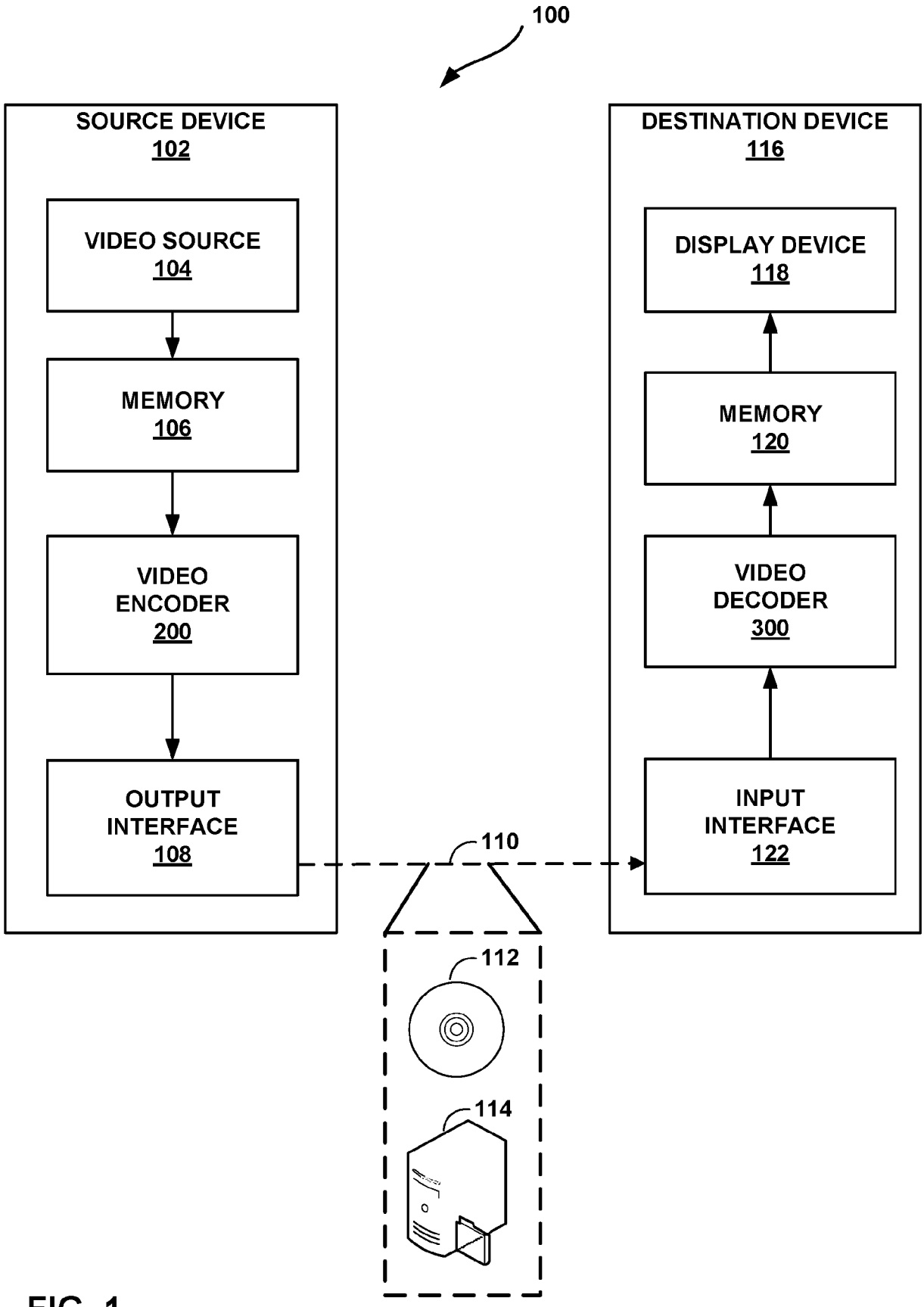

100
SOURCE DEVICE
102
VIDEO SOURCE
104
MEMORY
106
VIDEO
ENCODER
200
OUTPUT
INTERFACE
108
110
DESTINATION DEVICE
116
DISPLAY DEVICE
118
MEMORY
120
VIDEO
DECODER
300
INPUT
INTERFACE
122
112
114

