FIG. 1

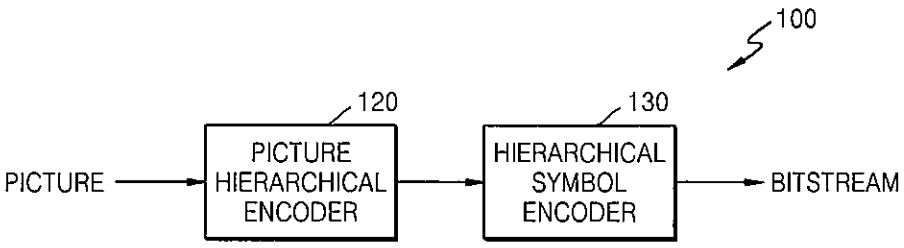

100
120
130
PICTURE
PICTURE HIERARCHICAL ENCODER
HIERARCHICAL SYMBOL ENCODER
BITSTREAM

FIG. 2

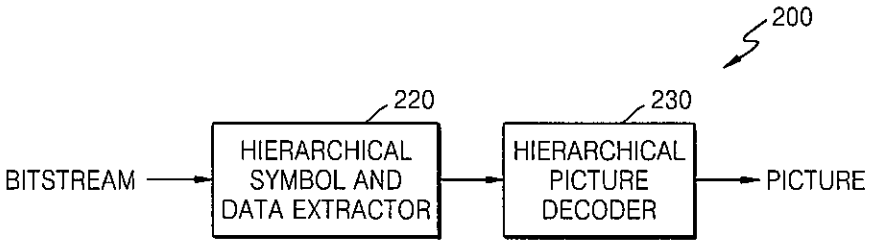

200
220
230
BITSTREAM
HIERARCHICAL SYMBOL AND DATA EXTRACTOR
HIERARCHICAL PICTURE DECODER
PICTURE

FIG. 3

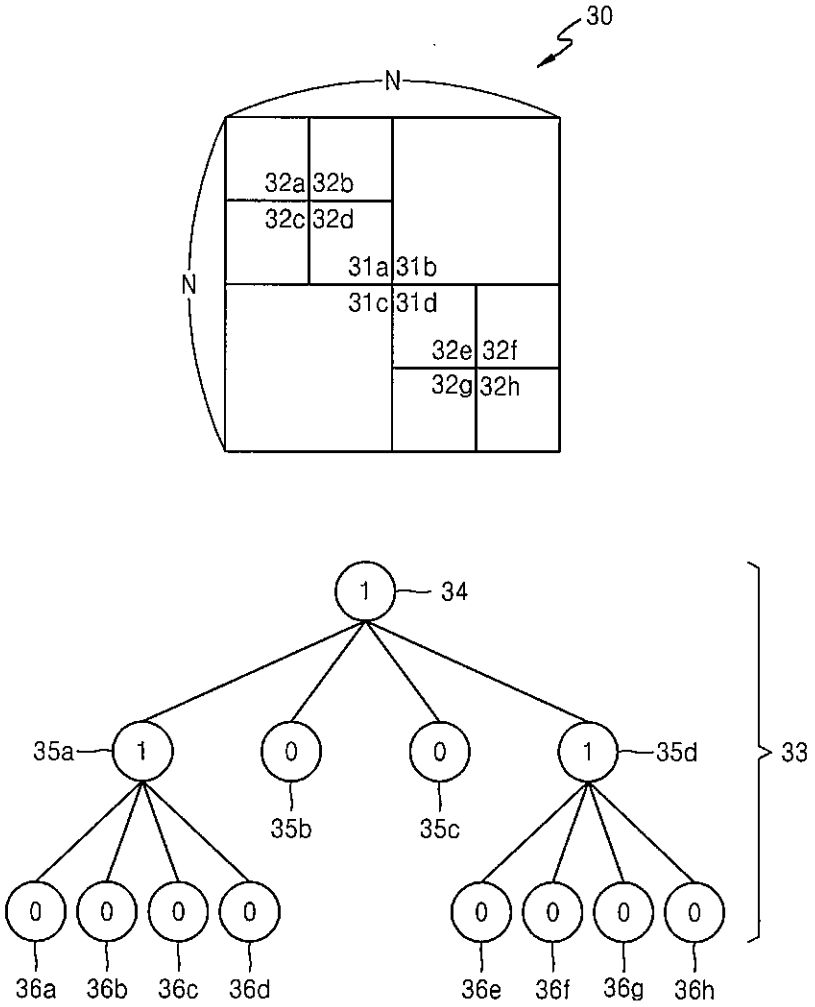

30
N
N
32a
32b
32c
32d
31a
31b
31c
31d
32e
32f
32g
32h
1
34
35a
1
0
0
1
35d
33
35b
35c
0
0
0
0
0
0
0
0
36a
36b
36c
36d
36e
36f
36g
36h

