

Docket No. 112735WO

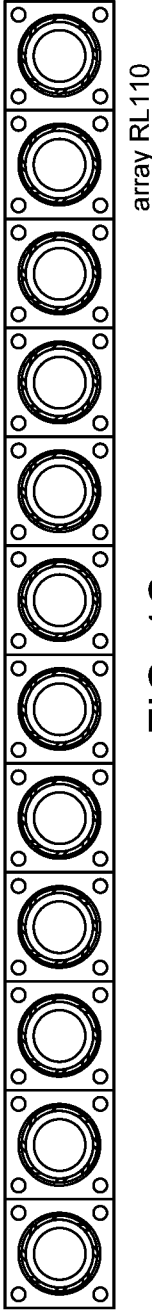
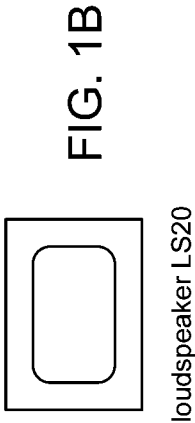
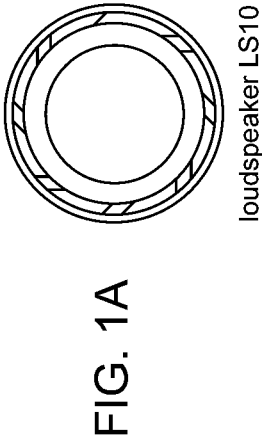


FIG. 1C

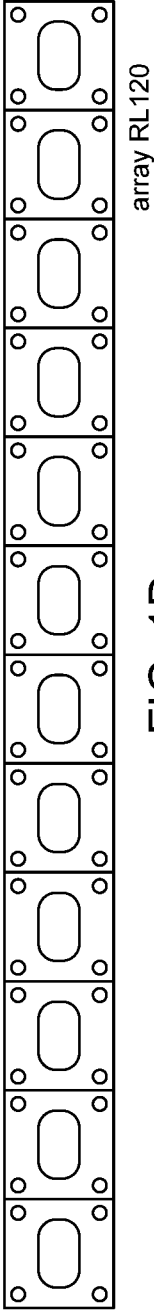


FIG. 1D

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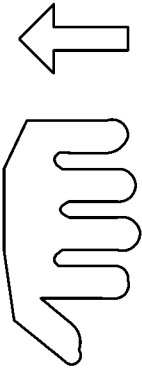
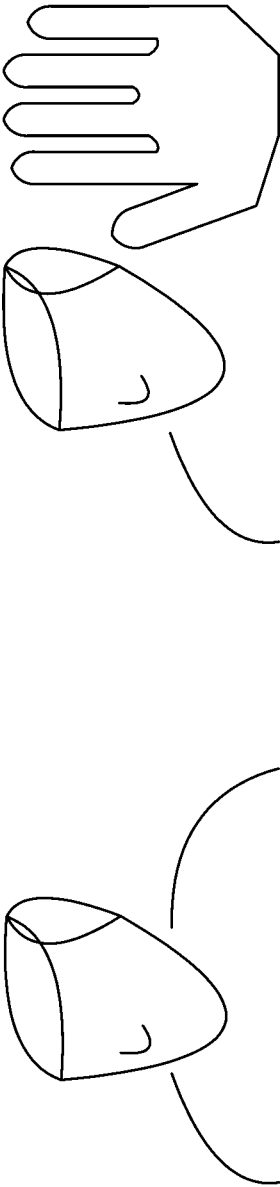
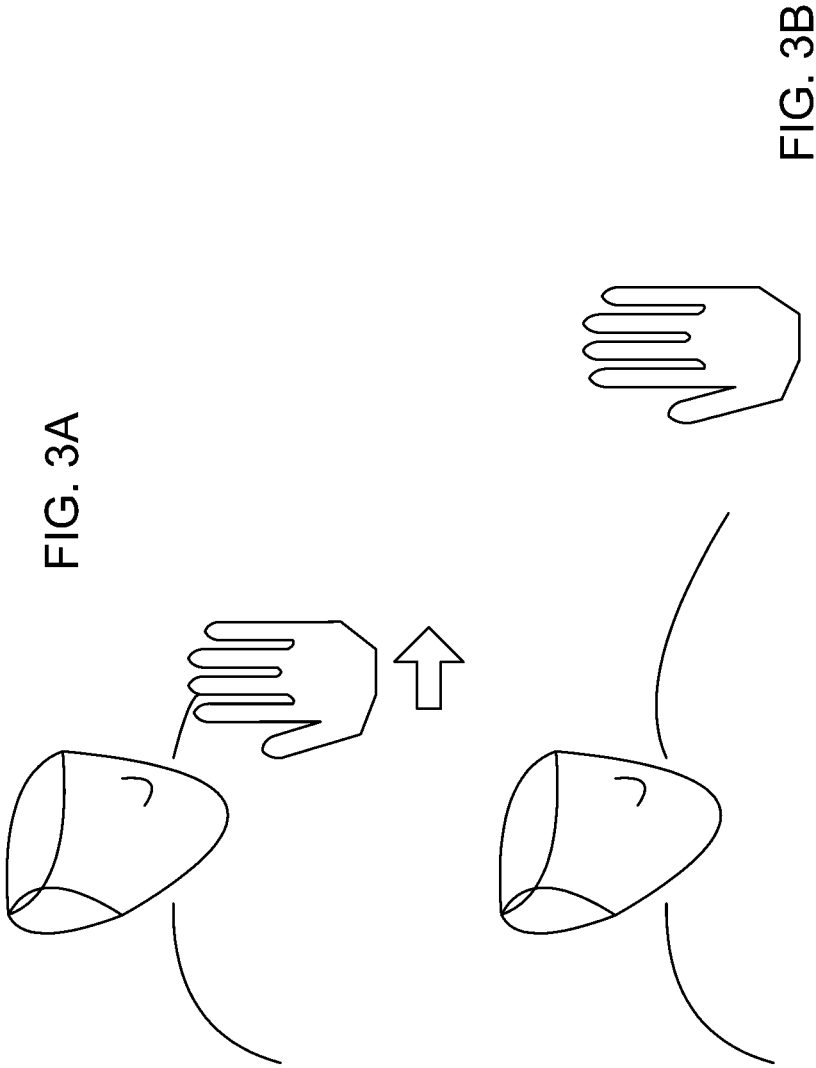


FIG. 2B

FIG. 2A

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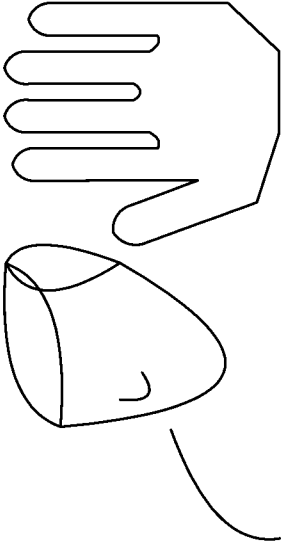


FIG. 4B

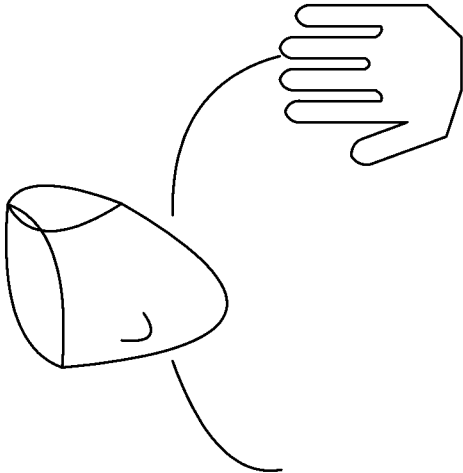


FIG. 4A

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FIG. 5B

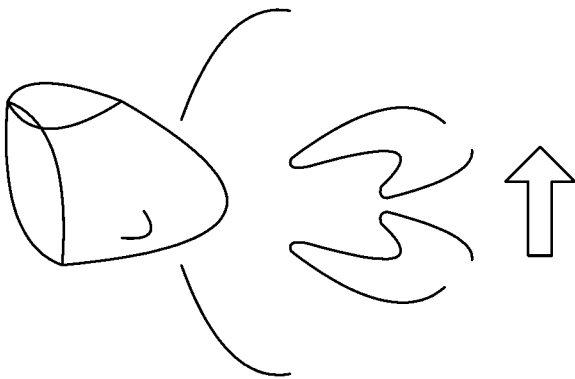


FIG. 5A

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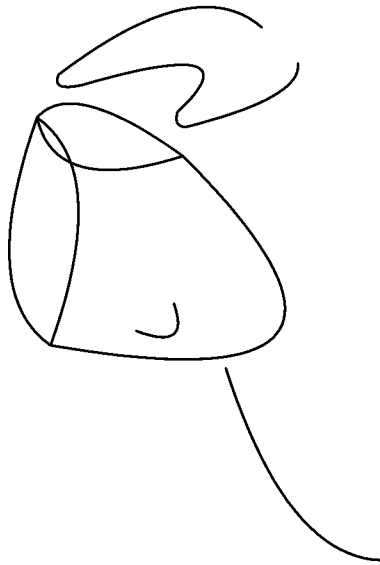


FIG. 6B

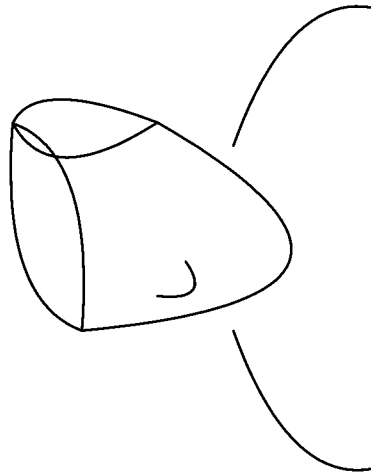


FIG. 6A

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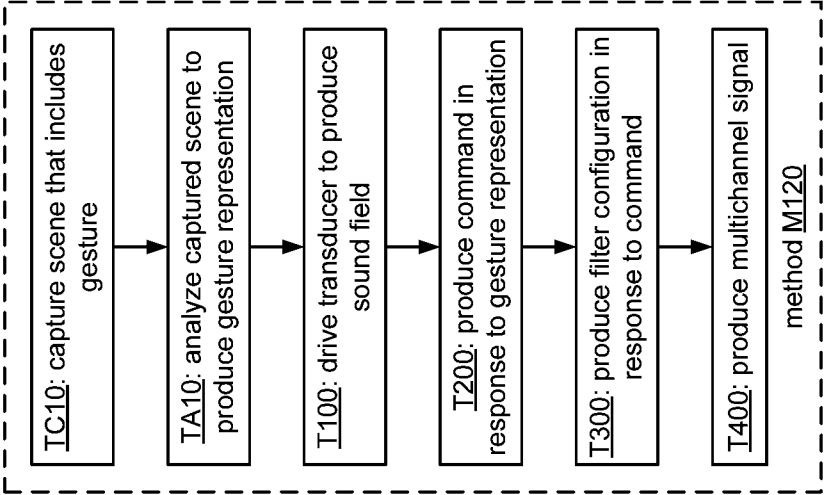


