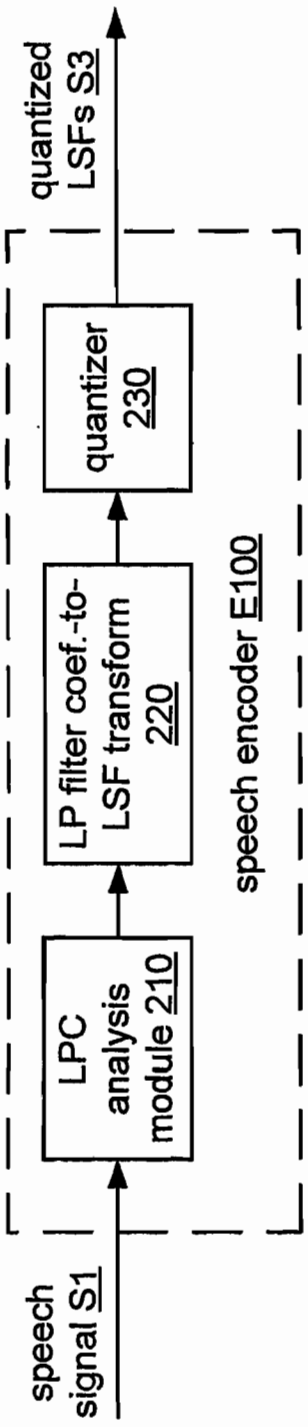

speech signal S1
LPC analysis module 210
LP filter coef.-to-LSF transform 220
quantizer 230
quantized LSFs S3
speech encoder E100

FIG. 1a

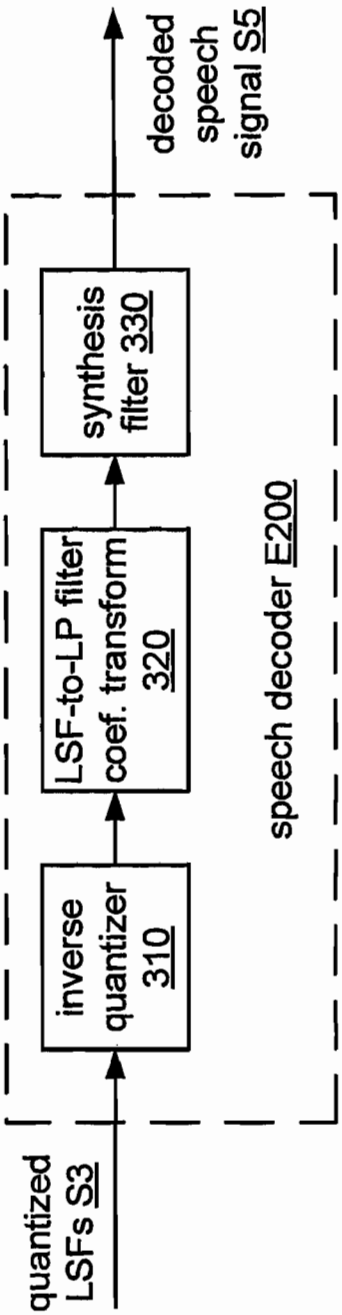

quantized LSFs S3
inverse quantizer 310
LSF-to-LP filter coef. transform 320
synthesis filter 330
decoded speech signal S5
speech decoder E200