FIG. 4

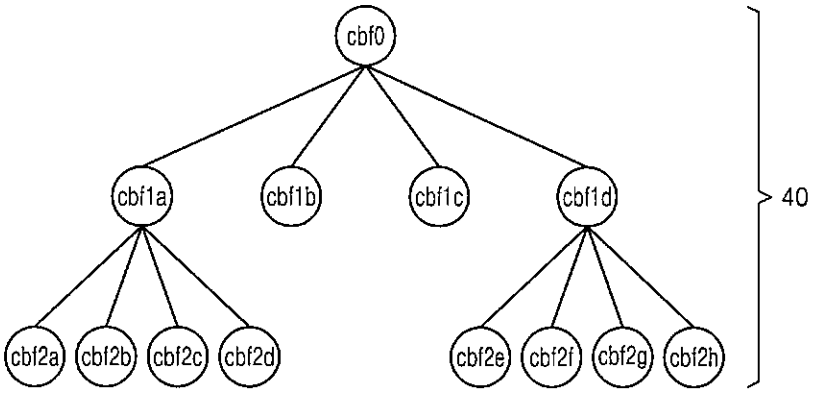

cbf0
cbf1a
cbf1b
cbf1c
cbf1d
cbf2a
cbf2b
cbf2c
cbf2d
cbf2e
cbf2f
cbf2g
cbf2h
40

FIG. 5

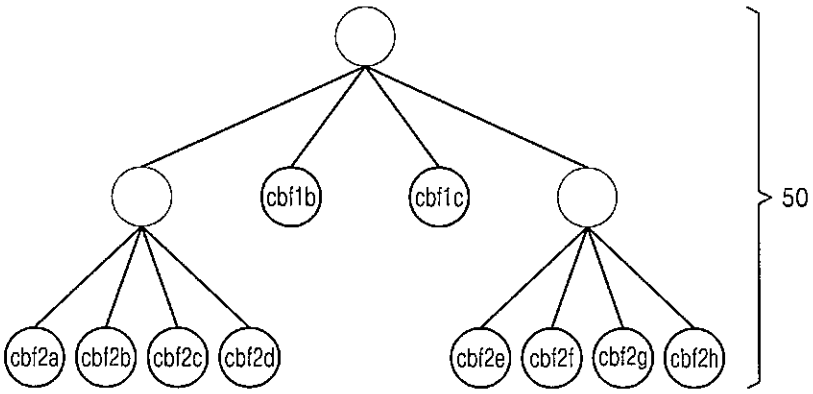

cbf1b
cbf1c
cbf2a
cbf2b
cbf2c
cbf2d
cbf2e
cbf2f
cbf2g
cbf2h
50

FIG. 6

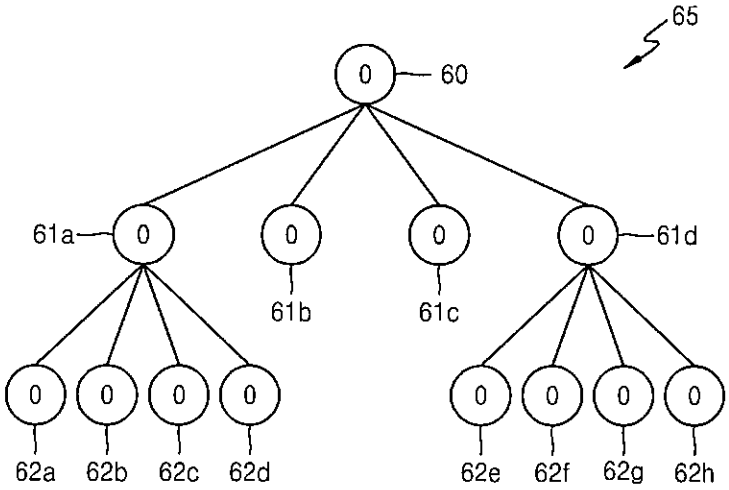

65
0
60
61a
0
0
0
0
61d
61b
61c
0
0
0
0
0
0
0
0
62a
62b
62c
62d
62e
62f
62g
62h

FIG. 7

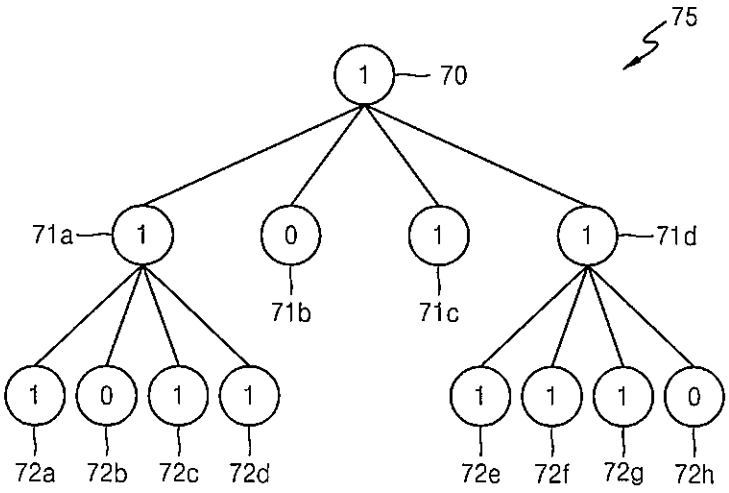

75
1
70
71a
1
0
1
1
71d
71b
71c
