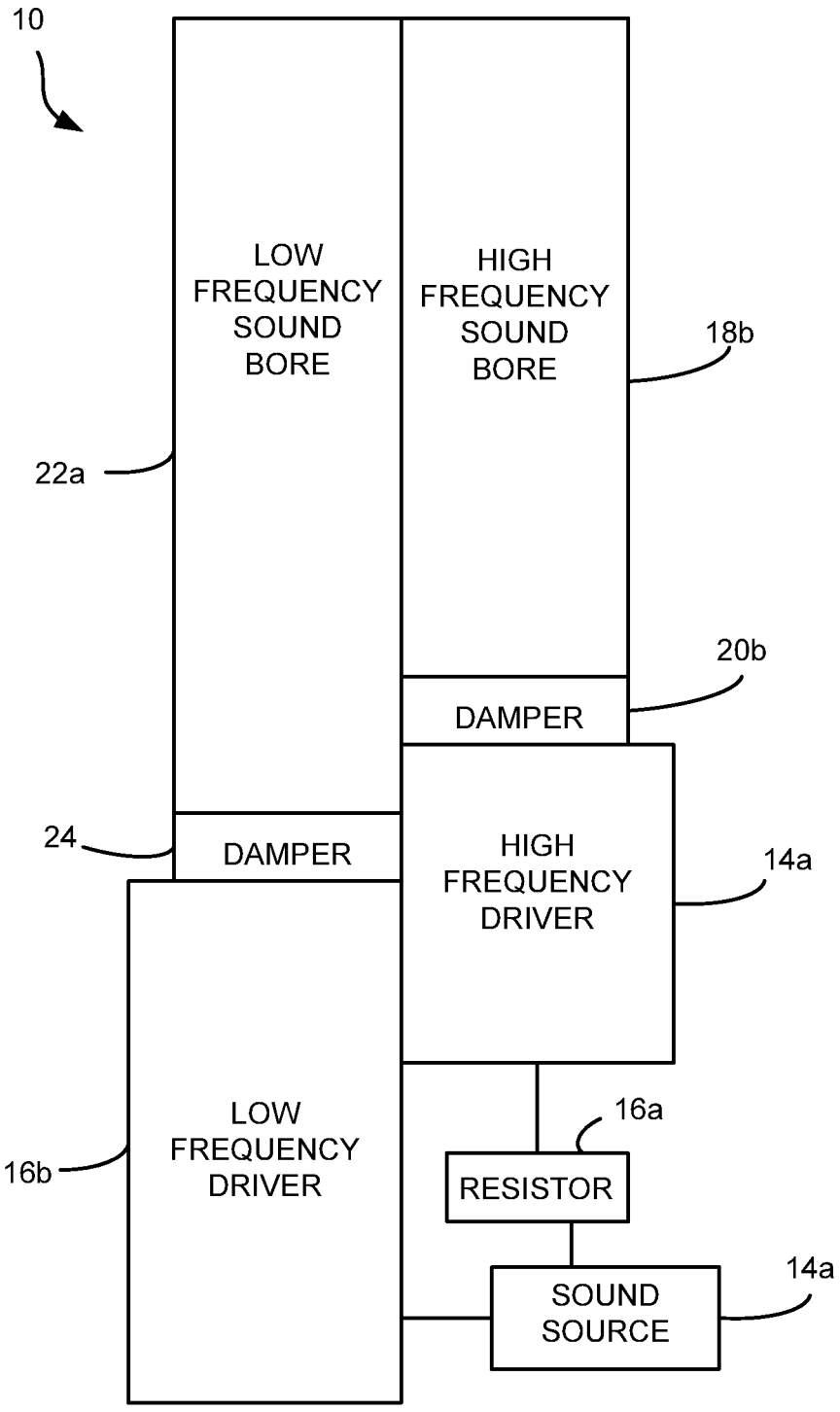
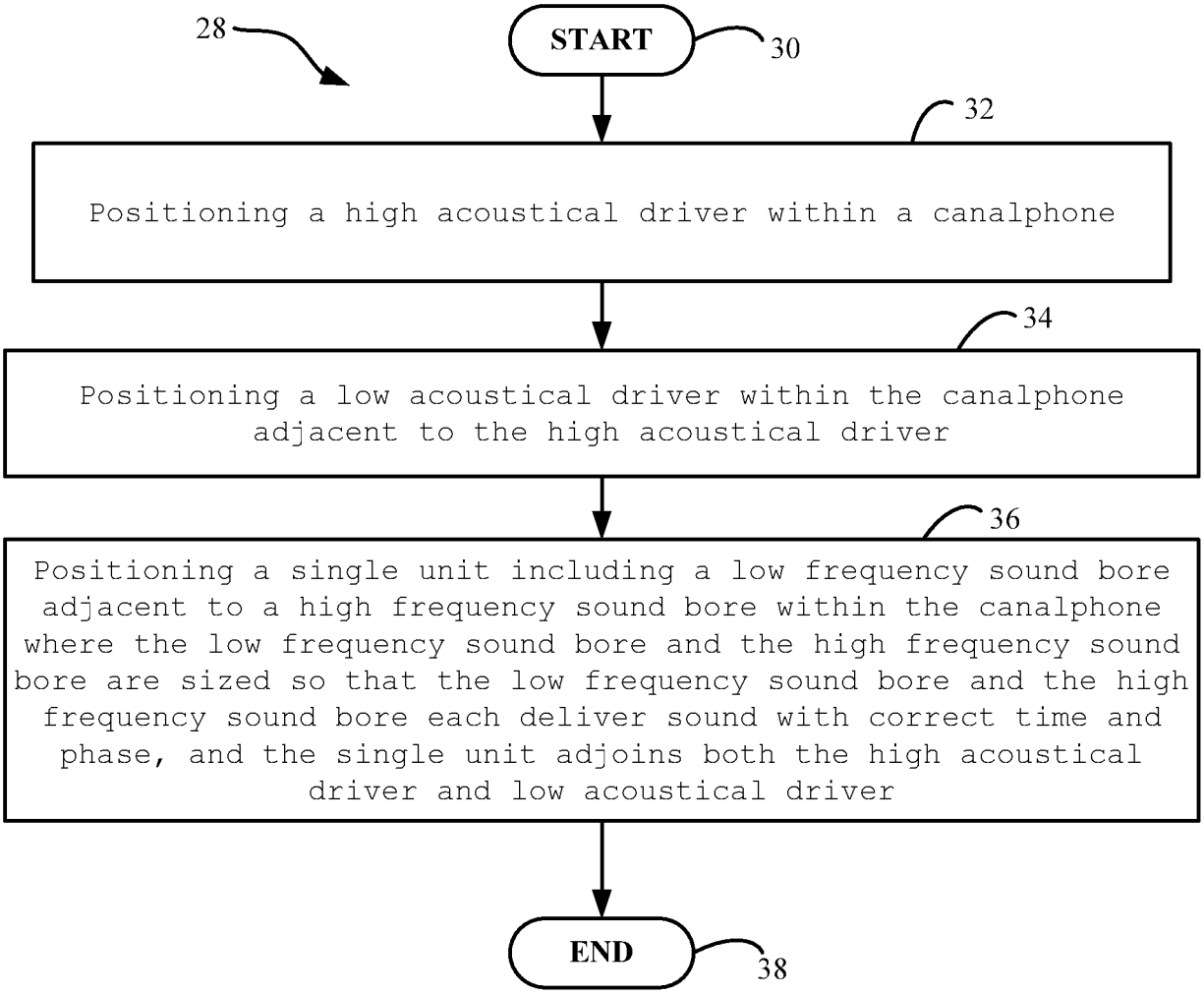
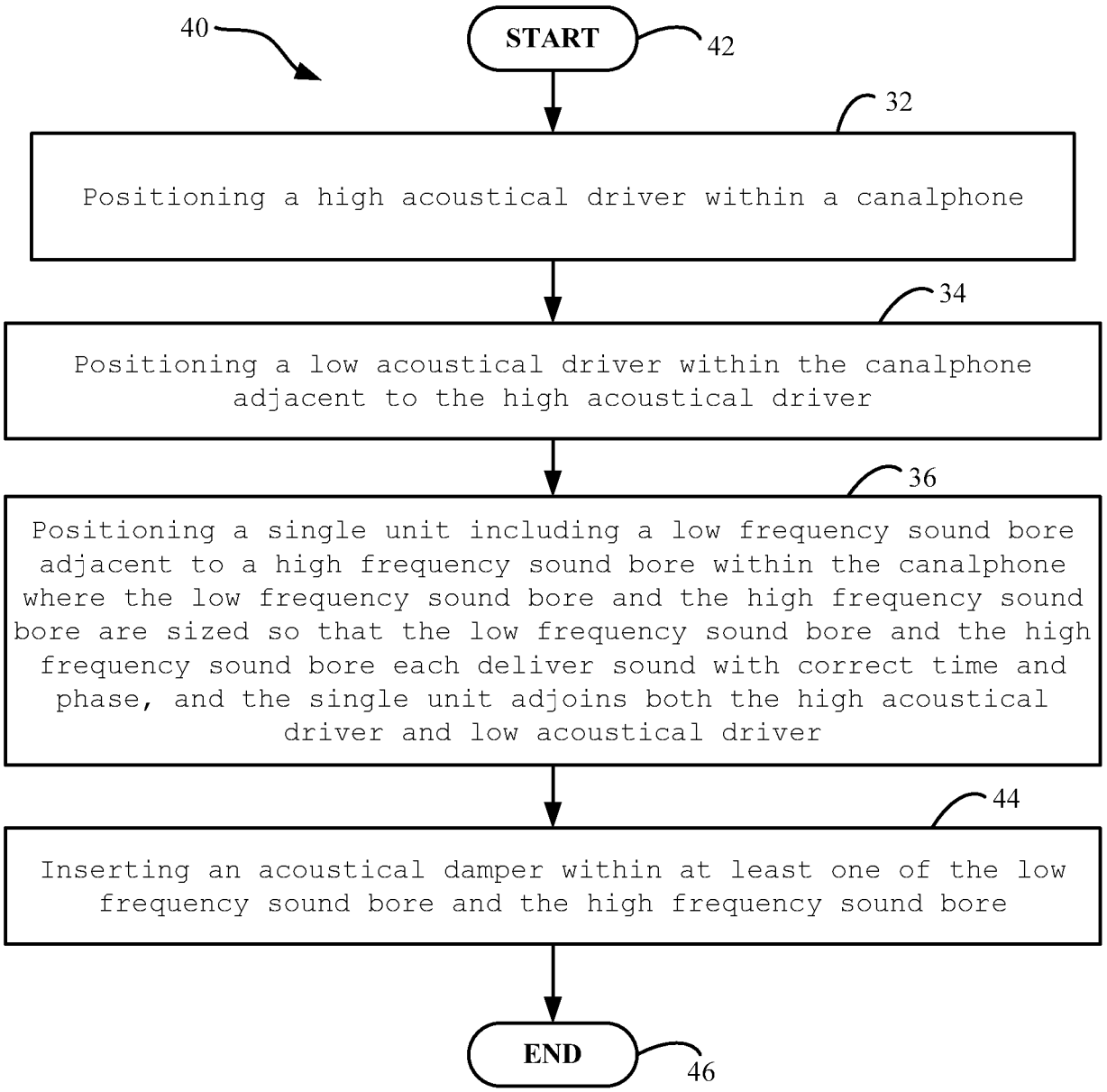
