FIG. 1

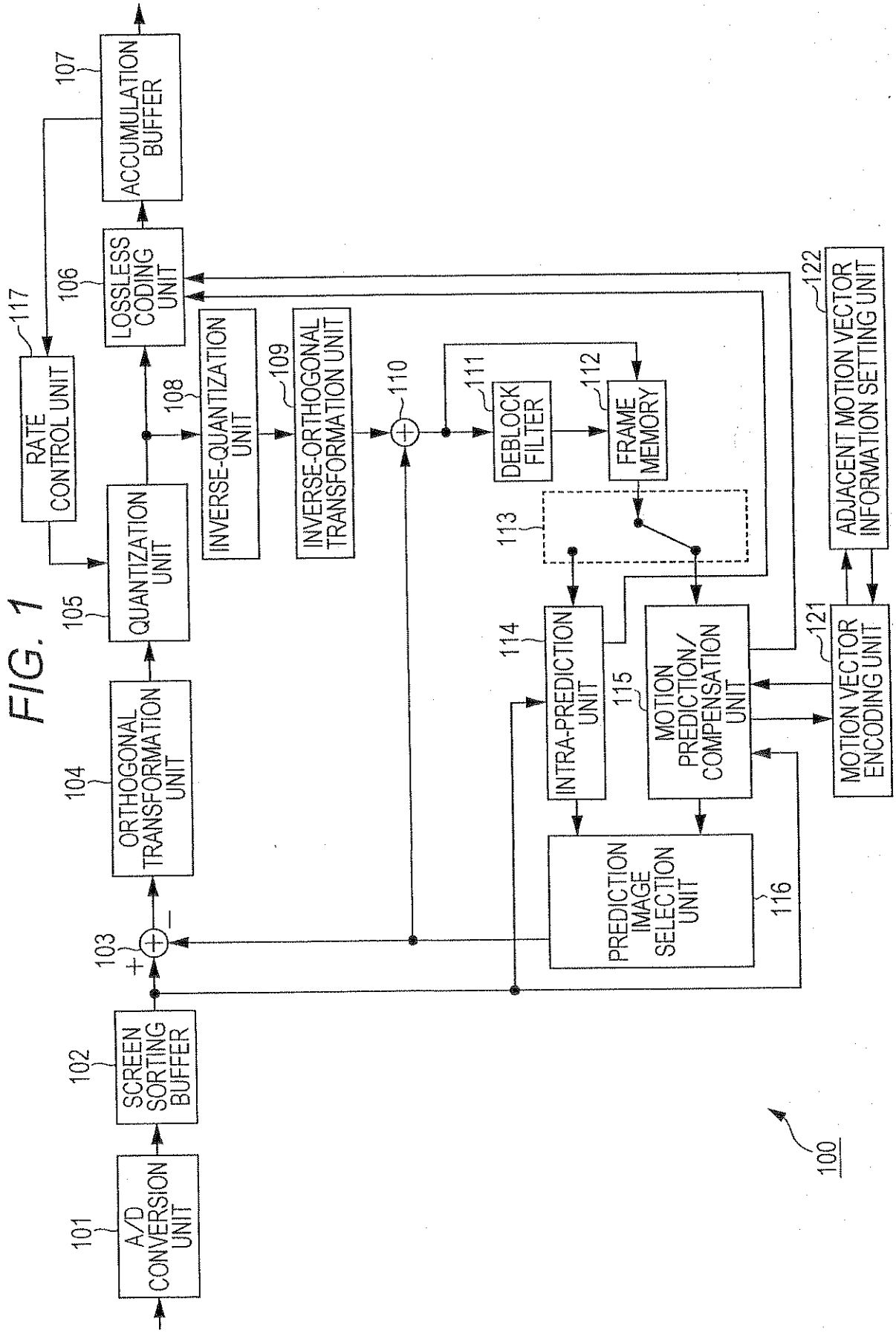

A/D CONVERSION UNIT
101
SCREEN SORTING BUFFER
102
103
ORTHOGONAL TRANSFORMATION UNIT
104
QUANTIZATION UNIT
105
LOSSLESS CODING UNIT
106
ACCUMULATION BUFFER
107
108
INVERSE-QUANTIZATION UNIT
109
INVERSE-ORTHOGONAL TRANSFORMATION UNIT
110
DEBLOCK FILTER
111
FRAME MEMORY
112
113
INTRA-PREDICTION UNIT
114
MOTION PREDICTION/ COMPENSATION UNIT
115
PREDICTION IMAGE SELECTION UNIT
116
RATE CONTROL UNIT
117
MOTION VECTOR ENCODING UNIT
121
ADJACENT MOTION VECTOR INFORMATION SETTING UNIT
122
100

FIG. 2

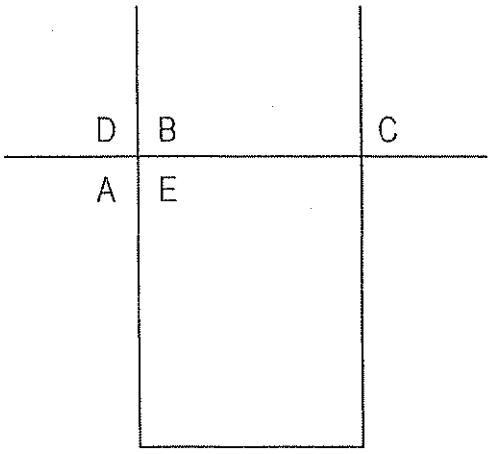


FIG. 3

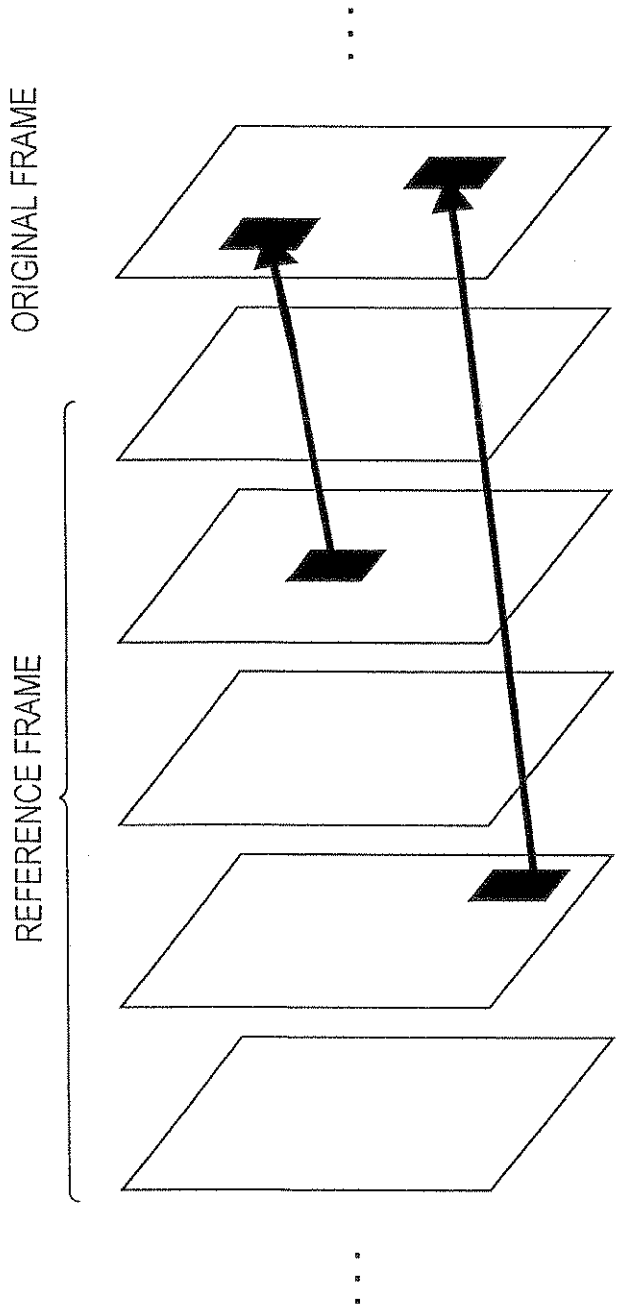


FIG. 4

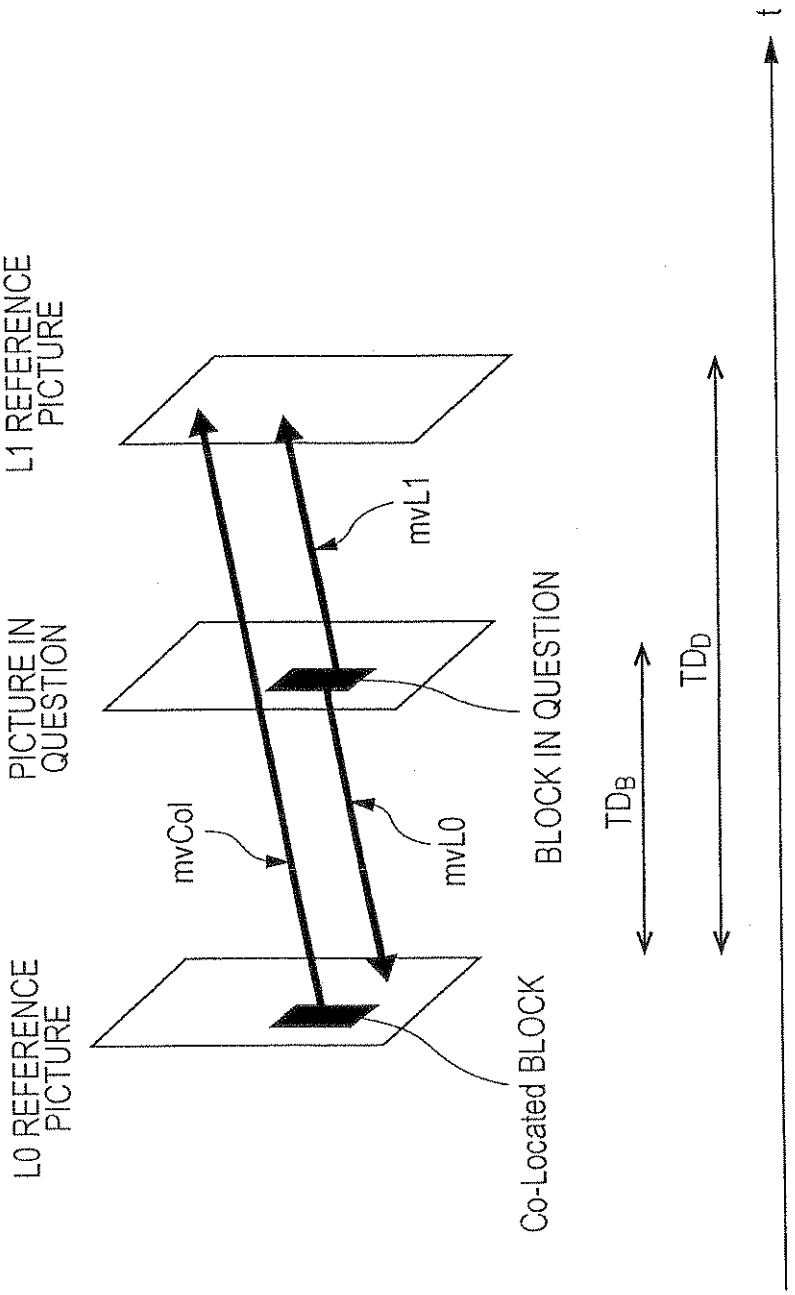

L1 REFERENCE PICTURE
PICTURE IN QUESTION
L0 REFERENCE PICTURE
mvL1
mvCol
mvL0
BLOCK IN QUESTION
Co-Located BLOCK
TDB
TDD
t

FIG. 5

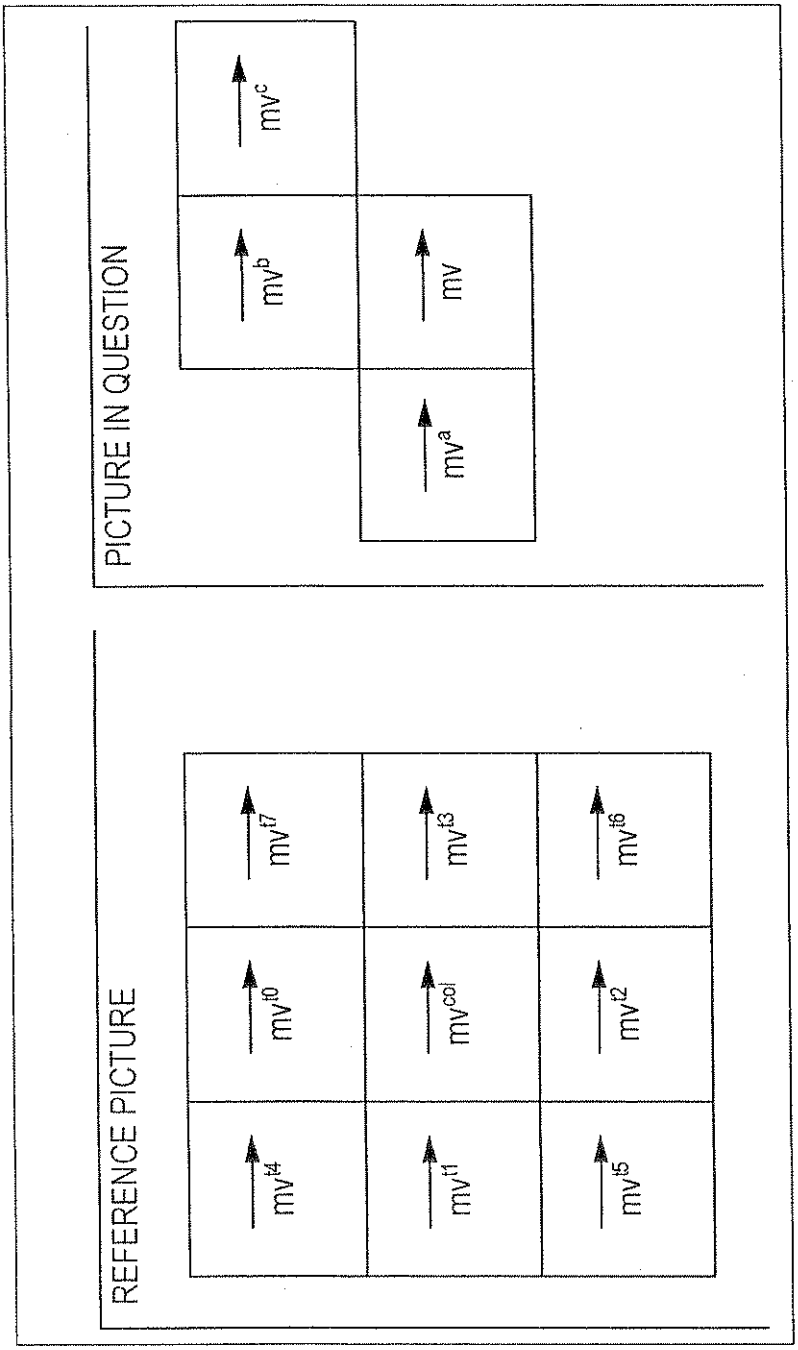

REFERENCE PICTURE
mv^t4
mv^t0
mv^t7
mv^t1
mv^col
mv^t3
mv^t5
mv^t2
mv^t6
PICTURE IN QUESTION
mv^a
mv^b
mv^c
mv

