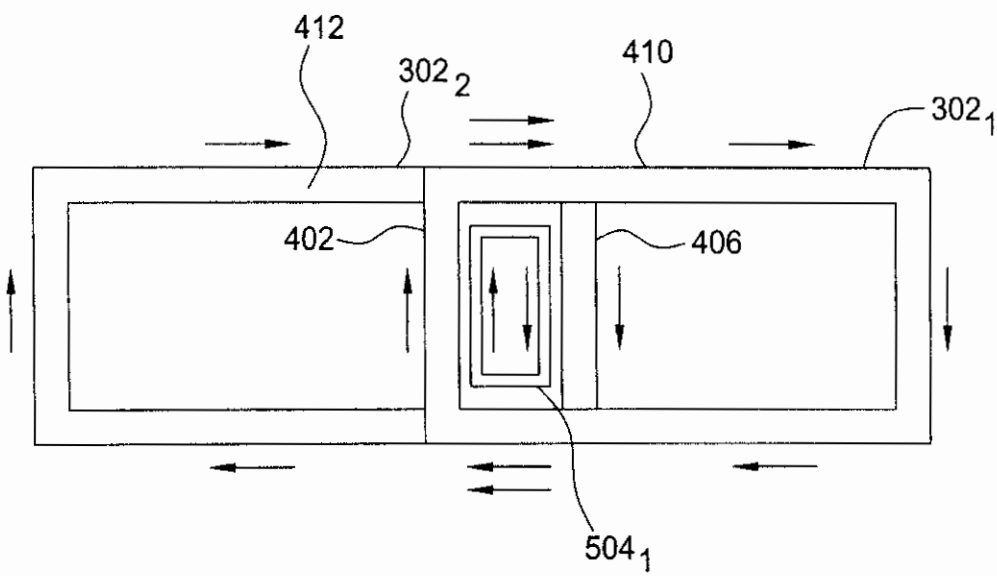

412
302_2
410
302_1
402
406
504_1

FIG. 7

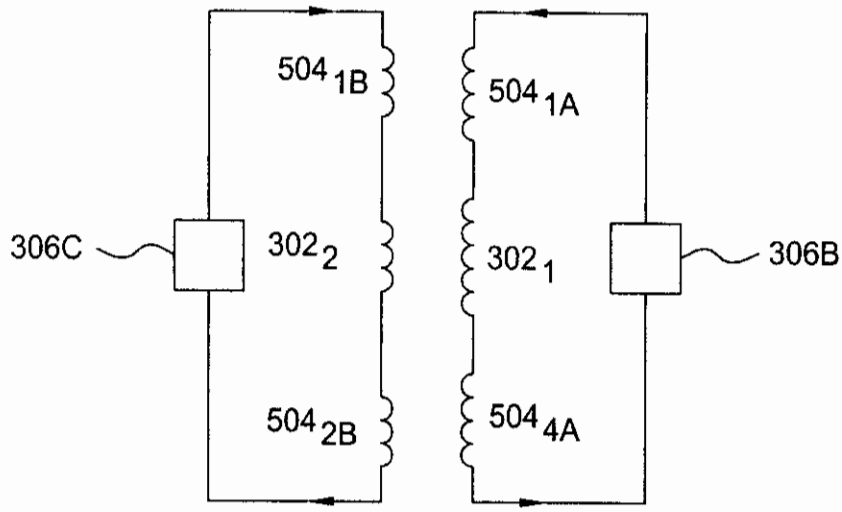


FIG. 7A

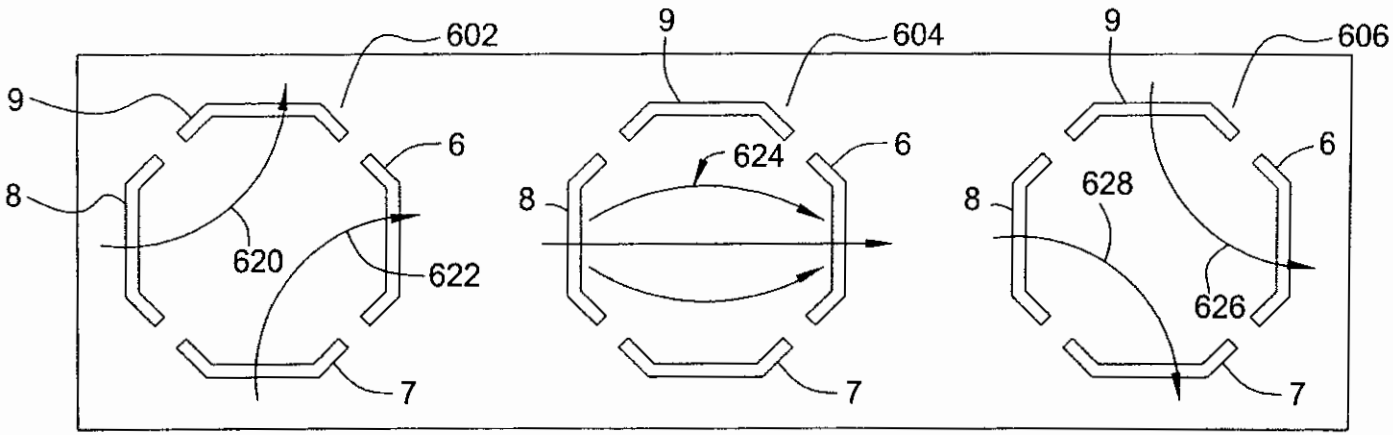


FIG. 8A
(PRIOR ART)

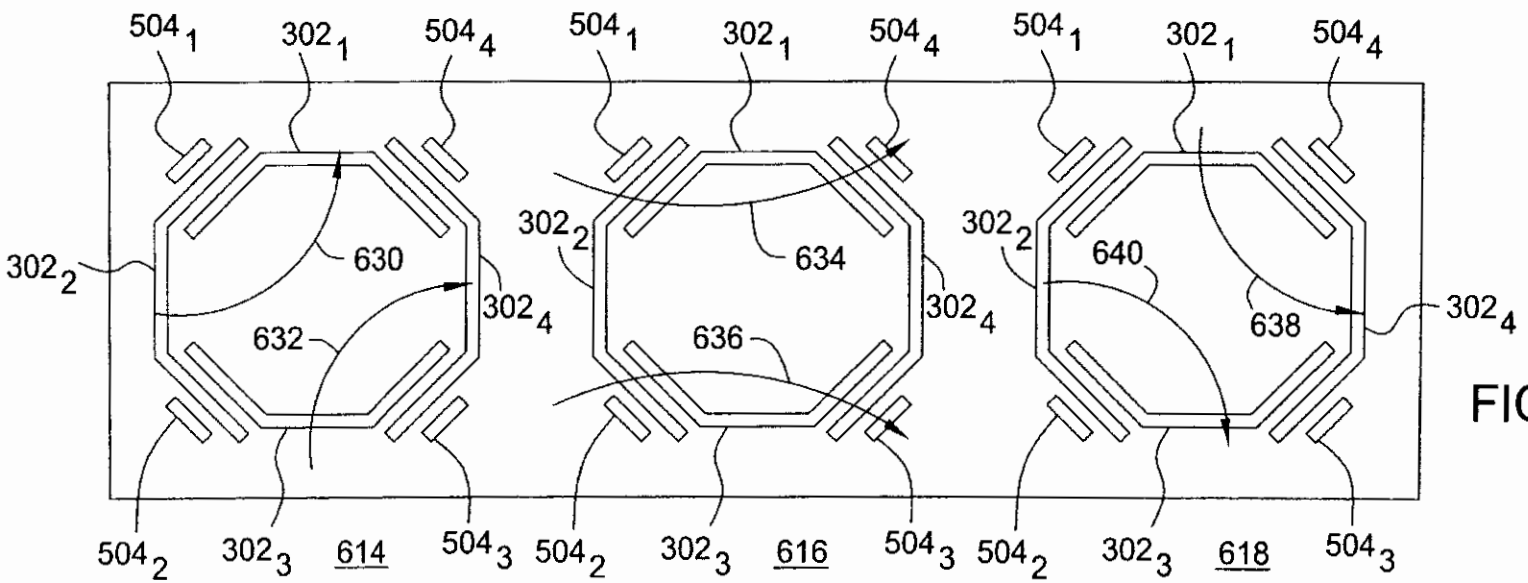


FIG. 8B

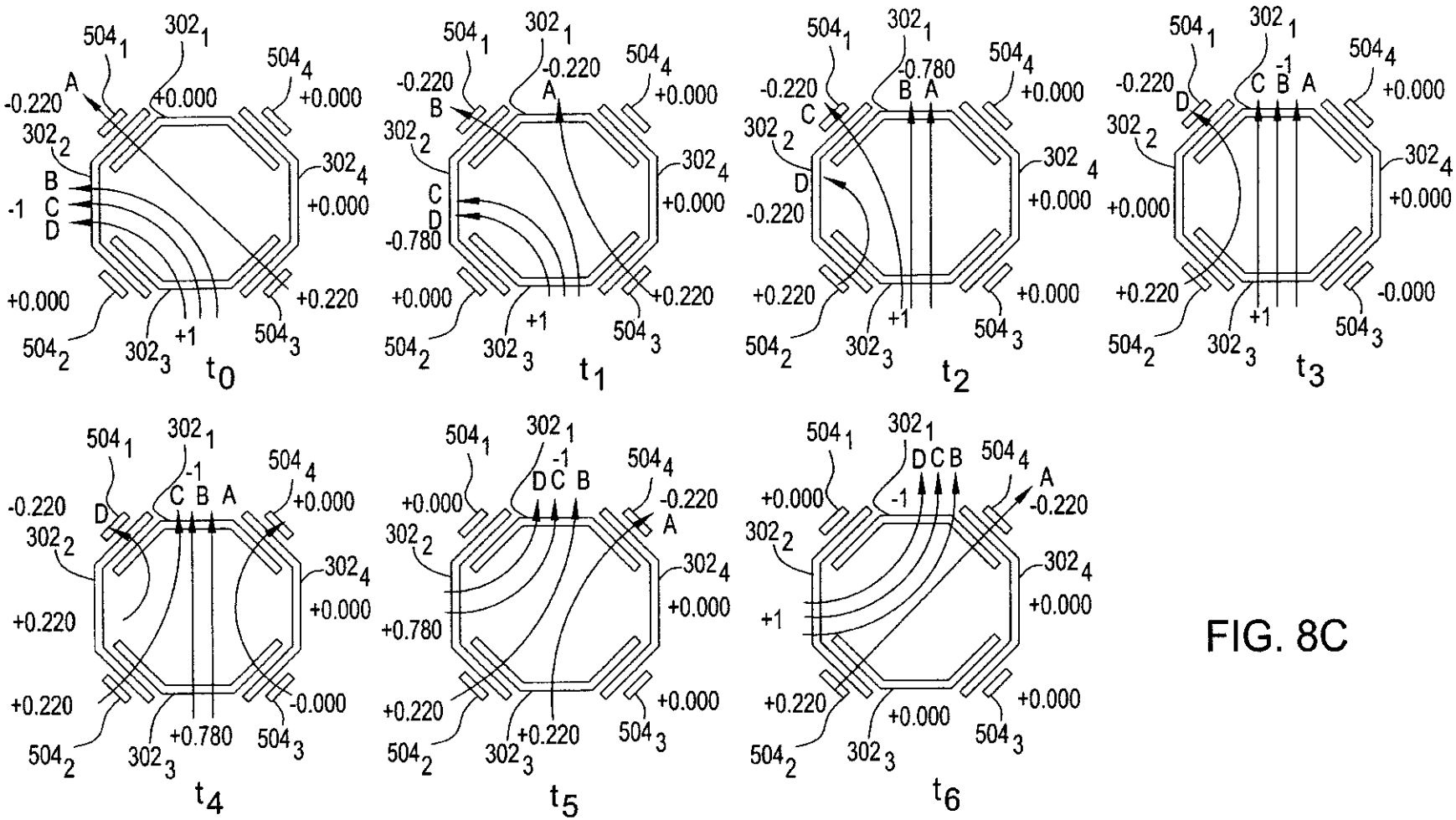


FIG. 8C

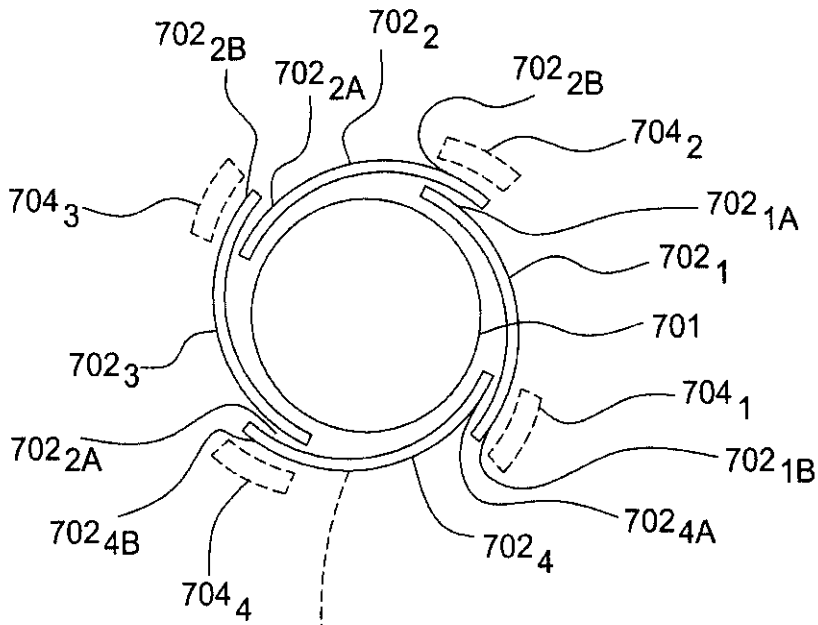

702_{2B}
702_2
702_{2A}
702_{2B}
704_2
704_3
702_{1A}
702_1
701
702_3
704_1
702_{2A}
702_{1B}
702_{4B}
702_{4A}
702_4
704_4