FIG. 1

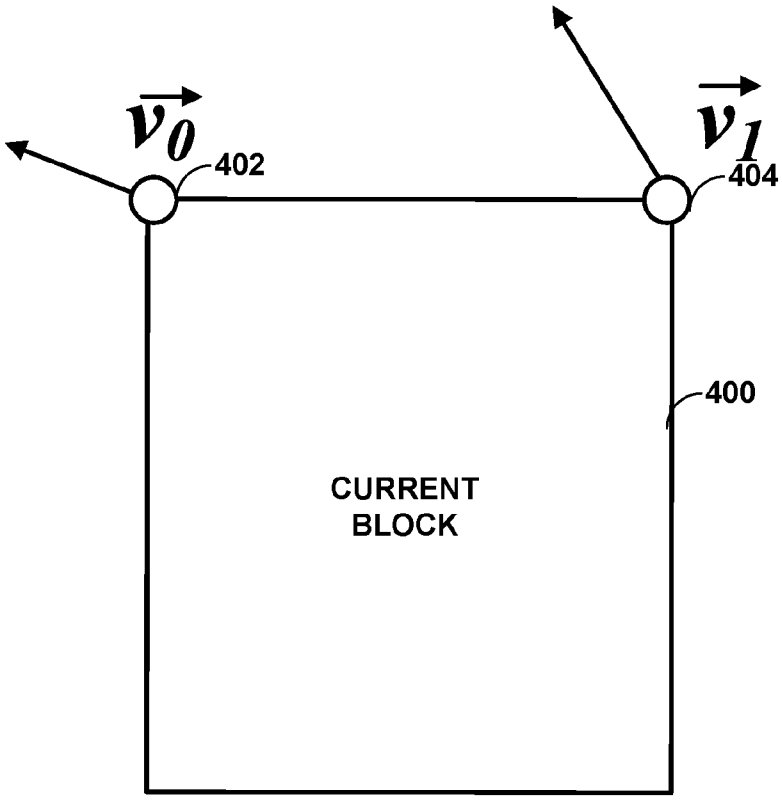


FIG. 2

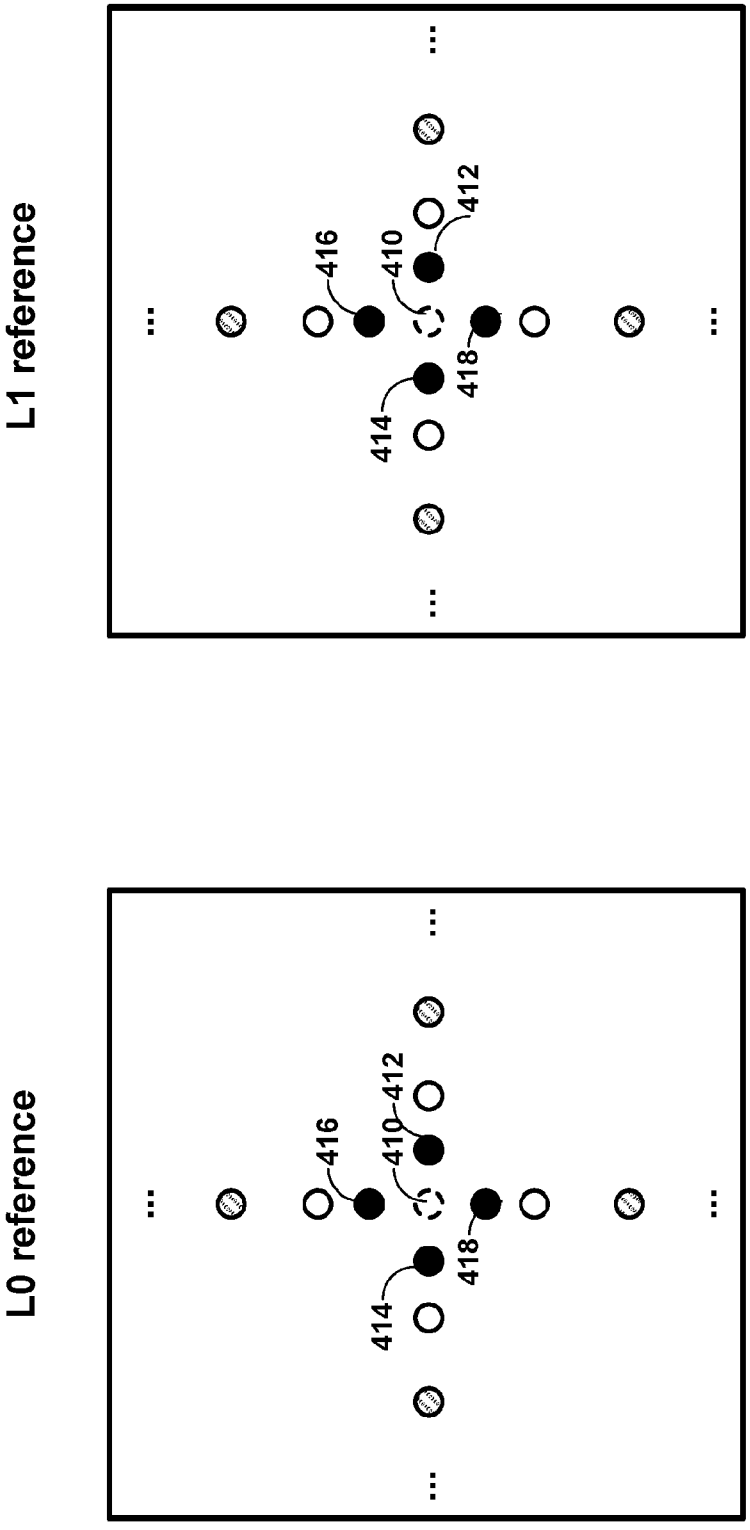


FIG. 3

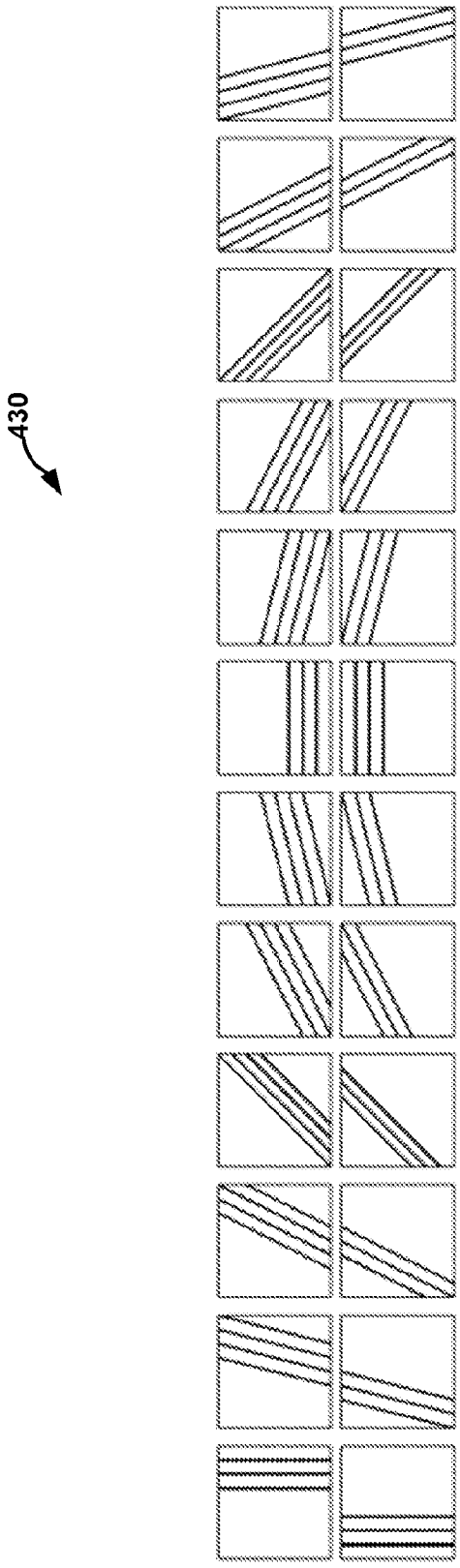


FIG. 4

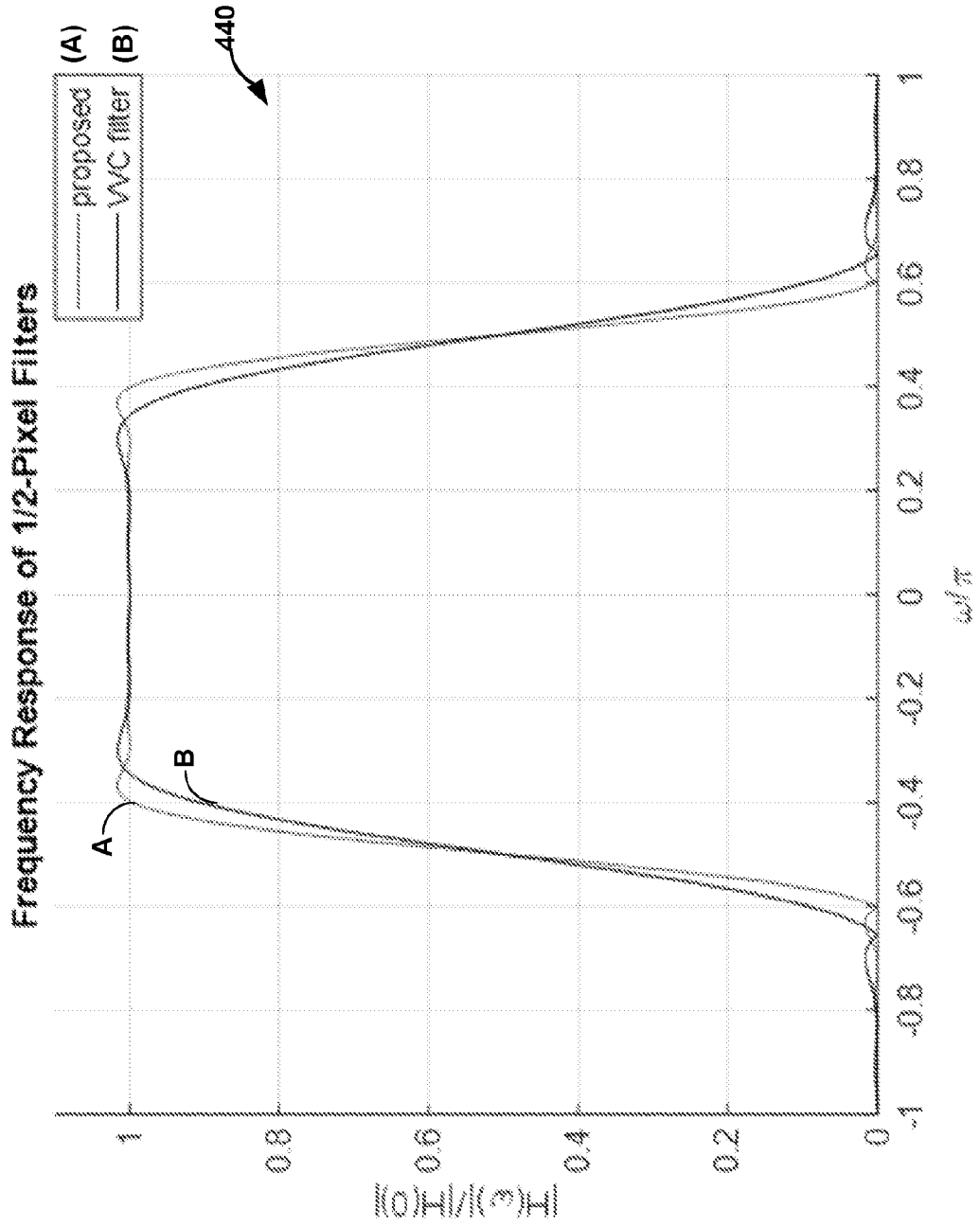

Frequency Response of 1/2-Pixel Filters
(A) proposed
(B) VVC filter
440
A
B
|H(ω)|/|H(0)|
ω/π
1
0.8
0.6
0.4
0.2
0
-.1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1

