Fig.1

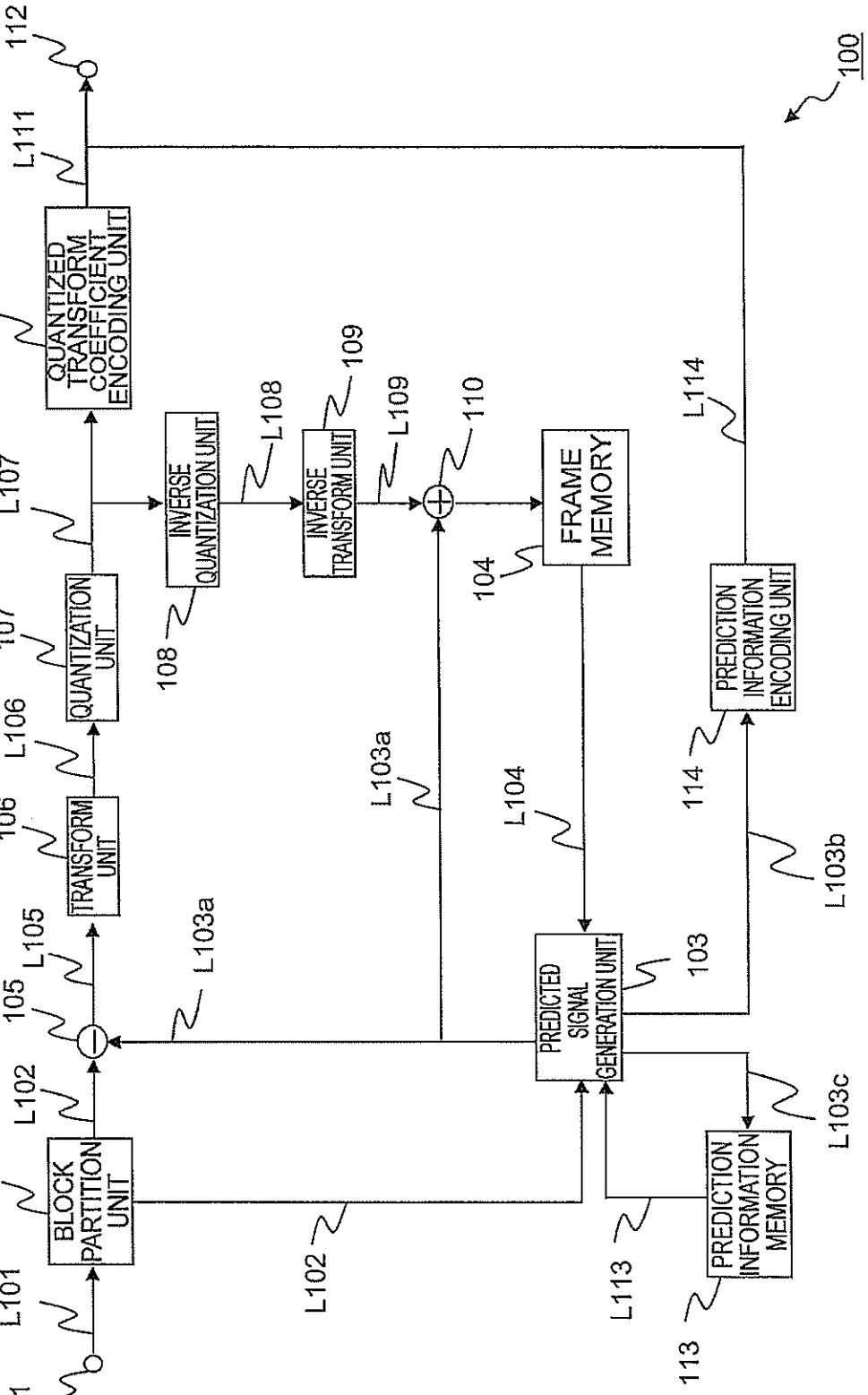

100
101
L101
102
BLOCK PARTITION UNIT
L102
103
PREDICTED SIGNAL GENERATION UNIT
104
FRAME MEMORY
105
L103a
106
TRANSFORM UNIT
107
QUANTIZATION UNIT
108
INVERSE QUANTIZATION UNIT
109
INVERSE TRANSFORM UNIT
110
111
QUANTIZED TRANSFORM COEFFICIENT ENCODING UNIT
112
L103b
113
PREDICTION INFORMATION MEMORY
114
PREDICTION INFORMATION ENCODING UNIT
L103c
L104
L105
L106
L107
L108
L109
L111
L113
L114

Fig.2

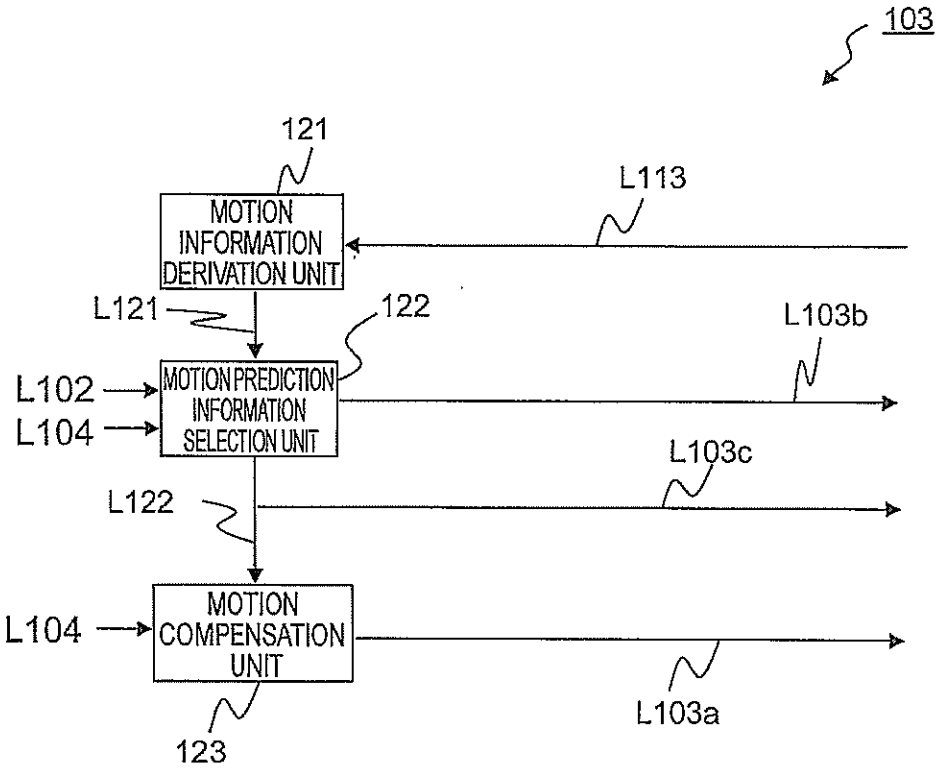
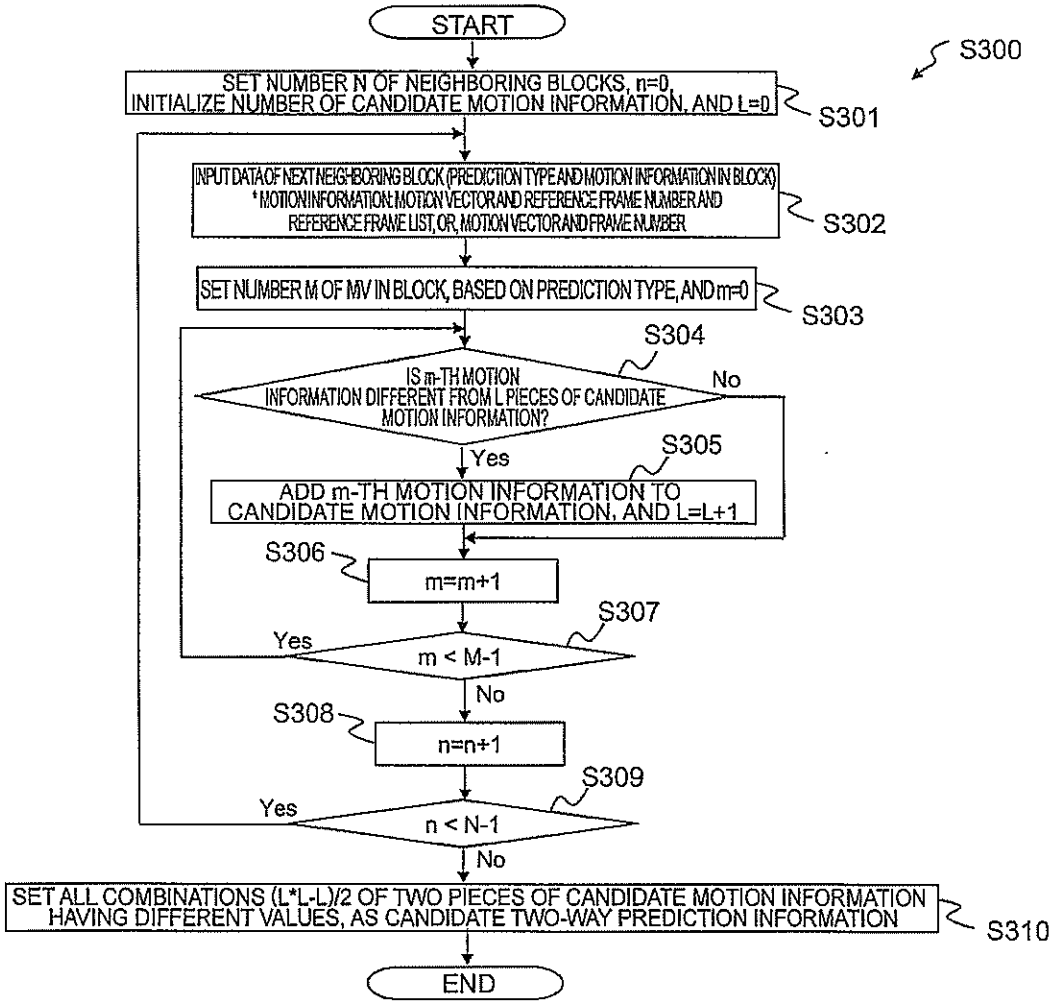