FIG. 6

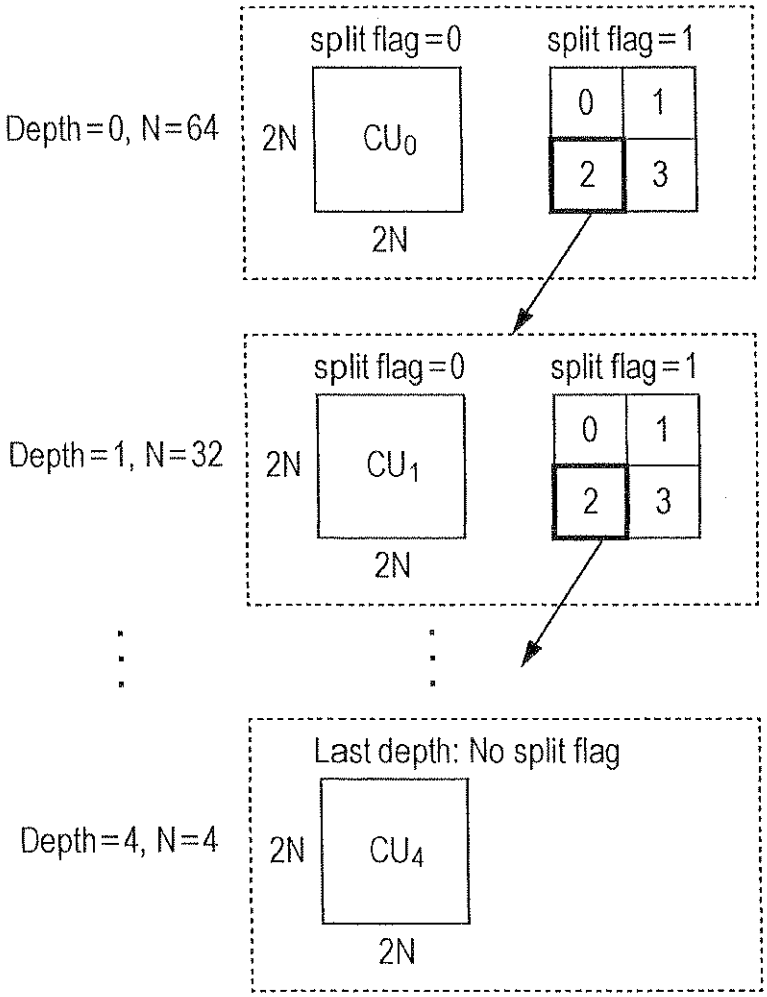

Depth = 0, N = 64
split flag = 0
split flag = 1
2N
CU0
2N
0
1
2
3
Depth = 1, N = 32
split flag = 0
split flag = 1
2N
CU1
2N
0
1
2
3
Depth = 4, N = 4
Last depth: No split flag
2N
CU4
2N

FIG. 7

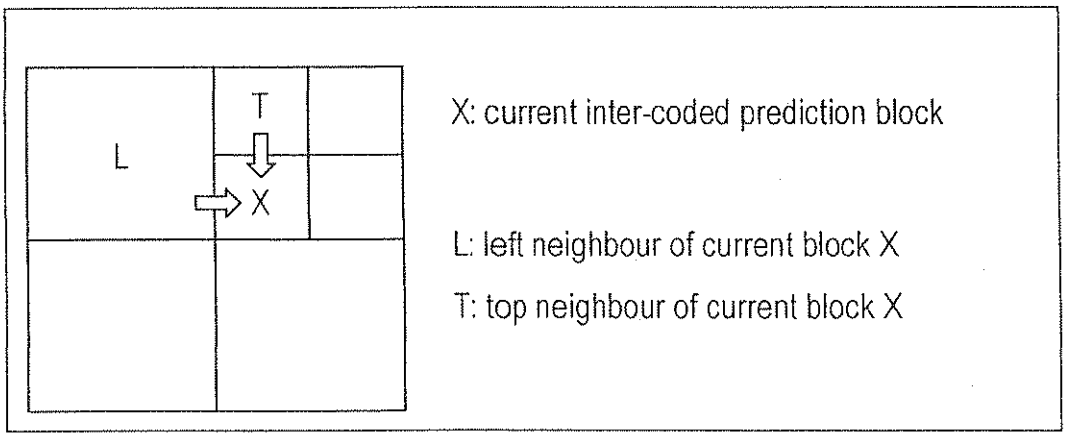

T
L
X
X: current inter-coded prediction block
L: left neighbour of current block X
T: top neighbour of current block X

