FIG. 1

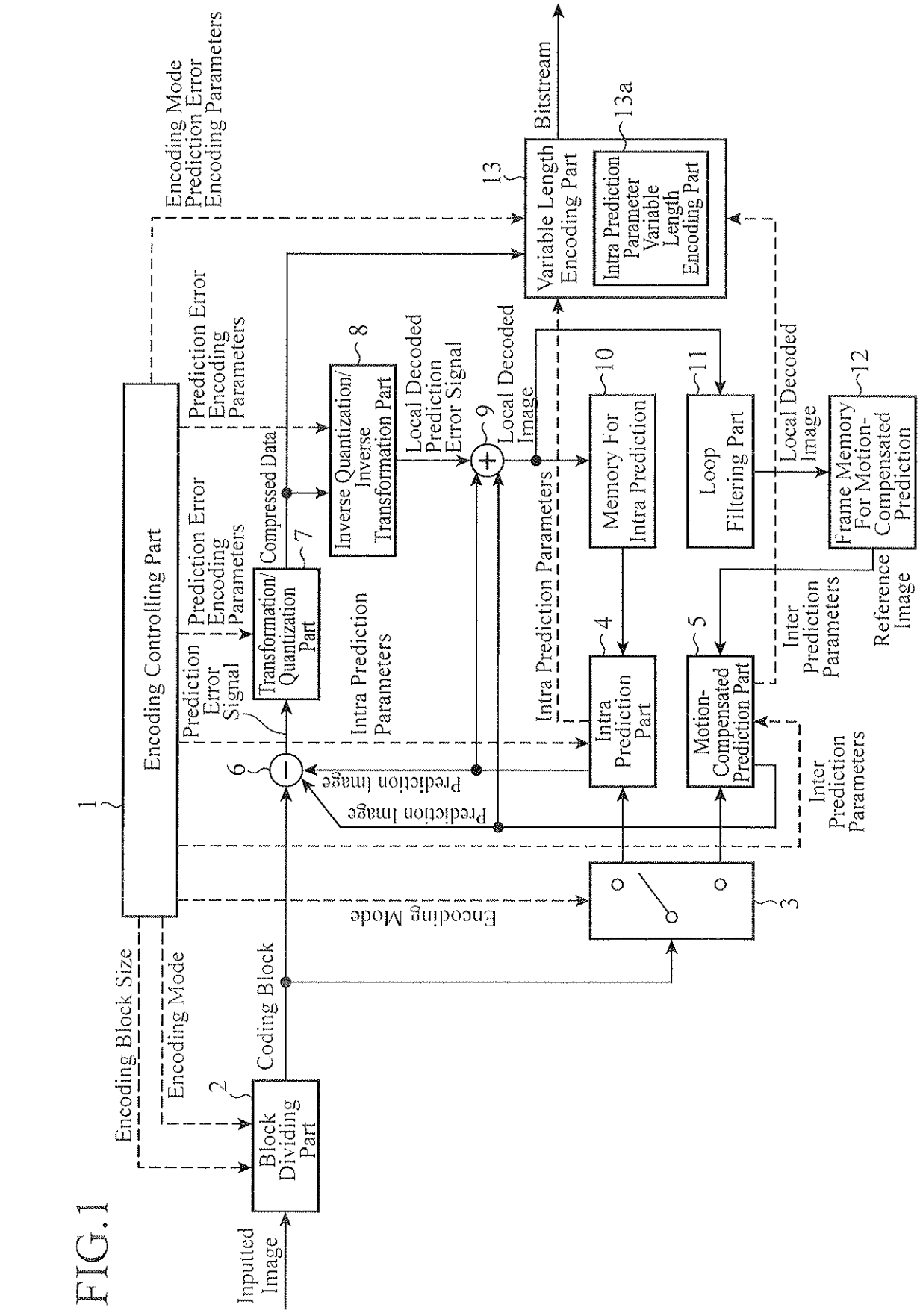

Inputted Image
Block Dividing Part
2
Coding Block
Encoding Block Size
Encoding Mode
Encoding Controlling Part
1
Encoding Mode
Prediction Error Encoding Parameters
Bitstream
Variable Length Encoding Part
13
Intra Prediction Parameter Variable Length Encoding Part
13a
Prediction Error Encoding Parameters
Compressed Data
Transformation/ Quantization Part
7
Inverse Quantization/ Inverse Transformation Part
8
Local Decoded Prediction Error Signal
Prediction Error Signal
Intra Prediction Parameters
Prediction Image
6
9
Local Decoded Image
Memory For Intra Prediction
10
Loop Filtering Part
11
Local Decoded Image
Frame Memory For Motion-Compensated Prediction
12
Intra Prediction Parameters
Intra Prediction Part
4
Motion-Compensated Prediction Part
5
Inter Prediction Parameters
Reference Image
Encoding Mode
3