FIG. 5

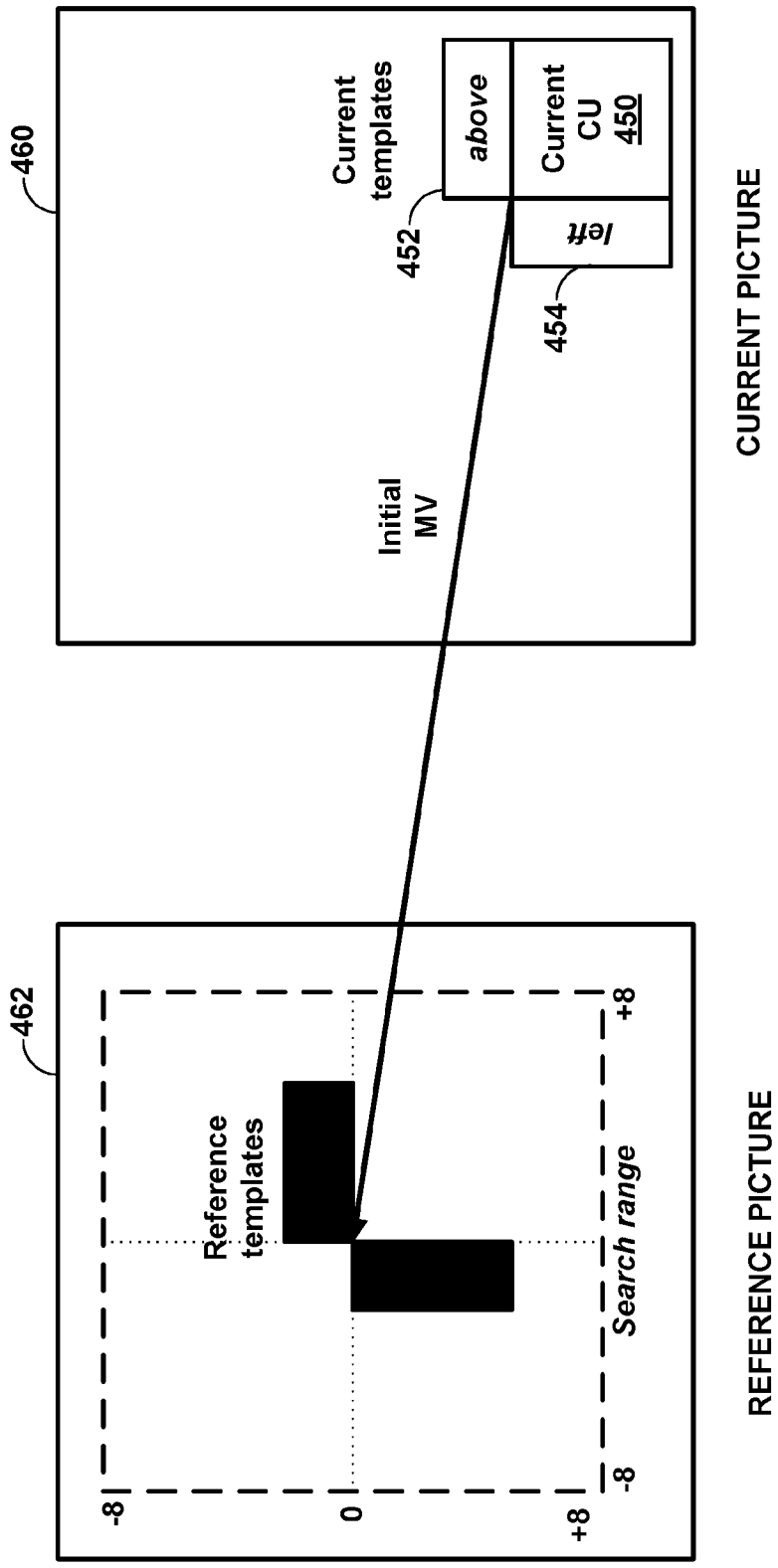

460
Current templates
above
Current CU 450
left
452
454
Initial MV
CURRENT PICTURE
462
Reference templates
Search range
-8
0
+8
-8
+8
REFERENCE PICTURE