1
0
1
1
1
1
1
0
72a
72b
72c
72d
72e
72f
72g
72h

FIG. 8

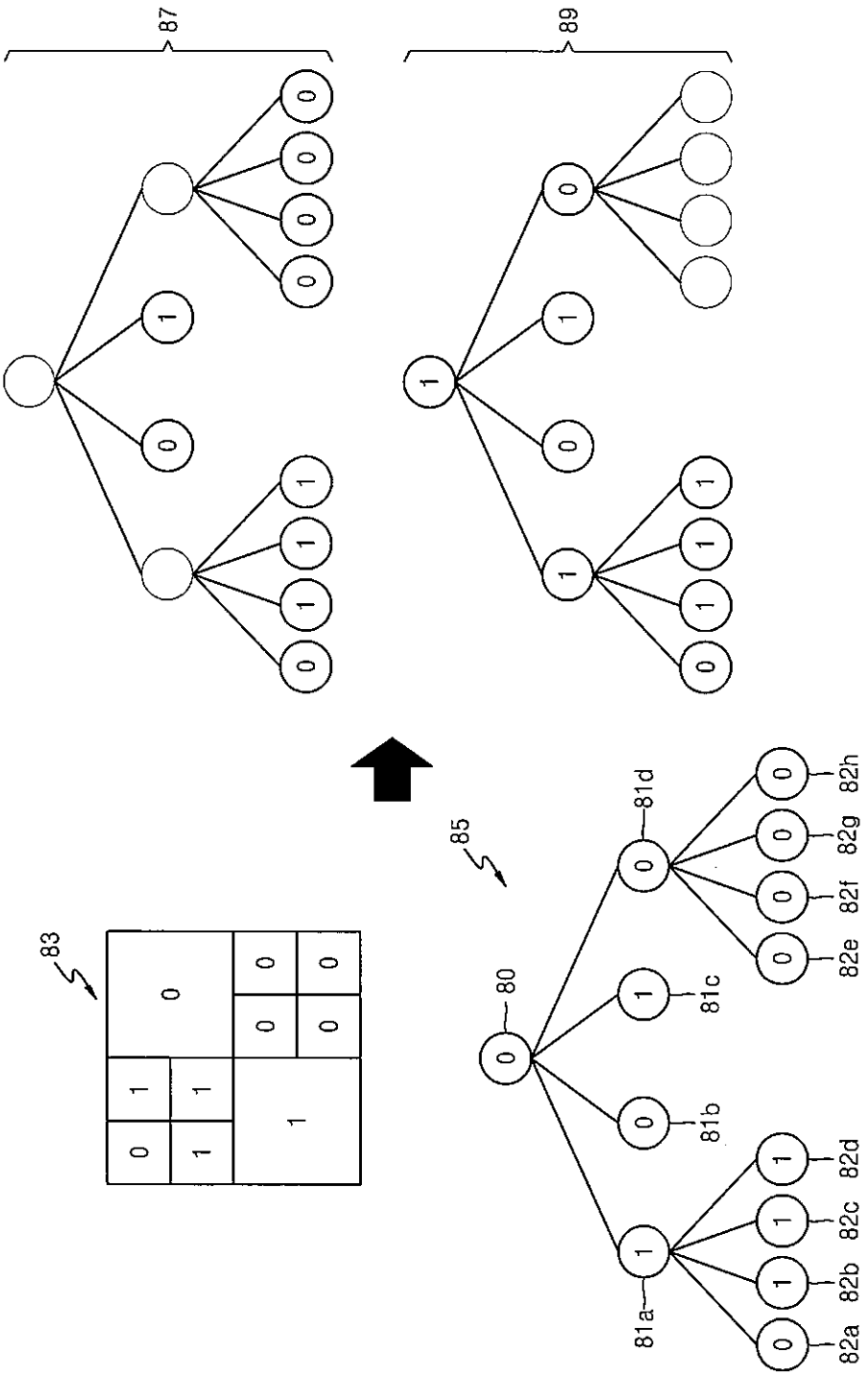


FIG. 9

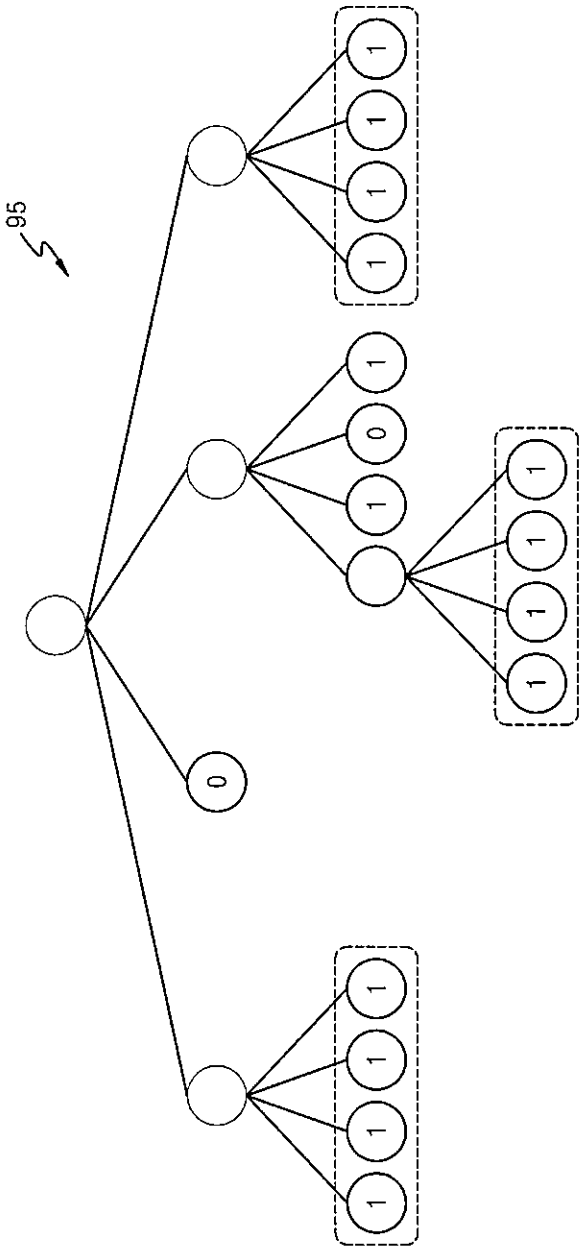


FIG. 10

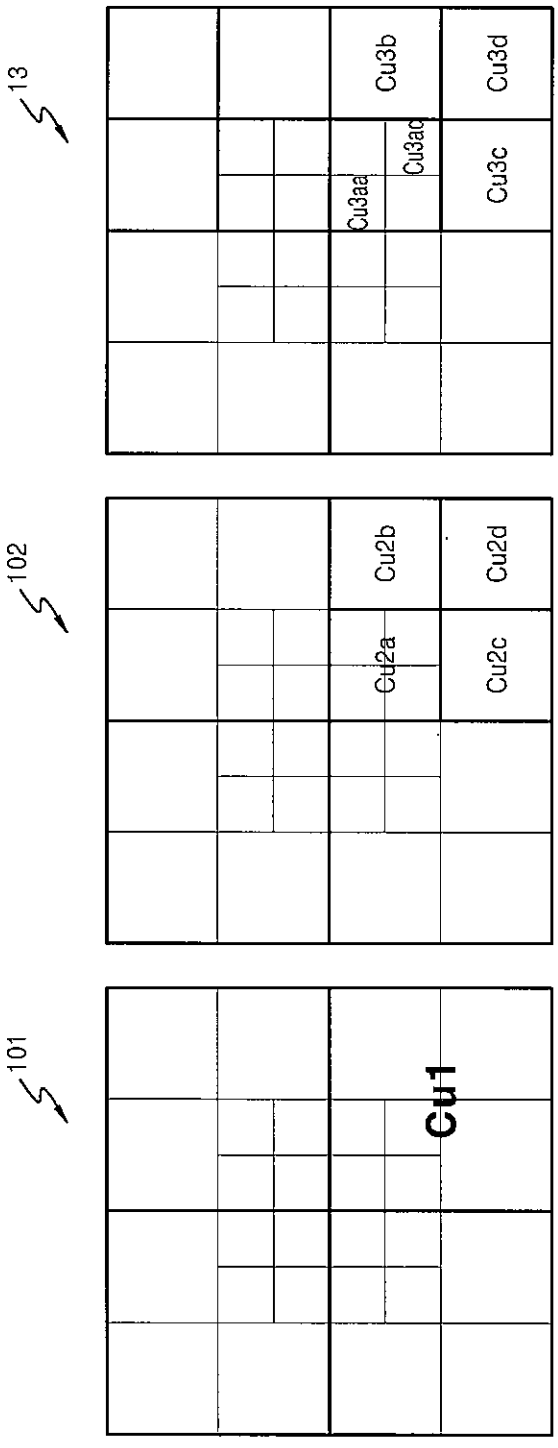


FIG. 11

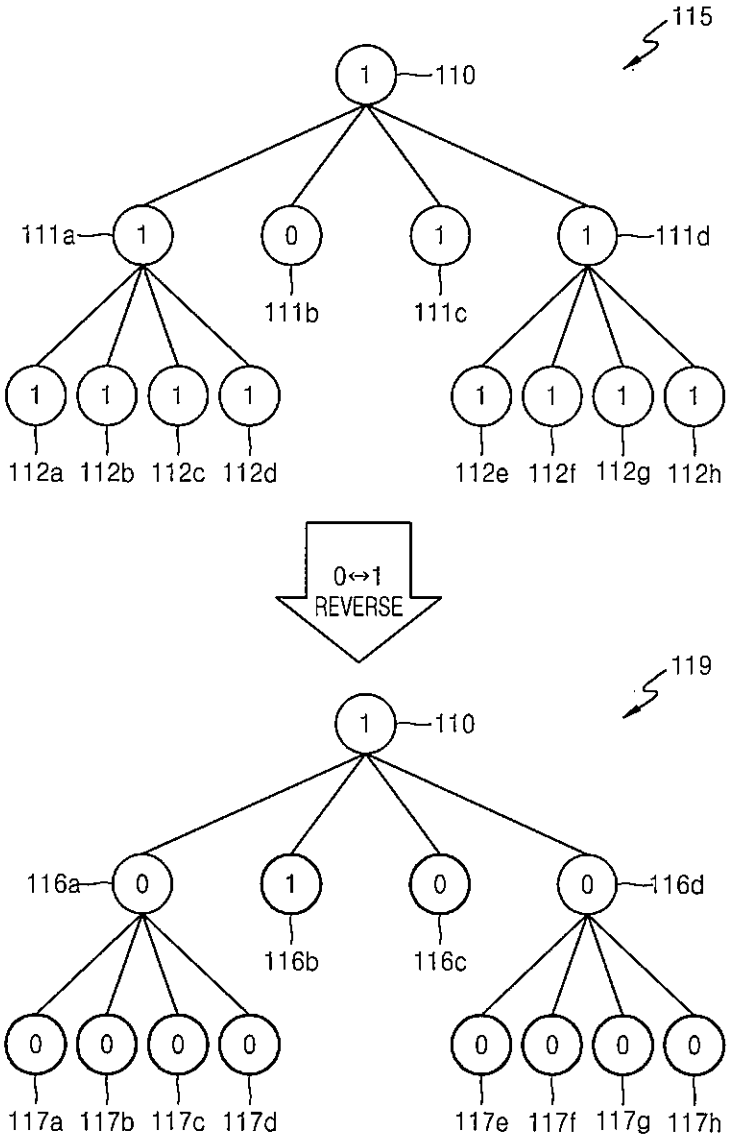

115
1
110
111a
1
0
1
1
111d
111b
111c
1
1
1
1
1
1
1
1
112a
112b
112c
112d
112e
112f
112g
112h
0↔1
REVERSE
119
1
110
116a
0
1
0
0
116d
116b
116c
0
0
0
0
0
0
0
0
117a
117b
117c
117d
117e
117f
117g
117h

