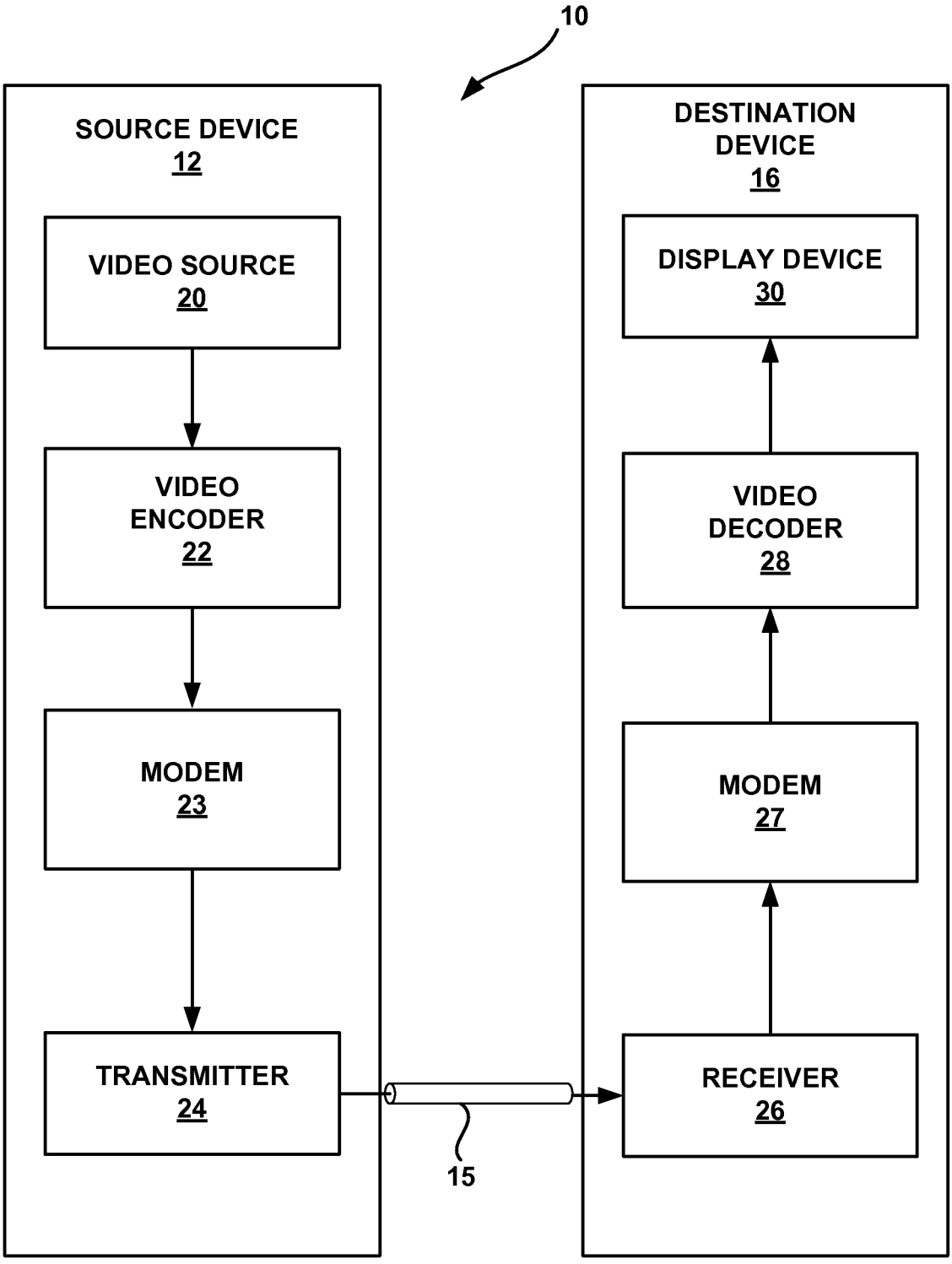

10
SOURCE DEVICE
12
VIDEO SOURCE
20
VIDEO
ENCODER
22
MODEM
23
TRANSMITTER
24
15
DESTINATION
DEVICE
16
DISPLAY DEVICE
30
VIDEO
DECODER
28
MODEM
27
RECEIVER
26