103
121
L113
MOTION INFORMATION DERIVATION UNIT
L121
122
L103b
L102
L104
MOTION PREDICTION INFORMATION SELECTION UNIT
L103c
L122
L104
MOTION COMPENSATION UNIT
L103a
123

Fig.3


START
S300
SET NUMBER N OF NEIGHBORING BLOCKS, n=0, INITIALIZE NUMBER OF CANDIDATE MOTION INFORMATION, AND L=0
S301
INPUT DATA OF NEXT NEIGHBORING BLOCK (PREDICTION TYPE AND MOTION INFORMATION IN BLOCK) * MOTION INFORMATION: MOTION VECTOR AND REFERENCE FRAME NUMBER AND REFERENCE FRAME LIST, OR, MOTION VECTOR AND FRAME NUMBER
S302
SET NUMBER M OF MV IN BLOCK, BASED ON PREDICTION TYPE, AND m=0
S303
S304
IS m-TH MOTION INFORMATION DIFFERENT FROM L PIECES OF CANDIDATE MOTION INFORMATION?
No
Yes
S305
ADD m-TH MOTION INFORMATION TO CANDIDATE MOTION INFORMATION, AND L=L+1
S306
m=m+1
S307
Yes
m < M-1
No
S308
n=n+1
S309
Yes
n < N-1
No
SET ALL COMBINATIONS (L*L-L)/2 OF TWO PIECES OF CANDIDATE MOTION INFORMATION HAVING DIFFERENT VALUES, AS CANDIDATE TWO-WAY PREDICTION INFORMATION
S310
END