FIG. 8

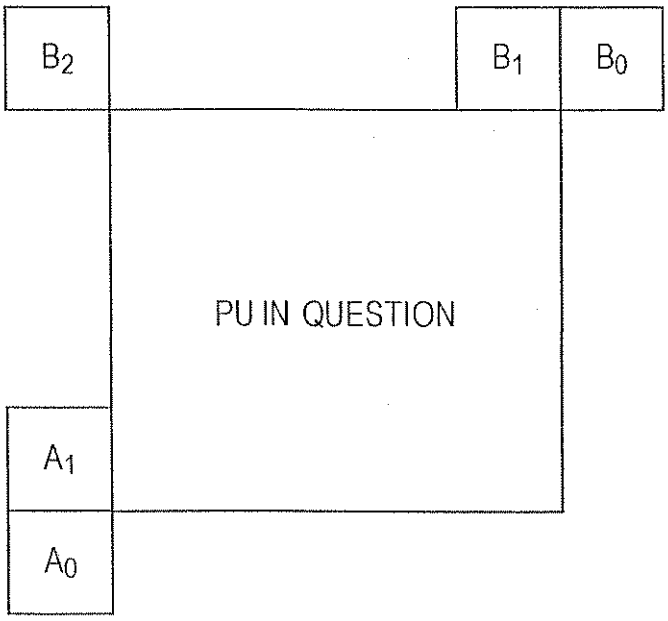


FIG. 9

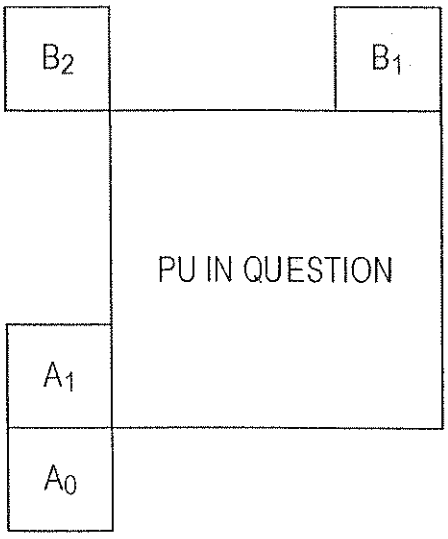


FIG. 10

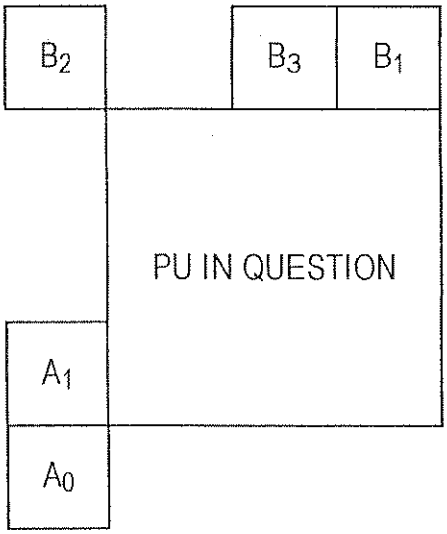


FIG. 11

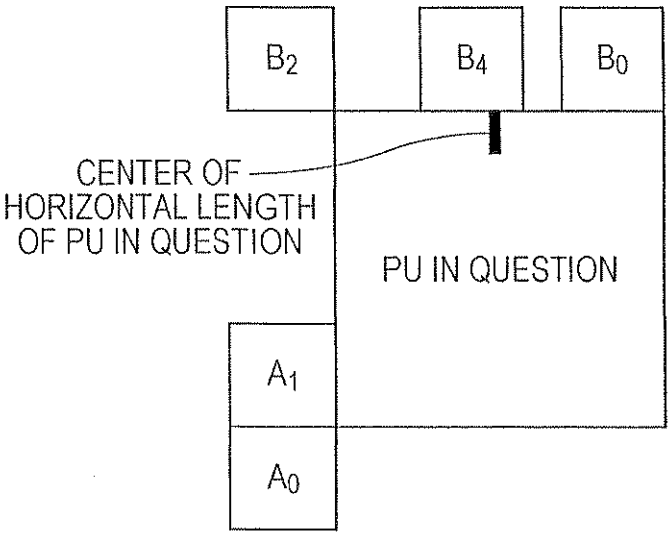


FIG. 12

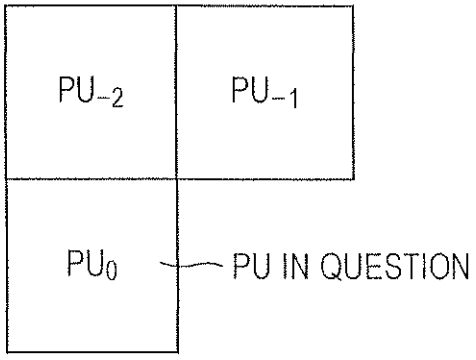


FIG. 13

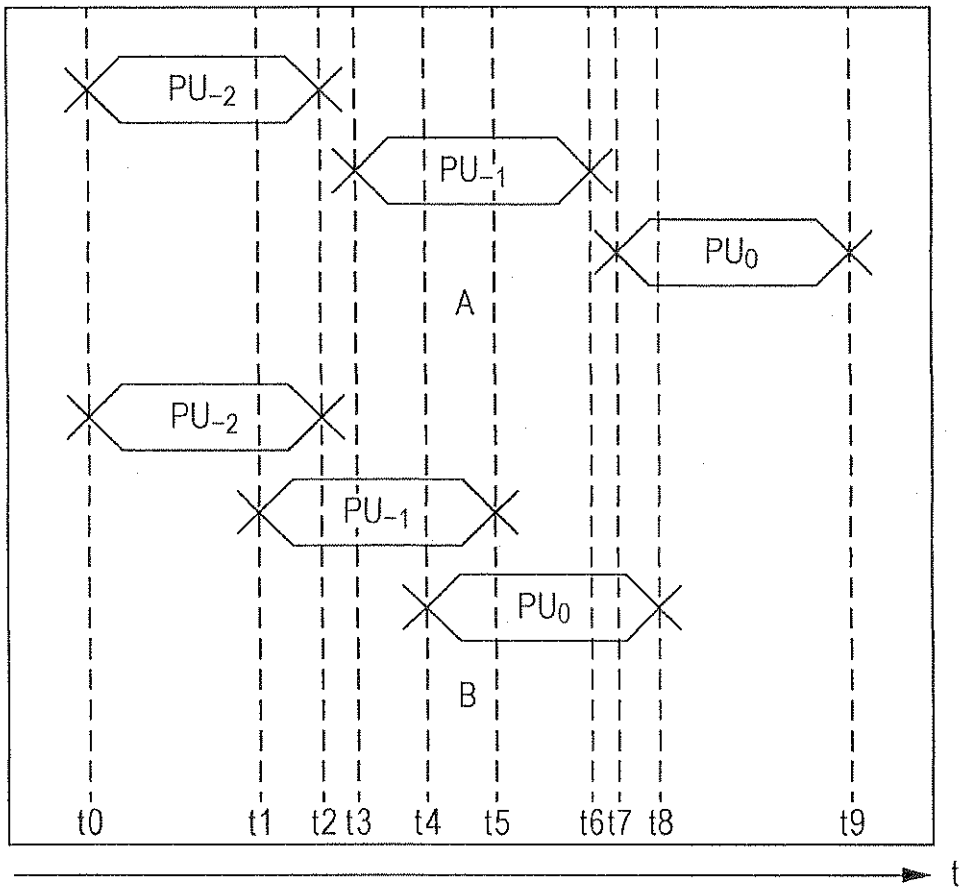


FIG. 14

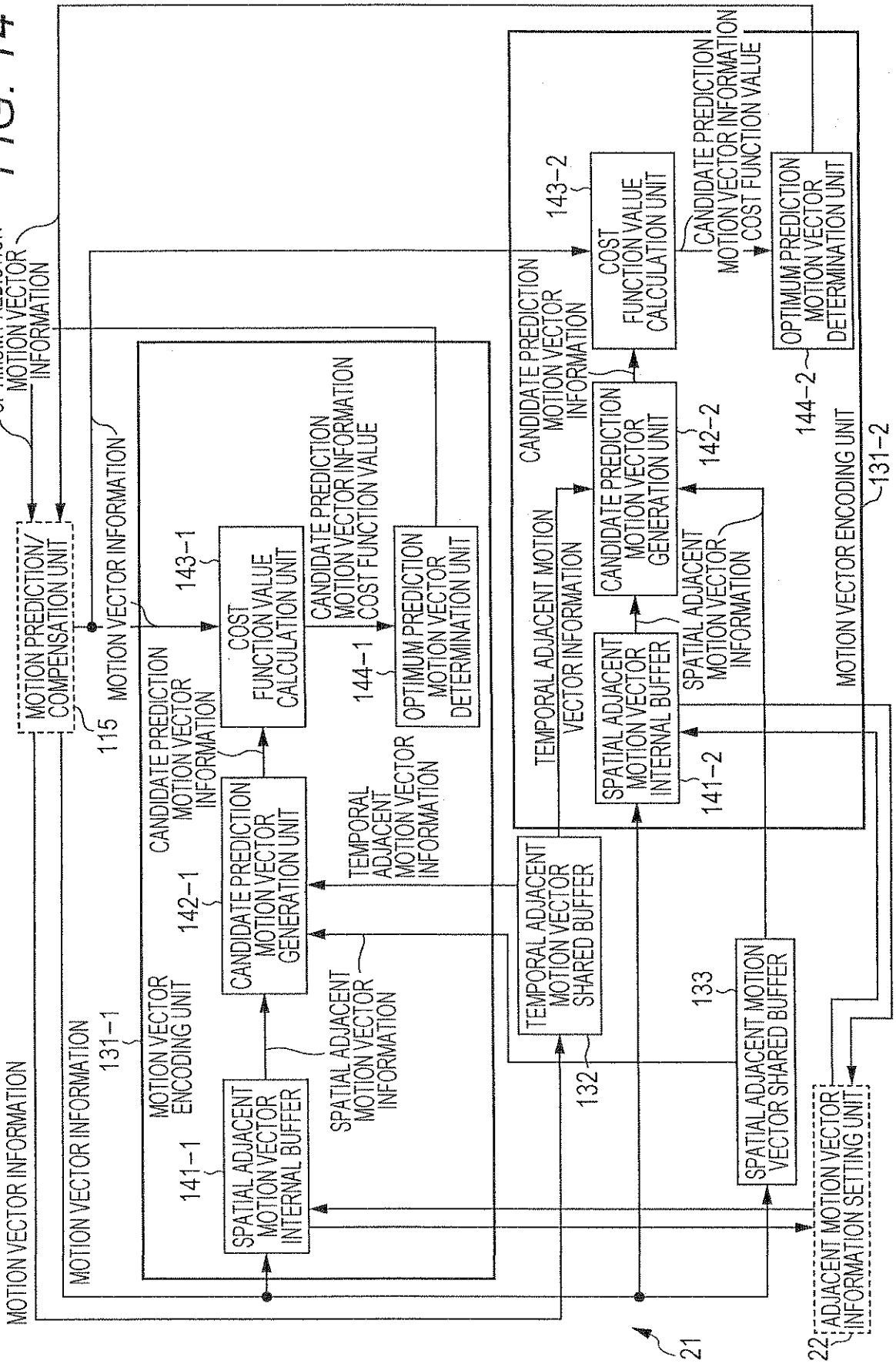

MOTION VECTOR INFORMATION
MOTION VECTOR ENCODING UNIT
131-1
MOTION VECTOR INFORMATION
OPTIMUM PREDICTION MOTION VECTOR INFORMATION
MOTION PREDICTION/ COMPENSATION UNIT
115
MOTION VECTOR INFORMATION
SPATIAL ADJACENT MOTION VECTOR INTERNAL BUFFER
141-1
CANDIDATE PREDICTION MOTION VECTOR GENERATION UNIT
142-1
CANDIDATE PREDICTION MOTION VECTOR INFORMATION
COST FUNCTION VALUE CALCULATION UNIT
143-1
CANDIDATE PREDICTION MOTION VECTOR INFORMATION
COST FUNCTION VALUE
OPTIMUM PREDICTION MOTION VECTOR DETERMINATION UNIT
144-1
SPATIAL ADJACENT MOTION VECTOR INFORMATION
TEMPORAL ADJACENT MOTION VECTOR INFORMATION
TEMPORAL ADJACENT MOTION VECTOR SHARED BUFFER
132
SPATIAL ADJACENT MOTION VECTOR VECTOR SHARED BUFFER
133
121
MOTION VECTOR ENCODING UNIT
131-2
SPATIAL ADJACENT MOTION VECTOR INTERNAL BUFFER
141-2
CANDIDATE PREDICTION MOTION VECTOR GENERATION UNIT
142-2
CANDIDATE PREDICTION MOTION VECTOR INFORMATION
COST FUNCTION VALUE CALCULATION UNIT
143-2
CANDIDATE PREDICTION MOTION VECTOR INFORMATION
COST FUNCTION VALUE
OPTIMUM PREDICTION MOTION VECTOR DETERMINATION UNIT
144-2
SPATIAL ADJACENT MOTION VECTOR INFORMATION
TEMPORAL ADJACENT MOTION VECTOR INFORMATION
ADJACENT MOTION VECTOR INFORMATION SETTING UNIT
122

FIG. 15

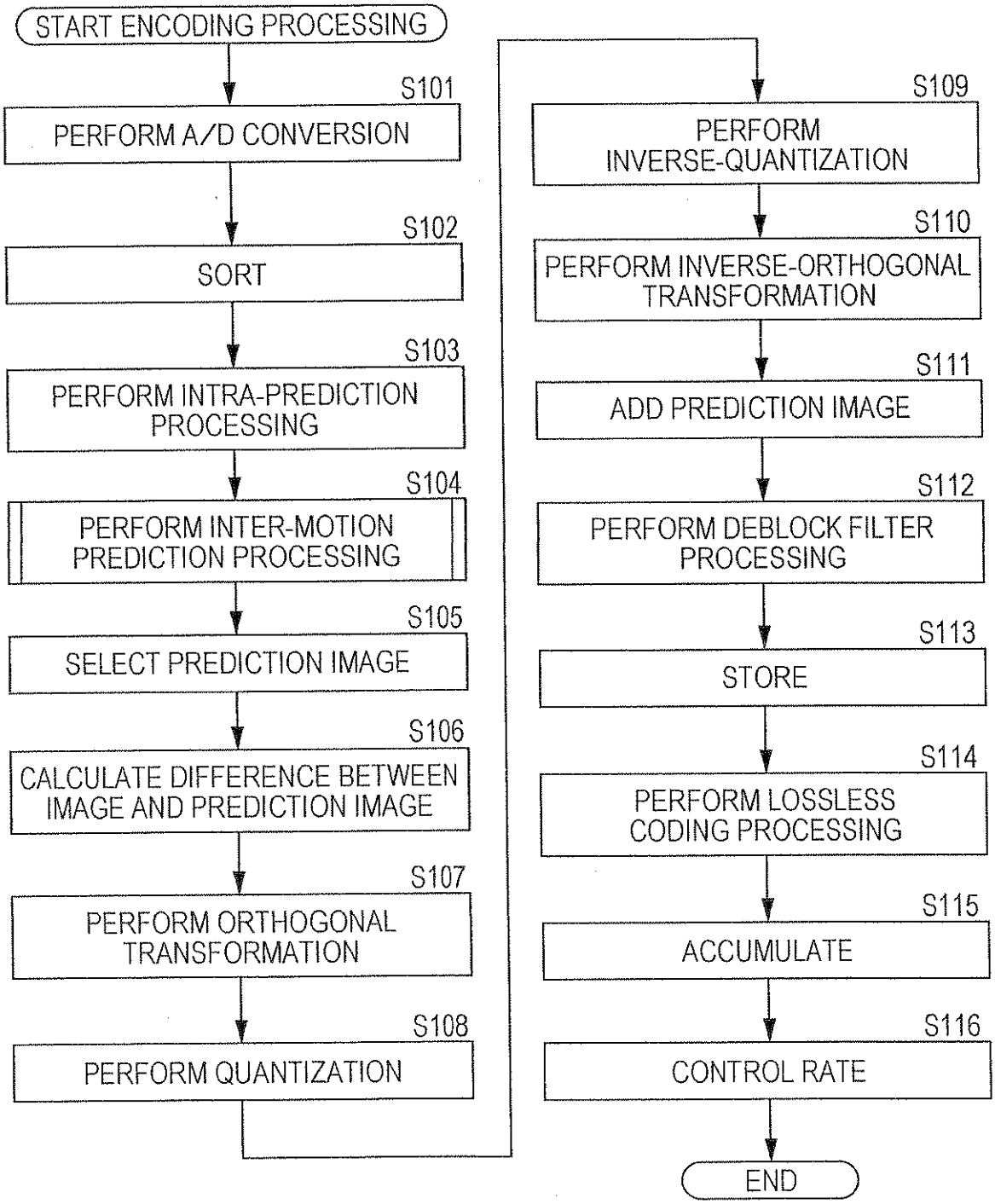

START ENCODING PROCESSING
S101
PERFORM A/D CONVERSION
S102
SORT
S103
PERFORM INTRA-PREDICTION PROCESSING
S104
PERFORM INTER-MOTION PREDICTION PROCESSING
S105
SELECT PREDICTION IMAGE
S106
CALCULATE DIFFERENCE BETWEEN IMAGE AND PREDICTION IMAGE
S107
PERFORM ORTHOGONAL TRANSFORMATION
S108
PERFORM QUANTIZATION
S109
PERFORM INVERSE-QUANTIZATION
S110
PERFORM INVERSE-ORTHOGONAL TRANSFORMATION
S111
ADD PREDICTION IMAGE
S112
PERFORM DEBLOCK FILTER PROCESSING
S113
STORE
S114
PERFORM LOSSLESS CODING PROCESSING
S115
ACCUMULATE
S116
CONTROL RATE
END

FIG. 16

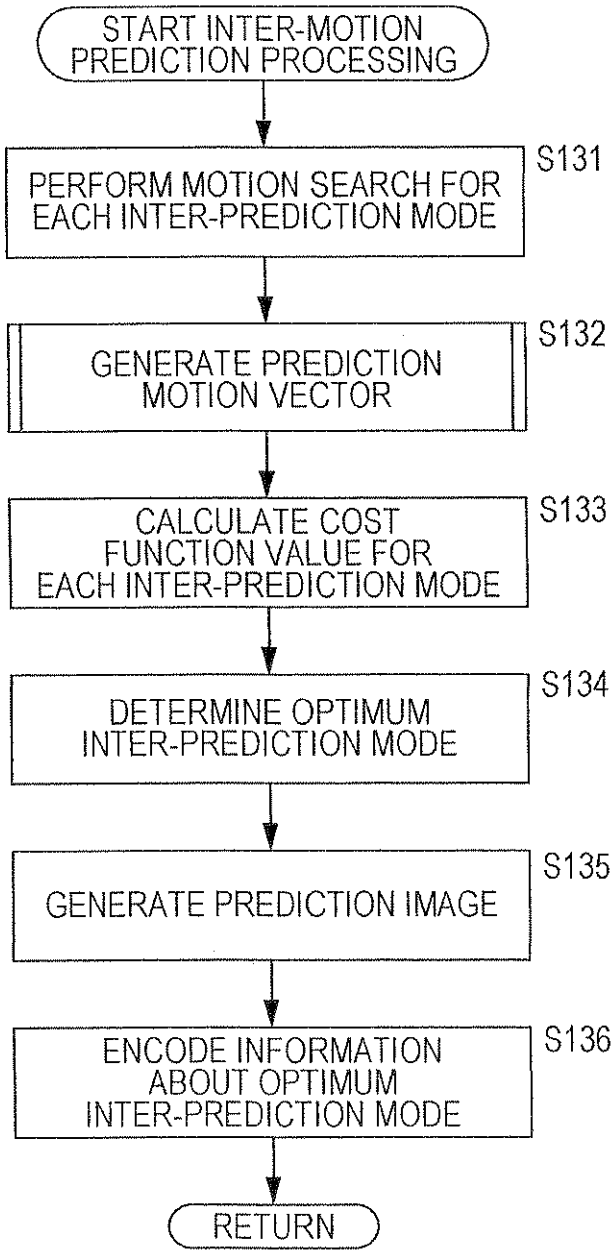

START INTER-MOTION PREDICTION PROCESSING
PERFORM MOTION SEARCH FOR EACH INTER-PREDICTION MODE
S131
GENERATE PREDICTION MOTION VECTOR
S132
CALCULATE COST FUNCTION VALUE FOR EACH INTER-PREDICTION MODE
S133
DETERMINE OPTIMUM INTER-PREDICTION MODE
S134
GENERATE PREDICTION IMAGE
S135
ENCODE INFORMATION ABOUT OPTIMUM INTER-PREDICTION MODE
S136
RETURN