FIG. 1

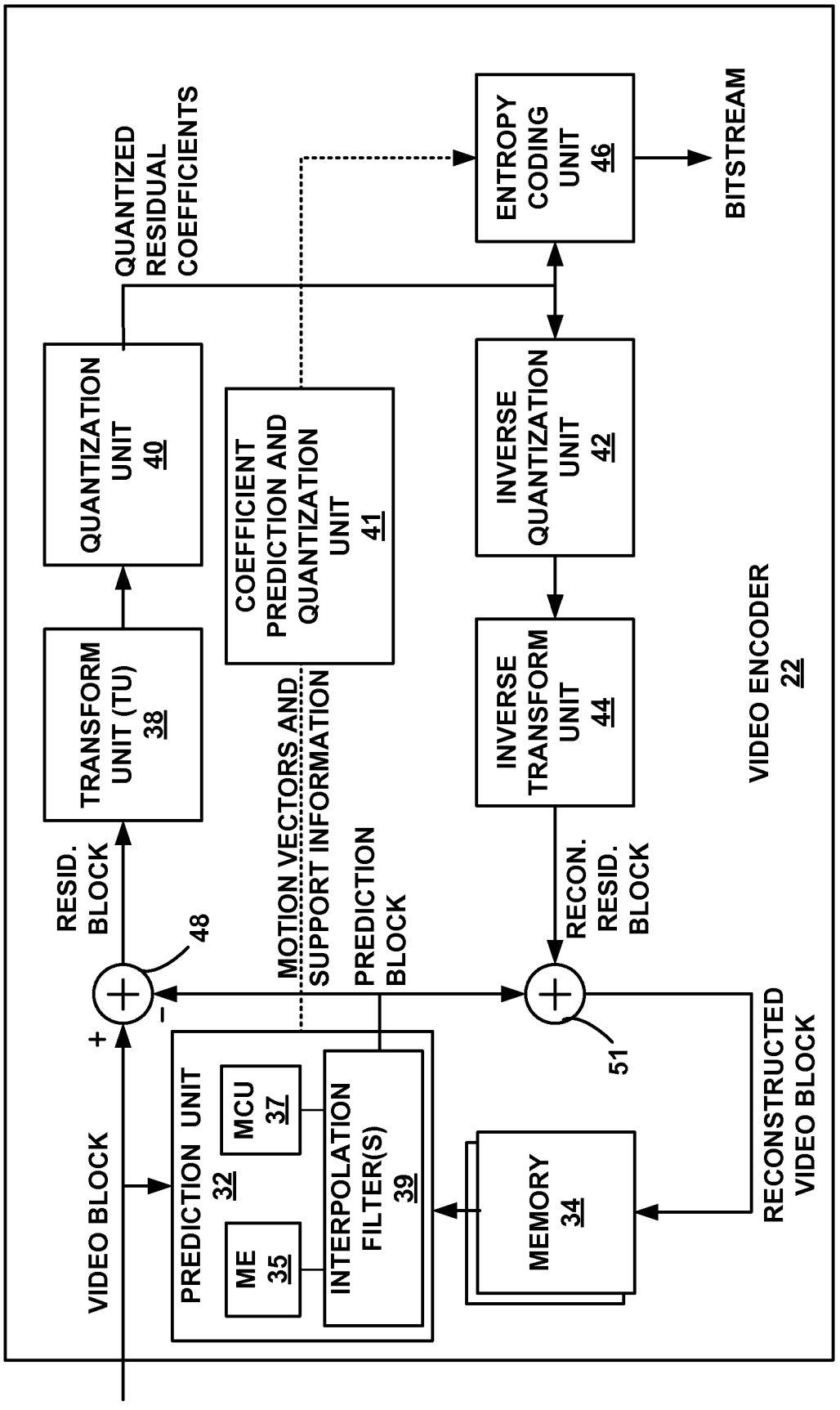

VIDEO ENCODER
22
VIDEO BLOCK
RESID. BLOCK
+
-
48
TRANSFORM UNIT (TU)
38
QUANTIZATION UNIT
40
QUANTIZED RESIDUAL COEFFICIENTS
ENTROPY CODING UNIT
46
BITSTREAM
COEFFICIENT PREDICTION AND QUANTIZATION UNIT
41
MOTION VECTORS AND SUPPORT INFORMATION
PREDICTION BLOCK
PREDICTION UNIT
32
MCU
37
ME
35
INTERPOLATION FILTER(S)
39
MEMORY
34
INVERSE QUANTIZATION UNIT
42
INVERSE TRANSFORM UNIT
44
RECON. RESID. BLOCK
51
RECONSTRUCTED VIDEO BLOCK

FIG. 2

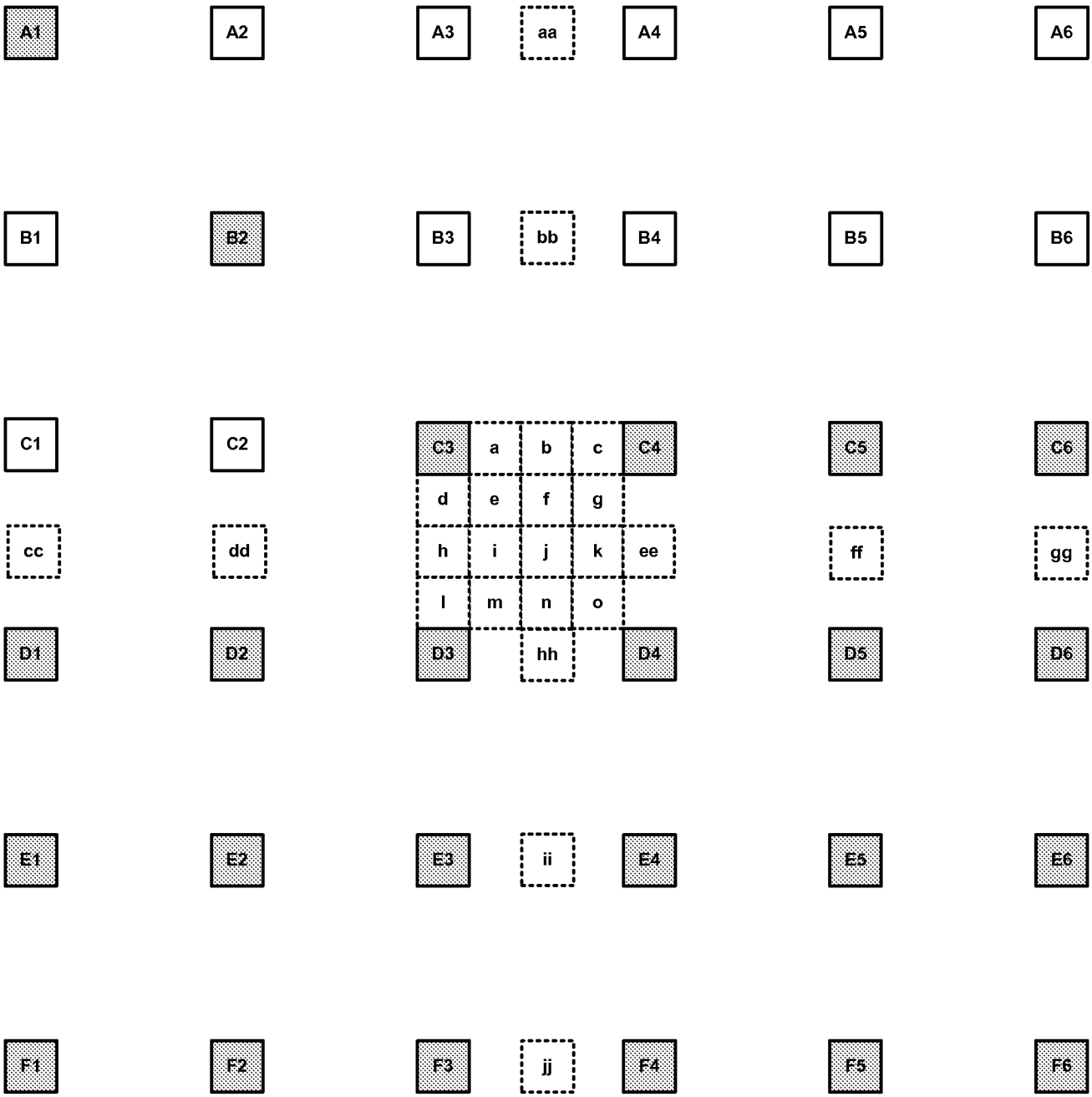

A1
A2
A3
aa
A4
A5
A6
B1
B2
B3
bb
B4
B5
B6
C1
C2
C3
a
b
c
C4
C5
C6
d
e
f
g
cc
dd
h
i
j
k
ee
ff
gg
l
m
n
o
D1
D2
D3
hh
D4
D5
D6
E1
E2
E3
ii
E4
E5
E6
F1
F2
F3
jj
F4
F5
F6