FIG.2

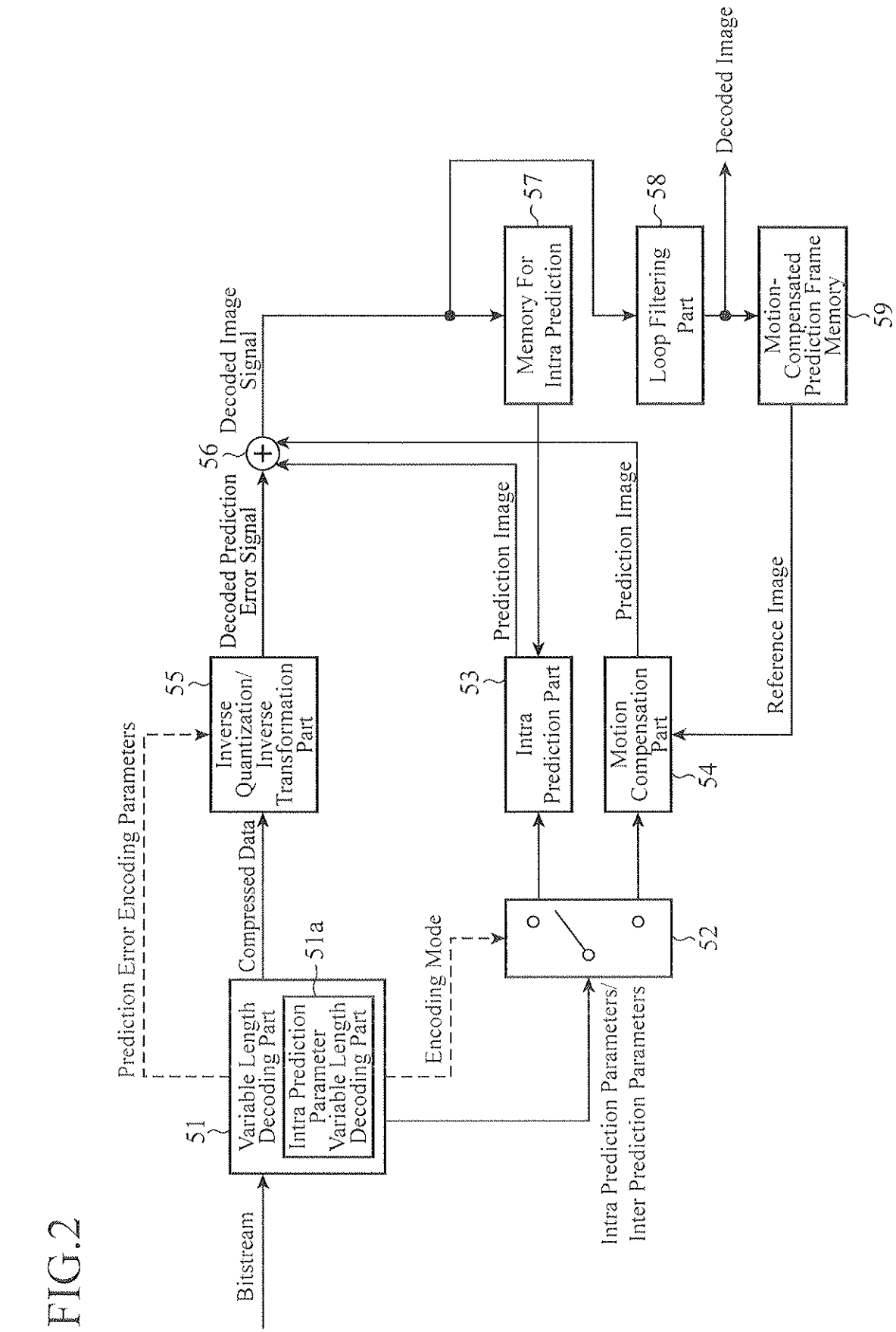

Bitstream
51
Variable Length Decoding Part
Intra Prediction Parameter Variable Length Decoding Part
51a
Prediction Error Encoding Parameters
Compressed Data
55
Inverse Quantization/ Inverse Transformation Part
Decoded Prediction Error Signal
56
Decoded Image Signal
Encoding Mode
52
Intra Prediction Parameters/ Inter Prediction Parameters
53
Intra Prediction Part
Prediction Image
54
Motion Compensation Part
Prediction Image
Reference Image
57
Memory For Intra Prediction
58
Loop Filtering Part
Decoded Image
59
Motion-Compensated Prediction Frame Memory

FIG.3

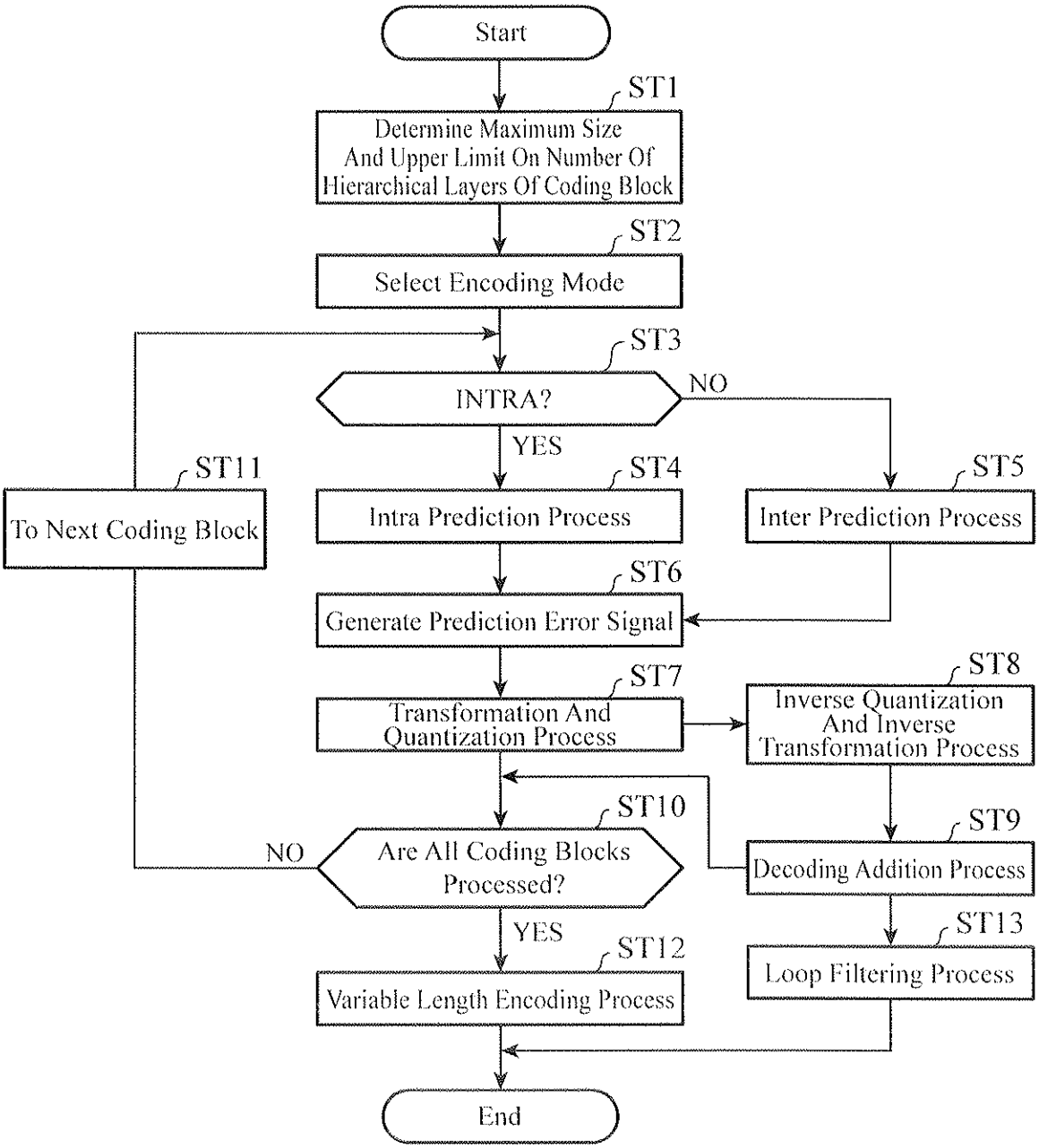
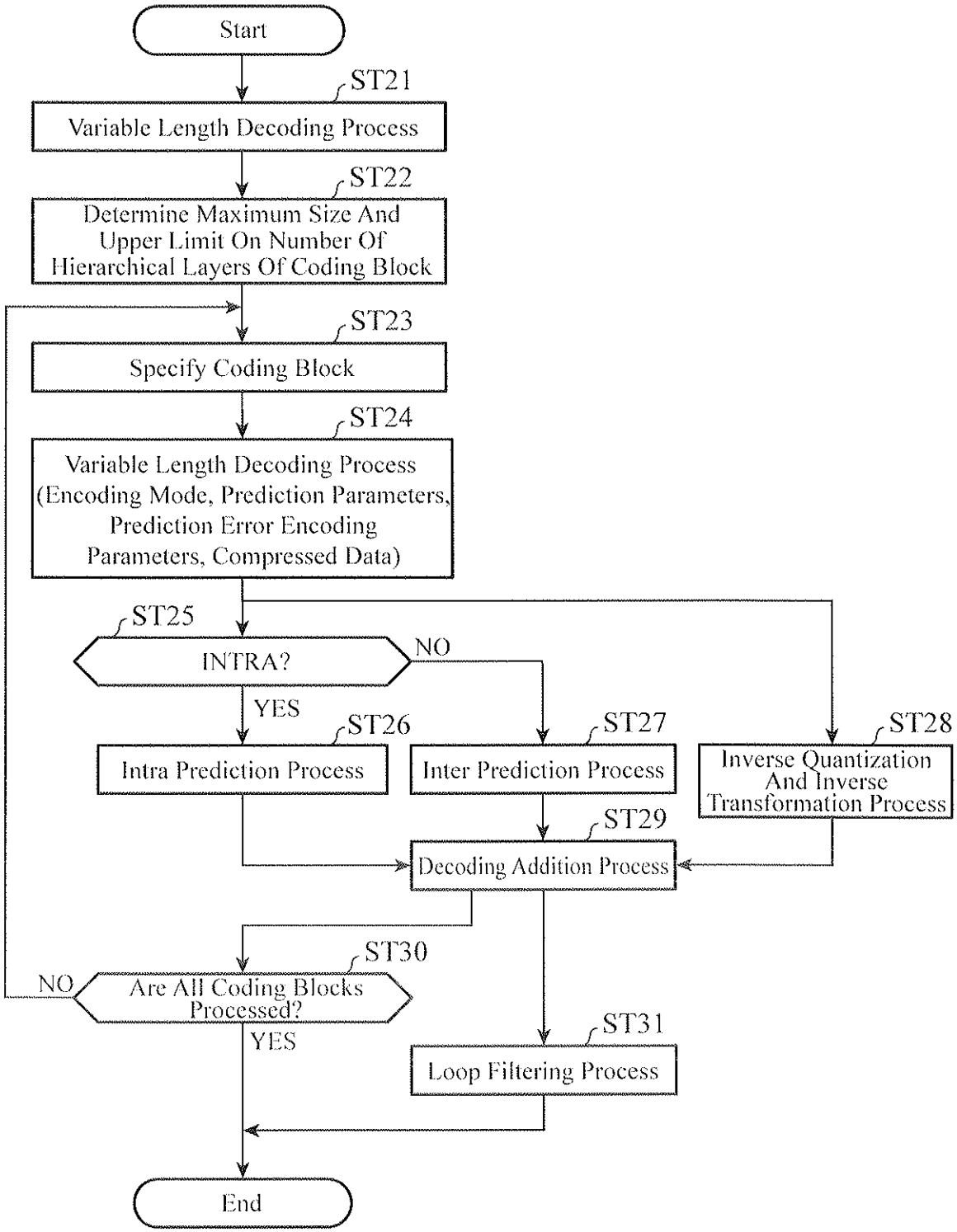

