Fig.1

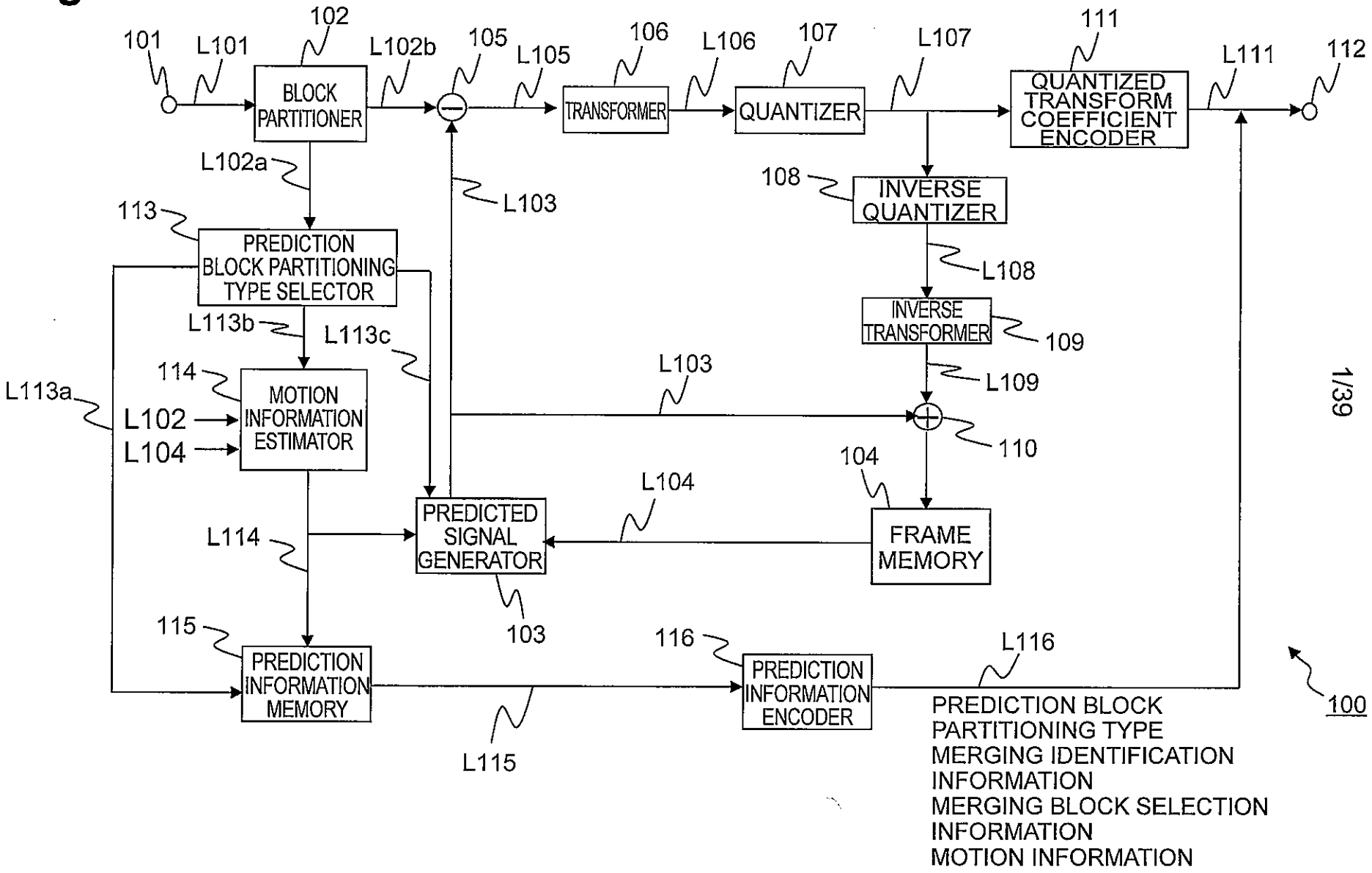
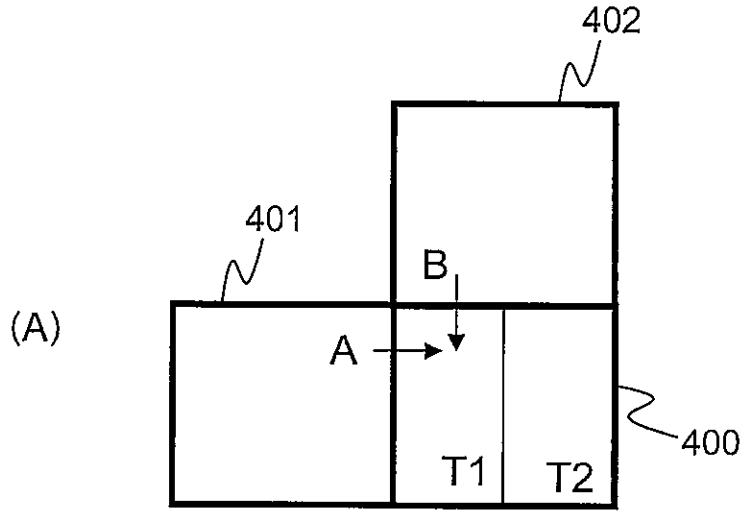
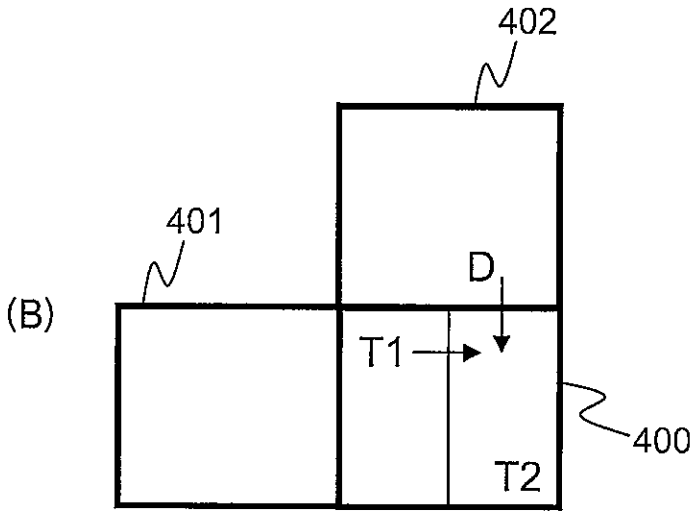

101
L101
102
BLOCK PARTITIONER
L102b
105
L105
106
TRANSFORMER
L106
107
QUANTIZER
L107
111
QUANTIZED TRANSFORM COEFFICIENT ENCODER
L111
112
L102a
L103
108
INVERSE QUANTIZER
113
PREDICTION BLOCK PARTITIONING TYPE SELECTOR
L108
INVERSE TRANSFORMER
109
L113b
L113c
L109
L103
114
L113a
MOTION INFORMATION ESTIMATOR
L102
L104
110
104
L104
PREDICTED SIGNAL GENERATOR
FRAME MEMORY
L114
103
115
116
L116
PREDICTION INFORMATION MEMORY
PREDICTION INFORMATION ENCODER
L115
100
PREDICTION BLOCK PARTITIONING TYPE
MERGING IDENTIFICATION INFORMATION
MERGING BLOCK SELECTION INFORMATION
MOTION INFORMATION

Fig.2

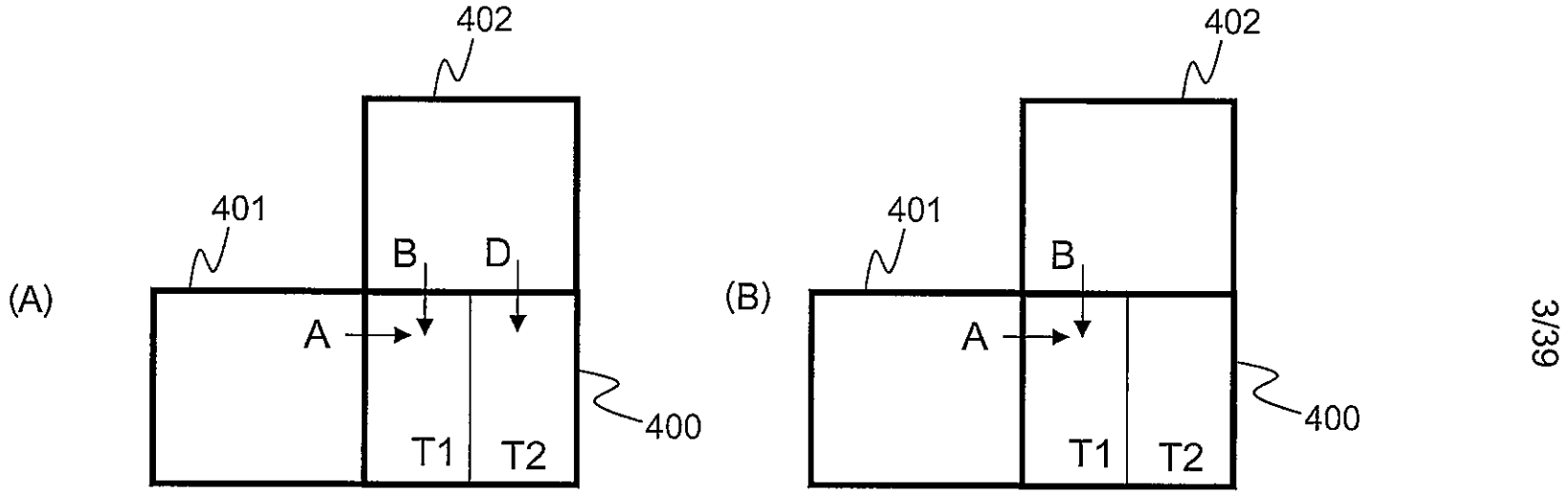


CANDIDATES OF NEIGHBORING BLOCKS AVAILABLE FOR GENERATION OF PREDICTED SIGNAL OF PREDICTION BLOCK T1



CANDIDATES OF NEIGHBORING BLOCKS AVAILABLE FOR GENERATION OF PREDICTED SIGNAL OF PREDICTION BLOCK T2

Fig.3



CASE WHERE MOTION INFORMATION OF T1 AND MOTION INFORMATION OF D ARE DIFFERENT FROM EACH OTHER

CASE WHERE MOTION INFORMATION OF T1 AND MOTION INFORMATION OF D ARE IDENTICAL WITH EACH OTHER

CANDIDATES OF NEIGHBORING BLOCKS AVAILABLE FOR GENERATION OF PREDICTED SIGNALS OF PREDICTION BLOCKS T1 AND T2

Fig.4

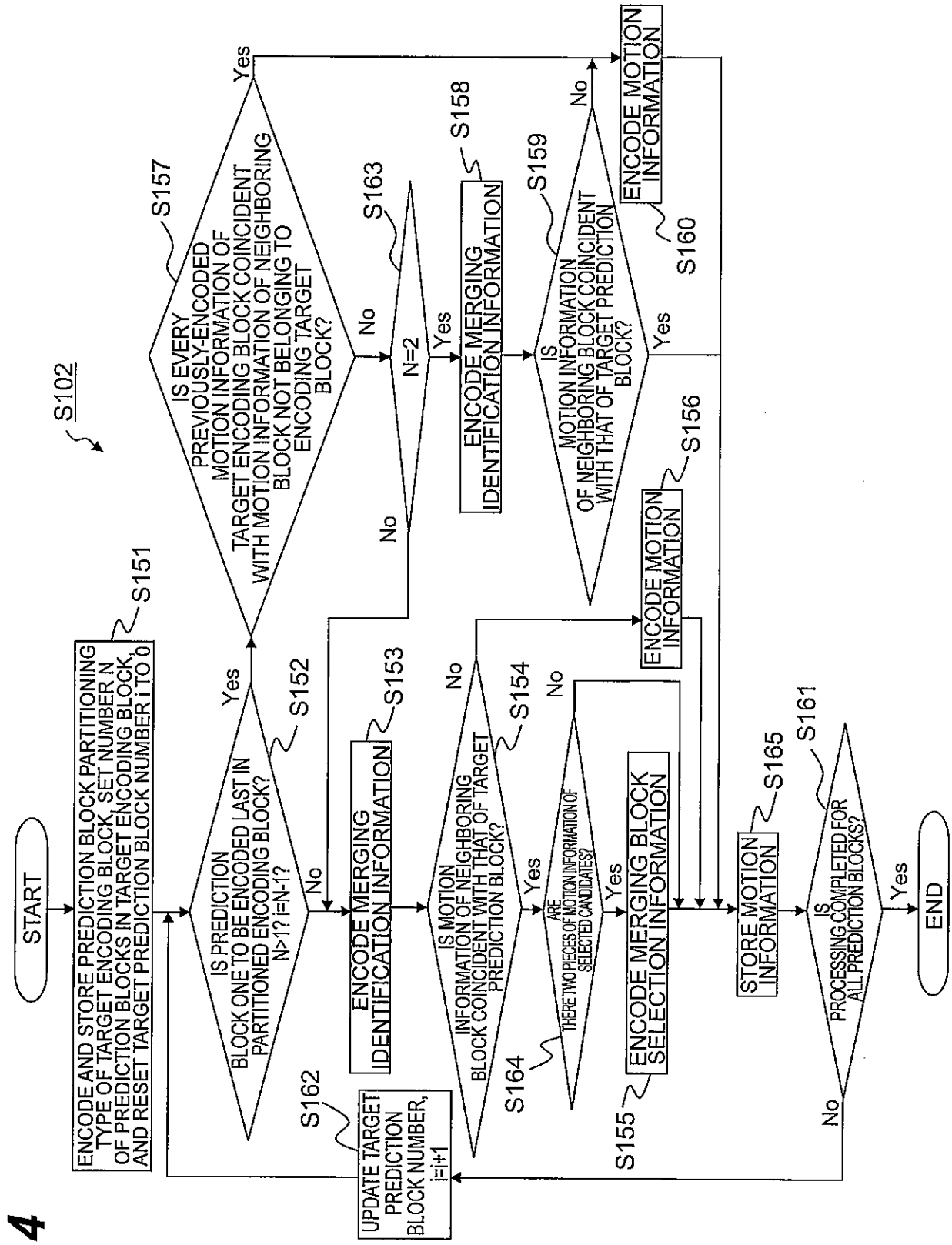

START
S102
ENCODE AND STORE PREDICTION BLOCK PARTITIONING TYPE OF TARGET ENCODING BLOCK, SET NUMBER N OF PREDICTION BLOCKS IN TARGET ENCODING BLOCK, AND RESET TARGET PREDICTION BLOCK NUMBER i TO 0
S151
IS PREDICTION BLOCK ONE TO BE ENCODED LAST IN PARTITIONED ENCODING BLOCK? N>1? i=N-1?
S152
Yes
No
IS EVERY PREVIOUSLY-ENCODED MOTION INFORMATION OF TARGET ENCODING BLOCK COINCIDENT WITH MOTION INFORMATION OF NEIGHBORING BLOCK NOT BELONGING TO ENCODING TARGET BLOCK?
S157
Yes
No
ENCODE MERGING IDENTIFICATION INFORMATION
S153
N=2
S163
Yes
No
ENCODE MERGING IDENTIFICATION INFORMATION
S158
IS MOTION INFORMATION OF NEIGHBORING BLOCK COINCIDENT WITH THAT OF TARGET PREDICTION BLOCK?
S159
No
Yes
ENCODE MOTION INFORMATION
S160
ENCODE MOTION INFORMATION
S156
IS MOTION INFORMATION OF NEIGHBORING BLOCK COINCIDENT WITH THAT OF TARGET PREDICTION BLOCK?
S154
No
Yes
ARE THERE TWO PIECES OF MOTION INFORMATION OF SELECTED CANDIDATES?
S164
No
Yes
ENCODE MERGING BLOCK SELECTION INFORMATION
S155
STORE MOTION INFORMATION
S165
IS PROCESSING COMPLETED FOR ALL PREDICTION BLOCKS?
S161
No
Yes
UPDATE TARGET PREDICTION BLOCK NUMBER, i=i+1
S162
END