FIG. 7C

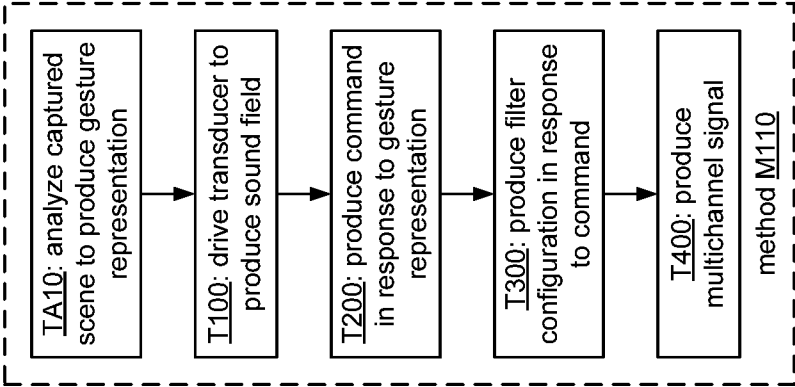


FIG. 7B

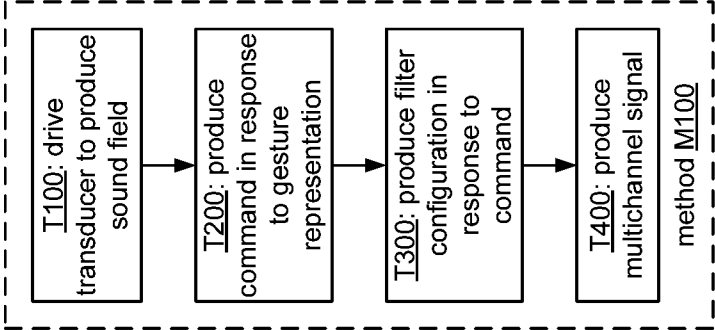


FIG. 7A

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REPRESENTED GESTURE	CORRESPONDING COMMAND
GA1) blocking	CA1) reduce beam intensity
GA2) beckoning	CA2) increase beam intensity
GB1) closing hand, translating, opening	CB1) change beam direction
GB2) bringing hands together, translating, moving hands apart	CB2) change beam direction
GC1) moving hands toward each other horizontally	CC1) reduce beam width
GC2) moving hands away from each other horizontally	CC2) increase beam width
GD1) raising hand to ear	CD1) create beam
GD2) hand-waving	CD2) delete beam
GE1) raising hands together	CE1) increase sound field intensity
GE2) lowering hands together	CE2) decrease sound field intensity
GF1) moving hands toward each other vertically	CF1) compress dynamic range (e.g., of field or beam)
GF2) moving hands away from each other vertically	CF2) expand dynamic range (e.g., of field or beam)

FIG. 8

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REPRESENTED GESTURE	CORRESPONDING COMMAND
GF3) holding one hand to ear while lowering other hand	CF3) decrease beam intensity
GF4) holding one hand to ear while raising other hand	CF4) increase beam intensity
GG1a) holding one hand to ear while holding other open palm upright above chin level and rotating CW	CG1a) increase treble level (e.g., of field or beam)
GG2a) holding one hand to ear while holding other open palm upright above chin level and rotating CCW	CG2a) decrease treble level (e.g., of field or beam)
GG1b) holding one hand to ear while holding other open palm upright at chin level and rotating CW	CG1b) increase midrange level (e.g., of field or beam)
GG2b) holding one hand to ear while holding other open palm upright at chin level and rotating CCW	CG2b) decrease midrange level (e.g., of field or beam)
GG1c) holding one hand to ear while holding other open palm upright below chin level and rotating CW	CG1c) increase bass level (e.g., of field or beam)
GG2c) holding one hand to ear while holding other open palm upright below chin level and rotating CCW	CG2c) decrease bass level (e.g., of field or beam)
GH1) locking (clockwise rotation of closed hand)	CH1) disable changes to sound field configuration
GH2) unlocking (CCW rotation of closed hand)	CH2) enable changes to sound field configuration

FIG. 9

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REPRESENTED GESTURE	CORRESPONDING COMMAND
GC1a) moving hands toward each other horizontally to shoulder width	CC1a) reduce beam width by one unit (e.g., one dB)
GC2a) moving hands away from each other horizontally from shoulder width	CC2a) increase beam width to maximum
GC1b) moving hands toward each other horizontally from shoulder width	CC1b) reduce beam width to minimum
GC2b) moving hands away from each other horizontally to shoulder width	CC2b) increase beam width by one unit (e.g., one dB)

FIG. 10

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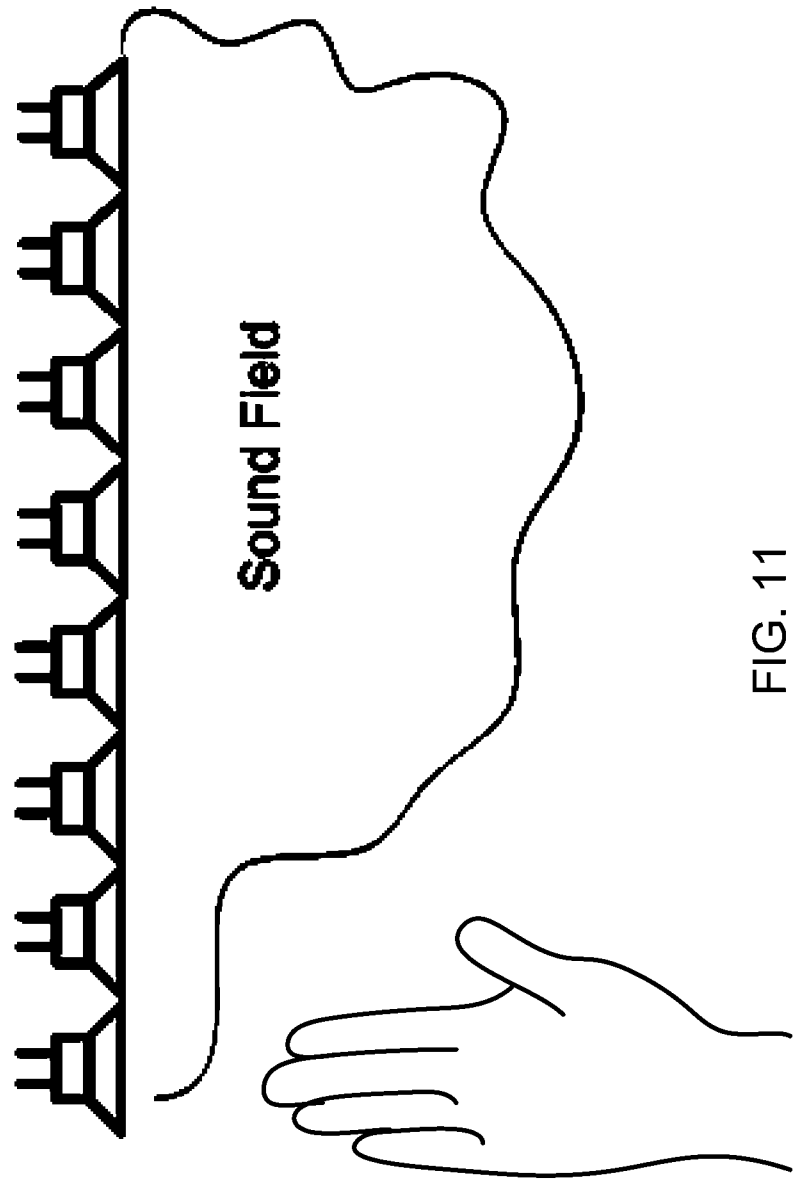


FIG. 11

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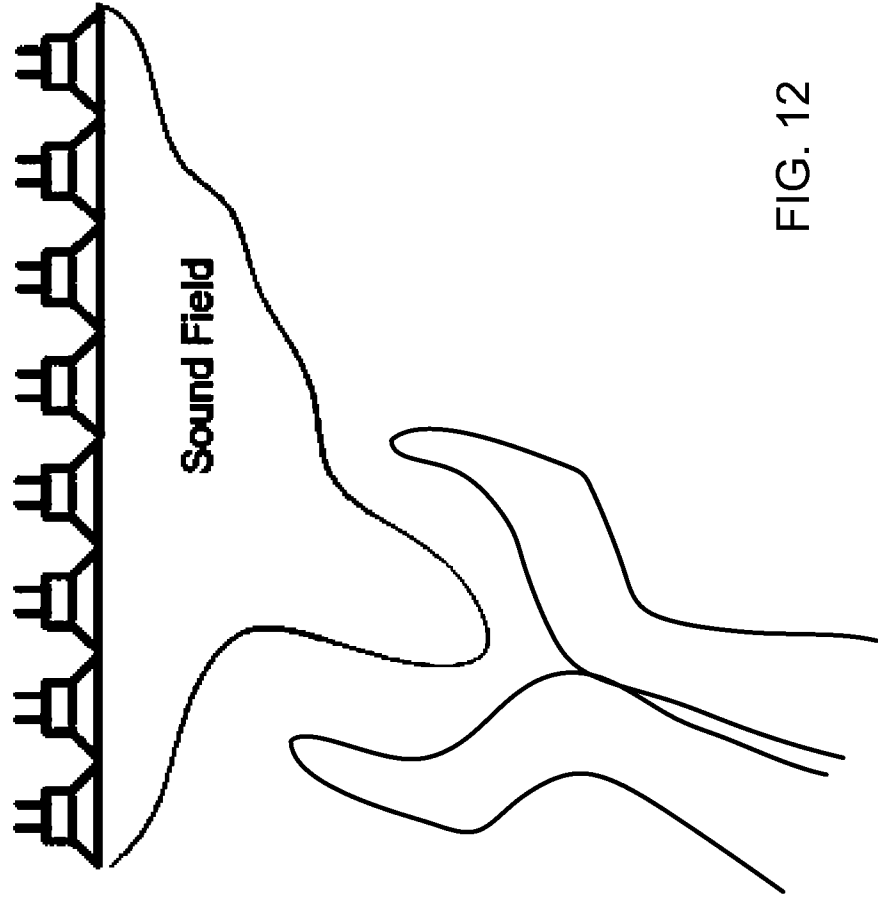