Start
ST1
Determine Maximum Size And Upper Limit On Number Of Hierarchical Layers Of Coding Block
ST2
Select Encoding Mode
ST3
INTRA?
NO
YES
ST4
Intra Prediction Process
ST5
Inter Prediction Process
ST6
Generate Prediction Error Signal
ST7
Transformation And Quantization Process
ST8
Inverse Quantization And Inverse Transformation Process
ST9
Decoding Addition Process
ST10
Are All Coding Blocks Processed?
NO
YES
ST11
To Next Coding Block
ST12
Variable Length Encoding Process
ST13
Loop Filtering Process
End

FIG.4


Start
ST21
Variable Length Decoding Process
ST22
Determine Maximum Size And Upper Limit On Number Of Hierarchical Layers Of Coding Block
ST23
Specify Coding Block
ST24
Variable Length Decoding Process (Encoding Mode, Prediction Parameters, Prediction Error Encoding Parameters, Compressed Data)
ST25
INTRA?
NO
YES
ST26
Intra Prediction Process
ST27
Inter Prediction Process
ST28
Inverse Quantization And Inverse Transformation Process
ST29
Decoding Addition Process
ST30
Are All Coding Blocks Processed?
NO
YES
ST31
Loop Filtering Process
End

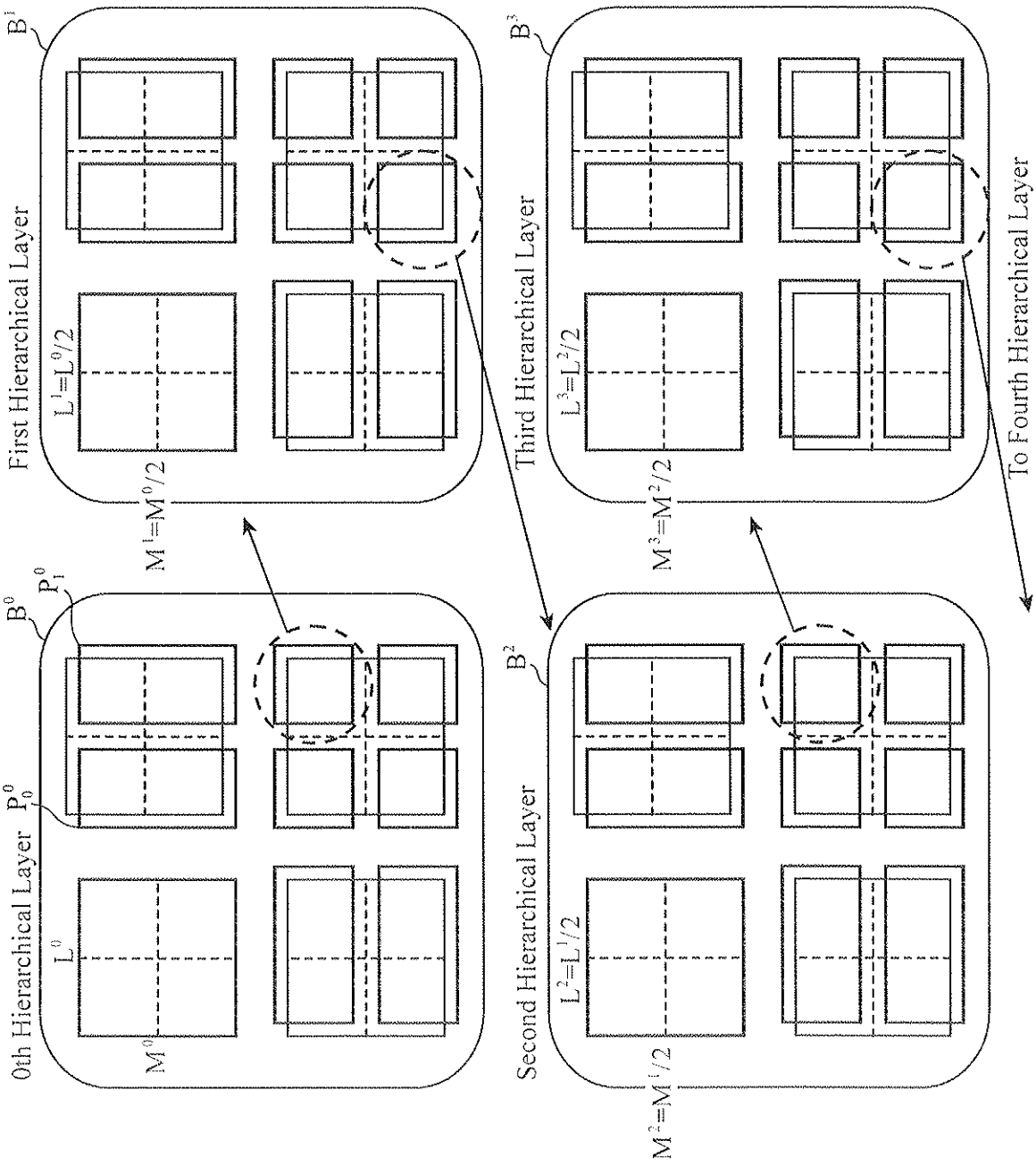

0th Hierarchical Layer
First Hierarchical Layer
Second Hierarchical Layer
Third Hierarchical Layer
To Fourth Hierarchical Layer
B0
B1
B2
B3
P0 0
P0 1
L0
M0
L1=L0/2
M1=M0/2
L2=L1/2
M2=M1/2
L3=L2/2
M3=M2/2