FIG. 12

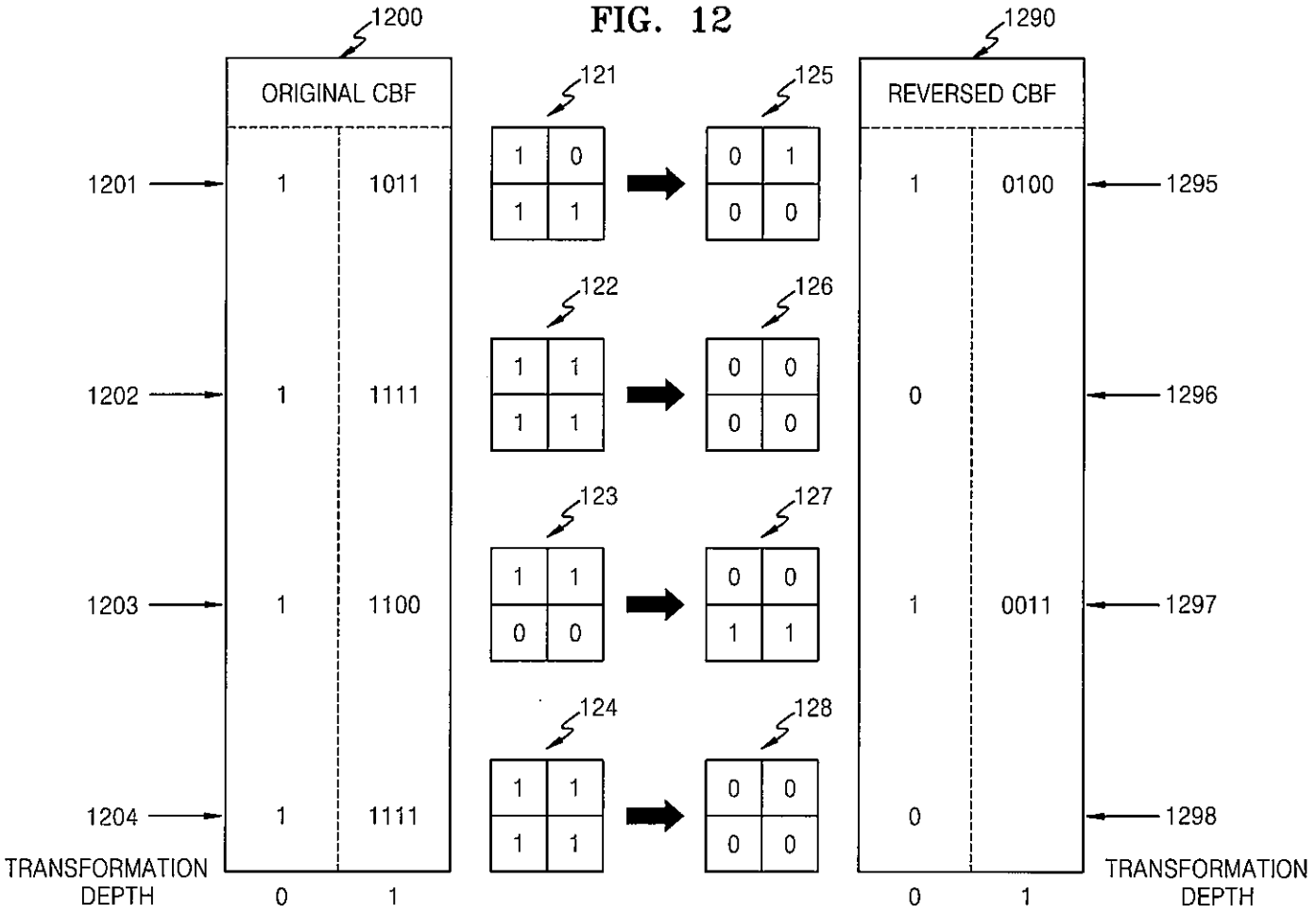

1200
ORIGINAL CBF
1201
1202
1203
1204
1 1011
1 1111
1 1100
1 1111
TRANSFORMATION DEPTH
0 1
121
122
123
124
125
126
127
128
1290
REVERSED CBF
1 0100
0 1296
1 0011
0 1298
1295
1297
TRANSFORMATION DEPTH
0 1

FIG. 13

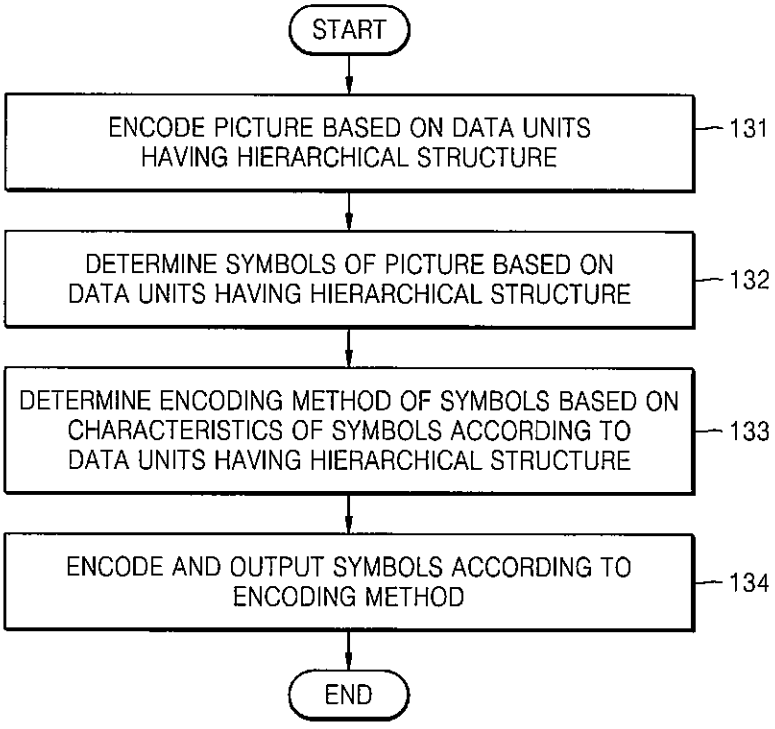

START
ENCODE PICTURE BASED ON DATA UNITS HAVING HIERARCHICAL STRUCTURE
131
DETERMINE SYMBOLS OF PICTURE BASED ON DATA UNITS HAVING HIERARCHICAL STRUCTURE
132
DETERMINE ENCODING METHOD OF SYMBOLS BASED ON CHARACTERISTICS OF SYMBOLS ACCORDING TO DATA UNITS HAVING HIERARCHICAL STRUCTURE
133
ENCODE AND OUTPUT SYMBOLS ACCORDING TO ENCODING METHOD
134
END

FIG. 14

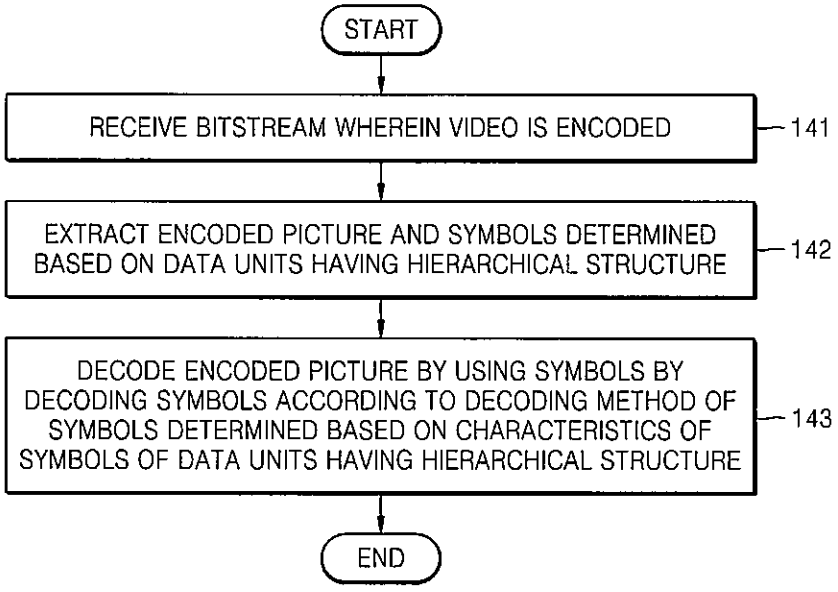

START
RECEIVE BITSTREAM WHEREIN VIDEO IS ENCODED
141
EXTRACT ENCODED PICTURE AND SYMBOLS DETERMINED BASED ON DATA UNITS HAVING HIERARCHICAL STRUCTURE
142
DECODE ENCODED PICTURE BY USING SYMBOLS BY DECODING SYMBOLS ACCORDING TO DECODING METHOD OF SYMBOLS DETERMINED BASED ON CHARACTERISTICS OF SYMBOLS OF DATA UNITS HAVING HIERARCHICAL STRUCTURE
143
END

