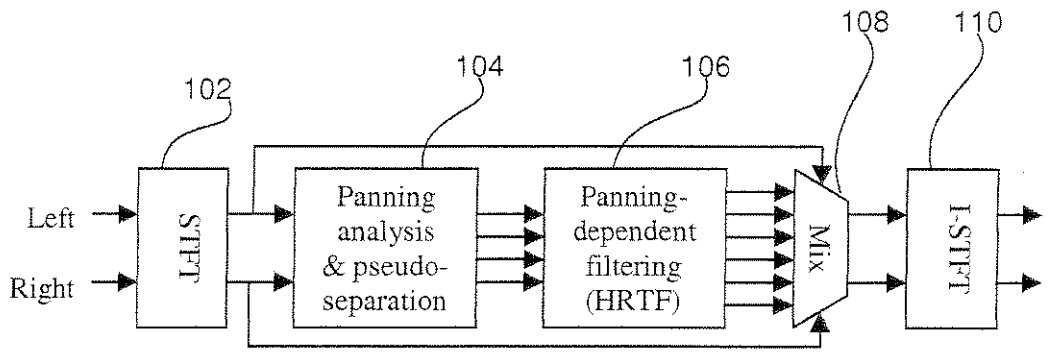

102
104
106
108
110
Left
Right
STFT
Panning analysis & pseudo-separation
Panning-dependent filtering (HRTF)
Mix
I-STFT

FIG. 1

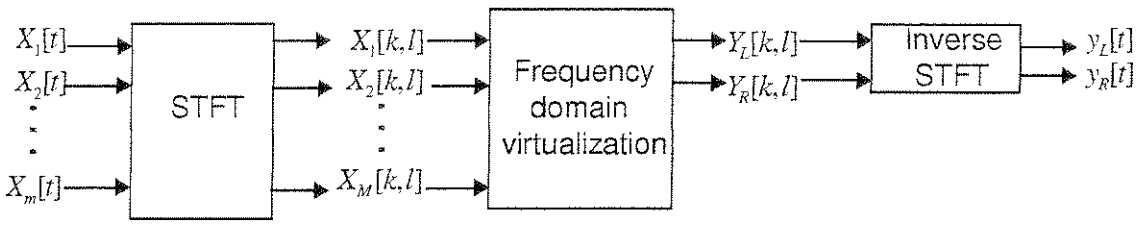

$X_1[t]$
$X_2[t]$
$X_m[t]$
STFT
$X_1[k,l]$
$X_2[k,l]$
$X_M[k,l]$
Frequency domain virtualization
$Y_L[k,l]$
$Y_R[k,l]$
Inverse STFT
$y_L[t]$
$y_R[t]$