FIG. 6

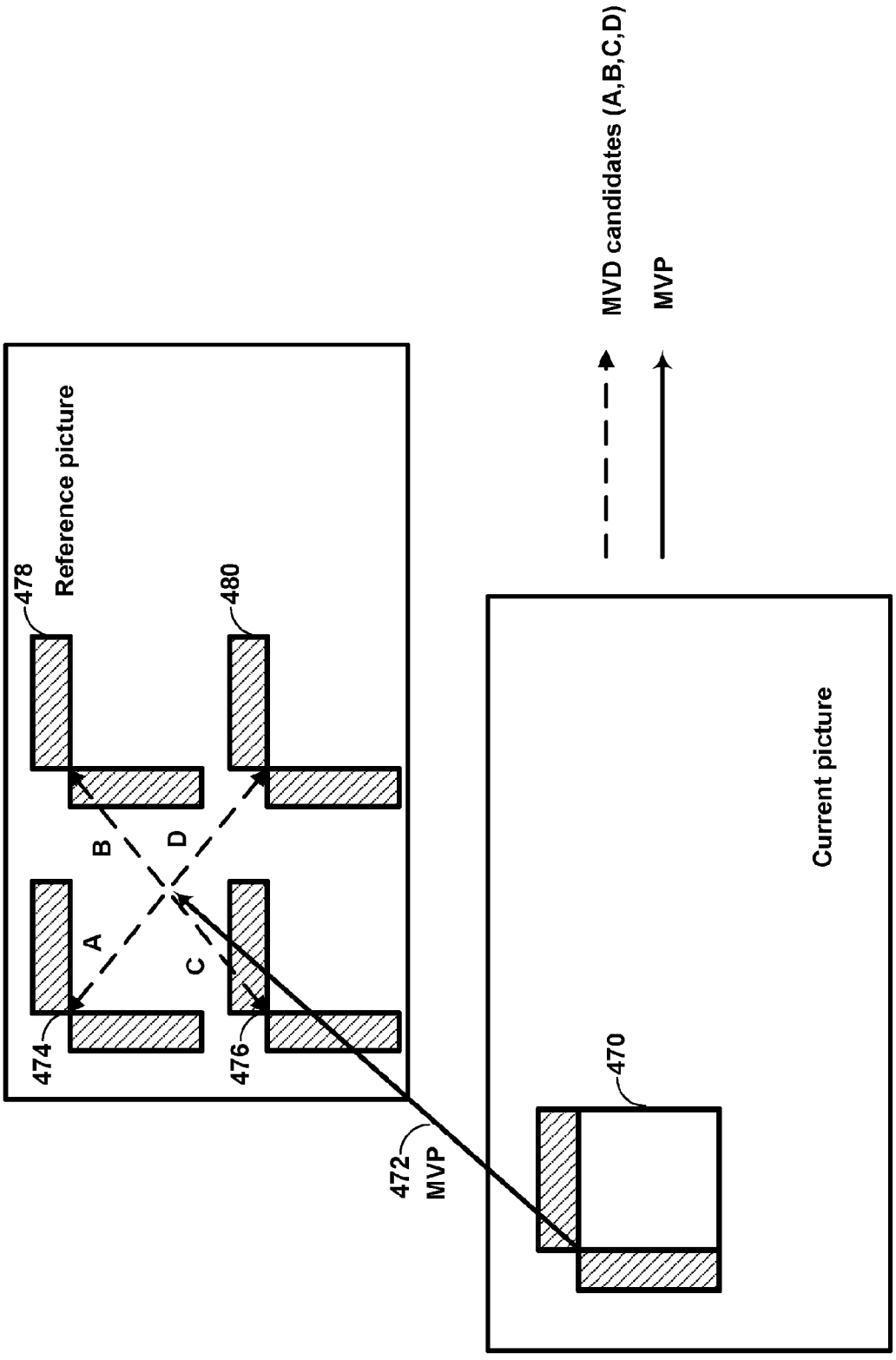

MVD candidates (A,B,C,D)
MVP
Reference picture
478
480
B
D
A
C
474
476
472
MVP
470
Current picture

