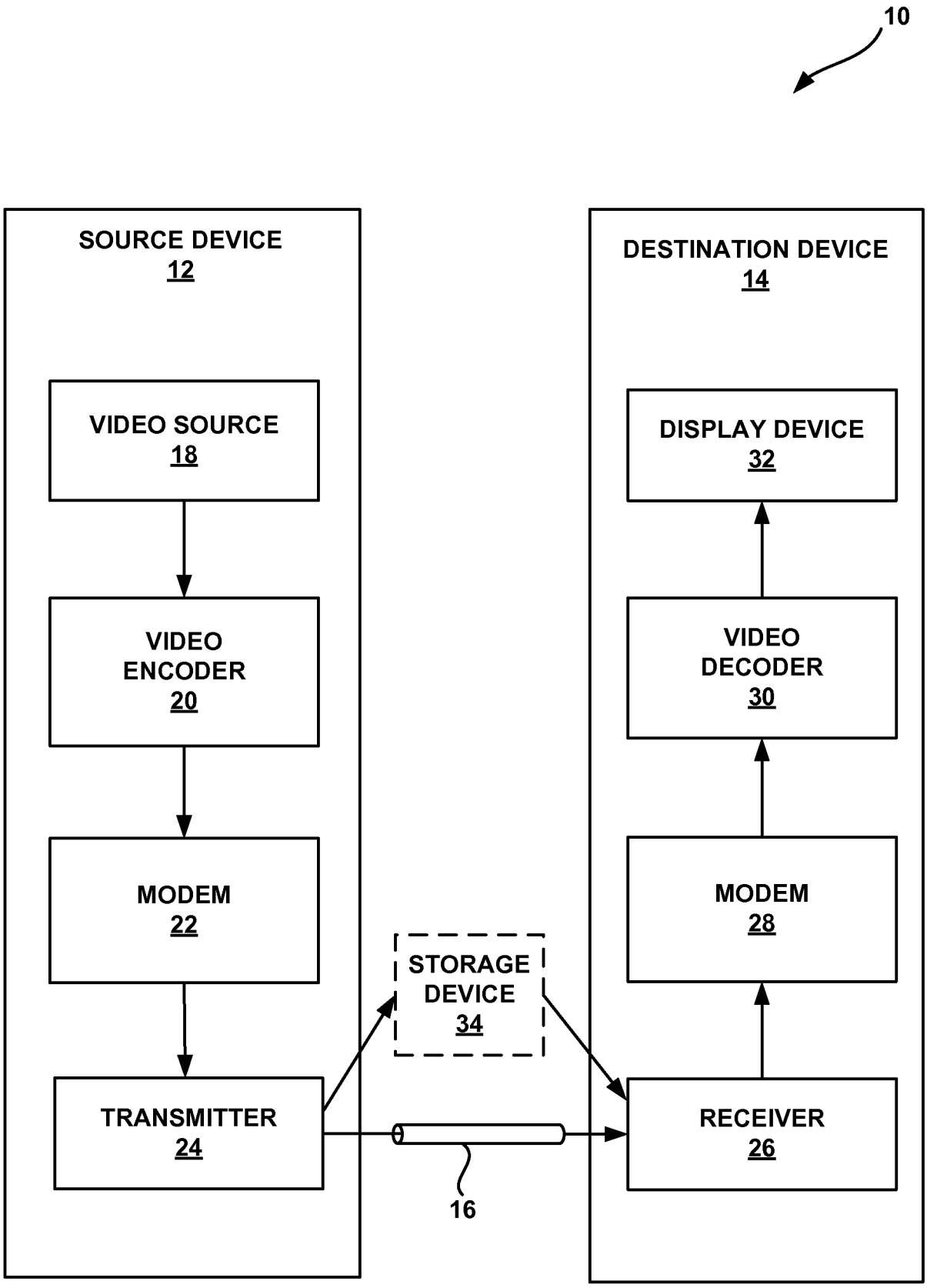
10
SOURCE DEVICE
12
VIDEO SOURCE
18
VIDEO
ENCODER
20
MODEM
22
TRANSMITTER
24
STORAGE
DEVICE
34
16
DESTINATION DEVICE
14
DISPLAY DEVICE
32
VIDEO
DECODER
30
MODEM
28
RECEIVER
26

FIG. 1

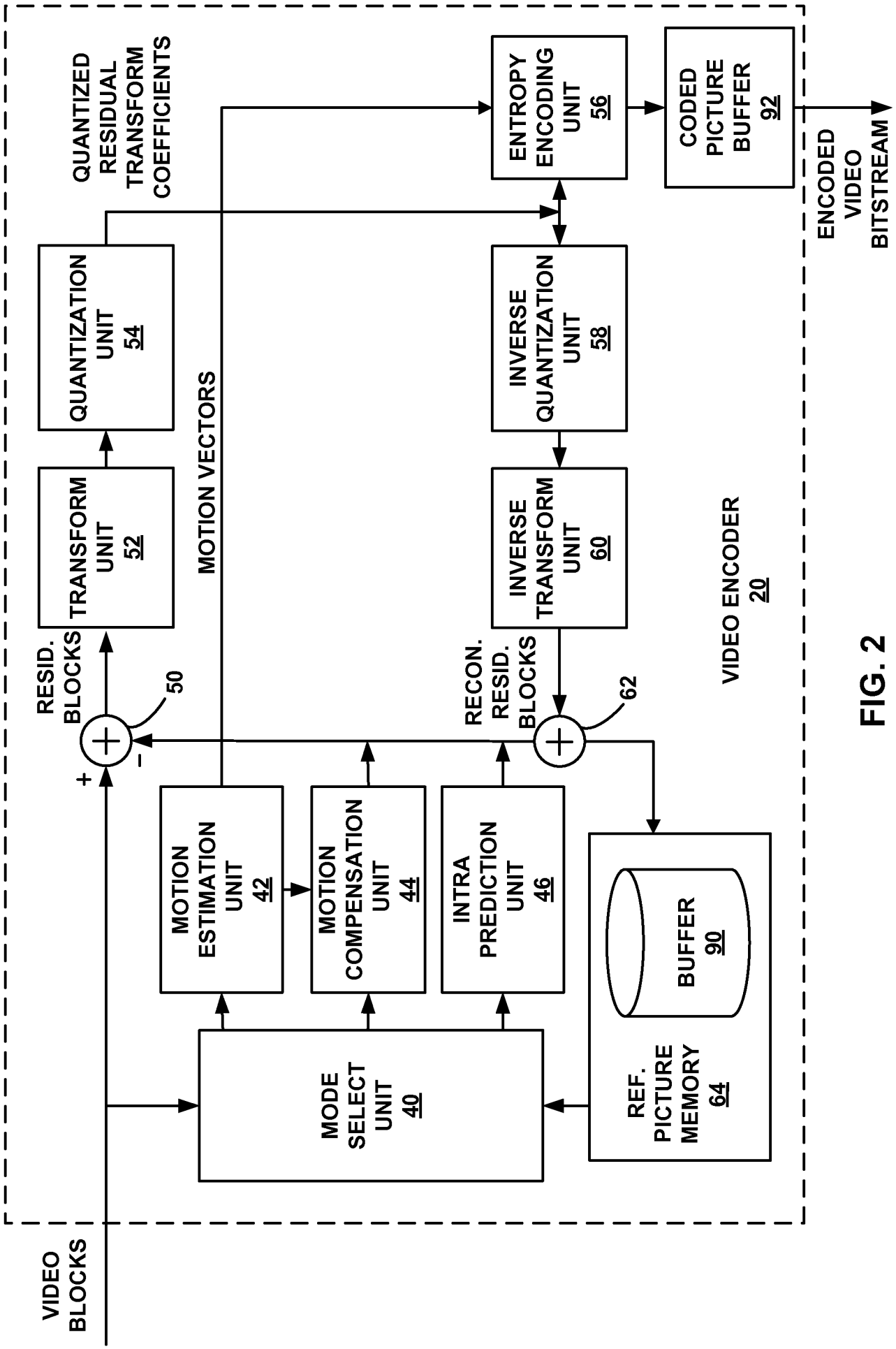
VIDEO BLOCKS