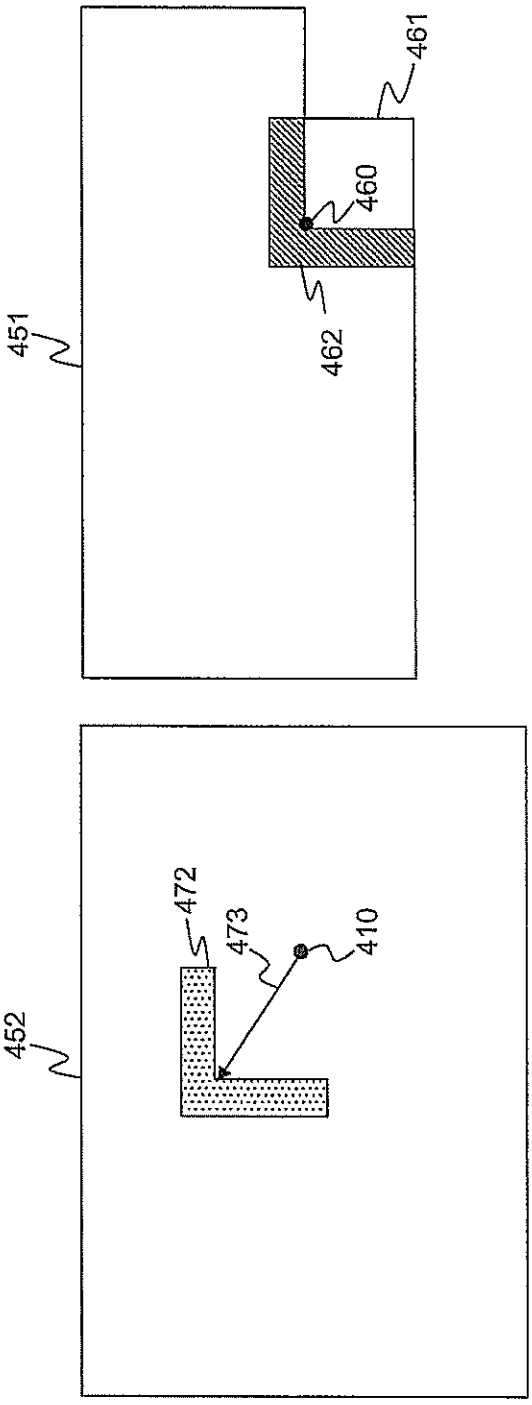


Fig.4

Fig.5

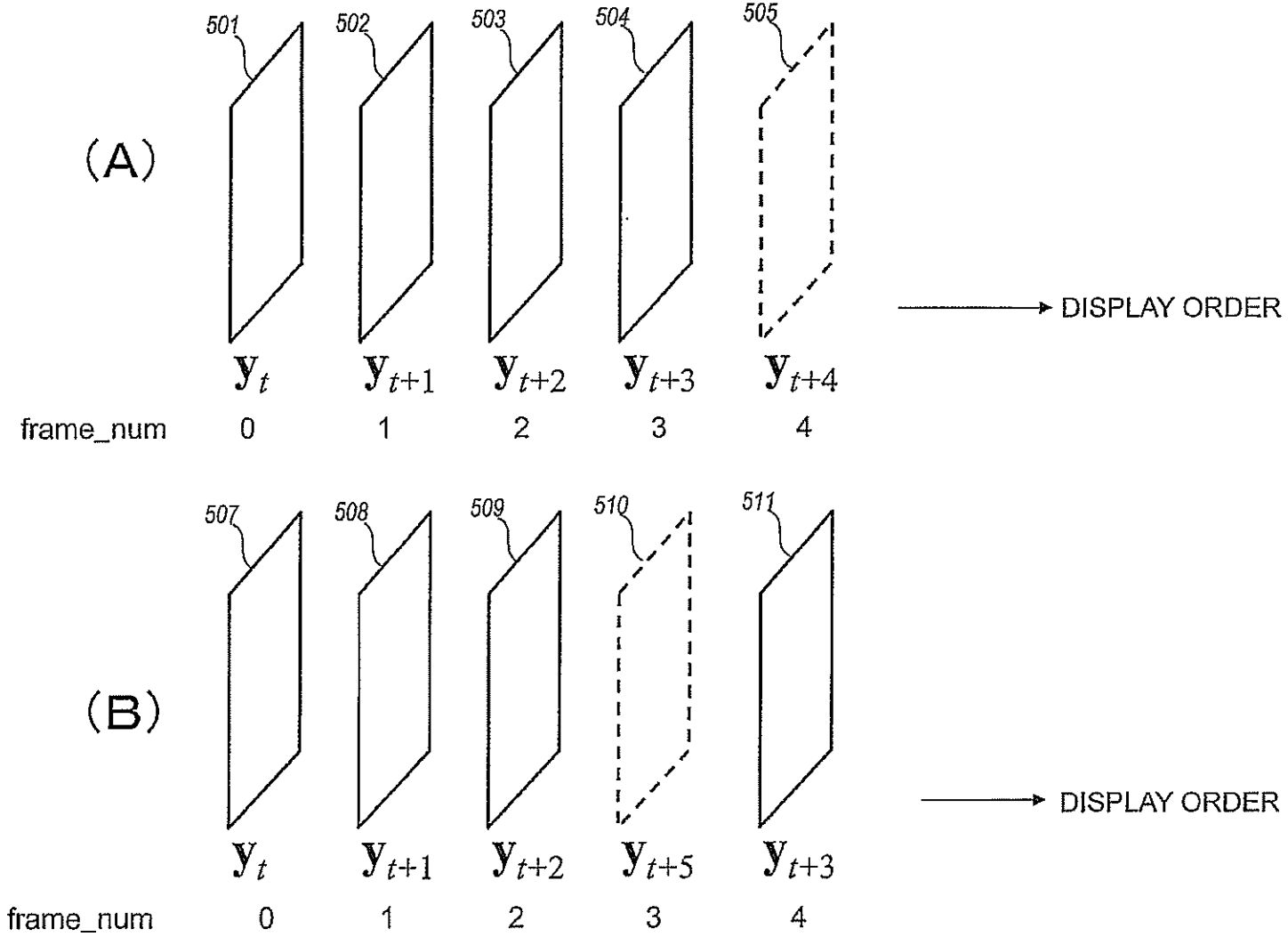

(A)
501
502
503
504
505
$\mathbf{y}_t$
$\mathbf{y}_{t+1}$
$\mathbf{y}_{t+2}$
$\mathbf{y}_{t+3}$
$\mathbf{y}_{t+4}$
DISPLAY ORDER
frame_num
0
1
2
3
4
(B)
507
508
509
510
511
$\mathbf{y}_t$
$\mathbf{y}_{t+1}$
$\mathbf{y}_{t+2}$
$\mathbf{y}_{t+5}$
$\mathbf{y}_{t+3}$
DISPLAY ORDER
frame_num
0
1
2
3
4

Fig.6

(A)

ref_idx	List0	List1
0	frame_num=3	frame_num=2
1	frame_num=2	frame_num=3
2	frame_num=1	frame_num=0
3	frame_num=0	frame_num=1

521

(B)

ref_idx	List0	List1
0	frame_num=2	frame_num=4
1	frame_num=1	-
2	frame_num=0	-

522

(C)

ref_idx	List0	List1
0	frame_num=2	frame_num=4
1	frame_num=1	frame_num=2
2	frame_num=0	frame_num=1
3	frame_num=4	frame_num=0

523

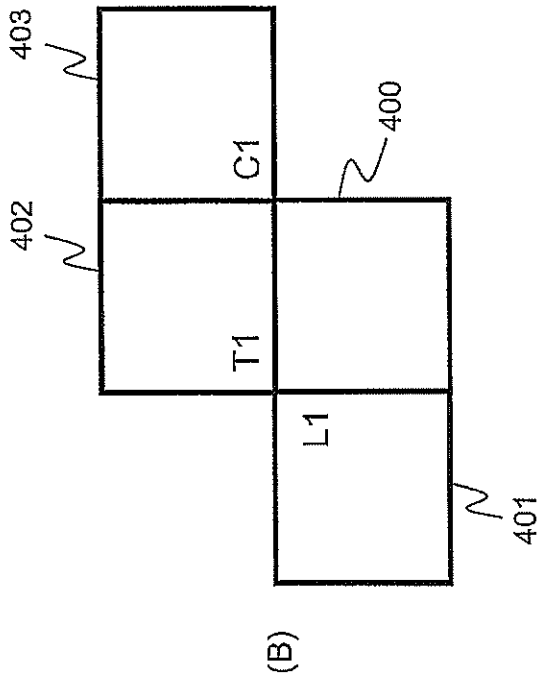
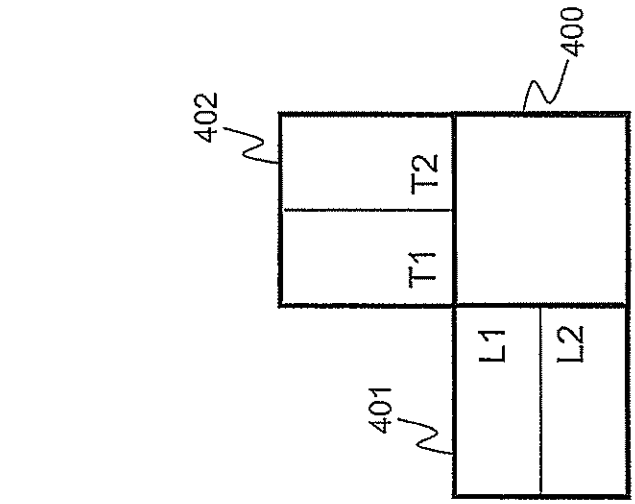
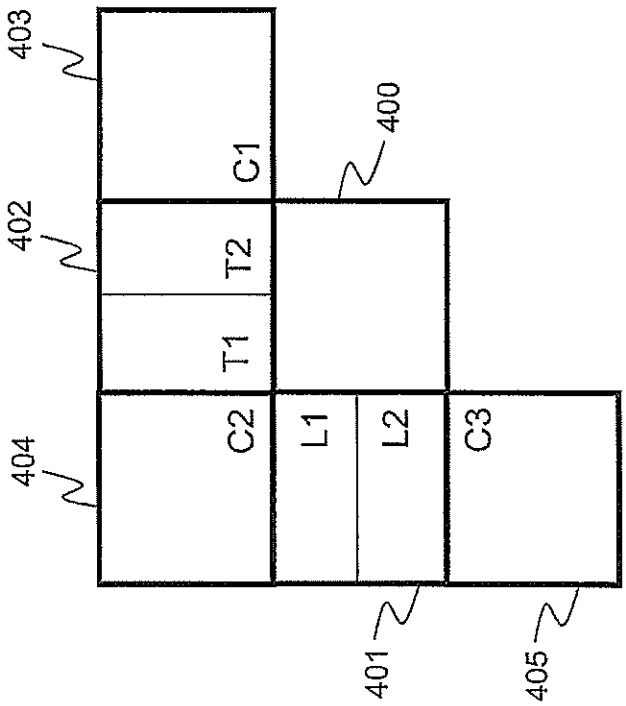