FIG. 1b

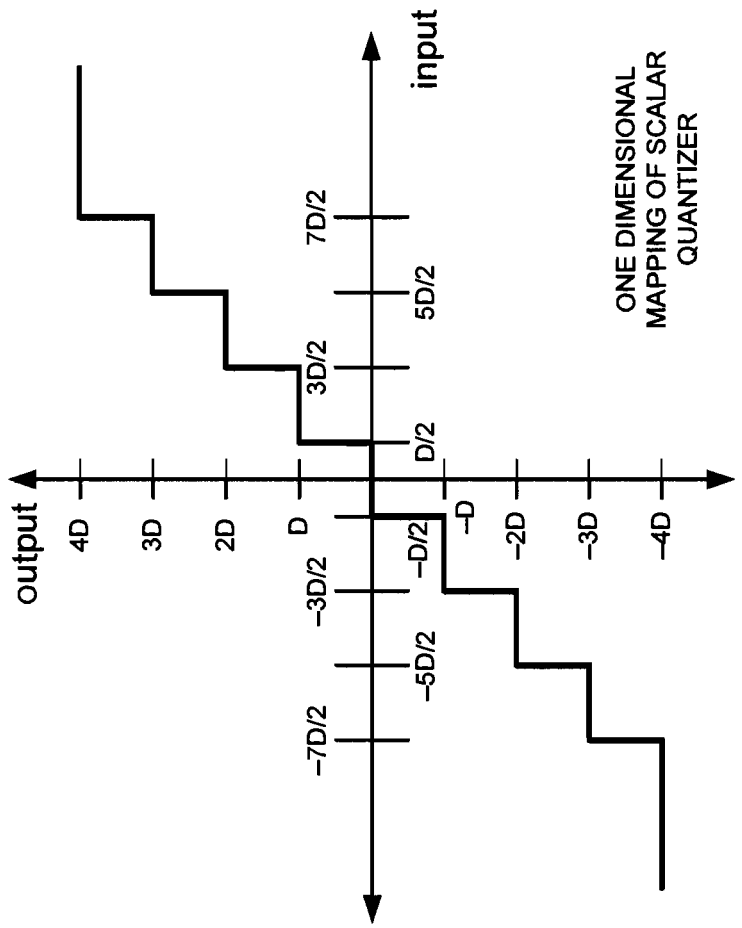

ONE DIMENSIONAL
MAPPING OF SCALAR
QUANTIZER
input
output
7D/2
5D/2
3D/2
D/2
-D
-2D
-3D
-4D
-D/2
-3D/2
-5D/2
-7D/2
4D
3D
2D
D