FIG. 3

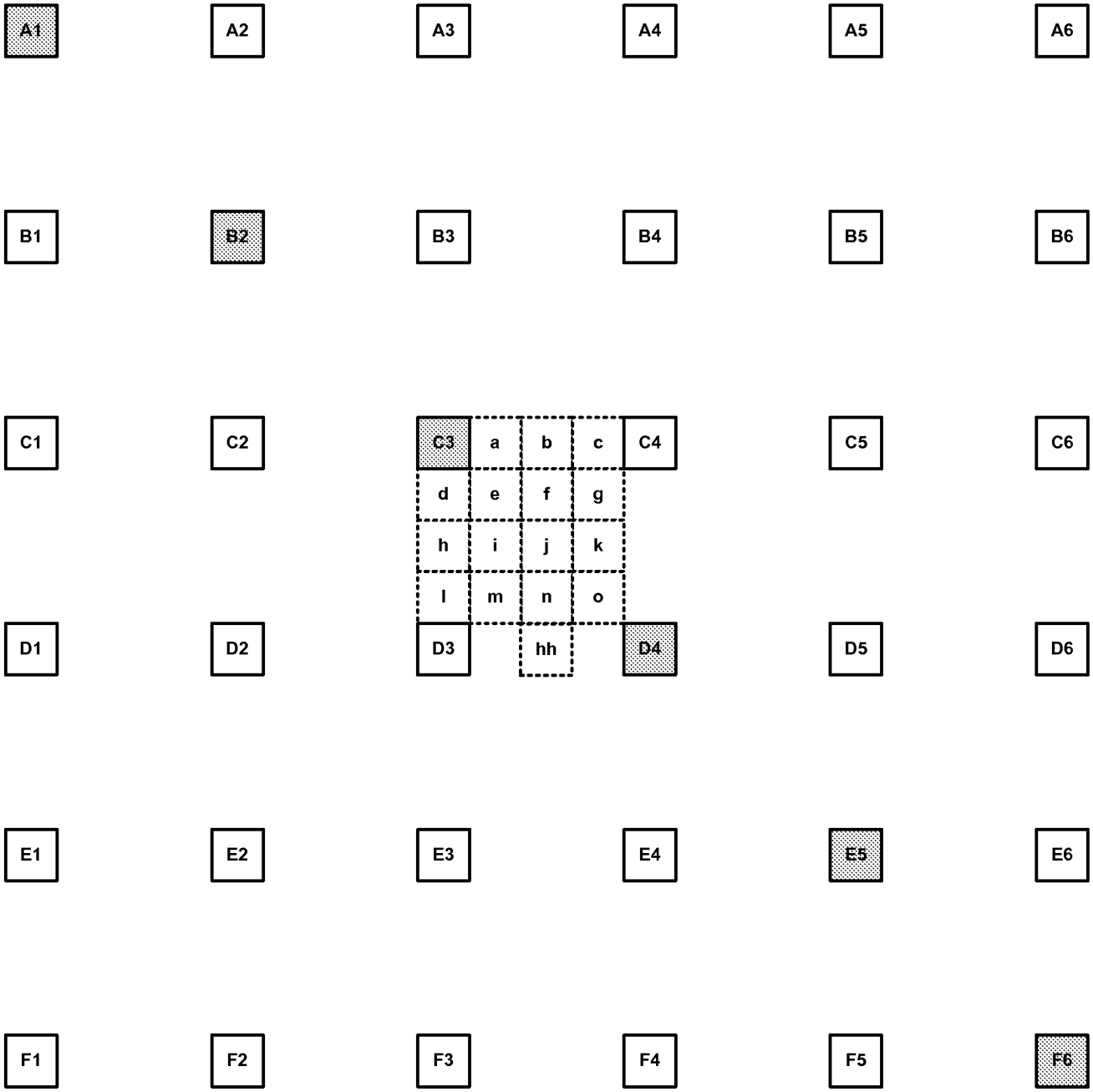

A1
A2
A3
A4
A5
A6
B1
B2
B3
B4
B5
B6
C1
C2
C3
a
b
c
C4
C5
C6
d
e
f
g
h
i
j
k
l
m
n
o
D1
D2
D3
hh
D4
D5
D6
E1
E2
E3
E4
E5
E6
F1
F2
F3
F4
F5
F6

FIG. 4

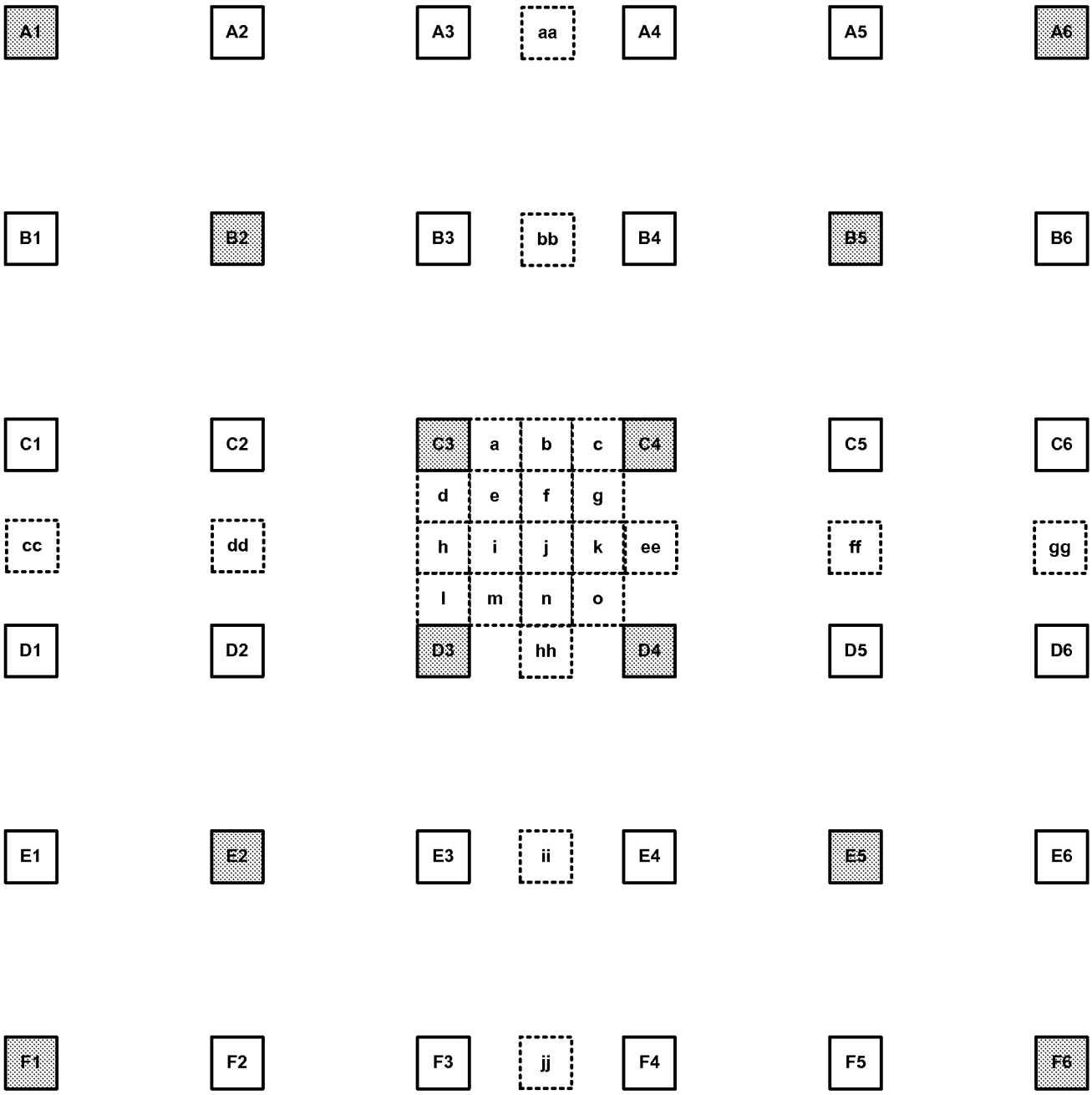

A1
A2
A3
aa
A4
A5
A6
B1
B2
B3
bb
B4
B5
B6
C1
C2
C3
a
b
c
C4
C5
C6
d
e
f
g
cc
dd
h
i
j
k
ee
ff
gg
l
m
n
o
D1
D2
D3
hh
D4
D5
D6
E1
E2
E3
ii
E4
E5
E6
F1
F2
F3
jj
F4
F5
F6