FIG. 9

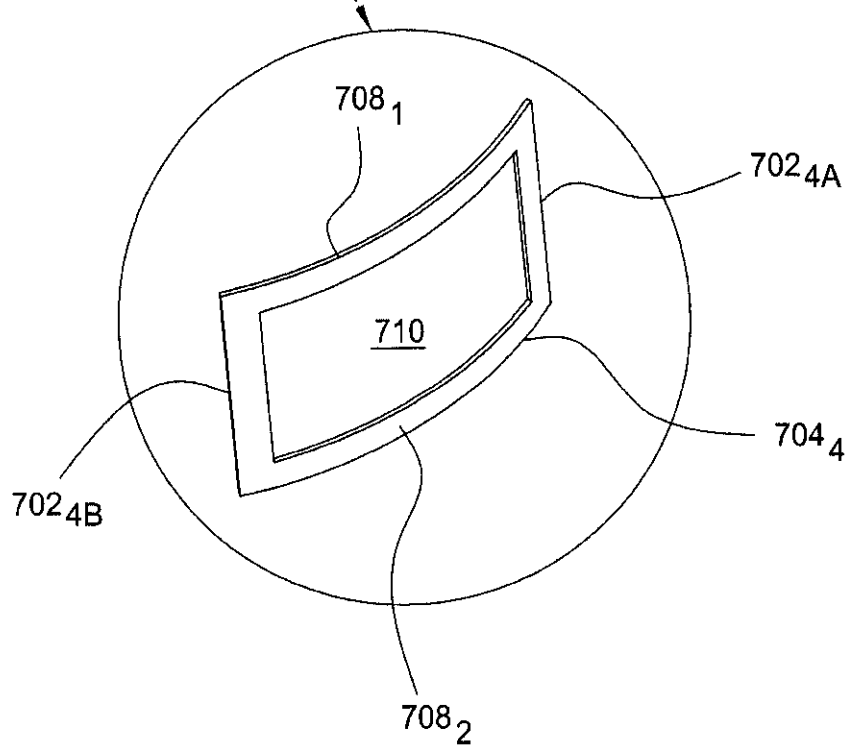

708_1
702_{4A}
710
704_4
702_{4B}
708_2

FIG. 9A

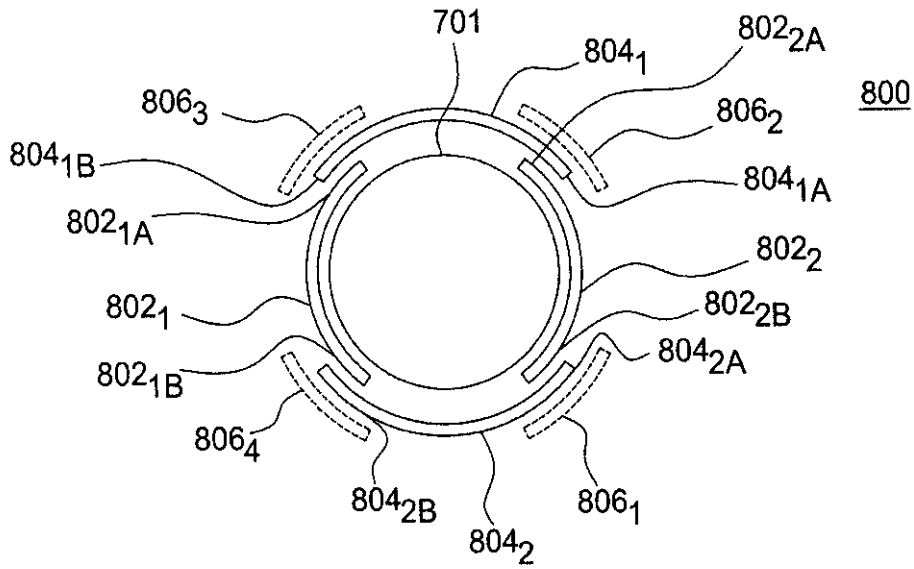

701
804_1
802_{2A}
800
806_3
806_2
804_{1B}
804_{1A}
802_{1A}
802_2
802_1
802_{2B}
804_{2A}
802_{1B}
806_4
804_{2B}
806_1
804_2

FIG. 10

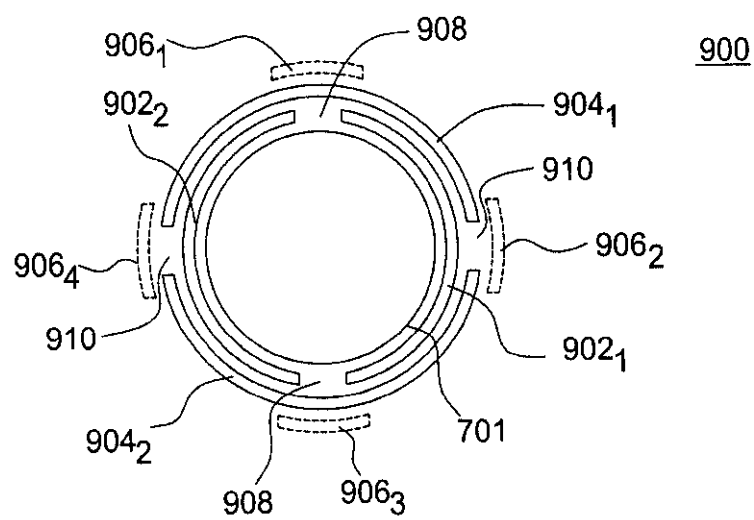
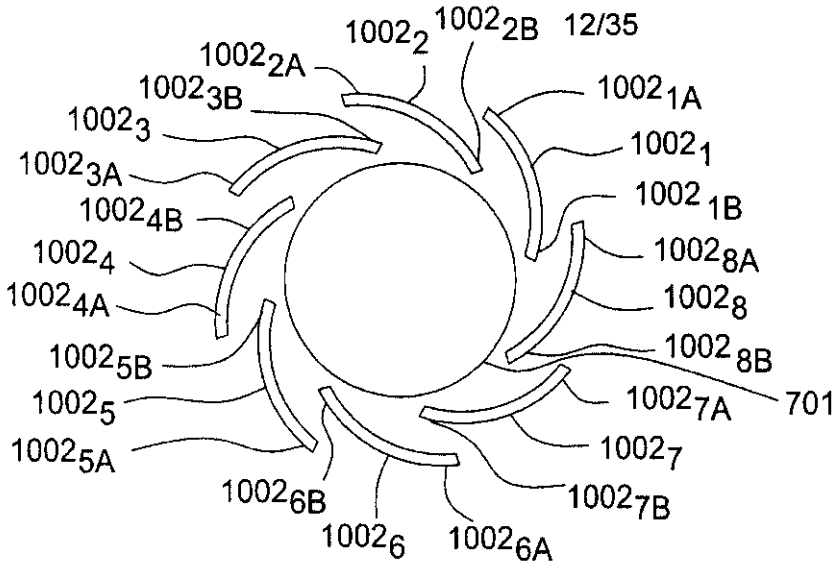
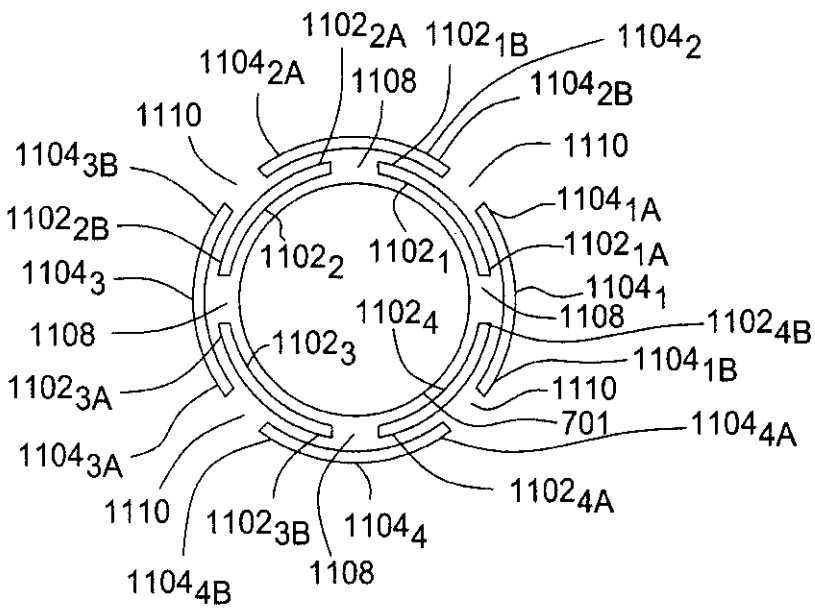