FIG. 15

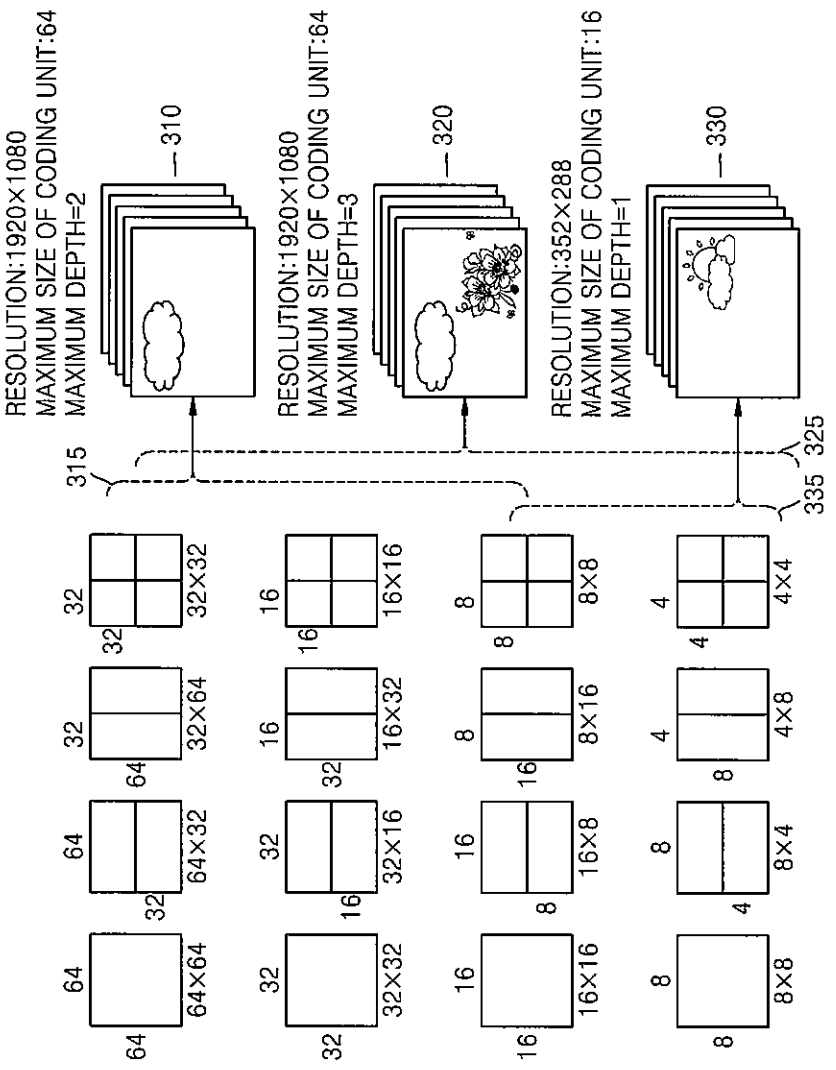

RESOLUTION:1920×1080
MAXIMUM SIZE OF CODING UNIT:64
MAXIMUM DEPTH=2
310
RESOLUTION:1920×1080
MAXIMUM SIZE OF CODING UNIT:64
MAXIMUM DEPTH=3
320
RESOLUTION:352×288
MAXIMUM SIZE OF CODING UNIT:16
MAXIMUM DEPTH=1
330
315
325
335
64×64
64×32
32×64
32×32
32×32
32×16
16×32
16×16
16×16
16×8
8×16
8×8
8×8
8×4
4×8
4×4

FIG. 16

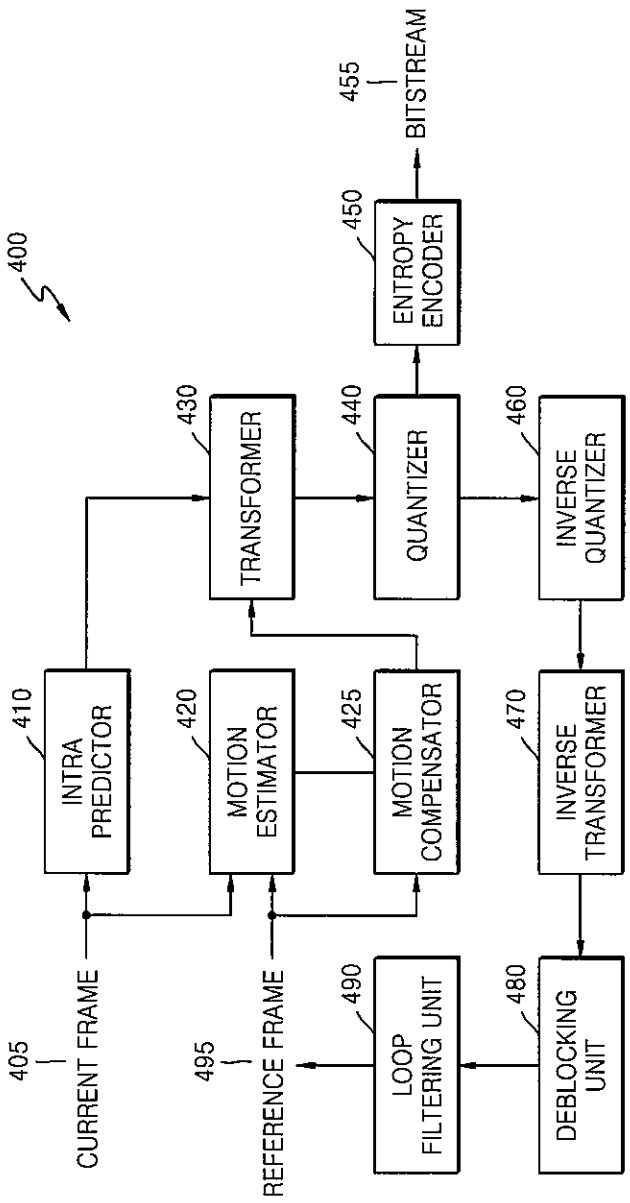

400
405
CURRENT FRAME
410
INTRA PREDICTOR
420
MOTION ESTIMATOR
425
MOTION COMPENSATOR
430
TRANSFORMER
440
QUANTIZER
450
ENTROPY ENCODER
455
BITSTREAM
460
INVERSE QUANTIZER
470
INVERSE TRANSFORMER
480
DEBLOCKING UNIT
490
LOOP FILTERING UNIT
495
REFERENCE FRAME

FIG. 17

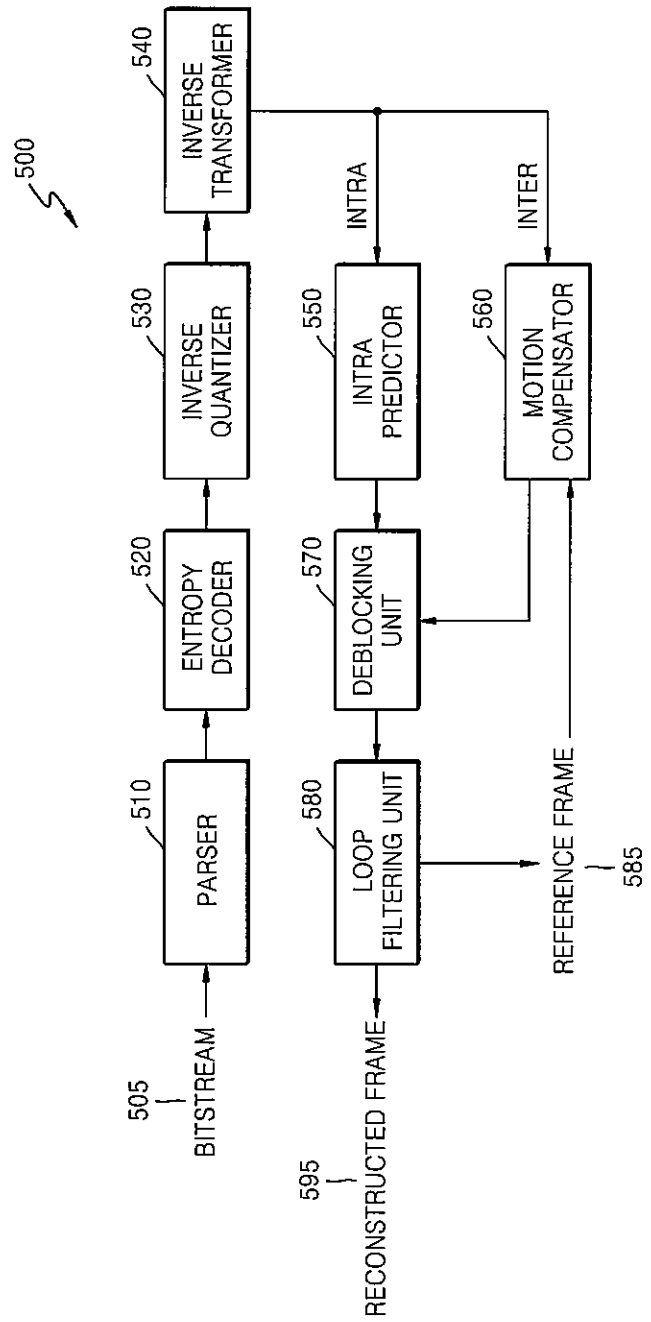

500
505
BITSTREAM
510
PARSER
520
ENTROPY DECODER
530
INVERSE QUANTIZER
540
INVERSE TRANSFORMER
INTRA
550
INTRA PREDICTOR
570
DEBLOCKING UNIT
580
LOOP FILTERING UNIT
595
RECONSTRUCTED FRAME
INTER
560
MOTION COMPENSATOR
585
REFERENCE FRAME