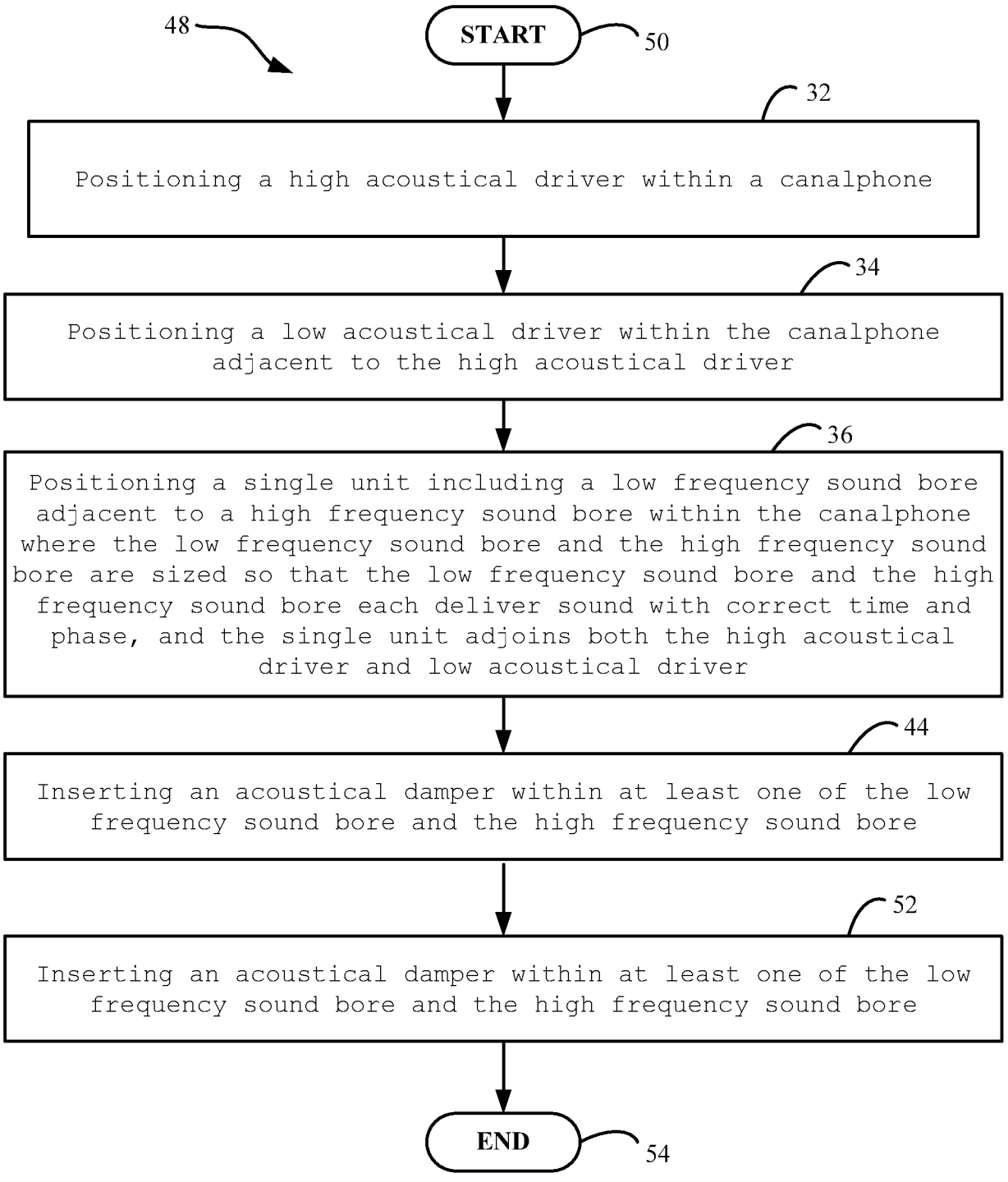
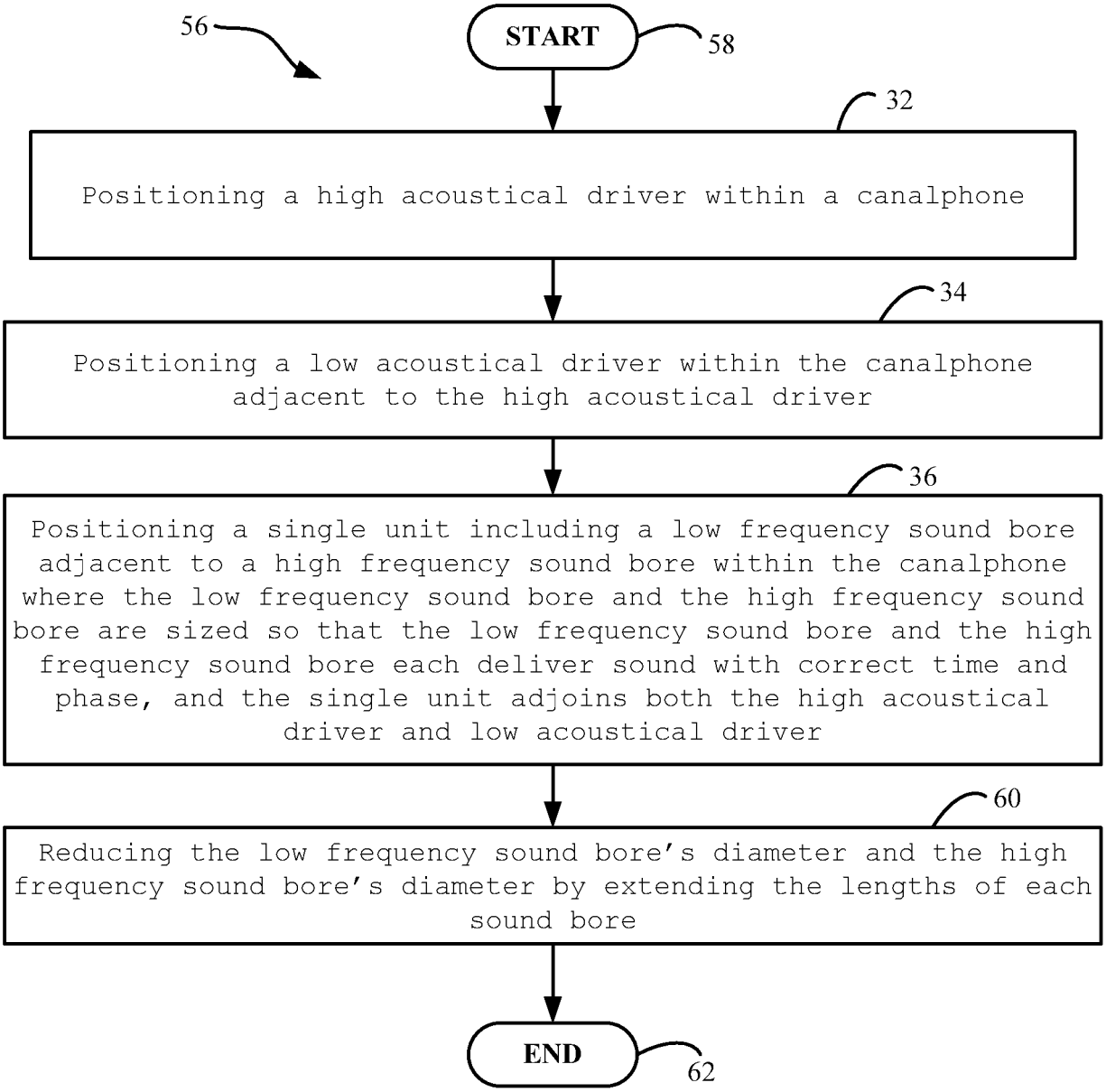
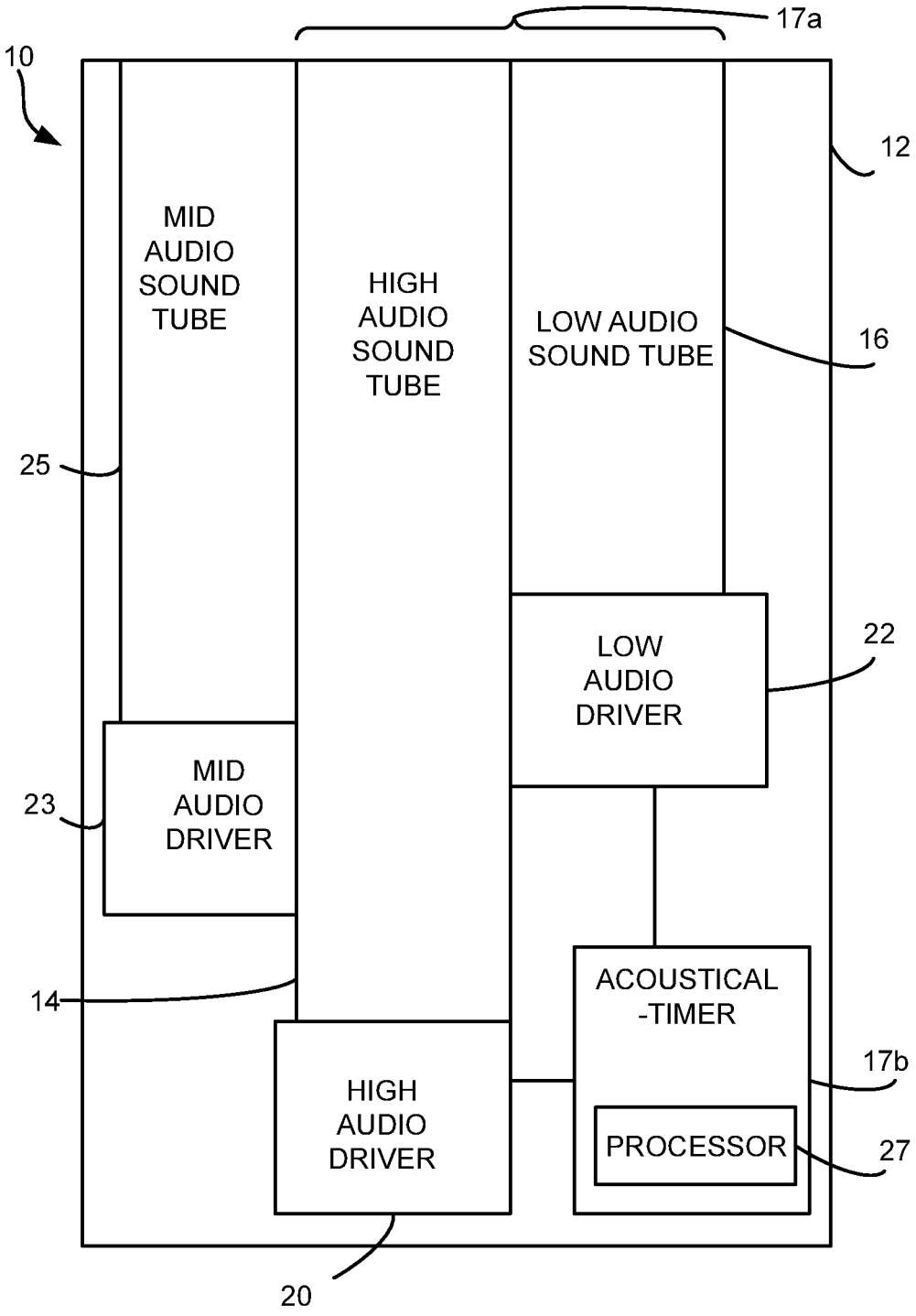