906_1
908
900
902_2
904_1
910
906_2
906_4
910
902_1
904_2
701
908
906_3

FIG. 11



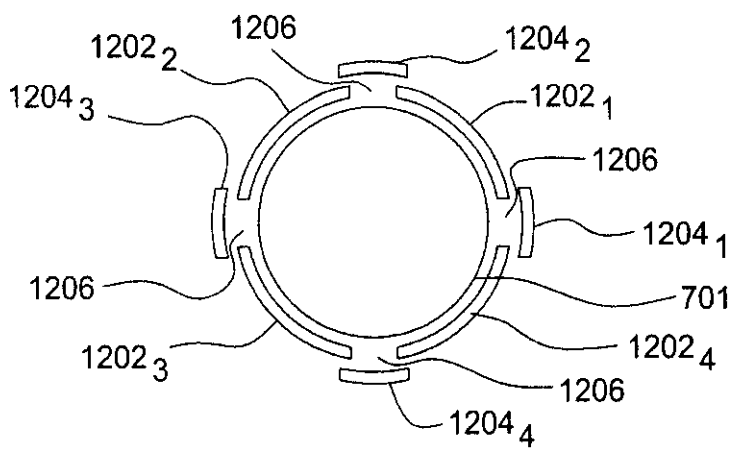
1000

FIG. 12



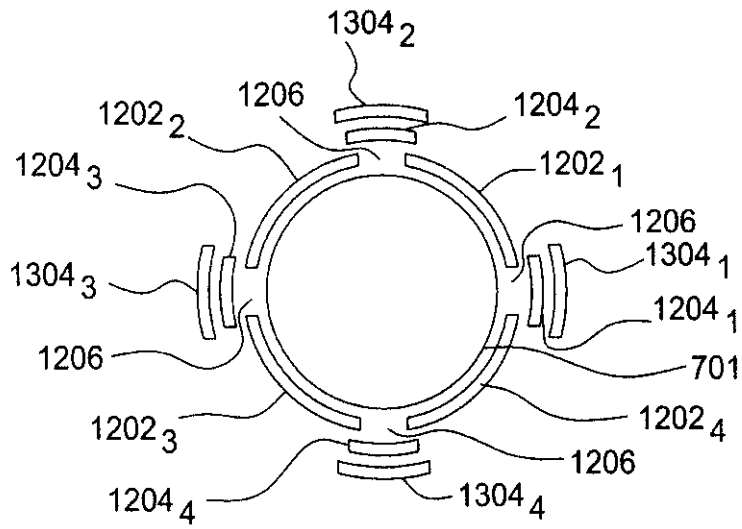
1100

FIG. 13



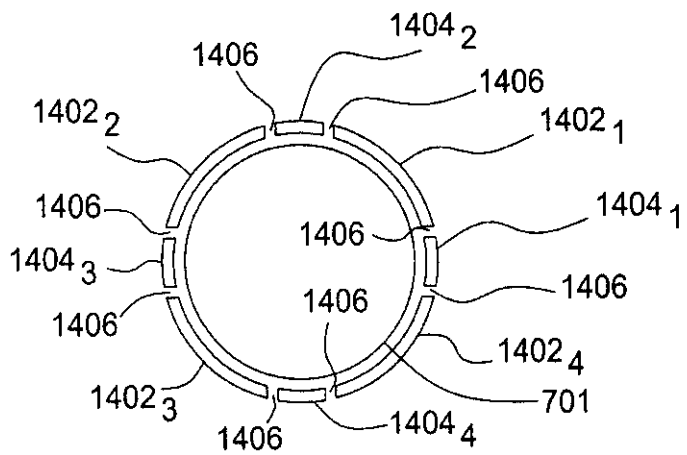
1200

FIG. 14



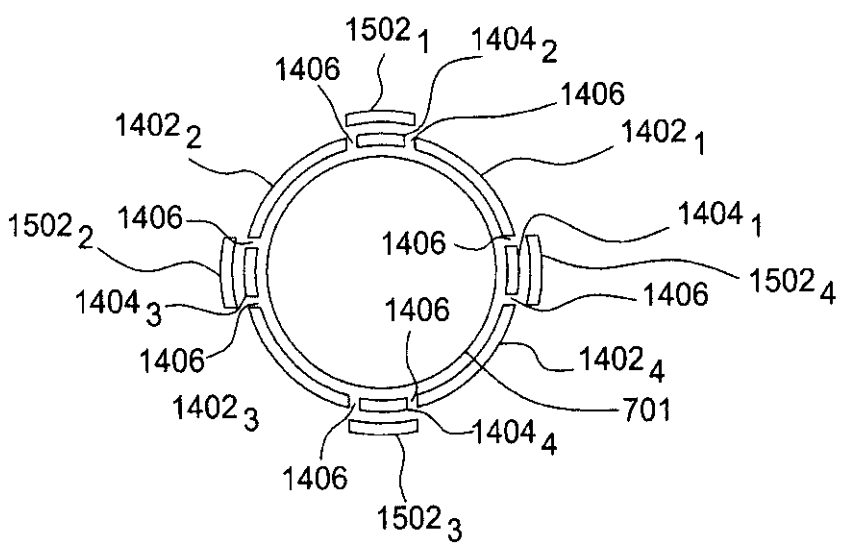
1300

FIG. 15



1400

FIG. 16



1500

FIG. 17

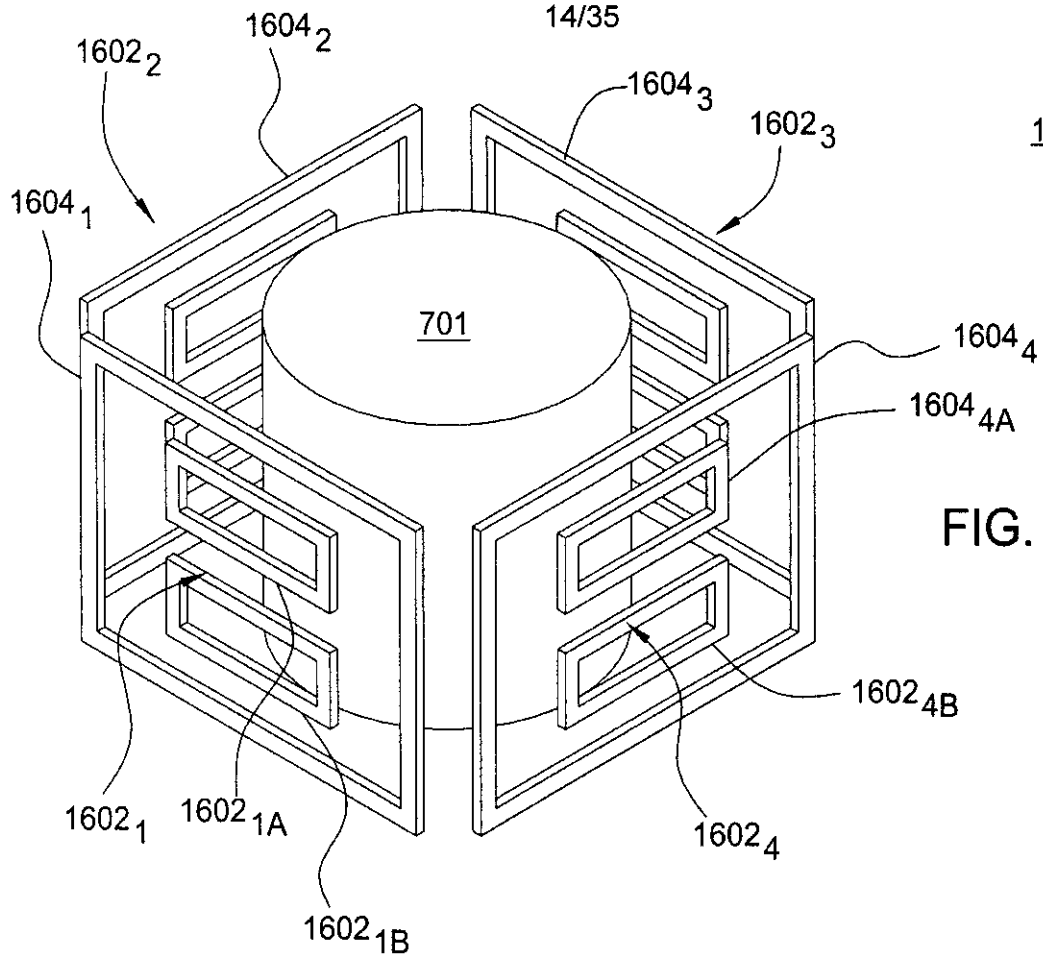


FIG. 18A

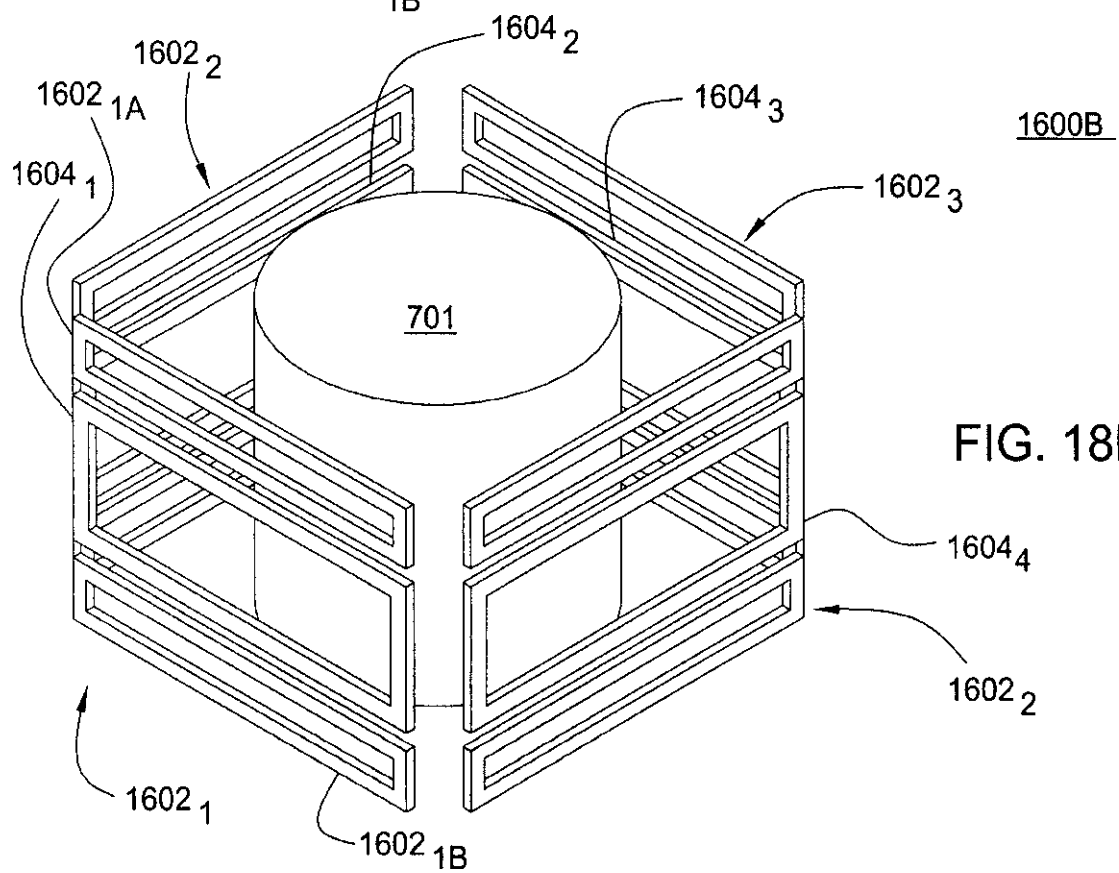


FIG. 18B

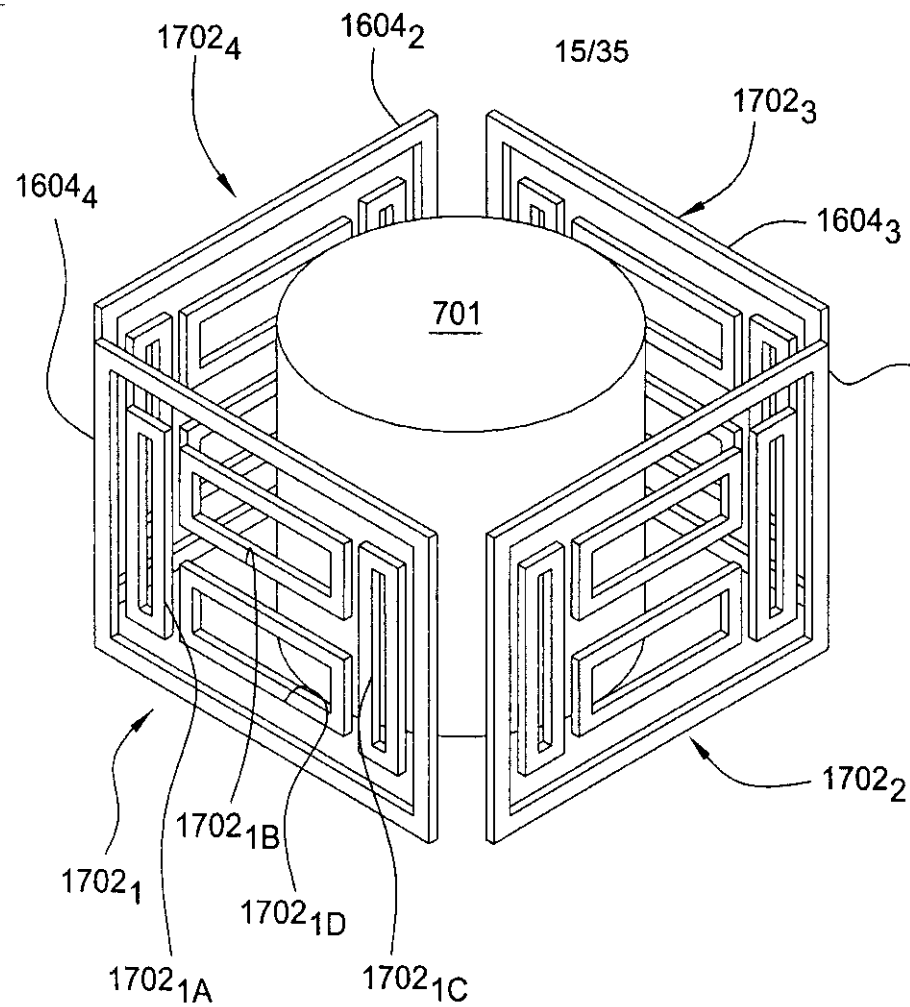


FIG. 19A

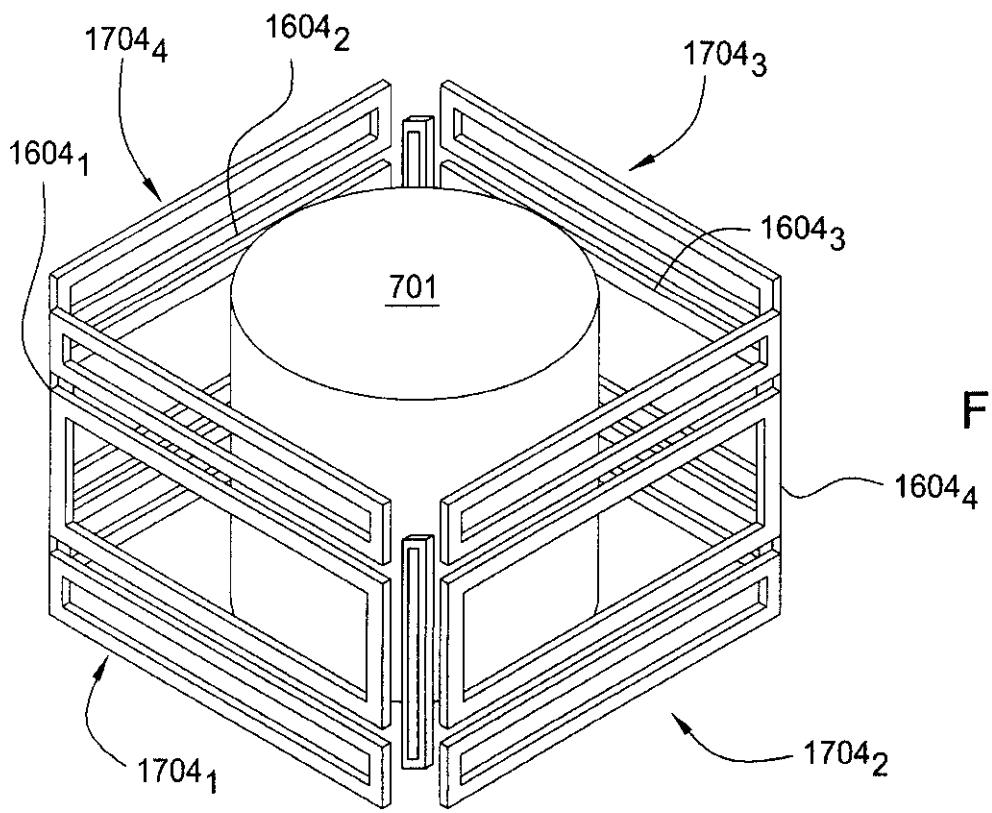


FIG. 19B

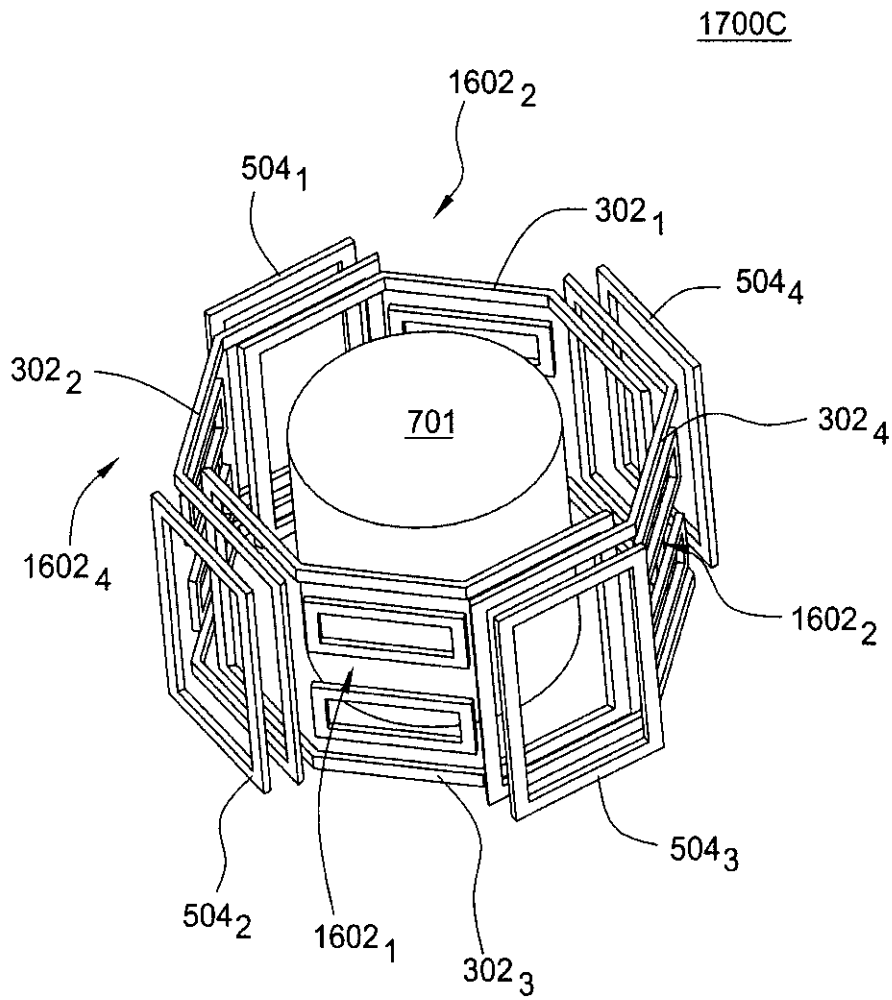

1700C
1602_2
504_1
302_1
504_4
302_2
701
302_4
1602_4
1602_2
504_3
504_2
1602_1
302_3

FIG. 19C

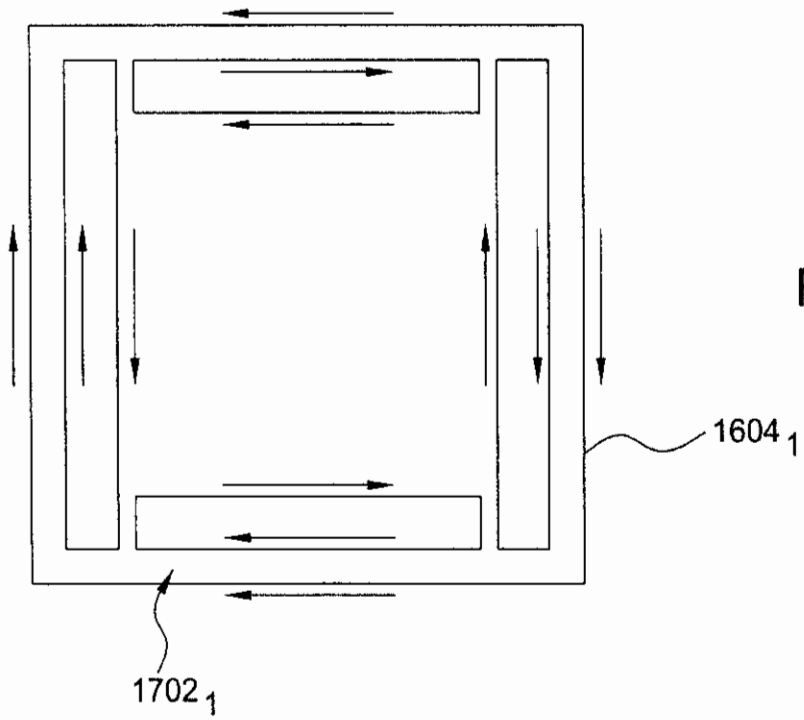


FIG. 20A

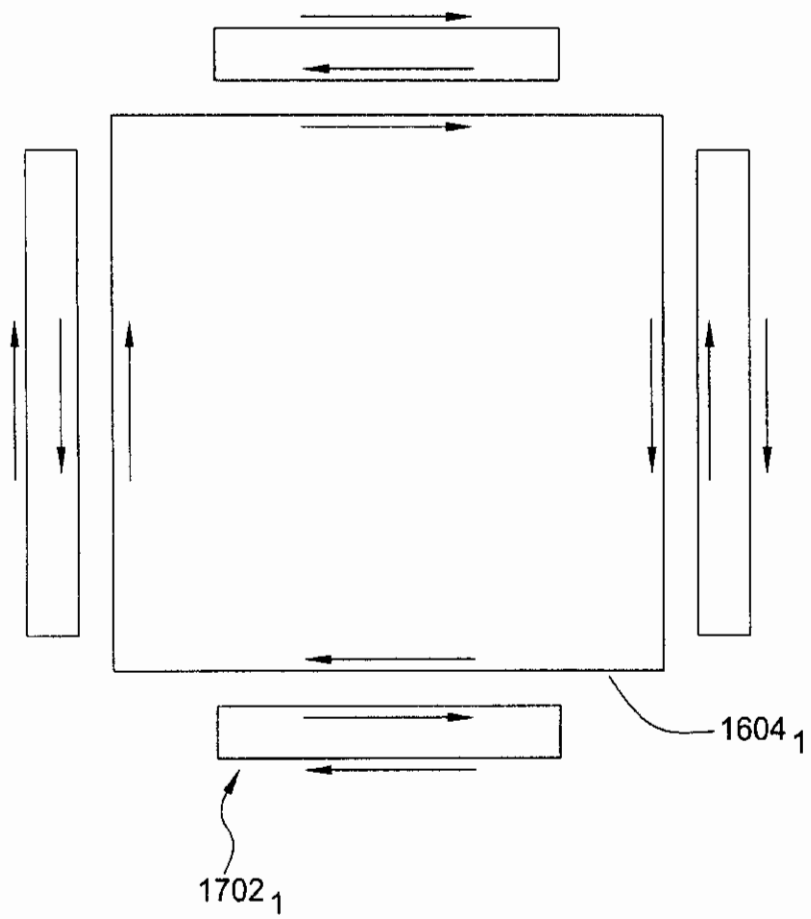


FIG. 20B

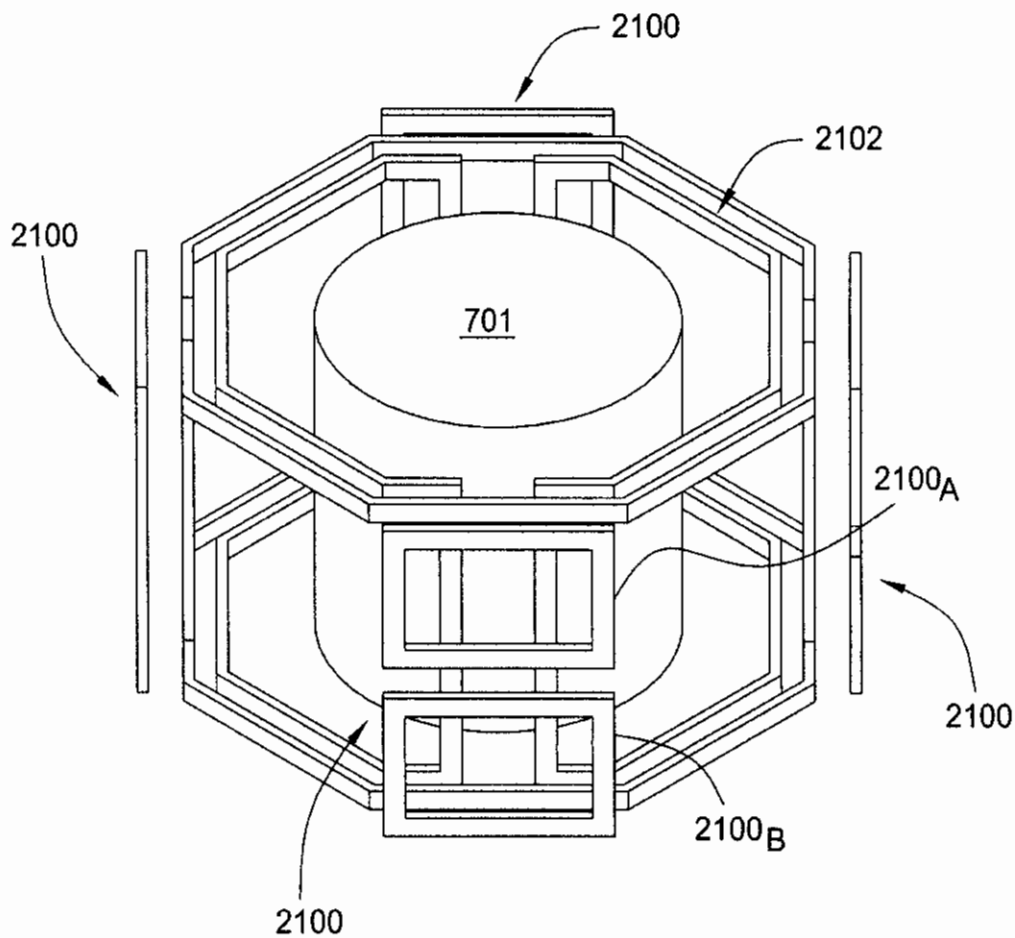


FIG. 21

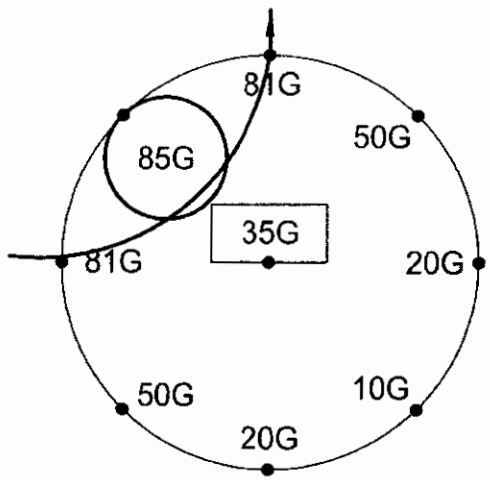


FIG. 22A

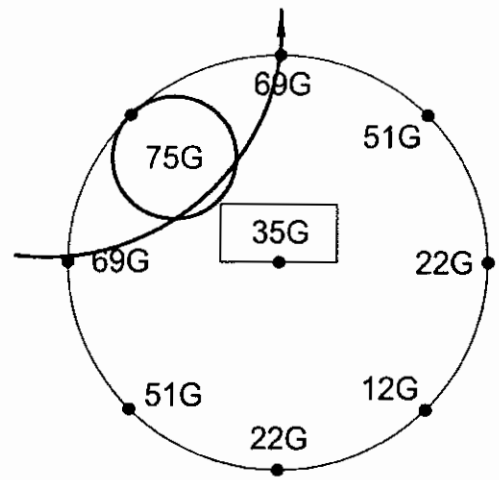


FIG. 22B

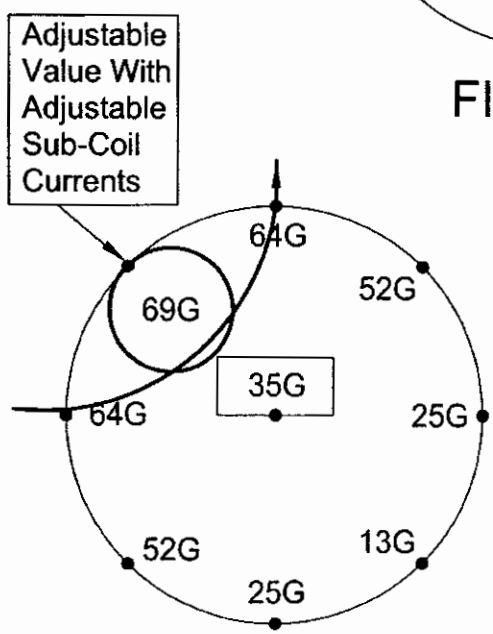


FIG. 22C

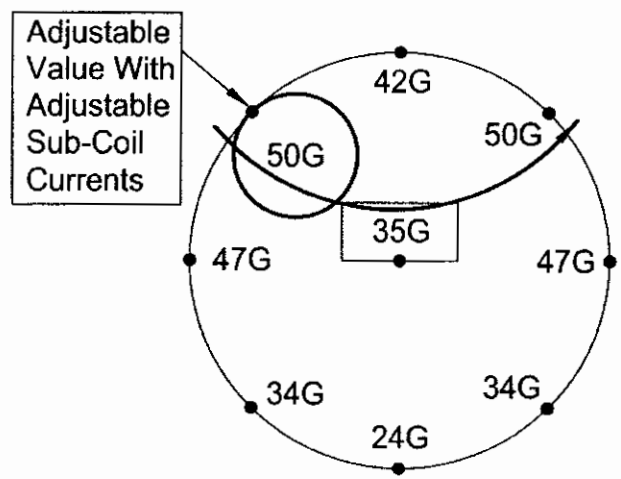


FIG. 22D

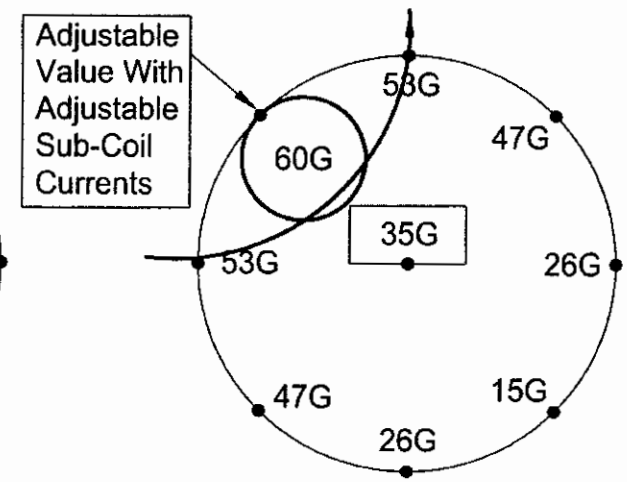


FIG. 22E

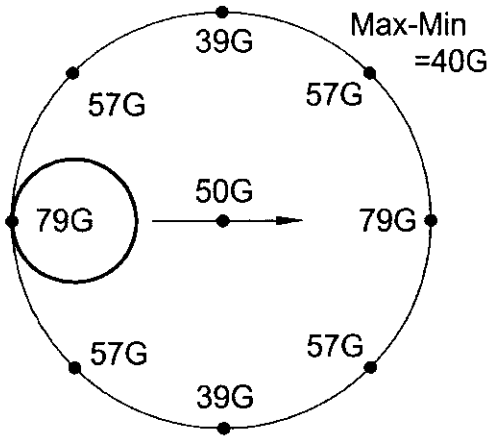


FIG. 22F

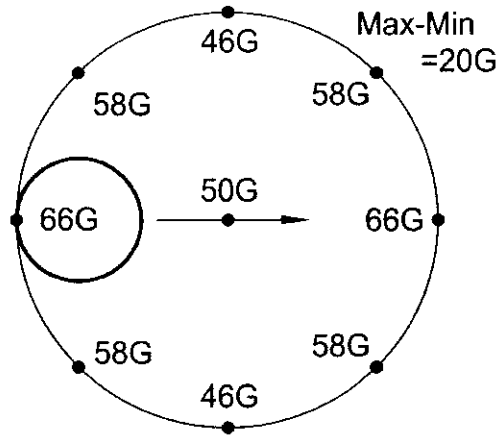


FIG. 22G

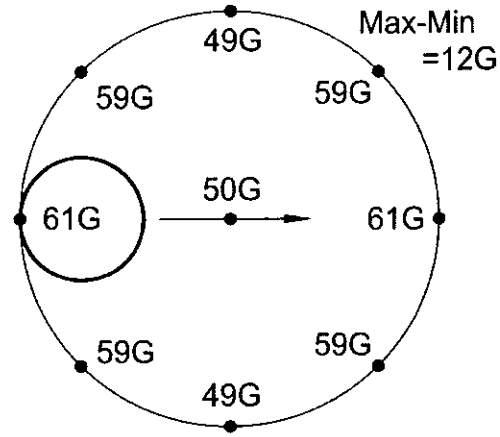


FIG. 22H

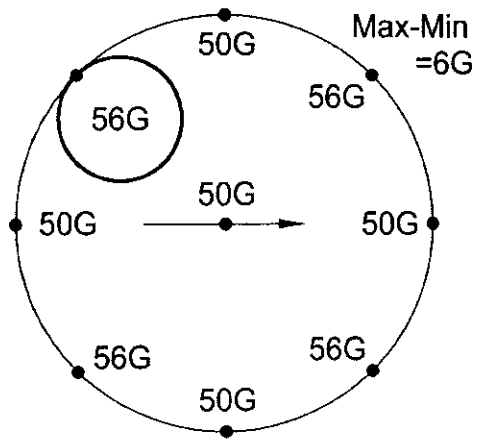


FIG. 22I

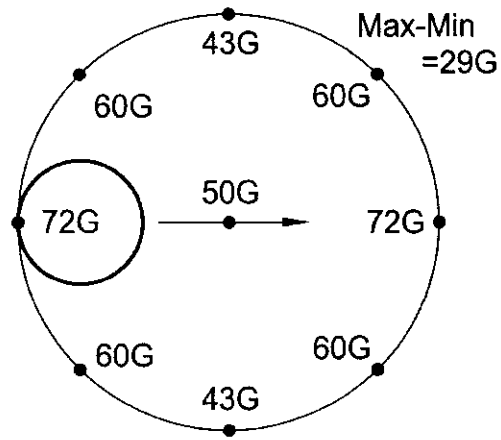


FIG. 22J

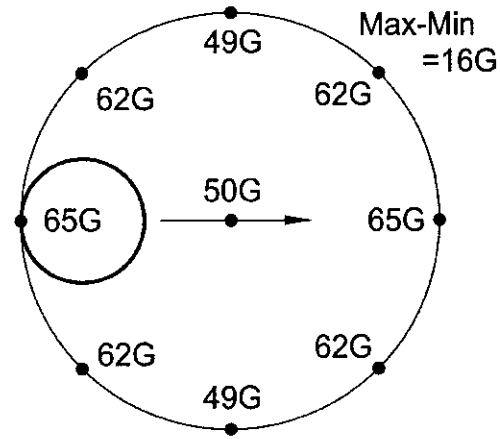
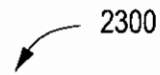


FIG. 22K



	TIME	COIL #1	COIL #2	COIL #3	COIL #4
SHAPE 0 DEGREES	0.00 - 0.95 sec	+1	-1	-R	+R
TRANSITION 0 DEGREES	0.95 - 1.00 sec	+1	0	-1	0
SHAPE 90 DEGREES	1.00 - 1.95 sec	+R	+1	-1	-R
TRANSITION 90 DEGREES	1.95 - 2.00 sec	0	+1	0	-1