Fig.7

Fig.8



(A)



(B)

Fig.9

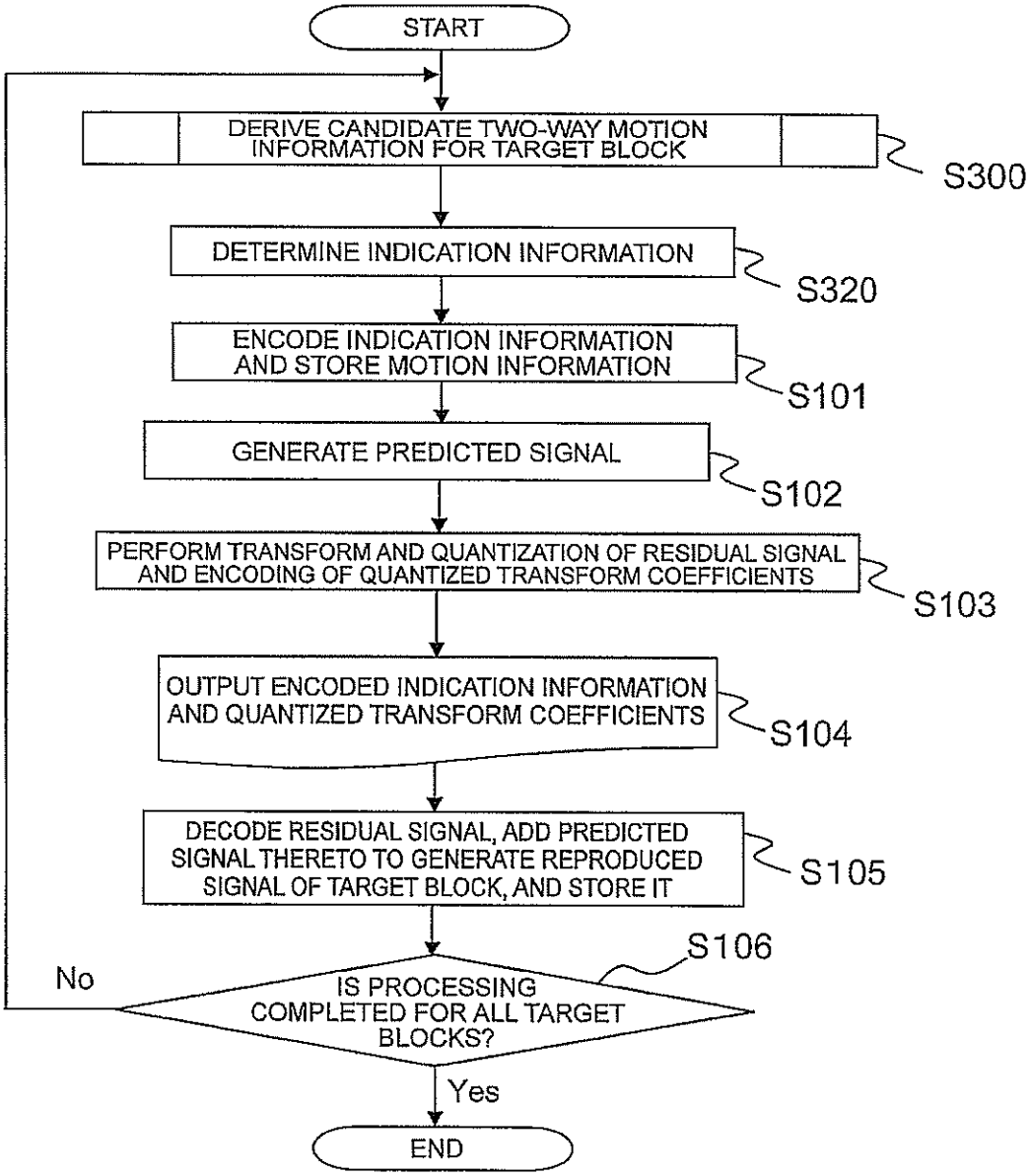

START
DERIVE CANDIDATE TWO-WAY MOTION INFORMATION FOR TARGET BLOCK
S300
DETERMINE INDICATION INFORMATION
S320
ENCODE INDICATION INFORMATION AND STORE MOTION INFORMATION
S101
GENERATE PREDICTED SIGNAL
S102
PERFORM TRANSFORM AND QUANTIZATION OF RESIDUAL SIGNAL AND ENCODING OF QUANTIZED TRANSFORM COEFFICIENTS
S103
OUTPUT ENCODED INDICATION INFORMATION AND QUANTIZED TRANSFORM COEFFICIENTS
S104
DECODE RESIDUAL SIGNAL, ADD PREDICTED SIGNAL THERETO TO GENERATE REPRODUCED SIGNAL OF TARGET BLOCK, AND STORE IT
S105
S106
No
IS PROCESSING COMPLETED FOR ALL TARGET BLOCKS?
Yes
END