10
LOW FREQUENCY SOUND BORE
HIGH FREQUENCY SOUND BORE
18b
22a
20b
DAMPER
24
DAMPER
HIGH FREQUENCY DRIVER
14a
LOW FREQUENCY DRIVER
16b
16a
RESISTOR
14a
SOUND SOURCE

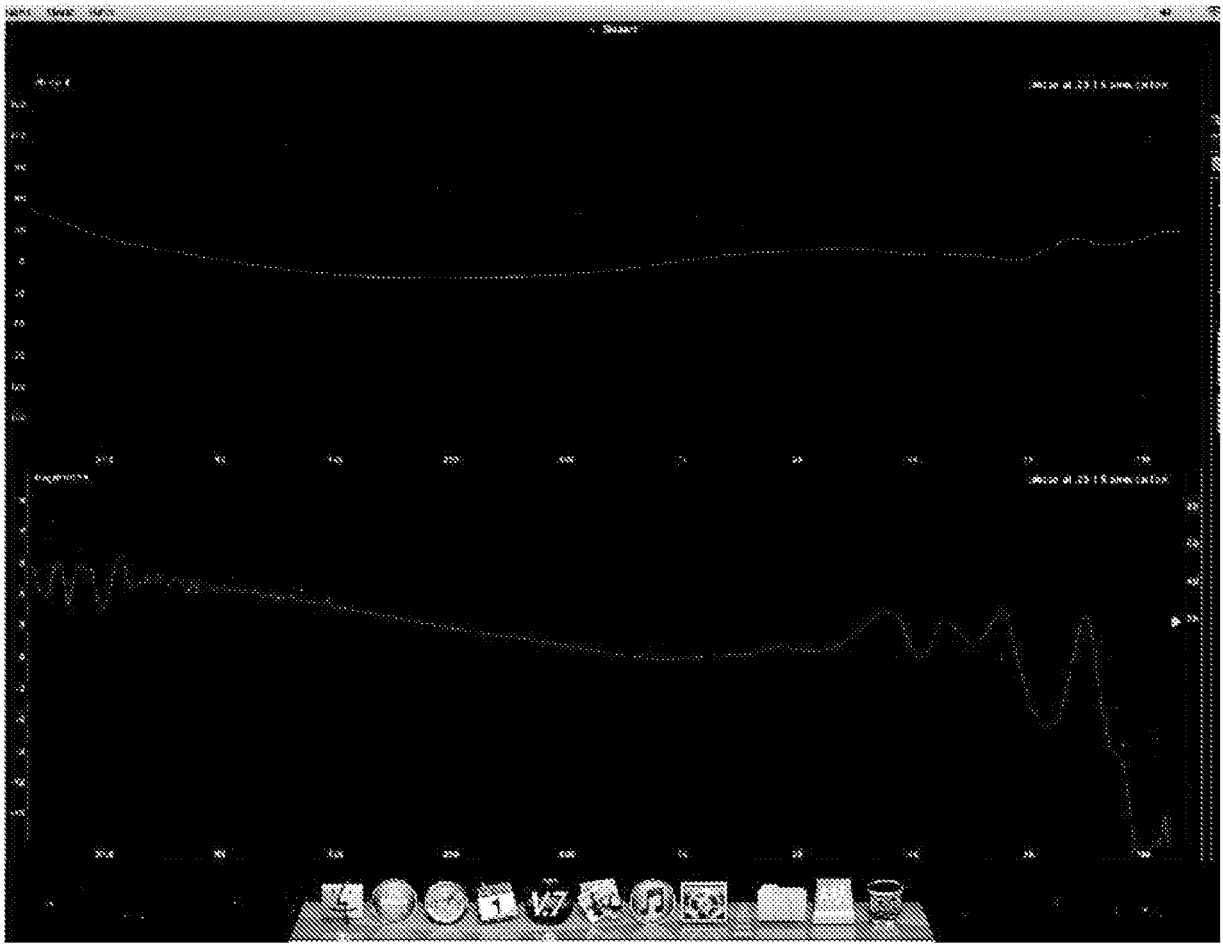

28
START
30
32
Positioning a high acoustical driver within a canalphone
34
Positioning a low acoustical driver within the canalphone adjacent to the high acoustical driver
36
Positioning a single unit including a low frequency sound bore adjacent to a high frequency sound bore within the canalphone where the low frequency sound bore and the high frequency sound bore are sized so that the low frequency sound bore and the high frequency sound bore each deliver sound with correct time and phase, and the single unit adjoins both the high acoustical driver and low acoustical driver
END
38

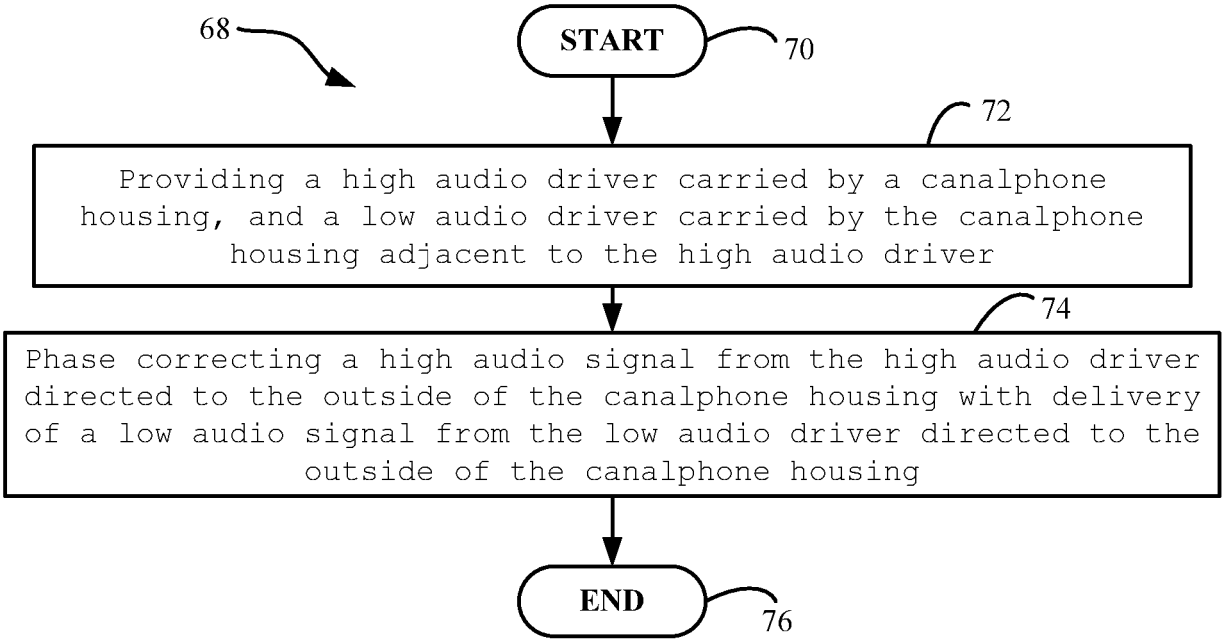

40
START
42
32
Positioning a high acoustical driver within a canalphone
34
Positioning a low acoustical driver within the canalphone adjacent to the high acoustical driver
36
Positioning a single unit including a low frequency sound bore adjacent to a high frequency sound bore within the canalphone where the low frequency sound bore and the high frequency sound bore are sized so that the low frequency sound bore and the high frequency sound bore each deliver sound with correct time and phase, and the single unit adjoins both the high acoustical driver and low acoustical driver
44
Inserting an acoustical damper within at least one of the low frequency sound bore and the high frequency sound bore
END
46