SHAPE 180 DEGREES	2.00 - 2.95 sec	-R	+R	+1	-1
TRANSITION 180 DEGREES	2.95 - 3.00 sec	-1	0	+1	0
SHAPE 270 DEGREES	3.00 - 3.95 sec	-1	-R	+R	+1
TRANSITION 270 DEGREES	3.95 - 4.00 sec	0	-1	0	+1

FIG. 23
(PRIOR ART)

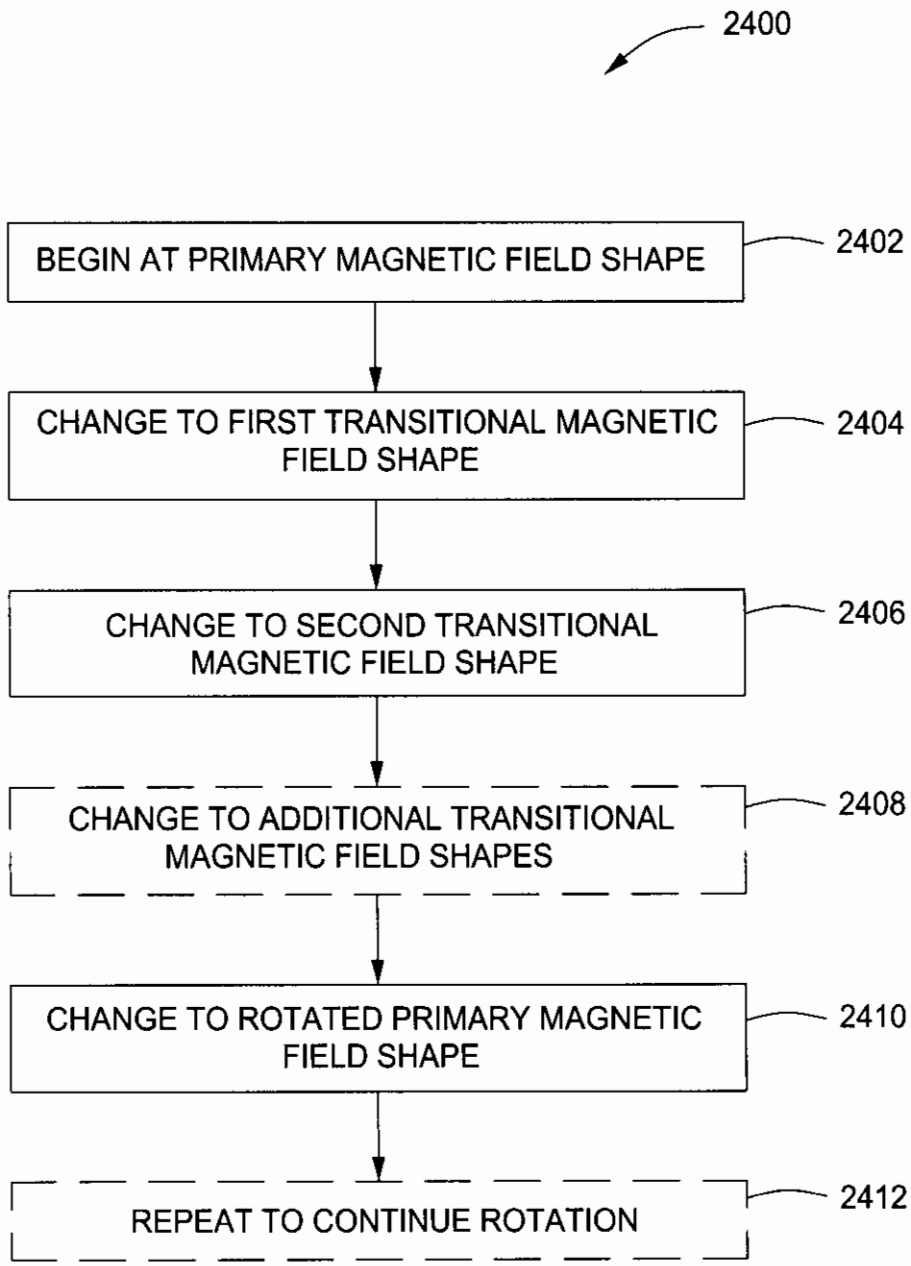

2400
BEGIN AT PRIMARY MAGNETIC FIELD SHAPE
2402
CHANGE TO FIRST TRANSITIONAL MAGNETIC FIELD SHAPE
2404
CHANGE TO SECOND TRANSITIONAL MAGNETIC FIELD SHAPE
2406
CHANGE TO ADDITIONAL TRANSITIONAL MAGNETIC FIELD SHAPES
2408
CHANGE TO ROTATED PRIMARY MAGNETIC FIELD SHAPE
2410
REPEAT TO CONTINUE ROTATION
2412

FIG. 24

2500

		TIME	COIL #1	COIL #2	COIL #3	COIL #4
1	**SHAPE** 0 DEGREES	0.00 - 0.90 sec	+1	-1	-R	+R
2	TRANSITION A, 0 DEGREES	0.90 - 0.95 sec	+(1+R)	-(0.5 * R)	-1	-(0.5 * R)
3	TRANSITION B, 0 DEGREES	0.95 - 1.00 sec	+1	+R	-(1+0.5*R)	-(0.5 * R)
4	**SHAPE** 90 DEGREES	1.00 - 1.90 sec	+R	+1	-1	-R
5	TRANSITION A, 90 DEGREES	1.90 - 1.95 sec	-(0.5 * R)	+(1+R)	-(0.5 * R)	-1
6	TRANSITION B, 90 DEGREES	1.95 - 2.00 sec	-(0.5 * R)	+1	+R	-(1+0.5*R)
7	**SHAPE** 180 DEGREES	2.00 - 2.90 sec	-R	+R	+1	-1
8	TRANSITION A, 180 DEGREES	2.90 - 2.95 sec	-1	-(0.5 * R)	+(1+R)	-(0.5 * R)
9	TRANSITION B, 180 DEGREES	2.95 - 3.00 sec	-(1+0.5*R)	-(0.5 * R)	+1	+R
10	**SHAPE** 270 DEGREES	3.00 - 3.90 sec	-1	-R	+R	+1
11	TRANSITION A, 270 DEGREES	3.90 - 3.95 sec	-(0.5 * R)	-1	-(0.5 * R)	+(1+R)
12	TRANSITION B, 270 DEGREES	3.95 - 4.00 sec	+R	-(1+0.5*R)	-(0.5 * R)	+1

FIG. 25

		TIME	COIL #1	COIL #2	COIL #3	COIL #4
1	**SHAPE** 0 DEGREES	0.00 - 0.75 sec	+1	-1	-R	+R
2	TRANSITION A, 0 DEGREES	0.75 - 0.80 sec	+(1+0.5*R)	-0.5*(1+0.5*R)	-0.5*(1+R)	+(0.25*R)
3	TRANSITION B, 0 DEGREES	0.80 - 0.85 sec	+(1+R)	-(0.5*R)	-1	-(0.5*R)