FIG. 2

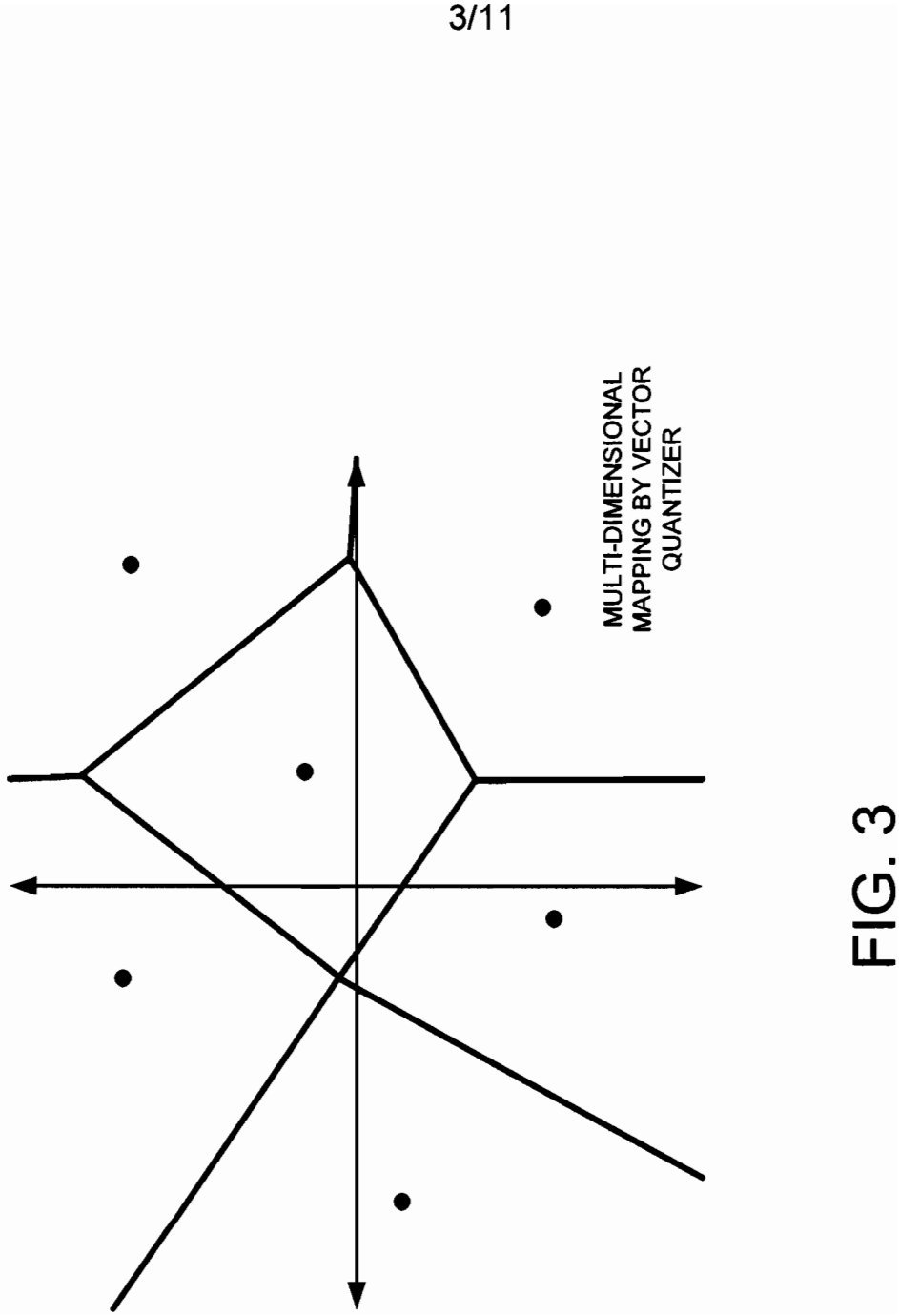


FIG. 3

FIG. 4a

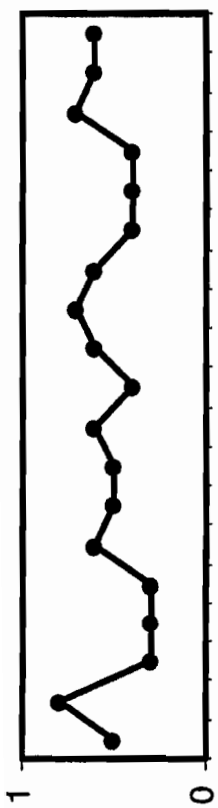


FIG. 4b

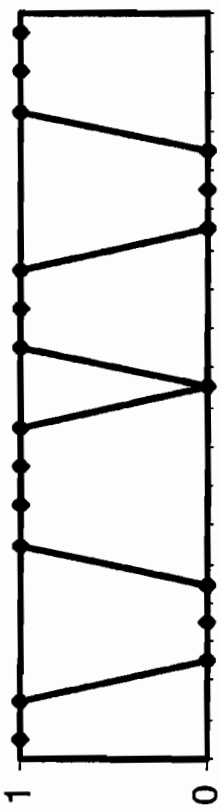


FIG. 4c

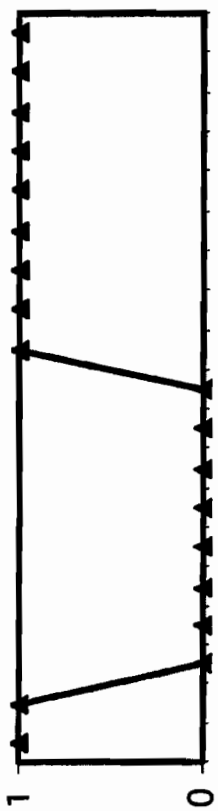
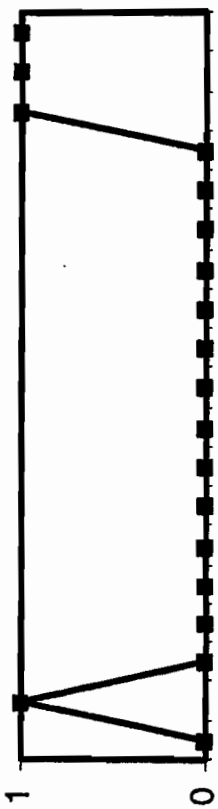