FIG. 12

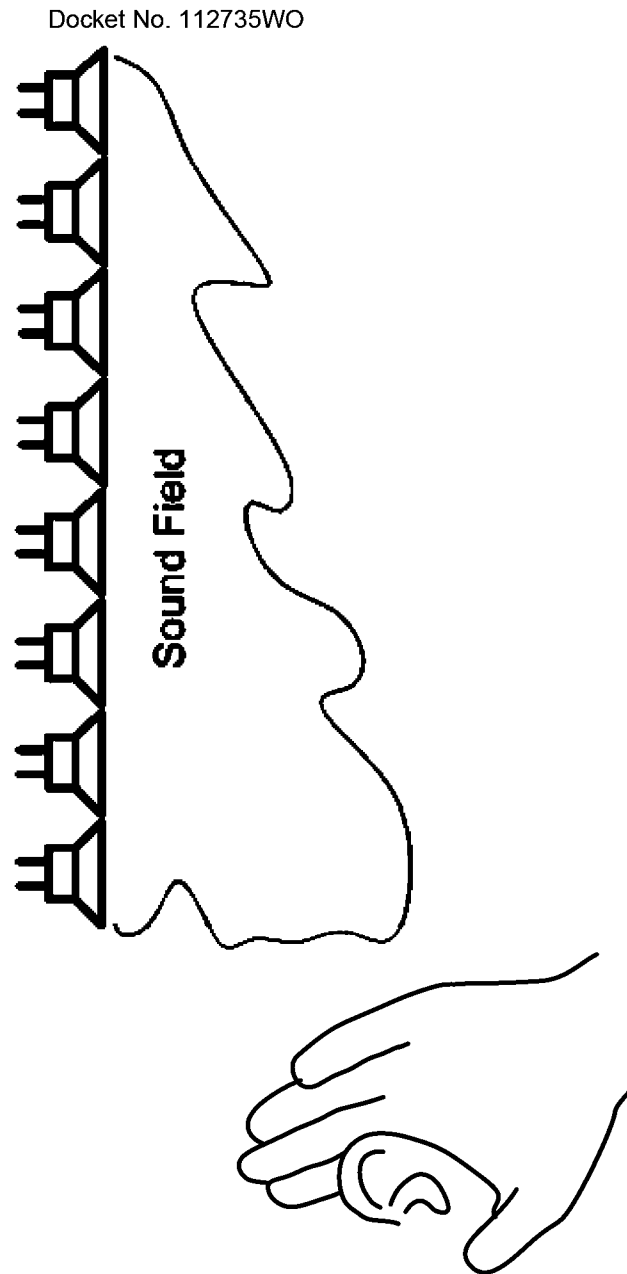


FIG. 13

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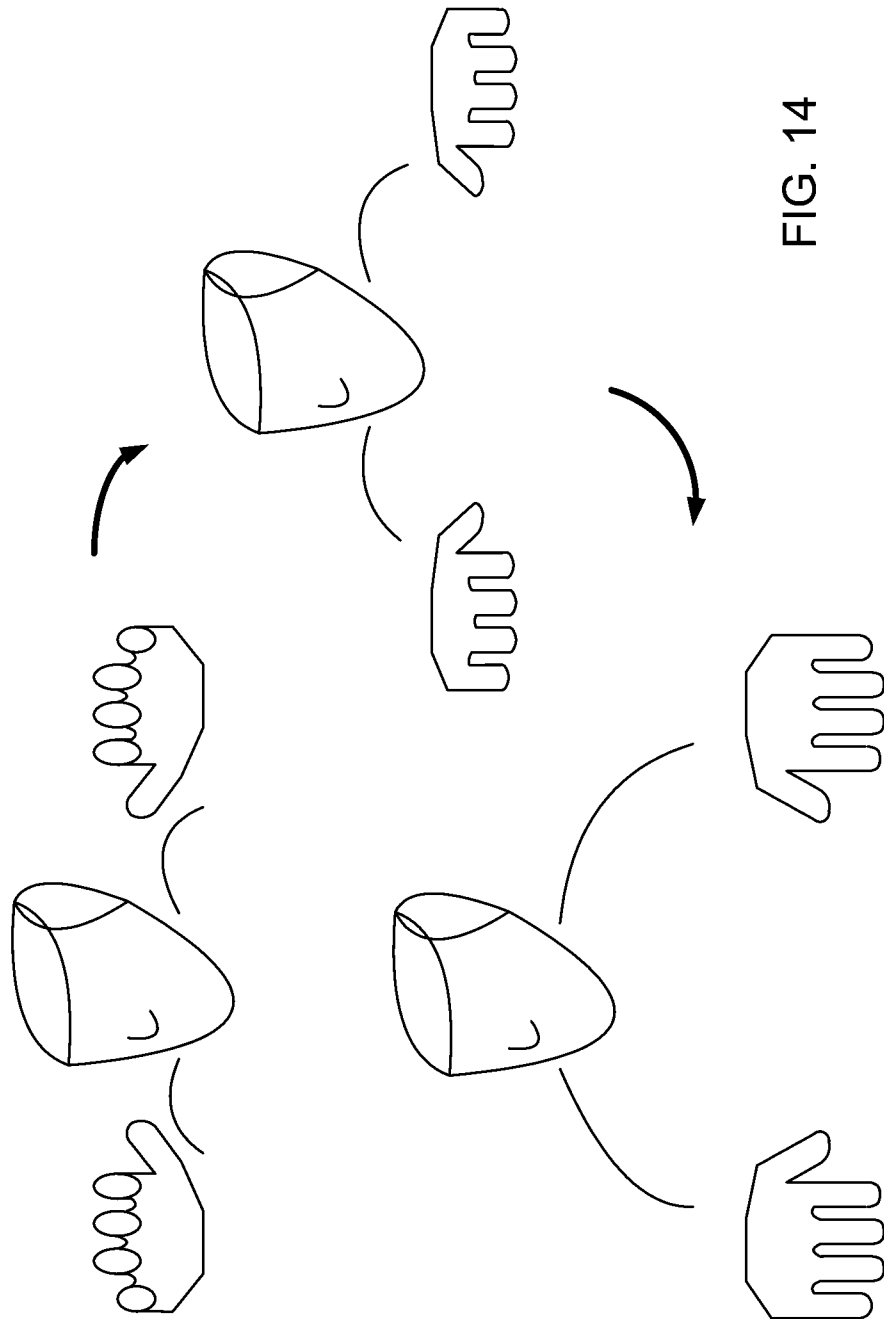


FIG. 14

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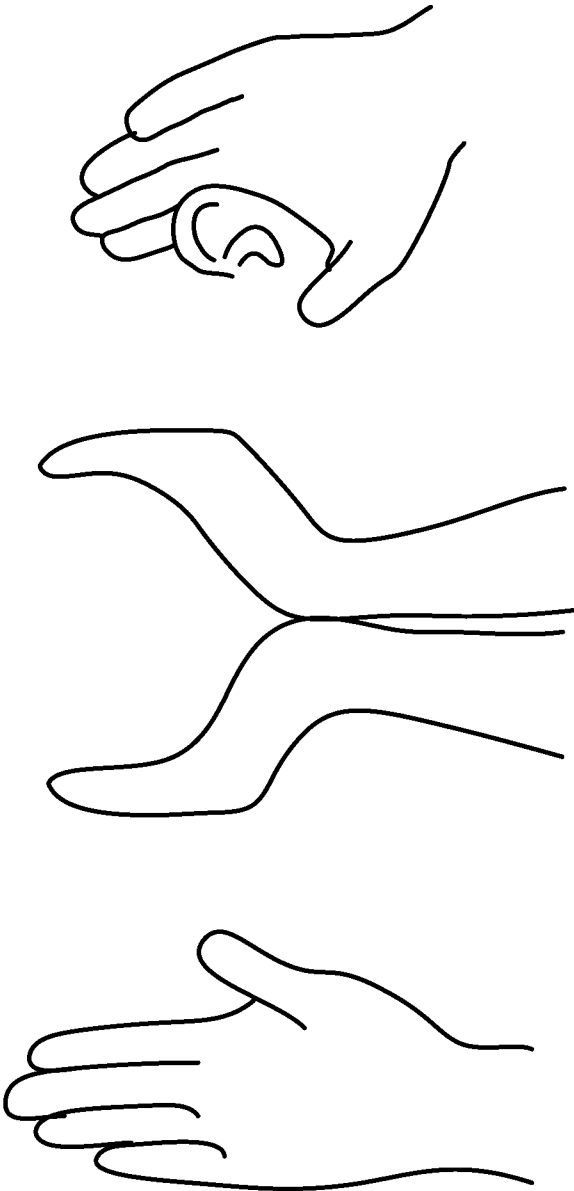