FIG. 5

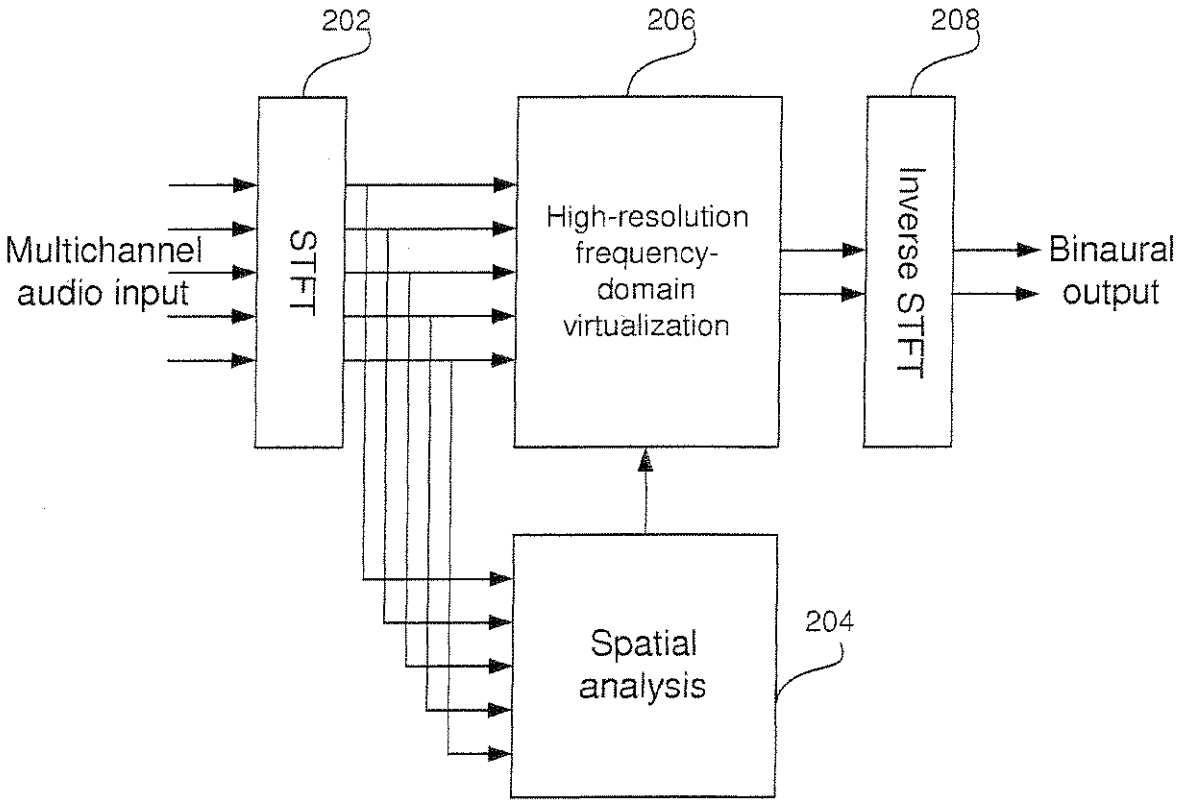

202
206
208
Multichannel audio input
STFT
High-resolution frequency-domain virtualization
Inverse STFT
Binaural output
Spatial analysis
204

FIG. 2

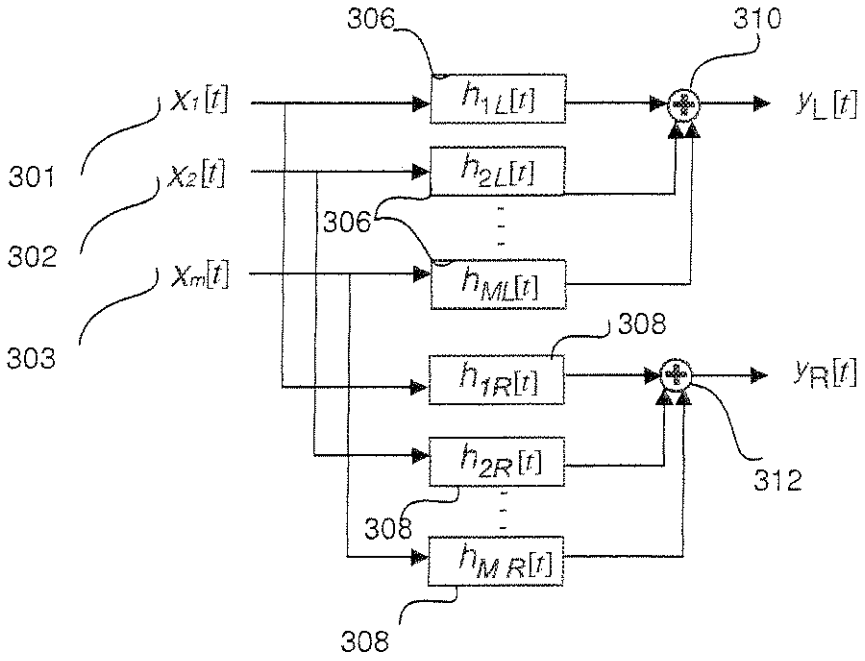


FIG. 3
(prior art)

FIG. 4A
(prior art)