FIG. 7

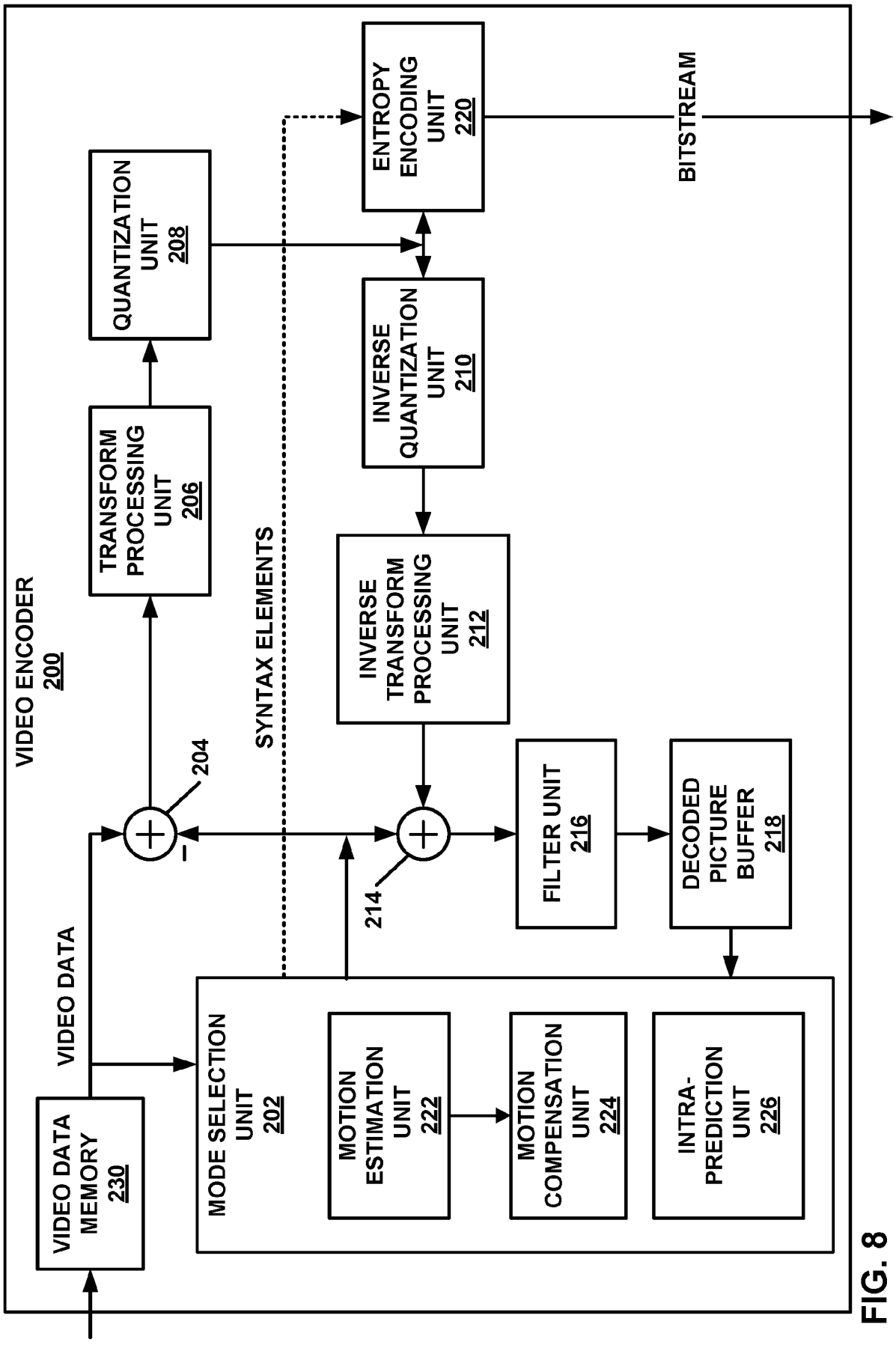

VIDEO ENCODER
200
VIDEO DATA MEMORY
230
VIDEO DATA
MODE SELECTION UNIT
202
MOTION ESTIMATION UNIT
222
MOTION COMPENSATION UNIT
224
INTRA-PREDICTION UNIT
226
204
214
SYNTAX ELEMENTS
TRANSFORM PROCESSING UNIT
206
QUANTIZATION UNIT
208
INVERSE QUANTIZATION UNIT
210
INVERSE TRANSFORM PROCESSING UNIT
212
FILTER UNIT
216
DECODED PICTURE BUFFER
218
ENTROPY ENCODING UNIT
220
BITSTREAM