FIG. 5

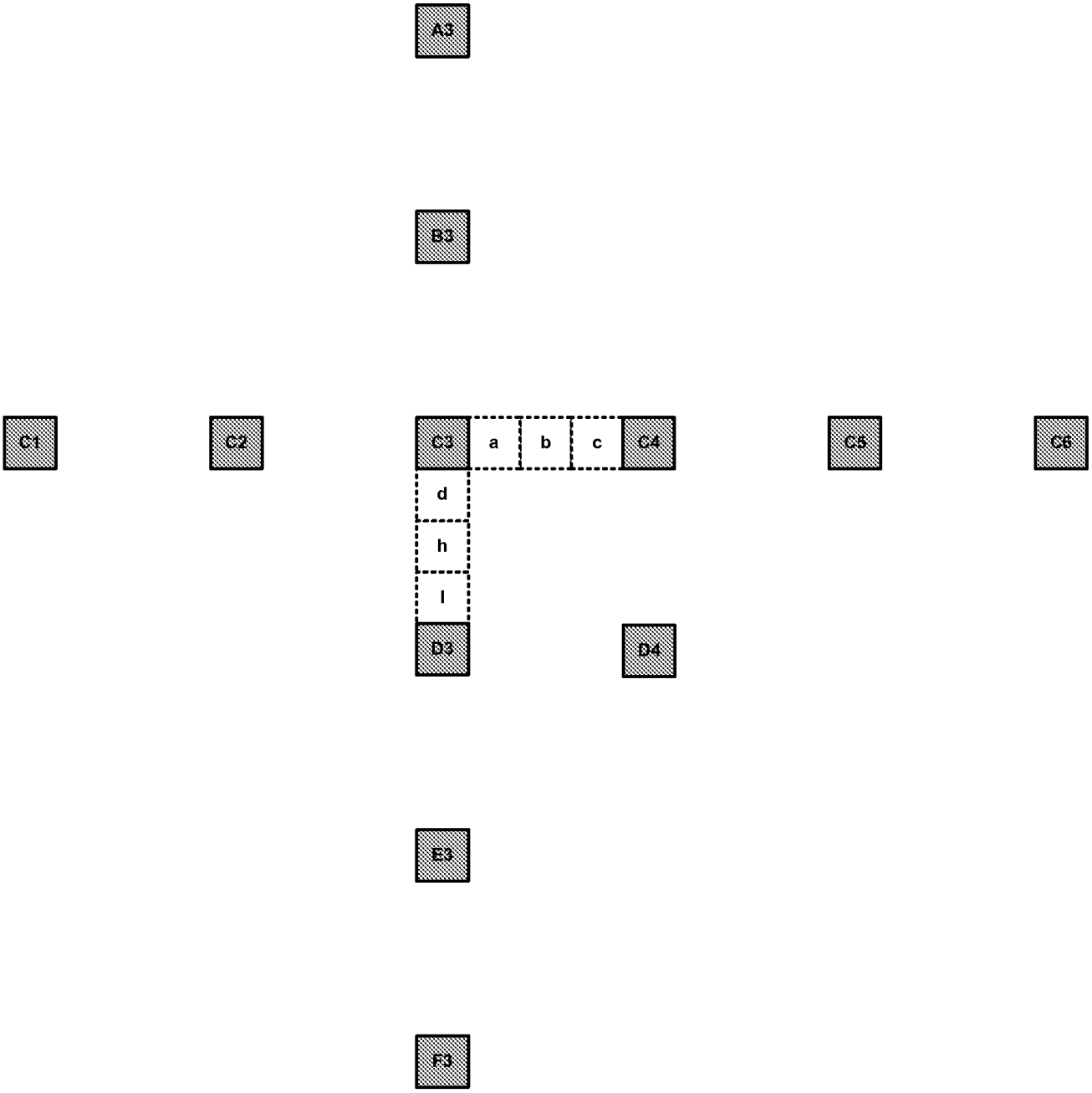


FIG. 6

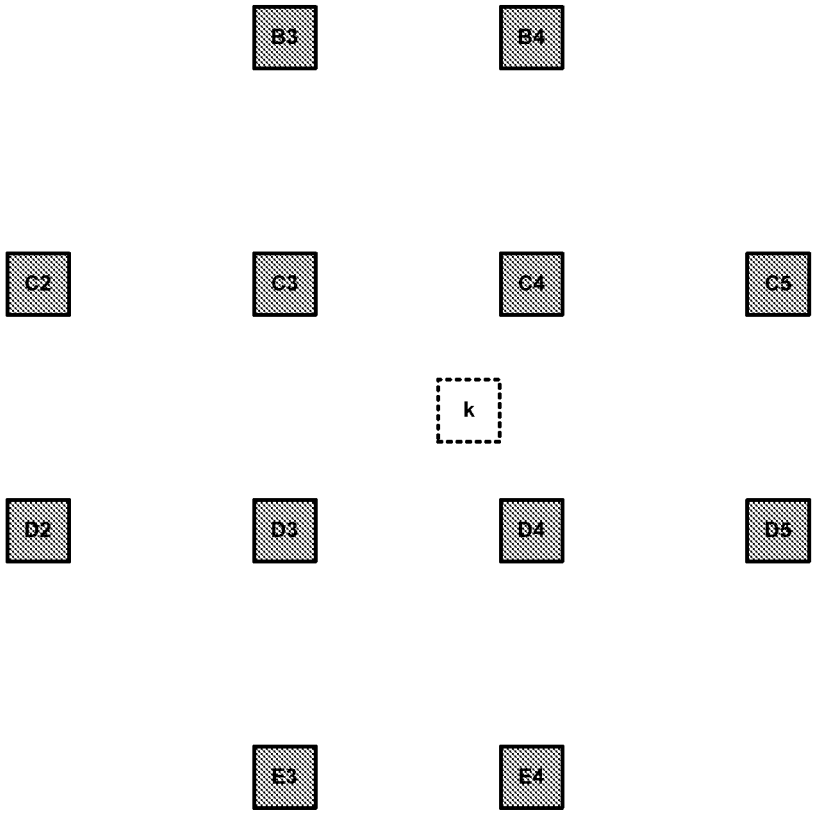


FIG. 7

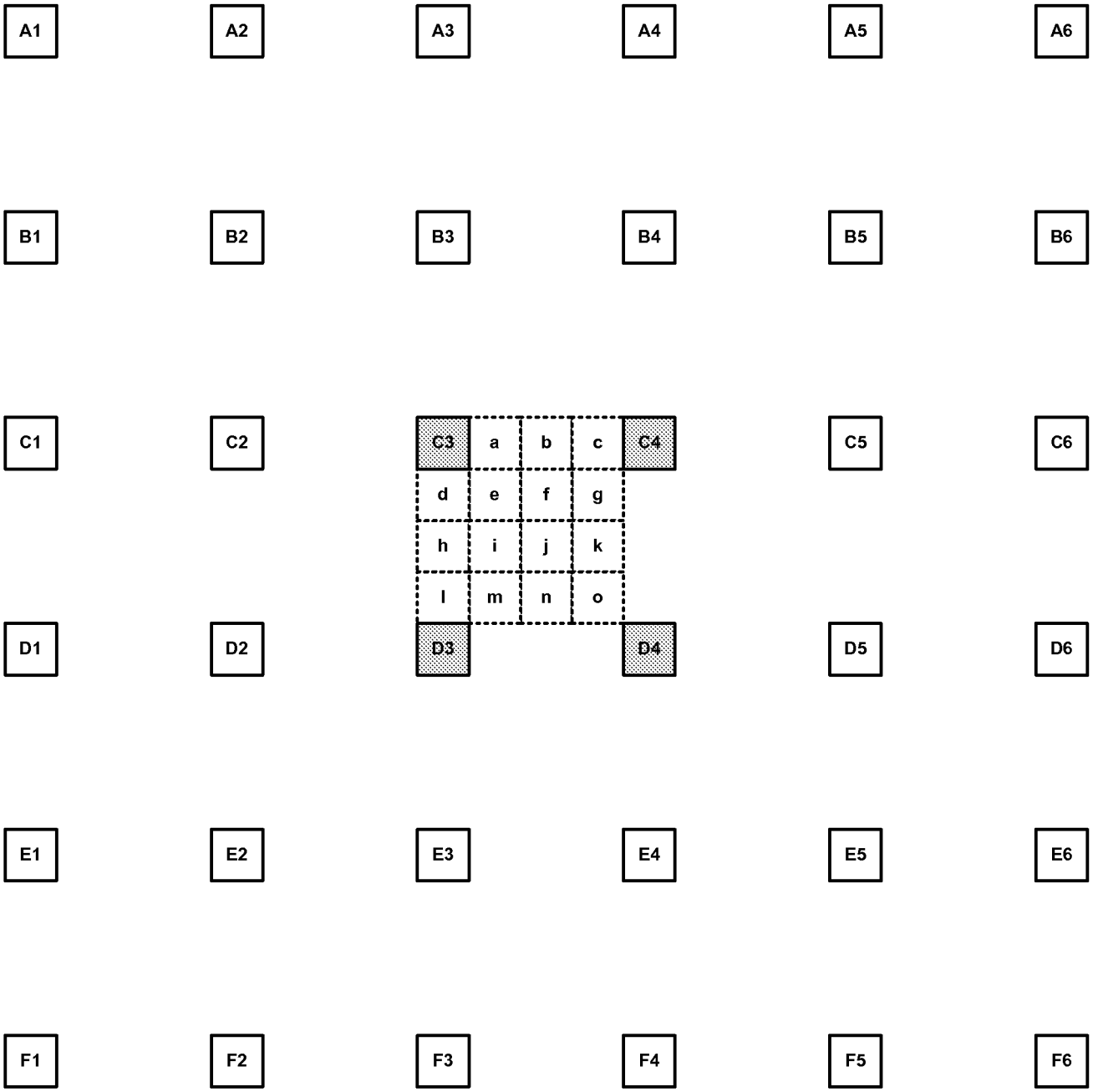

A1
A2
A3
A4
A5
A6
B1
B2
B3
B4
B5
B6
C1
C2
C3
a
b
c
C4
C5
C6
d
e
f
g
h
i
j
k
l
m
n
o
D1
D2
D3
D4
D5
D6
E1
E2
E3
E4
E5
E6
F1
F2
F3
F4
F5
F6