FIG.5

FIG.6

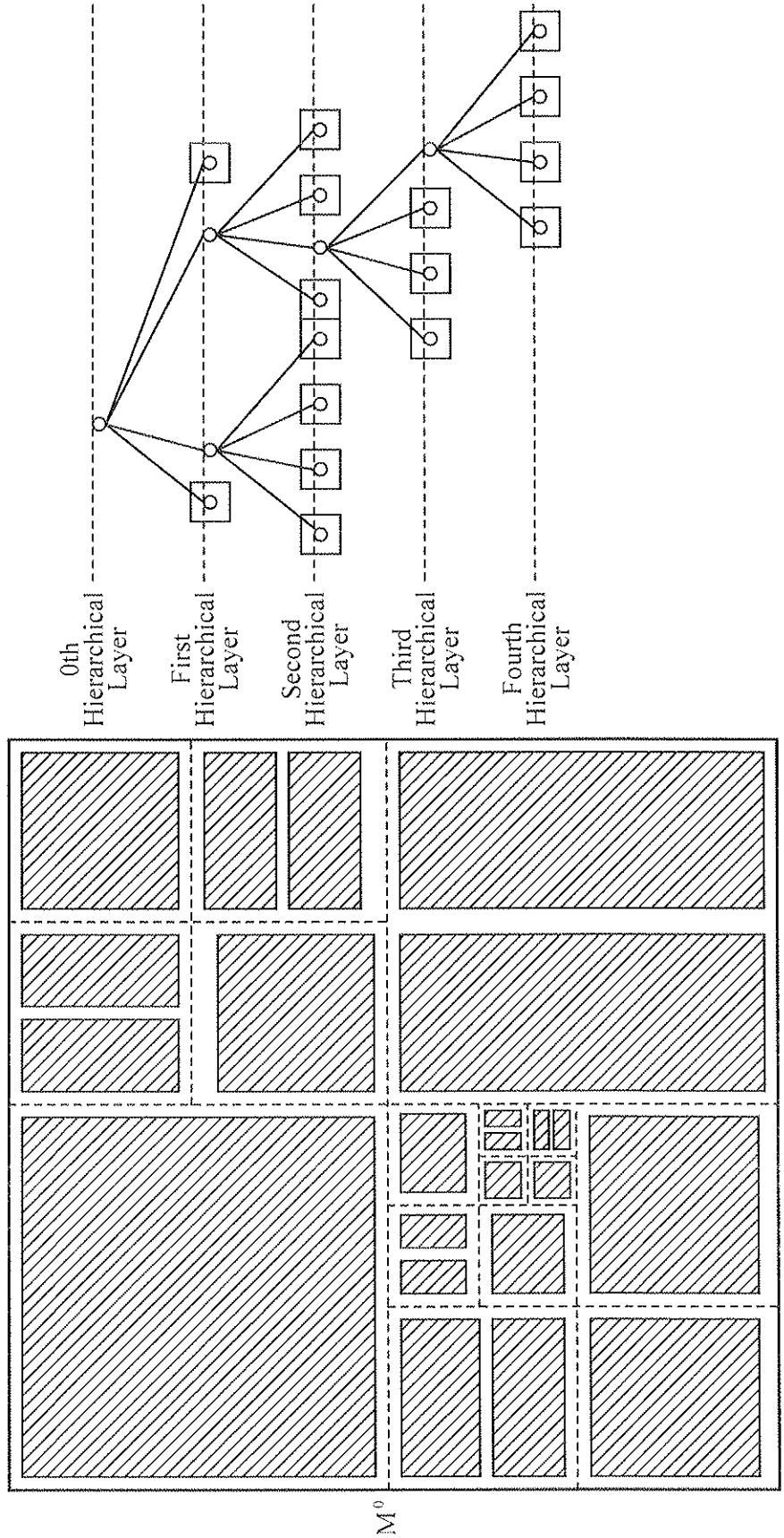

(a)
(b)
L^0
M^0
0th Hierarchical Layer
First Hierarchical Layer
Second Hierarchical Layer
Third Hierarchical Layer
Fourth Hierarchical Layer

FIG.7

Intra Prediction Mode Index	Intra Prediction Mode
0	Vertical Prediction
1	Horizontal Prediction
2	Average (DC) Prediction
3∼N-1	Diagonal Prediction

N: Number Of Intra Prediction Modes

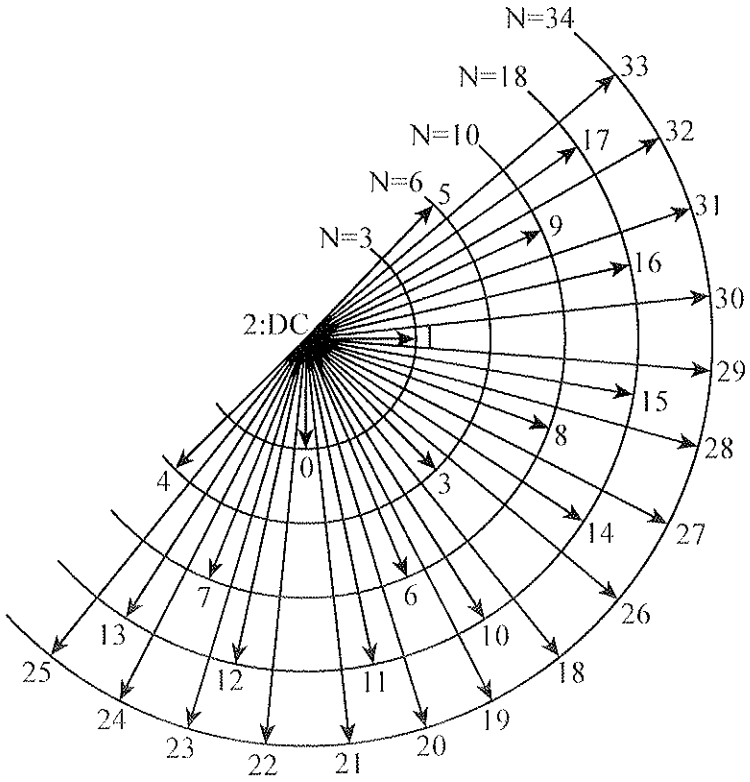


FIG.8

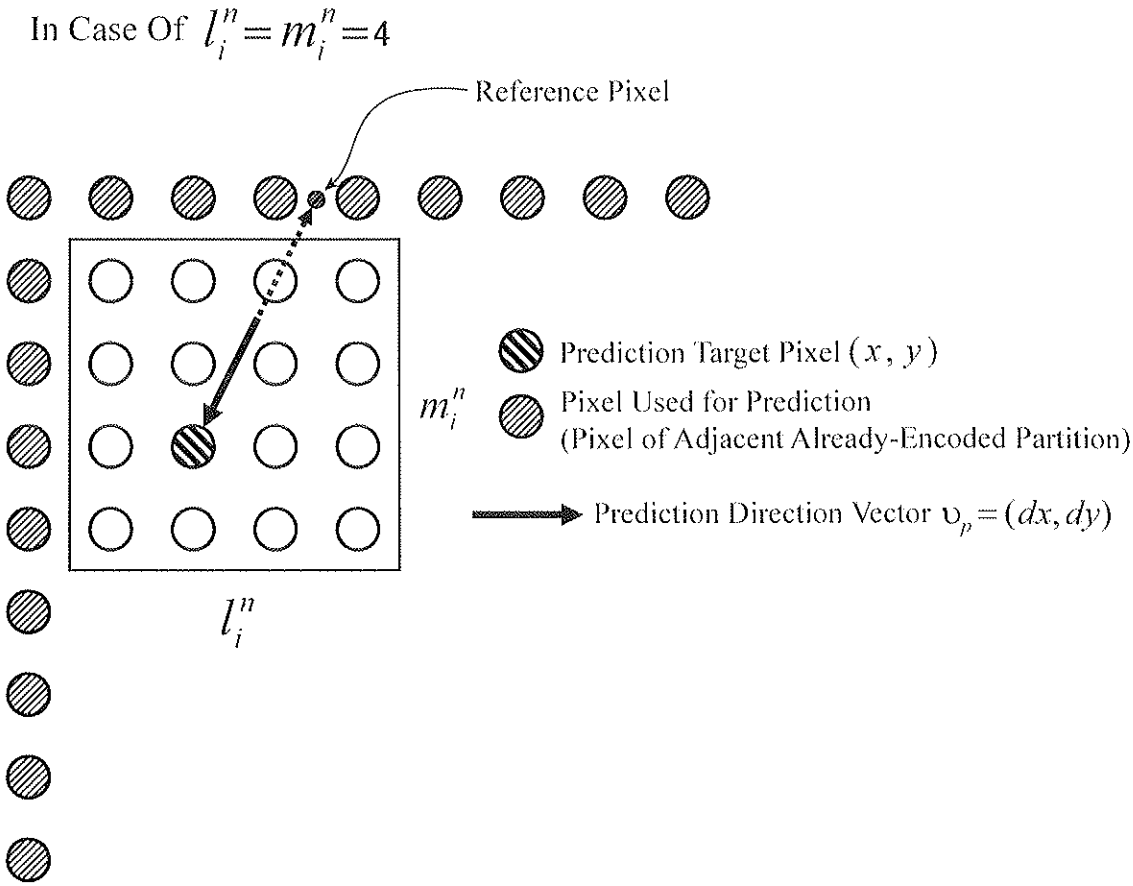
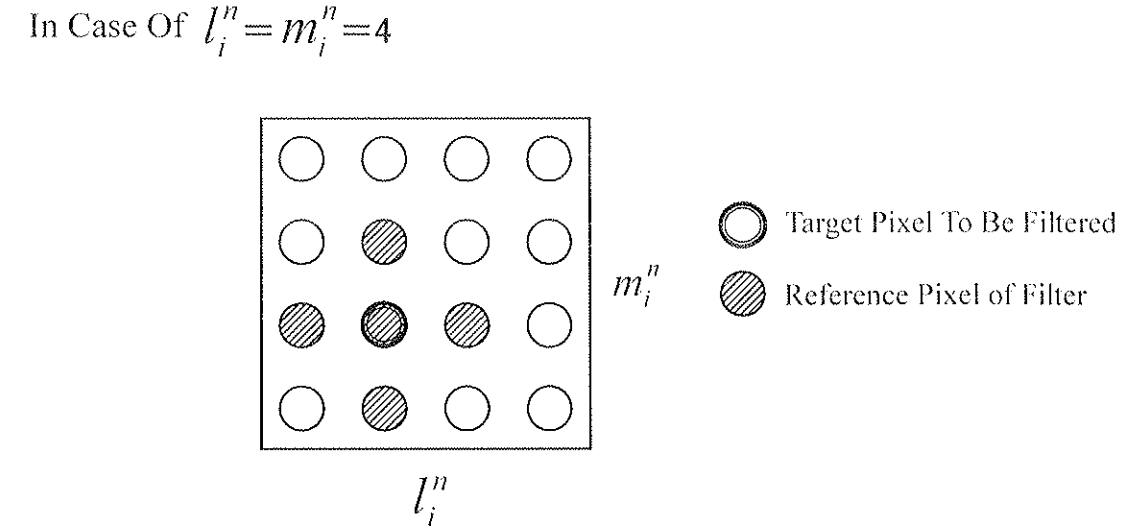