FIG. 8

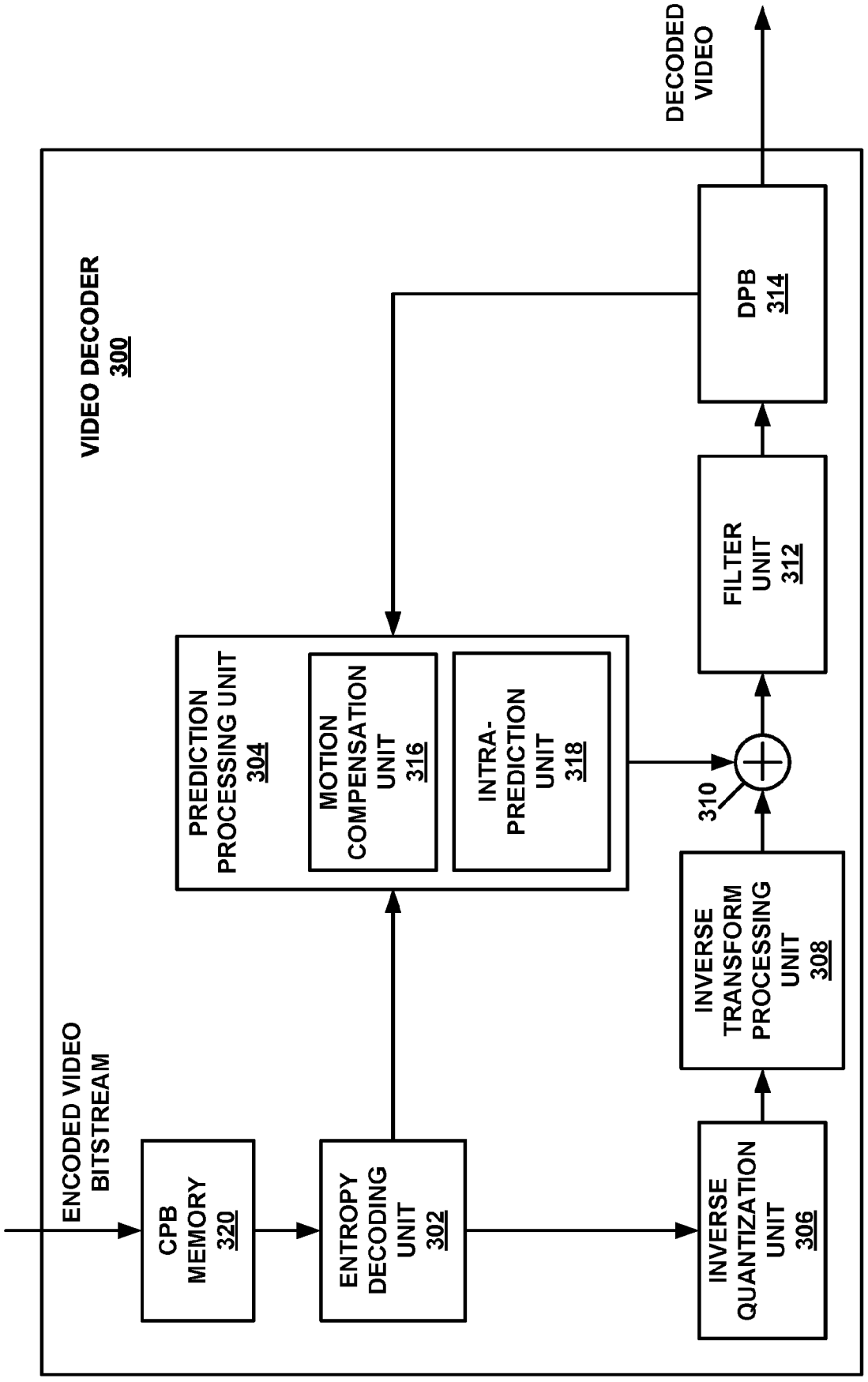

DECODED VIDEO
VIDEO DECODER 300
DPB 314
FILTER UNIT 312
PREDICTION PROCESSING UNIT 304
MOTION COMPENSATION UNIT 316
INTRA-PREDICTION UNIT 318
310
INVERSE TRANSFORM PROCESSING UNIT 308
INVERSE QUANTIZATION UNIT 306
ENTROPY DECODING UNIT 302
CPB MEMORY 320
ENCODED VIDEO BITSTREAM

FIG. 9

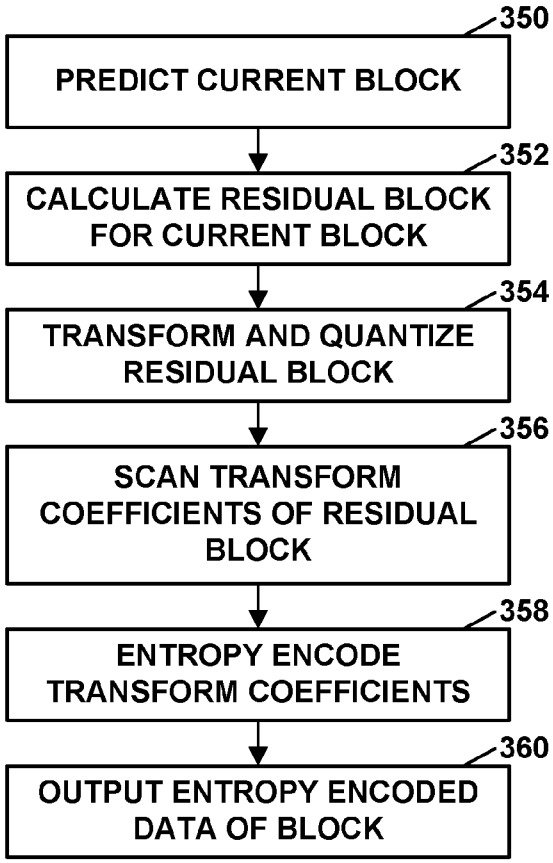

350
PREDICT CURRENT BLOCK
352
CALCULATE RESIDUAL BLOCK FOR CURRENT BLOCK
354
TRANSFORM AND QUANTIZE RESIDUAL BLOCK
356
SCAN TRANSFORM COEFFICIENTS OF RESIDUAL BLOCK
358
ENTROPY ENCODE TRANSFORM COEFFICIENTS
360
OUTPUT ENTROPY ENCODED DATA OF BLOCK

FIG. 10

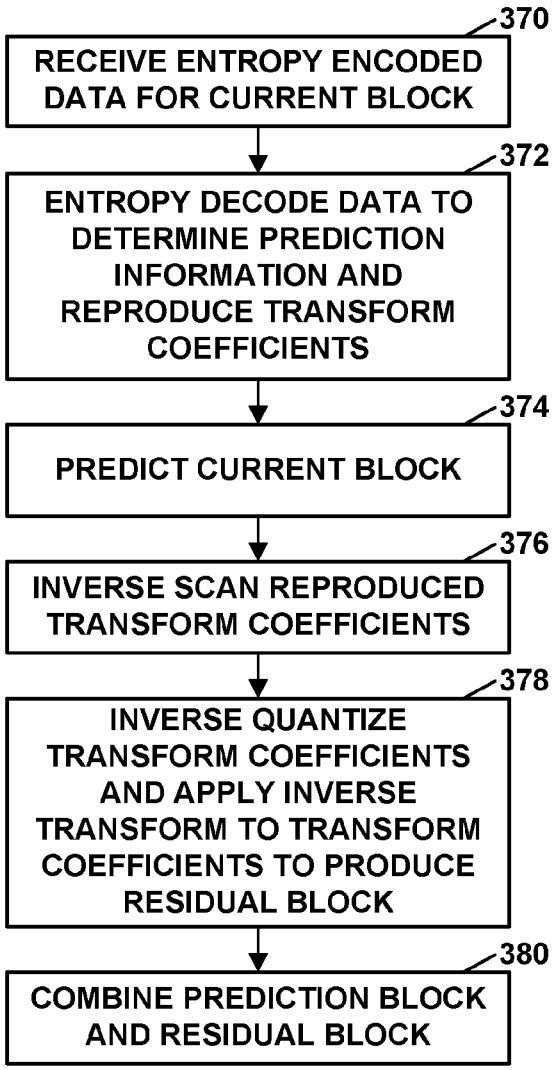

370
RECEIVE ENTROPY ENCODED DATA FOR CURRENT BLOCK
372
ENTROPY DECODE DATA TO DETERMINE PREDICTION INFORMATION AND REPRODUCE TRANSFORM COEFFICIENTS
374
PREDICT CURRENT BLOCK
376
INVERSE SCAN REPRODUCED TRANSFORM COEFFICIENTS
378
INVERSE QUANTIZE TRANSFORM COEFFICIENTS AND APPLY INVERSE TRANSFORM TO TRANSFORM COEFFICIENTS TO PRODUCE RESIDUAL BLOCK
380
COMBINE PREDICTION BLOCK AND RESIDUAL BLOCK