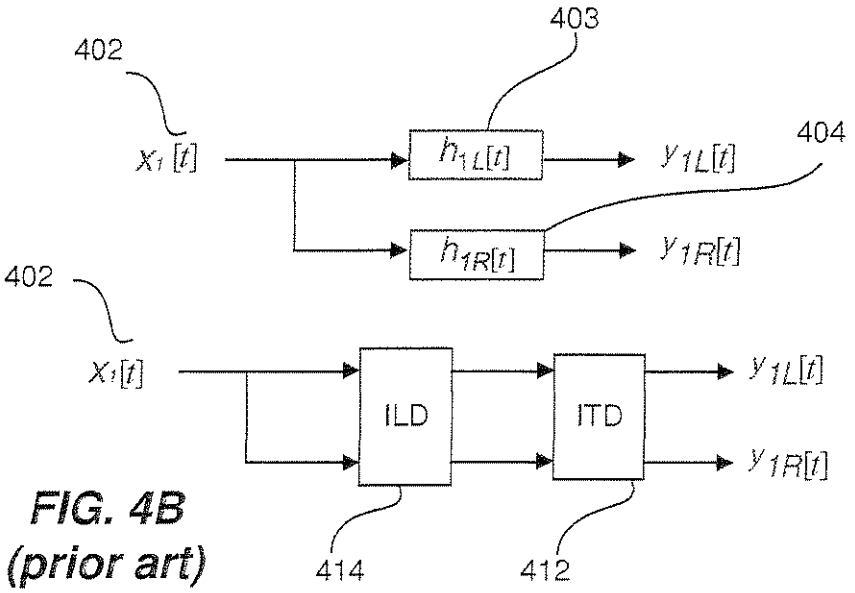


FIG. 4B
(prior art)