FIG. 4d



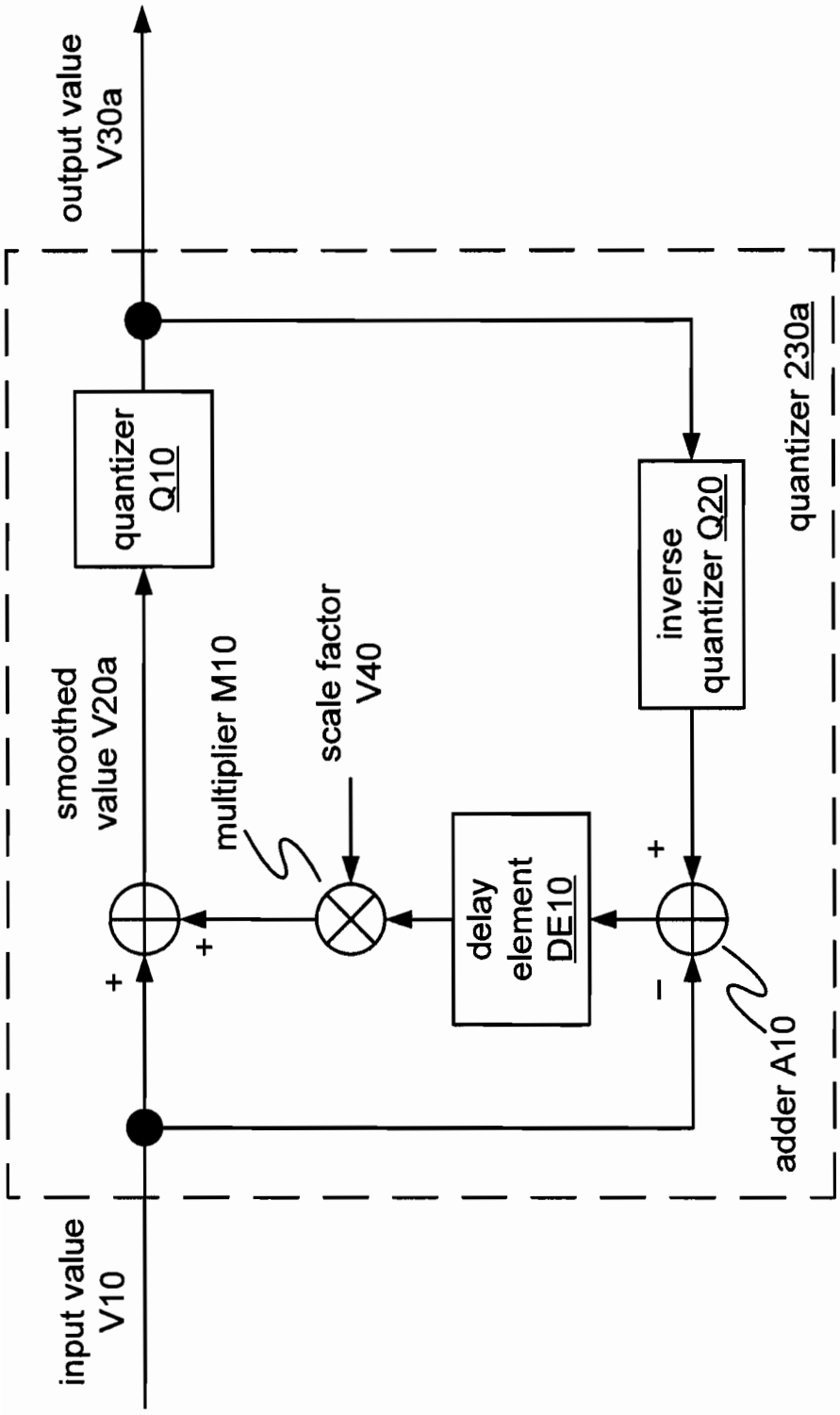

output value
V30a
quantizer
Q10
quantizer 230a
inverse
quantizer Q20
smoothed
value V20a
multiplier M10
scale factor
V40
delay
element
DE10
+
+
+
–
adder A10
input value
V10

FIG. 5

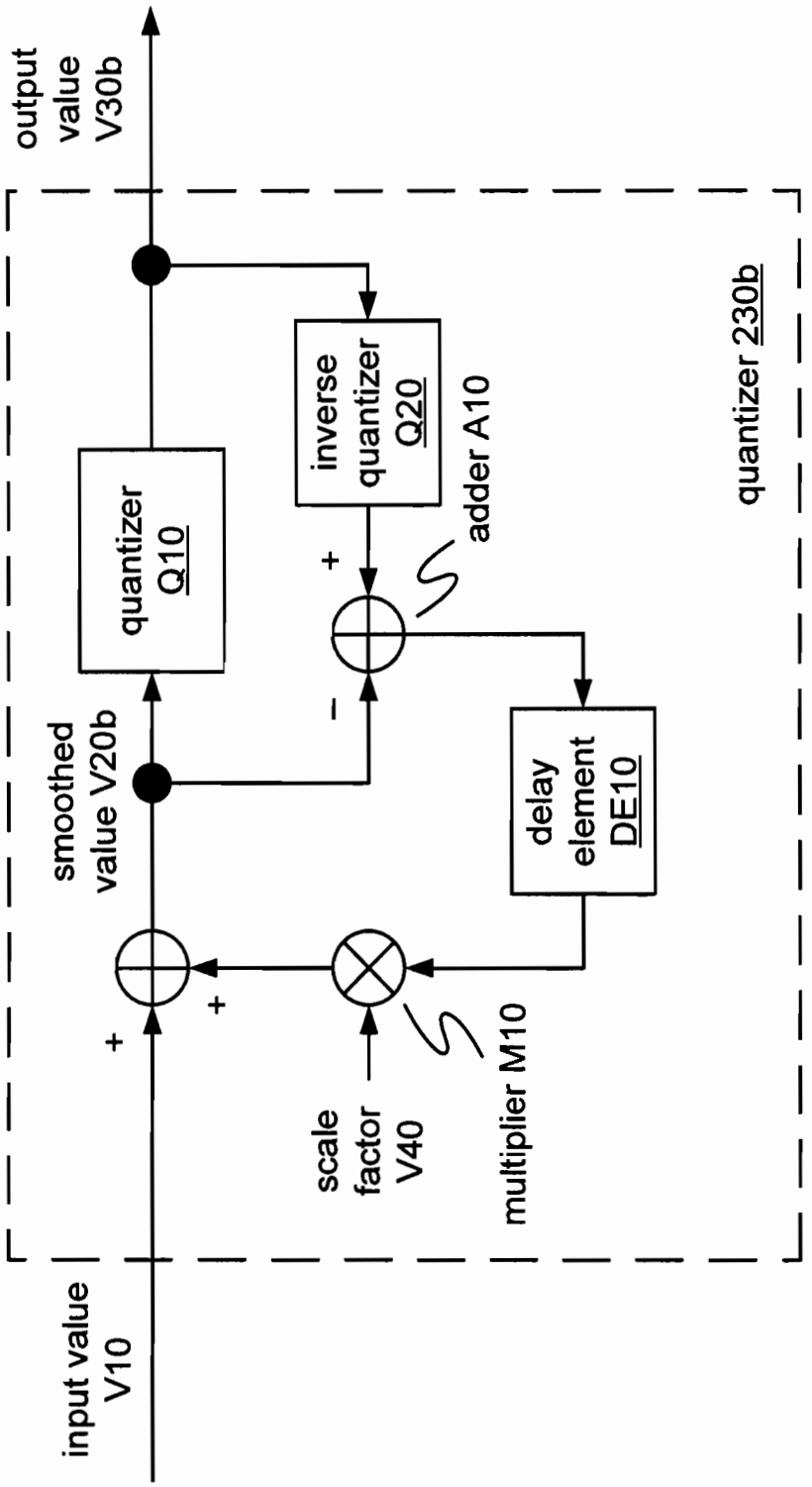
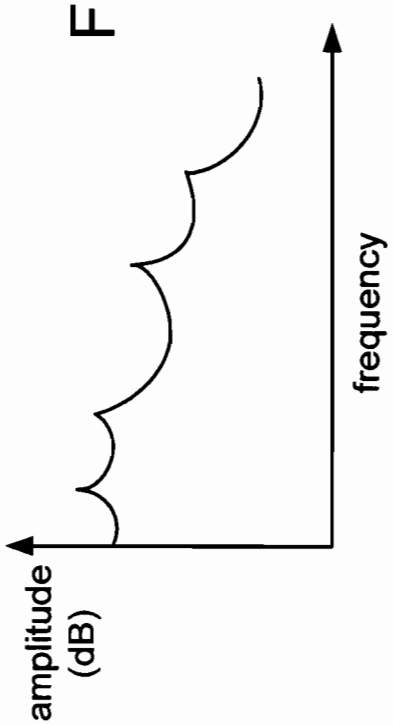