In Case Of $l_i^n = m_i^n = 4$
Reference Pixel
m_i^n
l_i^n
Prediction Target Pixel (x, y)
Pixel Used for Prediction
(Pixel of Adjacent Already-Encoded Partition)
Prediction Direction Vector $\upsilon_p = (dx, dy)$

FIG.9


In Case Of $l_i^n = m_i^n = 4$
m_i^n
l_i^n
Target Pixel To Be Filtered
Reference Pixel of Filter

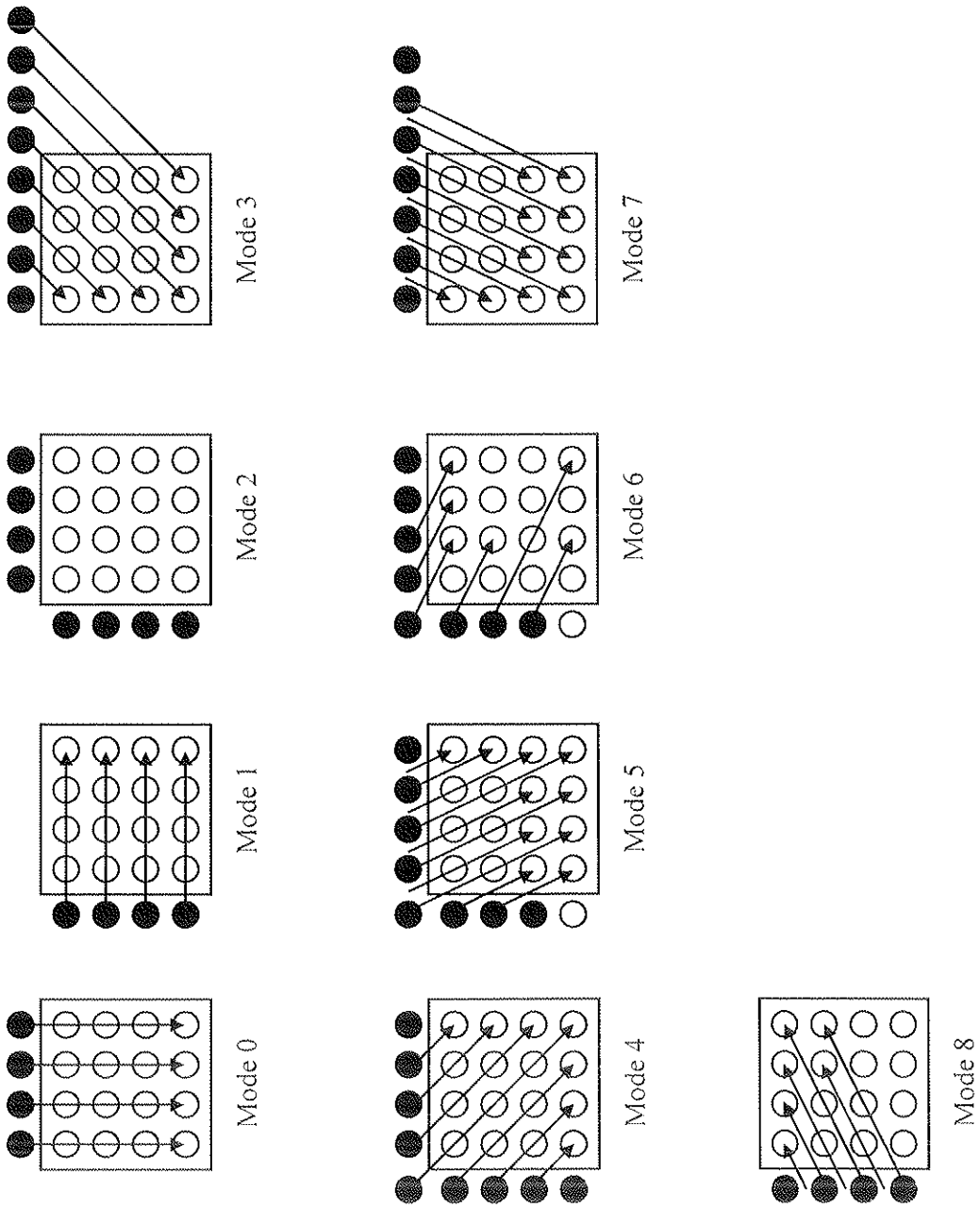


FIG. 10

FIG.11

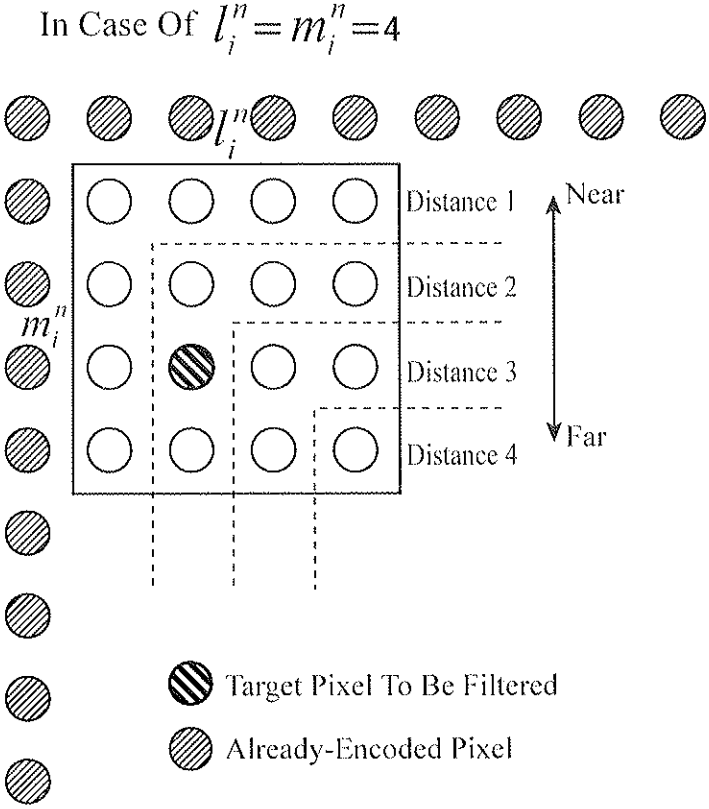

In Case Of $l_i^n = m_i^n = 4$
l_i^n
m_i^n
Distance 1
Distance 2
Distance 3
Distance 4
Near
Far
Target Pixel To Be Filtered
Already-Encoded Pixel