FIG. 17

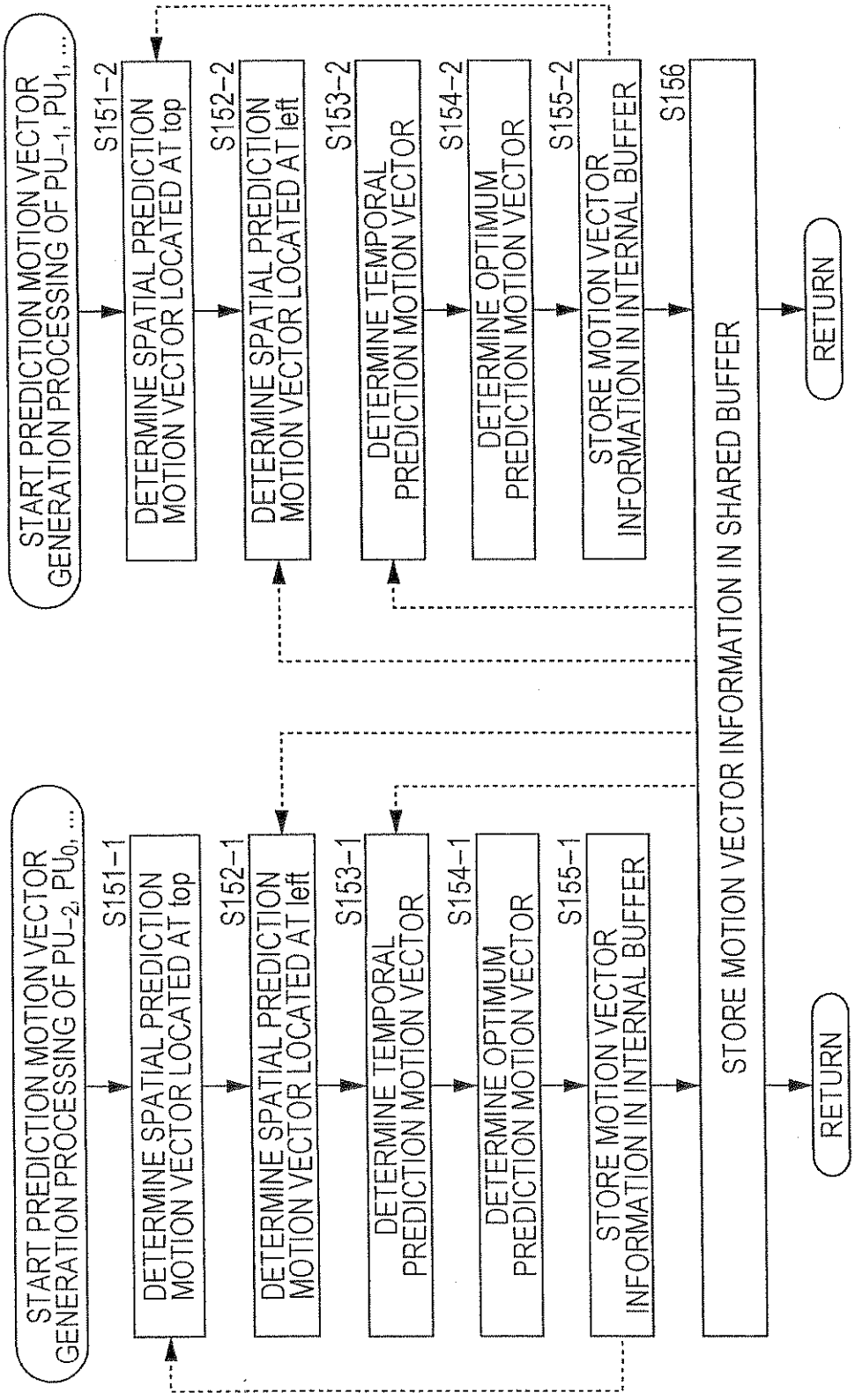

START PREDICTION MOTION VECTOR GENERATION PROCESSING OF PU−2, PU0, ...
S151−1
DETERMINE SPATIAL PREDICTION MOTION VECTOR LOCATED AT top
S152−1
DETERMINE SPATIAL PREDICTION MOTION VECTOR LOCATED AT left
S153−1
DETERMINE TEMPORAL PREDICTION MOTION VECTOR
S154−1
DETERMINE OPTIMUM PREDICTION MOTION VECTOR
S155−1
STORE MOTION VECTOR INFORMATION IN INTERNAL BUFFER
RETURN
START PREDICTION MOTION VECTOR GENERATION PROCESSING OF PU−1, PU1, ...
S151−2
DETERMINE SPATIAL PREDICTION MOTION VECTOR LOCATED AT top
S152−2
DETERMINE SPATIAL PREDICTION MOTION VECTOR LOCATED AT left
S153−2
DETERMINE TEMPORAL PREDICTION MOTION VECTOR
S154−2
DETERMINE OPTIMUM PREDICTION MOTION VECTOR
S155−2
STORE MOTION VECTOR INFORMATION IN INTERNAL BUFFER
S156
STORE MOTION VECTOR INFORMATION IN SHARED BUFFER
RETURN

FIG. 18

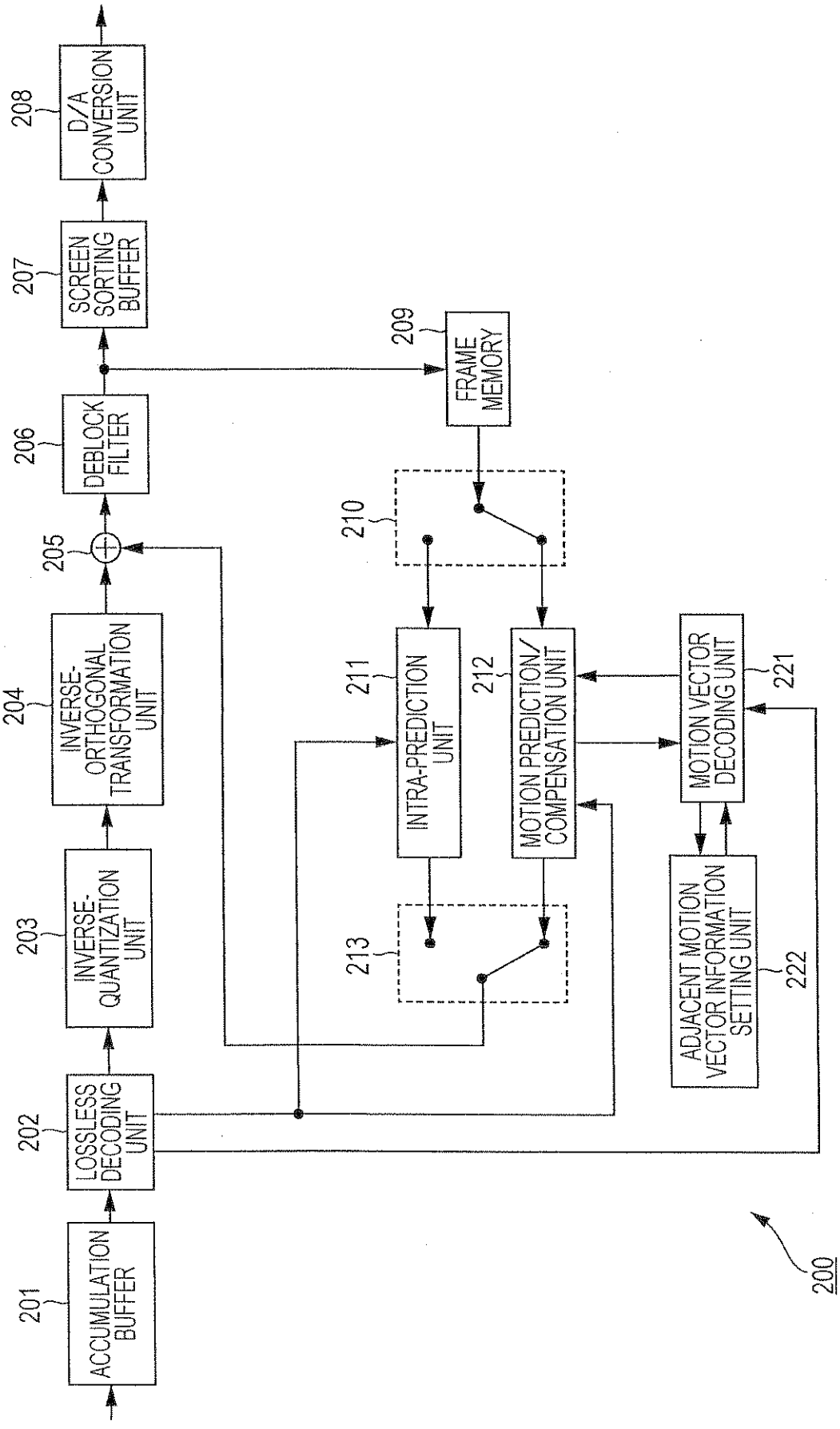

ACCUMULATION BUFFER
201
LOSSLESS DECODING UNIT
202
INVERSE-QUANTIZATION UNIT
203
INVERSE-ORTHOGONAL TRANSFORMATION UNIT
204
205
DEBLOCK FILTER
206
SCREEN SORTING BUFFER
207
D/A CONVERSION UNIT
208
FRAME MEMORY
209
210
INTRA-PREDICTION UNIT
211
MOTION PREDICTION/ COMPENSATION UNIT
212
213
MOTION VECTOR DECODING UNIT
221
ADJACENT MOTION VECTOR INFORMATION SETTING UNIT
222
200

FIG. 19

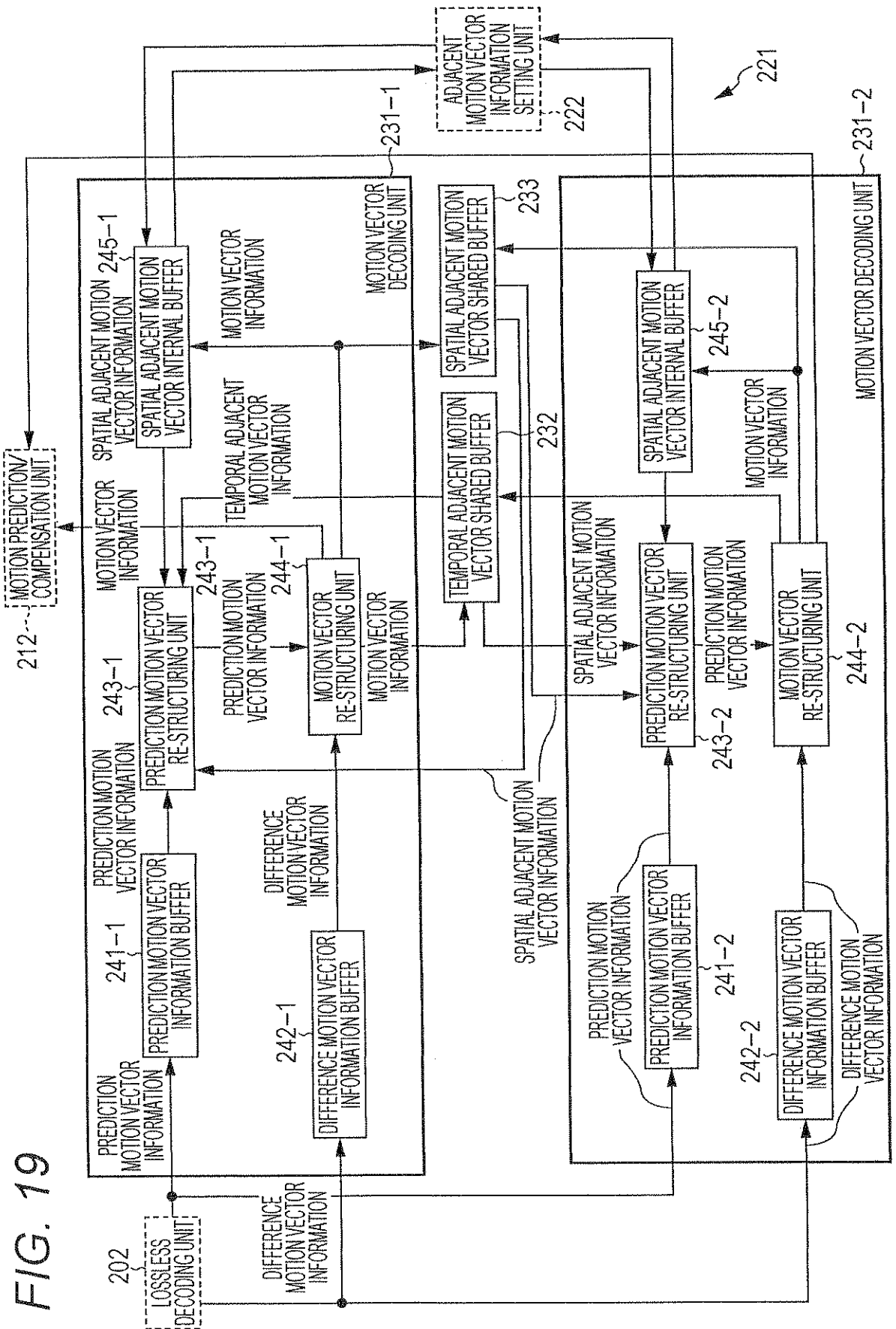

202
LOSSLESS DECODING UNIT
DIFFERENCE MOTION VECTOR INFORMATION
PREDICTION MOTION VECTOR INFORMATION
212
MOTION PREDICTION/ COMPENSATION UNIT
221
ADJACENT MOTION VECTOR INFORMATION SETTING UNIT
222
231-1
231-2
MOTION VECTOR DECODING UNIT
241-1
PREDICTION MOTION VECTOR INFORMATION BUFFER
241-2
242-1
DIFFERENCE MOTION VECTOR INFORMATION BUFFER
242-2
243-1
PREDICTION MOTION VECTOR RE-STRUCTURING UNIT
243-2
244-1
MOTION VECTOR RE-STRUCTURING UNIT
244-2
245-1
SPATIAL ADJACENT MOTION VECTOR INTERNAL BUFFER
245-2
232
TEMPORAL ADJACENT MOTION VECTOR SHARED BUFFER
233
SPATIAL ADJACENT MOTION VECTOR SHARED BUFFER
SPATIAL ADJACENT MOTION VECTOR INFORMATION
TEMPORAL ADJACENT MOTION VECTOR INFORMATION
MOTION VECTOR INFORMATION
PREDICTION MOTION VECTOR INFORMATION
DIFFERENCE MOTION VECTOR INFORMATION