VIDEO ENCODER 20
MODE SELECT UNIT 40
MOTION ESTIMATION UNIT 42
MOTION COMPENSATION UNIT 44
INTRA PREDICTION UNIT 46
REF. PICTURE MEMORY 64
BUFFER 90
RESID. BLOCKS
50
+
-
TRANSFORM UNIT 52
QUANTIZATION UNIT 54
QUANTIZED RESIDUAL TRANSFORM COEFFICIENTS
MOTION VECTORS
ENTROPY ENCODING UNIT 56
CODED PICTURE BUFFER 92
ENCODED VIDEO BITSTREAM
INVERSE QUANTIZATION UNIT 58
INVERSE TRANSFORM UNIT 60
RECON. RESID. BLOCKS
62

FIG. 2

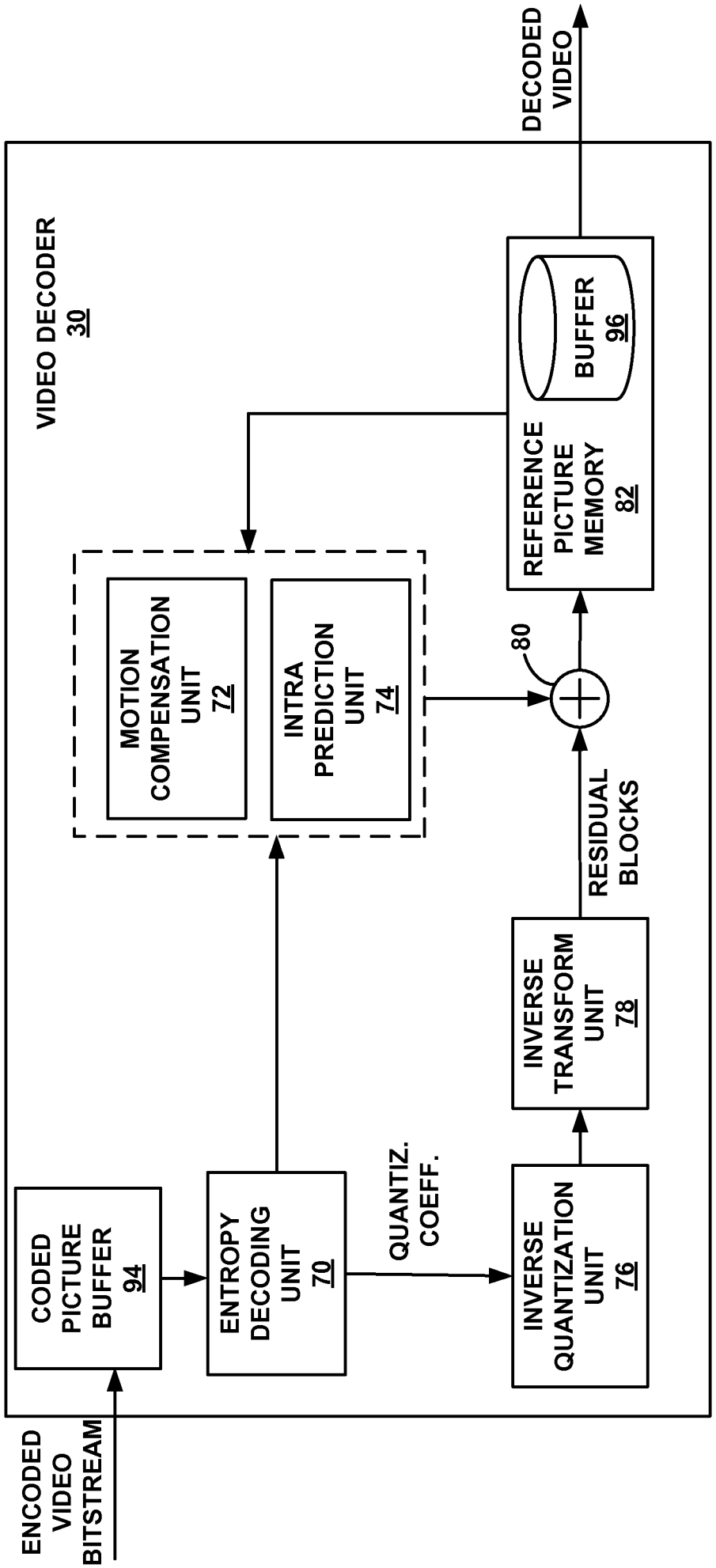
ENCODED VIDEO BITSTREAM
VIDEO DECODER 30
CODED PICTURE BUFFER 94
ENTROPY DECODING UNIT 70
QUANTIZ. COEFF.