Fig.5

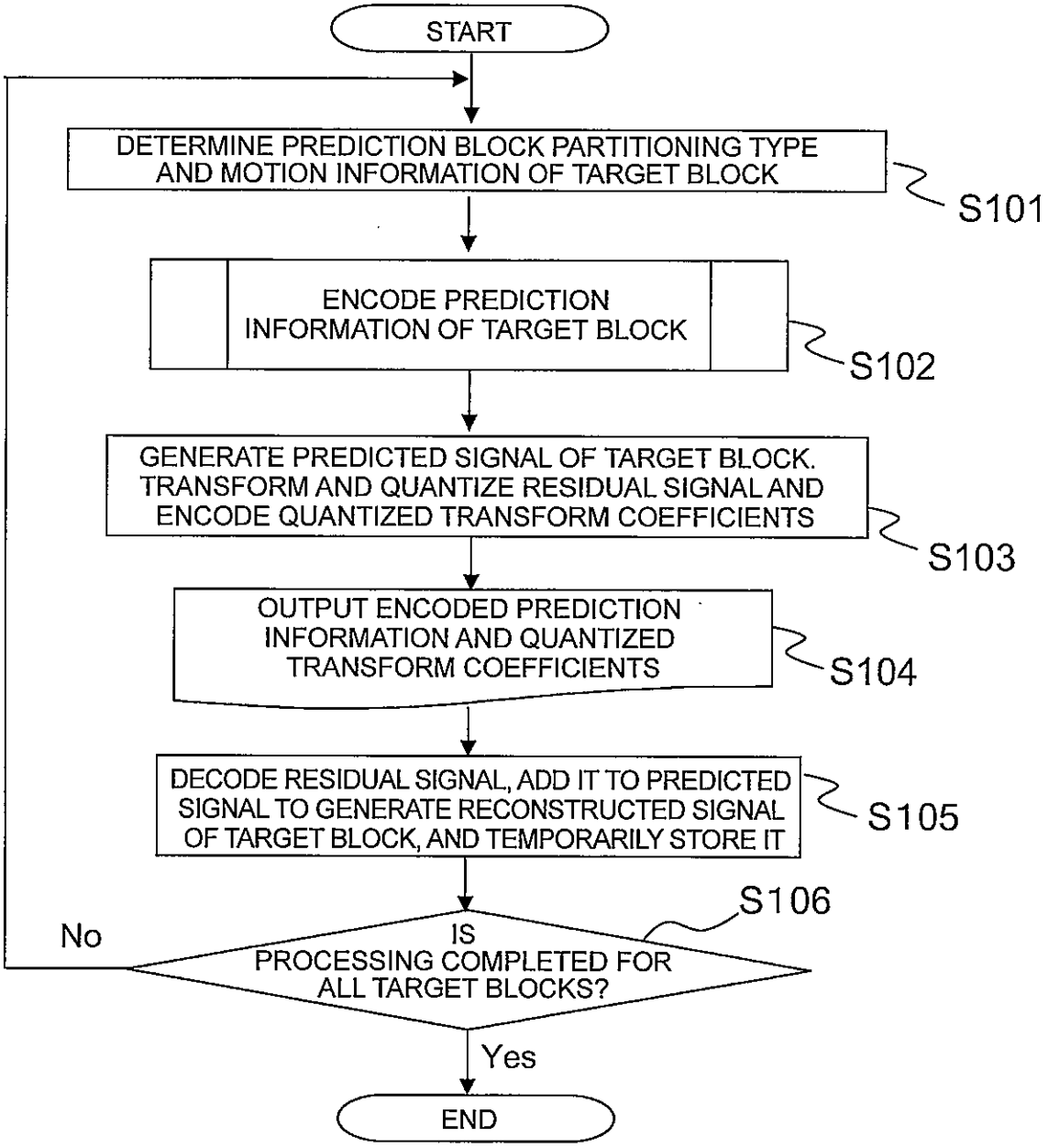

START
DETERMINE PREDICTION BLOCK PARTITIONING TYPE AND MOTION INFORMATION OF TARGET BLOCK
S101
ENCODE PREDICTION INFORMATION OF TARGET BLOCK
S102
GENERATE PREDICTED SIGNAL OF TARGET BLOCK. TRANSFORM AND QUANTIZE RESIDUAL SIGNAL AND ENCODE QUANTIZED TRANSFORM COEFFICIENTS
S103
OUTPUT ENCODED PREDICTION INFORMATION AND QUANTIZED TRANSFORM COEFFICIENTS
S104
DECODE RESIDUAL SIGNAL, ADD IT TO PREDICTED SIGNAL TO GENERATE RECONSTRUCTED SIGNAL OF TARGET BLOCK, AND TEMPORARILY STORE IT
S105
S106
No
IS PROCESSING COMPLETED FOR ALL TARGET BLOCKS?
Yes
END

Fig.6

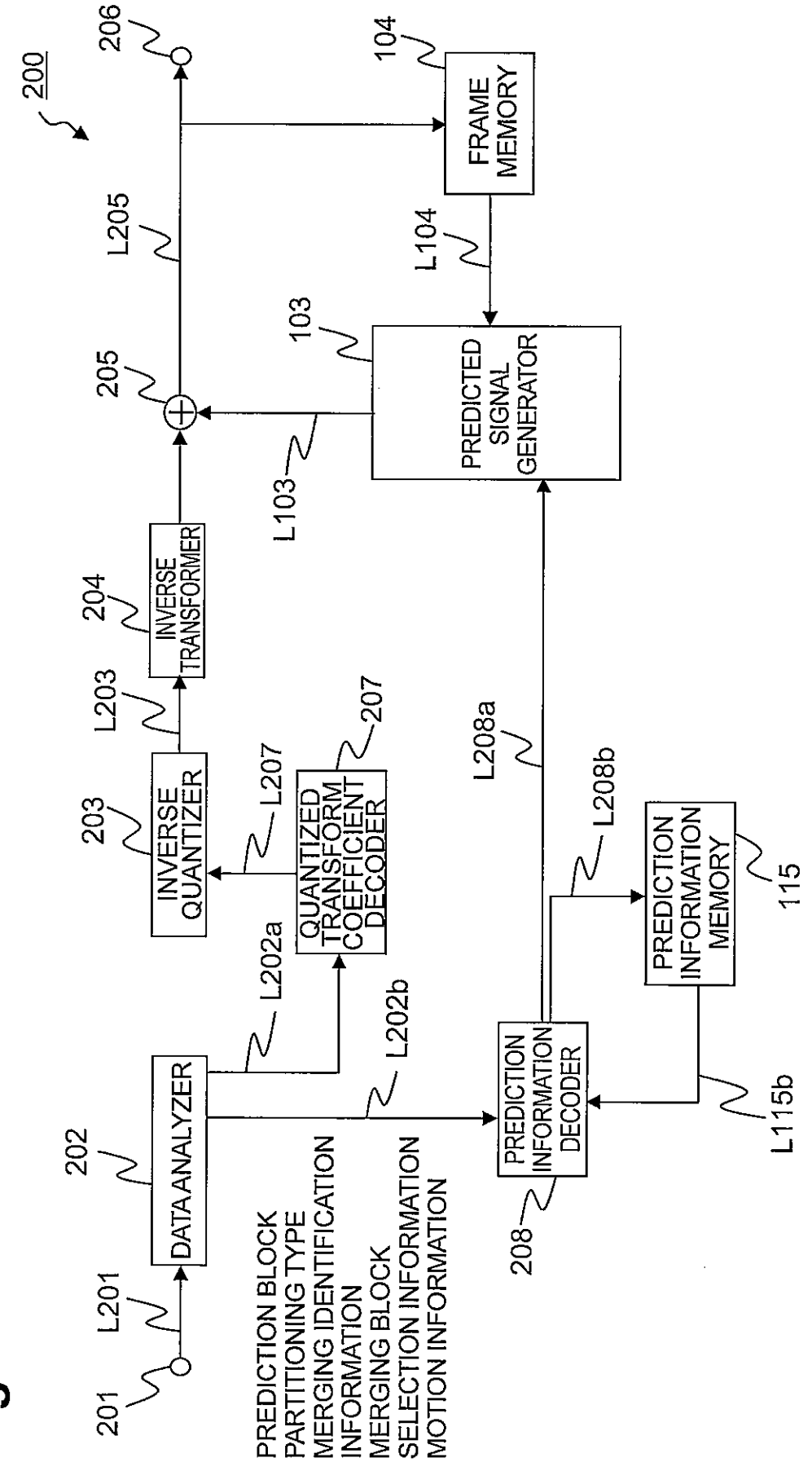

200
206
104
FRAME MEMORY
L205
L104
103
205
PREDICTED SIGNAL GENERATOR
L103
204
INVERSE TRANSFORMER
L203
207
203
INVERSE QUANTIZER
L207
QUANTIZED TRANSFORM COEFFICIENT DECODER
L208a
L208b
PREDICTION INFORMATION MEMORY
115
L202a
L202b
202
DATA ANALYZER
PREDICTION INFORMATION DECODER
L115b
208
L201
201
PREDICTION BLOCK
PARTITIONING TYPE
MERGING IDENTIFICATION INFORMATION
MERGING BLOCK
SELECTION INFORMATION
MOTION INFORMATION

Fig.7

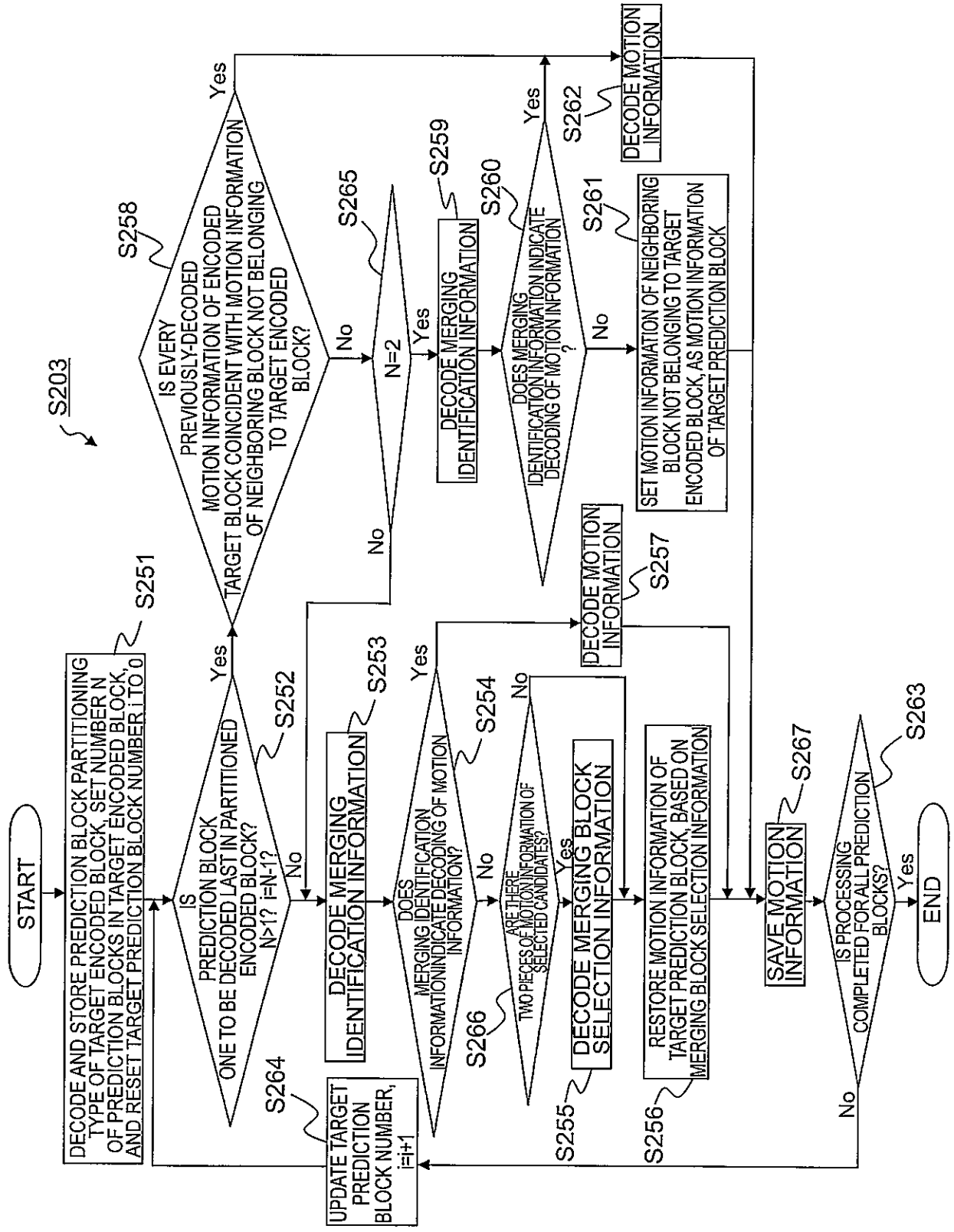

START
S203
DECODE AND STORE PREDICTION BLOCK PARTITIONING TYPE OF TARGET ENCODED BLOCK, SET NUMBER N OF PREDICTION BLOCKS IN TARGET ENCODED BLOCK, AND RESET TARGET PREDICTION BLOCK NUMBER i TO 0
S251
IS PREDICTION BLOCK ONE TO BE DECODED LAST IN PARTITIONED ENCODED BLOCK? N>1? i=N-1?
S252
Yes
No
DECODE MERGING IDENTIFICATION INFORMATION
S253
DOES MERGING IDENTIFICATION INFORMATION INDICATE DECODING OF MOTION INFORMATION?
S254
Yes
No
ARE THERE TWO PIECES OF MOTION INFORMATION OF SELECTED CANDIDATES?
S266
Yes
No
DECODE MERGING BLOCK SELECTION INFORMATION
S255
DECODE MOTION INFORMATION
S257
RESTORE MOTION INFORMATION OF TARGET PREDICTION BLOCK, BASED ON MERGING BLOCK SELECTION INFORMATION
S256
IS EVERY PREVIOUSLY-DECODED MOTION INFORMATION OF ENCODED TARGET BLOCK COINCIDENT WITH MOTION INFORMATION OF NEIGHBORING BLOCK NOT BELONGING TO TARGET ENCODED BLOCK?
S258
Yes
No
N=2
S265
Yes
No
DECODE MERGING IDENTIFICATION INFORMATION
S259
DOES MERGING IDENTIFICATION INFORMATION INDICATE DECODING OF MOTION INFORMATION?
S260
Yes
No
SET MOTION INFORMATION OF NEIGHBORING BLOCK NOT BELONGING TO TARGET ENCODED BLOCK, AS MOTION INFORMATION OF TARGET PREDICTION BLOCK
S261
DECODE MOTION INFORMATION
S262
SAVE MOTION INFORMATION
S267
IS PROCESSING COMPLETED FOR ALL PREDICTION BLOCKS?
S263
Yes
No
END
UPDATE TARGET PREDICTION BLOCK NUMBER, i=i+1
S264

Fig.8

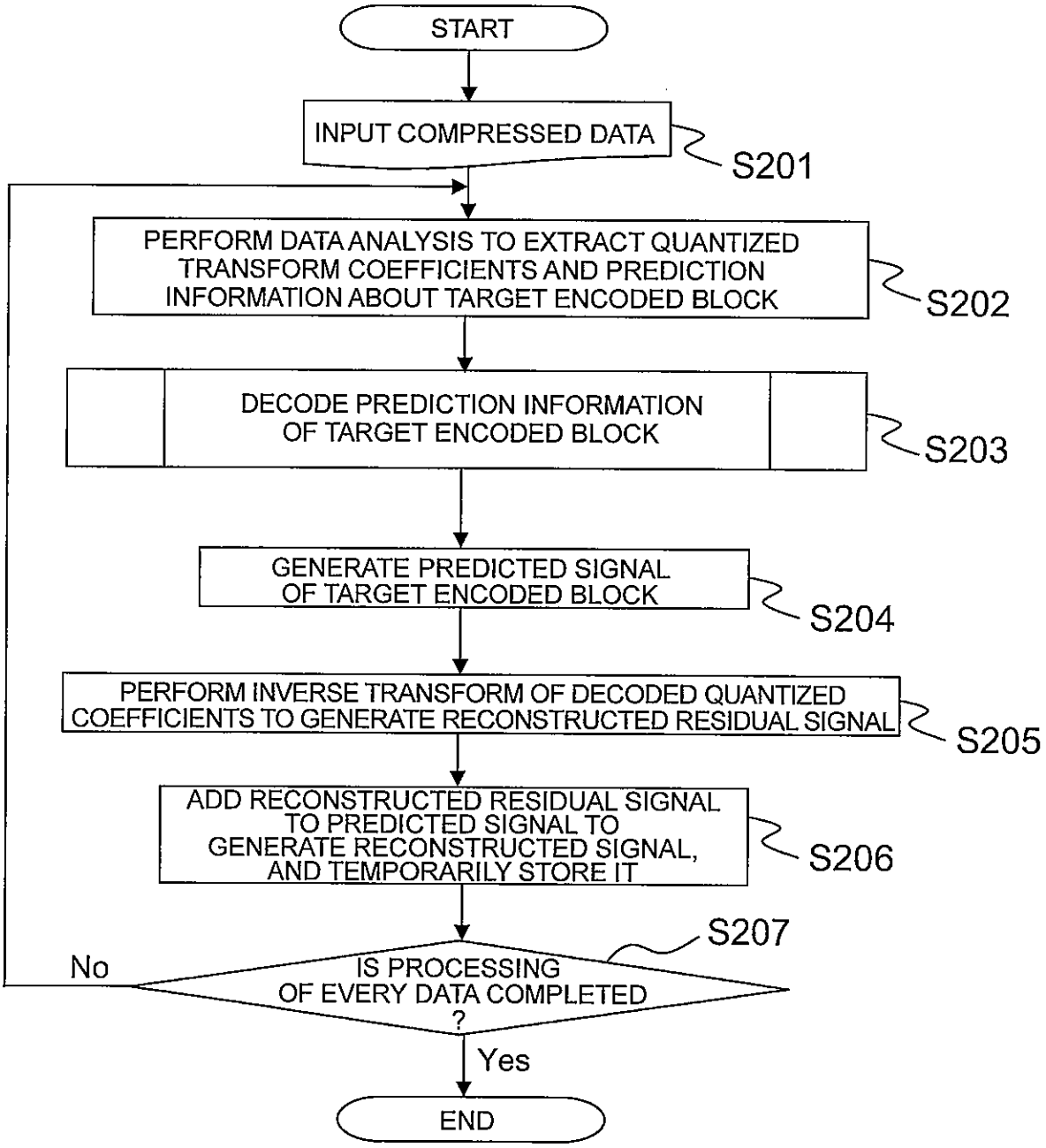

START
INPUT COMPRESSED DATA
S201
PERFORM DATA ANALYSIS TO EXTRACT QUANTIZED TRANSFORM COEFFICIENTS AND PREDICTION INFORMATION ABOUT TARGET ENCODED BLOCK
S202
DECODE PREDICTION INFORMATION OF TARGET ENCODED BLOCK
S203
GENERATE PREDICTED SIGNAL OF TARGET ENCODED BLOCK
S204
PERFORM INVERSE TRANSFORM OF DECODED QUANTIZED COEFFICIENTS TO GENERATE RECONSTRUCTED RESIDUAL SIGNAL
S205
ADD RECONSTRUCTED RESIDUAL SIGNAL TO PREDICTED SIGNAL TO GENERATE RECONSTRUCTED SIGNAL, AND TEMPORARILY STORE IT
S206
S207
No
IS PROCESSING OF EVERY DATA COMPLETED ?
Yes
END