FIG. 8

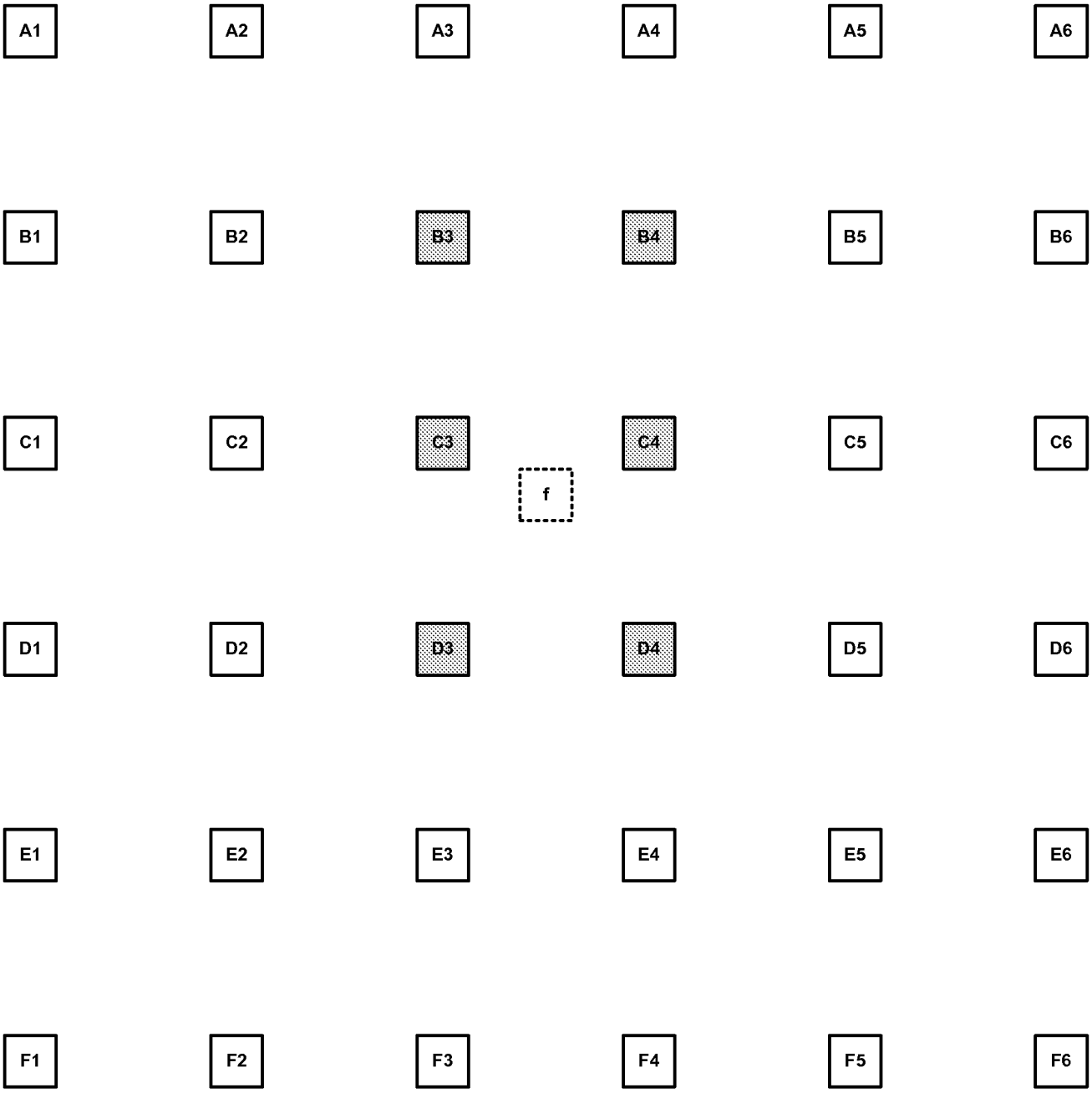

A1
A2
A3
A4
A5
A6
B1
B2
B3
B4
B5
B6
C1
C2
C3
C4
C5
C6
f
D1
D2
D3
D4
D5
D6
E1
E2
E3
E4
E5
E6
F1
F2
F3
F4
F5
F6

FIG. 9

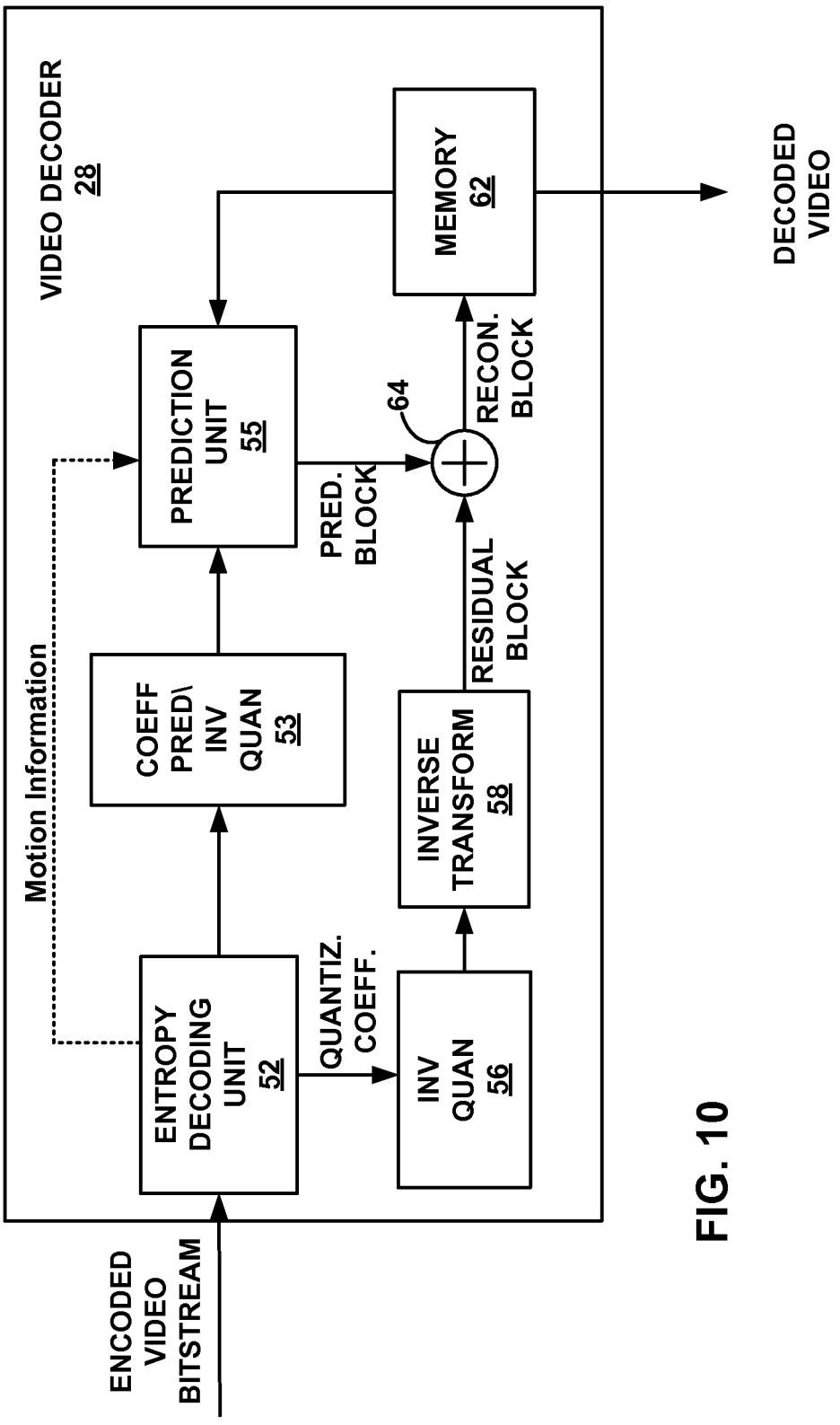

VIDEO DECODER
28
ENCODED VIDEO BITSTREAM
ENTROPY DECODING UNIT
52
QUANTIZ. COEFF.
INV QUAN
56
INVERSE TRANSFORM
58
RESIDUAL BLOCK
COEFF PRED\ INV QUAN
53
Motion Information
PREDICTION UNIT
55
PRED. BLOCK
64
RECON. BLOCK
MEMORY
62
DECODED VIDEO

FIG. 10

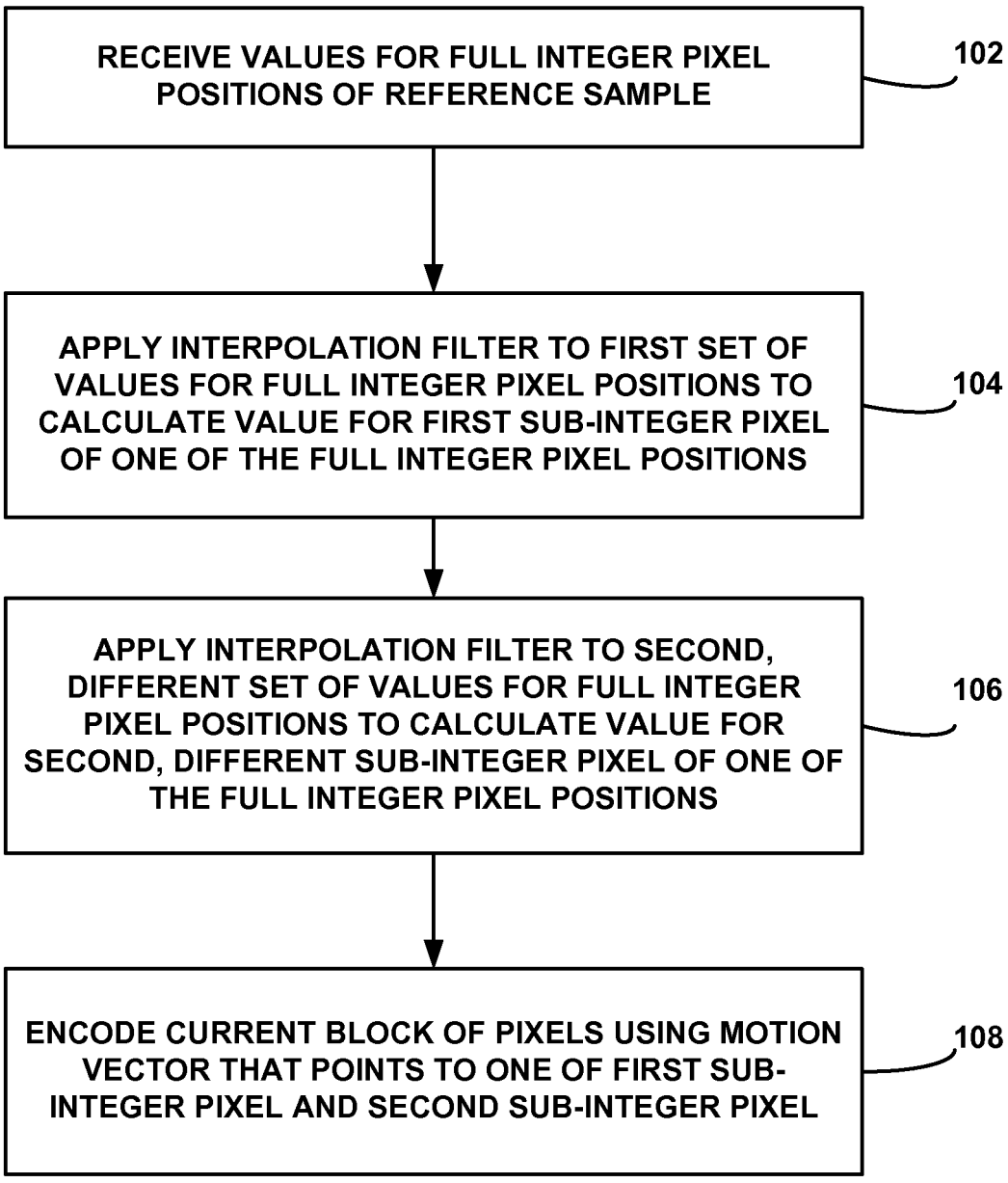

RECEIVE VALUES FOR FULL INTEGER PIXEL POSITIONS OF REFERENCE SAMPLE
102
APPLY INTERPOLATION FILTER TO FIRST SET OF VALUES FOR FULL INTEGER PIXEL POSITIONS TO CALCULATE VALUE FOR FIRST SUB-INTEGER PIXEL OF ONE OF THE FULL INTEGER PIXEL POSITIONS
104
APPLY INTERPOLATION FILTER TO SECOND, DIFFERENT SET OF VALUES FOR FULL INTEGER PIXEL POSITIONS TO CALCULATE VALUE FOR SECOND, DIFFERENT SUB-INTEGER PIXEL OF ONE OF THE FULL INTEGER PIXEL POSITIONS
106
ENCODE CURRENT BLOCK OF PIXELS USING MOTION VECTOR THAT POINTS TO ONE OF FIRST SUB-INTEGER PIXEL AND SECOND SUB-INTEGER PIXEL
108