4	TRANSITION C, 0 DEGREES	0.85 - 0.90 sec	+(1+0.5*R)	+(0.25*R)	-(1+0.25*R)	-(0.5*R)
5	TRANSITION D, 0 DEGREES	0.90 - 0.95 sec	+1	+R	-(1+0.5*R)	-(0.5*R)
6	TRANSITION E, 0 DEGREES	0.95 - 1.00 sec	+0.5*(1+R)	+0.5*(1+R)	-(1+0.25*R)	-0.75*R
7	**SHAPE** 90 DEGREES	1.00 - 1.75 sec	+R	+1	-1	-R
8	TRANSITION A, 90 DEGREES	1.75 - 1.80 sec	+(0.25*R)	+(1+0.5*R)	-0.5*(1+0.5*R)	-0.5*(1+R)
9	TRANSITION B, 90 DEGREES	1.80 - 1.85 sec	-(0.5*R)	+(1+R)	-(0.5*R)	-1
10	TRANSITION C, 90 DEGREES	1.85 - 1.90 sec	-(0.5*R)	+(1+0.5*R)	+(0.25*R)	-(1+0.25*R)
11	TRANSITION D, 90 DEGREES	1.90 - 1.95 sec	-(0.5*R)	+1	+R	-(1+0.5*R)
12	TRANSITION E, 90 DEGREES	1.95 - 2.00 sec	-0.75*R	+0.5*(1+R)	+0.5*(1+R)	-(1+0.25*R)
13	**SHAPE** 180 DEGREES	2.00 - 2.75 sec	-R	+R	+1	-1
14	TRANSITION A, 180 DEGREES	2.75 - 2.80 sec	-0.5*(1+R)	+(0.25*R)	+(1+0.5*R)	-0.5*(1+0.5*R)
15	TRANSITION B, 180 DEGREES	2.80 - 2.85 sec	-1	-(0.5*R)	+(1+R)	-(0.5*R)
16	TRANSITION C, 180 DEGREES	2.85 - 2.90 sec	-(1+0.25*R)	-(0.5*R)	+(1+0.5*R)	+(0.25*R)
17	TRANSITION D, 180 DEGREES	2.90 - 2.95 sec	-(1+0.5*R)	-(0.5*R)	+1	+R
18	TRANSITION E, 180 DEGREES	2.95 - 3.00 sec	-(1+0.25*R)	-0.75*R	+0.5*(1+R)	+0.5*(1+R)
19	**SHAPE** 270 DEGREES	3.00 - 3.75 sec	-1	-R	+R	+1
20	TRANSITION A, 270 DEGREES	3.75 - 3.80 sec	-0.5*(1+0.5*R)	-0.5*(1+R)	+(0.25*R)	+(1+0.5*R)
21	TRANSITION B, 270 DEGREES	3.80 - 3.85 sec	-(0.5*R)	-1	-(0.5*R)	+(1+R)
22	TRANSITION C, 270 DEGREES	3.85 - 3.90 sec	+(0.25*R)	-(1+0.25*R)	-(0.5*R)	+(1+0.5*R)
23	TRANSITION D, 270 DEGREES	3.90 - 3.95 sec	+R	-(1+0.5*R)	-(0.5*R)	+1
24	TRANSITION E, 270 DEGREES	3.95 - 3.00 sec	-0.5*(1+R)	-(1+0.25*R)	-0.75*R	+0.5*(1+R)

2600

FIG. 26

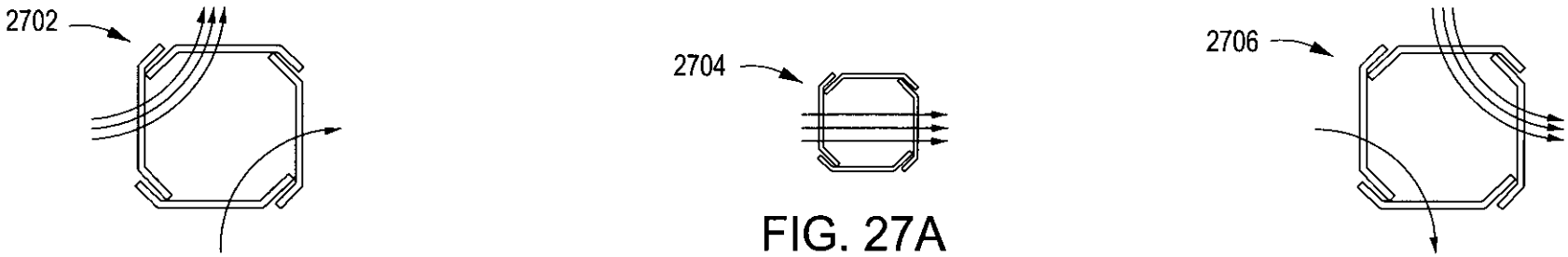


FIG. 27A
(PRIOR ART)