Fig.9

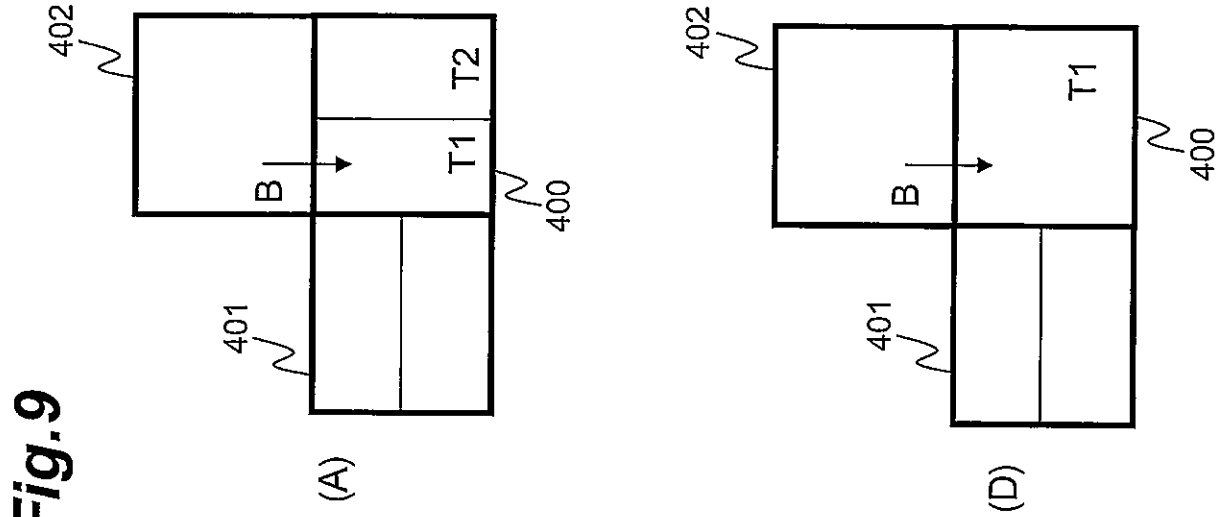


Fig.10

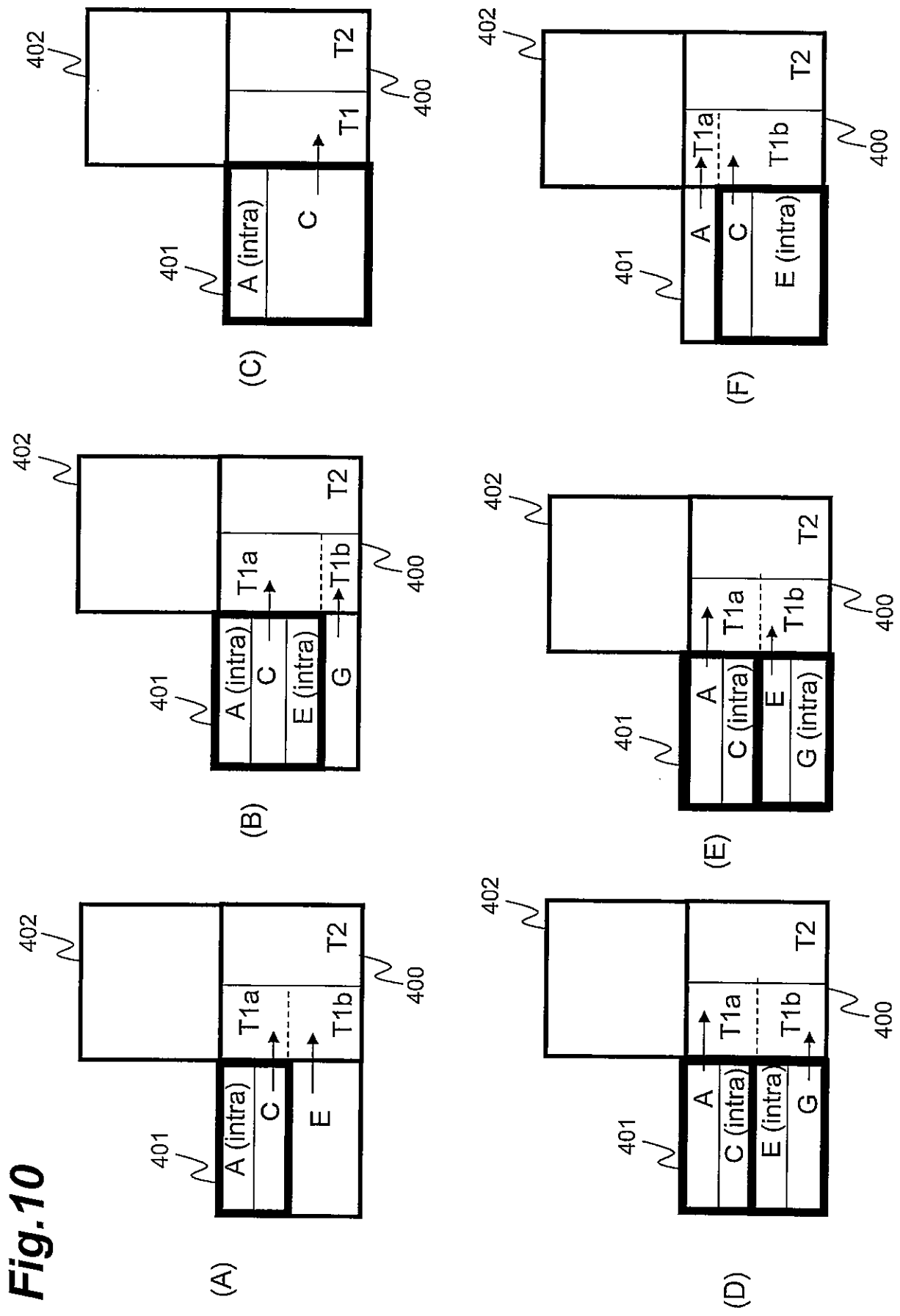

(A)
402
400
T2
T1a
T1b
401
A (intra)
C
E
(B)
402
400
T2
T1a
T1b
401
A (intra)
C
E (intra)
G
(C)
402
400
T2
T1
401
A (intra)
C
(D)
402
400
T2
T1a
T1b
401
A
C (intra)
E (intra)
G
(E)
402
400
T2
T1a
T1b
401
A
C (intra)
E
G (intra)
(F)
402
400
T2
T1a
T1b
401
A
C
E (intra)

Fig.11

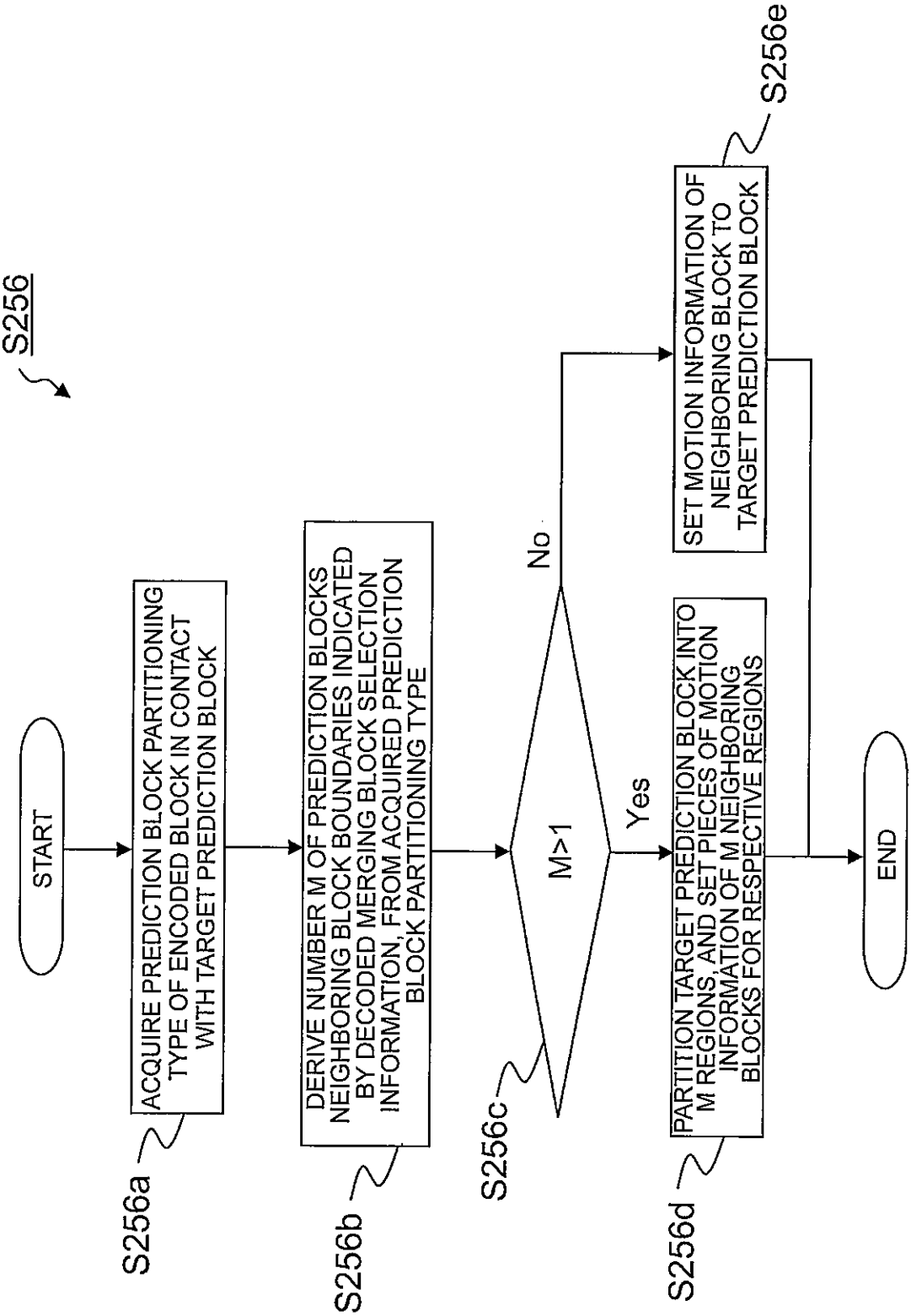
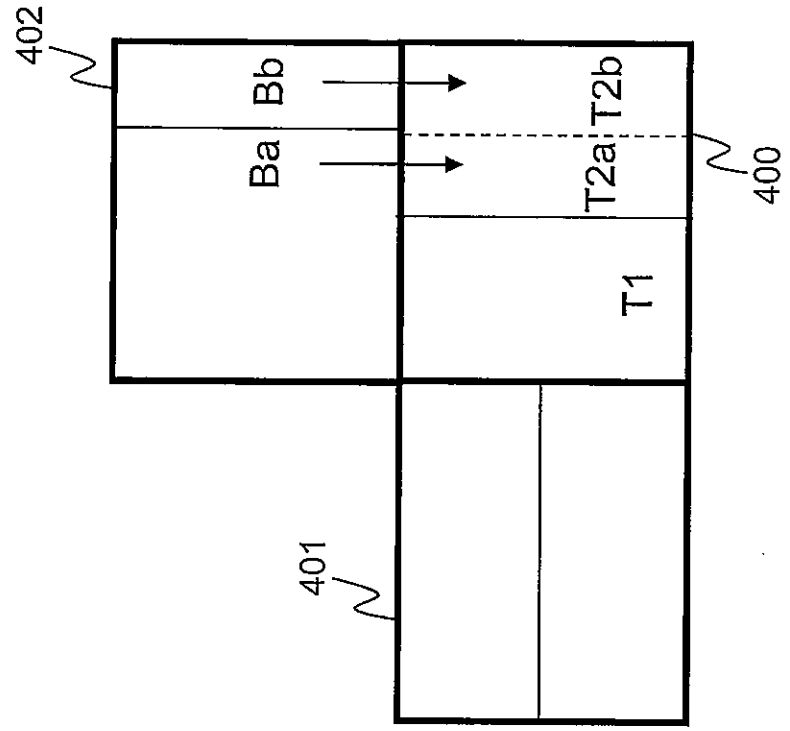
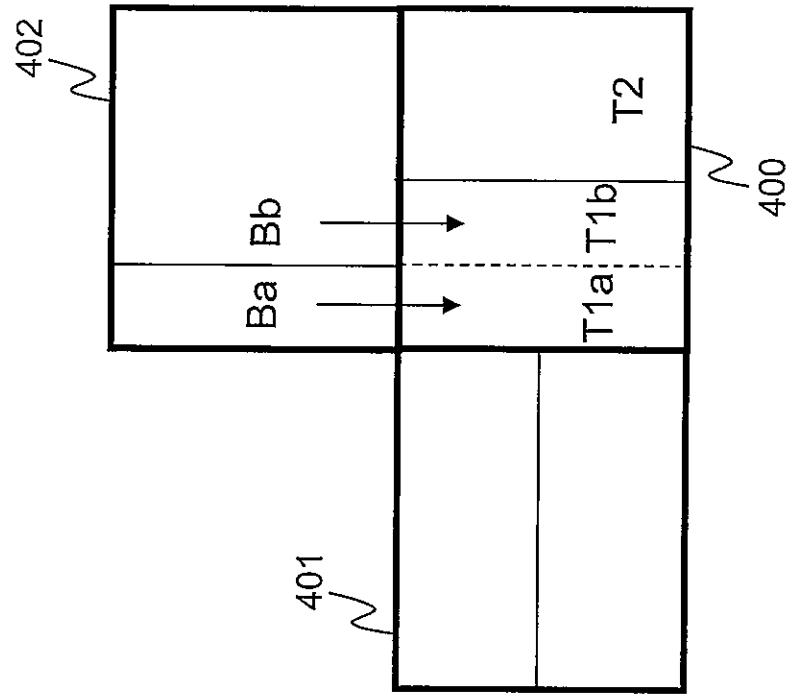

S256
START
ACQUIRE PREDICTION BLOCK PARTITIONING TYPE OF ENCODED BLOCK IN CONTACT WITH TARGET PREDICTION BLOCK
S256a
DERIVE NUMBER M OF PREDICTION BLOCKS NEIGHBORING BLOCK BOUNDARIES INDICATED BY DECODED MERGING BLOCK SELECTION INFORMATION, FROM ACQUIRED PREDICTION BLOCK PARTITIONING TYPE
S256b
M>1
S256c
No
Yes
SET MOTION INFORMATION OF NEIGHBORING BLOCK TO TARGET PREDICTION BLOCK
S256e
PARTITION TARGET PREDICTION BLOCK INTO M REGIONS, AND SET PIECES OF MOTION INFORMATION OF M NEIGHBORING BLOCKS FOR RESPECTIVE REGIONS
S256d
END

Fig.12



(B)



(A)

Fig.13

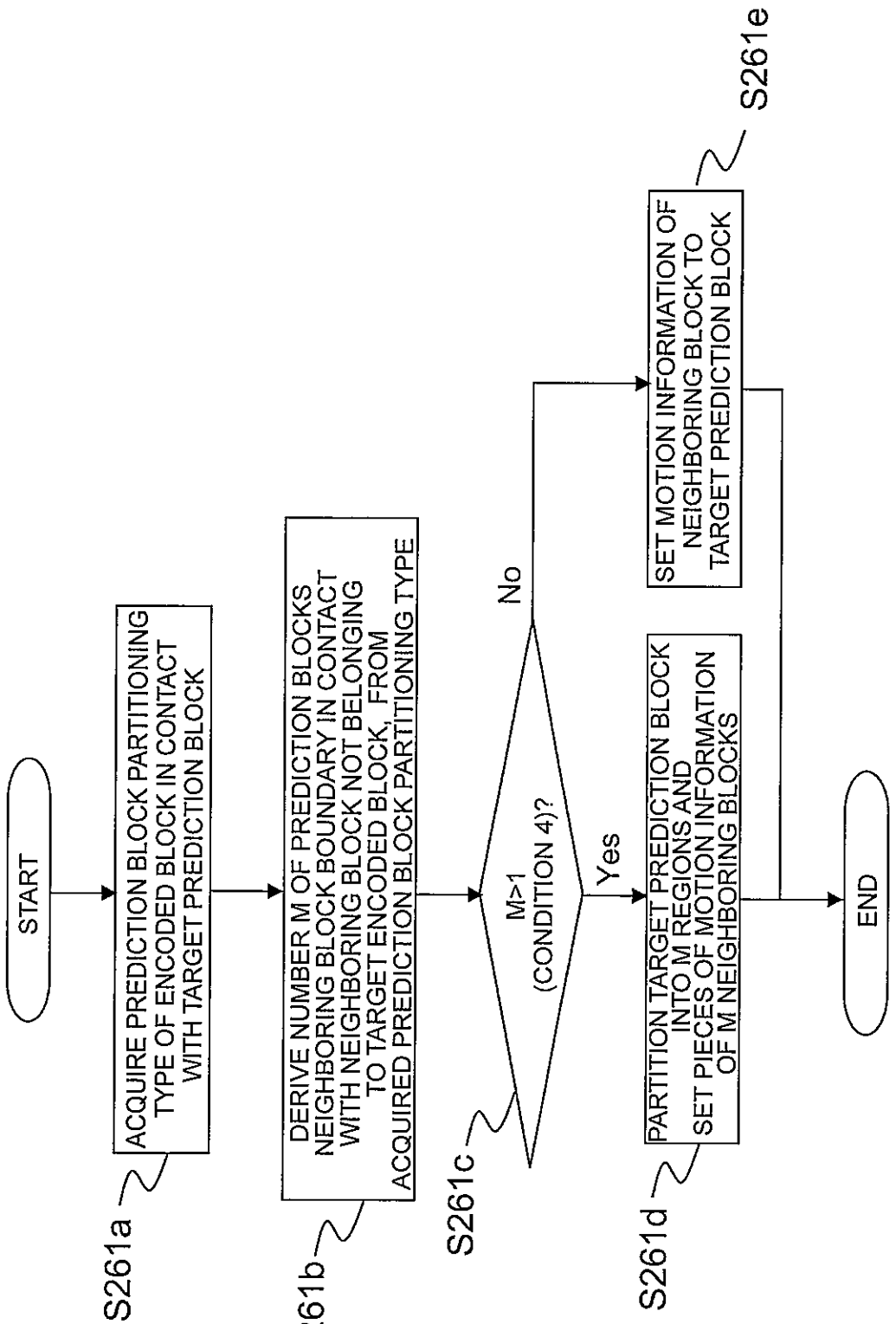
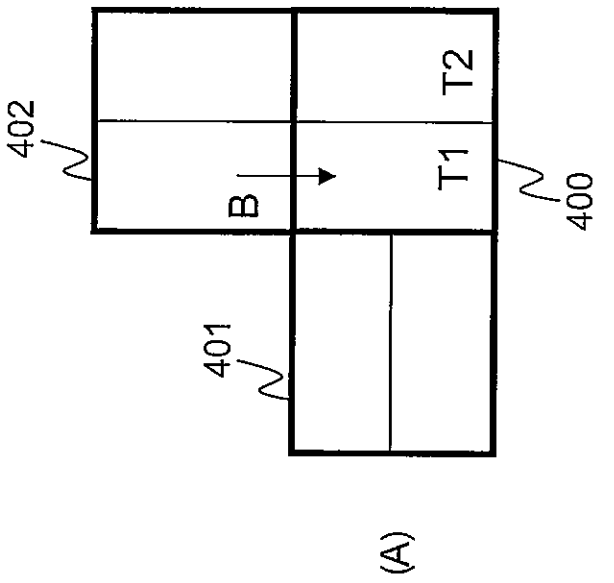