FIG. 18

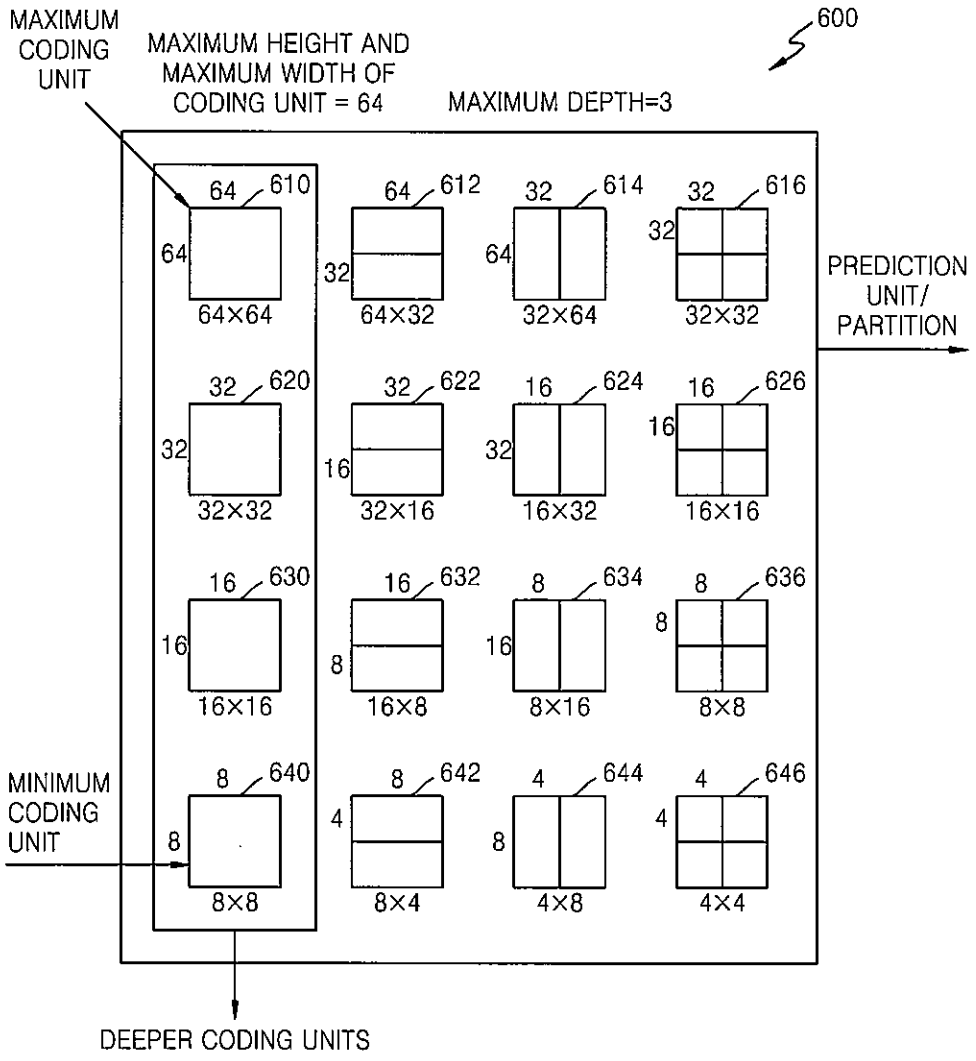

MAXIMUM CODING UNIT
MAXIMUM HEIGHT AND MAXIMUM WIDTH OF CODING UNIT = 64
MAXIMUM DEPTH=3
600
64 610
64
64×64
64 612
32
64×32
32 614
64
32×64
32 616
32
32×32
PREDICTION UNIT/ PARTITION
32 620
32
32×32
32 622
16
32×16
16 624
32
16×32
16 626
16
16×16
16 630
16
16×16
16 632
8
16×8
8 634
16
8×16
8 636
8
8×8
MINIMUM CODING UNIT
8 640
8
8×8
8 642
4
8×4
4 644
8
4×8
4 646
4
4×4
DEEPER CODING UNITS

FIG. 19

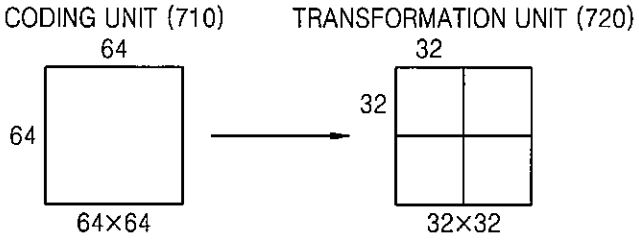
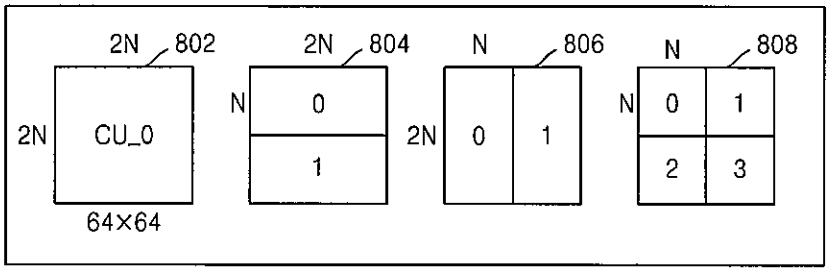
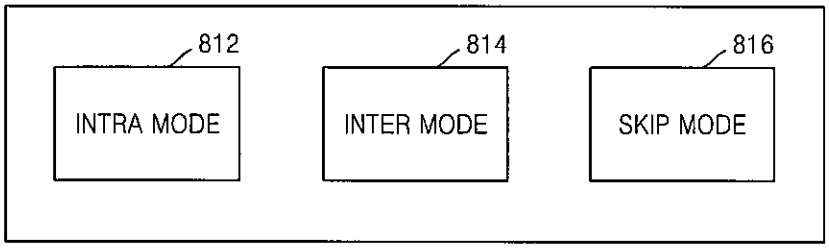


FIG. 20

'PARTITION TYPE'-INFORMATION (800)



'PREDICTION MODE'-INFORMATION (810)



'SIZE OF TRANSFORMATION UNIT'-INFORMATION (820)