FIG. 11

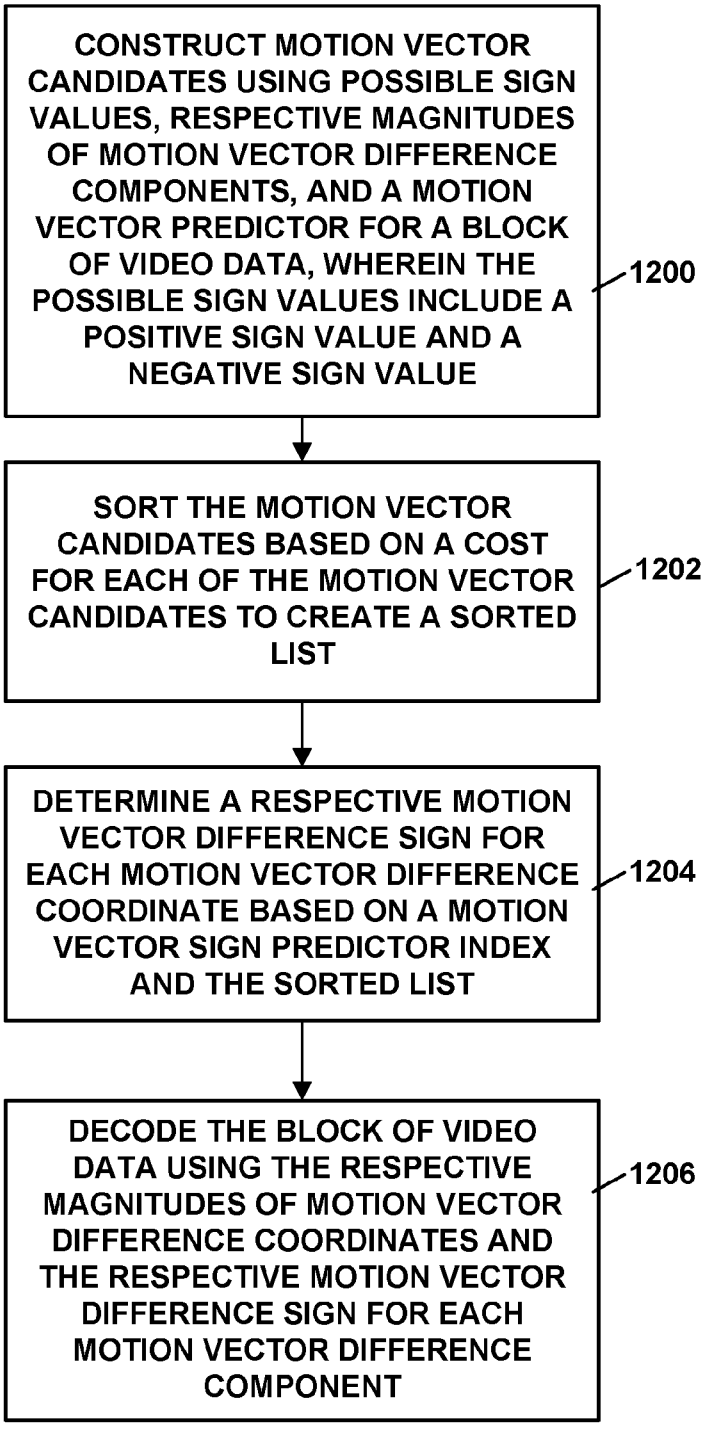

CONSTRUCT MOTION VECTOR CANDIDATES USING POSSIBLE SIGN VALUES, RESPECTIVE MAGNITUDES OF MOTION VECTOR DIFFERENCE COMPONENTS, AND A MOTION VECTOR PREDICTOR FOR A BLOCK OF VIDEO DATA, WHEREIN THE POSSIBLE SIGN VALUES INCLUDE A POSITIVE SIGN VALUE AND A NEGATIVE SIGN VALUE
1200
SORT THE MOTION VECTOR CANDIDATES BASED ON A COST FOR EACH OF THE MOTION VECTOR CANDIDATES TO CREATE A SORTED LIST
1202
DETERMINE A RESPECTIVE MOTION VECTOR DIFFERENCE SIGN FOR EACH MOTION VECTOR DIFFERENCE COORDINATE BASED ON A MOTION VECTOR SIGN PREDICTOR INDEX AND THE SORTED LIST
1204
DECODE THE BLOCK OF VIDEO DATA USING THE RESPECTIVE MAGNITUDES OF MOTION VECTOR DIFFERENCE COORDINATES AND THE RESPECTIVE MOTION VECTOR DIFFERENCE SIGN FOR EACH MOTION VECTOR DIFFERENCE COMPONENT
1206

FIG. 12