FIG. 11

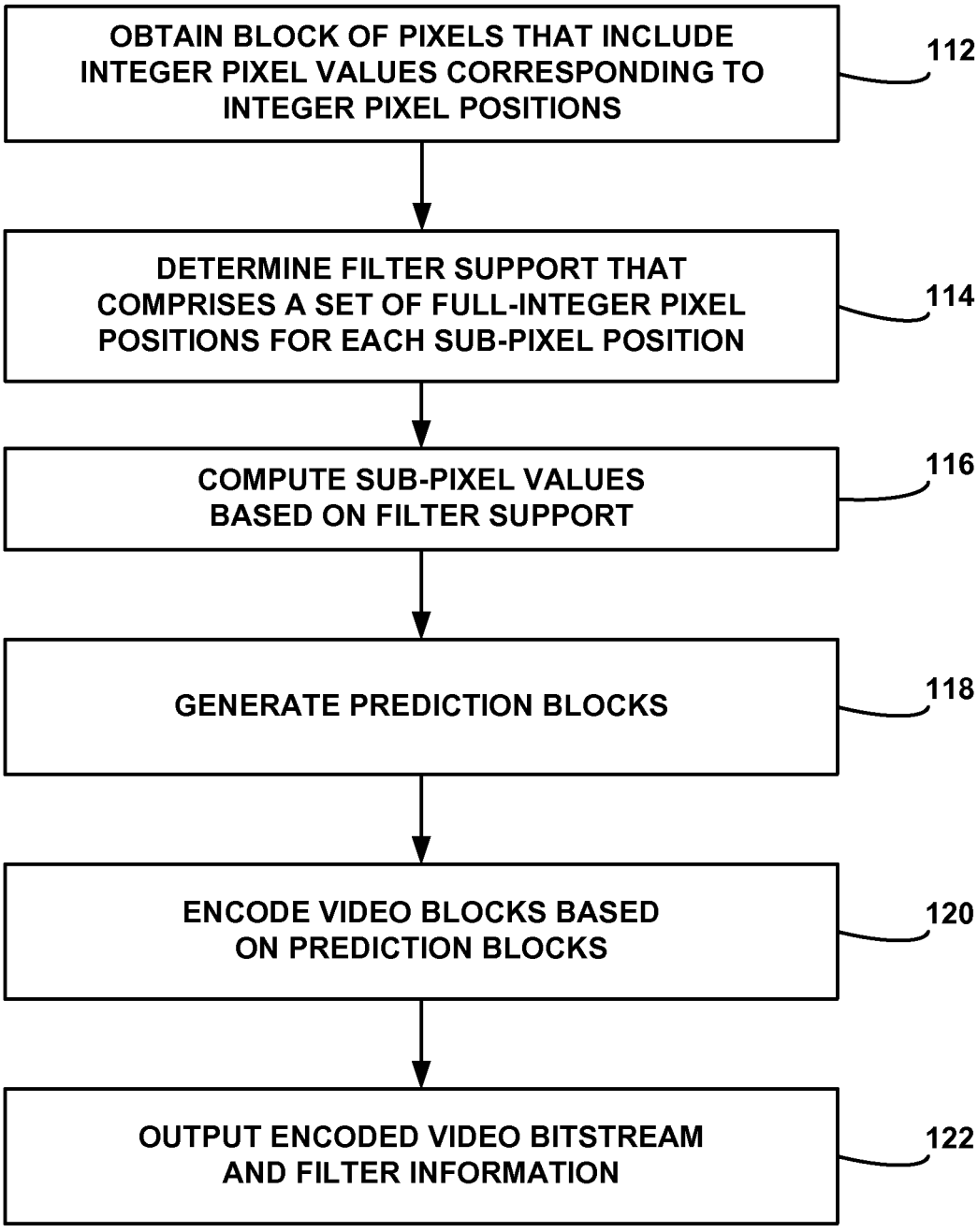

OBTAIN BLOCK OF PIXELS THAT INCLUDE INTEGER PIXEL VALUES CORRESPONDING TO INTEGER PIXEL POSITIONS
112
DETERMINE FILTER SUPPORT THAT COMPRISES A SET OF FULL-INTEGER PIXEL POSITIONS FOR EACH SUB-PIXEL POSITION
114
COMPUTE SUB-PIXEL VALUES BASED ON FILTER SUPPORT
116
GENERATE PREDICTION BLOCKS
118
ENCODE VIDEO BLOCKS BASED ON PREDICTION BLOCKS
120
OUTPUT ENCODED VIDEO BITSTREAM AND FILTER INFORMATION
122