FIG.12

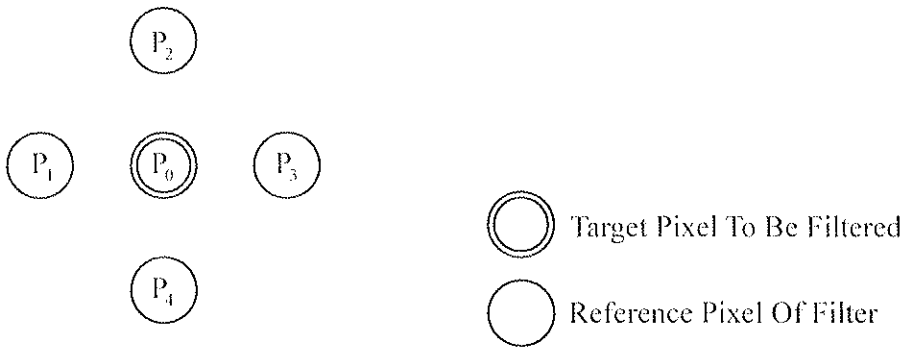

P_2
P_1
P_0
P_3
P_4
Target Pixel To Be Filtered
Reference Pixel Of Filter

FIG.13

Intra Prediction Mode Index	Partition Size [pixel]				
	4x4	8x8	16x16	32x32	64x64
0	0	0	0	0	0
1	0	0	0	0	0
2	3	2	1	0	0
3	2	4	4	0	0
4	2	4	4	0	0
5	2	4	4	0	0
6	0	4	4	0	0
7	0	4	4	0	0
8	0	4	4	0	0
9	0	4	4	0	0
10	0	0	4	0	0
11	0	0	4	0	0
12	0	0	4	0	0
13	0	0	4	0	0
14	0	0	4	0	0
15	0	0	4	0	0
16	0	0	4	0	0
17	0	0	4	0	0
18	0	0	4	0	0
19	0	0	4	0	0
20	0	0	4	0	0
21	0	0	4	0	0
22	0	0	4	0	0
23	0	0	4	0	0
24	0	0	4	0	0
25	0	0	4	0	0
26	0	0	4	0	0
27	0	0	4	0	0
28	0	0	4	0	0
29	0	0	4	0	0
30	0	0	4	0	0
31	0	0	4	0	0
32	0	0	4	0	0
33	0	0	4	0	0

FIG.14

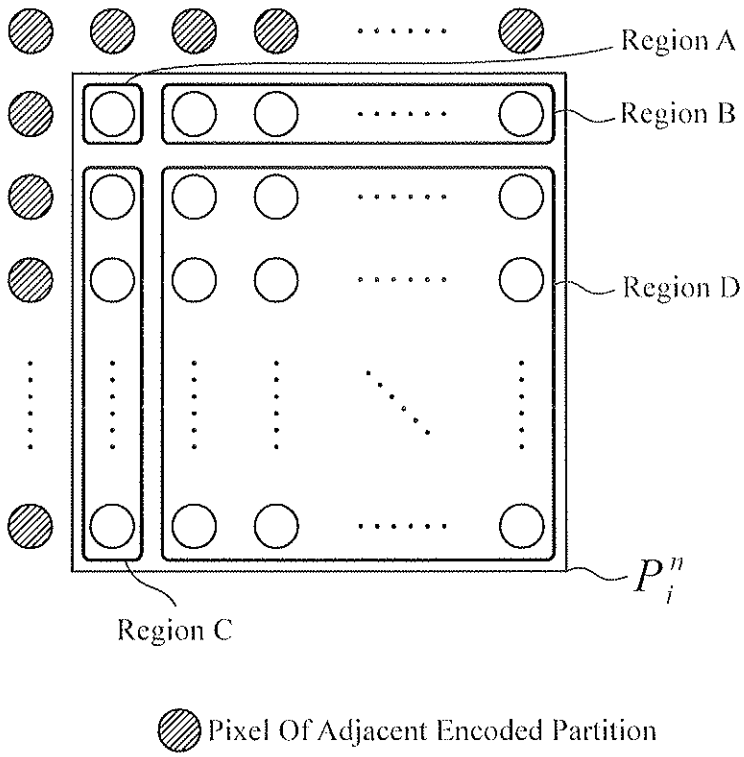

Region A
Region B
Region D
P_i^n
Region C
Pixel Of Adjacent Encoded Partition

FIG. 15

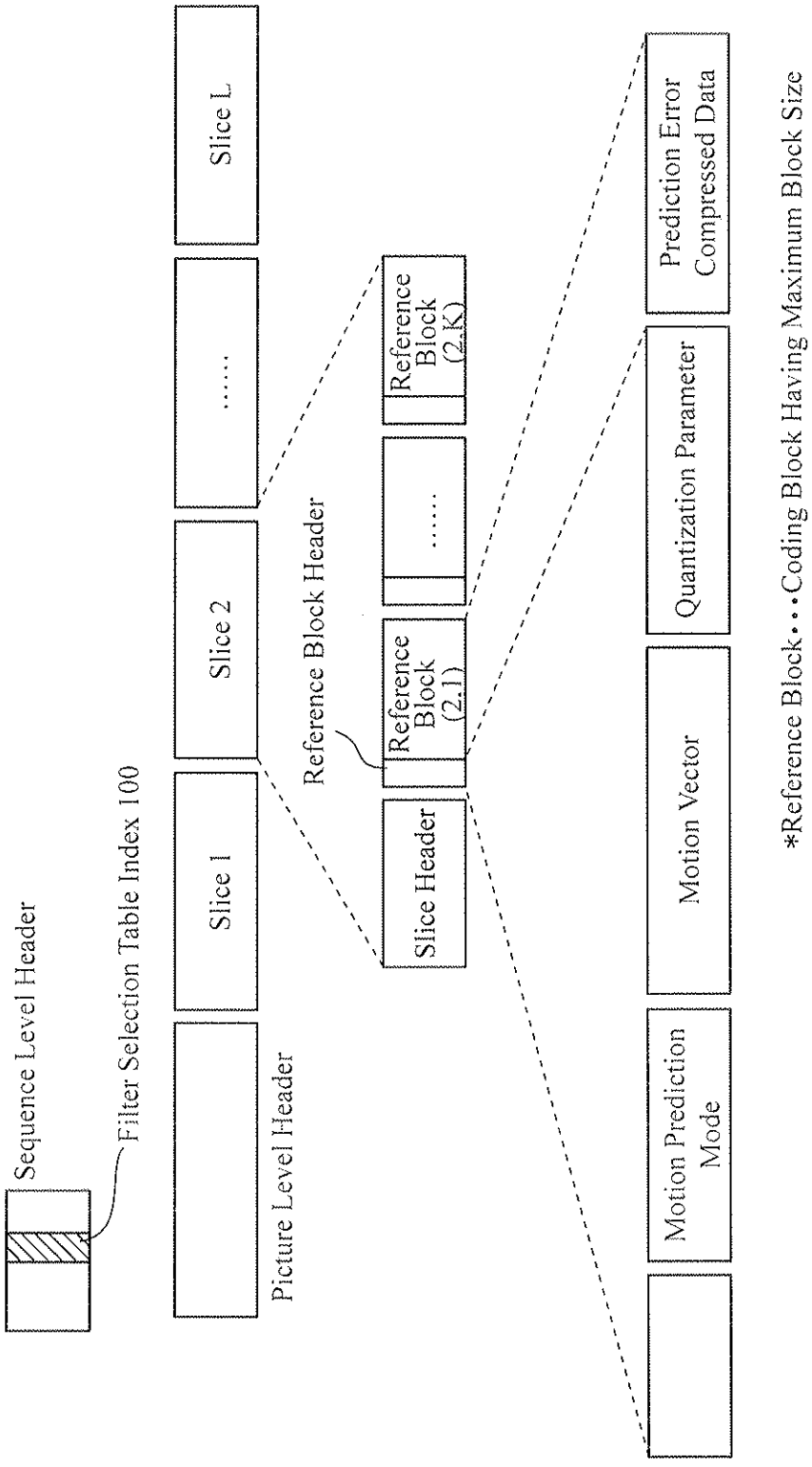

Sequence Level Header
Filter Selection Table Index 100
Picture Level Header
Slice 1
Slice 2
.....
Slice L
Reference Block Header
Slice Header
Reference Block (2.1)
.....
Reference Block (2.K)
Motion Prediction Mode
Motion Vector
Quantization Parameter
Prediction Error Compressed Data
*Reference Block • • • Coding Block Having Maximum Block Size