START
ACQUIRE PREDICTION BLOCK PARTITIONING TYPE OF ENCODED BLOCK IN CONTACT WITH TARGET PREDICTION BLOCK
S261a
DERIVE NUMBER M OF PREDICTION BLOCKS NEIGHBORING BLOCK BOUNDARY IN CONTACT WITH NEIGHBORING BLOCK NOT BELONGING TO TARGET ENCODED BLOCK, FROM ACQUIRED PREDICTION BLOCK PARTITIONING TYPE
S261b
M>1 (CONDITION 4)?
S261c
No
Yes
SET MOTION INFORMATION OF NEIGHBORING BLOCK TO TARGET PREDICTION BLOCK
S261e
PARTITION TARGET PREDICTION BLOCK INTO M REGIONS AND SET PIECES OF MOTION INFORMATION OF M NEIGHBORING BLOCKS
S261d
END

Fig.14



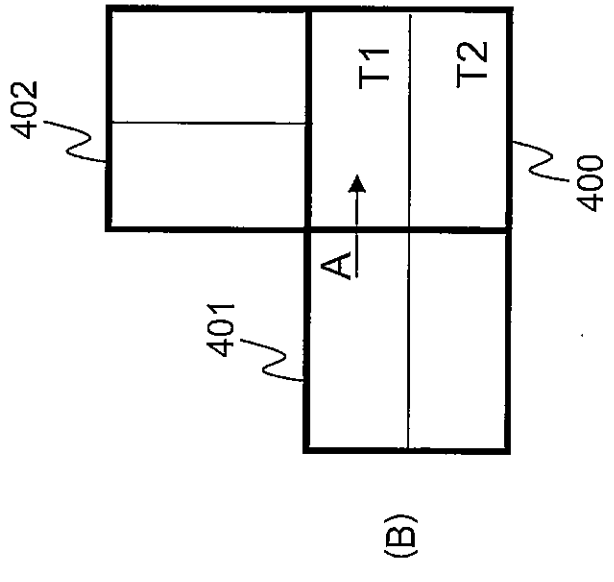
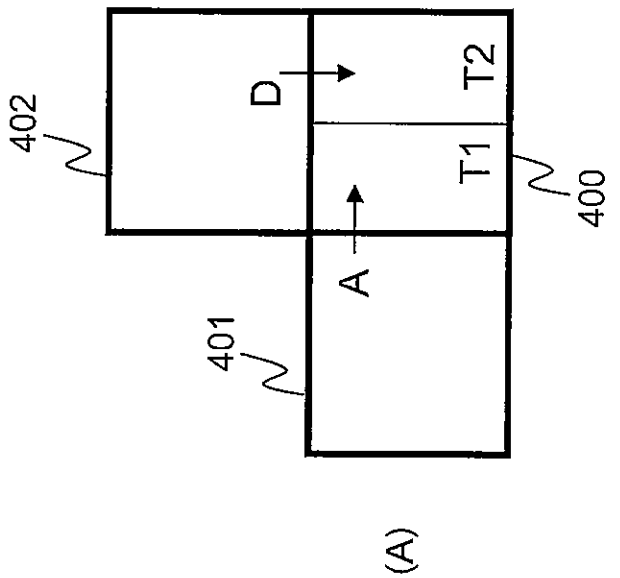


Fig.15


402
D
T2
T1
400
401
A
(A)
LIMIT CANDIDATES FOR BLOCK MERGING TO ONE

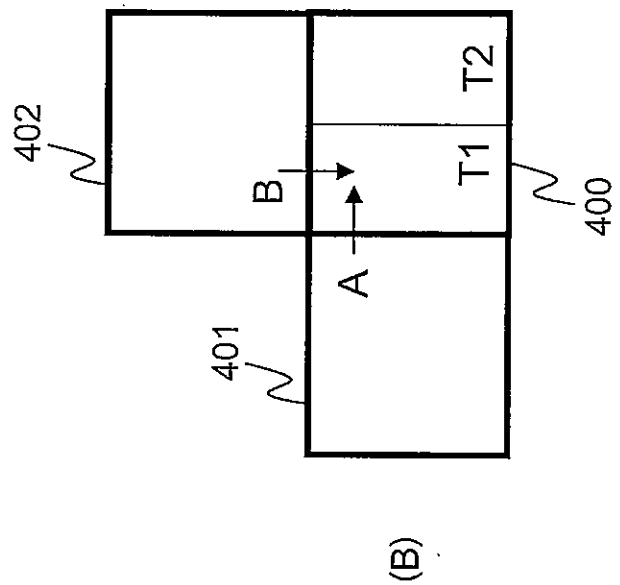

402
B
T2
T1
400
401
A
(B)
NOT APPLY BLOCK MERGING TO BLOCK T2

Fig.16

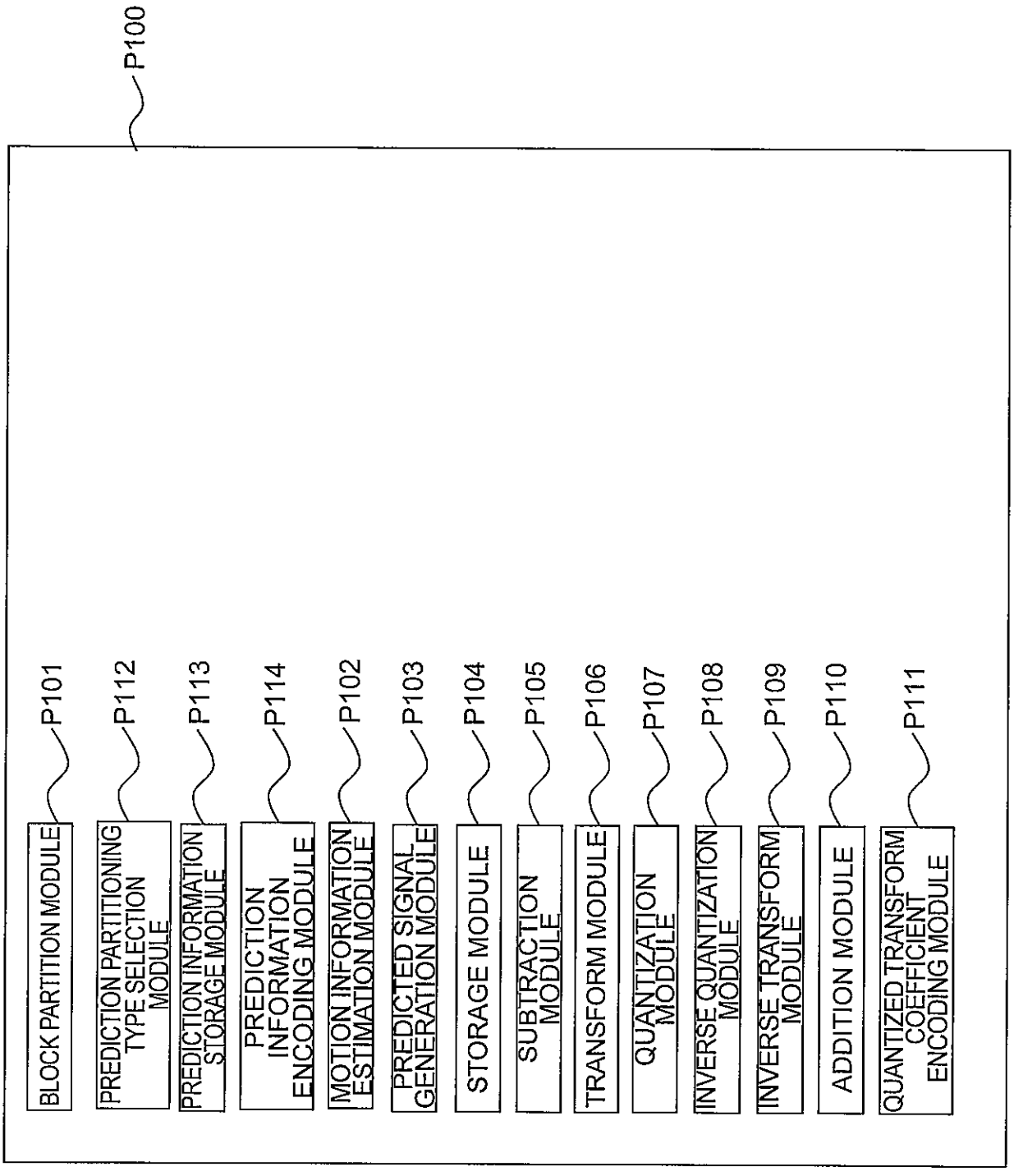

P100
BLOCK PARTITION MODULE
P101
PREDICTION PARTITIONING TYPE SELECTION MODULE
P112
PREDICTION INFORMATION STORAGE MODULE
P113
PREDICTION INFORMATION ENCODING MODULE
P114
MOTION INFORMATION ESTIMATION MODULE
P102
PREDICTED SIGNAL GENERATION MODULE
P103
STORAGE MODULE
P104
SUBTRACTION MODULE
P105
TRANSFORM MODULE
P106
QUANTIZATION MODULE
P107
INVERSE QUANTIZATION MODULE
P108
INVERSE TRANSFORM MODULE
P109
ADDITION MODULE
P110
QUANTIZED TRANSFORM COEFFICIENT ENCODING MODULE
P111

Fig.17

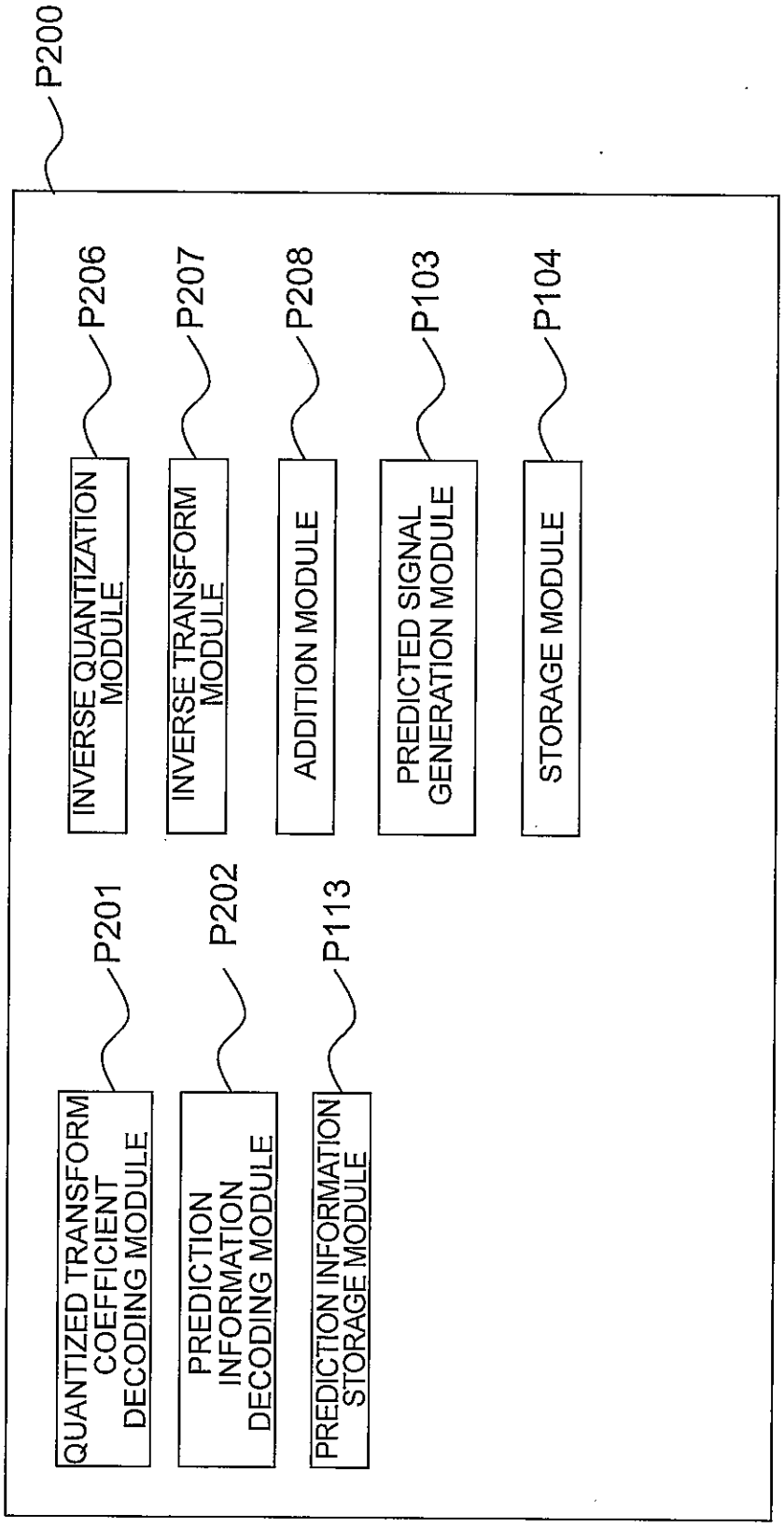

P200
QUANTIZED TRANSFORM COEFFICIENT DECODING MODULE
P201
PREDICTION INFORMATION DECODING MODULE
P202
PREDICTION INFORMATION STORAGE MODULE
P113
INVERSE QUANTIZATION MODULE
P206
INVERSE TRANSFORM MODULE
P207
ADDITION MODULE
P208
PREDICTED SIGNAL GENERATION MODULE
P103
STORAGE MODULE
P104

Fig.18

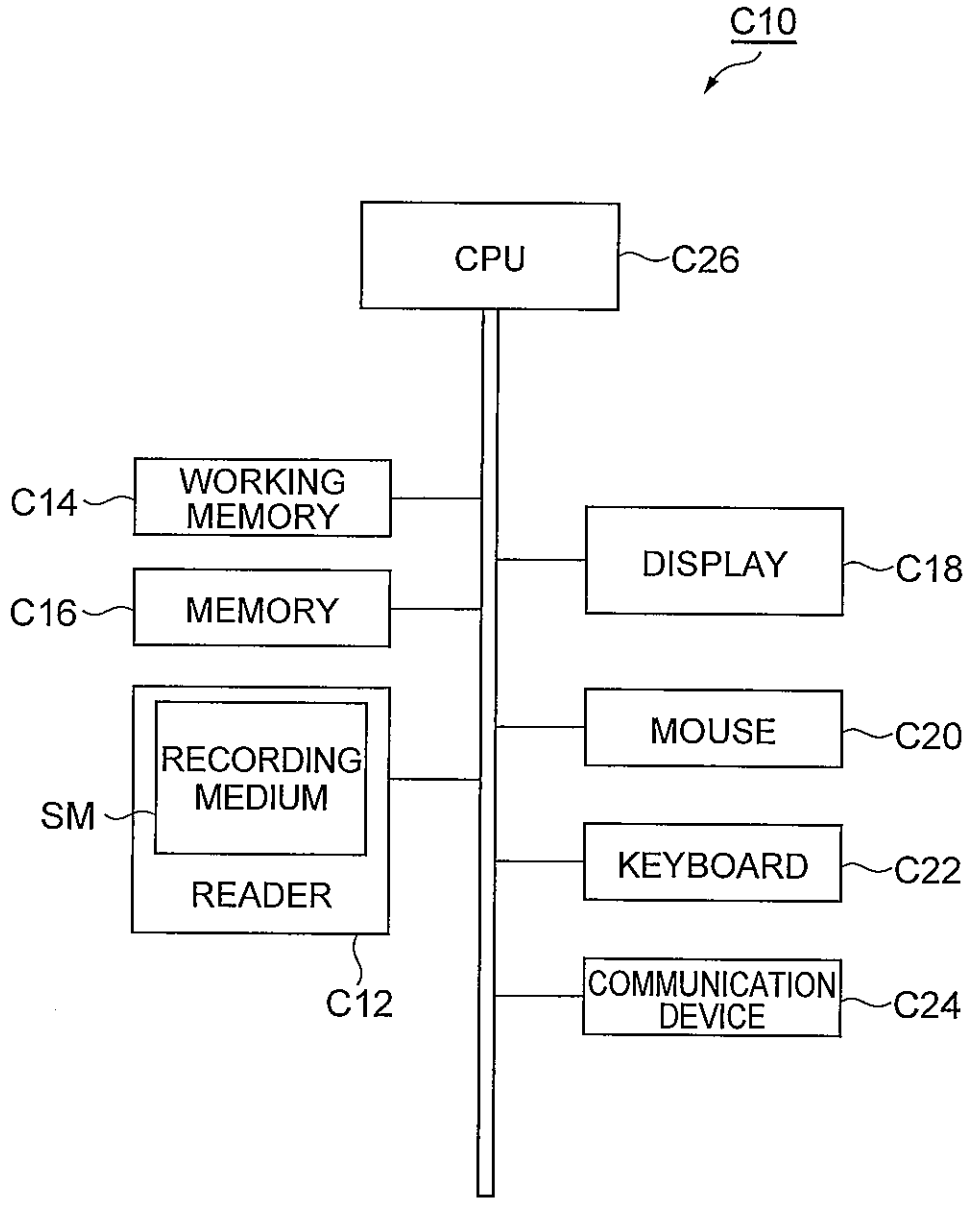

C10
CPU
C26
C14
WORKING MEMORY
C16
MEMORY
SM
RECORDING MEDIUM
READER
C12
DISPLAY
C18
MOUSE
C20
KEYBOARD
C22
COMMUNICATION DEVICE
C24