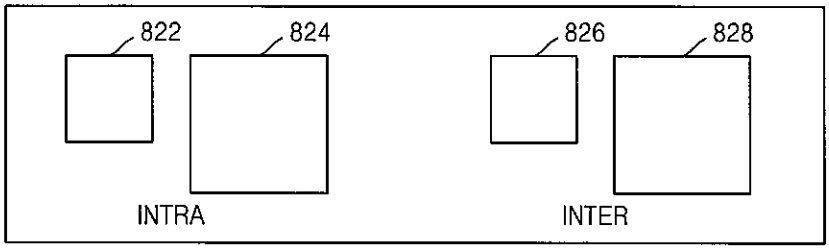


FIG. 21

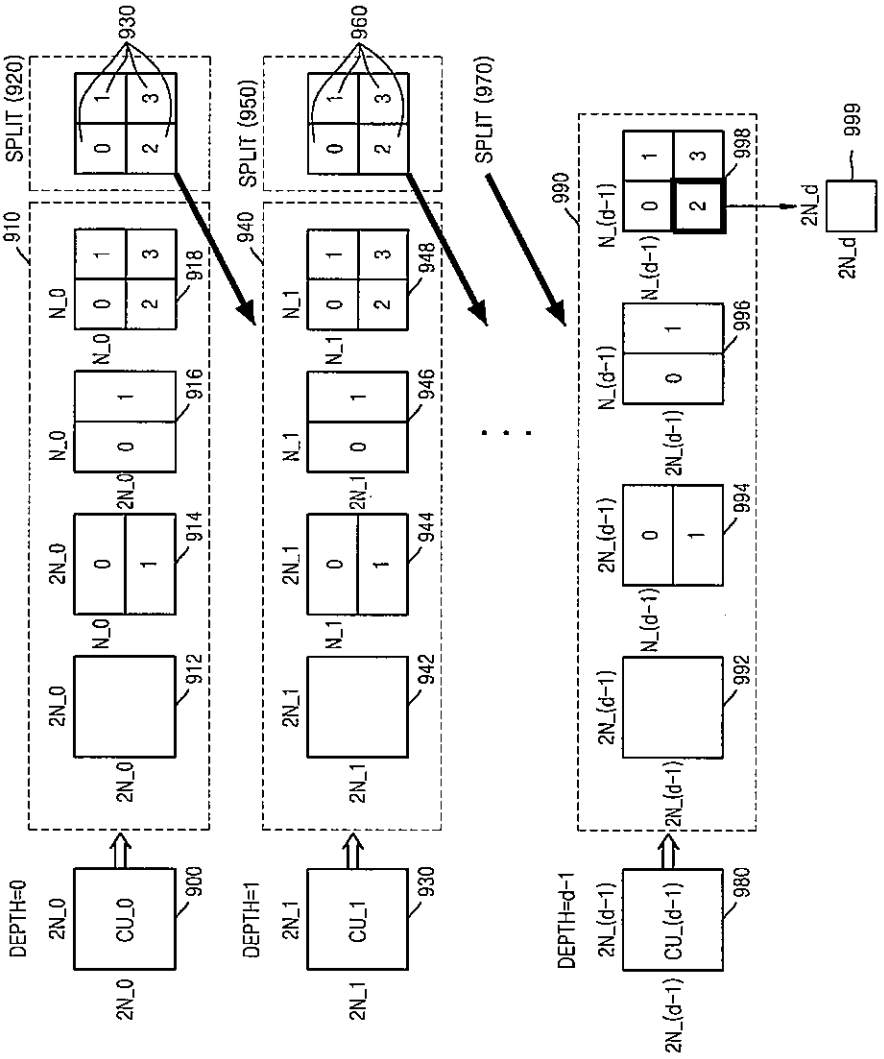
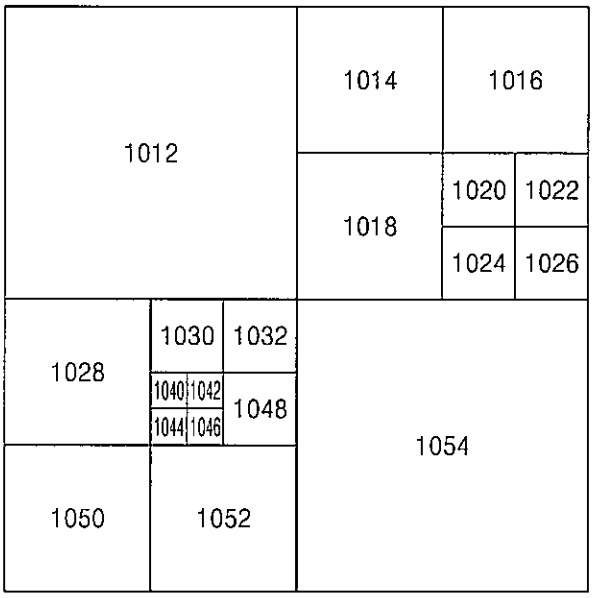

DEPTH=0
DEPTH=1
DEPTH=d-1
CU_0
CU_1
CU_(d-1)
SPLIT (920)
SPLIT (950)
SPLIT (970)
910
940
990
930
960
998
999
2N_0
2N_1
2N_(d-1)
2N_d
N_0
N_1
N_(d-1)
900
912
914
916
918
930
942
944
946
948
960
980
992
994
996
998
999

FIG. 22



CODING UNITS (1010)

FIG. 23

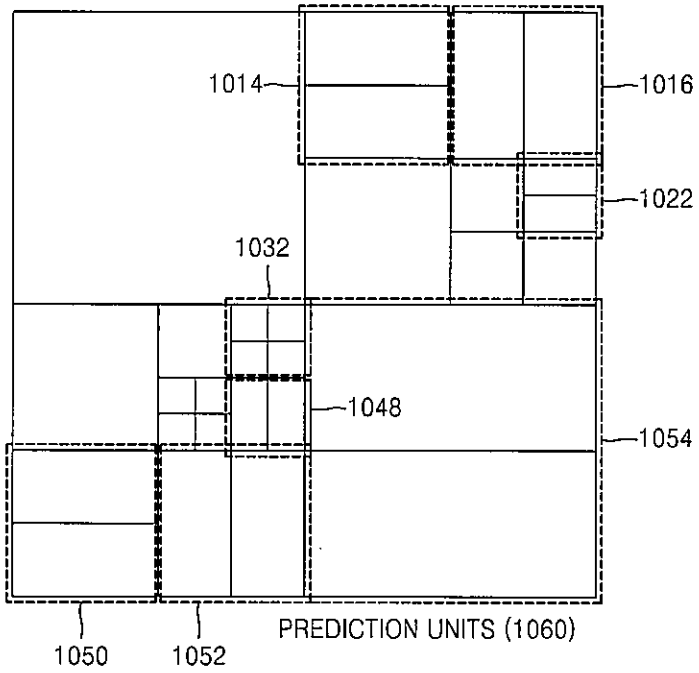

1014
1016
1022
1032
1048
1054
1050
1052
PREDICTION UNITS (1060)

FIG. 24

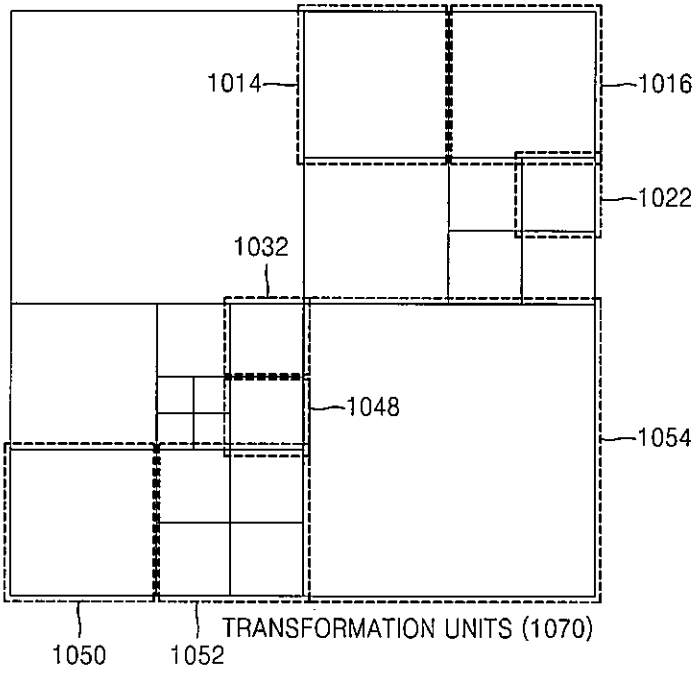

1014
1016
1022
1032
1048
1054
1050
1052
TRANSFORMATION UNITS (1070)