FIG. 15

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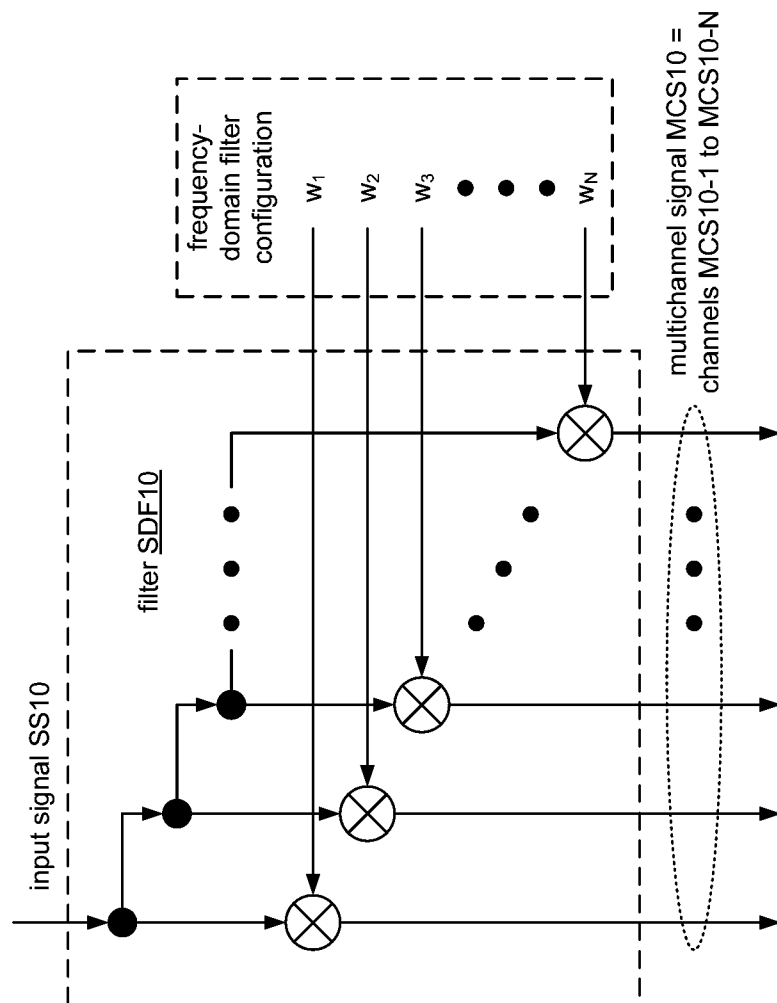
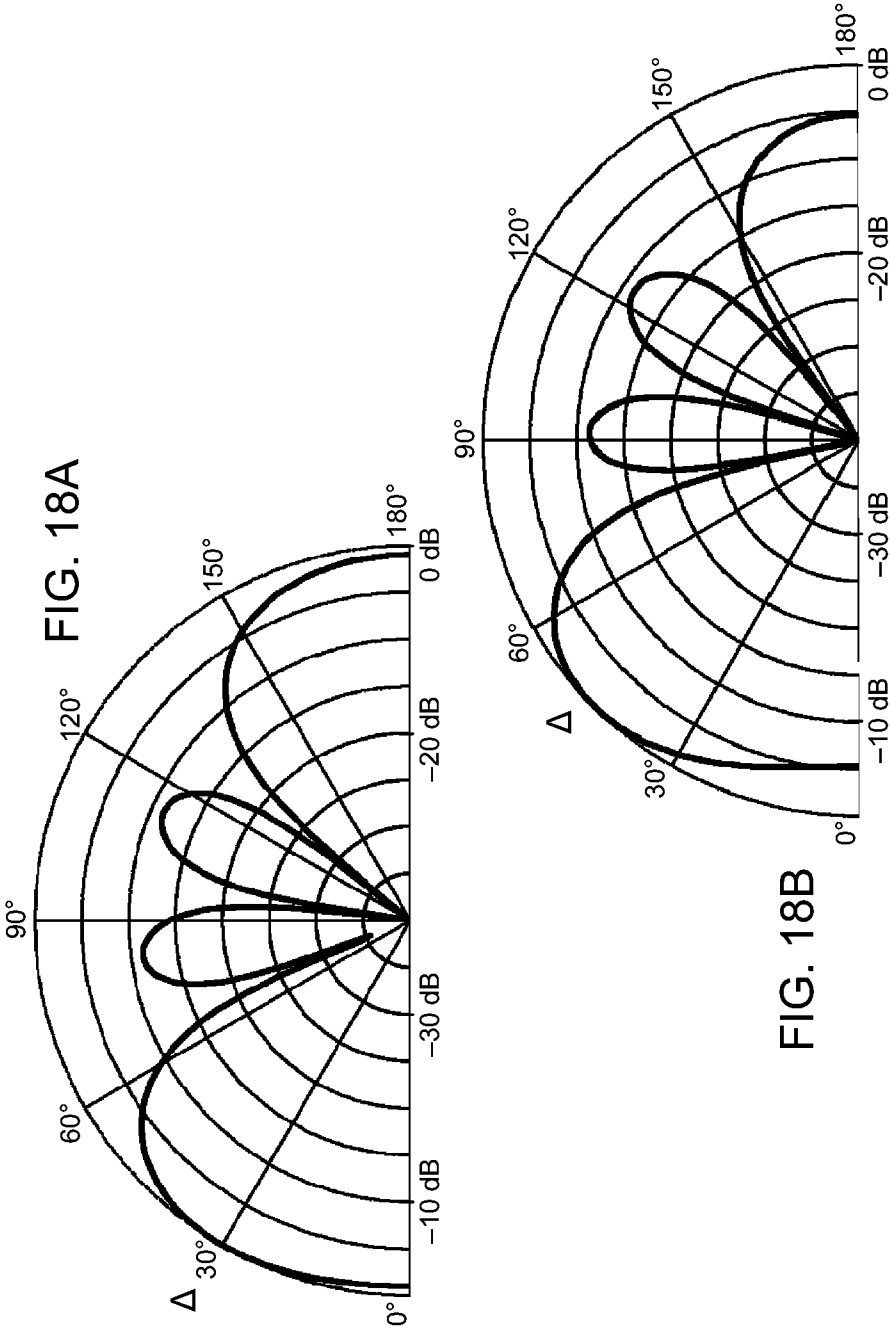
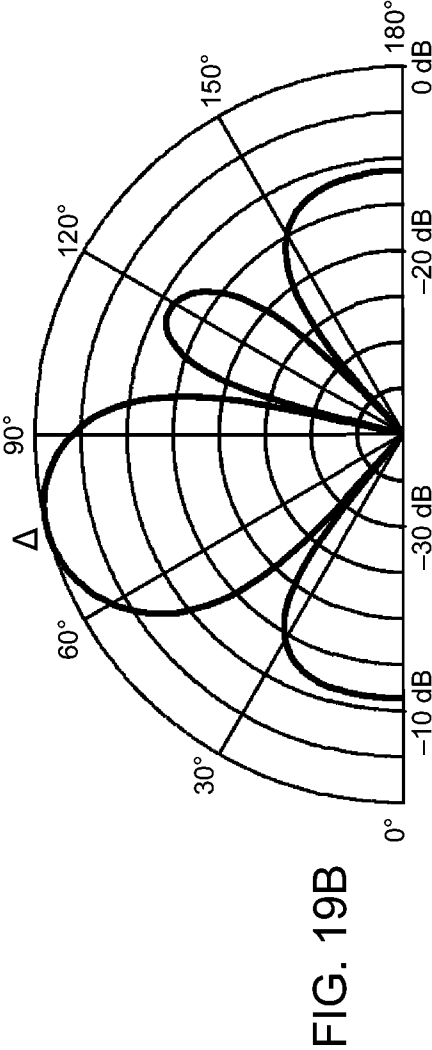
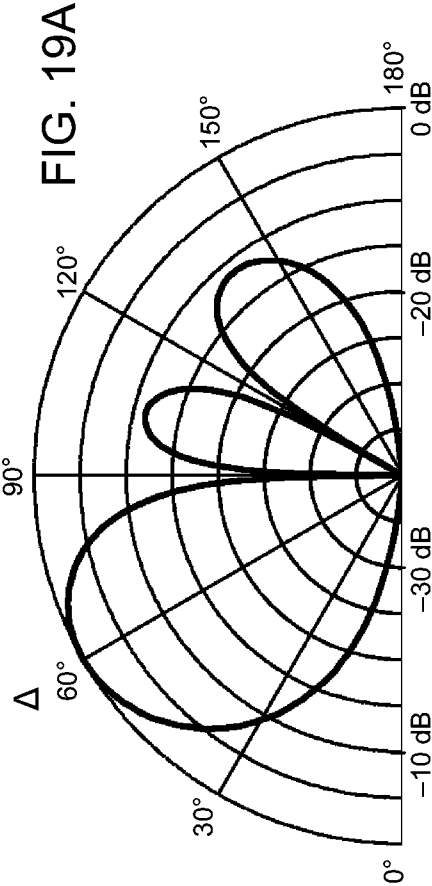