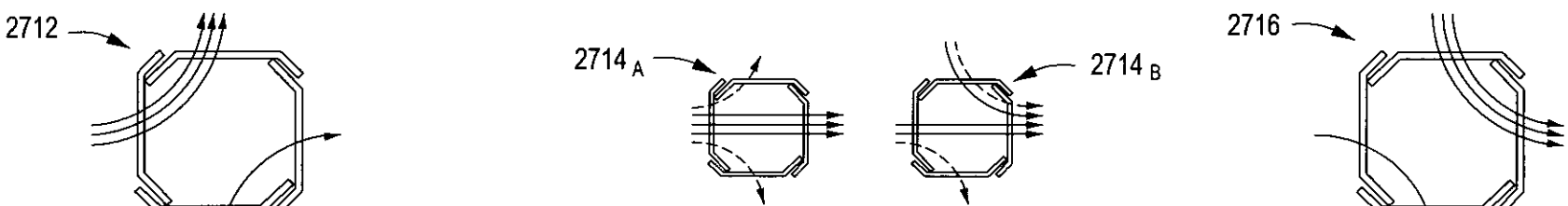


FIG. 27B

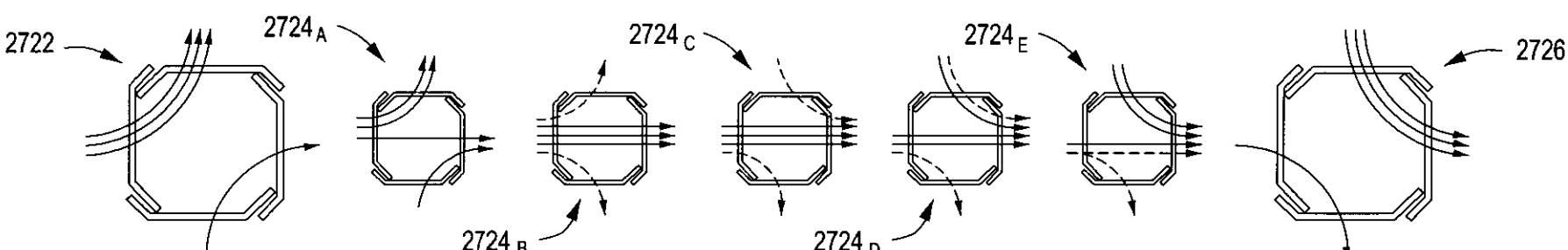


FIG. 27C

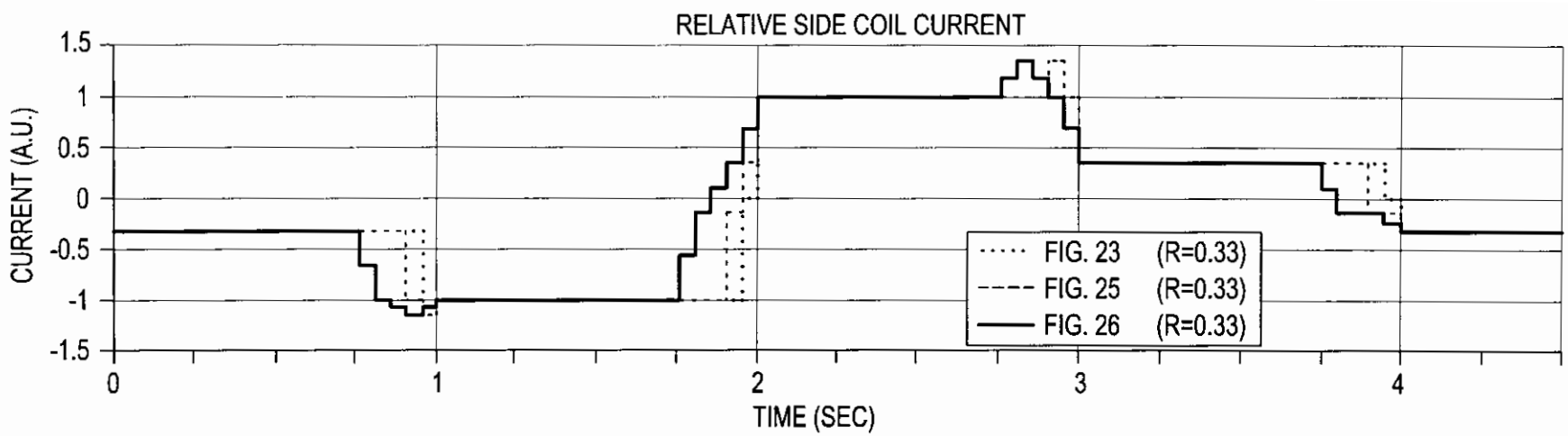


FIG. 28A

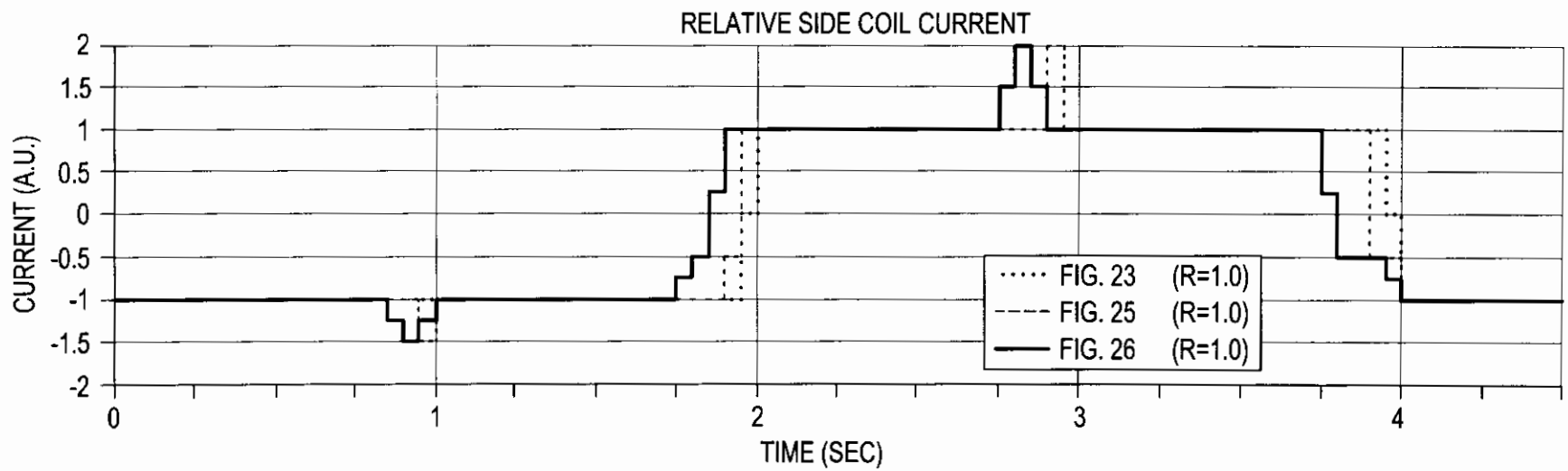
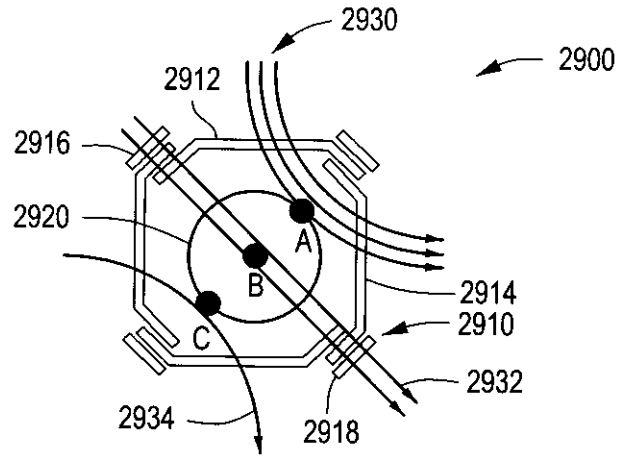