FIG. 25

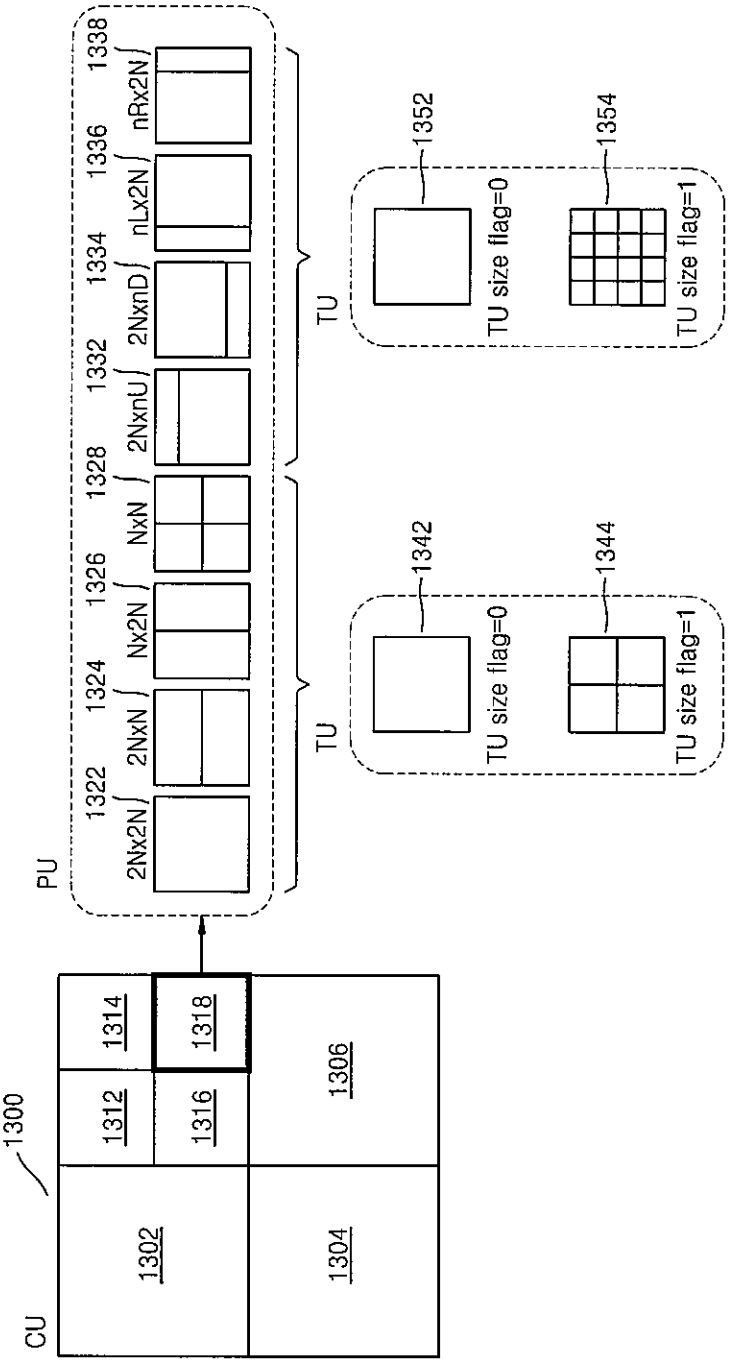

CU
1300
1302
1304
1306
1312
1314
1316
1318
PU
2Nx2N
1322
2NxN
1324
Nx2N
1326
NxN
1328
2NxnU
1332
2NxnD
1334
nLx2N
1336
nRx2N
1338
TU
TU
1342
TU size flag=0
1344
TU size flag=1
1352
TU size flag=0
1354
TU size flag=1

FIG. 26

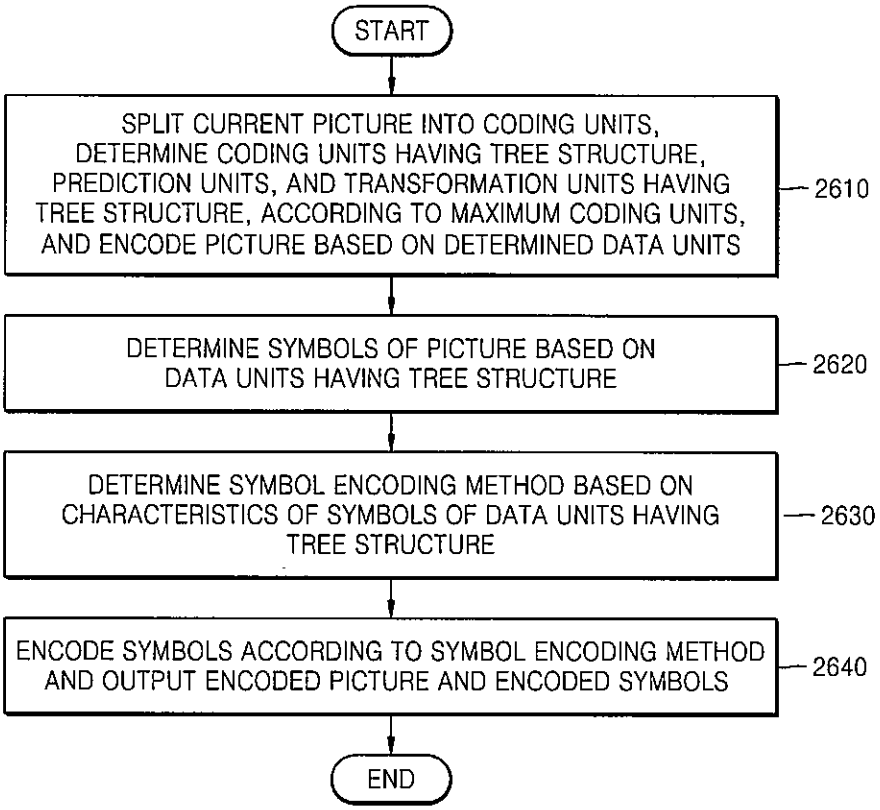
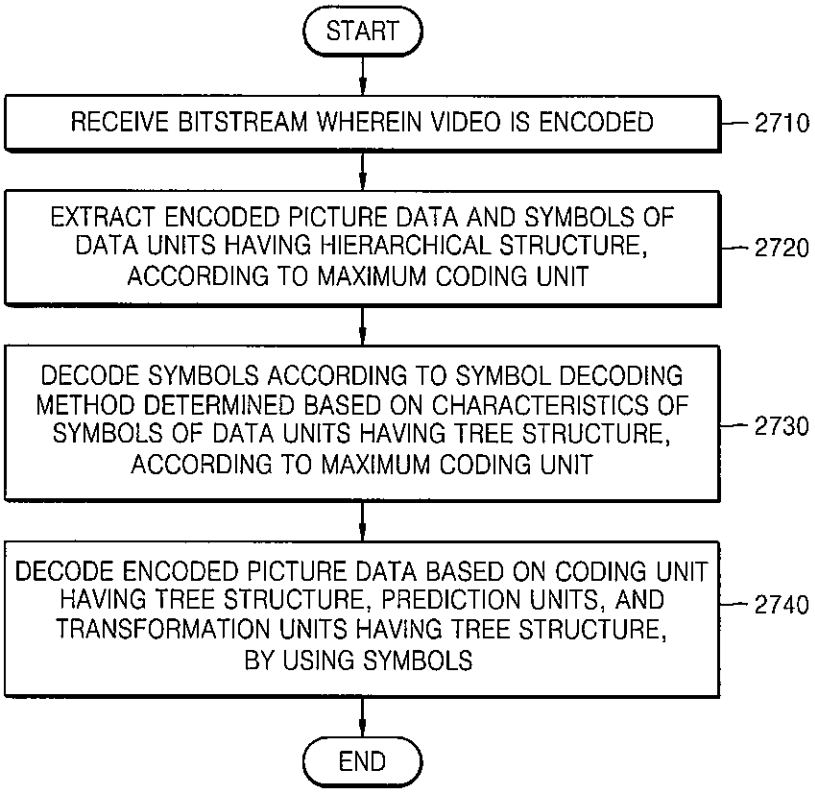

START
SPLIT CURRENT PICTURE INTO CODING UNITS, DETERMINE CODING UNITS HAVING TREE STRUCTURE, PREDICTION UNITS, AND TRANSFORMATION UNITS HAVING TREE STRUCTURE, ACCORDING TO MAXIMUM CODING UNITS, AND ENCODE PICTURE BASED ON DETERMINED DATA UNITS
2610
DETERMINE SYMBOLS OF PICTURE BASED ON DATA UNITS HAVING TREE STRUCTURE
2620
DETERMINE SYMBOL ENCODING METHOD BASED ON CHARACTERISTICS OF SYMBOLS OF DATA UNITS HAVING TREE STRUCTURE
2630
ENCODE SYMBOLS ACCORDING TO SYMBOL ENCODING METHOD AND OUTPUT ENCODED PICTURE AND ENCODED SYMBOLS
2640
END

FIG. 27


START
RECEIVE BITSTREAM WHEREIN VIDEO IS ENCODED
2710
EXTRACT ENCODED PICTURE DATA AND SYMBOLS OF DATA UNITS HAVING HIERARCHICAL STRUCTURE, ACCORDING TO MAXIMUM CODING UNIT
2720
DECODE SYMBOLS ACCORDING TO SYMBOL DECODING METHOD DETERMINED BASED ON CHARACTERISTICS OF SYMBOLS OF DATA UNITS HAVING TREE STRUCTURE, ACCORDING TO MAXIMUM CODING UNIT
2730
DECODE ENCODED PICTURE DATA BASED ON CODING UNIT HAVING TREE STRUCTURE, PREDICTION UNITS, AND TRANSFORMATION UNITS HAVING TREE STRUCTURE, BY USING SYMBOLS
2740
END