Fig.19

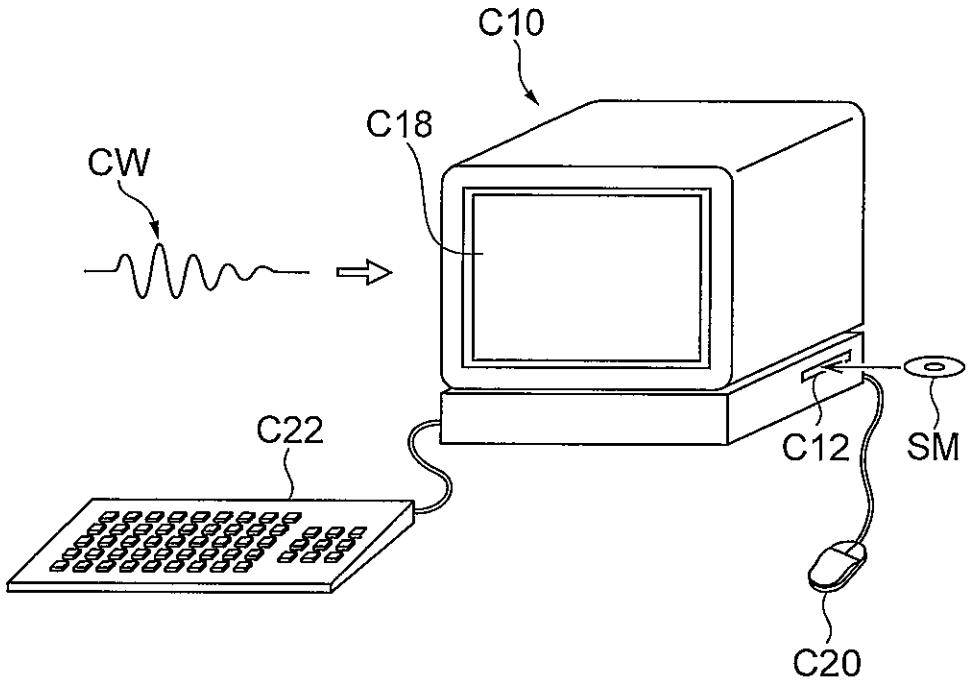
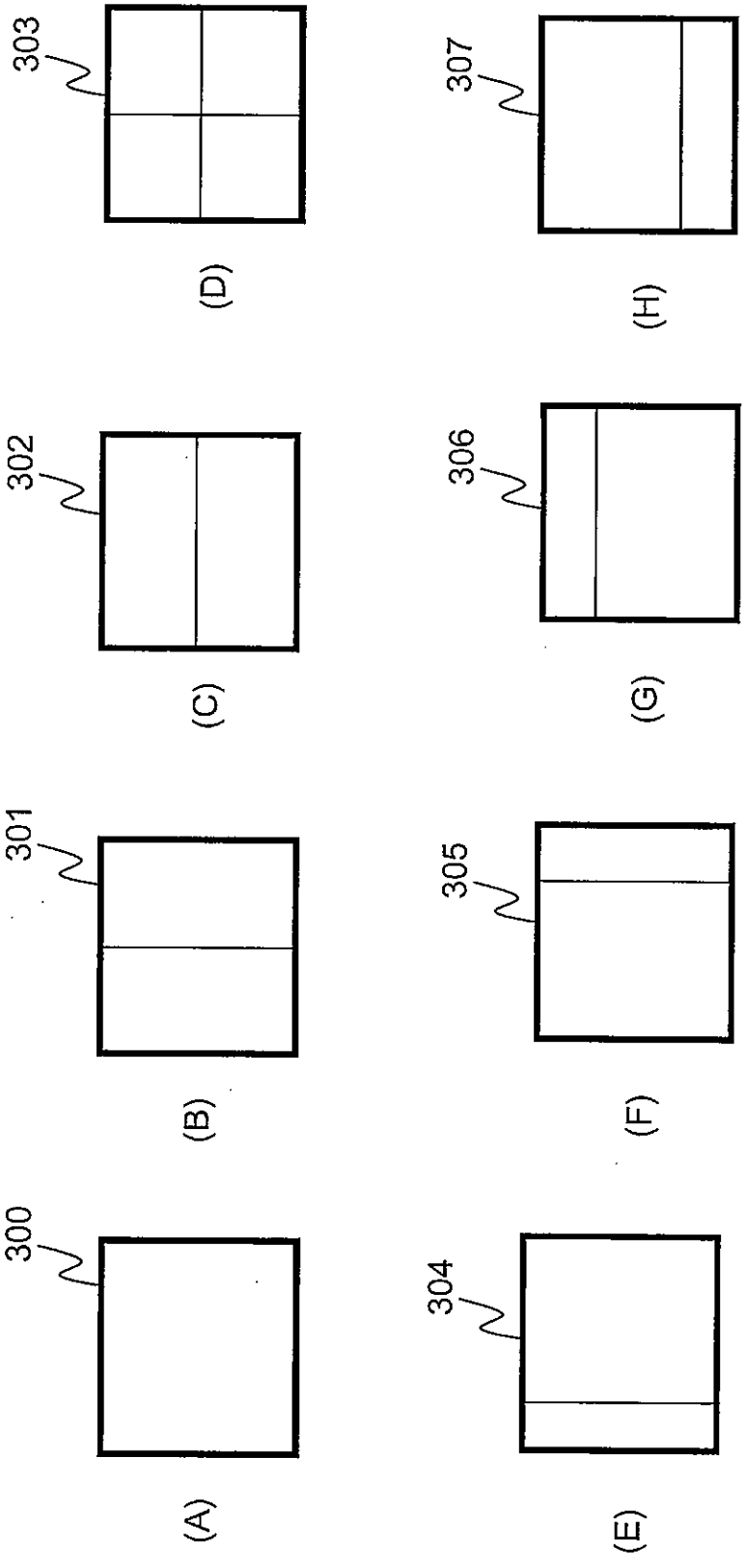


Fig.20



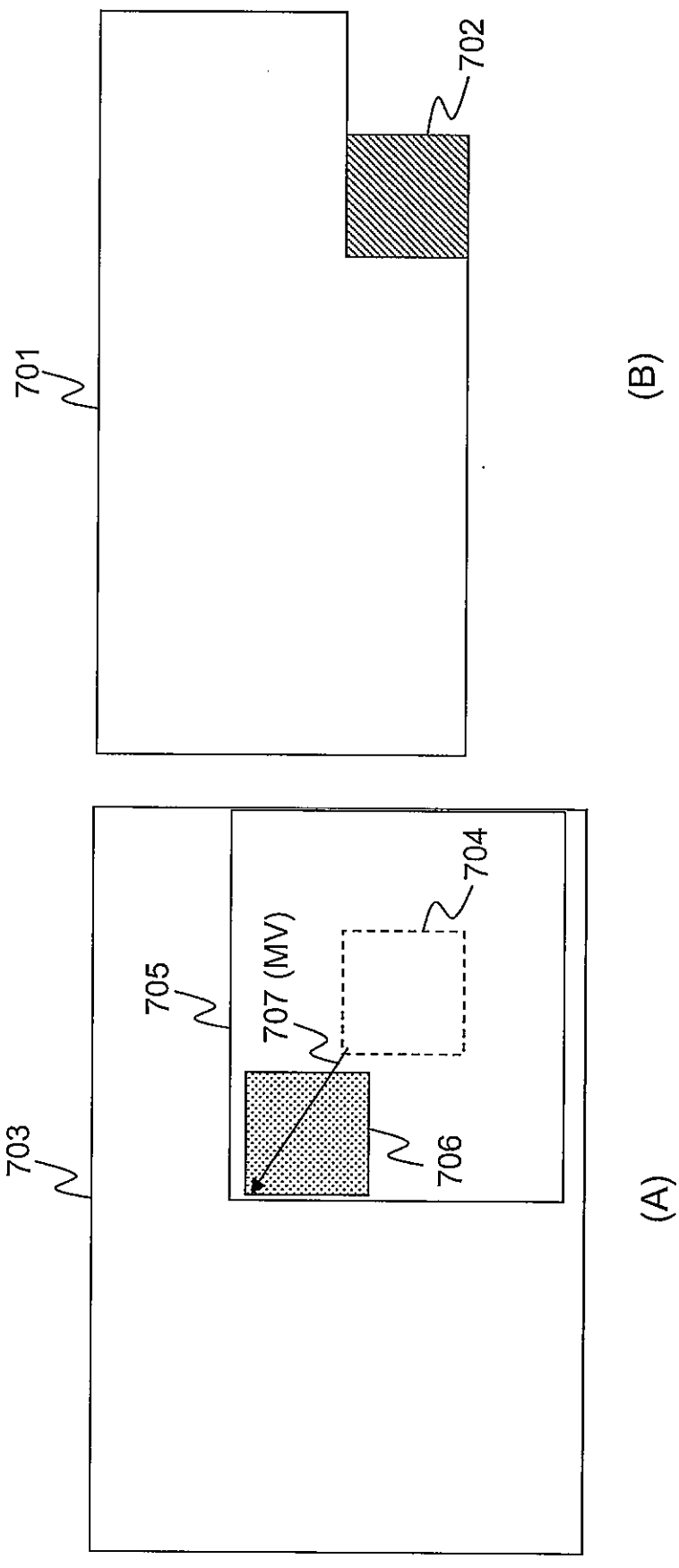


Fig.21

Fig.22

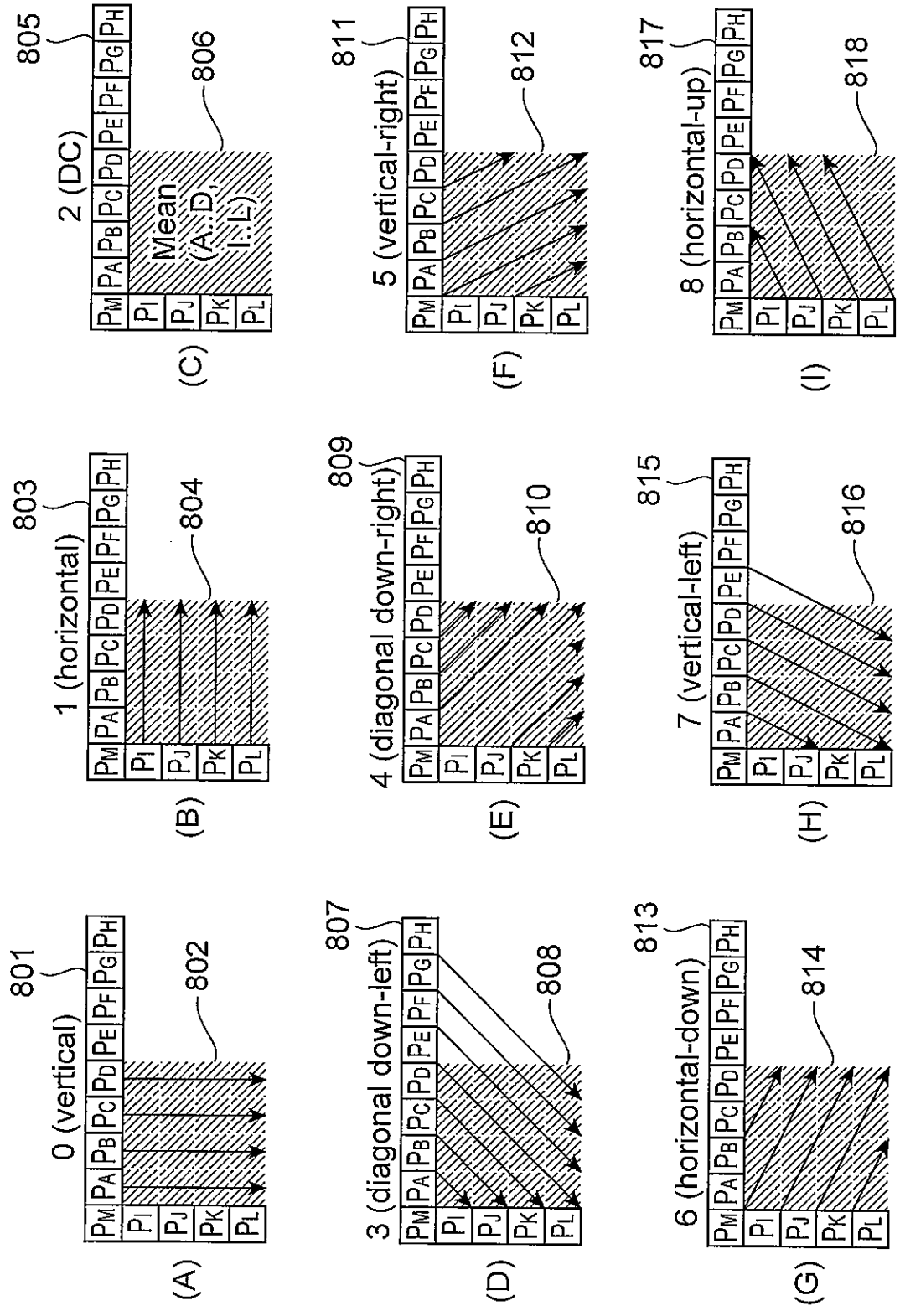

801
0 (vertical)
802
(A)
803
1 (horizontal)
804
(B)
805
2 (DC)
Mean (A..D; I..L)
806
(C)
807
3 (diagonal down-left)
808
(D)
809
4 (diagonal down-right)
810
(E)
811
5 (vertical-right)
812
(F)
813
6 (horizontal-down)
814
(G)
815
7 (vertical-left)
816
(H)
817
8 (horizontal-up)
818
(I)
PM PA PB PC PD PE PF PG PH
PI PJ PK PL