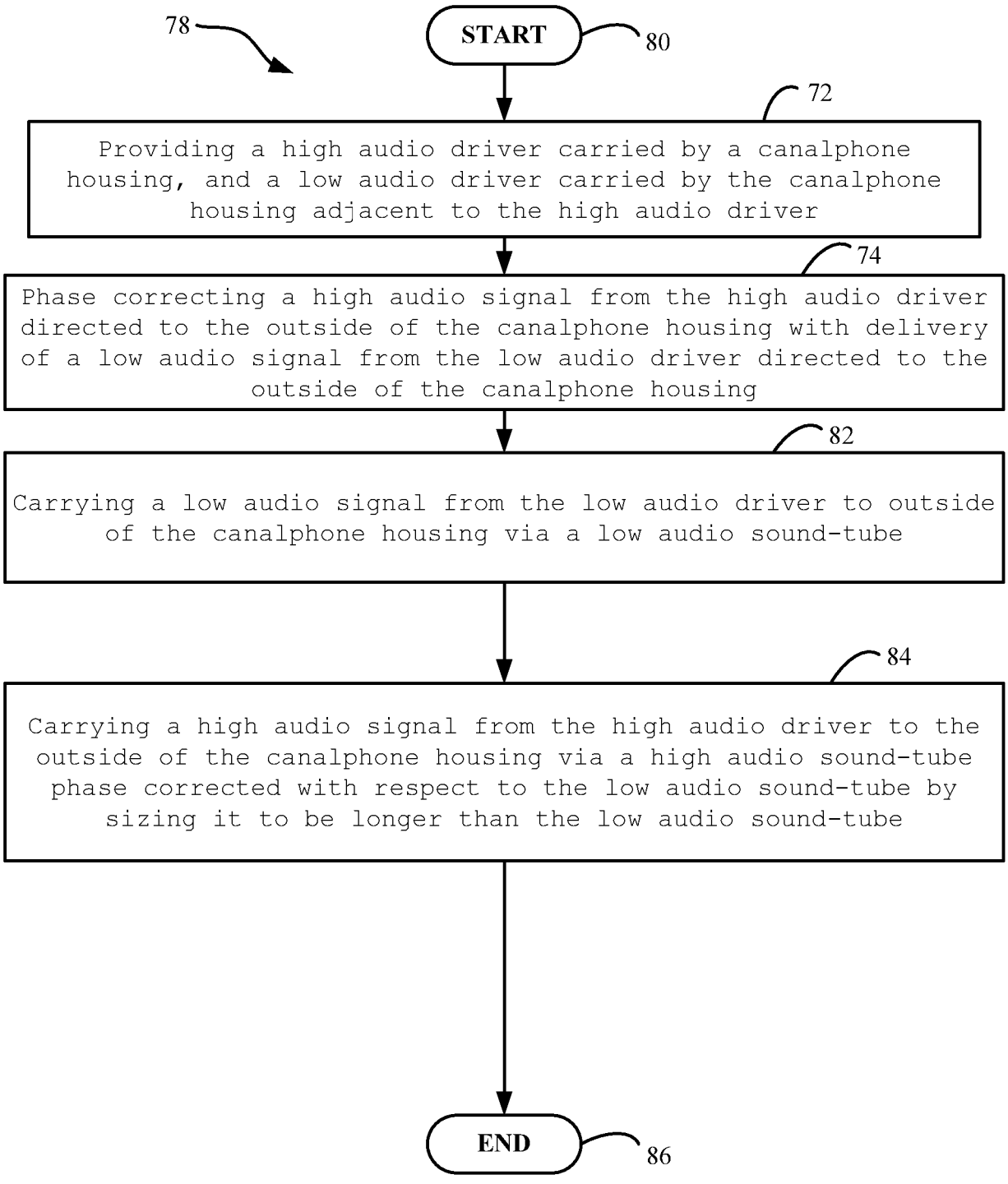

48
START
50
32
Positioning a high acoustical driver within a canalphone
34
Positioning a low acoustical driver within the canalphone adjacent to the high acoustical driver
36
Positioning a single unit including a low frequency sound bore adjacent to a high frequency sound bore within the canalphone where the low frequency sound bore and the high frequency sound bore are sized so that the low frequency sound bore and the high frequency sound bore each deliver sound with correct time and phase, and the single unit adjoins both the high acoustical driver and low acoustical driver
44
Inserting an acoustical damper within at least one of the low frequency sound bore and the high frequency sound bore
52
Inserting an acoustical damper within at least one of the low frequency sound bore and the high frequency sound bore
END
54

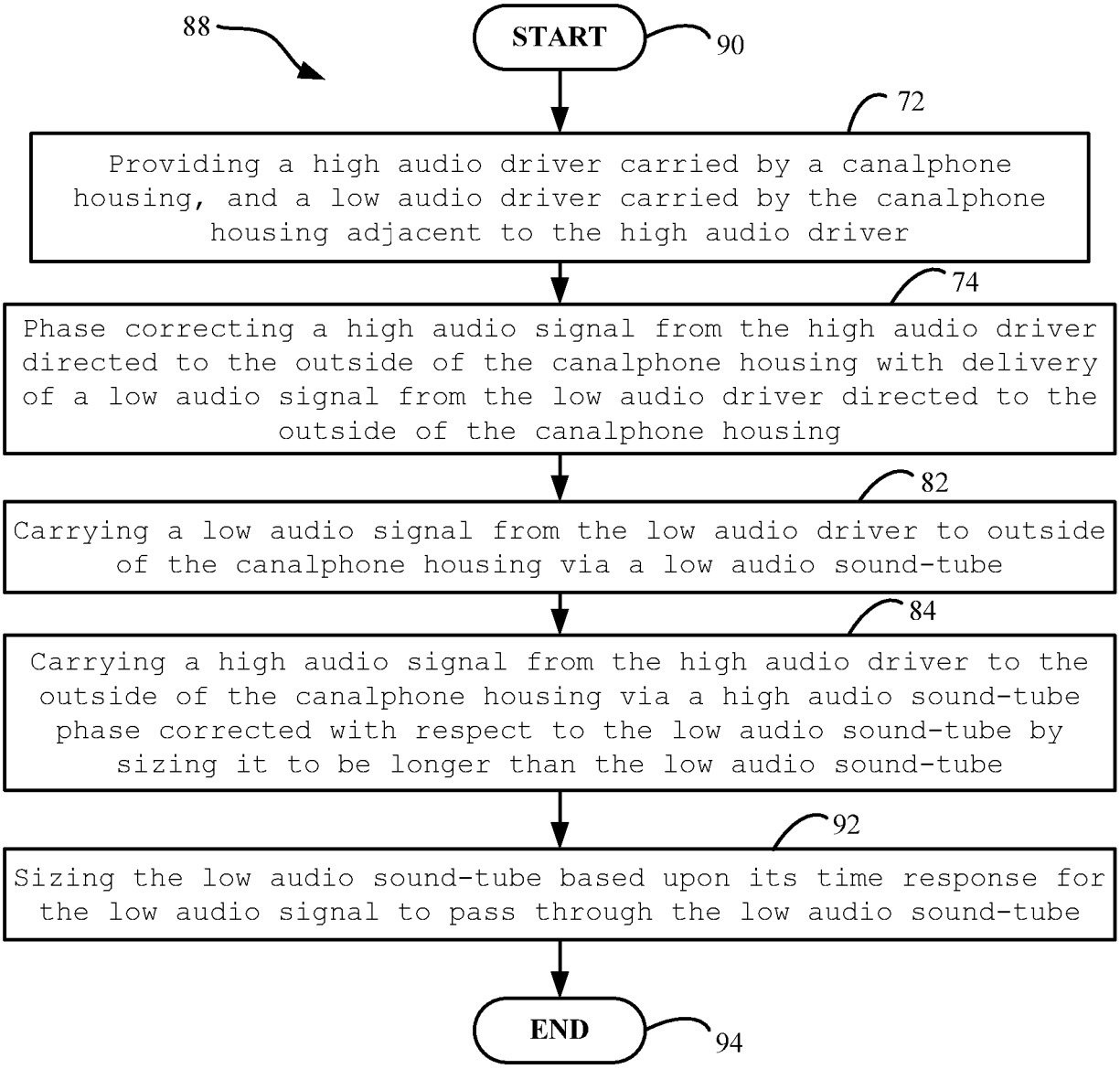

56
START
58
32
Positioning a high acoustical driver within a canalphone
34
Positioning a low acoustical driver within the canalphone adjacent to the high acoustical driver
36
Positioning a single unit including a low frequency sound bore adjacent to a high frequency sound bore within the canalphone where the low frequency sound bore and the high frequency sound bore are sized so that the low frequency sound bore and the high frequency sound bore each deliver sound with correct time and phase, and the single unit adjoins both the high acoustical driver and low acoustical driver
60
Reducing the low frequency sound bore's diameter and the high frequency sound bore's diameter by extending the lengths of each sound bore
END
62