FIG. 20

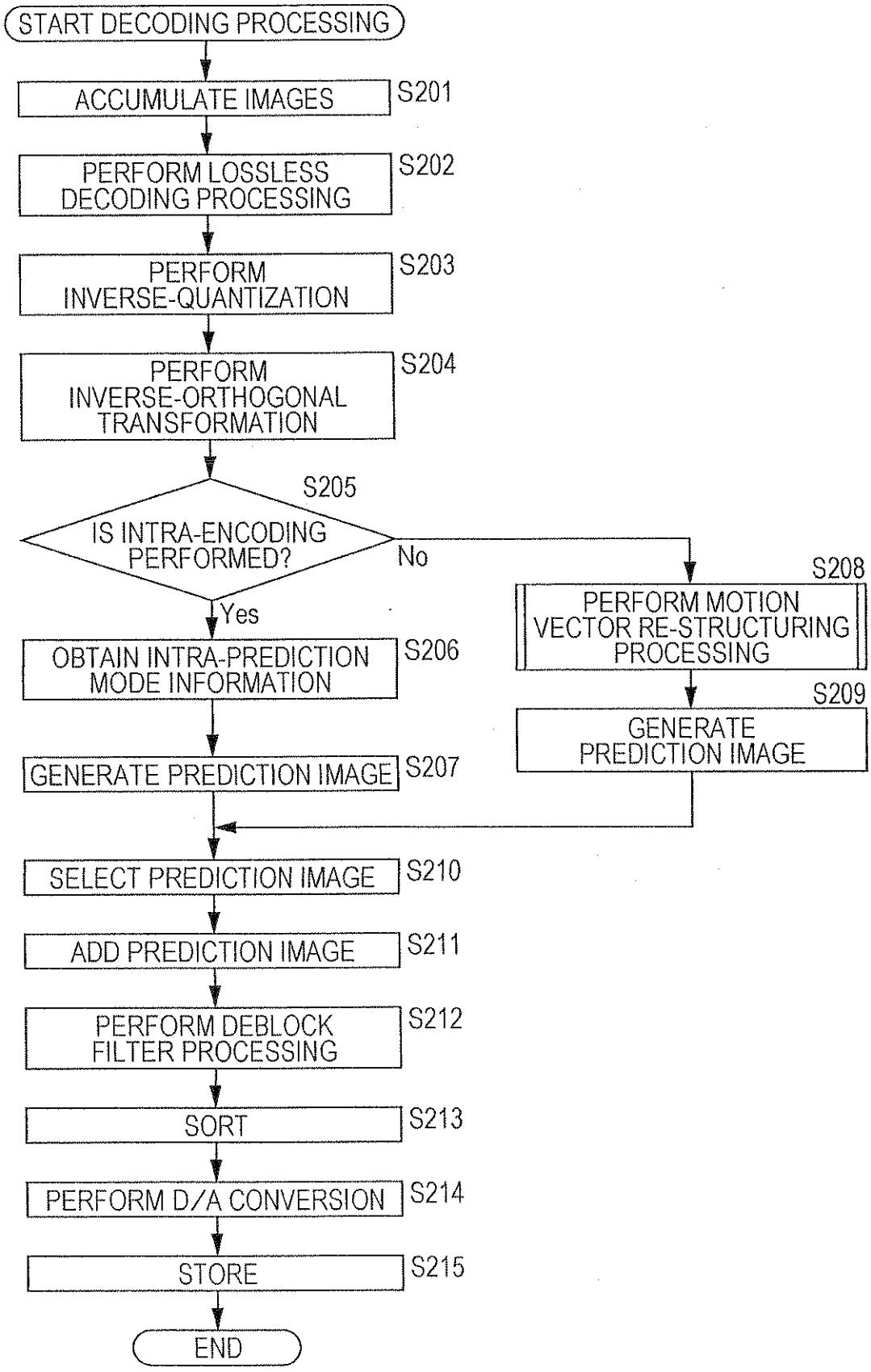

START DECODING PROCESSING
ACCUMULATE IMAGES
S201
PERFORM LOSSLESS DECODING PROCESSING
S202
PERFORM INVERSE-QUANTIZATION
S203
PERFORM INVERSE-ORTHOGONAL TRANSFORMATION
S204
S205
IS INTRA-ENCODING PERFORMED?
No
Yes
S208
PERFORM MOTION VECTOR RE-STRUCTURING PROCESSING
S209
GENERATE PREDICTION IMAGE
OBTAIN INTRA-PREDICTION MODE INFORMATION
S206
GENERATE PREDICTION IMAGE
S207
SELECT PREDICTION IMAGE
S210
ADD PREDICTION IMAGE
S211
PERFORM DEBLOCK FILTER PROCESSING
S212
SORT
S213
PERFORM D/A CONVERSION
S214
STORE
S215
END

FIG. 21

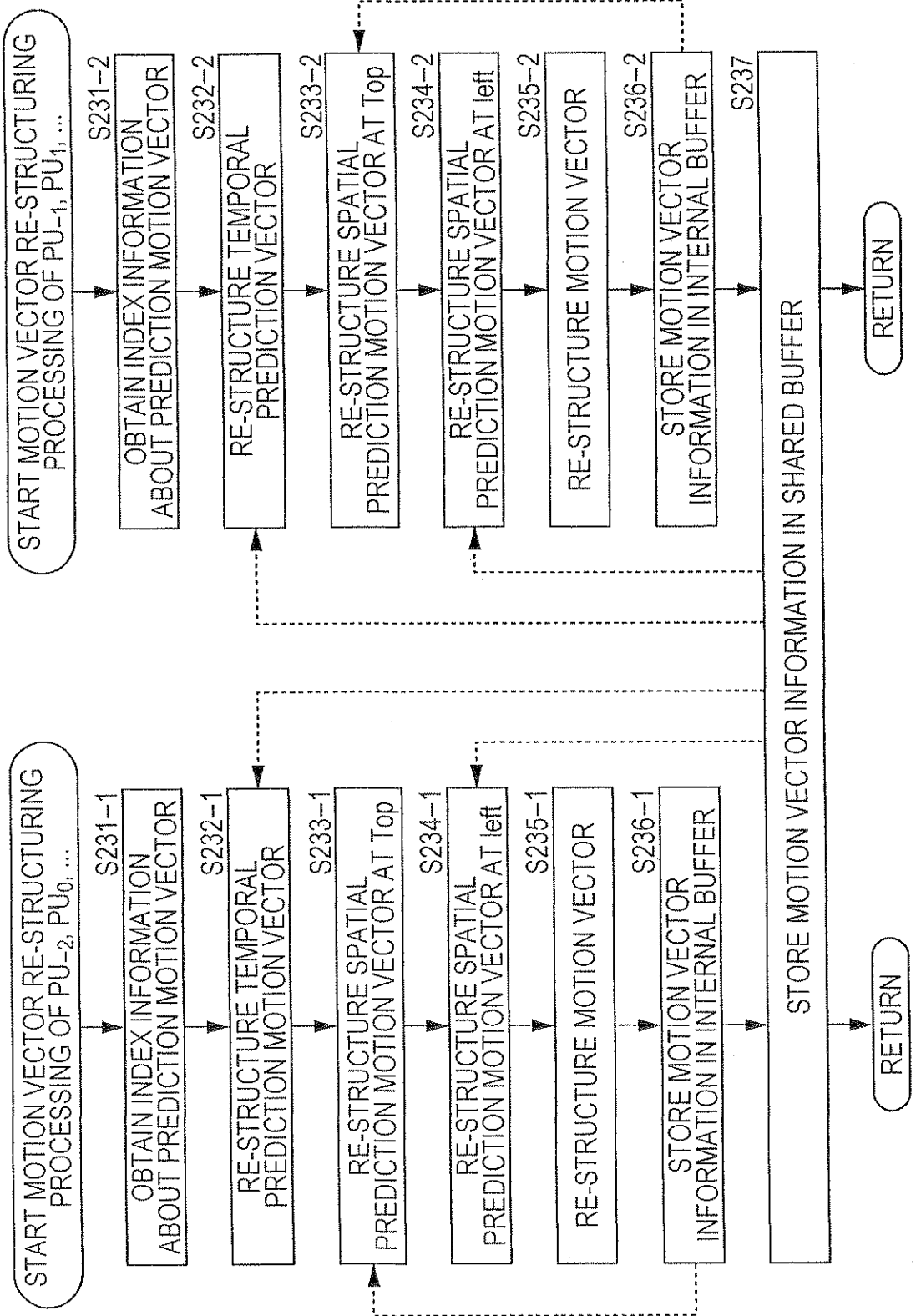

START MOTION VECTOR RE-STRUCTURING PROCESSING OF PU−2, PU0, ...
S231−1
OBTAIN INDEX INFORMATION ABOUT PREDICTION MOTION VECTOR
S232−1
RE-STRUCTURE TEMPORAL PREDICTION MOTION VECTOR
S233−1
RE-STRUCTURE SPATIAL PREDICTION MOTION VECTOR AT Top
S234−1
RE-STRUCTURE SPATIAL PREDICTION MOTION VECTOR AT left
S235−1
RE-STRUCTURE MOTION VECTOR
S236−1
STORE MOTION VECTOR INFORMATION IN INTERNAL BUFFER
RETURN
START MOTION VECTOR RE-STRUCTURING PROCESSING OF PU−1, PU1, ...
S231−2
OBTAIN INDEX INFORMATION ABOUT PREDICTION MOTION VECTOR
S232−2
RE-STRUCTURE TEMPORAL PREDICTION VECTOR
S233−2
RE-STRUCTURE SPATIAL PREDICTION MOTION VECTOR AT Top
S234−2
RE-STRUCTURE SPATIAL PREDICTION MOTION VECTOR AT left
S235−2
RE-STRUCTURE MOTION VECTOR
S236−2
STORE MOTION VECTOR INFORMATION IN INTERNAL BUFFER
S237
STORE MOTION VECTOR INFORMATION IN SHARED BUFFER
RETURN

FIG. 22

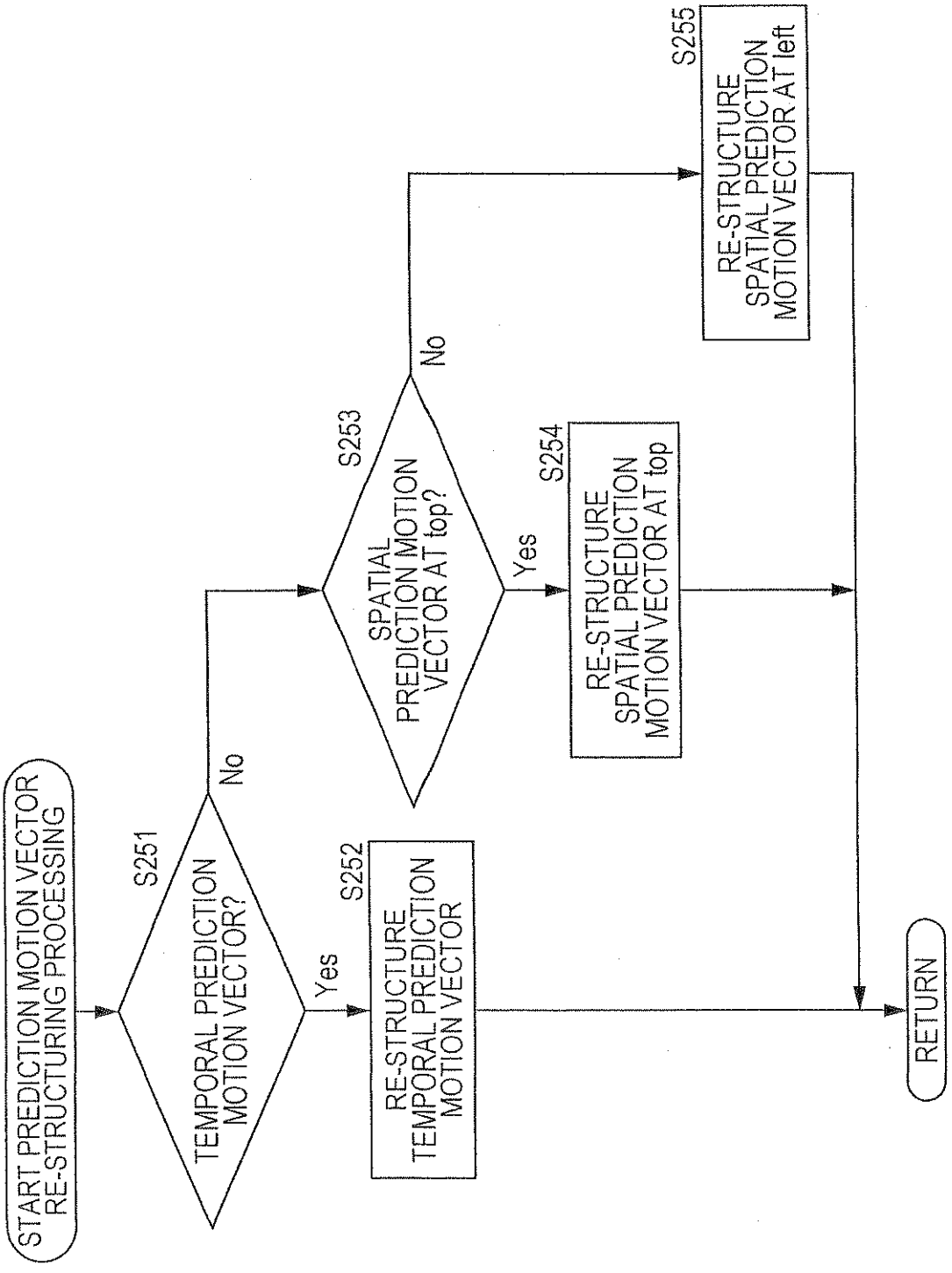

START PREDICTION MOTION VECTOR RE-STRUCTURING PROCESSING
S251
TEMPORAL PREDICTION MOTION VECTOR?
Yes
No
S252
RE-STRUCTURE TEMPORAL PREDICTION MOTION VECTOR
S253
SPATIAL PREDICTION MOTION VECTOR AT top?
Yes
No
S254
RE-STRUCTURE SPATIAL PREDICTION MOTION VECTOR AT top
S255
RE-STRUCTURE SPATIAL PREDICTION MOTION VECTOR AT left
RETURN