FIG. 28B

FIG. 29



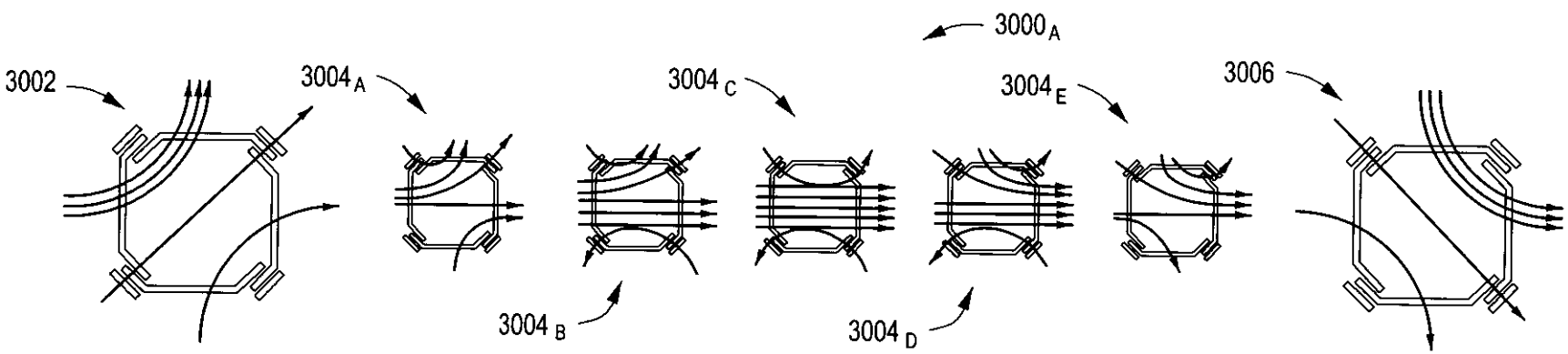


FIG. 30A

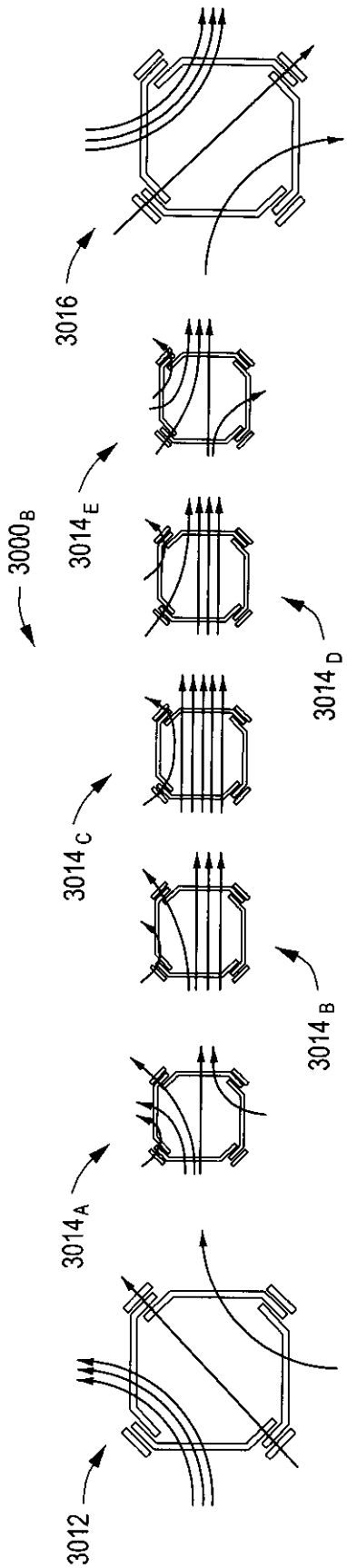


FIG. 30B

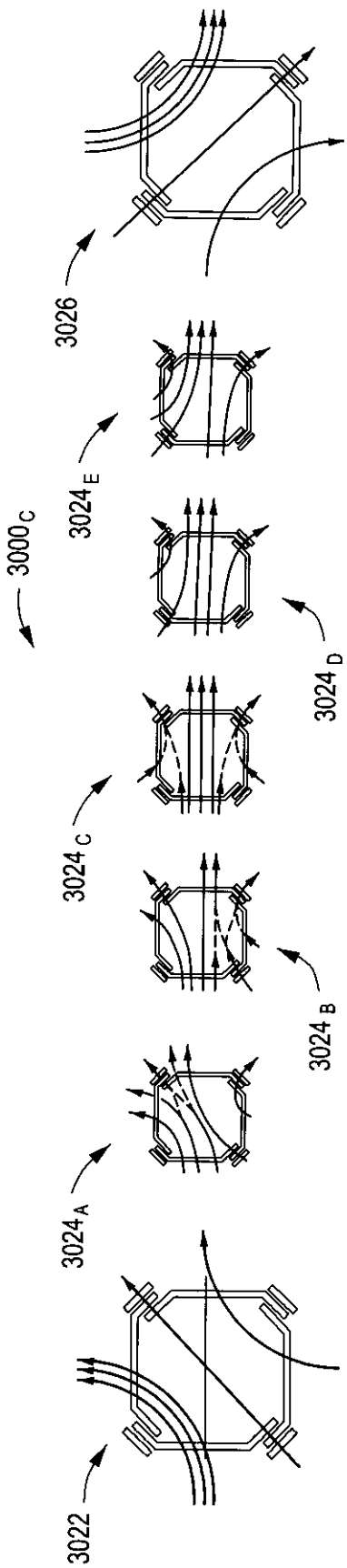


FIG. 30C

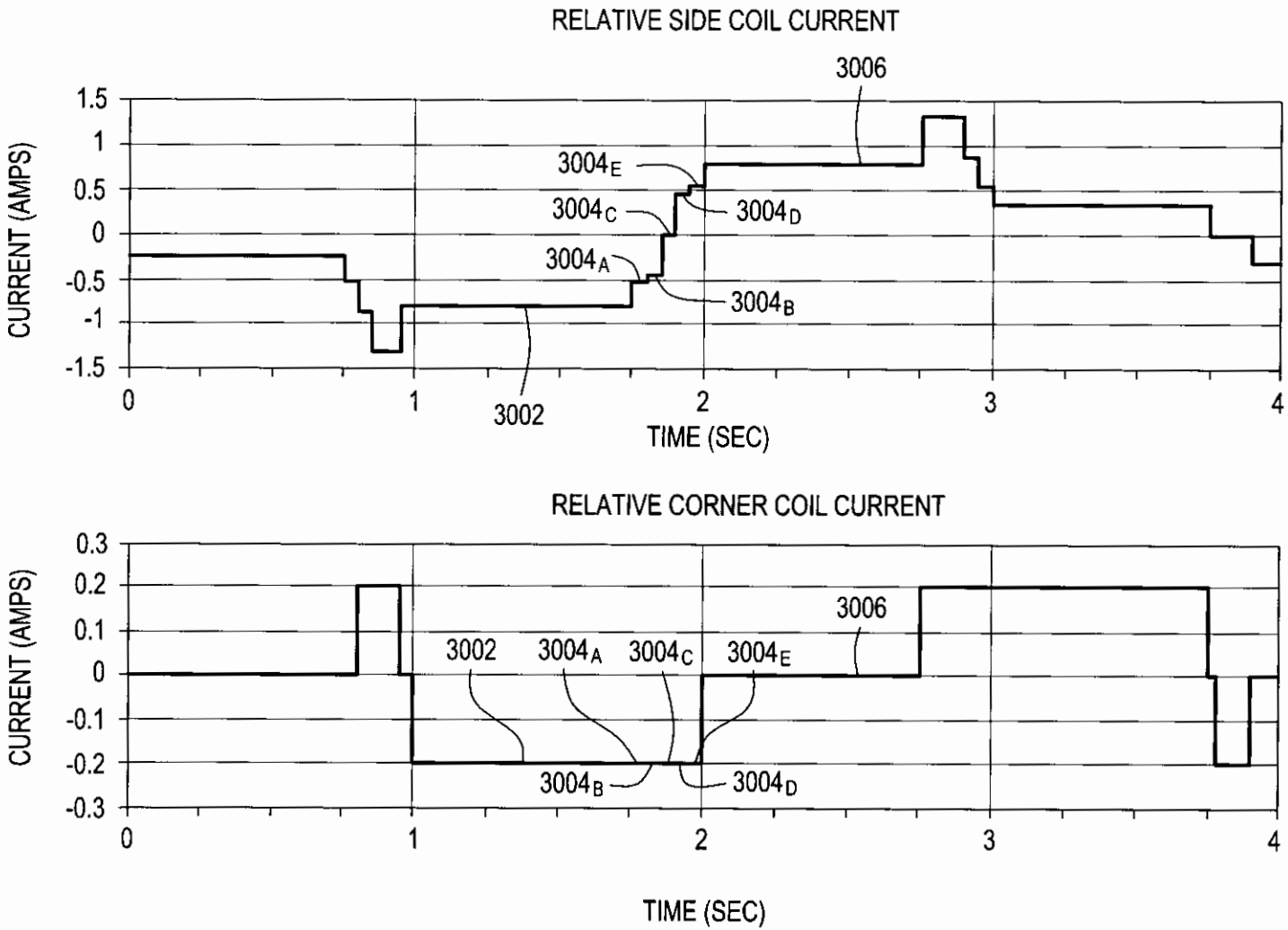

RELATIVE SIDE COIL CURRENT
CURRENT (AMPS)
1.5
1
0.5
0
-0.5
-1
-1.5
0
1
2
3
4
TIME (SEC)
3006
3004E
3004C
3004D
3004A
3004B
3002
RELATIVE CORNER COIL CURRENT
CURRENT (AMPS)
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
0
1
2
3
4
TIME (SEC)
3006
3002
3004A
3004C
3004E
3004B
3004D

FIG. 31A

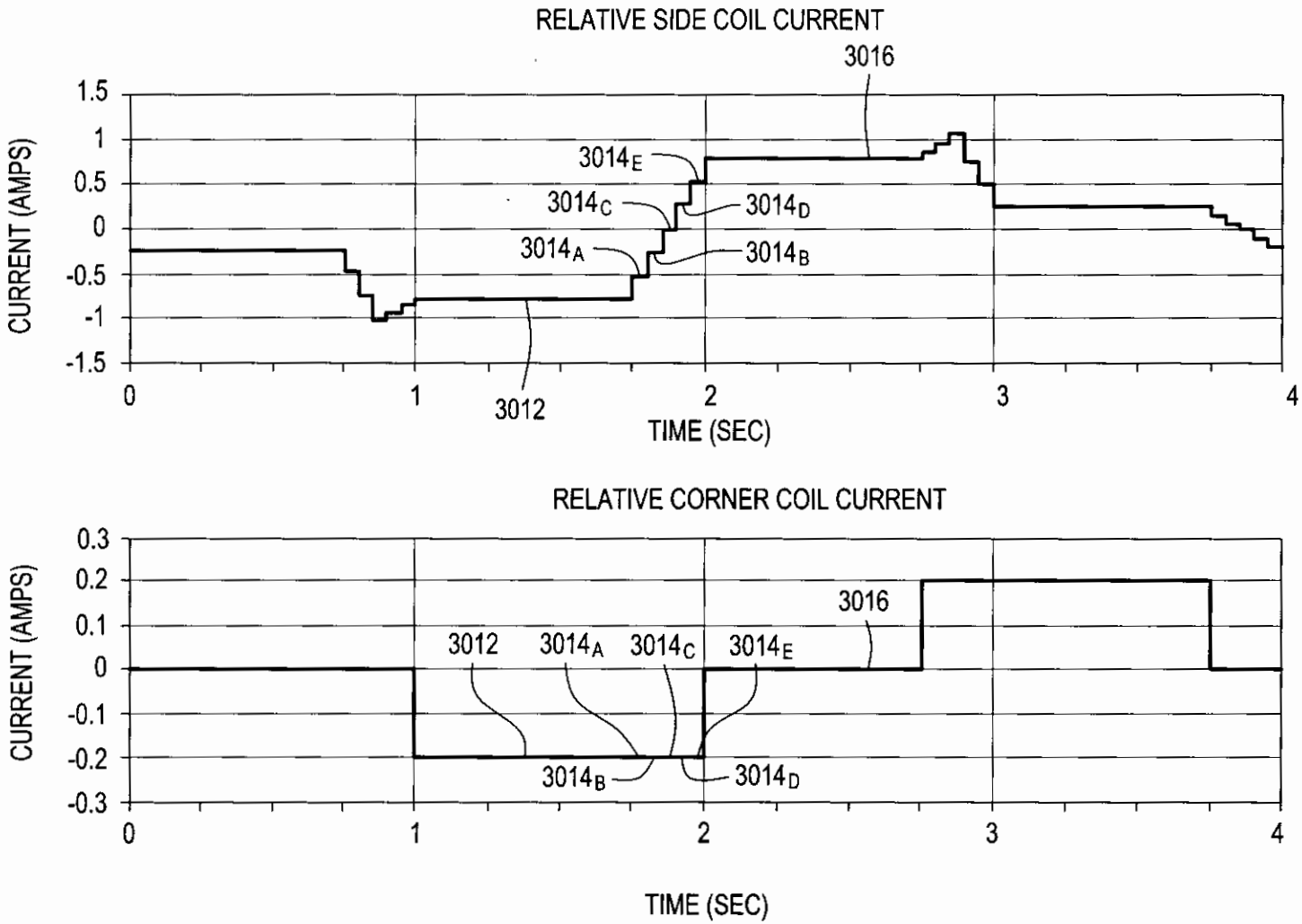

RELATIVE SIDE COIL CURRENT
CURRENT (AMPS)
1.5
1
0.5
0
-0.5
-1
-1.5
0
1
2
3
4
TIME (SEC)
3016
3014E
3014C
3014D
3014A
3014B
3012
RELATIVE CORNER COIL CURRENT
CURRENT (AMPS)
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
0
1
2
3
4
TIME (SEC)
3016
3012
3014A
3014C
3014E
3014B
3014D

FIG. 31B

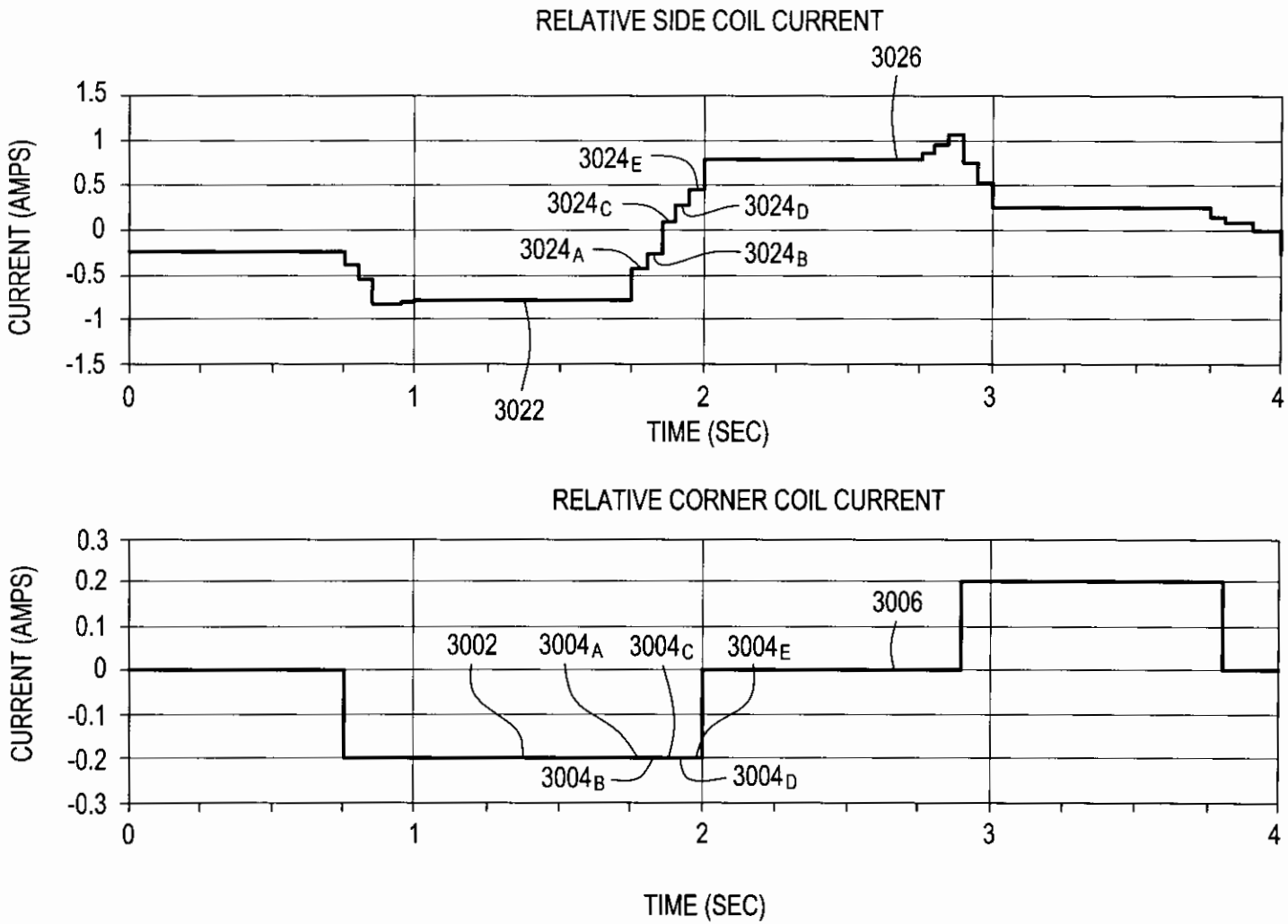
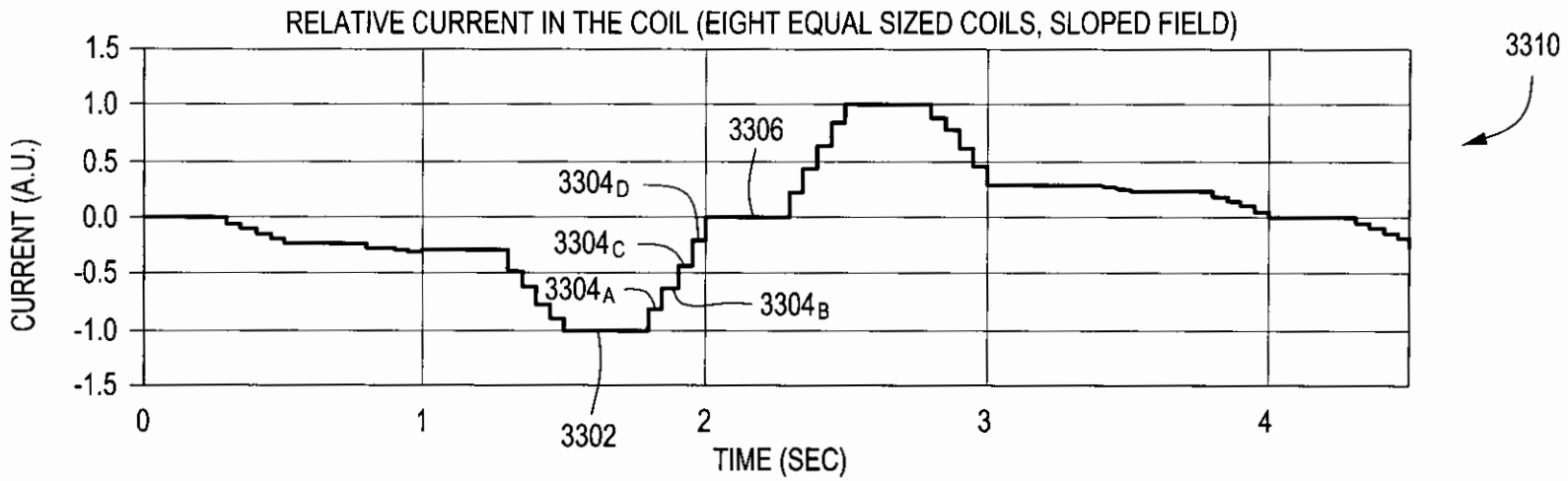