FIG.16

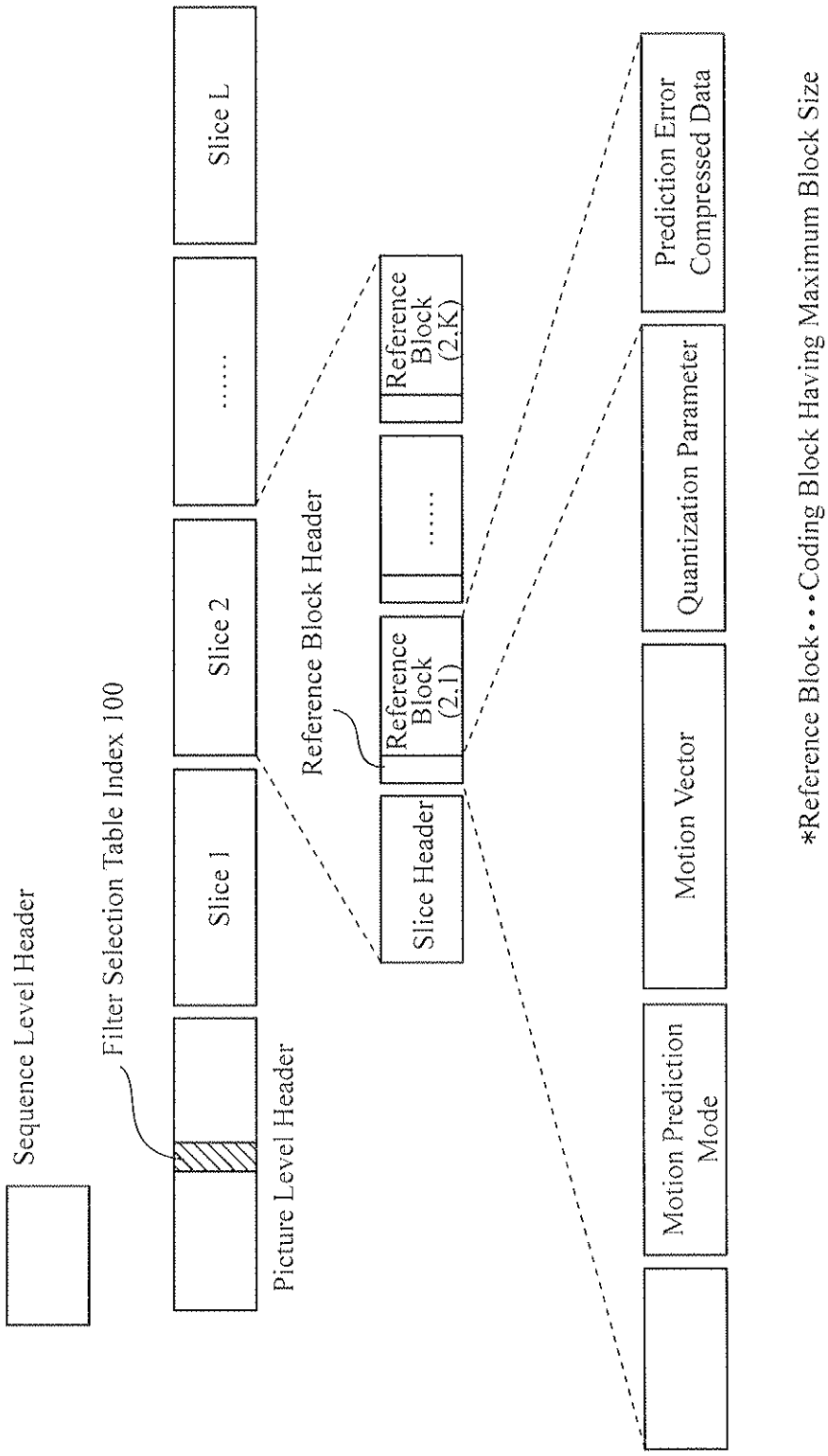

Sequence Level Header
Filter Selection Table Index 100
Picture Level Header
Slice 1
Slice 2
.....
Slice L
Reference Block Header
Slice Header
Reference Block (2,1)
.....
Reference Block (2,K)
Motion Prediction Mode
Motion Vector
Quantization Parameter
Prediction Error Compressed Data
*Reference Block • • • Coding Block Having Maximum Block Size