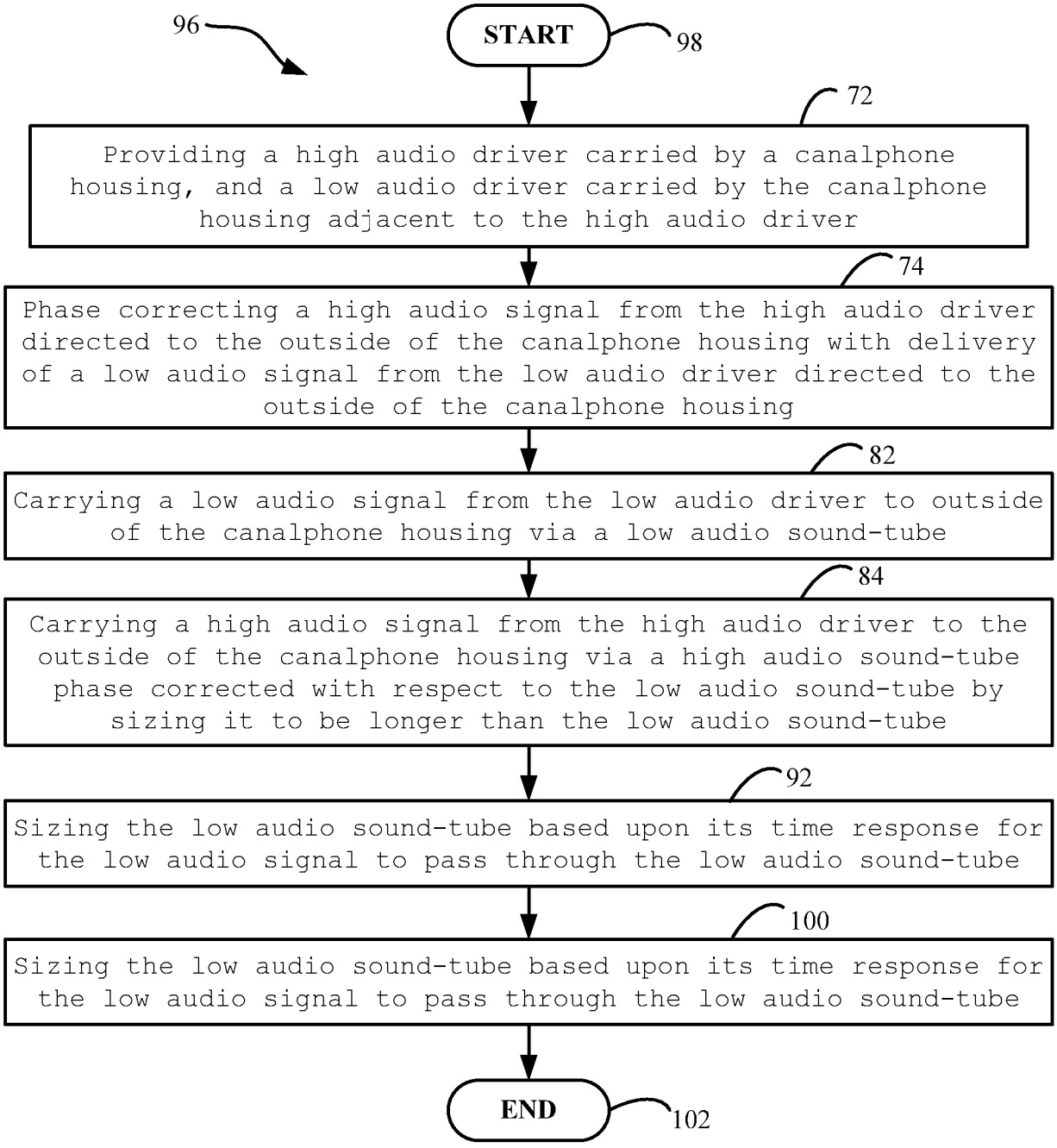

17a
10
12
MID AUDIO SOUND TUBE
HIGH AUDIO SOUND TUBE
LOW AUDIO SOUND TUBE
16
25
22
LOW AUDIO DRIVER
MID AUDIO DRIVER
23
14
ACOUSTICAL -TIMER
17b
HIGH AUDIO DRIVER
PROCESSOR
27
20

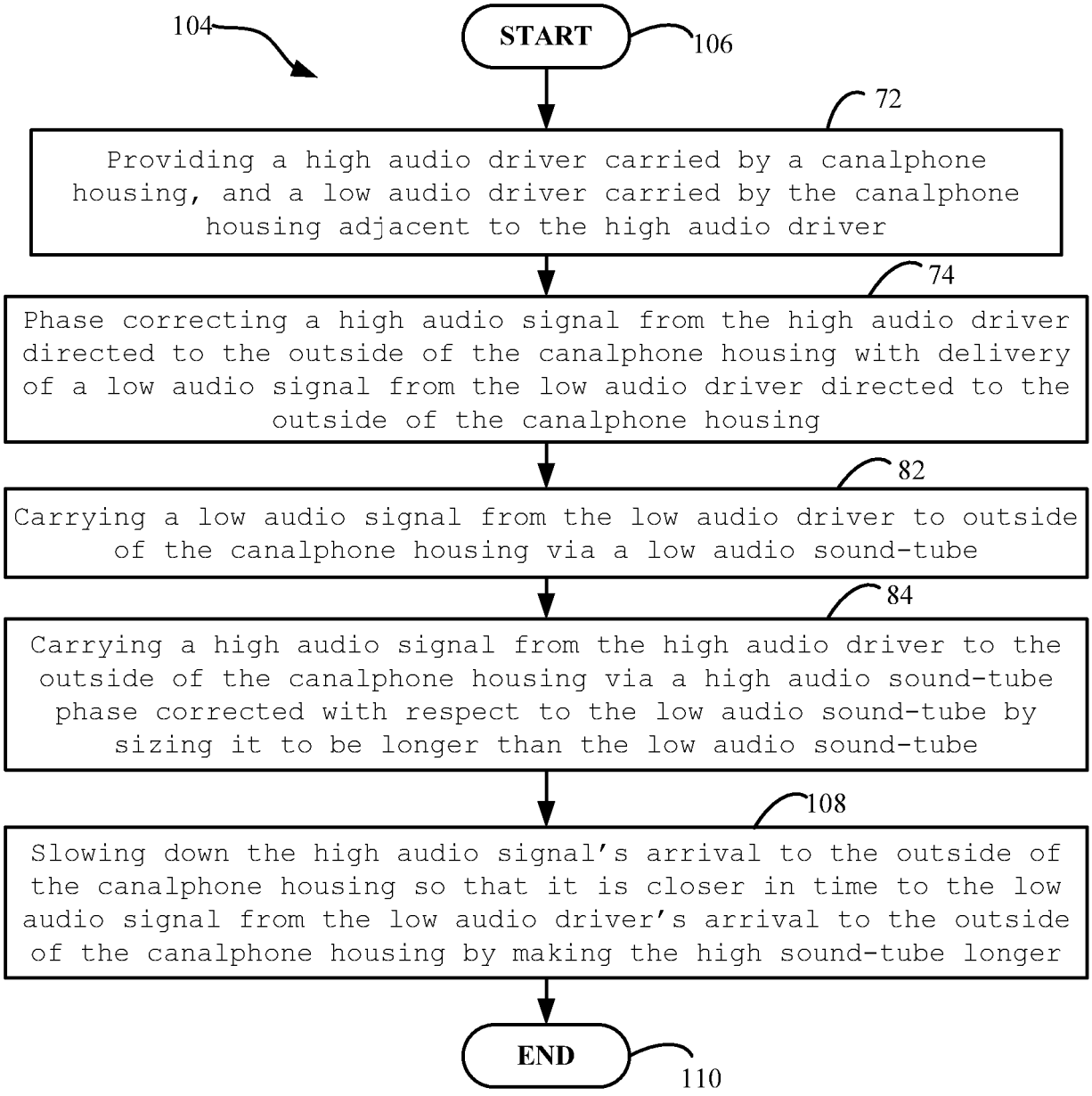


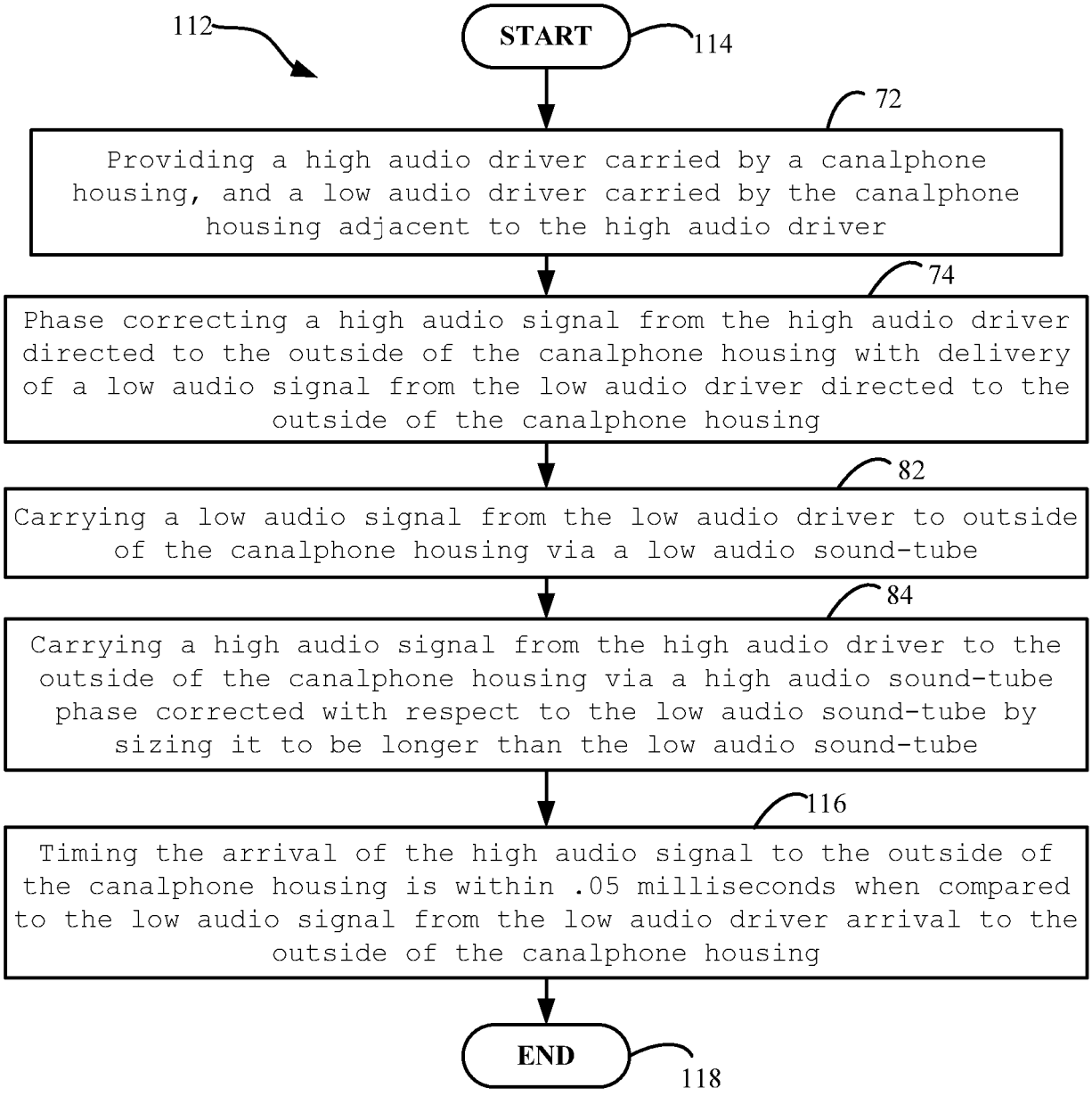

68
START
70
72
Providing a high audio driver carried by a canalphone housing, and a low audio driver carried by the canalphone housing adjacent to the high audio driver
74
Phase correcting a high audio signal from the high audio driver directed to the outside of the canalphone housing with delivery of a low audio signal from the low audio driver directed to the outside of the canalphone housing
END
76