INVERSE QUANTIZATION UNIT 76
INVERSE TRANSFORM UNIT 78
RESIDUAL BLOCKS
80
MOTION COMPENSATION UNIT 72
INTRA PREDICTION UNIT 74
REFERENCE PICTURE MEMORY 82
BUFFER 96
DECODED VIDEO

FIG. 3

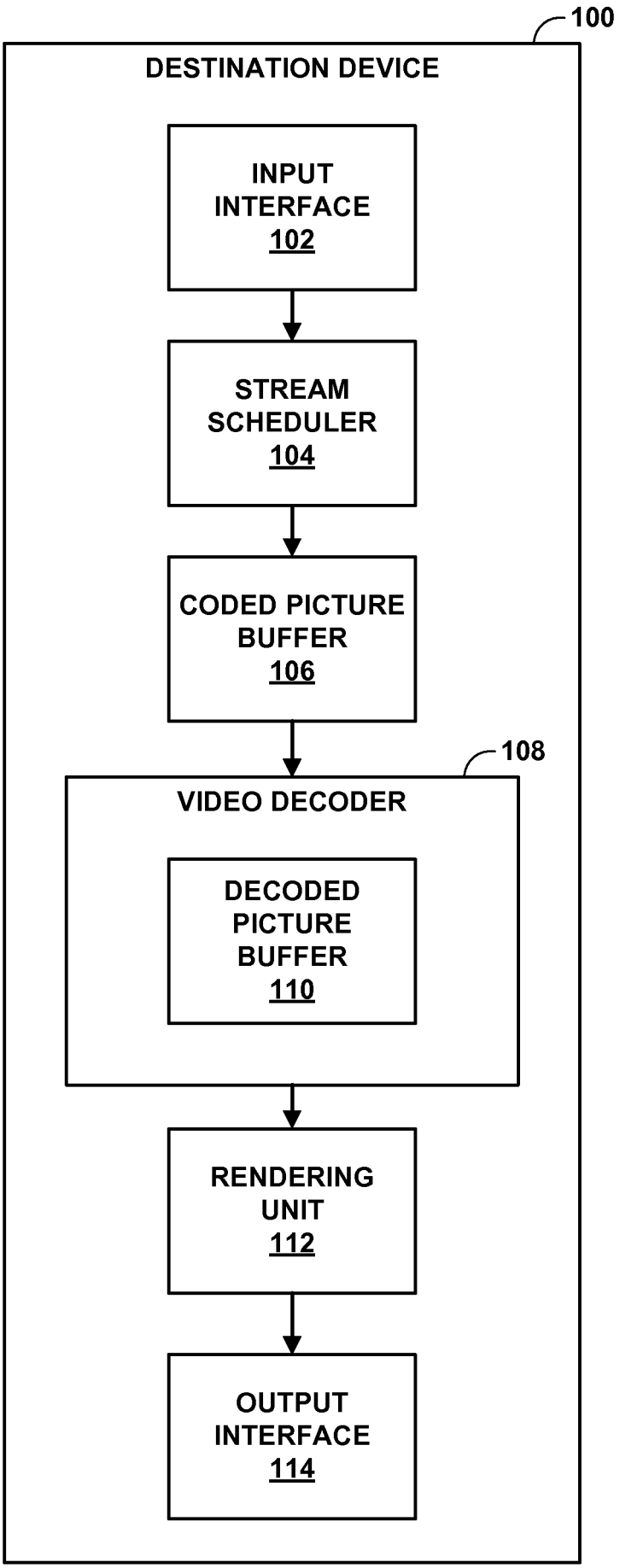
100
DESTINATION DEVICE
INPUT INTERFACE 102
STREAM SCHEDULER 104
CODED PICTURE BUFFER 106
108
VIDEO DECODER
DECODED PICTURE BUFFER 110
RENDERING UNIT 112
OUTPUT INTERFACE 114

FIG. 4

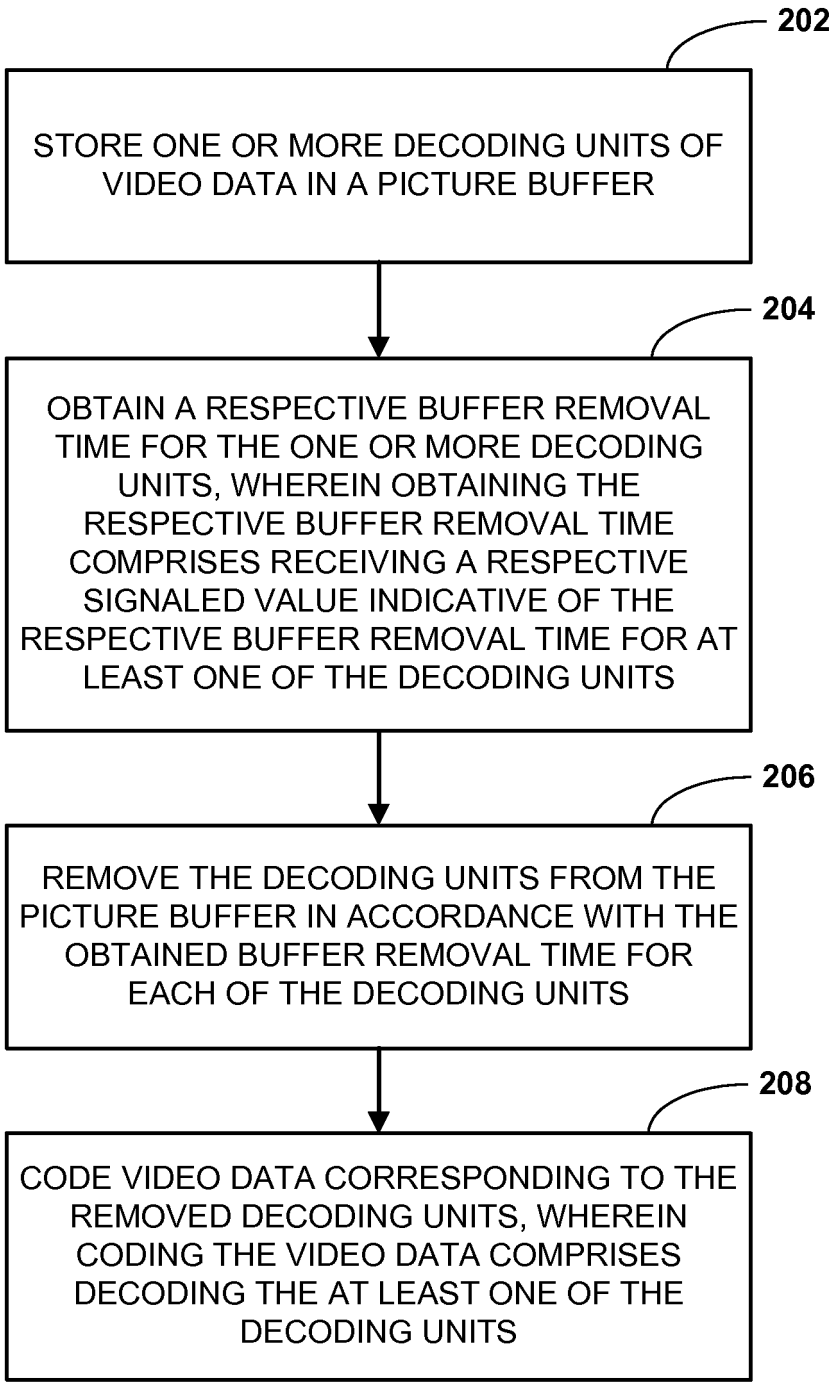
202
STORE ONE OR MORE DECODING UNITS OF VIDEO DATA IN A PICTURE BUFFER
204