FIG. 16

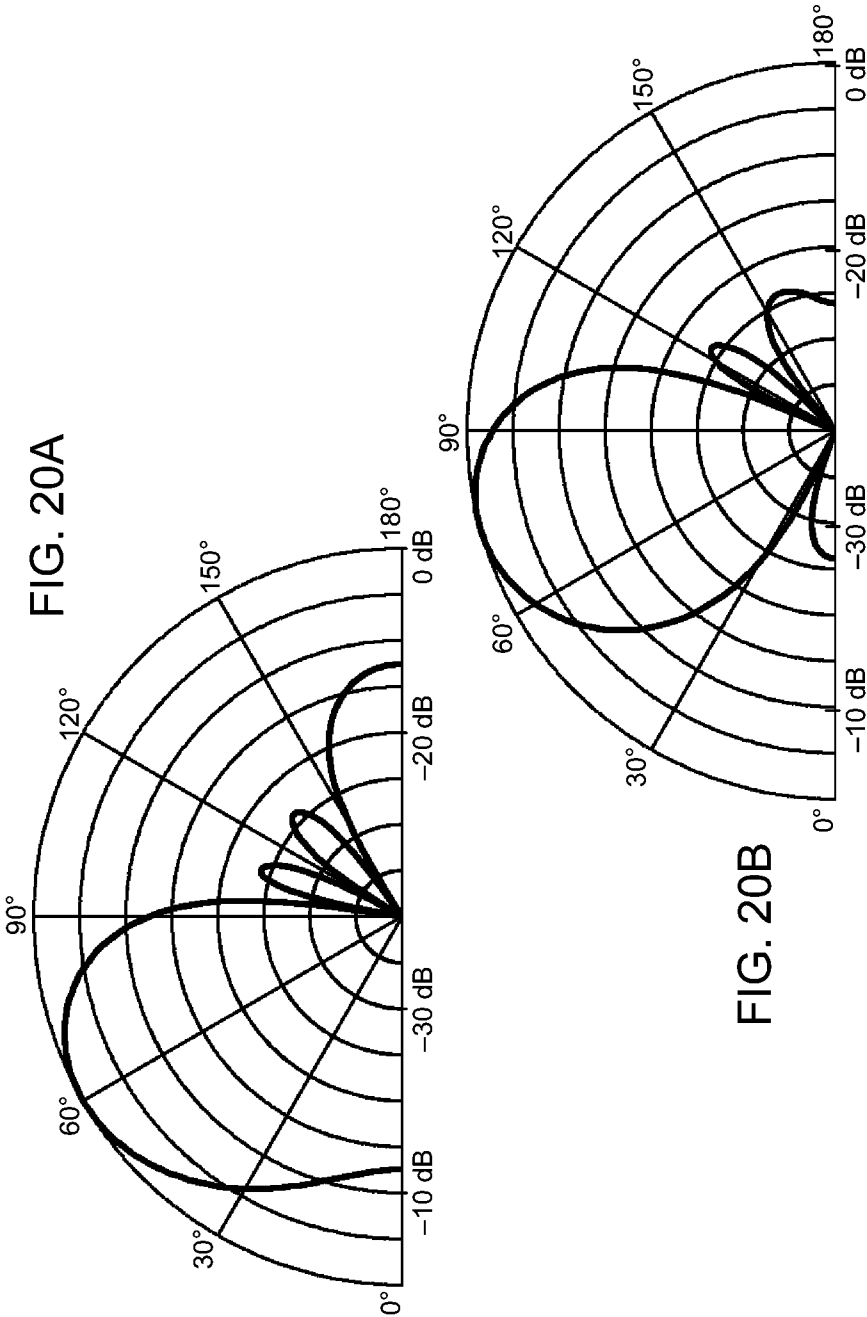
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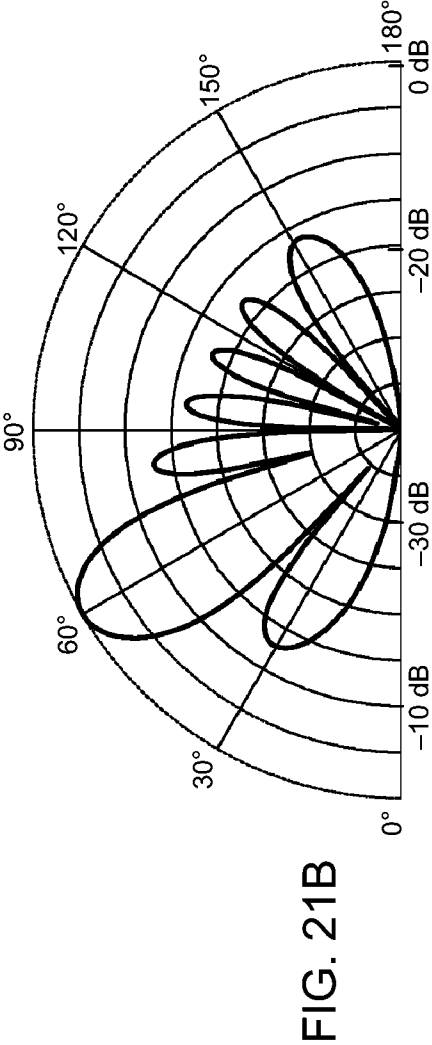
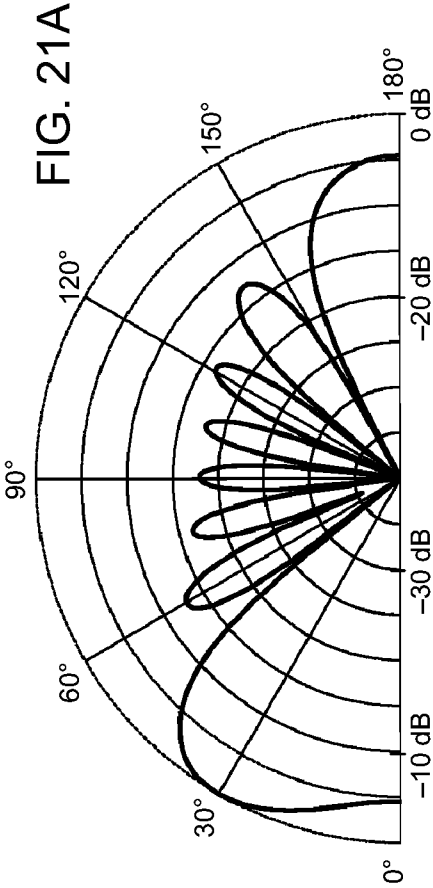
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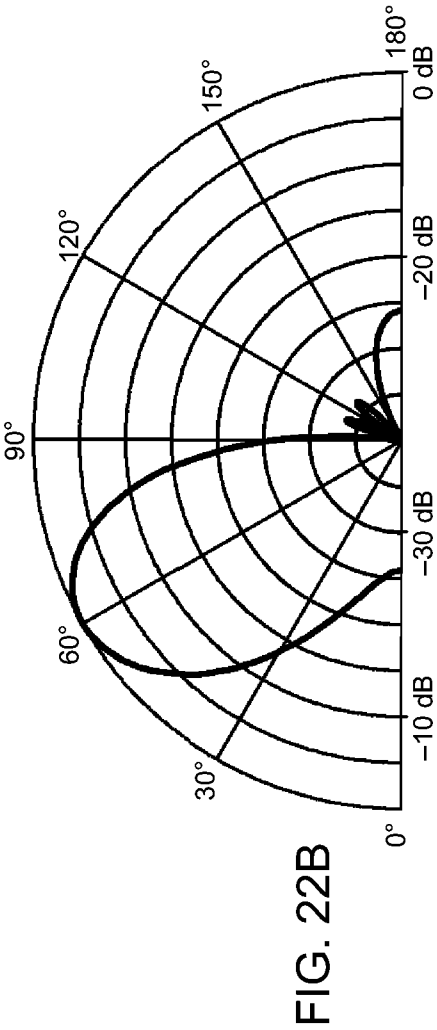
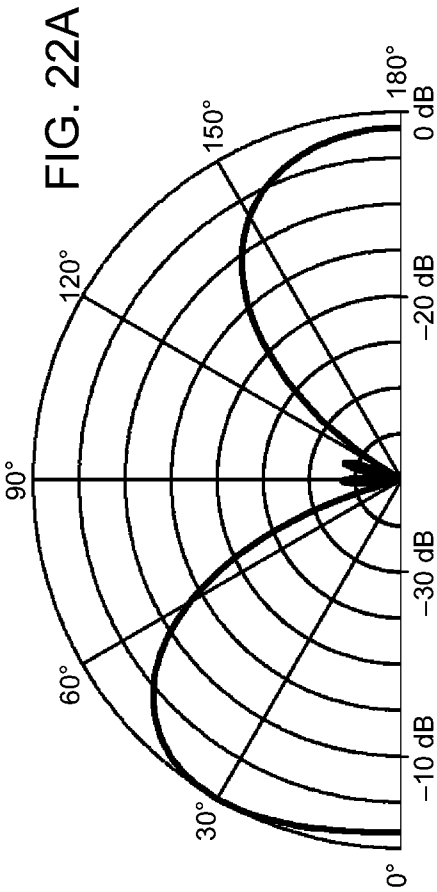
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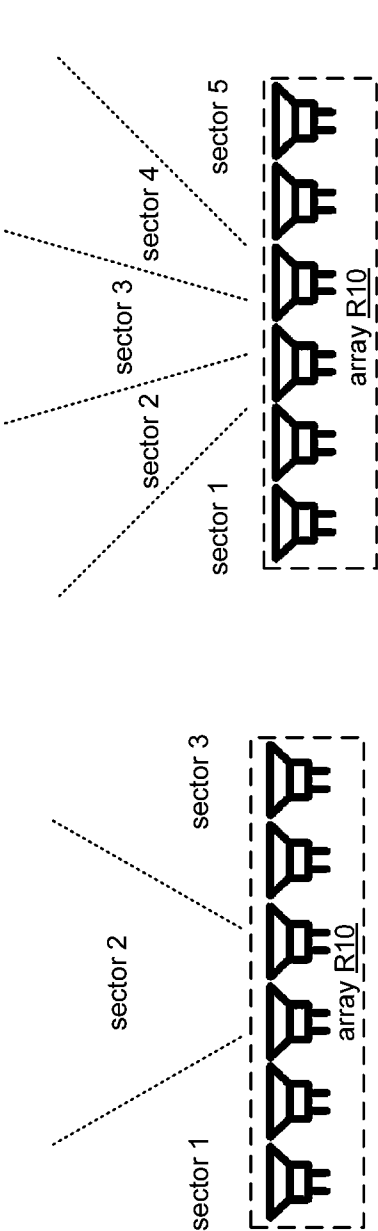


FIG. 23B

command	current beam width			
	narrow	medium	wide	wide
	↕↕	X	narrow	narrow
	↓	X	narrow	medium
	↑	medium	wide	X
↑↑	wide	wide	wide	X

FIG. 23C



FIG. 23D

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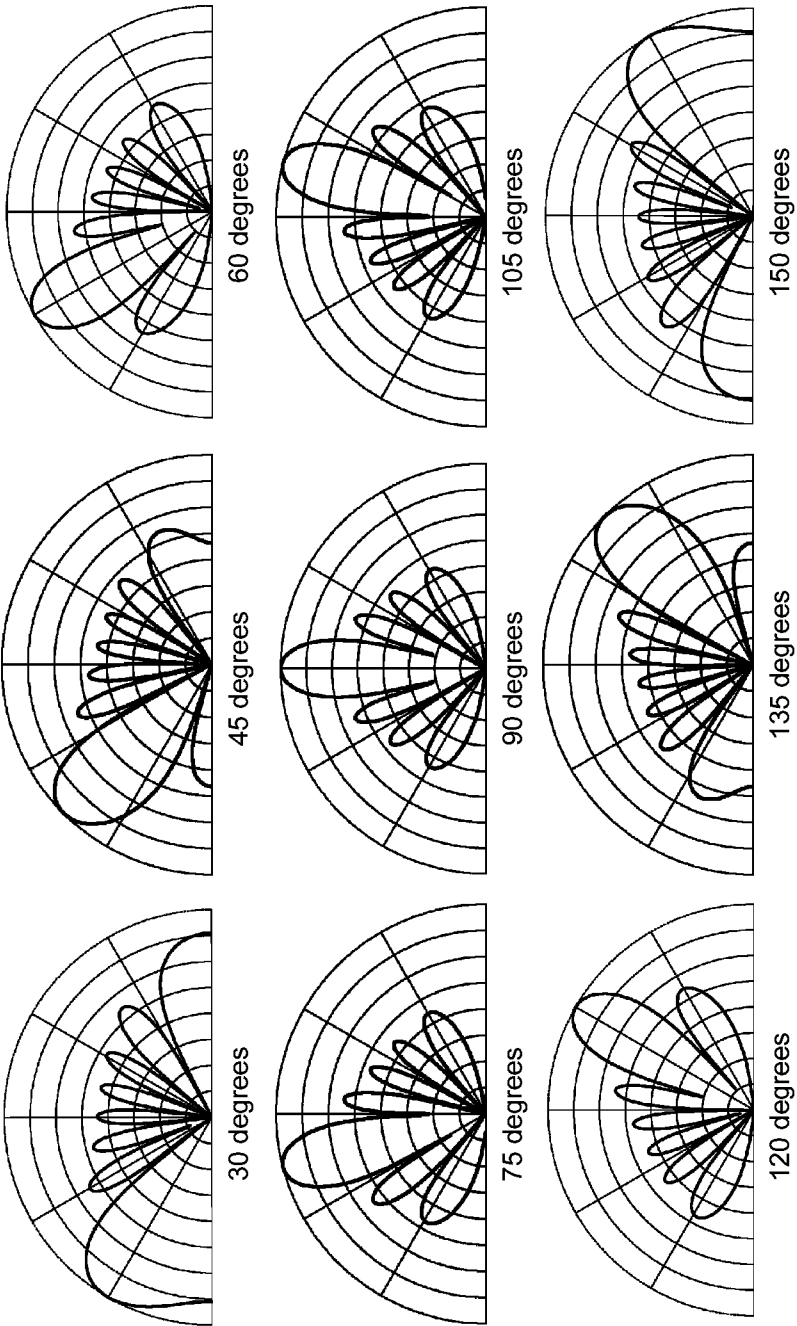