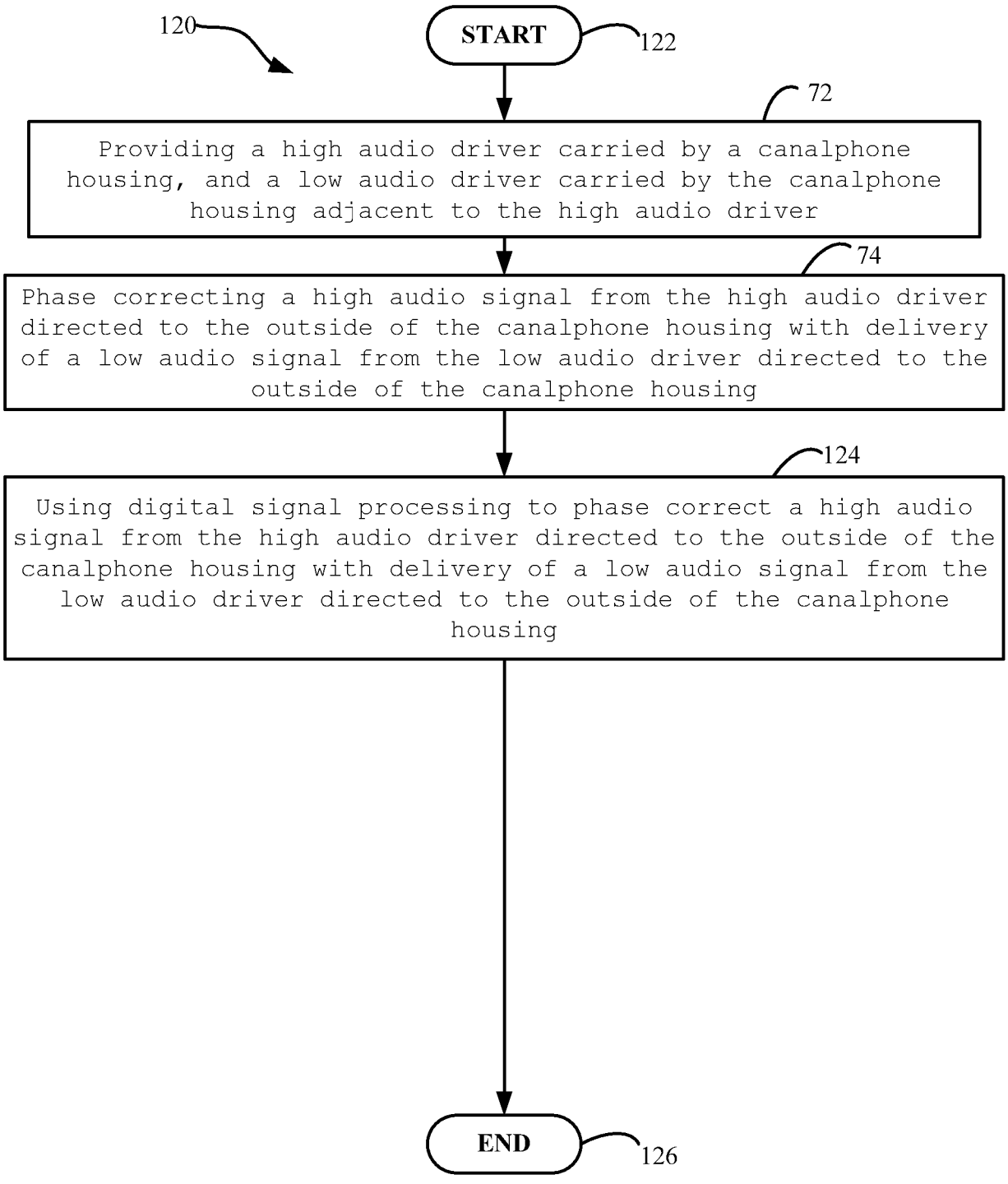

78
START
80
72
Providing a high audio driver carried by a canalphone housing, and a low audio driver carried by the canalphone housing adjacent to the high audio driver
74
Phase correcting a high audio signal from the high audio driver directed to the outside of the canalphone housing with delivery of a low audio signal from the low audio driver directed to the outside of the canalphone housing
82
Carrying a low audio signal from the low audio driver to outside of the canalphone housing via a low audio sound-tube
84
Carrying a high audio signal from the high audio driver to the outside of the canalphone housing via a high audio sound-tube phase corrected with respect to the low audio sound-tube by sizing it to be longer than the low audio sound-tube
END
86

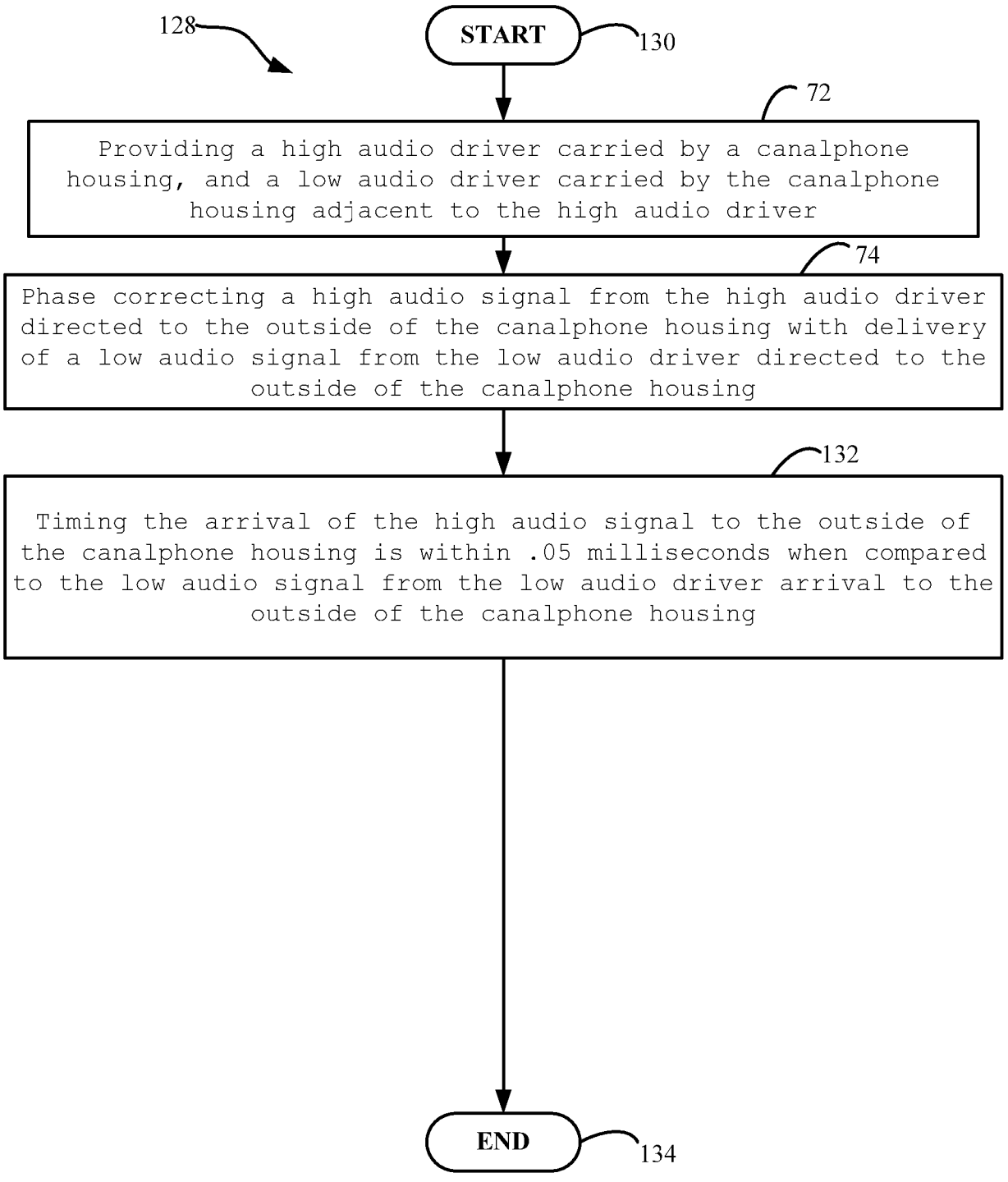

88
START
90
72
Providing a high audio driver carried by a canalphone housing, and a low audio driver carried by the canalphone housing adjacent to the high audio driver
74
Phase correcting a high audio signal from the high audio driver directed to the outside of the canalphone housing with delivery of a low audio signal from the low audio driver directed to the outside of the canalphone housing
82
Carrying a low audio signal from the low audio driver to outside of the canalphone housing via a low audio sound-tube
84
Carrying a high audio signal from the high audio driver to the outside of the canalphone housing via a high audio sound-tube phase corrected with respect to the low audio sound-tube by sizing it to be longer than the low audio sound-tube
92
Sizing the low audio sound-tube based upon its time response for the low audio signal to pass through the low audio sound-tube
END
94