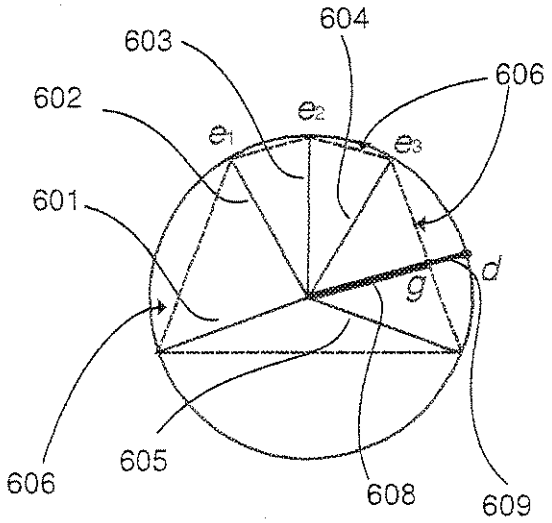


FIG. 6A

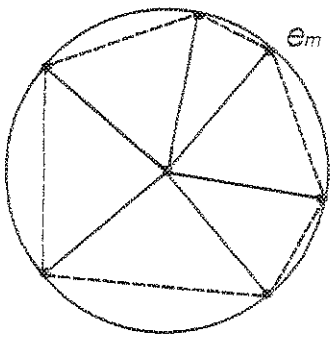


FIG. 6B

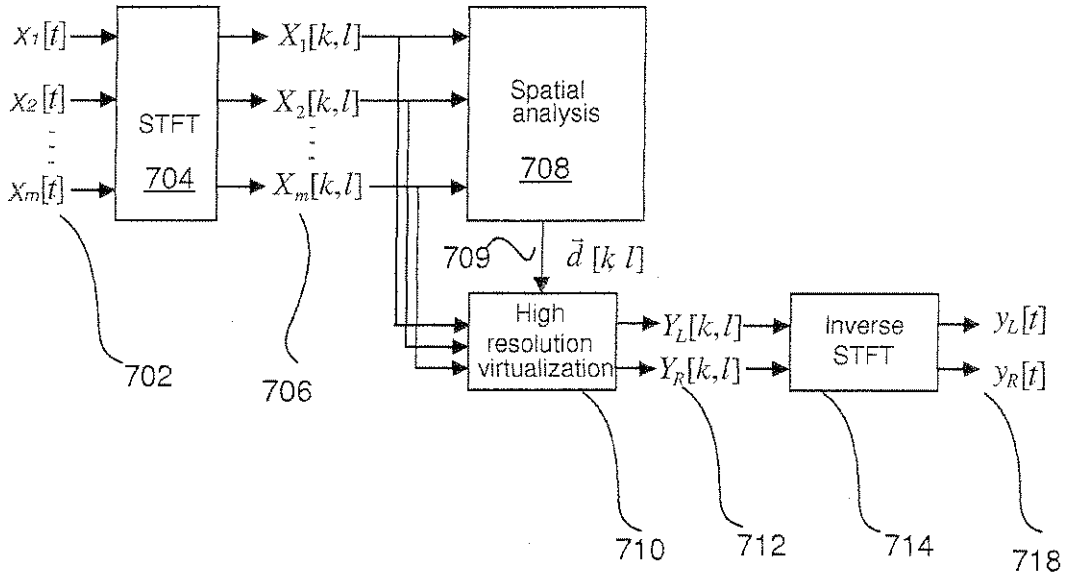

$X_1[t]$
$X_2[t]$
$X_m[t]$
STFT
704
$X_1[k,l]$
$X_2[k,l]$
$X_m[k,l]$
Spatial analysis
708
709
$\vec{d}[k\ l]$
High resolution virtualization
$Y_L[k,l]$
$Y_R[k,l]$
Inverse STFT
$y_L[t]$
$y_R[t]$
702
706
710
712
714
718

FIG. 7

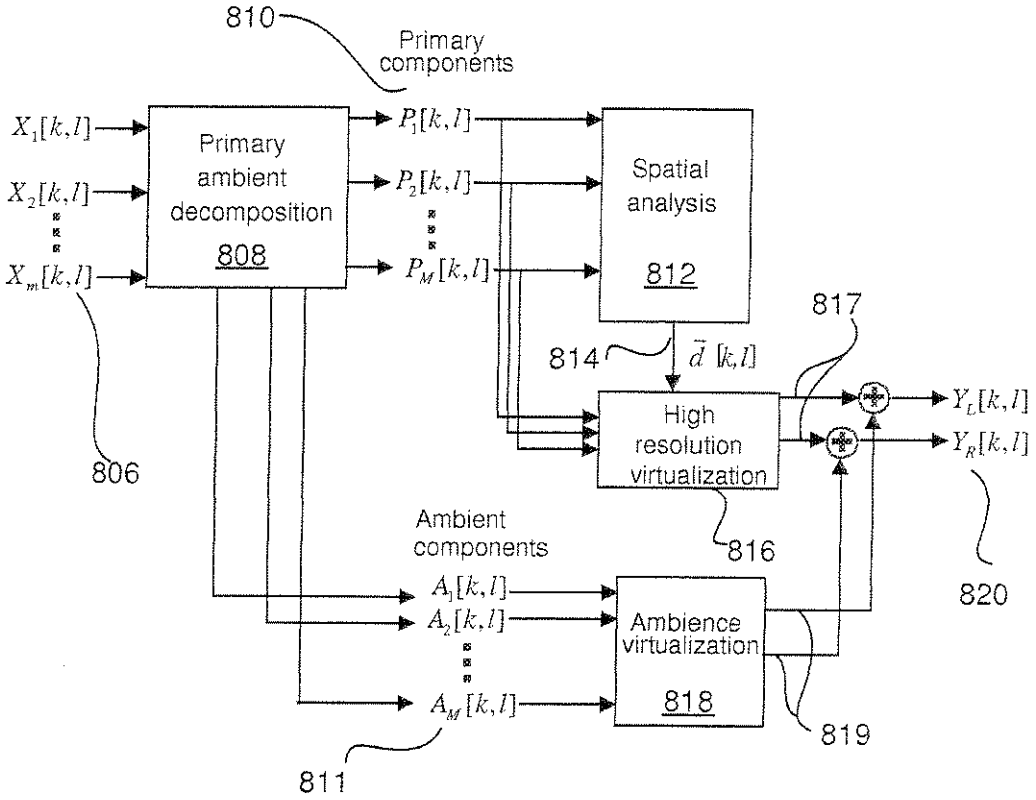

810
Primary components
$X_1[k,l]$
$X_2[k,l]$
$X_m[k,l]$
Primary ambient decomposition
808
$P_1[k,l]$
$P_2[k,l]$
$P_M[k,l]$
Spatial analysis
812
814
$\vec{d}\ [k,l]$
817
High resolution virtualization
816
$Y_L[k,l]$
$Y_R[k,l]$
820
806
Ambient components
$A_1[k,l]$
$A_2[k,l]$
$A_M[k,l]$
Ambience virtualization
818
819
811

FIG. 8