output value V30b
quantizer Q10
inverse quantizer Q20
adder A10
quantizer 230b
smoothed value V20b
delay element DE10
input value V10
scale factor V40
multiplier M10
+
+
+
−

FIG. 6

FIG. 7a


amplitude
(dB)
frequency

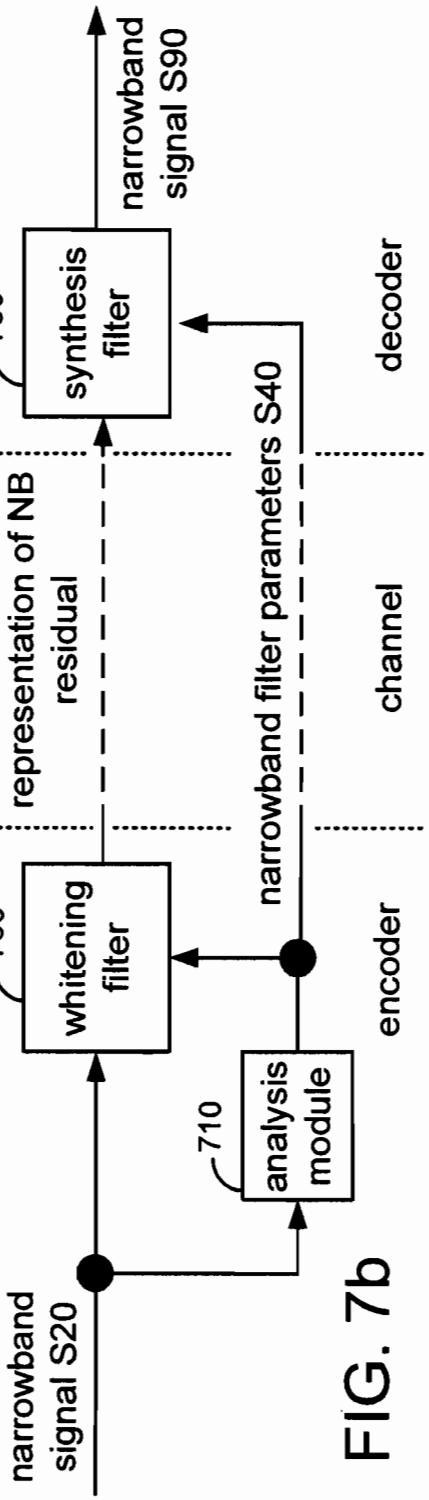

narrowband
signal S20
710
analysis
module
760
whitening
filter
representation of NB
residual
narrowband filter parameters S40
780
synthesis
filter
narrowband
signal S90
encoder
channel
decoder