Fig.23

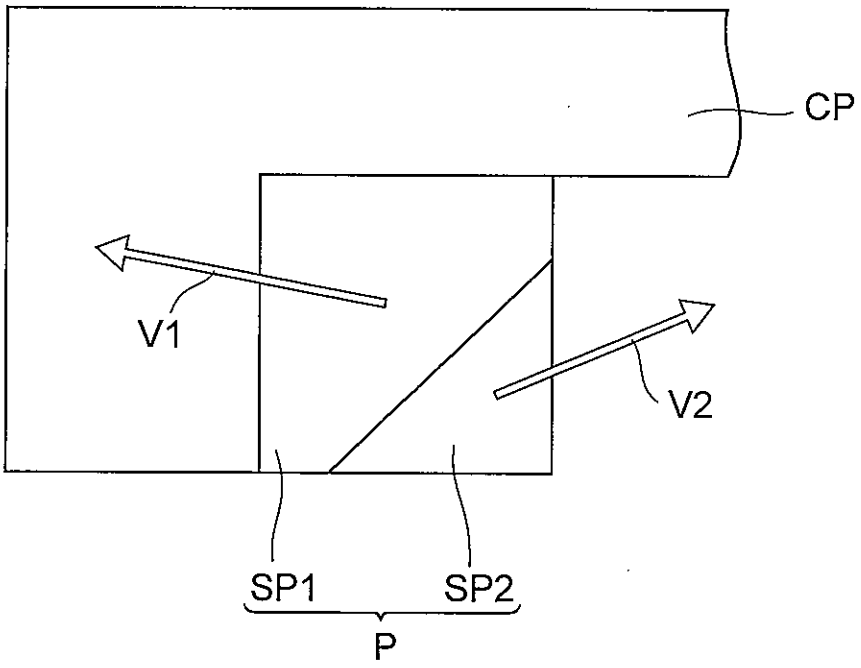


Fig.24

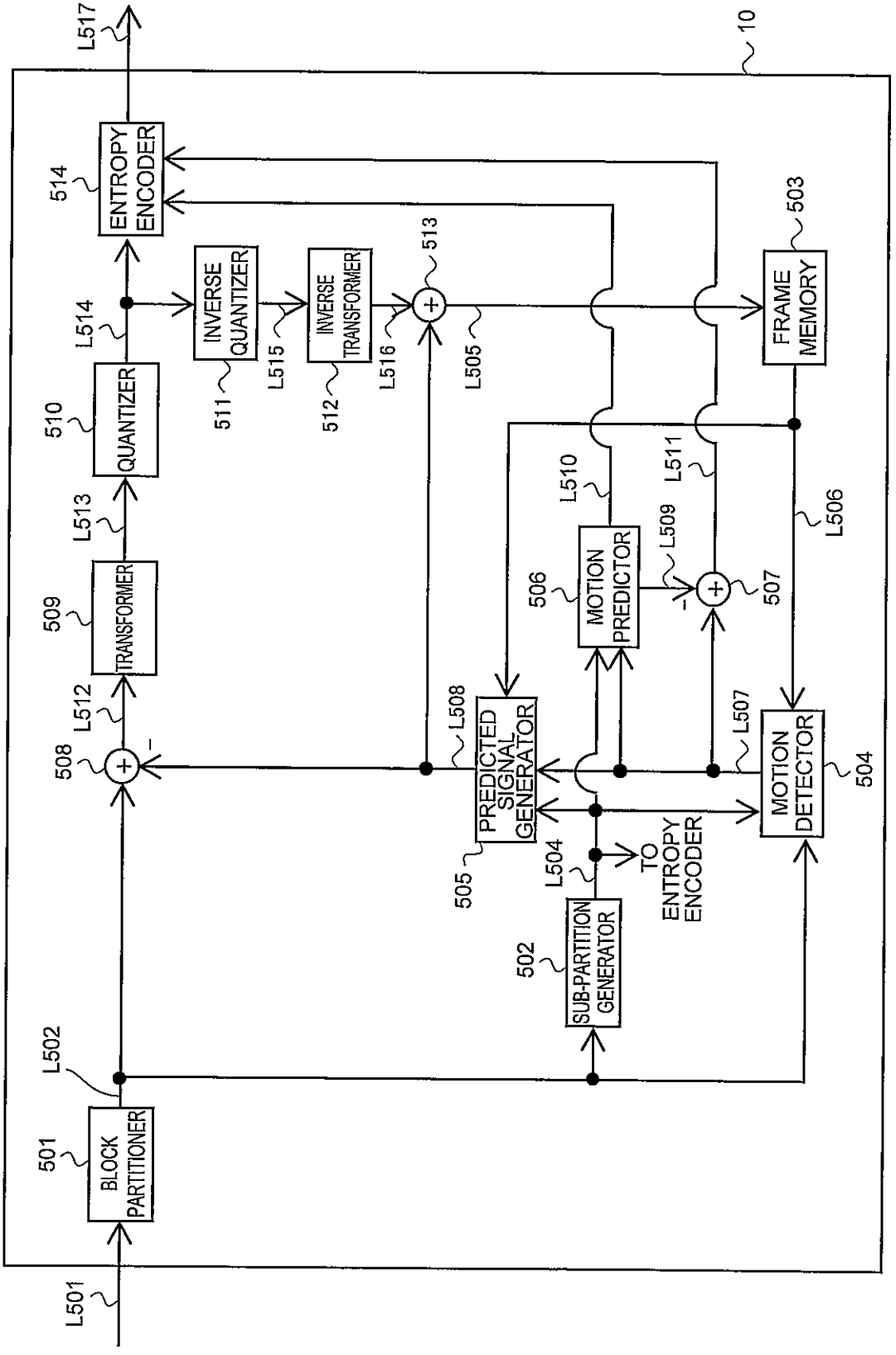

10
L501
BLOCK PARTITIONER
501
L502
SUB-PARTITION GENERATOR
502
TO ENTROPY ENCODER
L504
PREDICTED SIGNAL GENERATOR
505
L505
FRAME MEMORY
503
MOTION DETECTOR
504
L507
MOTION PREDICTOR
506
L506
L509
507
L510
L511
L508
508
L512
TRANSFORMER
509
L513
QUANTIZER
510
L514
ENTROPY ENCODER
514
L517
INVERSE QUANTIZER
511
L515
INVERSE TRANSFORMER
512
L516
513

Fig.25

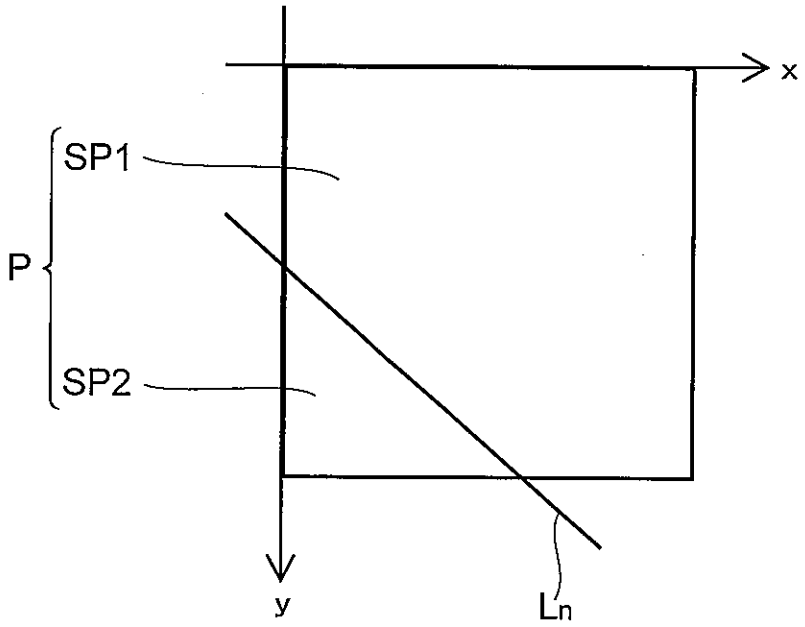


Fig.26

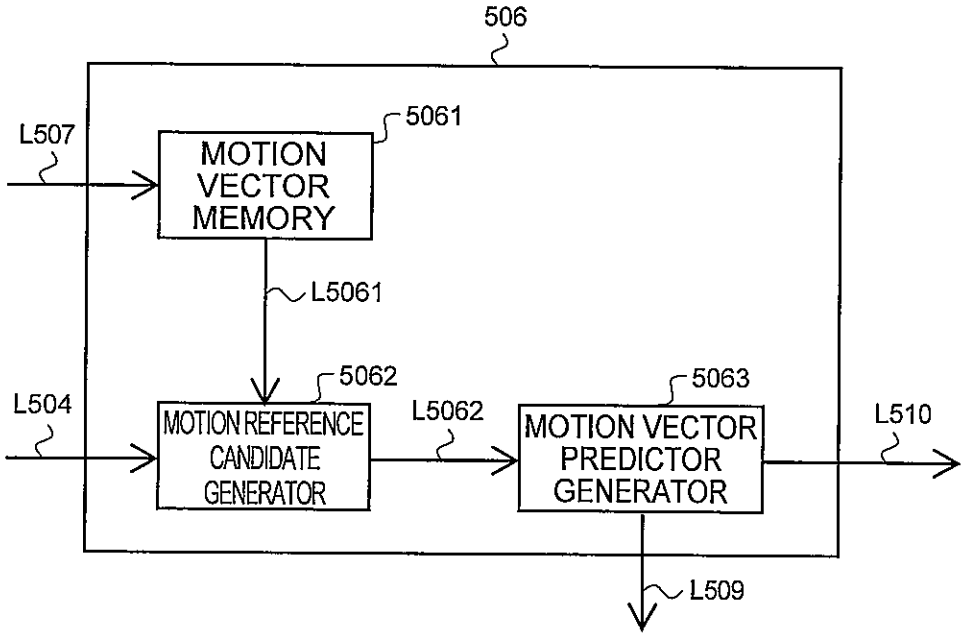

506
L507
5061
MOTION VECTOR MEMORY
L5061
L504
5062
MOTION REFERENCE CANDIDATE GENERATOR
L5062
5063
MOTION VECTOR PREDICTOR GENERATOR
L510
L509

Fig.27

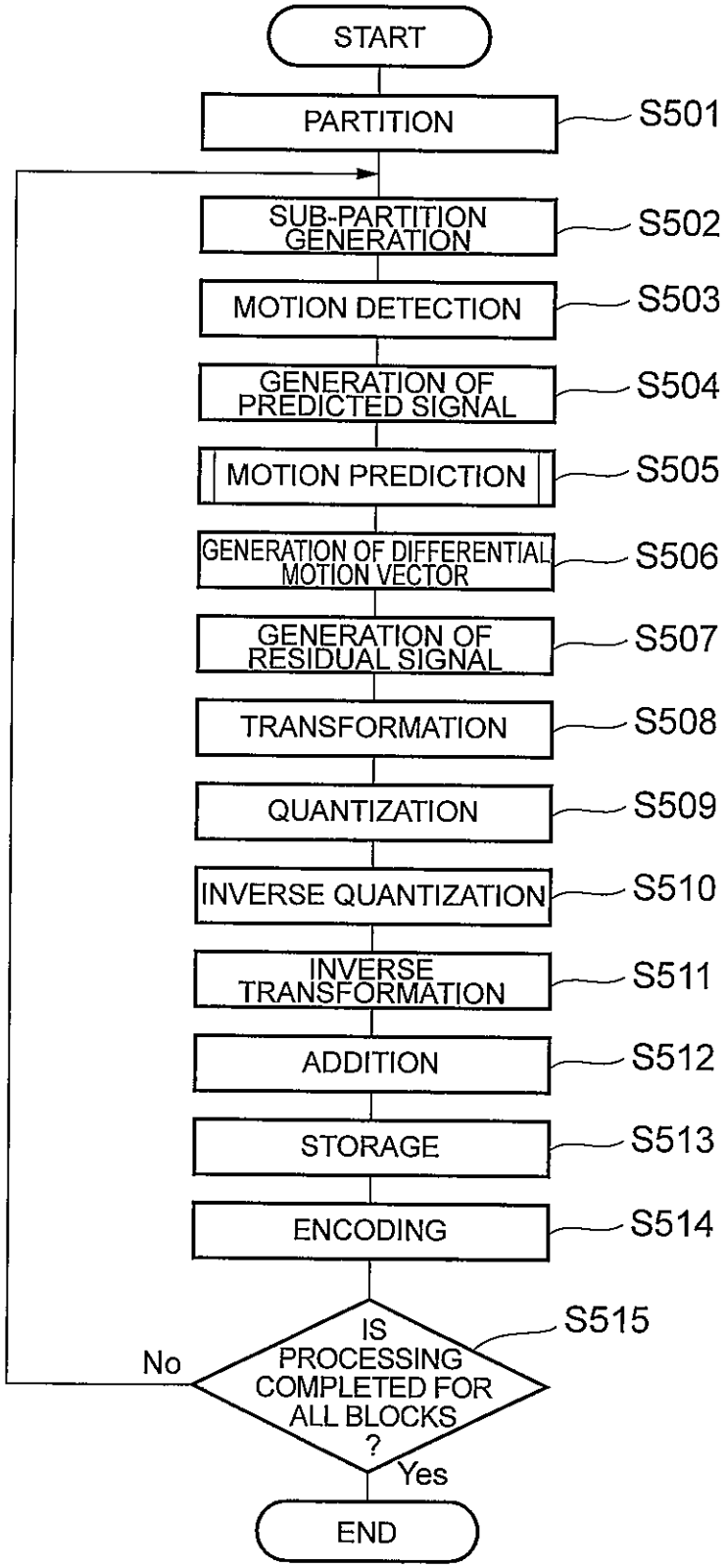
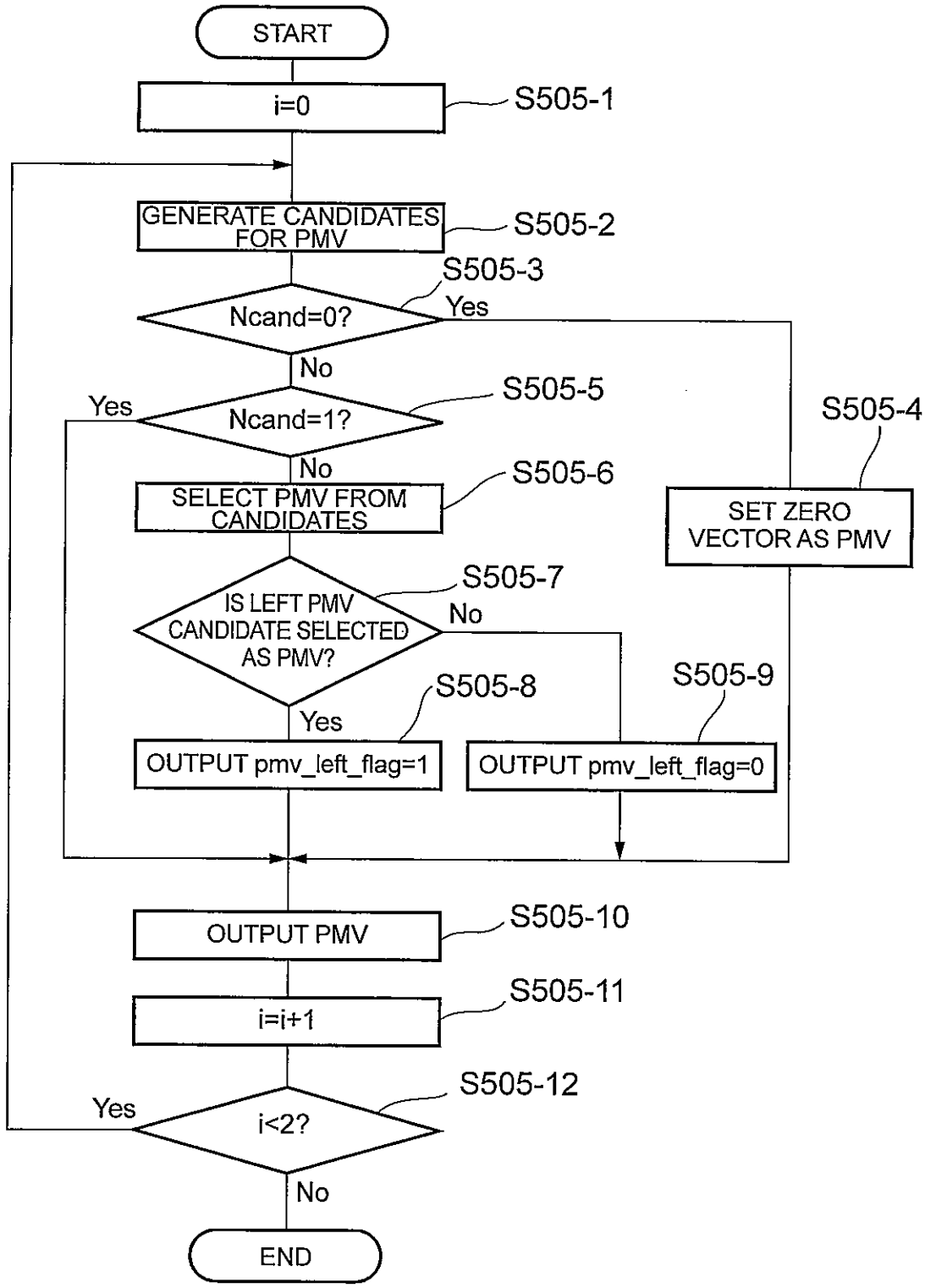

START
PARTITION
S501
SUB-PARTITION GENERATION
S502
MOTION DETECTION
S503
GENERATION OF PREDICTED SIGNAL
S504
MOTION PREDICTION
S505
GENERATION OF DIFFERENTIAL MOTION VECTOR
S506
GENERATION OF RESIDUAL SIGNAL
S507
TRANSFORMATION
S508
QUANTIZATION
S509
INVERSE QUANTIZATION
S510
INVERSE TRANSFORMATION
S511
ADDITION
S512
STORAGE
S513
ENCODING
S514
IS PROCESSING COMPLETED FOR ALL BLOCKS ?
S515
No
Yes
END

Fig.28


START
i=0
S505-1
GENERATE CANDIDATES FOR PMV
S505-2
S505-3
Ncand=0?
Yes
No
S505-5
Yes
Ncand=1?
S505-4
No
S505-6
SELECT PMV FROM CANDIDATES
SET ZERO VECTOR AS PMV
S505-7
IS LEFT PMV CANDIDATE SELECTED AS PMV?
No
S505-8
S505-9
Yes
OUTPUT pmv_left_flag=1
OUTPUT pmv_left_flag=0
OUTPUT PMV
S505-10
i=i+1
S505-11
S505-12
Yes
i<2?
No
END