Fig.10

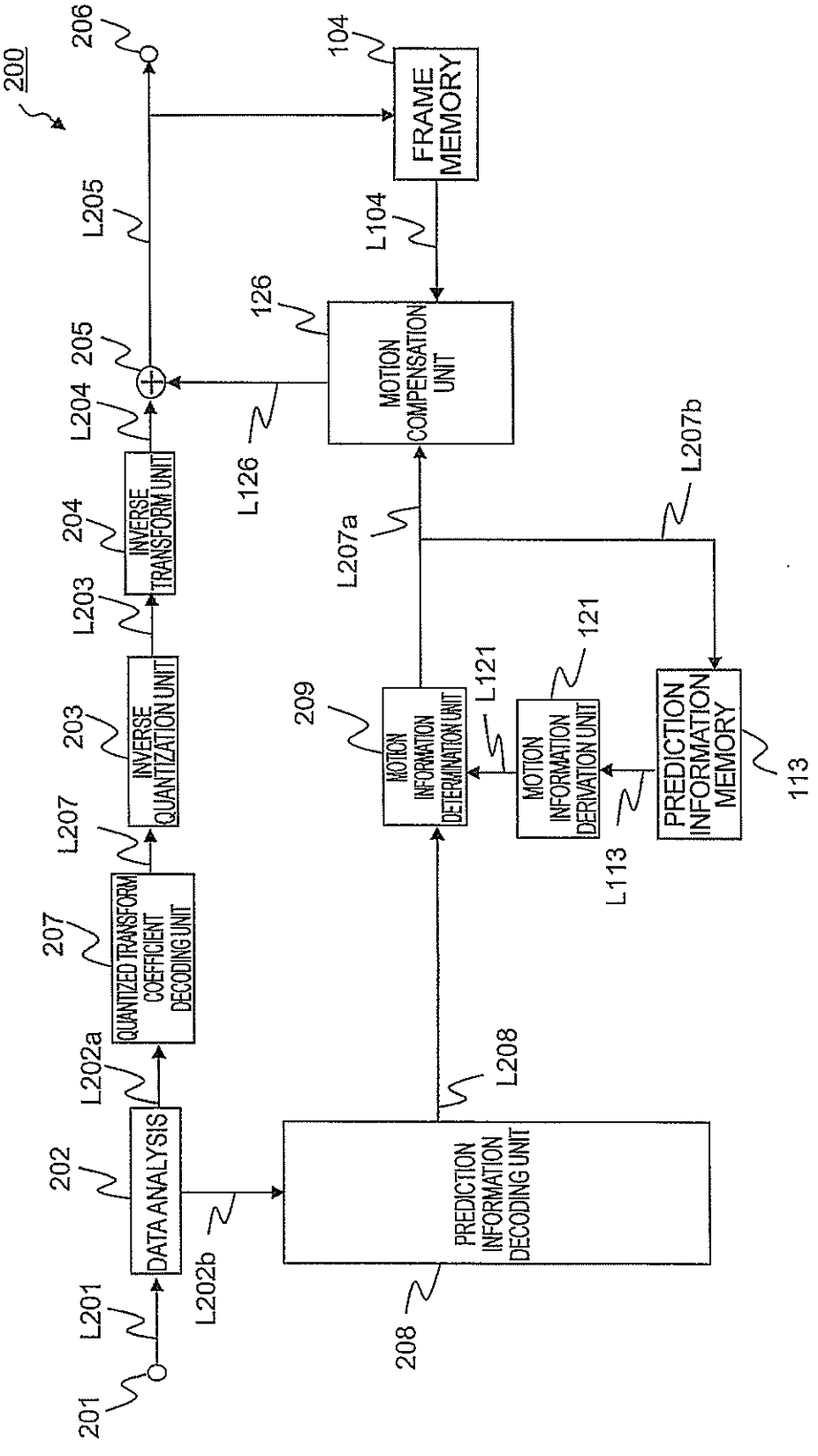

200
206
104
FRAME MEMORY
L205
L104
126
MOTION COMPENSATION UNIT
205
L204
L126
204
INVERSE TRANSFORM UNIT
L203
L207a
L207b
203
INVERSE QUANTIZATION UNIT
209
MOTION INFORMATION DETERMINATION UNIT
L121
121
MOTION INFORMATION DERIVATION UNIT
PREDICTION INFORMATION MEMORY
113
L207
207
QUANTIZED TRANSFORM COEFFICIENT DECODING UNIT
L113
L202a
L208
202
DATA ANALYSIS
PREDICTION INFORMATION DECODING UNIT
L202b
L201
208
201

Fig.11

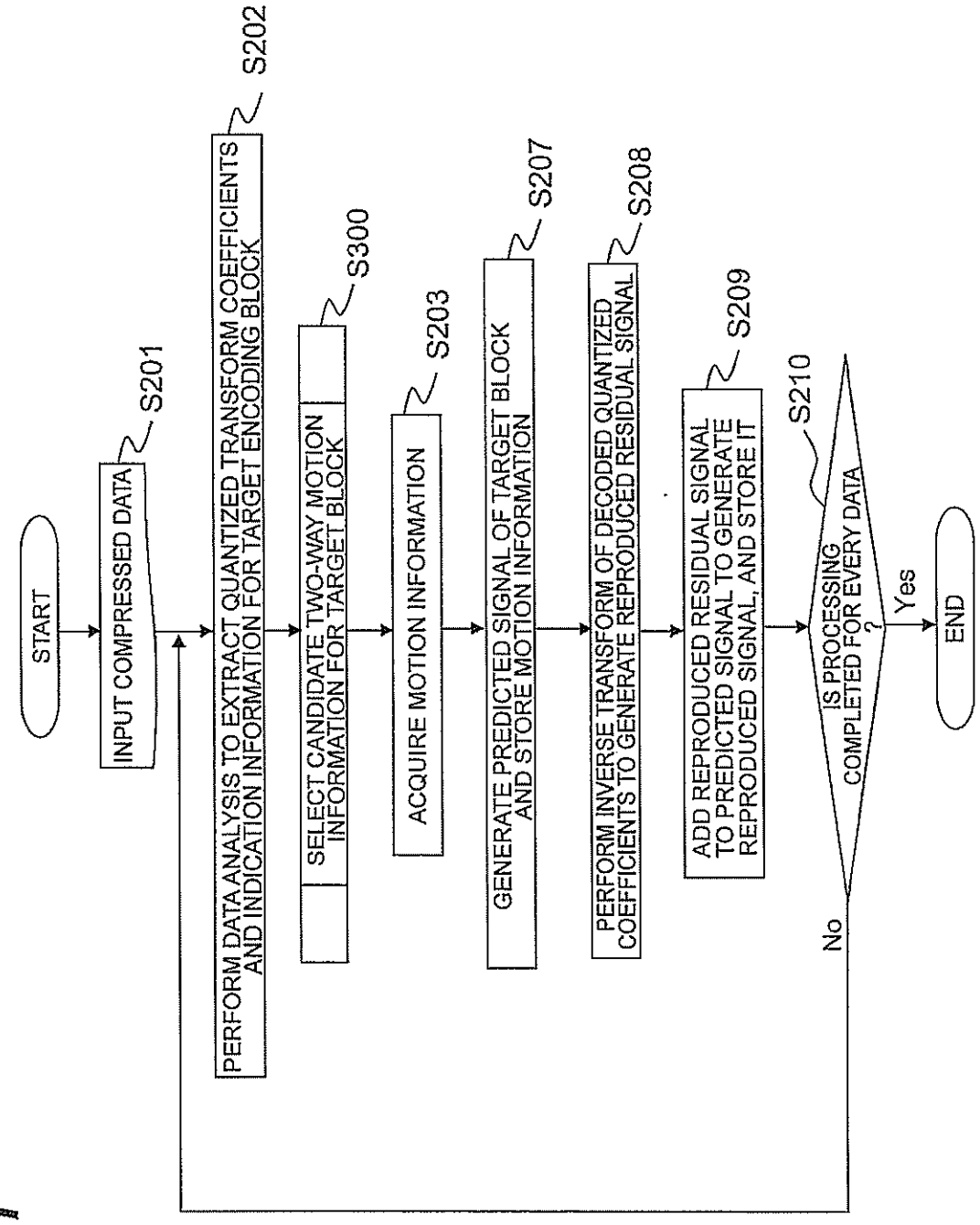

START
INPUT COMPRESSED DATA
S201
PERFORM DATA ANALYSIS TO EXTRACT QUANTIZED TRANSFORM COEFFICIENTS AND INDICATION INFORMATION FOR TARGET ENCODING BLOCK
S202
SELECT CANDIDATE TWO-WAY MOTION INFORMATION FOR TARGET BLOCK
S300
ACQUIRE MOTION INFORMATION
S203
GENERATE PREDICTED SIGNAL OF TARGET BLOCK AND STORE MOTION INFORMATION
S207
PERFORM INVERSE TRANSFORM OF DECODED QUANTIZED COEFFICIENTS TO GENERATE REPRODUCED RESIDUAL SIGNAL
S208
ADD REPRODUCED RESIDUAL SIGNAL TO PREDICTED SIGNAL TO GENERATE REPRODUCED SIGNAL, AND STORE IT
S209
IS PROCESSING COMPLETED FOR EVERY DATA ?
S210
No
Yes
END