FIG. 7b

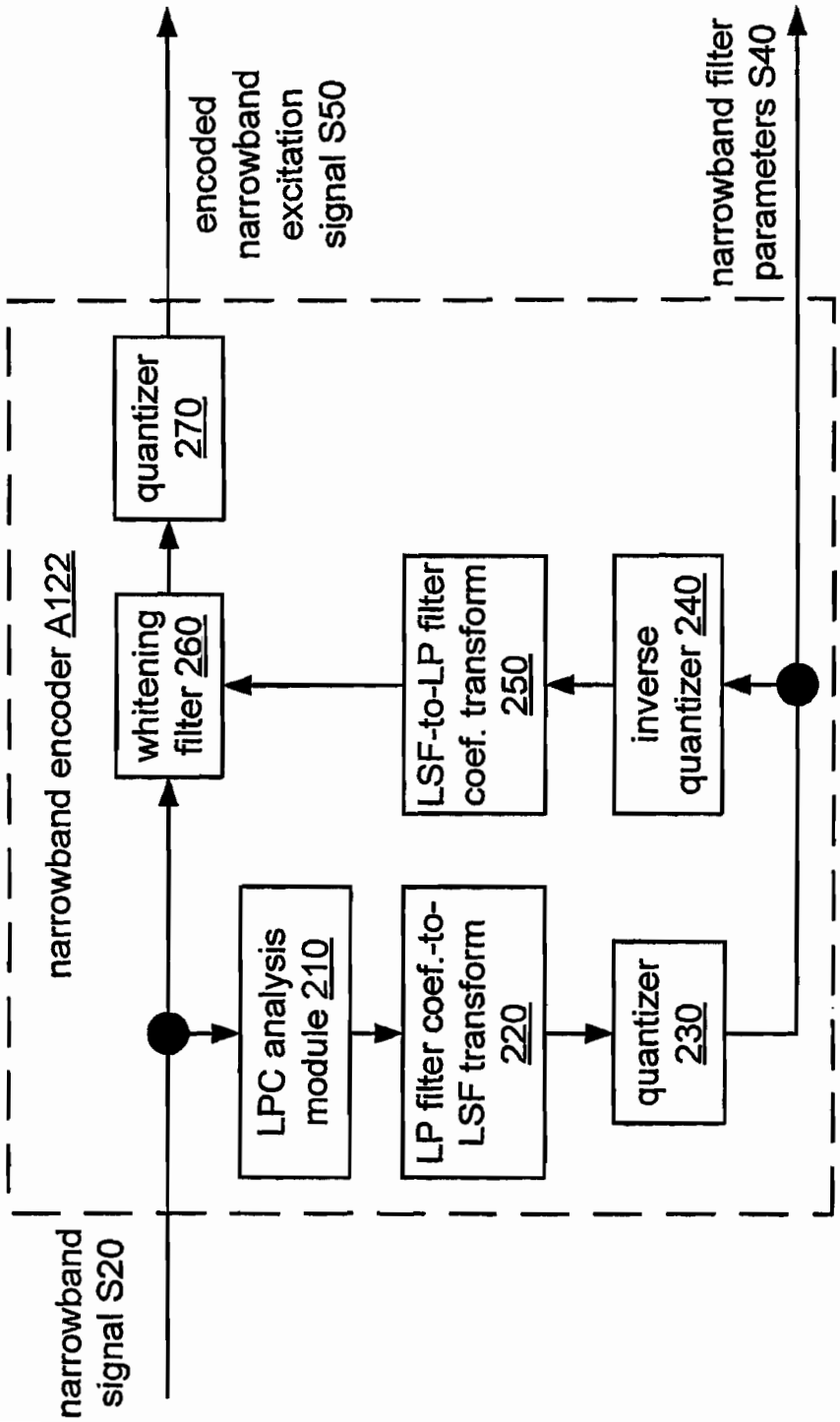

narrowband signal S20
narrowband encoder A122
LPC analysis module 210
LP filter coef.-to-LSF transform 220
quantizer 230
LSF-to-LP filter coef. transform 250
inverse quantizer 240
whitening filter 260
quantizer 270
encoded narrowband excitation signal S50
narrowband filter parameters S40