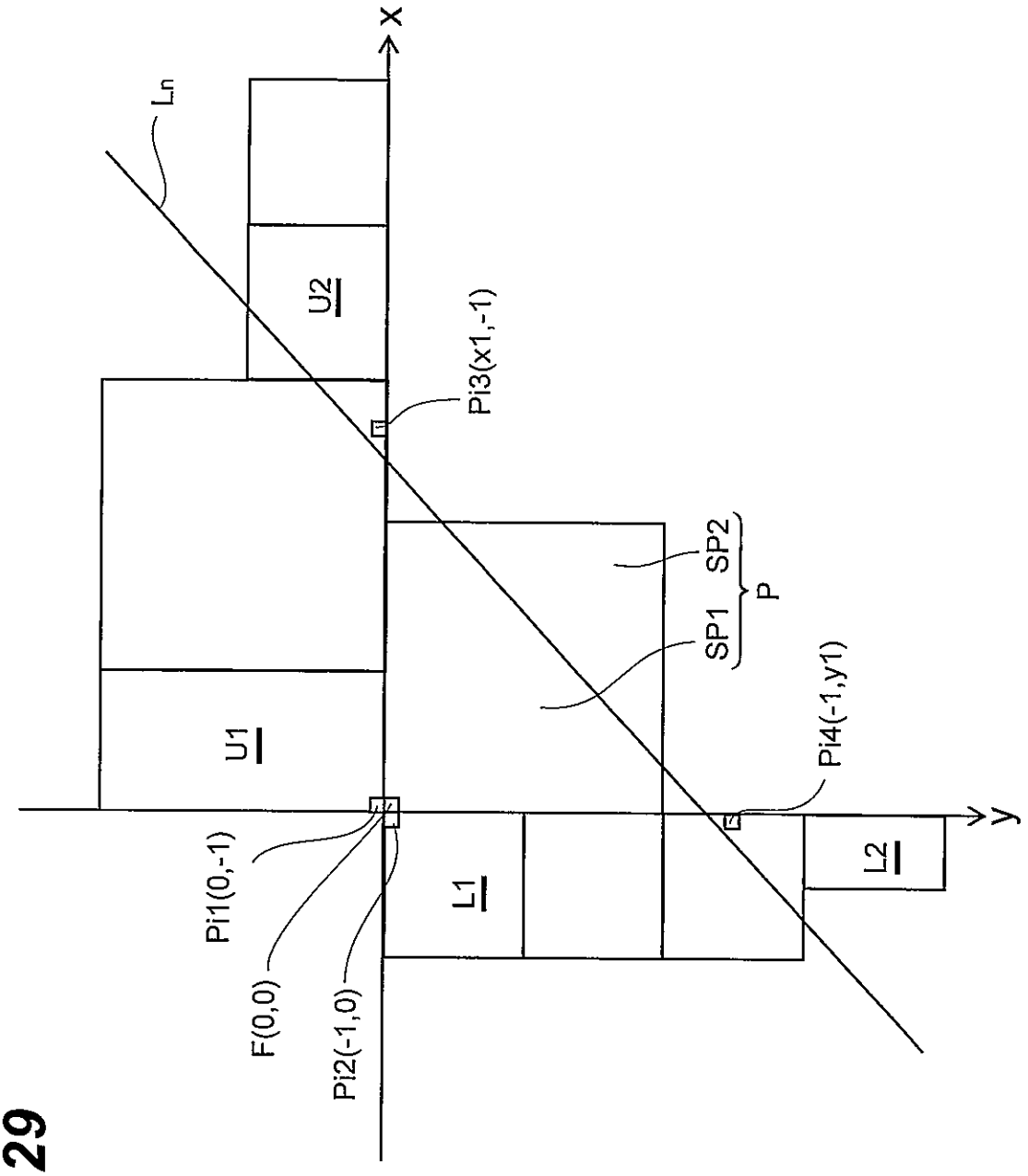


Fig.29

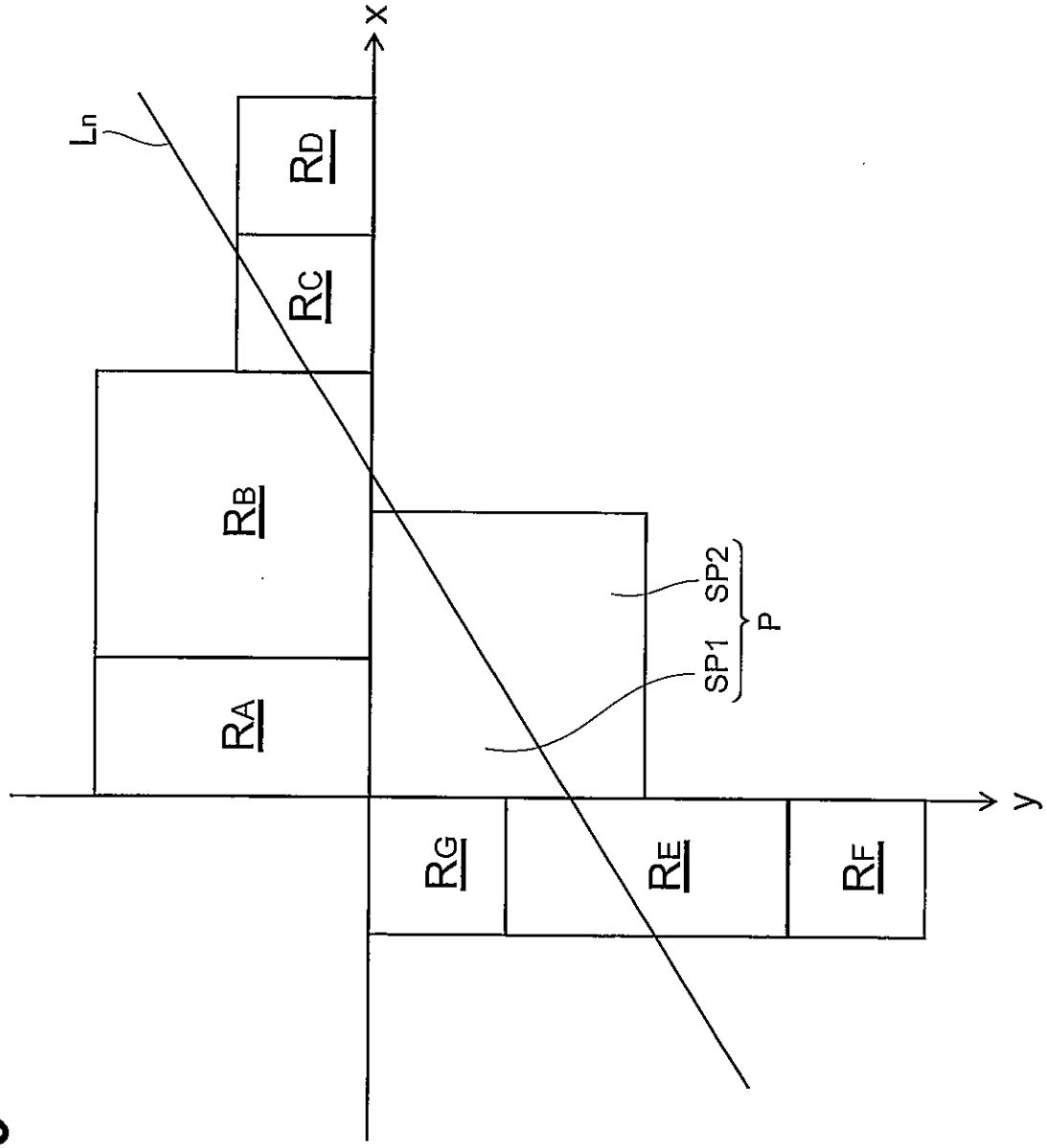


Fig.30

Fig.31

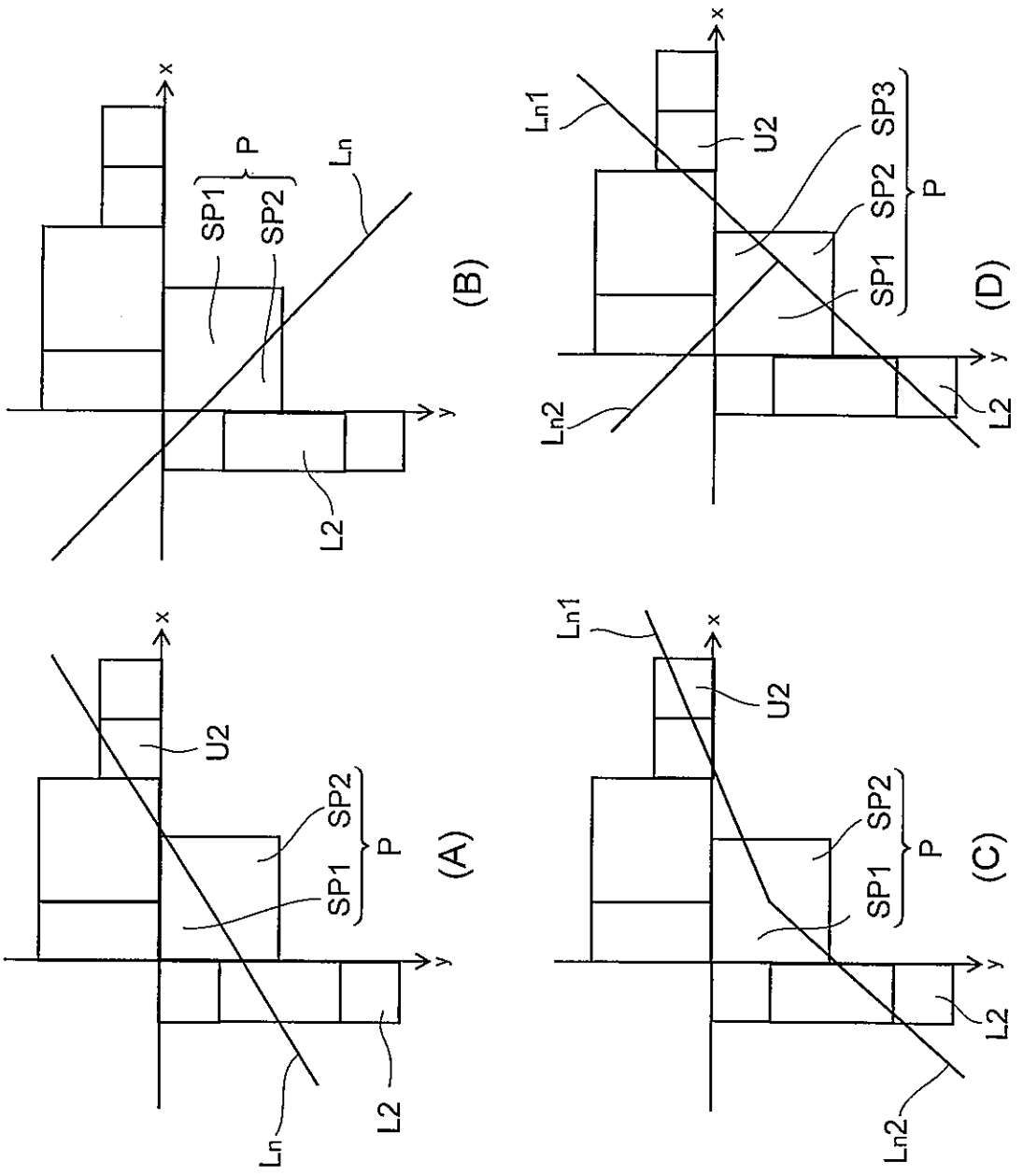

(A)
U2
SP1
SP2
P
Ln
L2
x
y
(B)
SP1
SP2
P
Ln
L2
x
y
(C)
Ln1
U2
SP1
SP2
P
Ln2
L2
x
y
(D)
Ln1
U2
SP1
SP2
SP3
P
Ln2
L2
x
y