FIG. 17

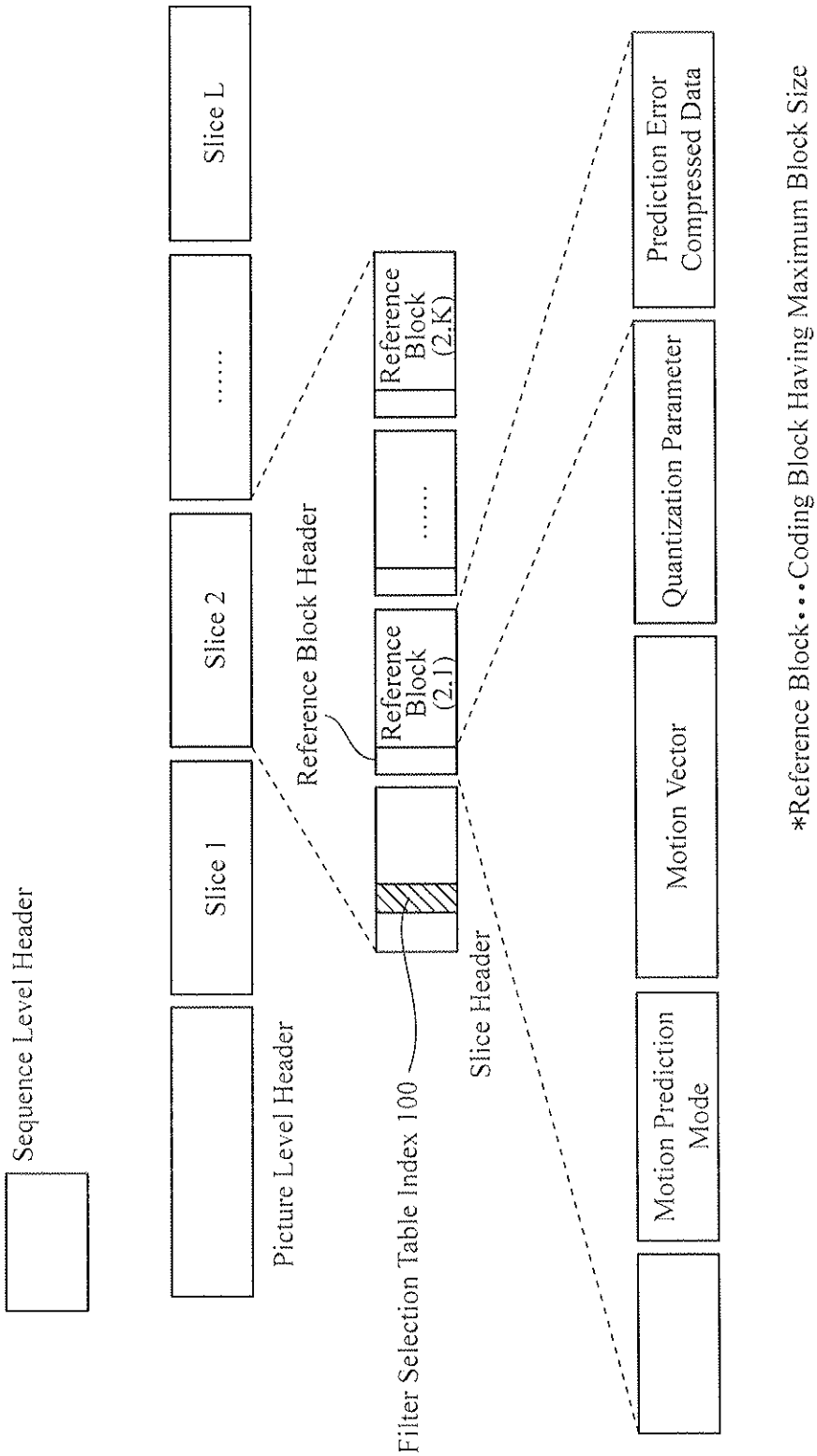

Sequence Level Header
Picture Level Header
Slice 1
Slice 2
.....
Slice L
Reference Block Header
Reference Block (2.1)
.....
Reference Block (2.K)
Filter Selection Table Index 100
Slice Header
Motion Prediction Mode
Motion Vector
Quantization Parameter
Prediction Error Compressed Data
*Reference Block • • • Coding Block Having Maximum Block Size

FIG. 18

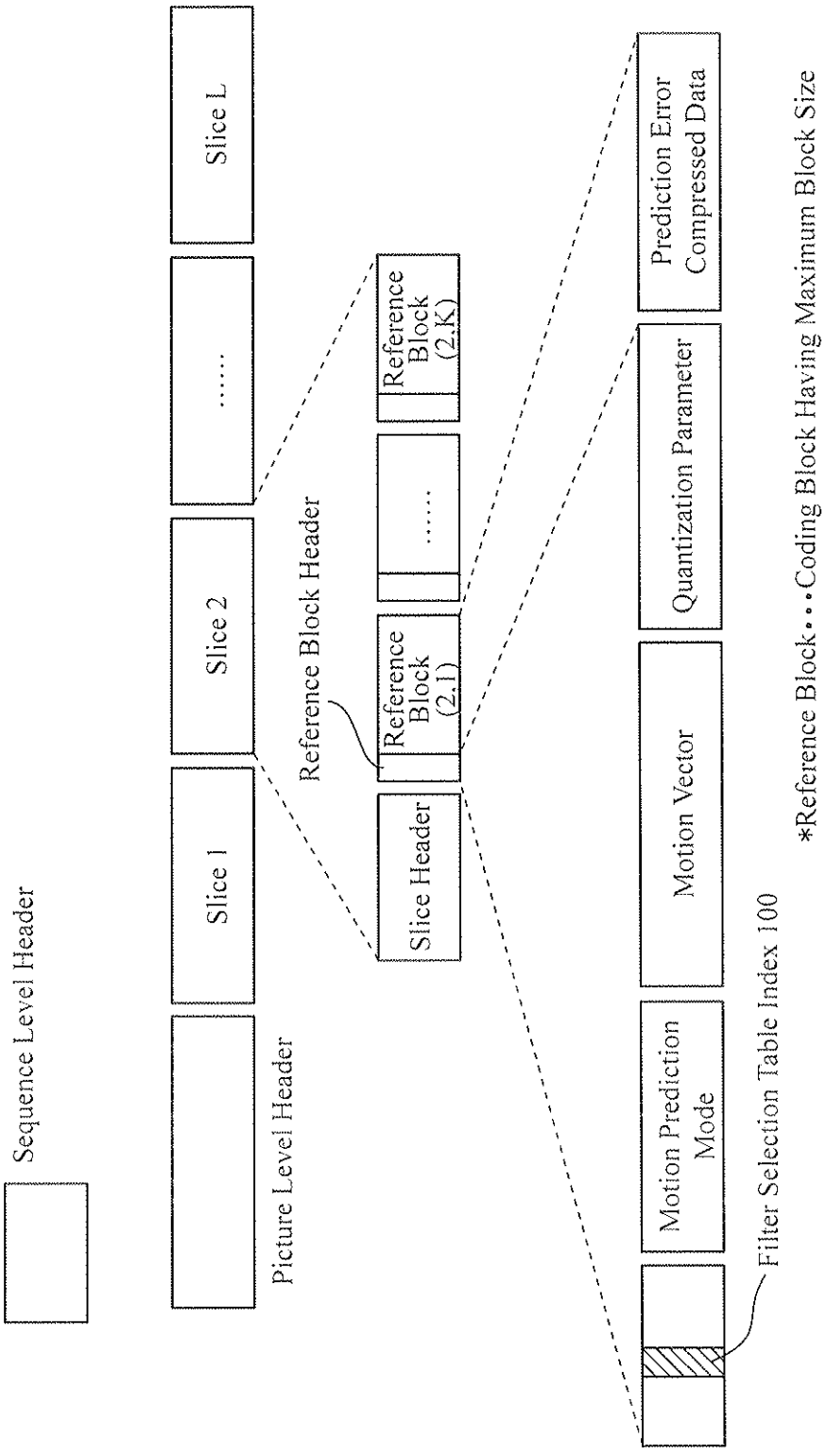

Sequence Level Header
Picture Level Header
Slice 1
Slice 2
.....
Slice L
Reference Block Header
Slice Header
Reference Block (2,1)
.....
Reference Block (2,K)
Motion Prediction Mode
Motion Vector
Quantization Parameter
Prediction Error Compressed Data
Filter Selection Table Index 100
*Reference Block . . . Coding Block Having Maximum Block Size

FIG.19

Intra Prediction Mode Index	Partition Size [pixel]				
	4x4	8x8	16x16	32x32	64x64
0	0	0	0	0	0
1	0	0	0	0	0
2	3	2	1	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	0	0	0	0	0
7	0	0	0	0	0
8	0	0	0	0	0
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	0	0
12	0	0	0	0	0
13	0	0	0	0	0
14	0	0	0	0	0
15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	0	0
19	0	0	0	0	0
20	0	0	0	0	0
21	0	0	0	0	0
22	0	0	0	0	0
23	0	0	0	0	0
24	0	0	0	0	0
25	0	0	0	0	0
26	0	0	0	0	0
27	0	0	0	0	0
28	0	0	0	0	0
29	0	0	0	0	0
30	0	0	0	0	0
31	0	0	0	0	0
32	0	0	0	0	0
33	0	0	0	0	0

FIG.20

Intra Prediction Mode Index	Partition Size [pixel]				
	4x4	8x8	16x16	32x32	64x64
0	0	0	0	0	0
1	0	0	0	0	0
2	0	0	0	0	0
3	1	1	1	1	1
4	1	1	1	1	1
5	1	1	1	1	1
6	0	1	1	1	1
7	0	1	1	1	1
8	0	1	1	1	1
9	0	1	1	1	1
10	0	0	1	1	1
11	0	0	1	1	1
12	0	0	1	1	1
13	0	0	1	1	1
14	0	0	1	1	1
15	0	0	1	1	1
16	0	0	1	1	1
17	0	0	1	1	1
18	0	0	0	1	1
19	0	0	0	1	1
20	0	0	0	1	1
21	0	0	0	1	1
22	0	0	0	1	1
23	0	0	0	1	1
24	0	0	0	1	1
25	0	0	0	1	1
26	0	0	0	1	1
27	0	0	0	1	1
28	0	0	0	1	1
29	0	0	0	1	1
30	0	0	0	1	1
31	0	0	0	1	1
32	0	0	0	1	1
33	0	0	0	1	1