Fig.12

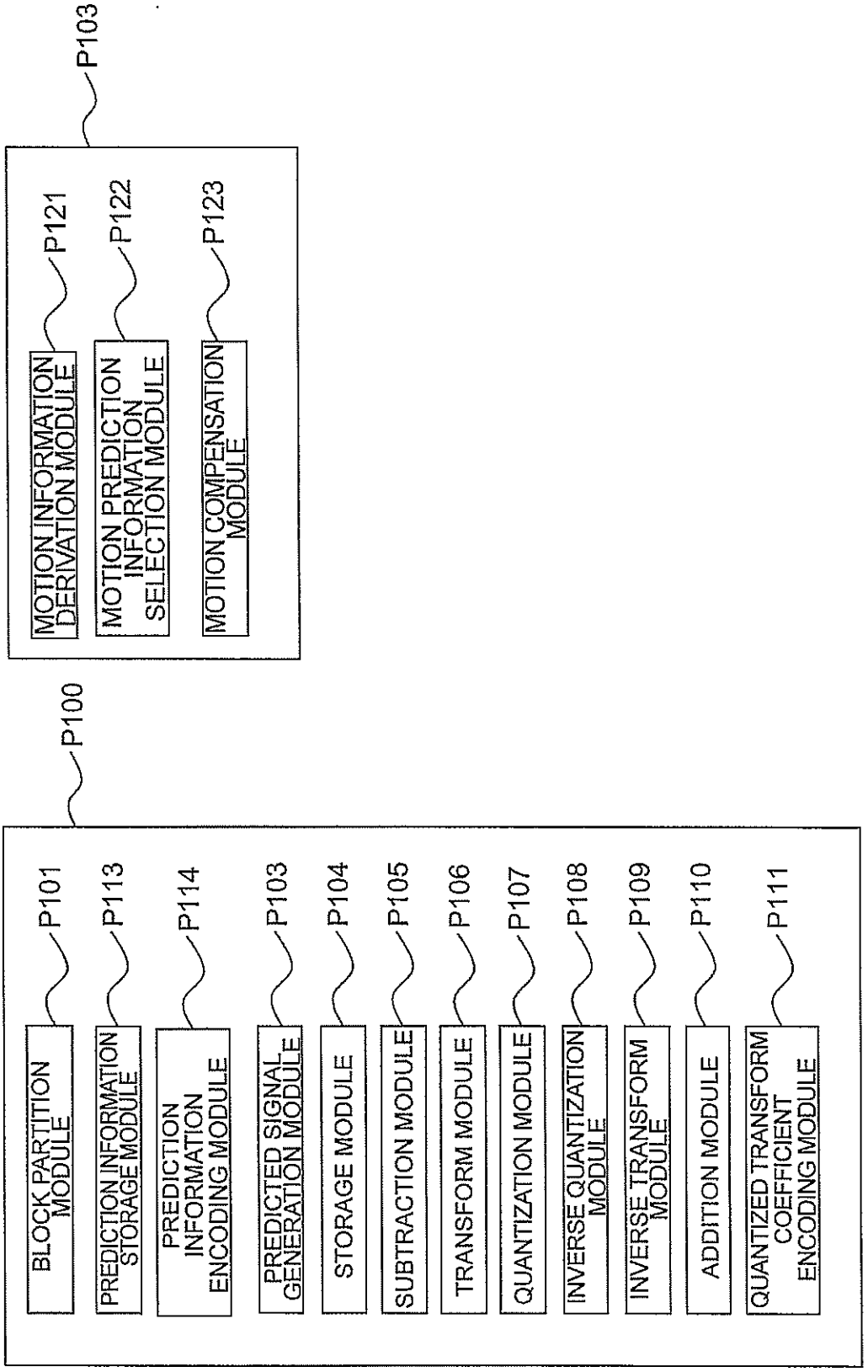

P100
BLOCK PARTITION MODULE
P101
PREDICTION INFORMATION STORAGE MODULE
P113
PREDICTION INFORMATION ENCODING MODULE
P114
PREDICTED SIGNAL GENERATION MODULE
P103
STORAGE MODULE
P104
SUBTRACTION MODULE
P105
TRANSFORM MODULE
P106
QUANTIZATION MODULE
P107
INVERSE QUANTIZATION MODULE
P108
INVERSE TRANSFORM MODULE
P109
ADDITION MODULE
P110
QUANTIZED TRANSFORM COEFFICIENT ENCODING MODULE
P111
P103
MOTION INFORMATION DERIVATION MODULE
P121
MOTION PREDICTION INFORMATION SELECTION MODULE
P122
MOTION COMPENSATION MODULE
P123