Fig.32

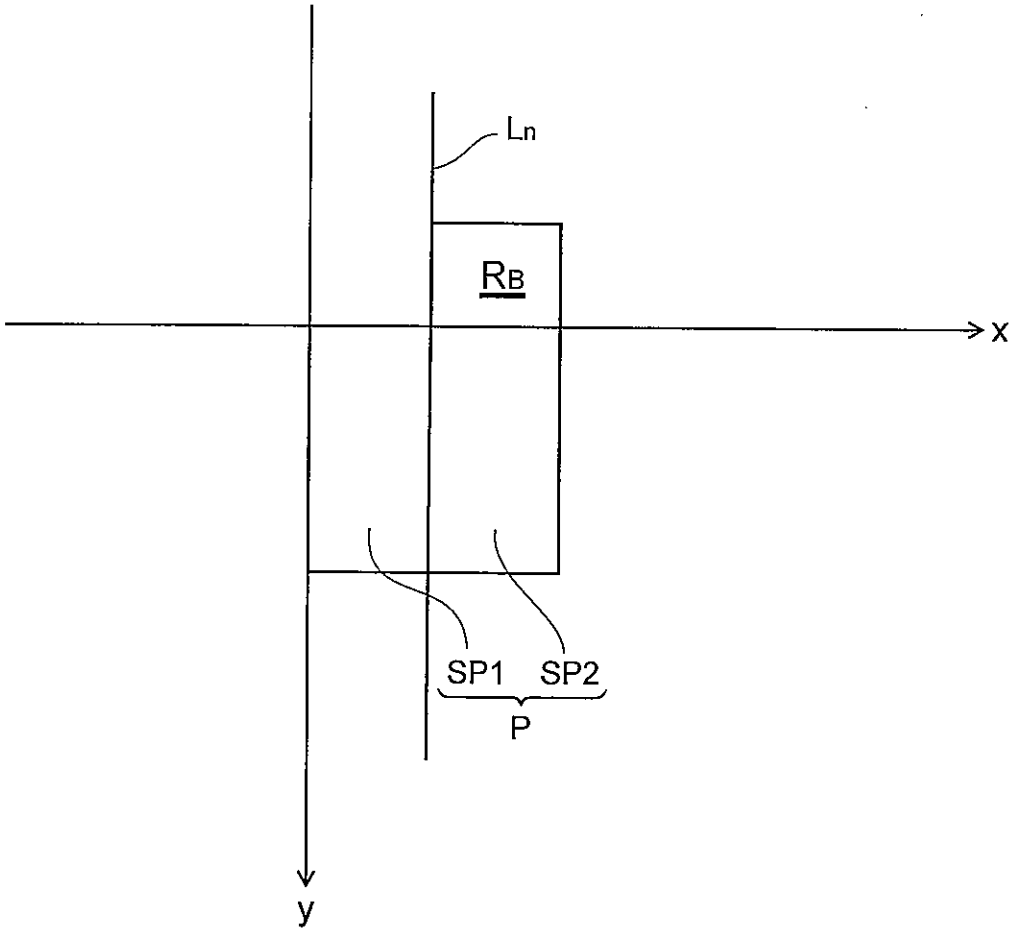


Fig.33

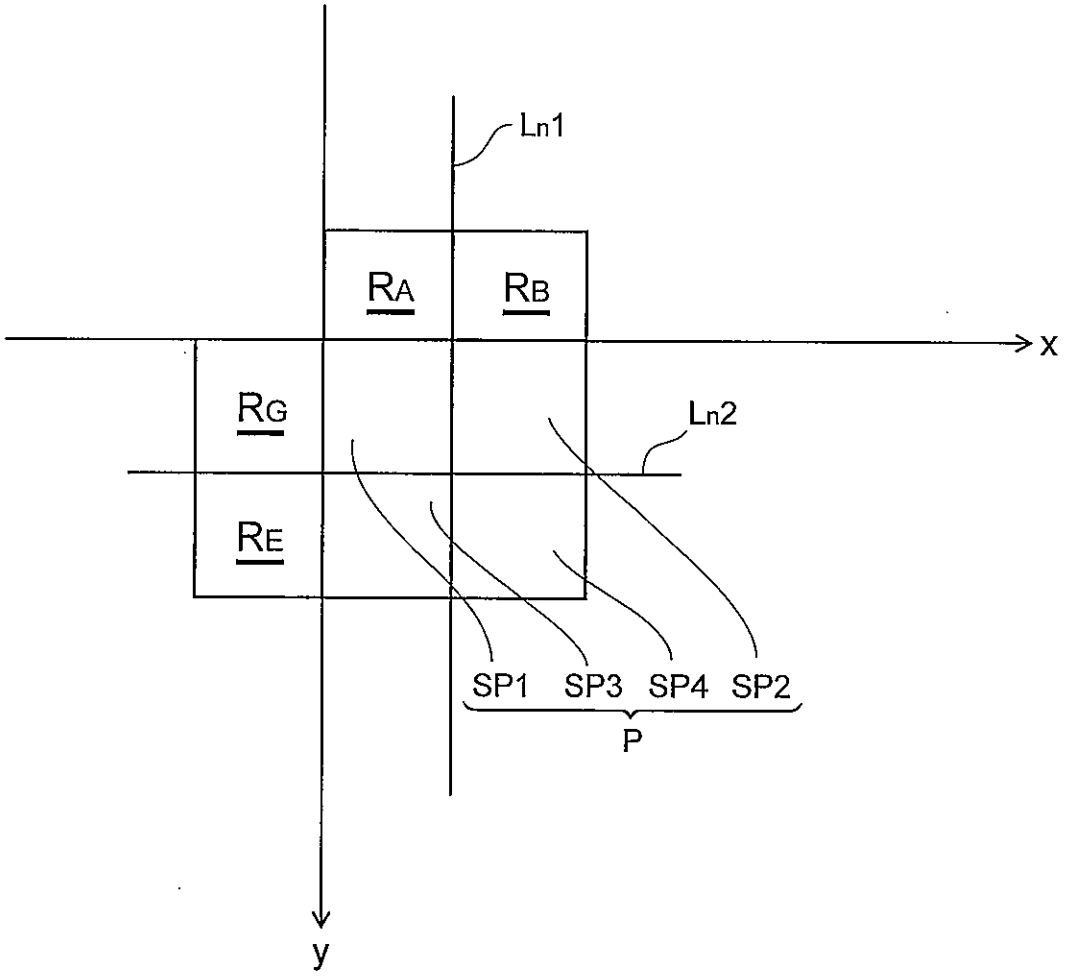


Fig.34

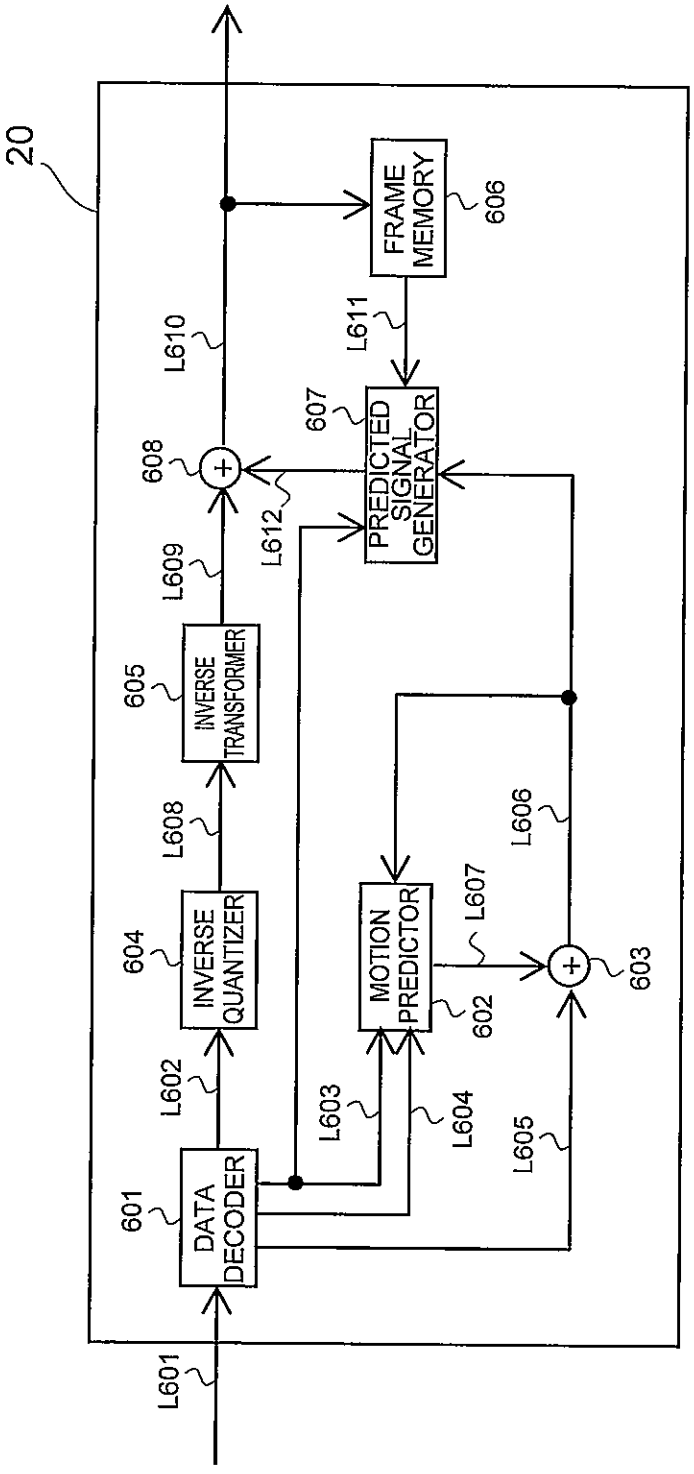

20
FRAME MEMORY
606
L610
L611
607
PREDICTED SIGNAL GENERATOR
608
L612
L609
INVERSE TRANSFORMER
605
L608
INVERSE QUANTIZER
604
MOTION PREDICTOR
L607
L606
603
602
L602
L603
L604
L605
DATA DECODER
601
L601

Fig.35

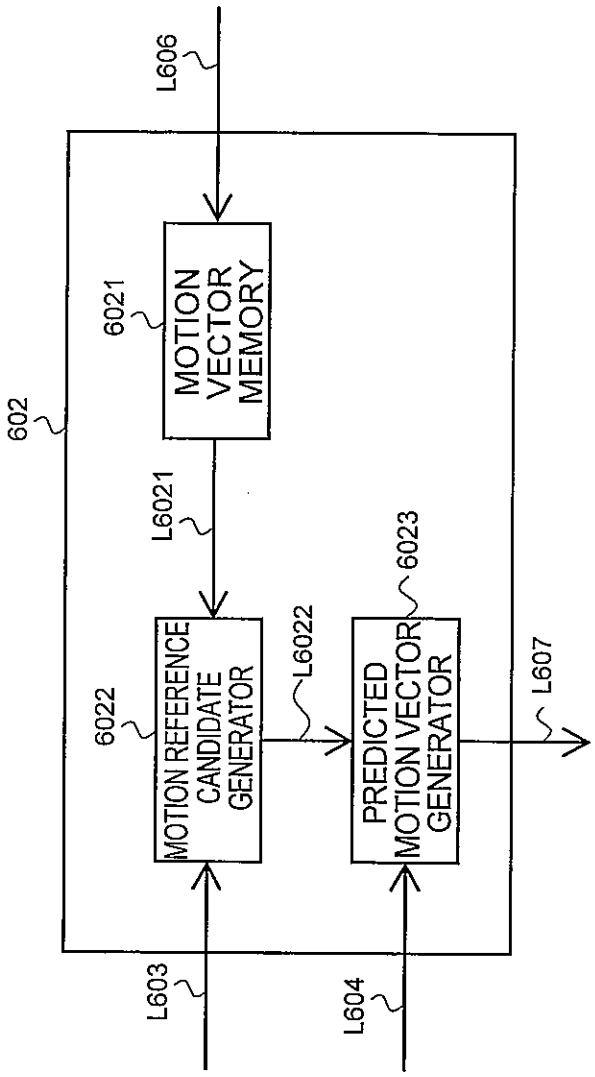

L606
602
6021
MOTION VECTOR MEMORY
L6021
6023
6022
MOTION REFERENCE CANDIDATE GENERATOR
L6022
PREDICTED MOTION VECTOR GENERATOR
L607
L603
L604

Fig.36

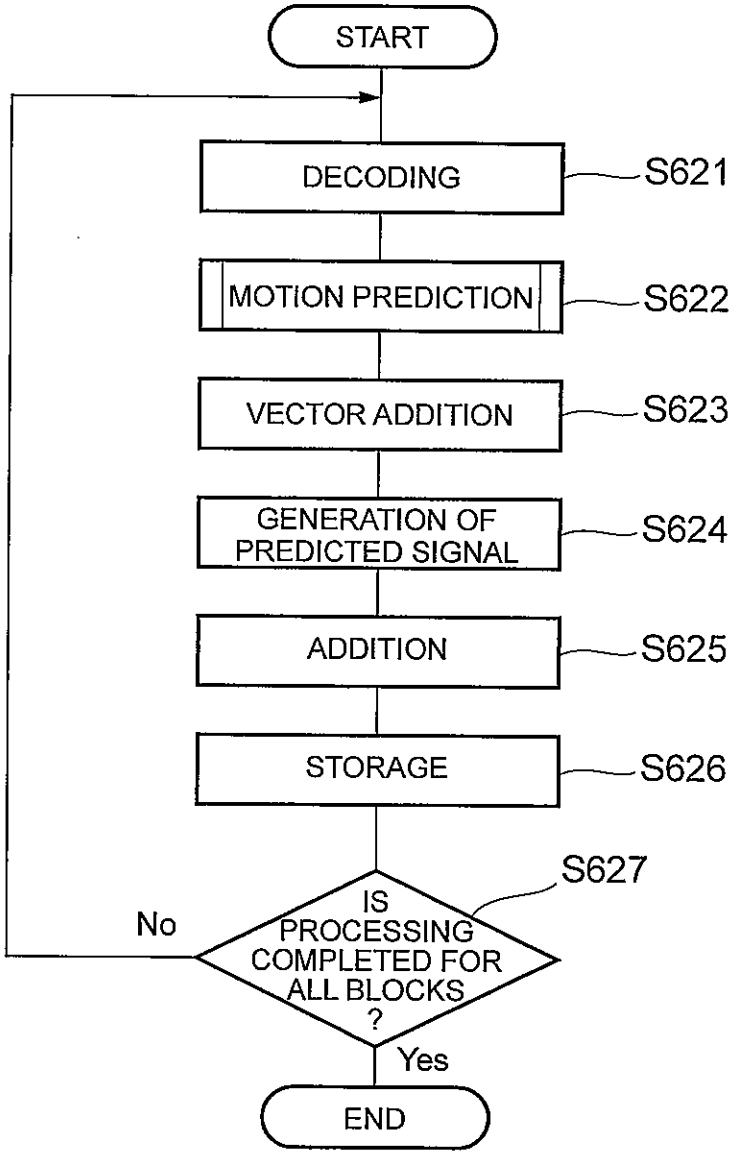

START
DECODING
S621
MOTION PREDICTION
S622
VECTOR ADDITION
S623
GENERATION OF PREDICTED SIGNAL
S624
ADDITION
S625
STORAGE
S626
S627
IS PROCESSING COMPLETED FOR ALL BLOCKS ?
No
Yes
END

Fig.37

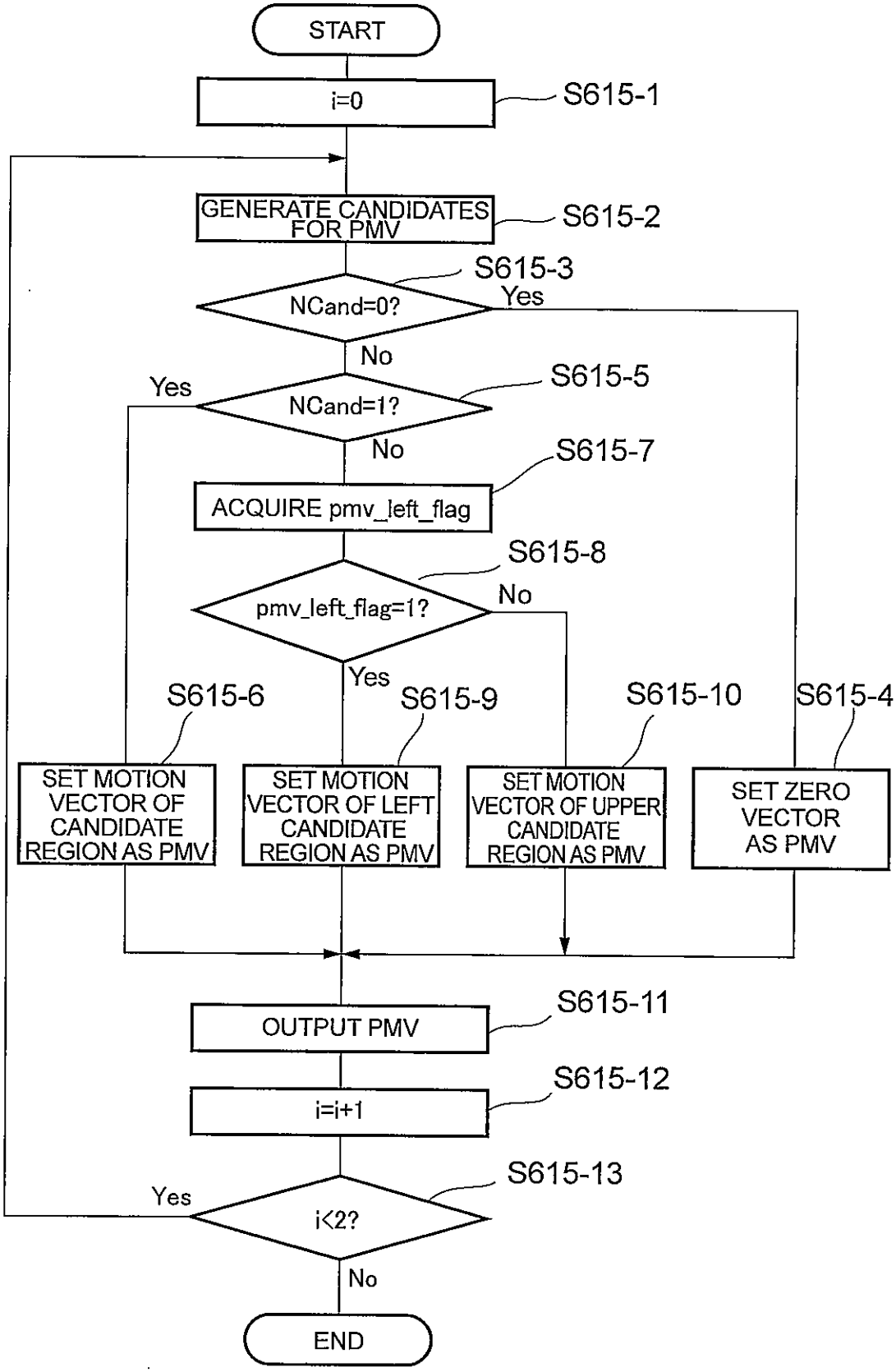

START
i=0
S615-1
GENERATE CANDIDATES FOR PMV
S615-2
S615-3
NCand=0?
Yes
No
S615-5
NCand=1?
Yes
No
S615-7
ACQUIRE pmv_left_flag
S615-8
pmv_left_flag=1?
No
Yes
S615-6
S615-9
S615-10
S615-4
SET MOTION VECTOR OF CANDIDATE REGION AS PMV
SET MOTION VECTOR OF LEFT CANDIDATE REGION AS PMV
SET MOTION VECTOR OF UPPER CANDIDATE REGION AS PMV
SET ZERO VECTOR AS PMV
OUTPUT PMV
S615-11
i=i+1
S615-12
S615-13
i<2?
Yes
No
END

Fig.38

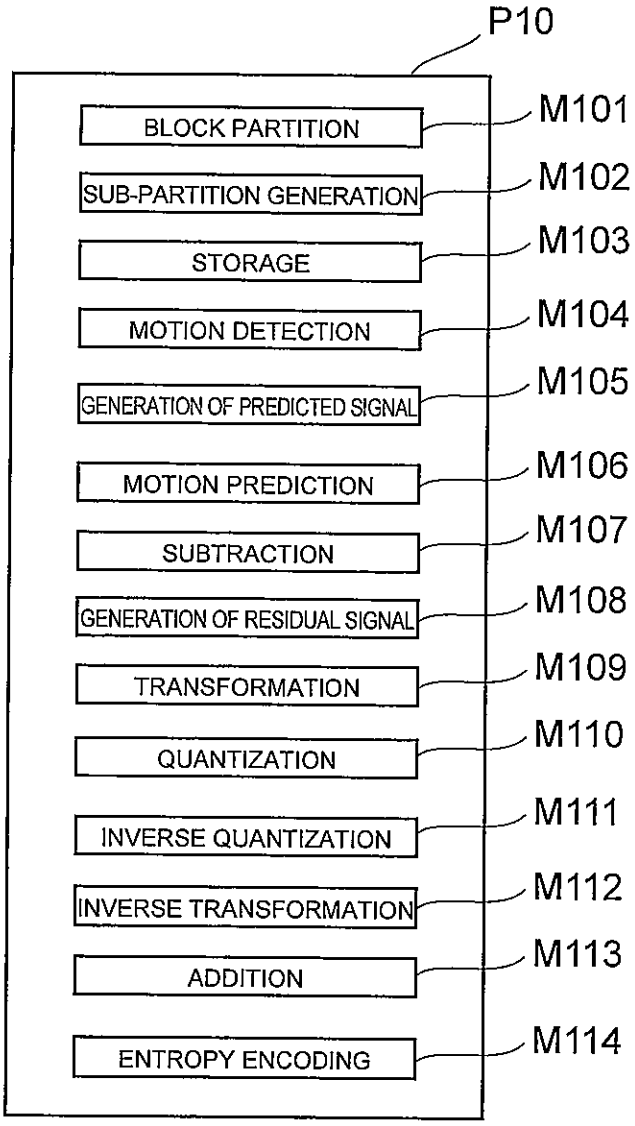
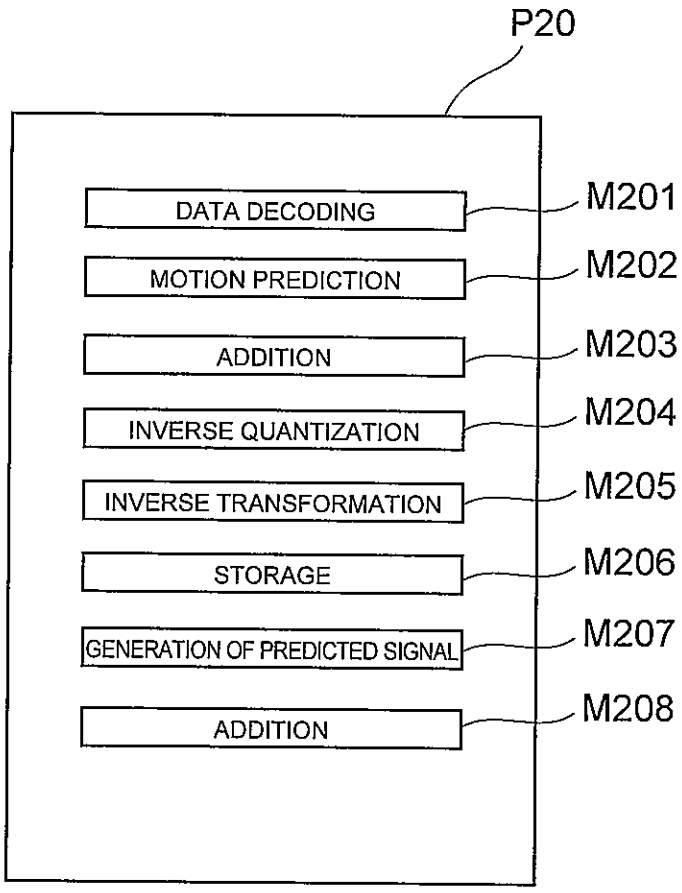

P10
BLOCK PARTITION
M101
SUB-PARTITION GENERATION
M102
STORAGE
M103
MOTION DETECTION
M104
GENERATION OF PREDICTED SIGNAL
M105
MOTION PREDICTION
M106
SUBTRACTION
M107
GENERATION OF RESIDUAL SIGNAL
M108
TRANSFORMATION
M109
QUANTIZATION
M110
INVERSE QUANTIZATION
M111
INVERSE TRANSFORMATION
M112
ADDITION
M113
ENTROPY ENCODING
M114

Fig.39


P20
DATA DECODING
M201
MOTION PREDICTION
M202
ADDITION
M203
INVERSE QUANTIZATION
M204
INVERSE TRANSFORMATION
M205
STORAGE
M206
GENERATION OF PREDICTED SIGNAL
M207
ADDITION
M208