OBTAIN A RESPECTIVE BUFFER REMOVAL TIME FOR THE ONE OR MORE DECODING UNITS, WHEREIN OBTAINING THE RESPECTIVE BUFFER REMOVAL TIME COMPRISES RECEIVING A RESPECTIVE SIGNALED VALUE INDICATIVE OF THE RESPECTIVE BUFFER REMOVAL TIME FOR AT LEAST ONE OF THE DECODING UNITS
206
REMOVE THE DECODING UNITS FROM THE PICTURE BUFFER IN ACCORDANCE WITH THE OBTAINED BUFFER REMOVAL TIME FOR EACH OF THE DECODING UNITS
208
CODE VIDEO DATA CORRESPONDING TO THE REMOVED DECODING UNITS, WHEREIN CODING THE VIDEO DATA COMPRISES DECODING THE AT LEAST ONE OF THE DECODING UNITS

FIG. 5

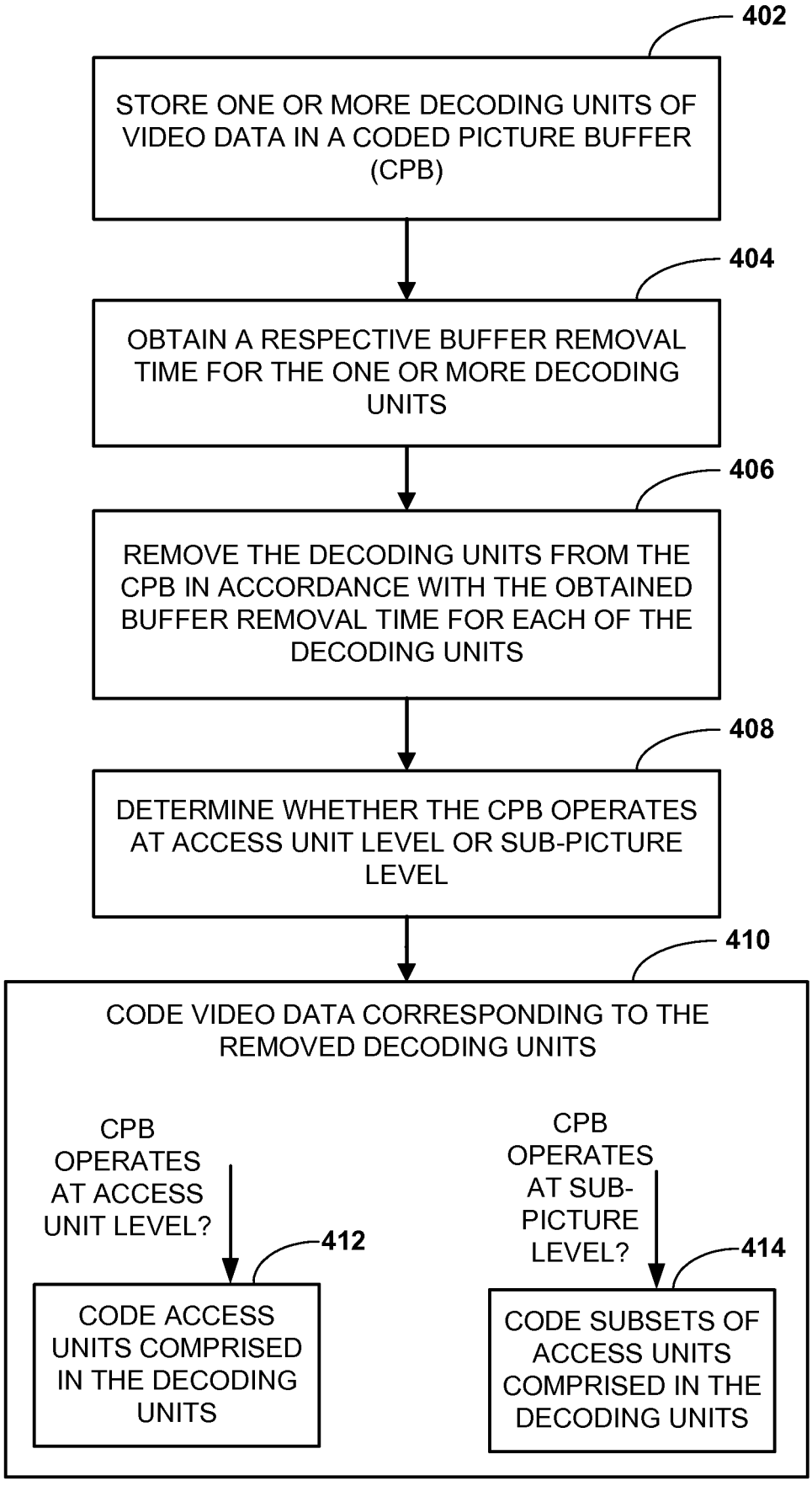
402
STORE ONE OR MORE DECODING UNITS OF VIDEO DATA IN A CODED PICTURE BUFFER (CPB)
404
OBTAIN A RESPECTIVE BUFFER REMOVAL TIME FOR THE ONE OR MORE DECODING UNITS
406
REMOVE THE DECODING UNITS FROM THE CPB IN ACCORDANCE WITH THE OBTAINED BUFFER REMOVAL TIME FOR EACH OF THE DECODING UNITS
408
DETERMINE WHETHER THE CPB OPERATES AT ACCESS UNIT LEVEL OR SUB-PICTURE LEVEL
410
CODE VIDEO DATA CORRESPONDING TO THE REMOVED DECODING UNITS
CPB OPERATES AT ACCESS UNIT LEVEL?
412