FIG. 24

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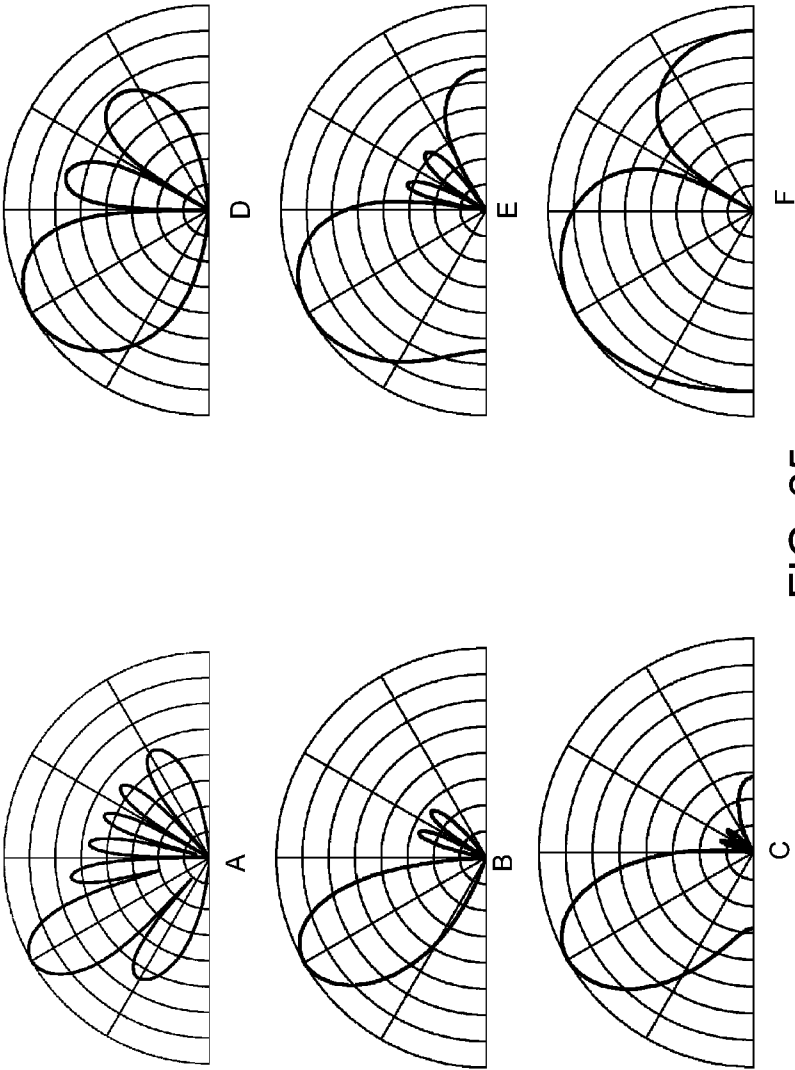


FIG. 25

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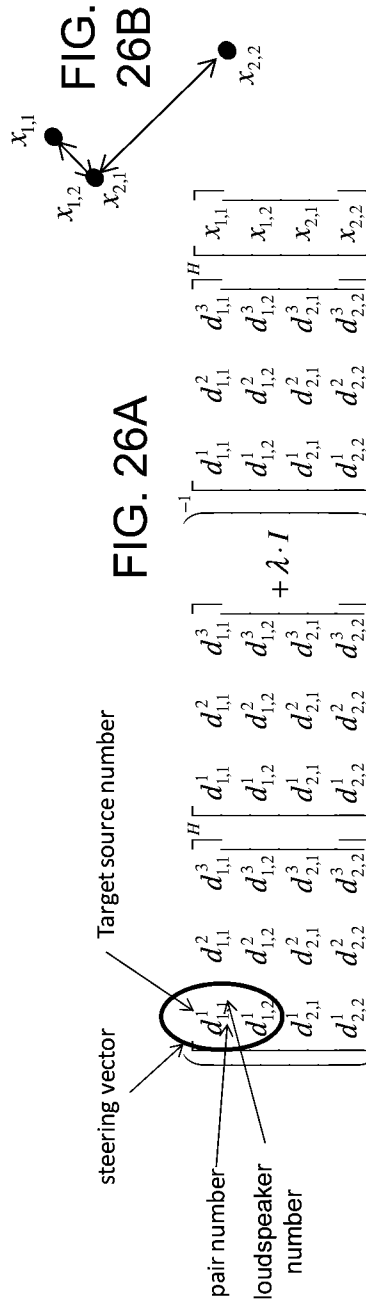


FIG. 26B

FIG. 26C

$$\arg \max_i \left[\begin{bmatrix} d^1_{1,1} & d^2_{1,1} & d^3_{1,1} & d^1_{1,2} & d^2_{1,2} & d^3_{1,2} & d^1_{2,1} & d^2_{2,1} & d^3_{2,1} & d^1_{2,2} & d^2_{2,2} & d^3_{2,2} \end{bmatrix}^{-1} \begin{bmatrix} d^1_{1,1} & d^2_{1,1} & d^3_{1,1} & d^1_{1,2} & d^2_{1,2} & d^3_{1,2} & d^1_{2,1} & d^2_{2,1} & d^3_{2,1} & d^1_{2,2} & d^2_{2,2} & d^3_{2,2} \end{bmatrix} + \lambda \cdot I \right] \begin{bmatrix} d^i_{1,1} \\ d^i_{1,2} \\ d^i_{2,1} \\ d^i_{2,2} \end{bmatrix}$$

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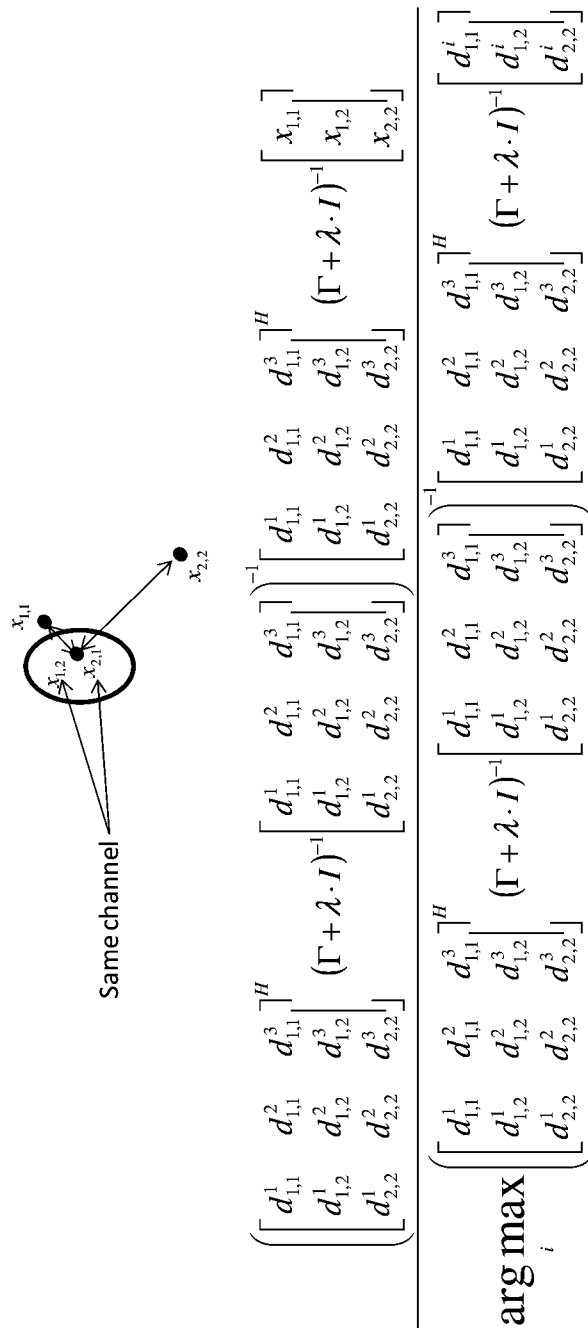