FIG. 8

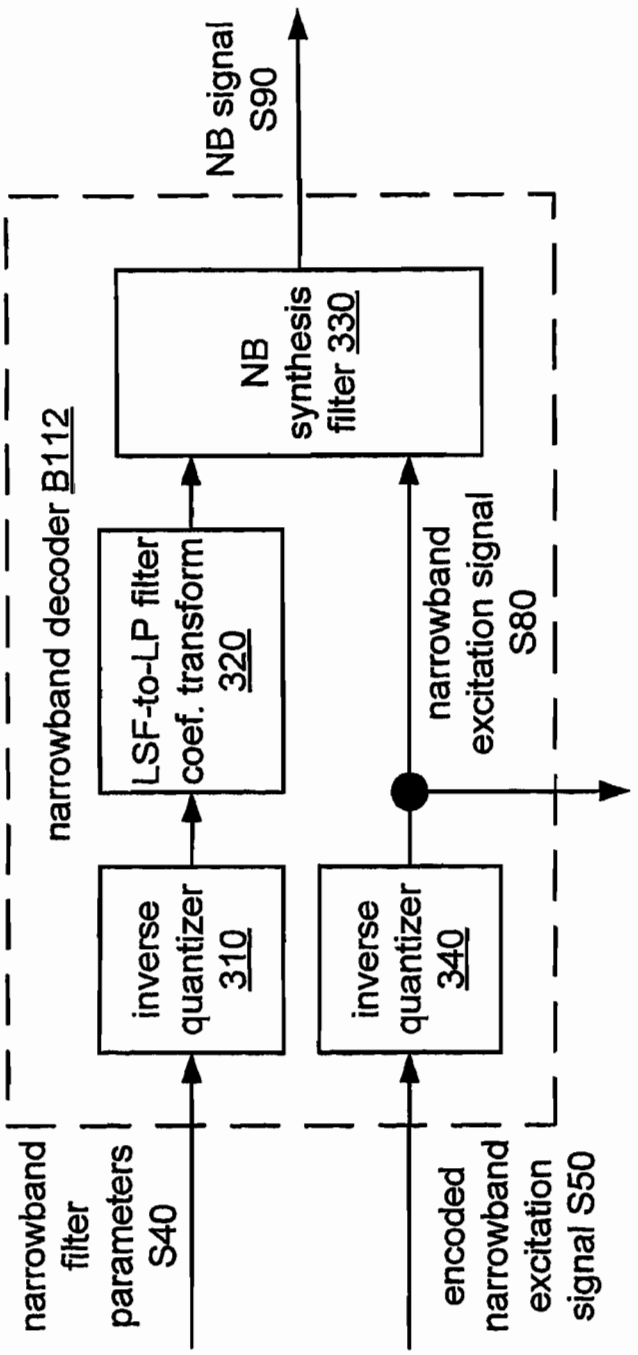

narrowband decoder B112
narrowband filter parameters S40
encoded narrowband excitation signal S50
inverse quantizer 310
LSF-to-LP filter coef. transform 320
inverse quantizer 340
narrowband excitation signal S80
NB synthesis filter 330
NB signal S90