FIG. 23

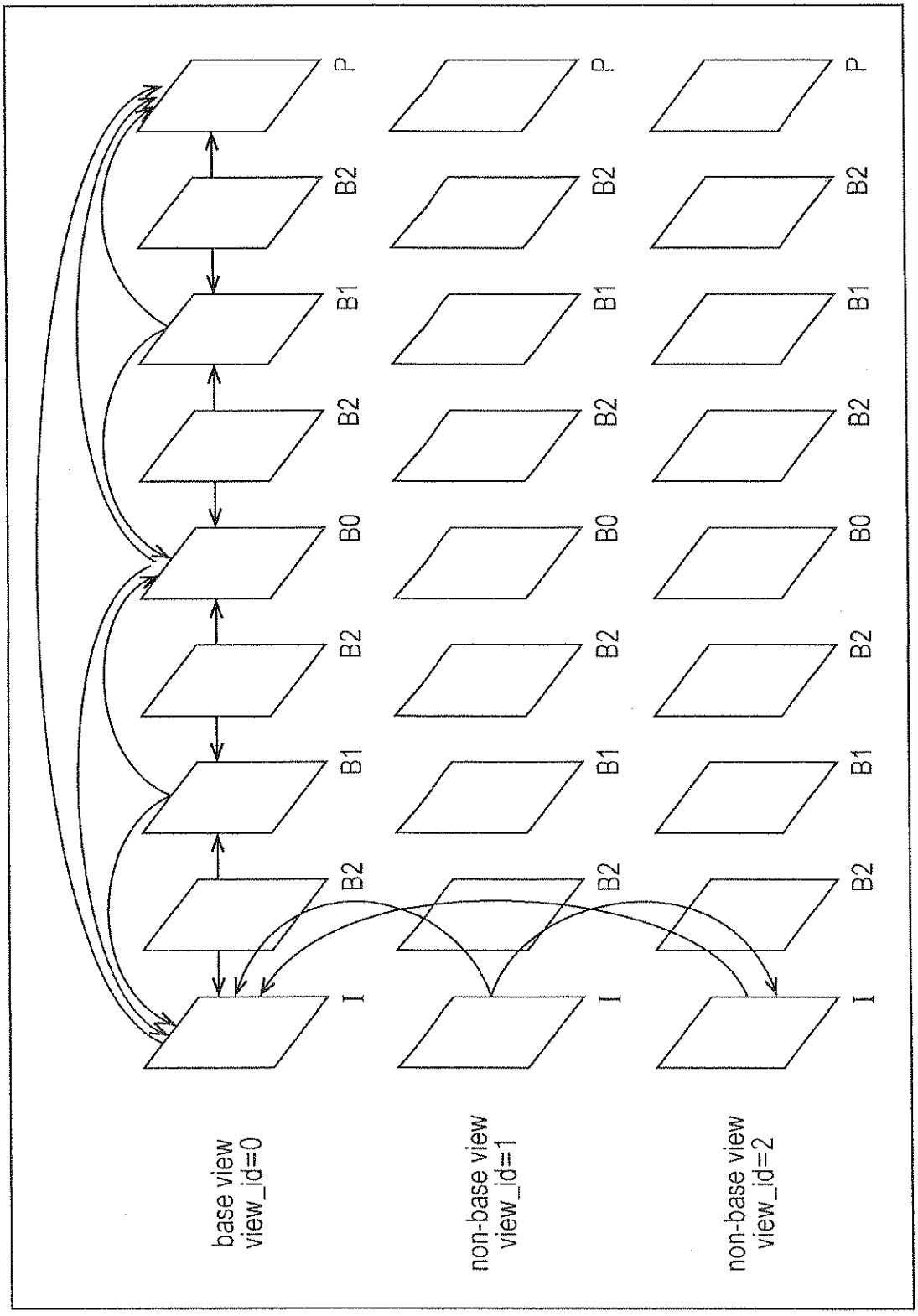

base view
view_id=0
non-base view
view_id=1
non-base view
view_id=2
I
B2
B1
B2
B0
B2
B1
B2
P

FIG. 24

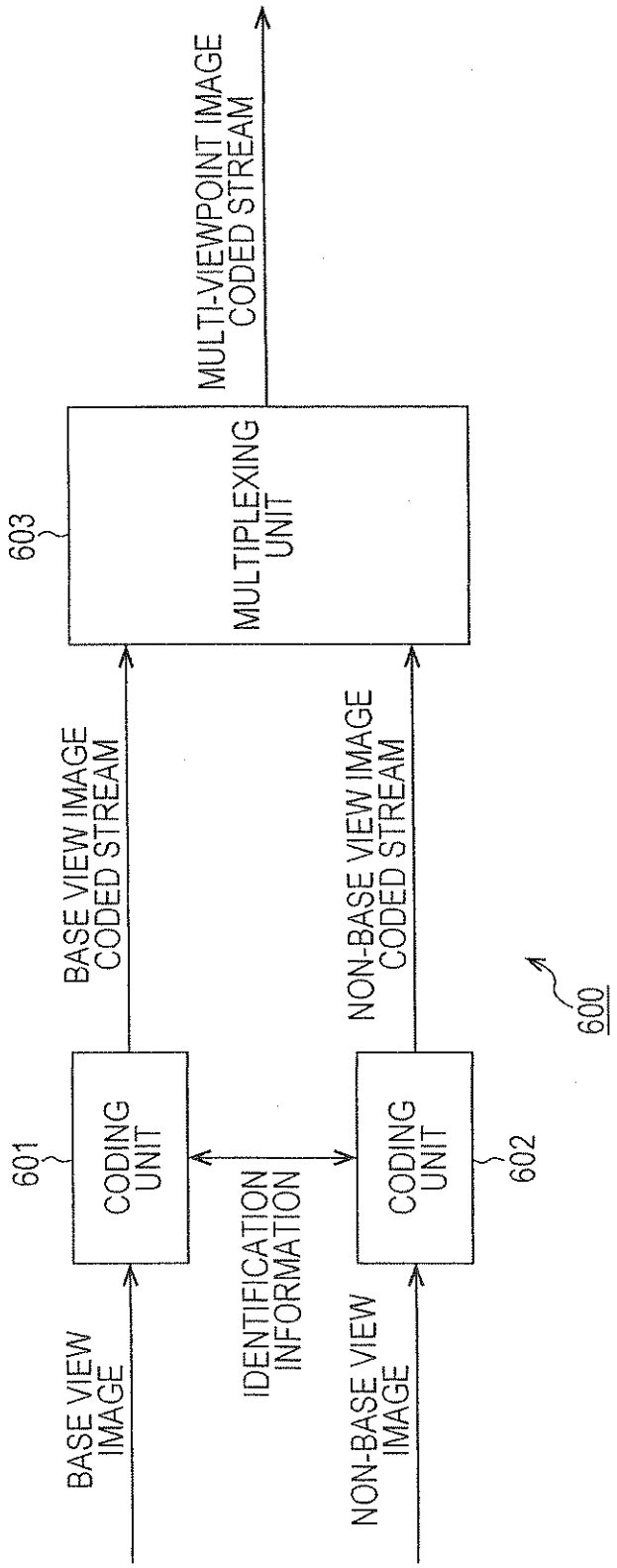

MULTI-VIEWPOINT IMAGE CODED STREAM
603
MULTIPLEXING UNIT
BASE VIEW IMAGE CODED STREAM
NON-BASE VIEW IMAGE CODED STREAM
600
601
CODING UNIT
602
CODING UNIT
IDENTIFICATION INFORMATION
BASE VIEW IMAGE
NON-BASE VIEW IMAGE

FIG. 25

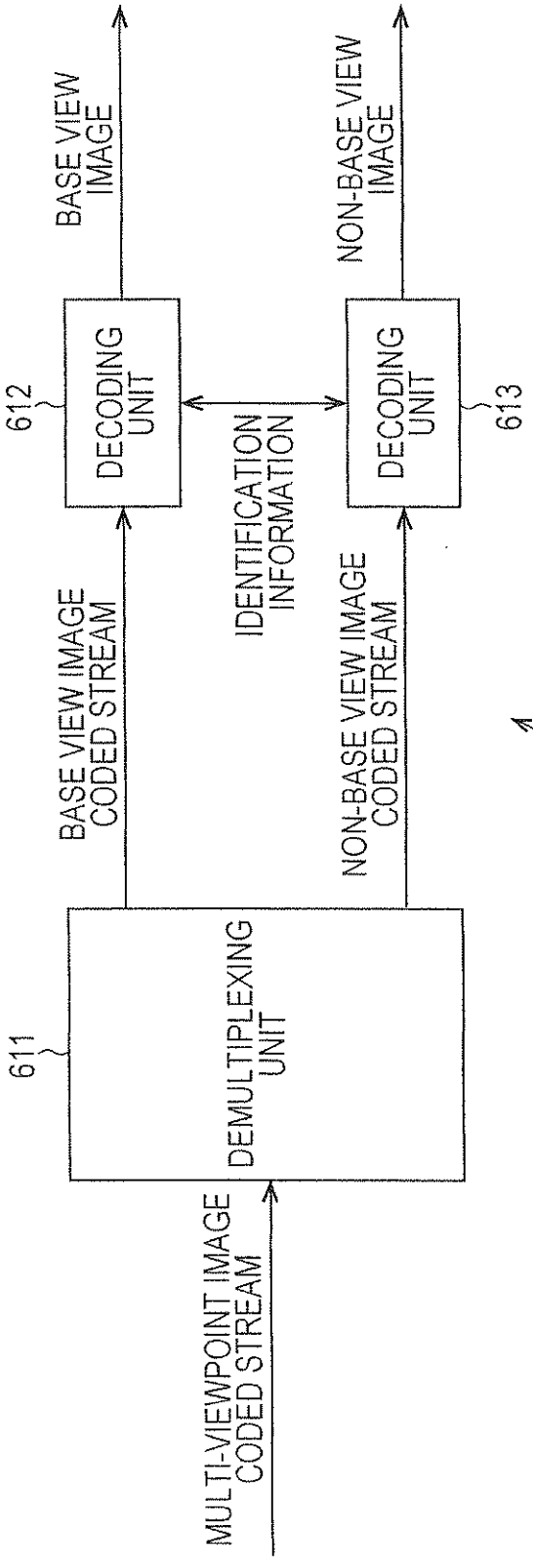

MULTI-VIEWPOINT IMAGE CODED STREAM
611
DEMULTIPLEXING UNIT
BASE VIEW IMAGE CODED STREAM
NON-BASE VIEW IMAGE CODED STREAM
IDENTIFICATION INFORMATION
612
DECODING UNIT
613
DECODING UNIT
BASE VIEW IMAGE
NON-BASE VIEW IMAGE
610

FIG. 26

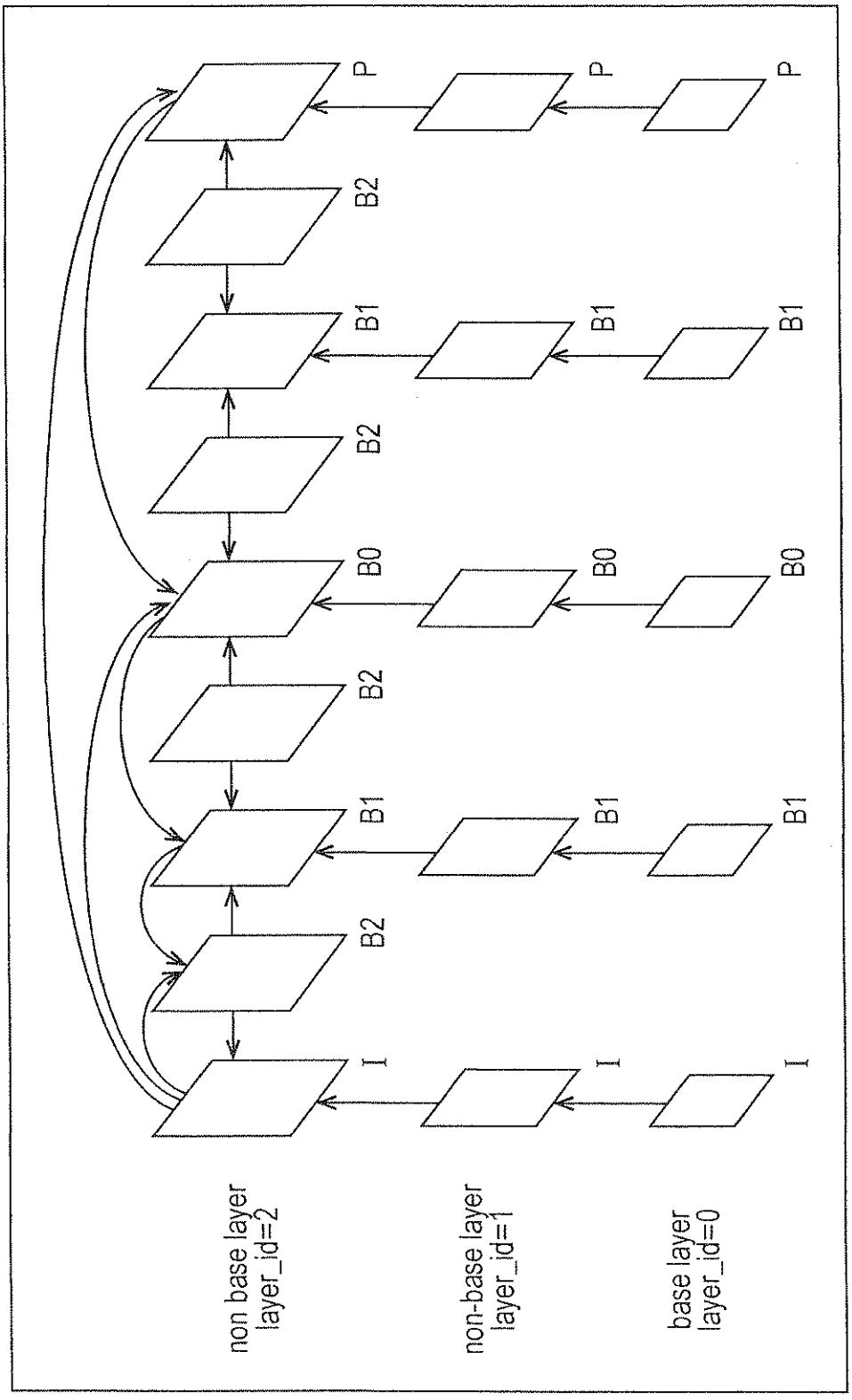

P
P
P
B2
B1
B1
B1
B2
B0
B0
B0
B2
B1
B1
B1
B2
I
I
I
non base layer
layer_id=2
non-base layer
layer_id=1
base layer
layer_id=0