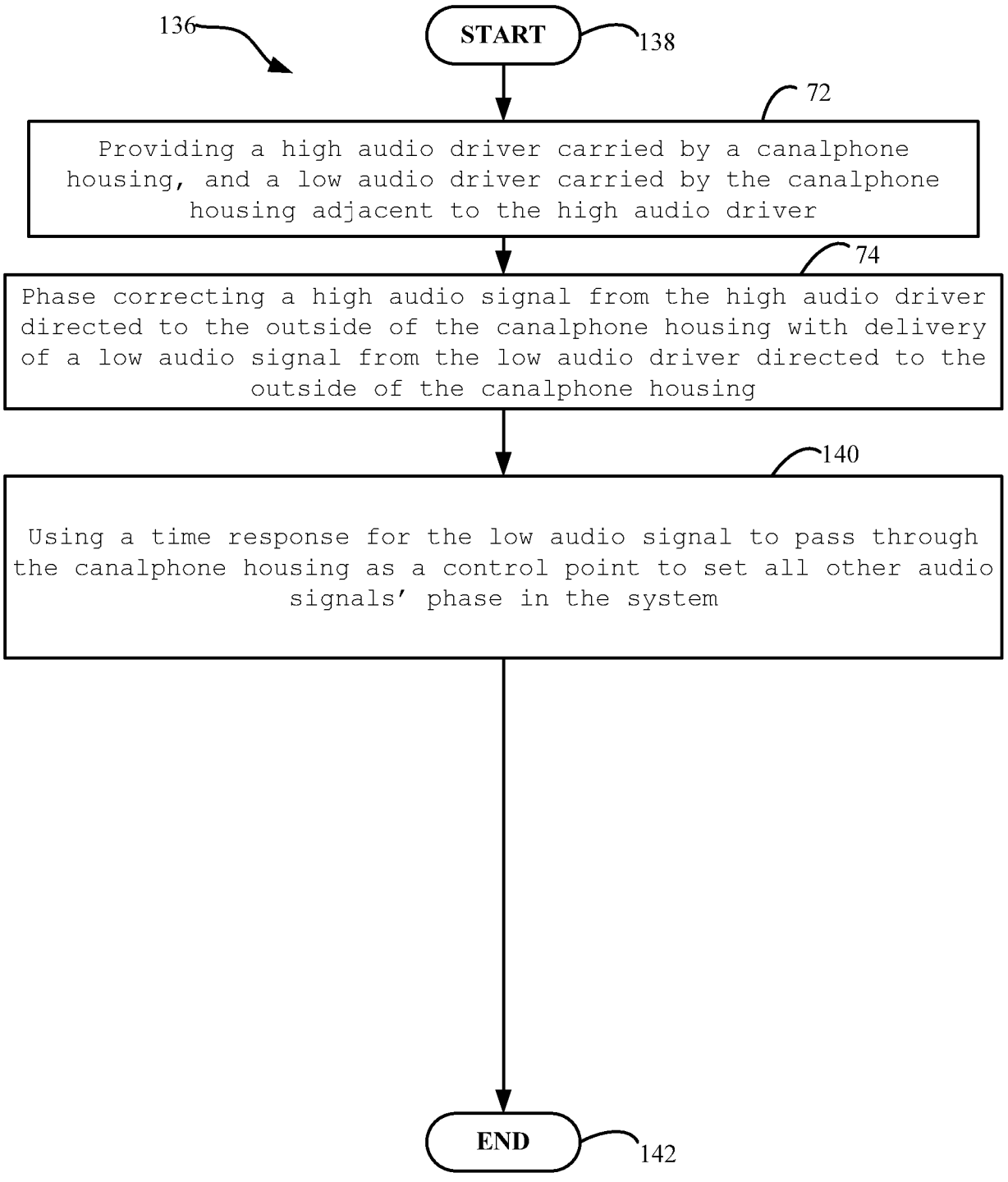

96
START
98
72
Providing a high audio driver carried by a canalphone housing, and a low audio driver carried by the canalphone housing adjacent to the high audio driver
74
Phase correcting a high audio signal from the high audio driver directed to the outside of the canalphone housing with delivery of a low audio signal from the low audio driver directed to the outside of the canalphone housing
82
Carrying a low audio signal from the low audio driver to outside of the canalphone housing via a low audio sound-tube
84
Carrying a high audio signal from the high audio driver to the outside of the canalphone housing via a high audio sound-tube phase corrected with respect to the low audio sound-tube by sizing it to be longer than the low audio sound-tube
92
Sizing the low audio sound-tube based upon its time response for the low audio signal to pass through the low audio sound-tube
100
Sizing the low audio sound-tube based upon its time response for the low audio signal to pass through the low audio sound-tube
END
102

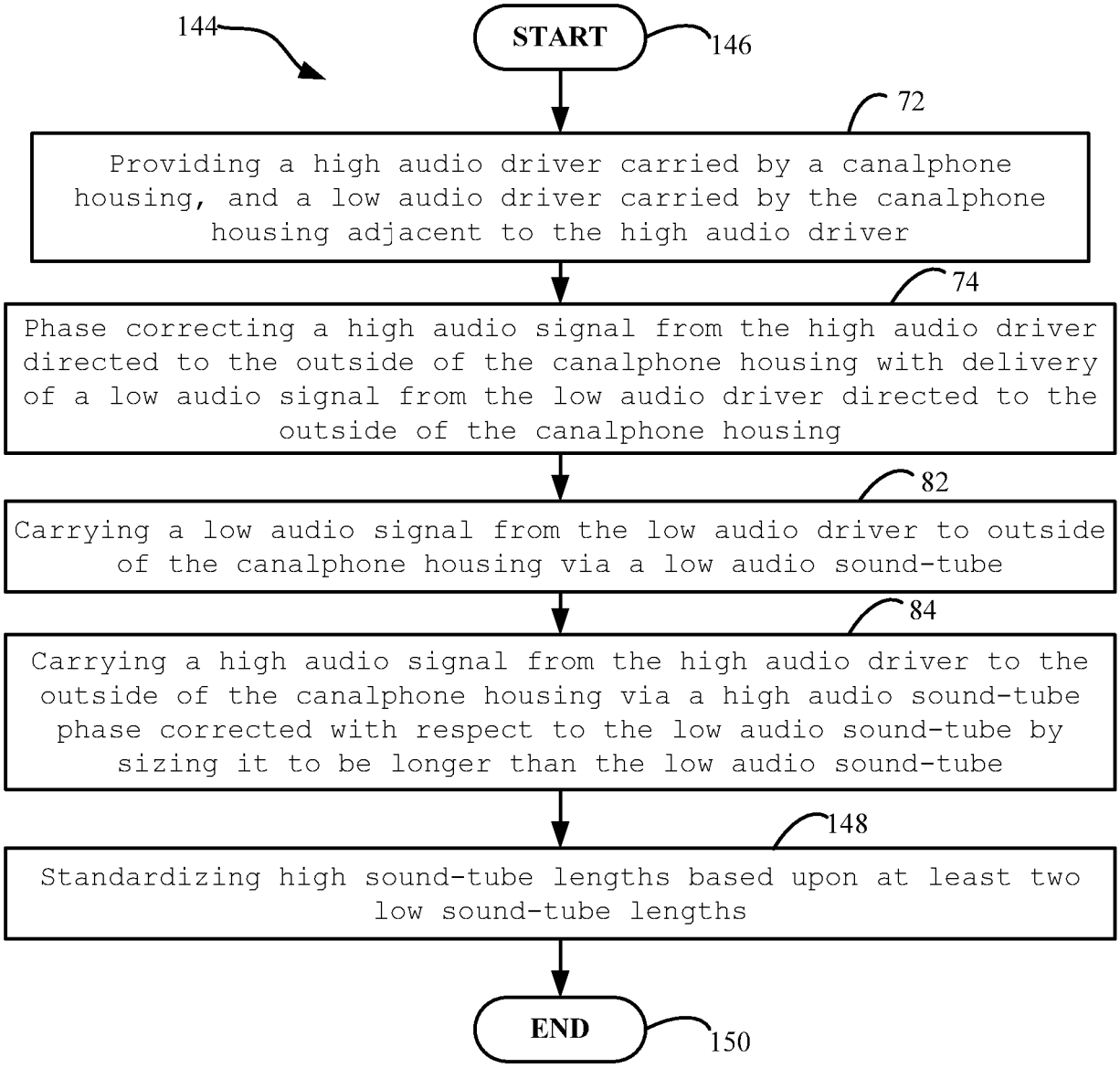

104
START
106
72
Providing a high audio driver carried by a canalphone housing, and a low audio driver carried by the canalphone housing adjacent to the high audio driver
74
Phase correcting a high audio signal from the high audio driver directed to the outside of the canalphone housing with delivery of a low audio signal from the low audio driver directed to the outside of the canalphone housing
82
Carrying a low audio signal from the low audio driver to outside of the canalphone housing via a low audio sound-tube
84
Carrying a high audio signal from the high audio driver to the outside of the canalphone housing via a high audio sound-tube phase corrected with respect to the low audio sound-tube by sizing it to be longer than the low audio sound-tube
108
Slowing down the high audio signal's arrival to the outside of the canalphone housing so that it is closer in time to the low audio signal from the low audio driver's arrival to the outside of the canalphone housing by making the high sound-tube longer
END
110