FIG. 9

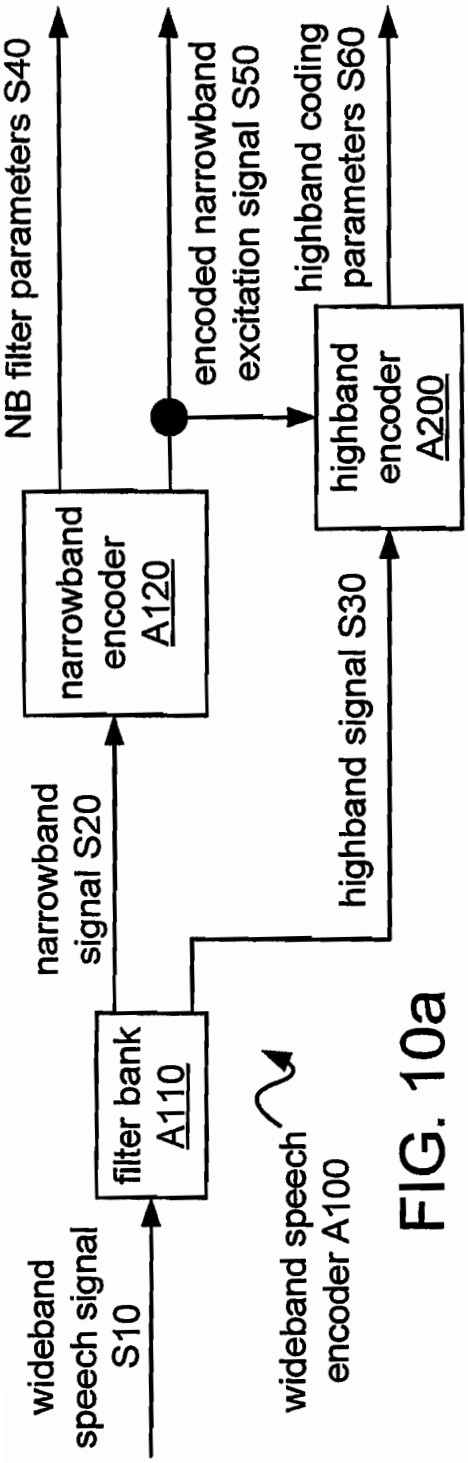


FIG. 10a

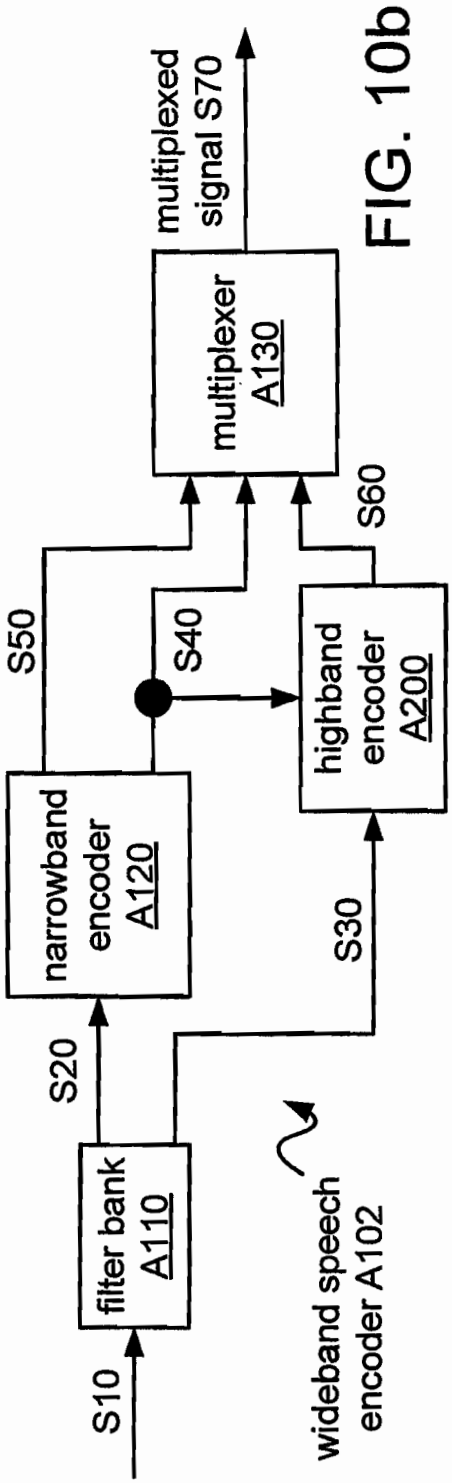


FIG. 10b

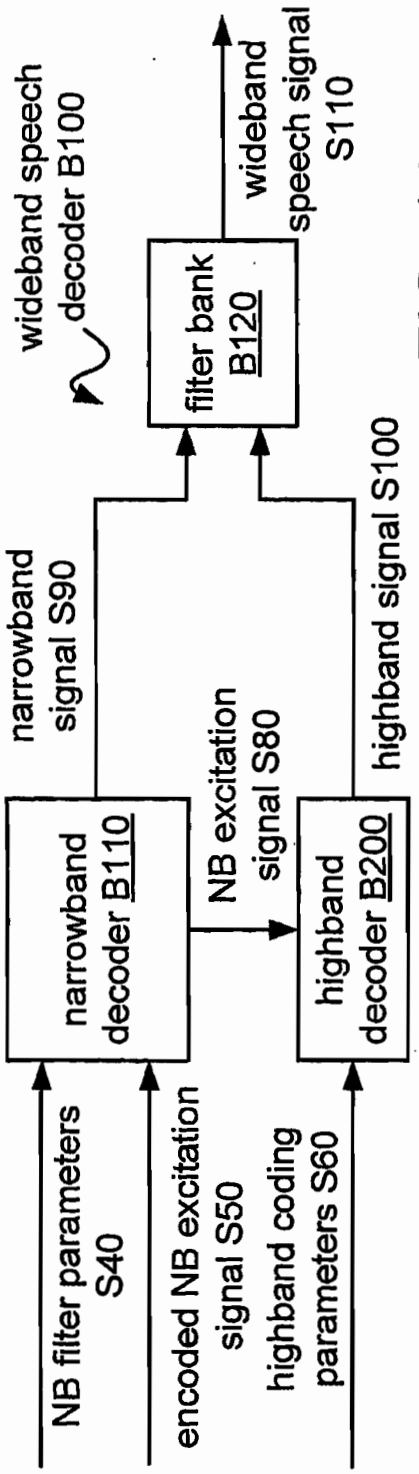


FIG. 11a

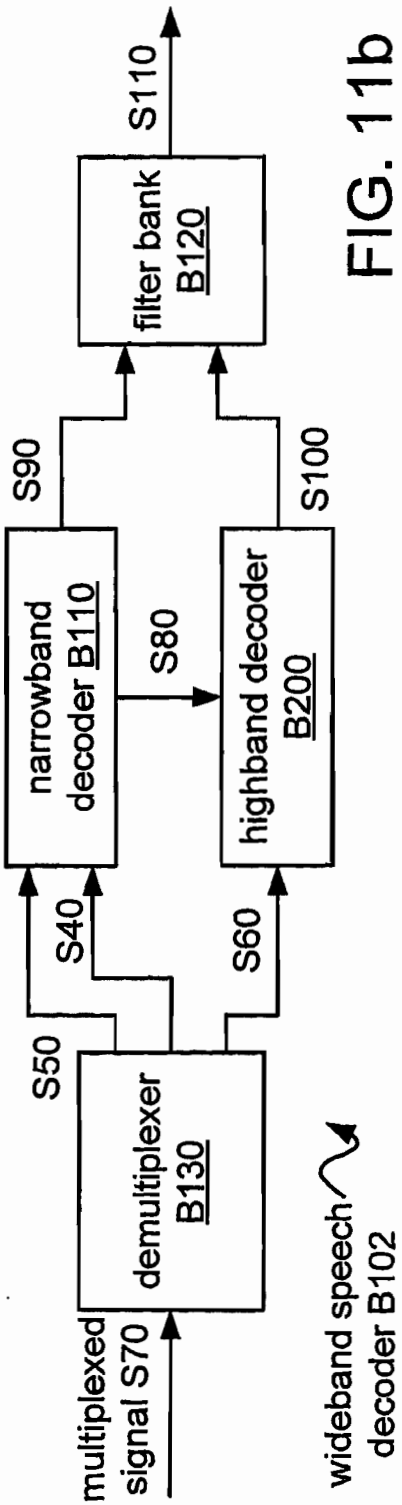


FIG. 11b