FIG. 27

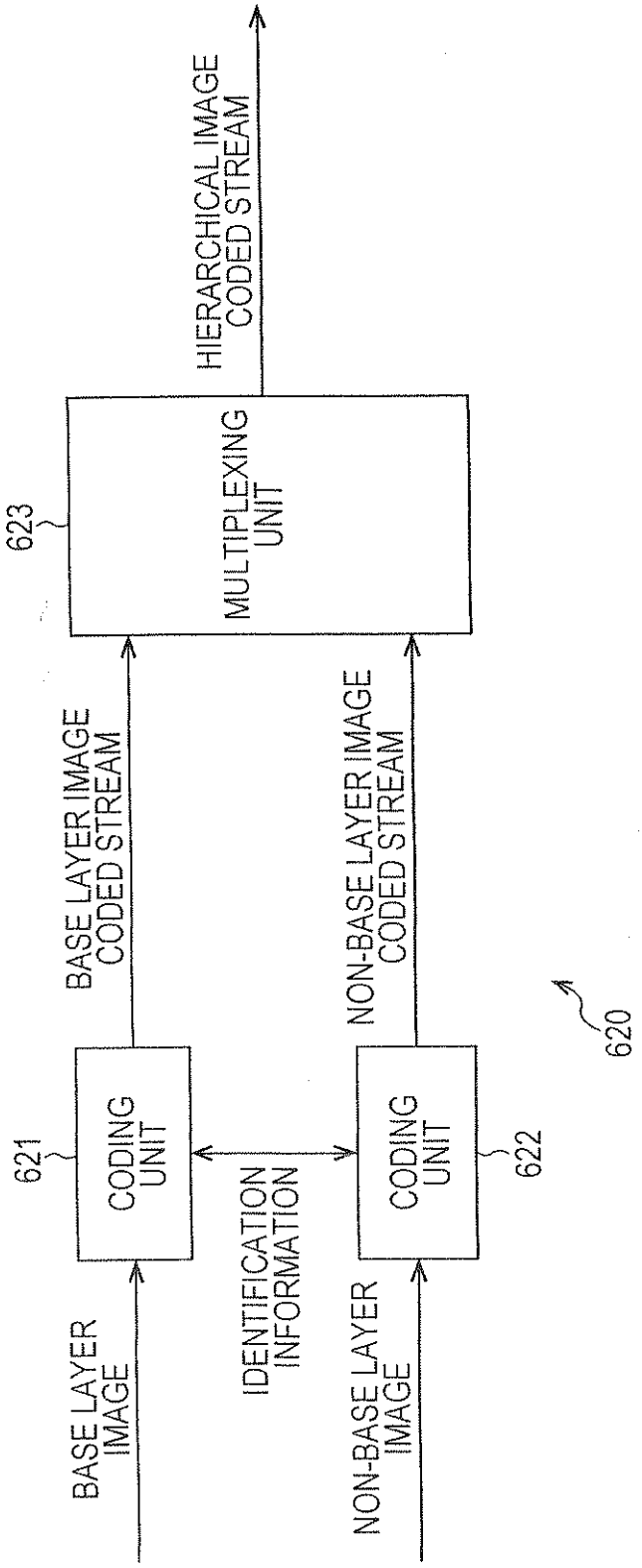

BASE LAYER IMAGE
NON-BASE LAYER IMAGE
CODING UNIT
621
CODING UNIT
622
IDENTIFICATION INFORMATION
BASE LAYER IMAGE CODED STREAM
NON-BASE LAYER IMAGE CODED STREAM
MULTIPLEXING UNIT
623
HIERARCHICAL IMAGE CODED STREAM
620

FIG. 28

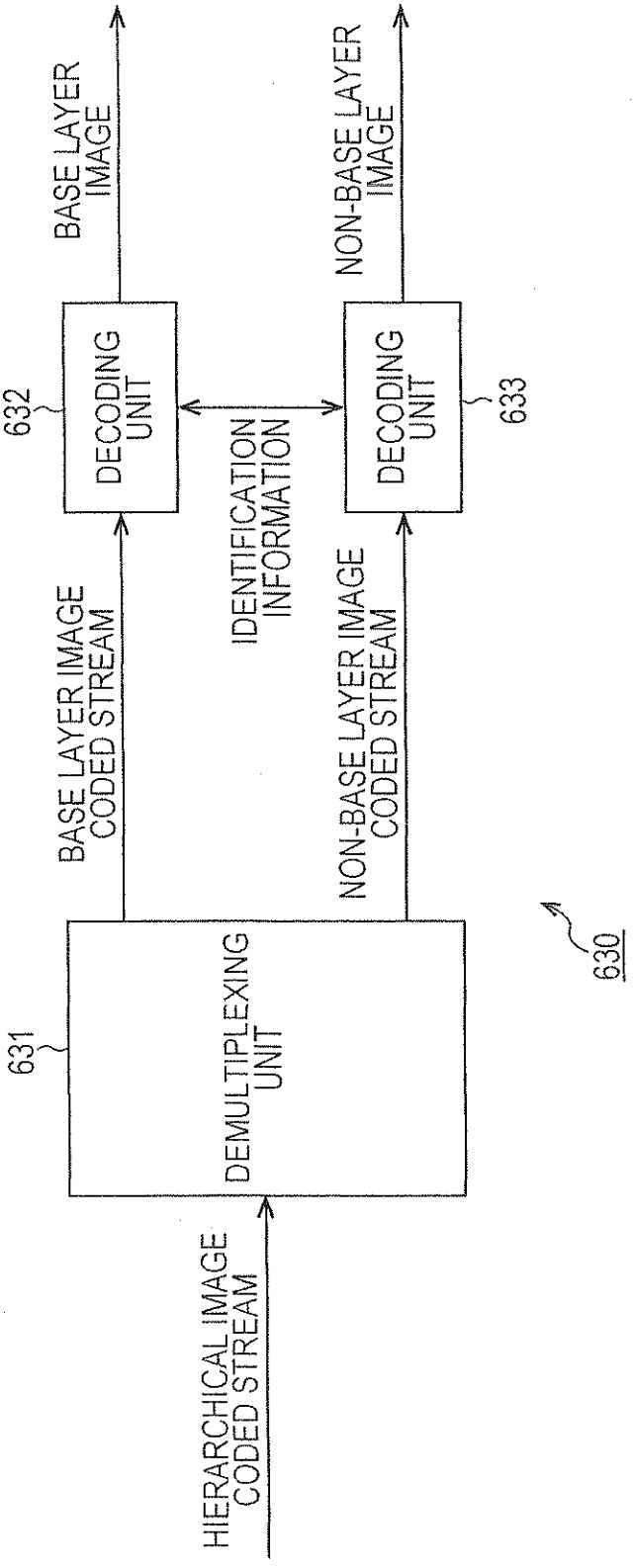

HIERARCHICAL IMAGE CODED STREAM
631
DEMULTIPLEXING UNIT
BASE LAYER IMAGE CODED STREAM
NON-BASE LAYER IMAGE CODED STREAM
IDENTIFICATION INFORMATION
632
DECODING UNIT
633
DECODING UNIT
BASE LAYER IMAGE
NON-BASE LAYER IMAGE
630

FIG. 29

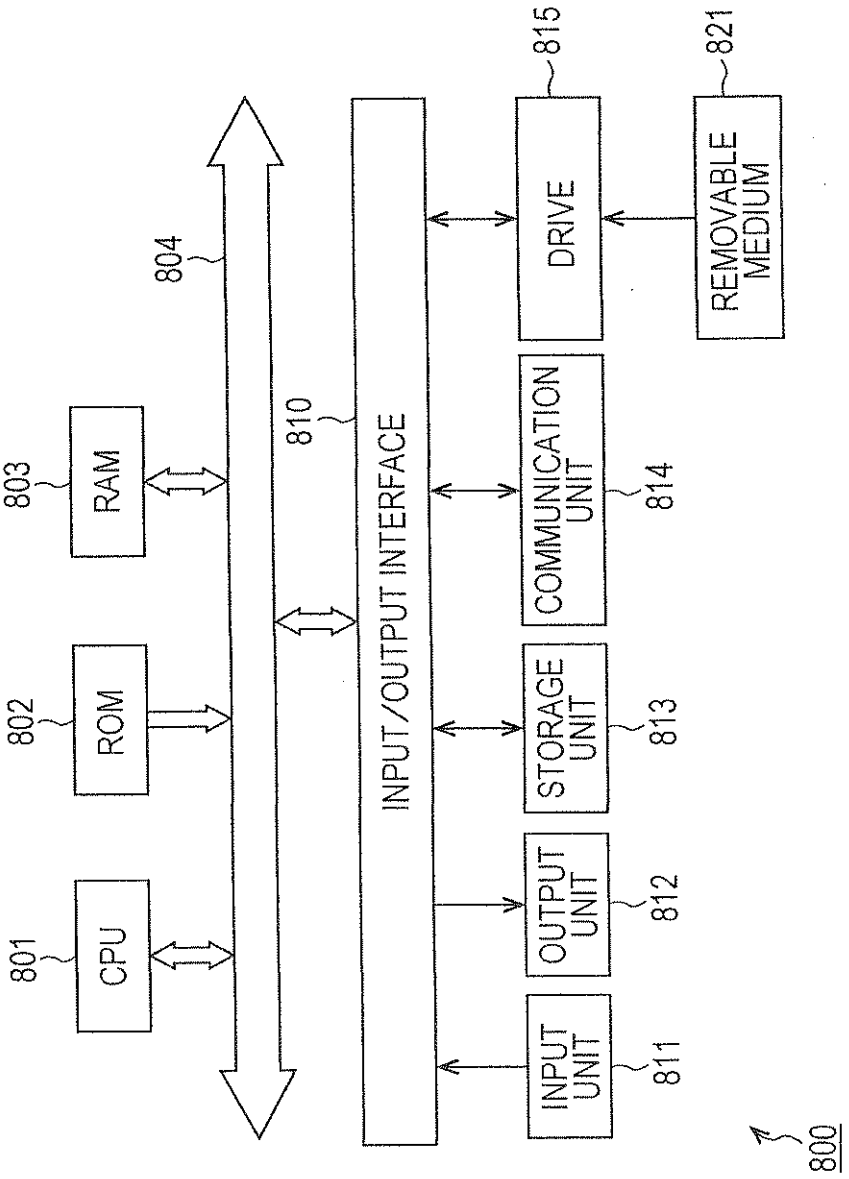

800
801
CPU
802
ROM
803
RAM
804
810
INPUT/OUTPUT INTERFACE
811
INPUT UNIT
812
OUTPUT UNIT
813
STORAGE UNIT
814
COMMUNICATION UNIT
815
DRIVE
821
REMOVABLE MEDIUM

FIG. 30

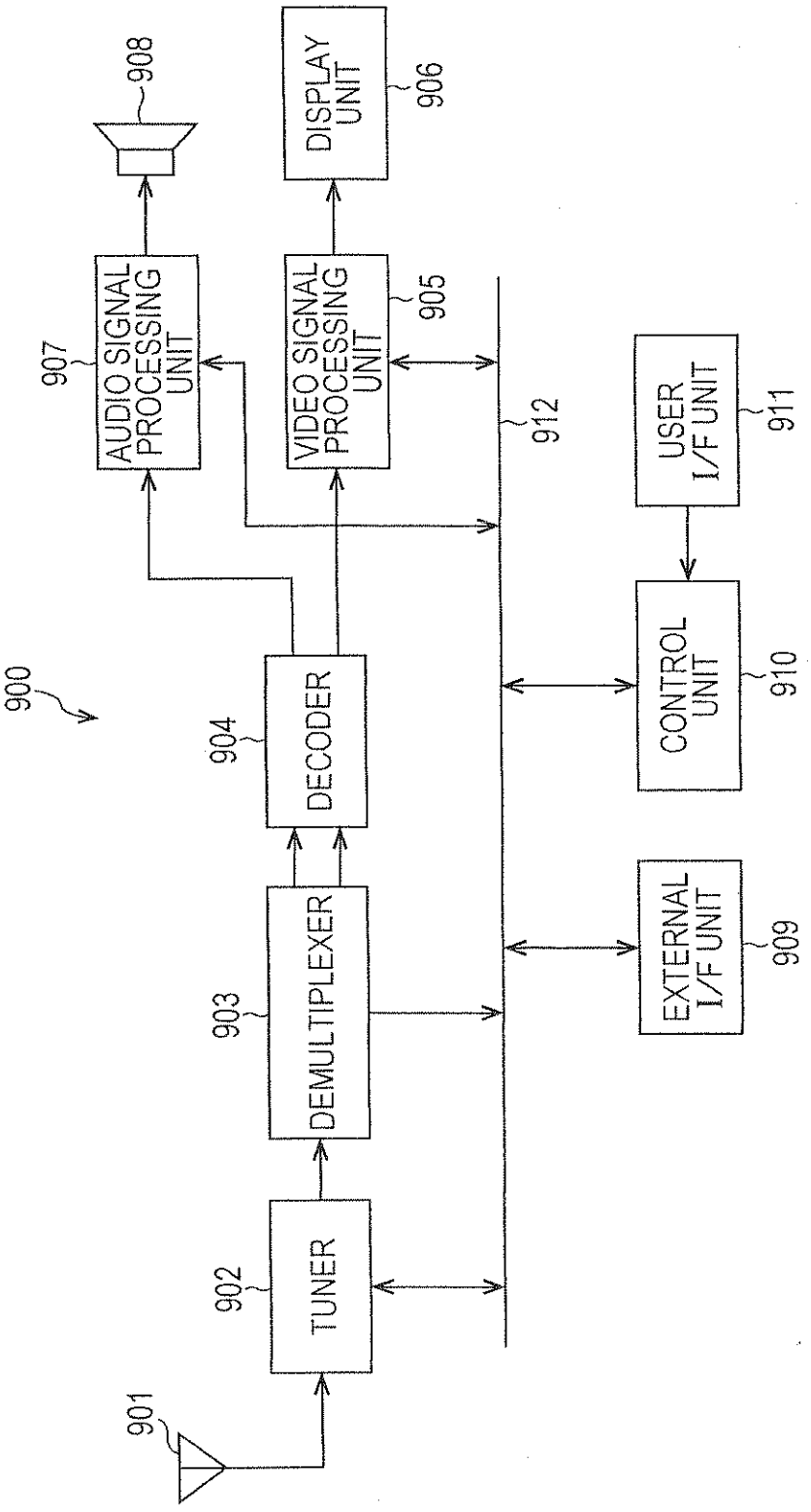

900
901
TUNER
902
DEMULTIPLEXER
903
DECODER
904
AUDIO SIGNAL PROCESSING UNIT
907
VIDEO SIGNAL PROCESSING UNIT
905
908
DISPLAY UNIT
906
912
CONTROL UNIT
910
USER I/F UNIT
911
EXTERNAL I/F UNIT
909