FIG. 27

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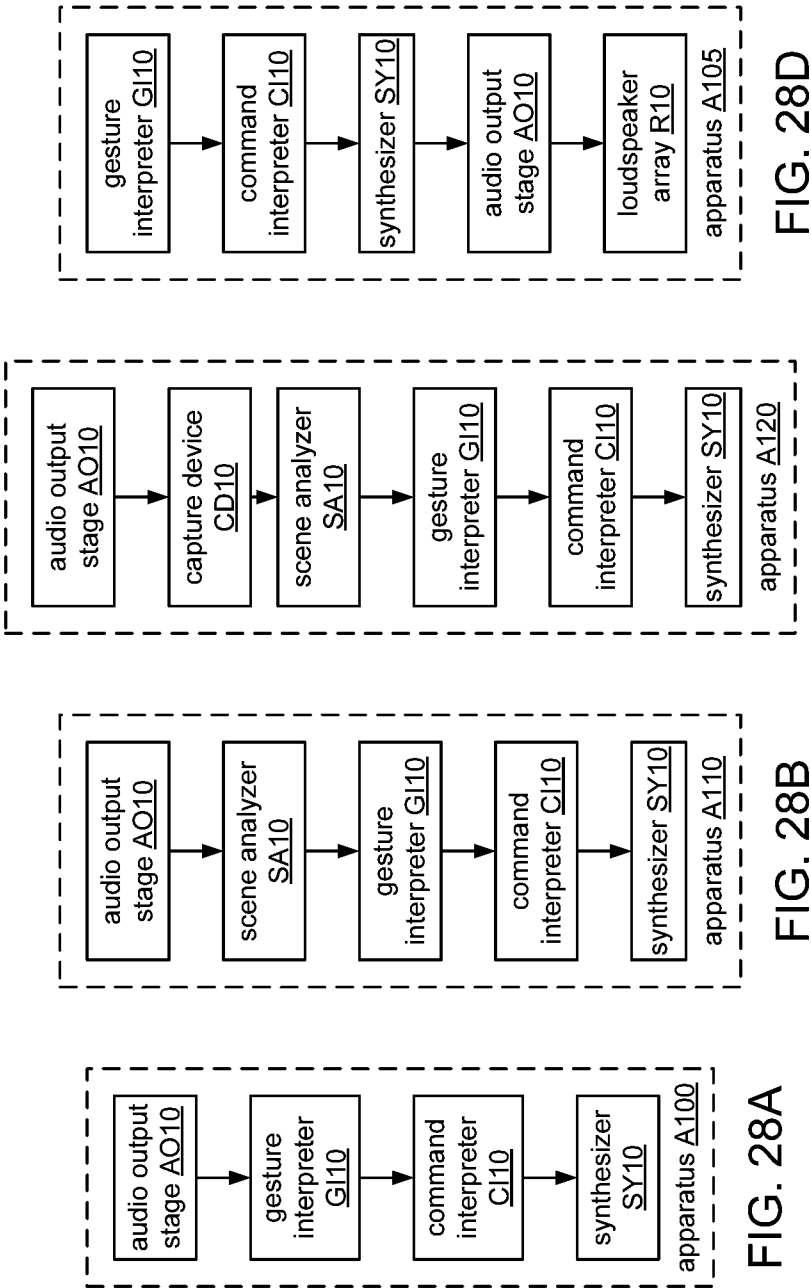


FIG. 28A

FIG. 28B

FIG. 28C

FIG. 28D

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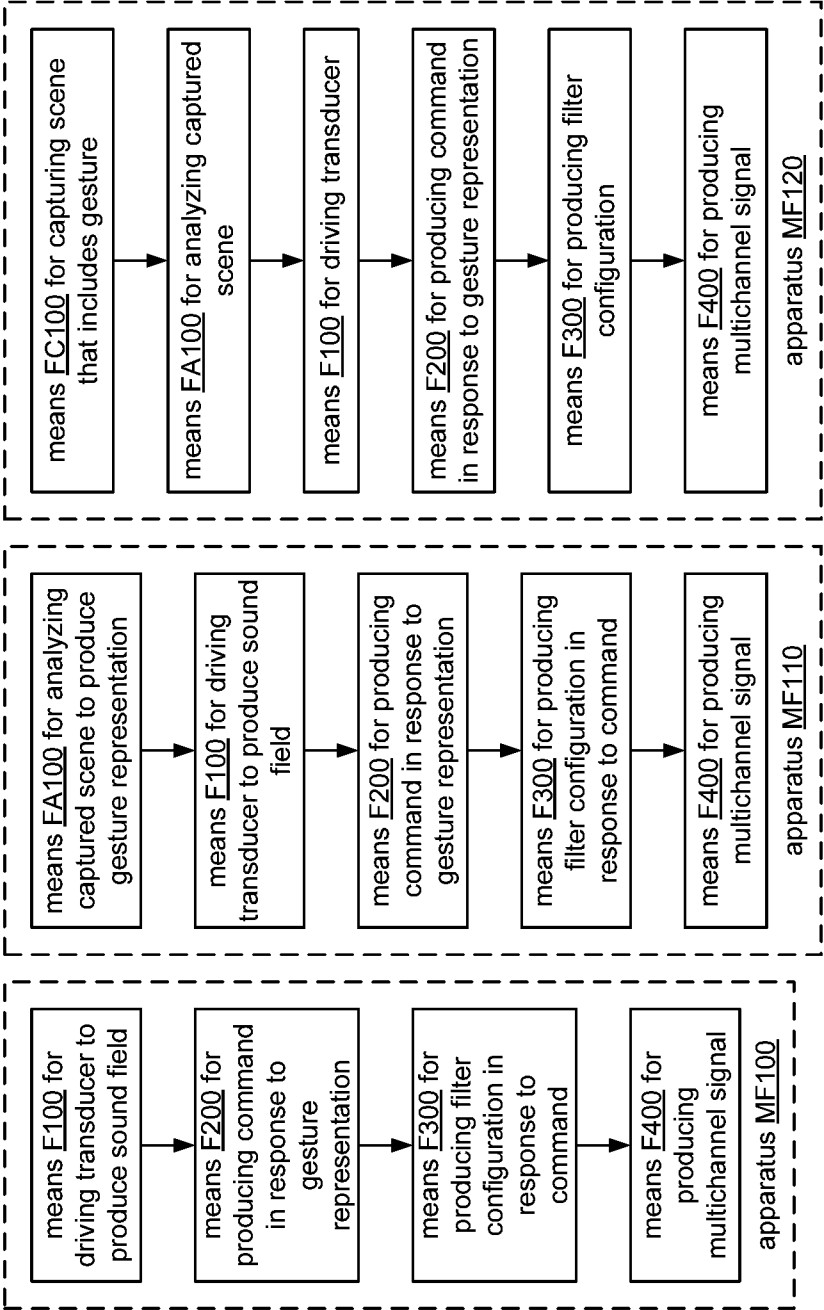
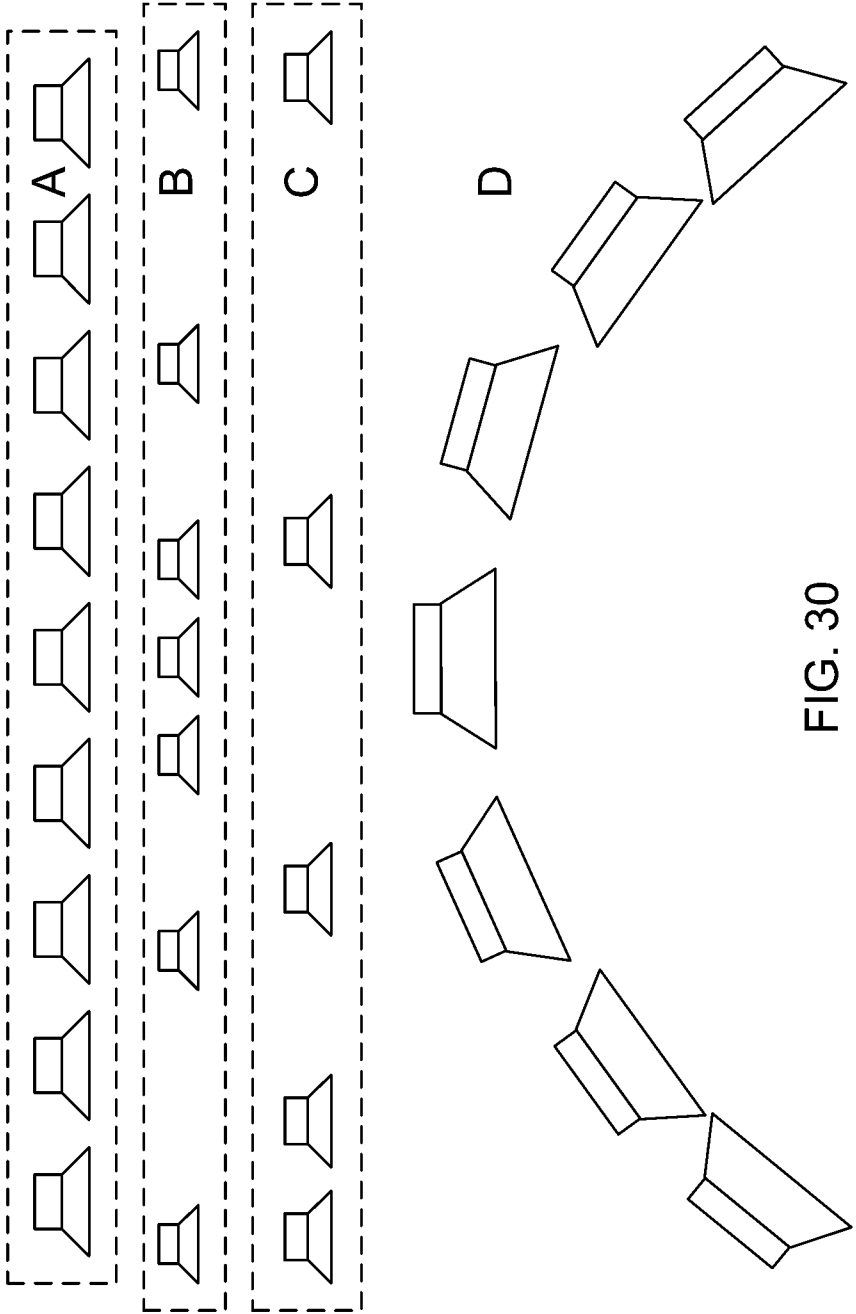


FIG. 29C

FIG. 29B

FIG. 29A

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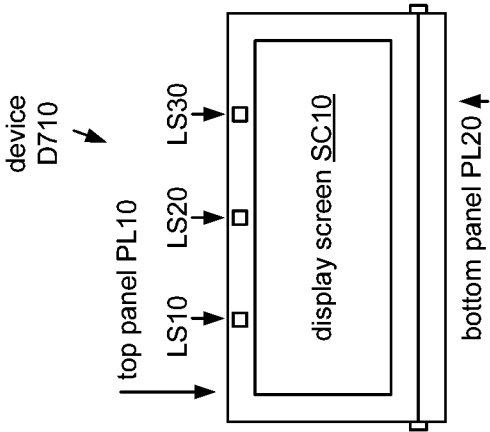
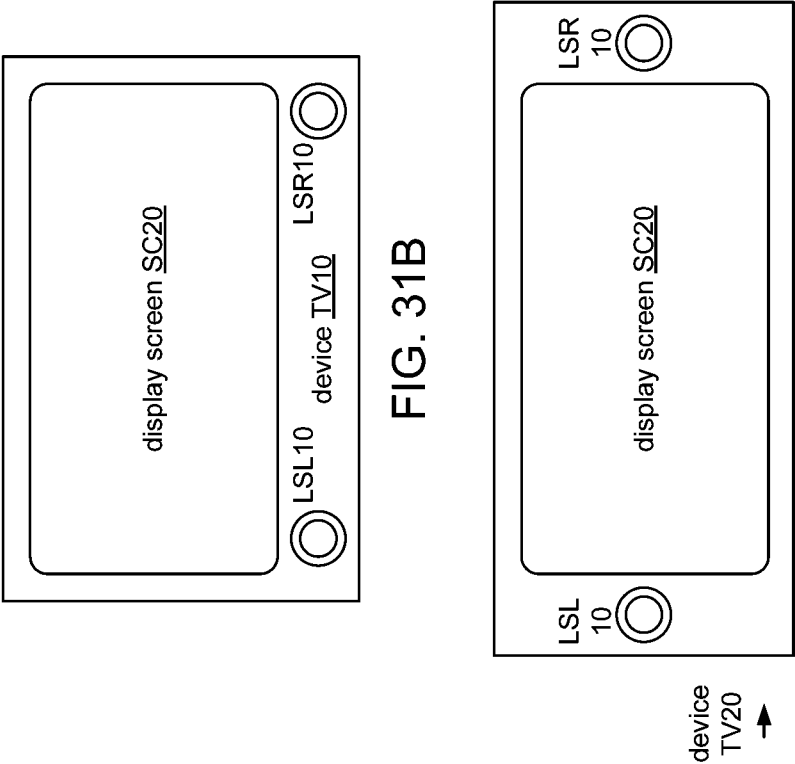