CODE ACCESS UNITS COMPRISED IN THE DECODING UNITS
CPB OPERATES AT SUB-PICTURE LEVEL?
414
CODE SUBSETS OF ACCESS UNITS COMPRISED IN THE DECODING UNITS

FIG. 6

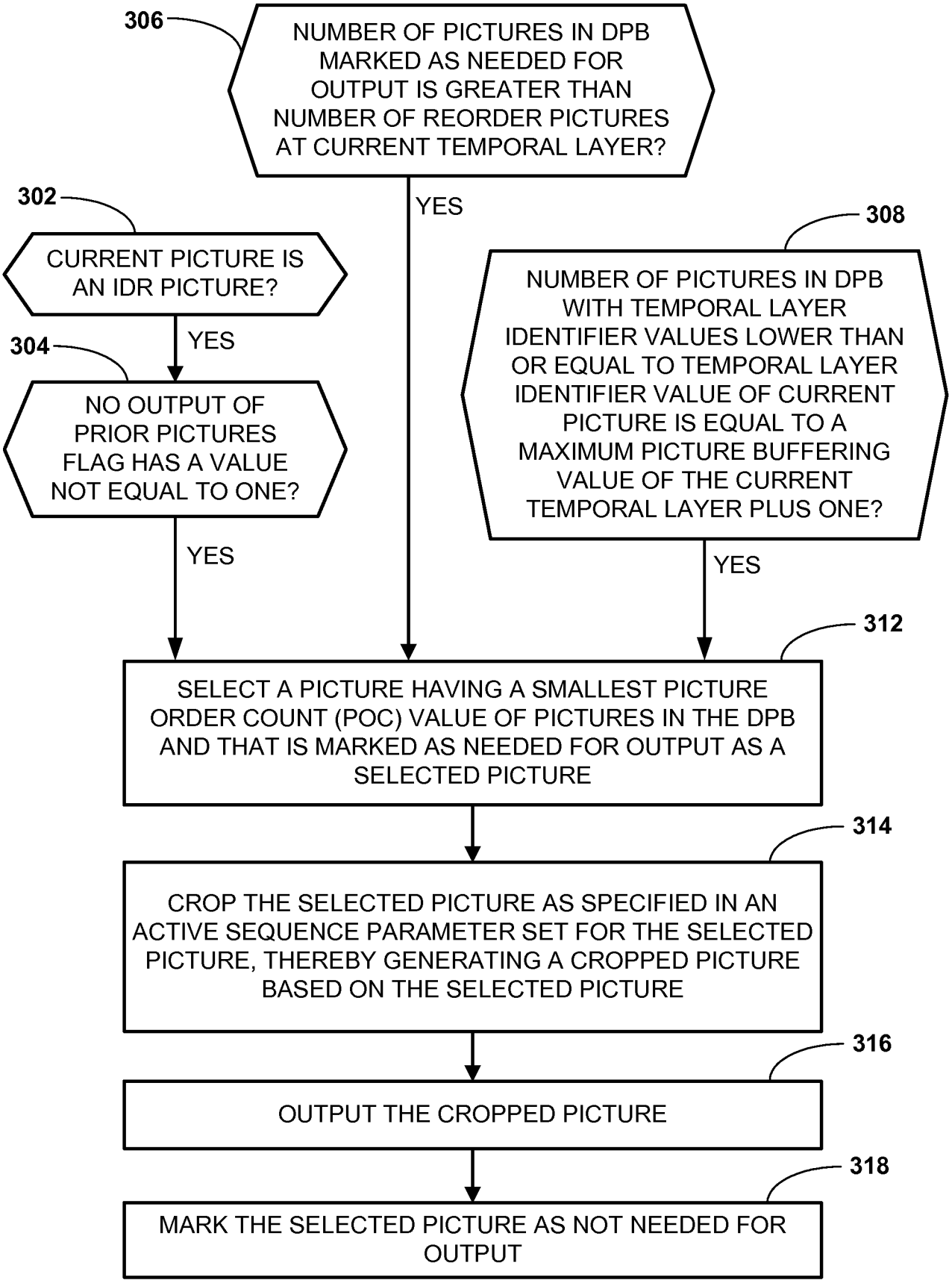
306
NUMBER OF PICTURES IN DPB MARKED AS NEEDED FOR OUTPUT IS GREATER THAN NUMBER OF REORDER PICTURES AT CURRENT TEMPORAL LAYER?
YES
302
CURRENT PICTURE IS AN IDR PICTURE?
YES
304
NO OUTPUT OF PRIOR PICTURES FLAG HAS A VALUE NOT EQUAL TO ONE?
YES
308
NUMBER OF PICTURES IN DPB WITH TEMPORAL LAYER IDENTIFIER VALUES LOWER THAN OR EQUAL TO TEMPORAL LAYER IDENTIFIER VALUE OF CURRENT PICTURE IS EQUAL TO A MAXIMUM PICTURE BUFFERING VALUE OF THE CURRENT TEMPORAL LAYER PLUS ONE?
YES
312
SELECT A PICTURE HAVING A SMALLEST PICTURE ORDER COUNT (POC) VALUE OF PICTURES IN THE DPB AND THAT IS MARKED AS NEEDED FOR OUTPUT AS A SELECTED PICTURE
314
CROP THE SELECTED PICTURE AS SPECIFIED IN AN ACTIVE SEQUENCE PARAMETER SET FOR THE SELECTED PICTURE, THEREBY GENERATING A CROPPED PICTURE BASED ON THE SELECTED PICTURE
316
OUTPUT THE CROPPED PICTURE
318
MARK THE SELECTED PICTURE AS NOT NEEDED FOR OUTPUT

FIG. 7