FIG. 31

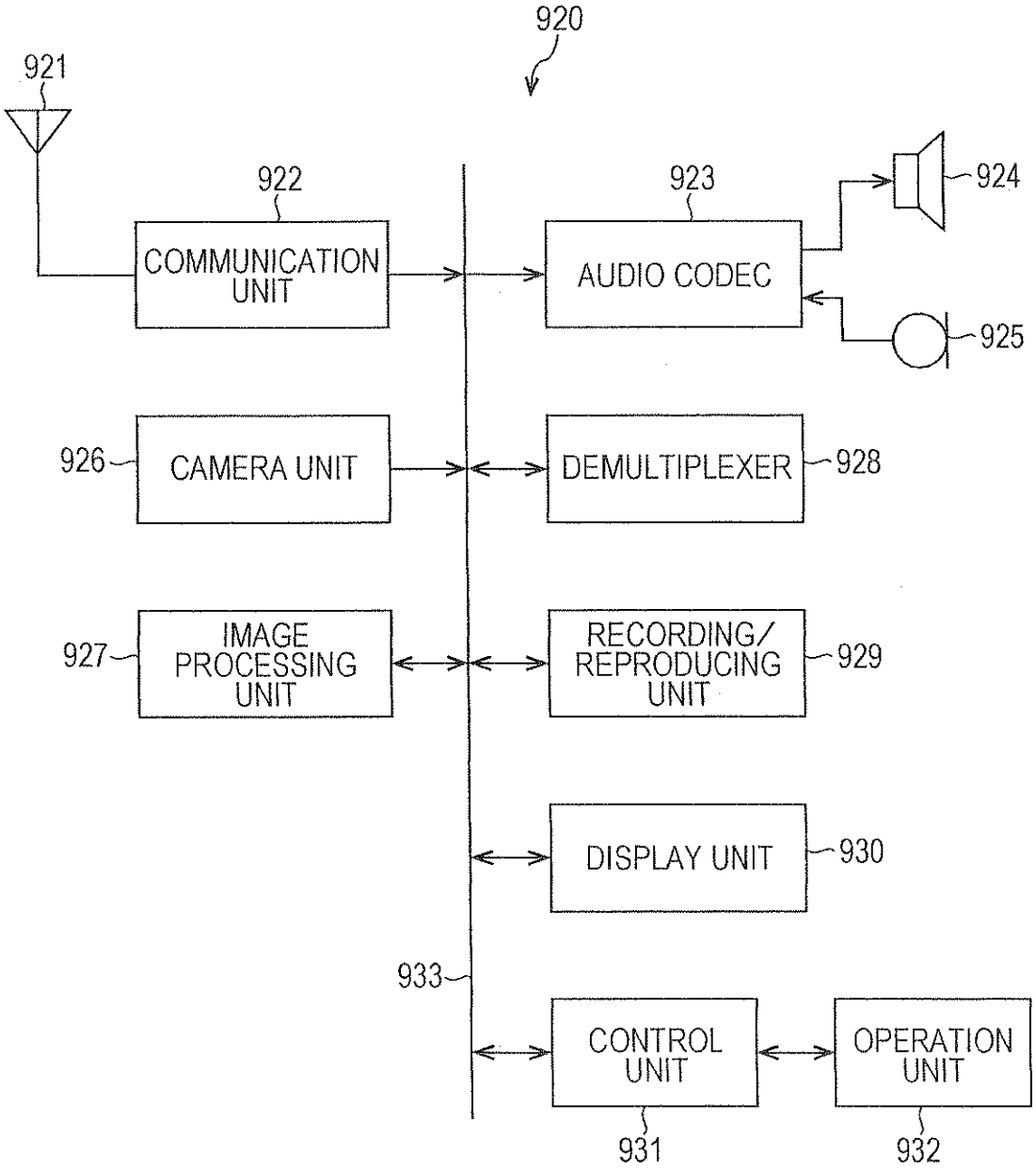

920
921
922
COMMUNICATION UNIT
923
AUDIO CODEC
924
925
926
CAMERA UNIT
DEMULTIPLEXER
928
927
IMAGE PROCESSING UNIT
RECORDING/ REPRODUCING UNIT
929
DISPLAY UNIT
930
933
CONTROL UNIT
OPERATION UNIT
931
932

FIG. 32

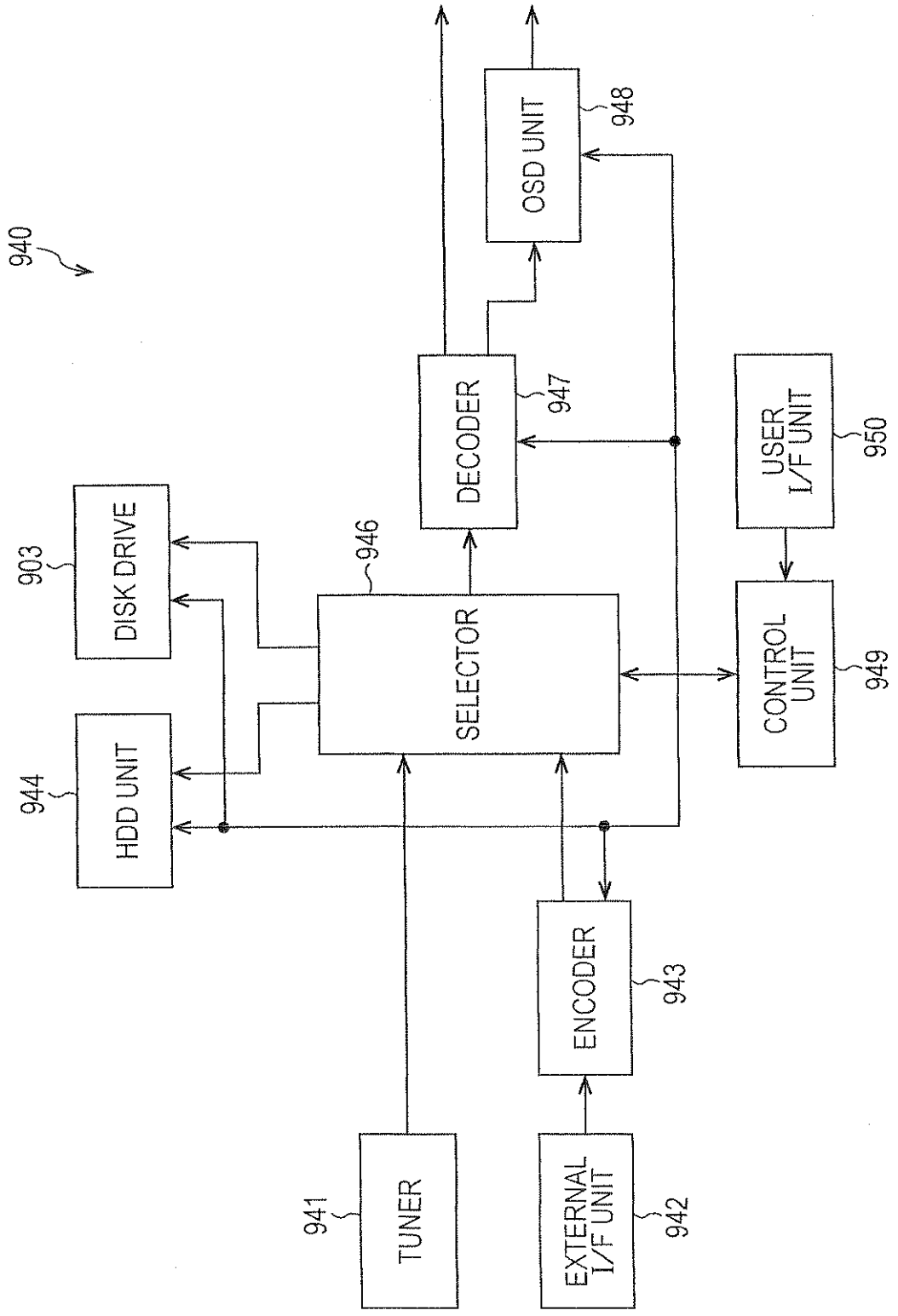
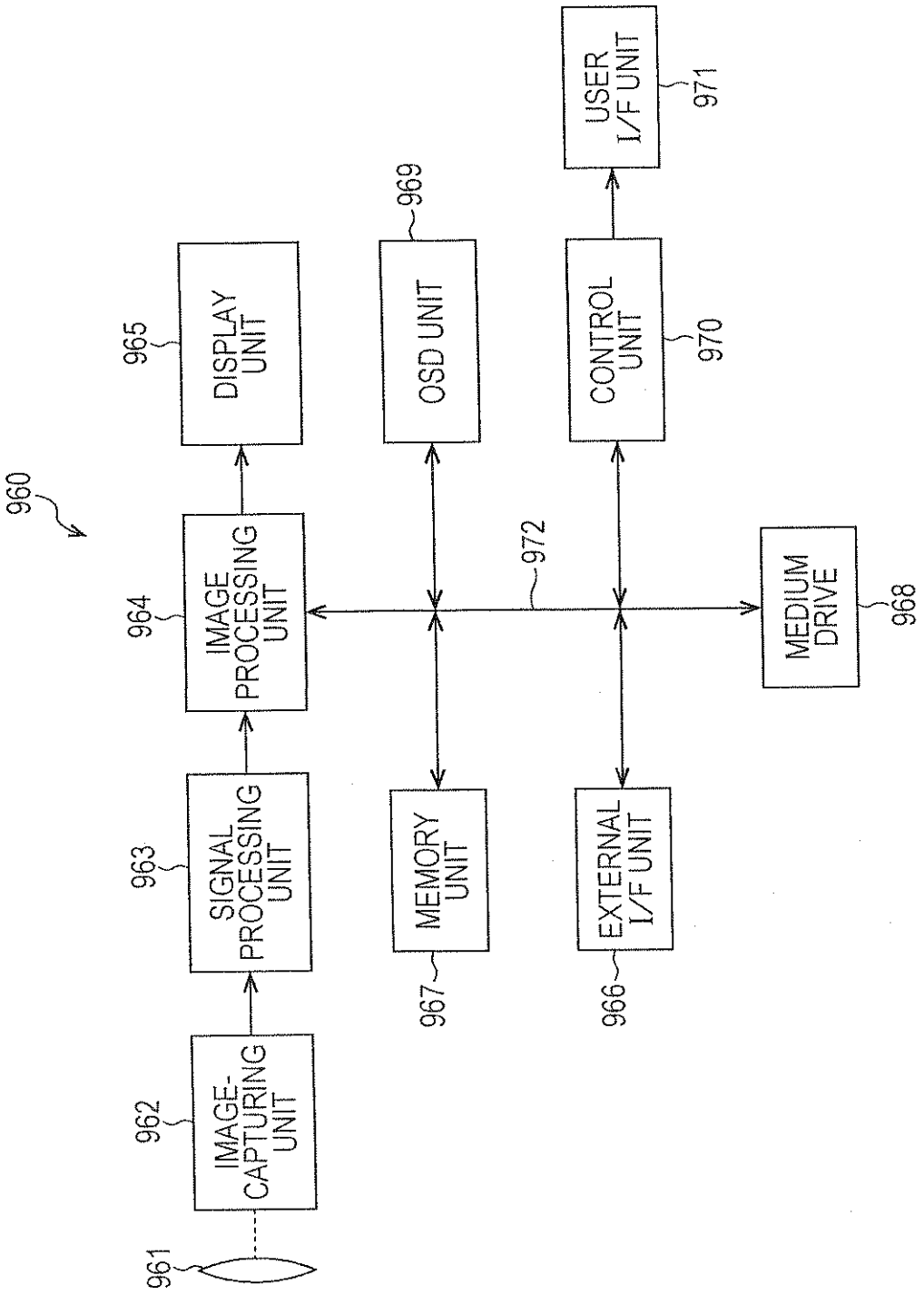

940
941
TUNER
942
EXTERNAL I/F UNIT
943
ENCODER
944
HDD UNIT
946
SELECTOR
947
DECODER
948
OSD UNIT
949
CONTROL UNIT
950
USER I/F UNIT
903
DISK DRIVE

FIG. 33


960
961
962
IMAGE-CAPTURING UNIT
963
SIGNAL PROCESSING UNIT
964
IMAGE PROCESSING UNIT
965
DISPLAY UNIT
966
EXTERNAL I/F UNIT
967
MEMORY UNIT
968
MEDIUM DRIVE
969
OSD UNIT
970
CONTROL UNIT
971
USER I/F UNIT
972