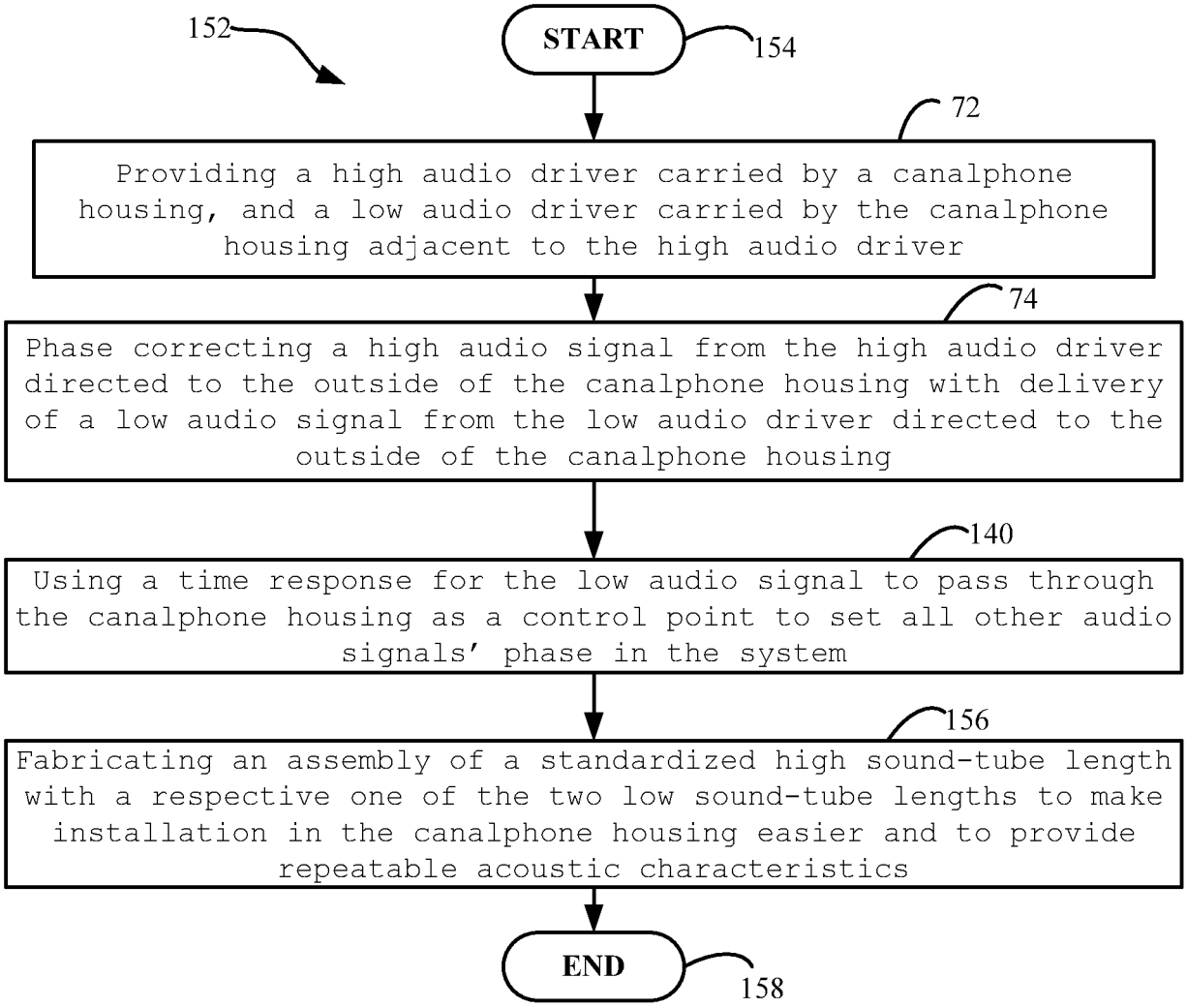

112
START
114
72
Providing a high audio driver carried by a canalphone housing, and a low audio driver carried by the canalphone housing adjacent to the high audio driver
74
Phase correcting a high audio signal from the high audio driver directed to the outside of the canalphone housing with delivery of a low audio signal from the low audio driver directed to the outside of the canalphone housing
82
Carrying a low audio signal from the low audio driver to outside of the canalphone housing via a low audio sound-tube
84
Carrying a high audio signal from the high audio driver to the outside of the canalphone housing via a high audio sound-tube phase corrected with respect to the low audio sound-tube by sizing it to be longer than the low audio sound-tube
116
Timing the arrival of the high audio signal to the outside of the canalphone housing is within .05 milliseconds when compared to the low audio signal from the low audio driver arrival to the outside of the canalphone housing
END
118

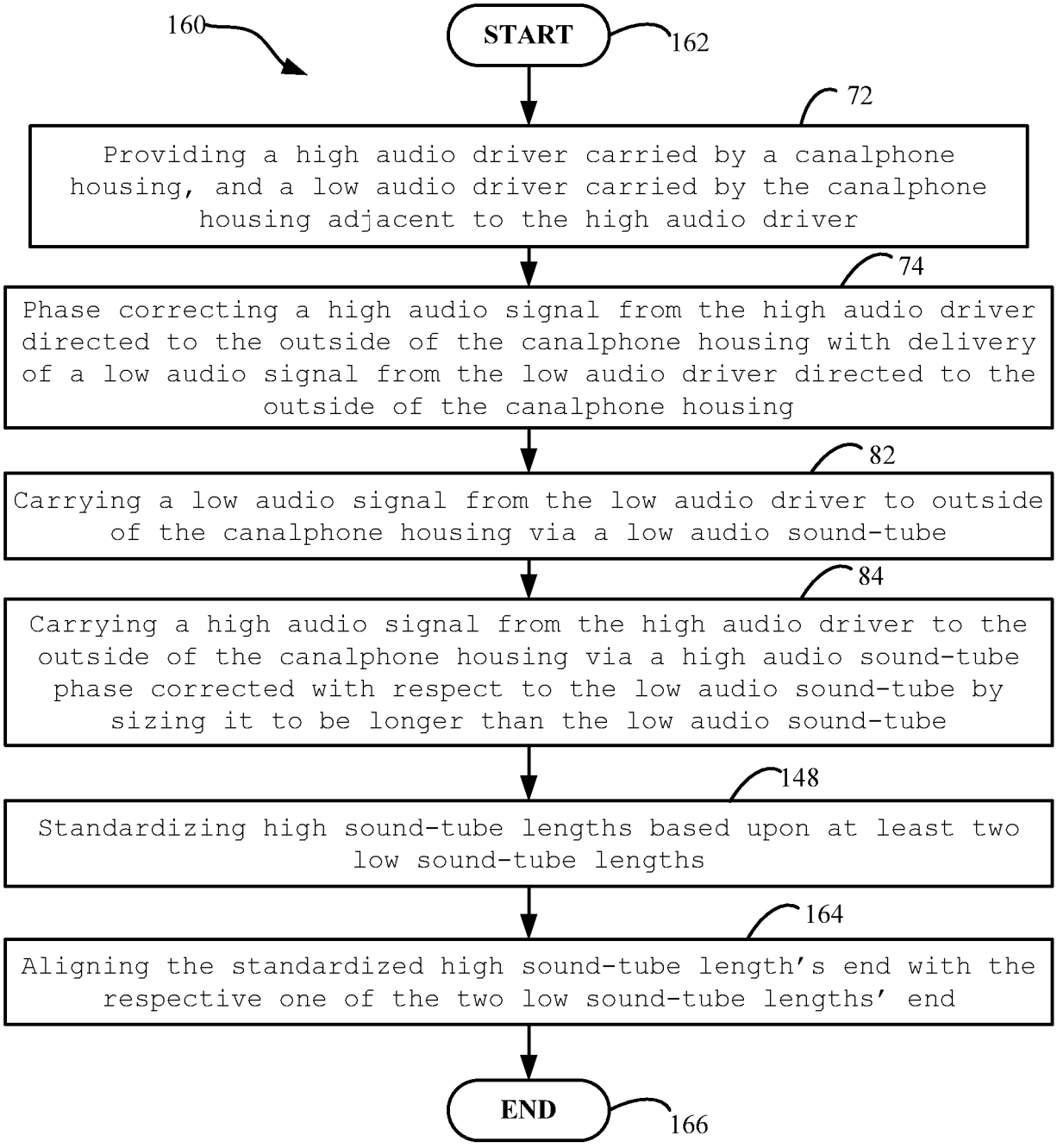

120
START
122
72
Providing a high audio driver carried by a canalphone housing, and a low audio driver carried by the canalphone housing adjacent to the high audio driver
74
Phase correcting a high audio signal from the high audio driver directed to the outside of the canalphone housing with delivery of a low audio signal from the low audio driver directed to the outside of the canalphone housing
124
Using digital signal processing to phase correct a high audio signal from the high audio driver directed to the outside of the canalphone housing with delivery of a low audio signal from the low audio driver directed to the outside of the canalphone housing
END
126


128
START
130
72
Providing a high audio driver carried by a canalphone housing, and a low audio driver carried by the canalphone housing adjacent to the high audio driver
74
Phase correcting a high audio signal from the high audio driver directed to the outside of the canalphone housing with delivery of a low audio signal from the low audio driver directed to the outside of the canalphone housing
132
Timing the arrival of the high audio signal to the outside of the canalphone housing is within .05 milliseconds when compared to the low audio signal from the low audio driver arrival to the outside of the canalphone housing
END
134


136
START
138
72
Providing a high audio driver carried by a canalphone housing, and a low audio driver carried by the canalphone housing adjacent to the high audio driver
74
Phase correcting a high audio signal from the high audio driver directed to the outside of the canalphone housing with delivery of a low audio signal from the low audio driver directed to the outside of the canalphone housing
140
Using a time response for the low audio signal to pass through the canalphone housing as a control point to set all other audio signals' phase in the system
END
142


144
START
146
72
Providing a high audio driver carried by a canalphone housing, and a low audio driver carried by the canalphone housing adjacent to the high audio driver
74
Phase correcting a high audio signal from the high audio driver directed to the outside of the canalphone housing with delivery of a low audio signal from the low audio driver directed to the outside of the canalphone housing
82
Carrying a low audio signal from the low audio driver to outside of the canalphone housing via a low audio sound-tube
84
Carrying a high audio signal from the high audio driver to the outside of the canalphone housing via a high audio sound-tube phase corrected with respect to the low audio sound-tube by sizing it to be longer than the low audio sound-tube
148
Standardizing high sound-tube lengths based upon at least two low sound-tube lengths
END
150


152
START
154
72
Providing a high audio driver carried by a canalphone housing, and a low audio driver carried by the canalphone housing adjacent to the high audio driver
74
Phase correcting a high audio signal from the high audio driver directed to the outside of the canalphone housing with delivery of a low audio signal from the low audio driver directed to the outside of the canalphone housing
140
Using a time response for the low audio signal to pass through the canalphone housing as a control point to set all other audio signals' phase in the system
156
Fabricating an assembly of a standardized high sound-tube length with a respective one of the two low sound-tube lengths to make installation in the canalphone housing easier and to provide repeatable acoustic characteristics
END
158


160
START
162
72
Providing a high audio driver carried by a canalphone housing, and a low audio driver carried by the canalphone housing adjacent to the high audio driver
74
Phase correcting a high audio signal from the high audio driver directed to the outside of the canalphone housing with delivery of a low audio signal from the low audio driver directed to the outside of the canalphone housing
82
Carrying a low audio signal from the low audio driver to outside of the canalphone housing via a low audio sound-tube
84
Carrying a high audio signal from the high audio driver to the outside of the canalphone housing via a high audio sound-tube phase corrected with respect to the low audio sound-tube by sizing it to be longer than the low audio sound-tube
148
Standardizing high sound-tube lengths based upon at least two low sound-tube lengths
164
Aligning the standardized high sound-tube length's end with the respective one of the two low sound-tube lengths' end
END
166