RELATIVE SIDE COIL CURRENT
CURRENT (AMPS)
1.5
1
0.5
0
-0.5
-1
-1.5
0
1
2
3
4
TIME (SEC)
3026
3024E
3024C
3024D
3024A
3024B
3022
RELATIVE CORNER COIL CURRENT
CURRENT (AMPS)
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
0
1
2
3
4
TIME (SEC)
3006
3002
3004A
3004C
3004E
3004B
3004D

FIG. 31C

			SCHEME V		SCHEME W		SCHEME X	
		TIME (SEC)	SIDE COIL #1	CORNER COIL #1	SIDE COIL #1	CORNER COIL #1	SIDE COIL #1	CORNER COIL #1
1	**SHAPE** 0 DEGREES	0.00 - 0.75 sec	-B	0	-B	0	-B	0
2	TRANSITION A_0	0.75 - 0.80 sec	-B -C	+C	-B -AD	0	-B+E(C-A)	-C
3	TRANSITION B_0	0.80 - 0.85 sec	-(A-C) -D(A-C)	+C	-B -A(1-D-E)	0	-B+2E(C-A)	-C
4	TRANSITION C_0	0.85 - 0.90 sec	-A(1+D)	+C	-A -B	0	-B+(C-A)	-C
5	TRANSITION D_0	0.90 - 0.95 sec	-A(1+D)	+C	-A -B(D+E)	0	-B+(C-A)+E(B-C)	-C
6	TRANSITION E_0	0.95 - 1.00 sec	-A	+C	-A -BD	0	-B+(C-A)+2E(B-C)	-C
7	**SHAPE** 90 DEGREES	1.00 - 1.75 sec	-A	-C	-A	-C	-A	-C
8	TRANSITION A_{90}	1.75 - 1.80 sec	-(A-C)	-C	-A(1-D)	-C	(C-A) - E(C-A)	-C
9	TRANSITION B_{90}	1.80 - 1.85 sec	-C(1+D)	-C	-A(1-D-E)	-C	(C-A) - 2E(C-A)	-C
10	TRANSITION C_{90}	1.85 - 1.90 sec	0	-C	0	-C	+AD	-C
11	TRANSITION D_{90}	1.90 - 1.95 sec	+C(1+D)	-C	+A(1-D-E)	-C	+AD +E(1-D)	-C
12	TRANSITION E_{90}	1.95 - 2.00 sec	+(A-C)	-C	+A(1-D)	-C	+AD +2E(1-D)	-C
13	**SHAPE** 180 DEGREES	2.00 - 2.75 sec	+A	0	+A	0	+A	0
14	TRANSITION A_{180}	2.75 - 2.80 sec	+A	+C	+A +B(D)	+C	+A +E(B+C-2AD)	0
15	TRANSITION B_{180}	2.80 - 2.85 sec	+A(1+D)	+C	+A +B(D+E)	+C	+A +2E(B+C-2AD)	0
16	TRANSITION C_{180}	2.85 - 2.90 sec	+A(1+D)	+C	+A +B	+C	+A +(B+C-2AD)	0
17	TRANSITION D_{180}	2.90 - 2.95 sec	+(A-C) + D(A-C)	+C	+B +A(D+E)	+C	(+B+A(1-D)) -AE(1-D)	+C
18	TRANSITION E_{180}	2.95 - 3.00 sec	+B +C	+C	+B +A(D)	+C	(+B+A(1-D)) -2AE(1-D)	+C
19	**SHAPE** 270 DEGREES	3.00 - 3.75 sec	+B	+C	+B	+C	+B	+C
20	TRANSITION A_{270}	3.75 - 3.80 sec	+B	0	+B(1-D)	0	+B -E(B+C-2AD)	+C
21	TRANSITION B_{270}	3.80 - 3.85 sec	0	-C	+B(1-D-E)	0	+B -2E(B+C-2AD)	+C
22	TRANSITION C_{270}	3.85 - 3.90 sec	0	-C	0	0	+AD	0
23	TRANSITION D_{270}	3.90 - 3.95 sec	0	-C	-B(1-D-E)	0	+E(C-B)	0
24	TRANSITION E_{270}	3.95 - 3.00 sec	-B	0	-B(1-D)	0	+2E(C-B)	0

3200

FIG. 32


RELATIVE CURRENT IN THE COIL (EIGHT EQUAL SIZED COILS, SLOPED FIELD)
CURRENT (A.U.)
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
0
1
2
3
4
TIME (SEC)
3310
3306
3304D
3304C
3304A
3304B
3302

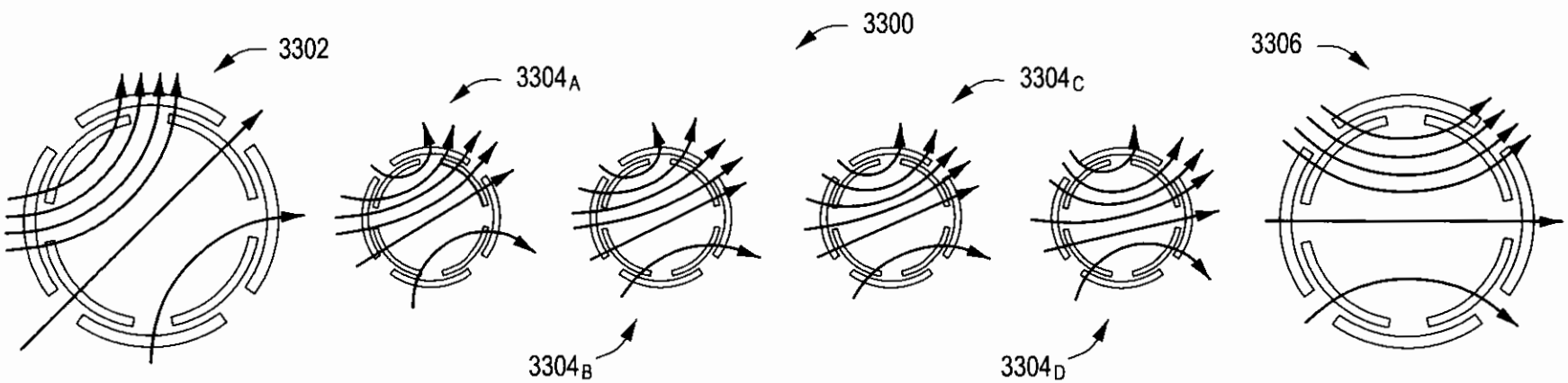

3300
3302
3304A
3304C
3306
3304B
3304D

FIG. 33

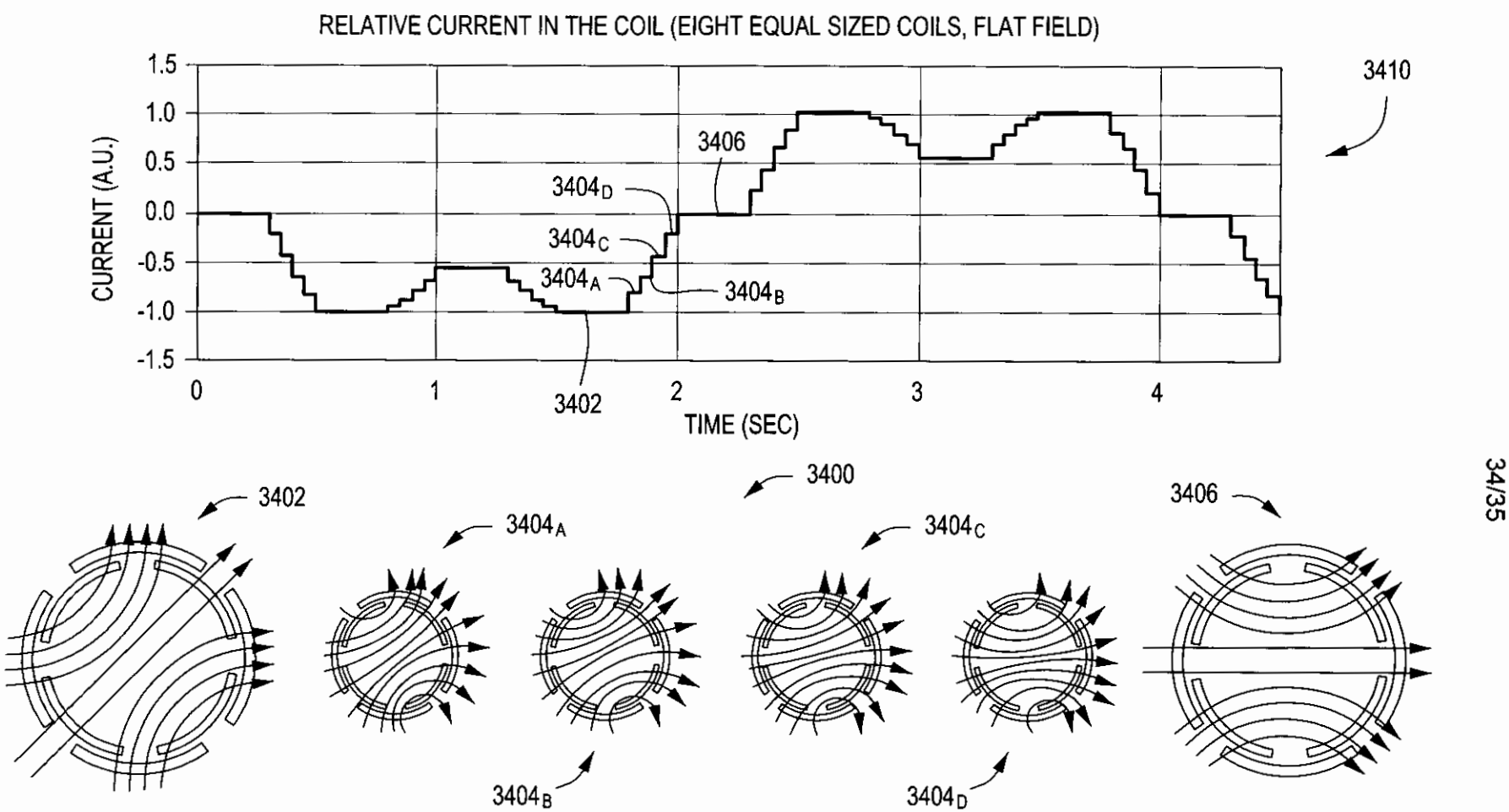

RELATIVE CURRENT IN THE COIL (EIGHT EQUAL SIZED COILS, FLAT FIELD)
CURRENT (A.U.)
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
0
1
2
3
4
TIME (SEC)
3410
3406
3404D
3404C
3404A
3404B
3402
3400
3402
3404A
3404C
3406
3404B
3404D

FIG. 34

		TIME (SEC)	SIDE COIL #1				TIME (SEC)	SIDE COIL #1
1	**SHAPE** 0 DEGREES	**0.00 - 0.30**	**0.0**		21	**SHAPE** 180 DEGREES	**2.00 - 2.30**	**0.0**
2	TRANSITION A_0	0.30 - 0.35	-0.2*B		22	TRANSITION A_{180}	2.30 - 2.35	+0.2*A
3	TRANSITION B_0	0.35 - 0.40	-0.4*B		23	TRANSITION B_{180}	3.35 - 3.40	+0.4*A
4	TRANSITION C_0	0.40 - 0.45	-0.6*B		24	TRANSITION C_{180}	3.40 - 3.45	+0.6*A
5	TRANSITION D_0	0.45 - 0.50	-0.8*B		25	TRANSITION D_{180}	3.45 - 3.50	+0.8*A
6	**SHAPE** 45 DEGREES	**0.50 - 0.80**	**-B**		26	**SHAPE** 225 DEGREES	**2.50 - 2.80**	**+A**
7	TRANSITION A_{45}	0.80 - 0.85	-B - 0.2*(C-B)		27	TRANSITION A_{225}	2.80 - 2.85	+A - 0.2*(A-C)
8	TRANSITION B_{45}	0.85 - 0.90	-B - 0.4*(C-B)		28	TRANSITION B_{225}	2.85 - 2.90	+A - 0.4*(A-C)
9	TRANSITION C_{45}	0.90 - 0.95	-B - 0.6*(C-B)		29	TRANSITION C_{225}	2.90 - 2.95	+A - 0.6*(A-C)
10	TRANSITION D_{45}	0.95 - 1.00	-B - 0.8*(C-B)		30	TRANSITION D_{225}	2.95 - 3.00	+A - 0.8*(A-C)
11	**SHAPE** 90 DEGREES	**1.00 - 1.30**	**-C**		31	**SHAPE** 270 DEGREES	**3.00 - 3.30**	**+C**
12	TRANSITION A_{90}	1.30 - 1.35	-C - 0.2*(A-C)		32	TRANSITION A_{270}	3.30 - 3.35	+C - 0.2*(C-B)
13	TRANSITION B_{90}	1.35 - 1.40	-C - 0.4*(A-C)		33	TRANSITION B_{270}	3.35 - 3.40	+C - 0.4*(C-B)
14	TRANSITION C_{90}	1.40 - 1.45	-C - 0.6*(A-C)		34	TRANSITION C_{270}	3.40 - 3.45	+C - 0.6*(C-B)
15	TRANSITION D_{90}	1.45 - 1.50	-C - 0.8*(A-C)		35	TRANSITION D_{270}	3.45 - 3.50	+C - 0.8*(C-B)
16	**SHAPE** 135 DEGREES	**1.50 - 1.80**	**-A**		36	**SHAPE** 315 DEGREES	**3.50 - 3.80**	**+B**
17	TRANSITION A_{135}	1.80 - 1.85	-0.8*A		37	TRANSITION A_{315}	3.80 - 3.85	+0.8*B
18	TRANSITION B_{135}	1.85 - 1.90	-0.6*A		38	TRANSITION B_{315}	3.85 - 3.90	+0.6*B
19	TRANSITION C_{135}	1.90 - 1.95	-0.4*A		39	TRANSITION C_{315}	3.90 - 3.95	+0.4*B
20	TRANSITION D_{135}	1.95 - 2.00	-0.2*A		40	TRANSITION D_{315}	3.95 - 4.00	+0.2*B

3500

FIG. 35