FIG. 31A

FIG. 31B

FIG. 31C

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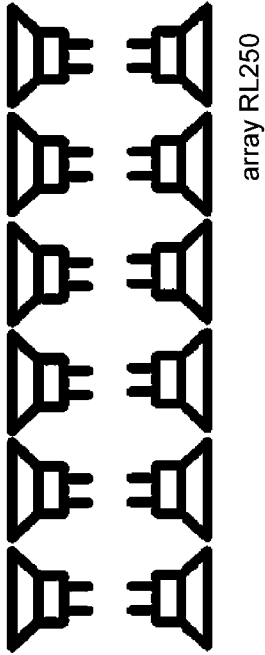
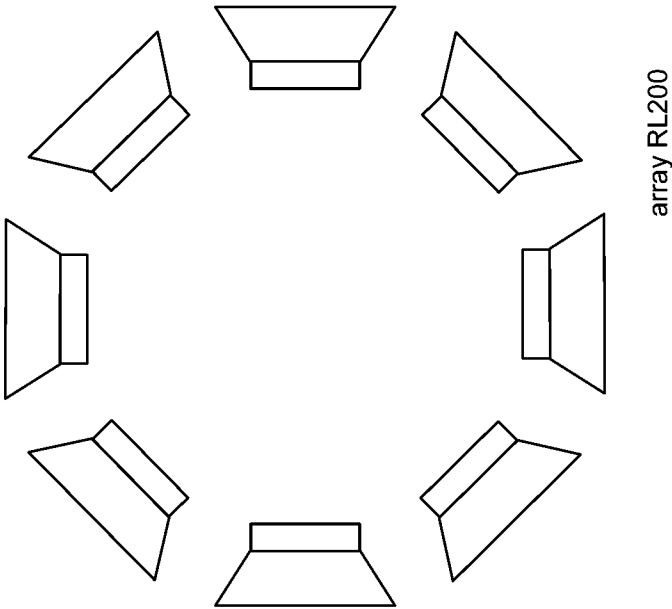


FIG. 32B

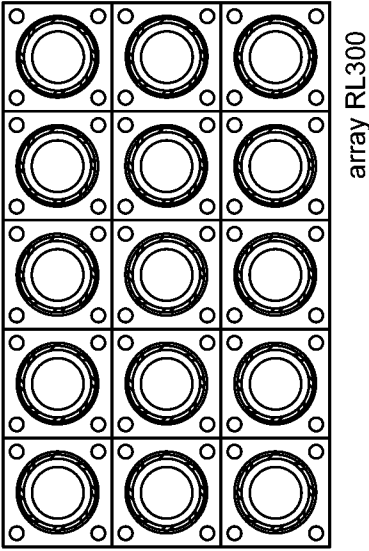


FIG. 32C

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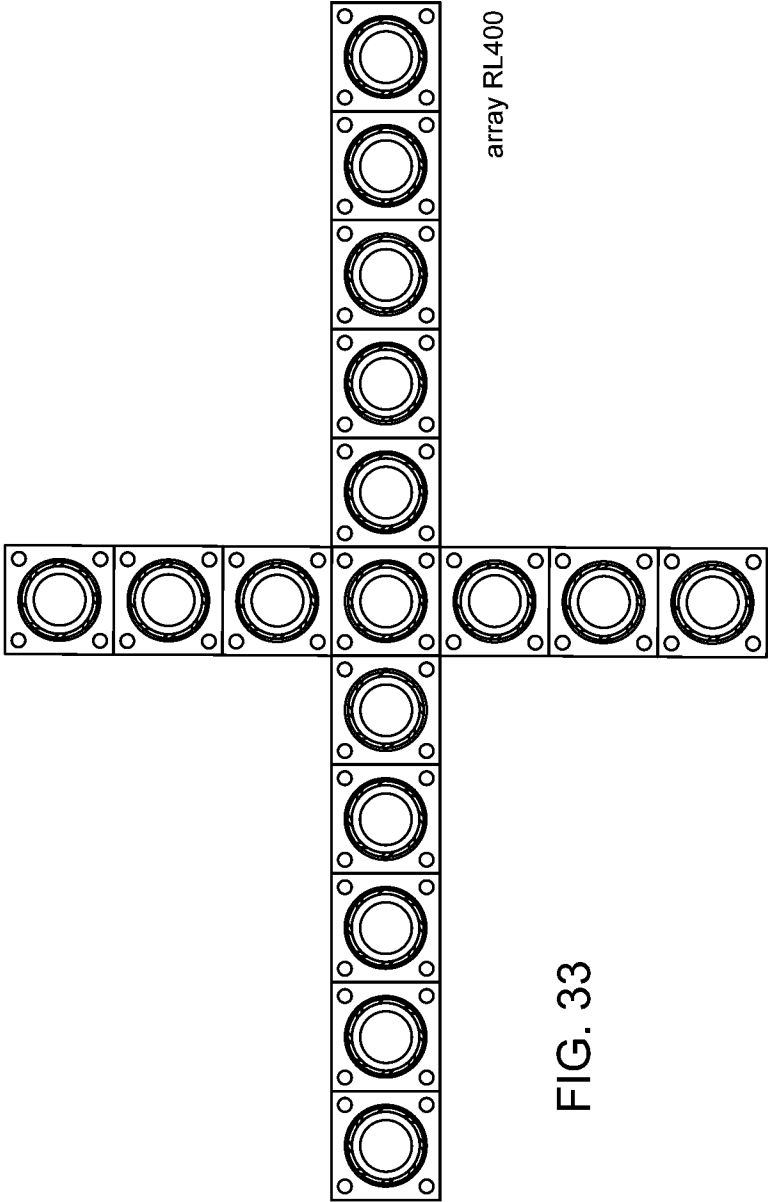


FIG. 33

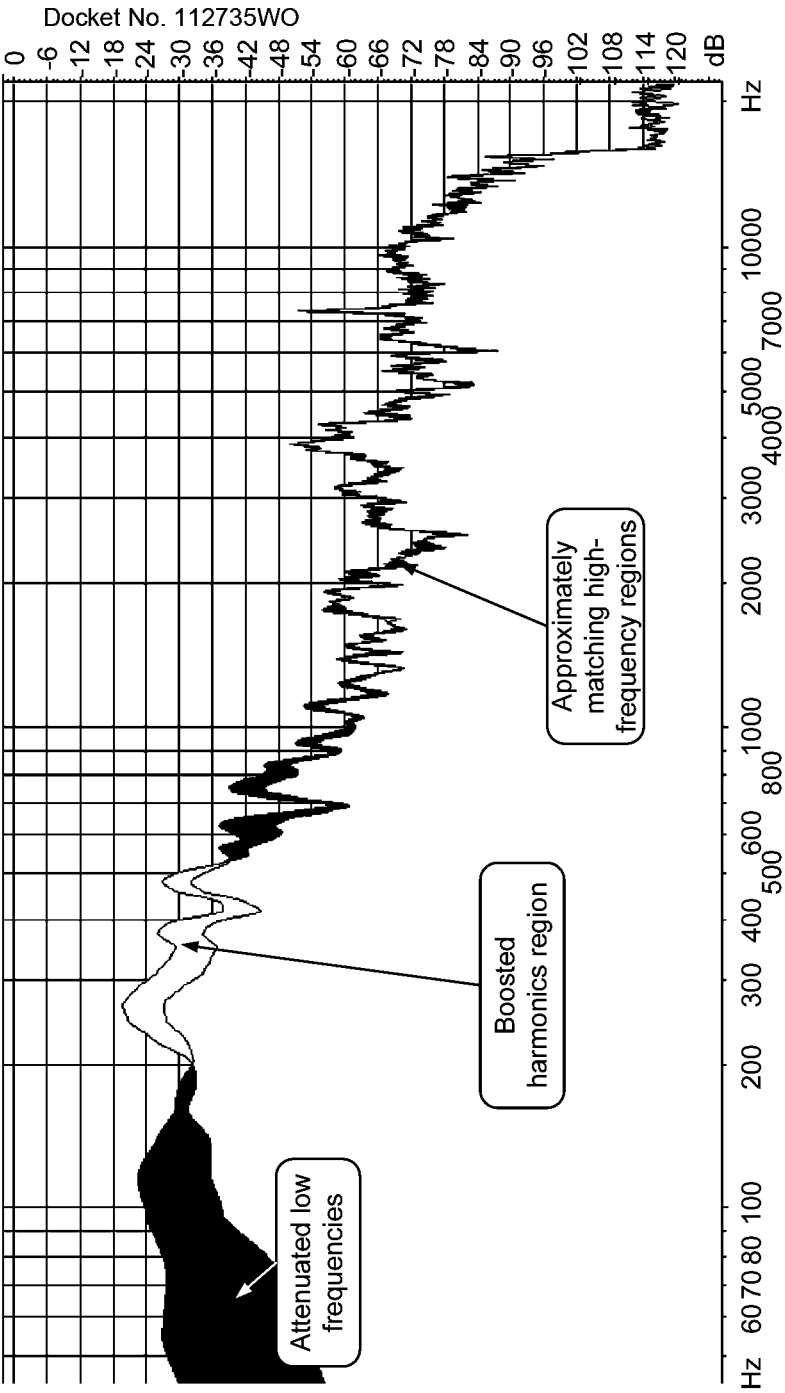


FIG. 34