Fig.13

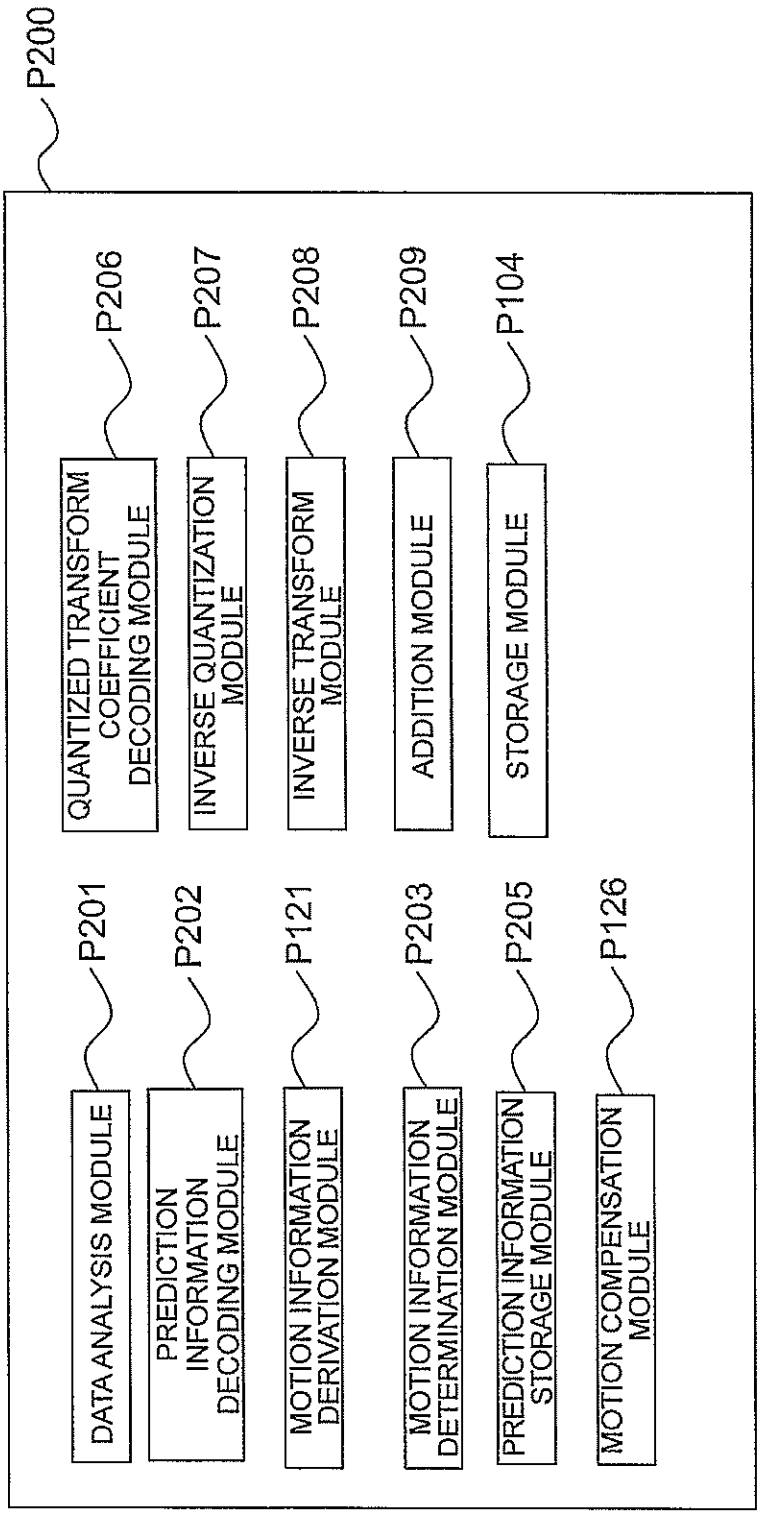

P200
DATA ANALYSIS MODULE
P201
PREDICTION INFORMATION DECODING MODULE
P202
MOTION INFORMATION DERIVATION MODULE
P121
MOTION INFORMATION DETERMINATION MODULE
P203
PREDICTION INFORMATION STORAGE MODULE
P205
MOTION COMPENSATION MODULE
P126
QUANTIZED TRANSFORM COEFFICIENT DECODING MODULE
P206
INVERSE QUANTIZATION MODULE
P207
INVERSE TRANSFORM MODULE
P208
ADDITION MODULE
P209
STORAGE MODULE
P104

Fig.14

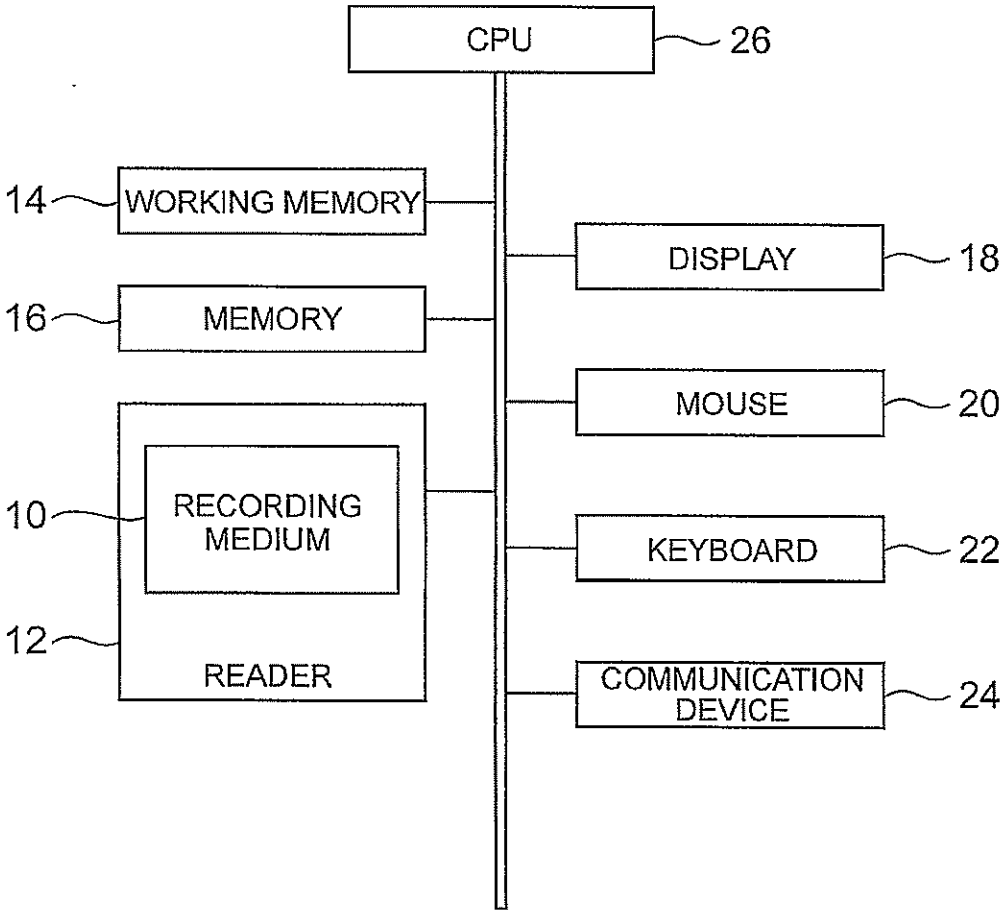
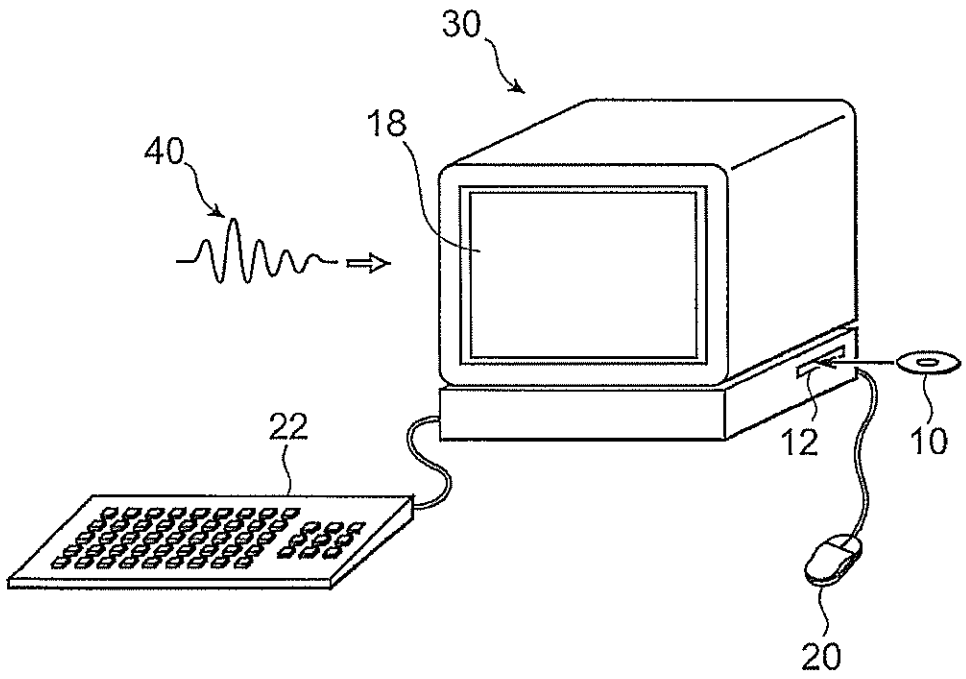

CPU
26
14
WORKING MEMORY
16
MEMORY
10
RECORDING MEDIUM
12
READER
DISPLAY
18
MOUSE
20
KEYBOARD
22
COMMUNICATION DEVICE
24

Fig.15



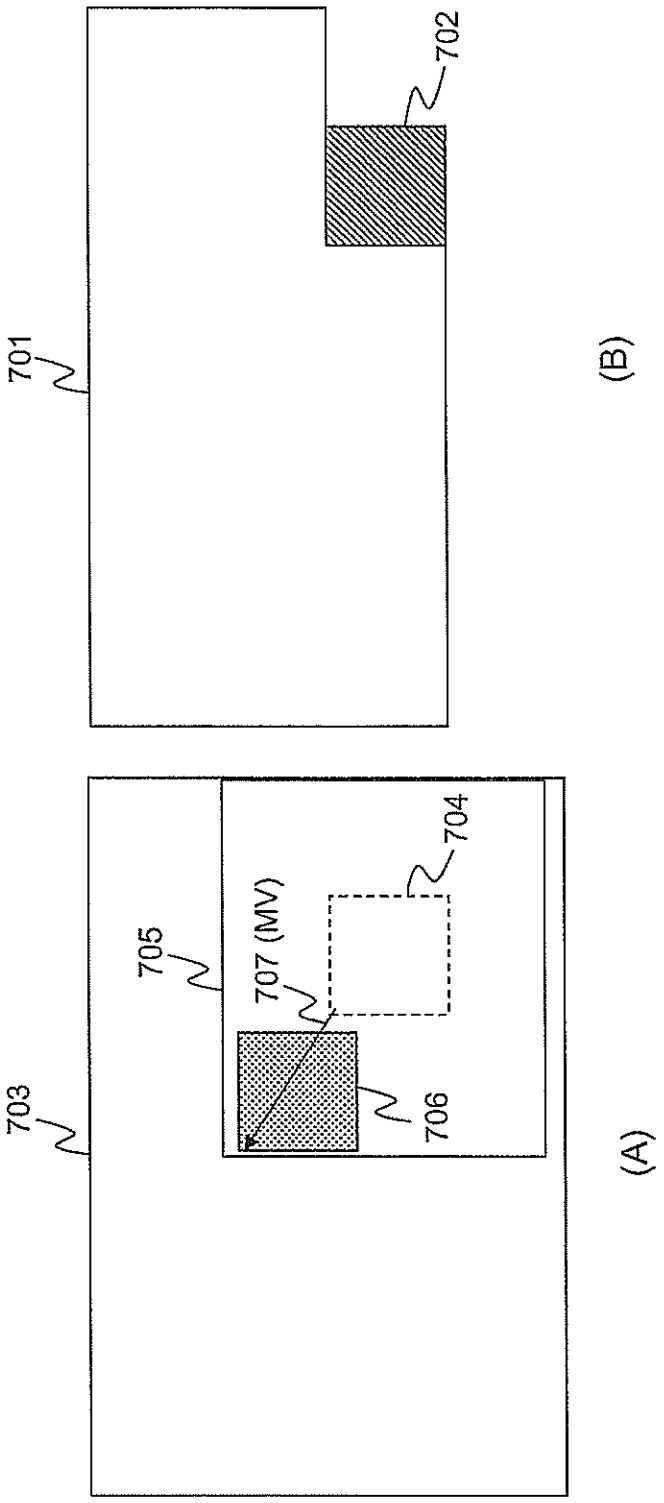


Fig. 16

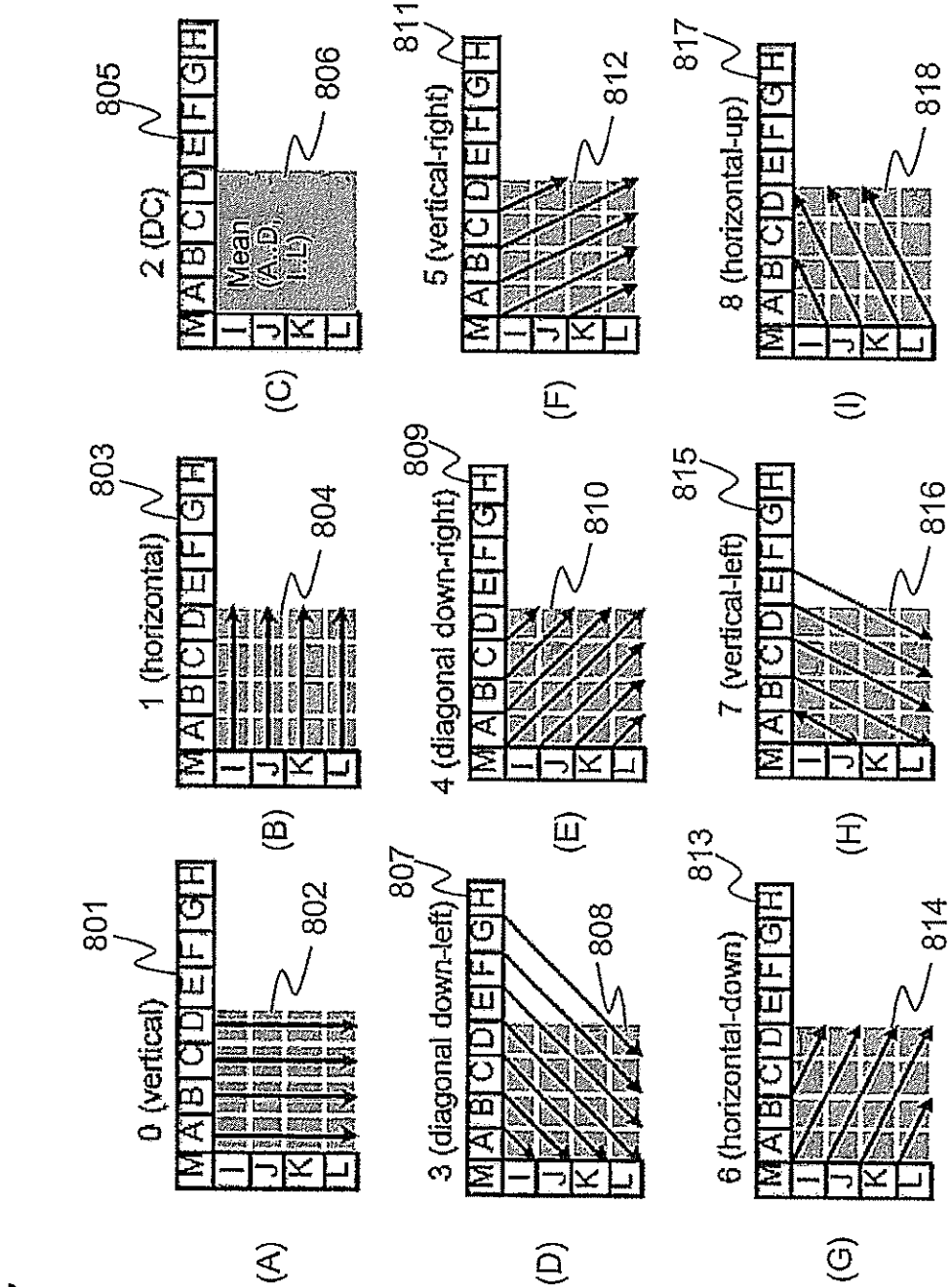

0 (vertical)
801
802
(A)
1 (horizontal)
803
804
(B)
2 (DC)
805
Mean (A..D, I..L)
806
(C)
3 (diagonal down-left)
807
808
(D)
4 (diagonal down-right)
809
810
(E)
5 (vertical-right)
811
812
(F)
6 (horizontal-down)
813
814
(G)
7 (vertical-left)
815
816
(H)
8 (horizontal-up)
817
818
(I)
M A B C D E F G H
I
J
K
L

Fig. 17