FIG. 12

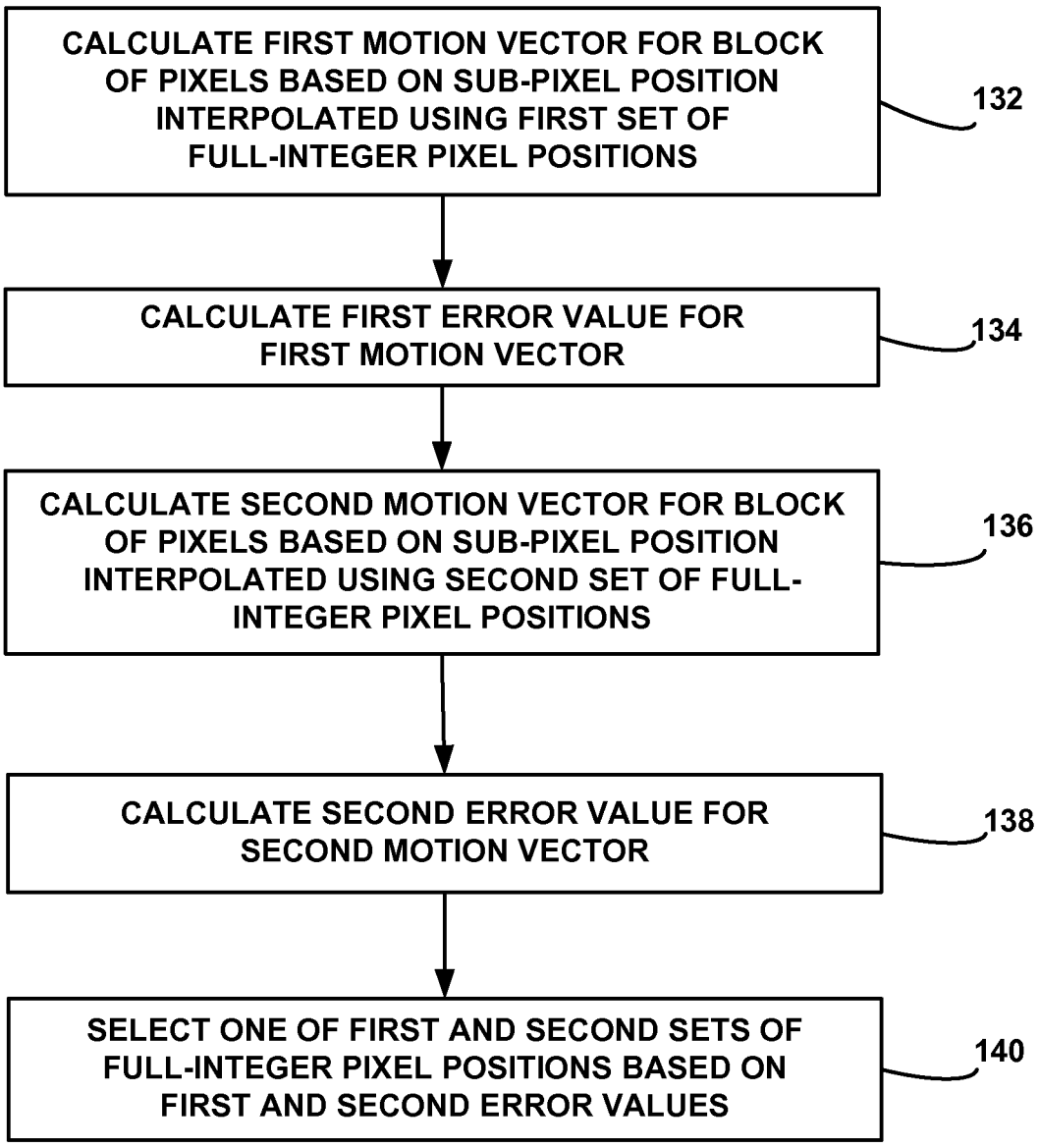

CALCULATE FIRST MOTION VECTOR FOR BLOCK OF PIXELS BASED ON SUB-PIXEL POSITION INTERPOLATED USING FIRST SET OF FULL-INTEGER PIXEL POSITIONS
132
CALCULATE FIRST ERROR VALUE FOR FIRST MOTION VECTOR
134
CALCULATE SECOND MOTION VECTOR FOR BLOCK OF PIXELS BASED ON SUB-PIXEL POSITION INTERPOLATED USING SECOND SET OF FULL-INTEGER PIXEL POSITIONS
136
CALCULATE SECOND ERROR VALUE FOR SECOND MOTION VECTOR
138
SELECT ONE OF FIRST AND SECOND SETS OF FULL-INTEGER PIXEL POSITIONS BASED ON FIRST AND SECOND ERROR VALUES
140

FIG. 13

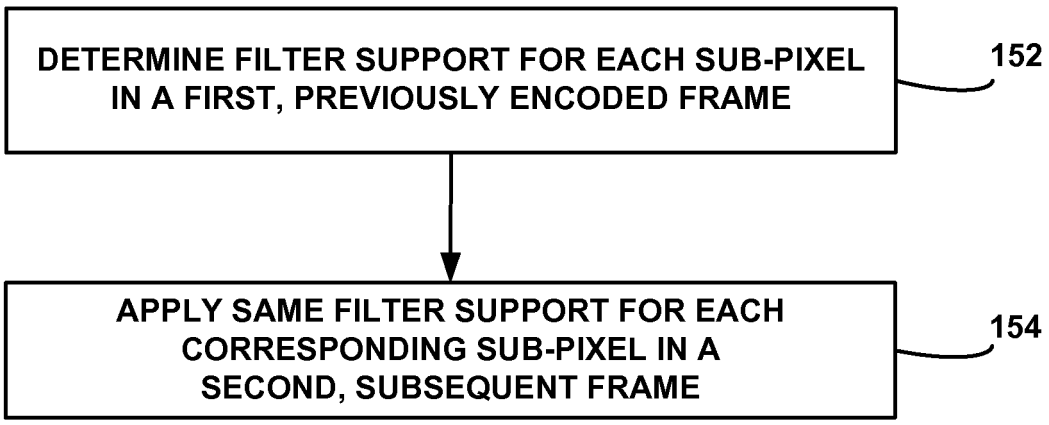

DETERMINE FILTER SUPPORT FOR EACH SUB-PIXEL IN A FIRST, PREVIOUSLY ENCODED FRAME
152
APPLY SAME FILTER SUPPORT FOR EACH CORRESPONDING SUB-PIXEL IN A SECOND, SUBSEQUENT FRAME
154

FIG. 14

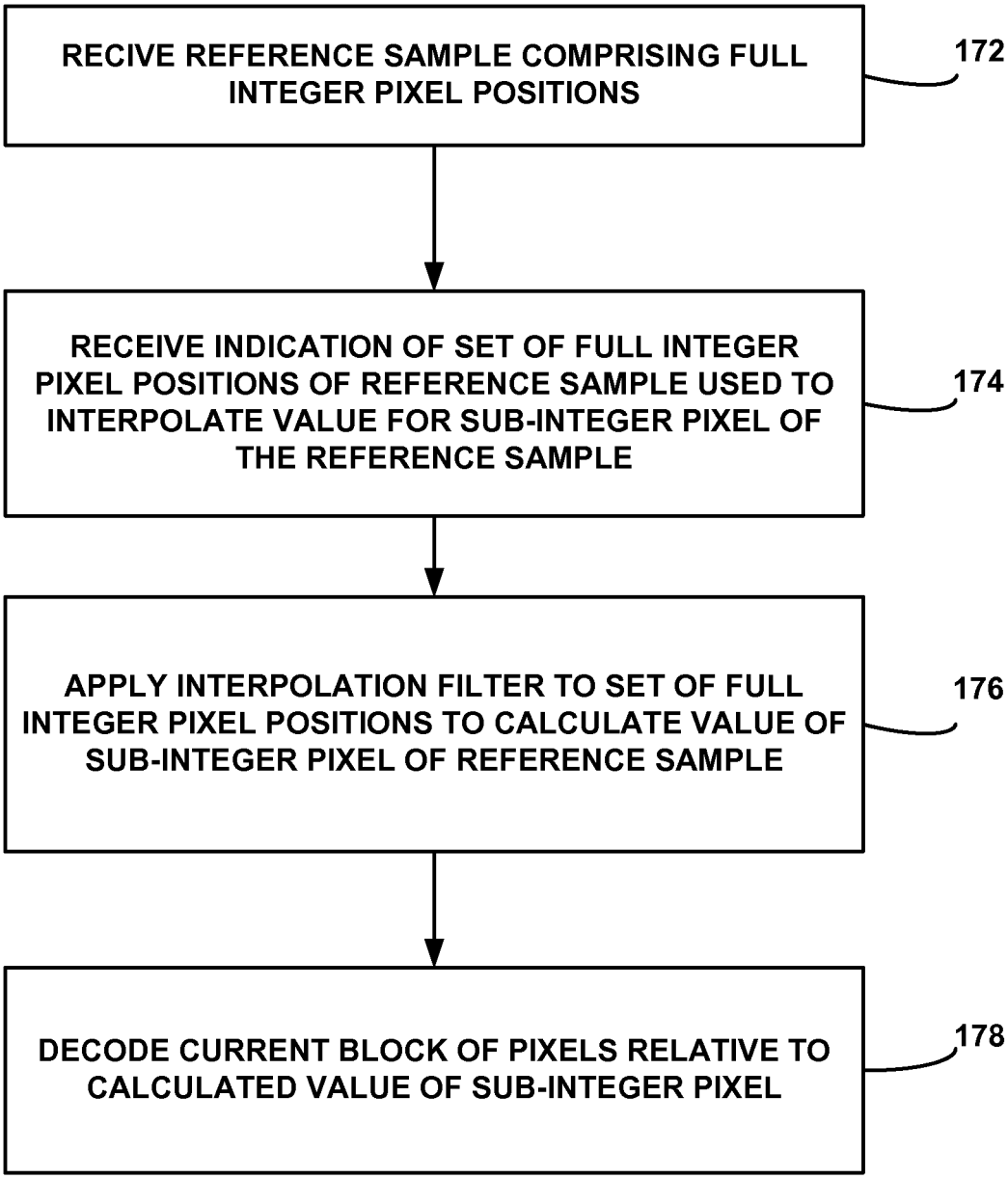

RECIVE REFERENCE SAMPLE COMPRISING FULL INTEGER PIXEL POSITIONS
172
RECEIVE INDICATION OF SET OF FULL INTEGER PIXEL POSITIONS OF REFERENCE SAMPLE USED TO INTERPOLATE VALUE FOR SUB-INTEGER PIXEL OF THE REFERENCE SAMPLE
174
APPLY INTERPOLATION FILTER TO SET OF FULL INTEGER PIXEL POSITIONS TO CALCULATE VALUE OF SUB-INTEGER PIXEL OF REFERENCE SAMPLE
176
DECODE CURRENT BLOCK OF PIXELS RELATIVE TO CALCULATED VALUE OF SUB-INTEGER PIXEL
178

FIG. 15

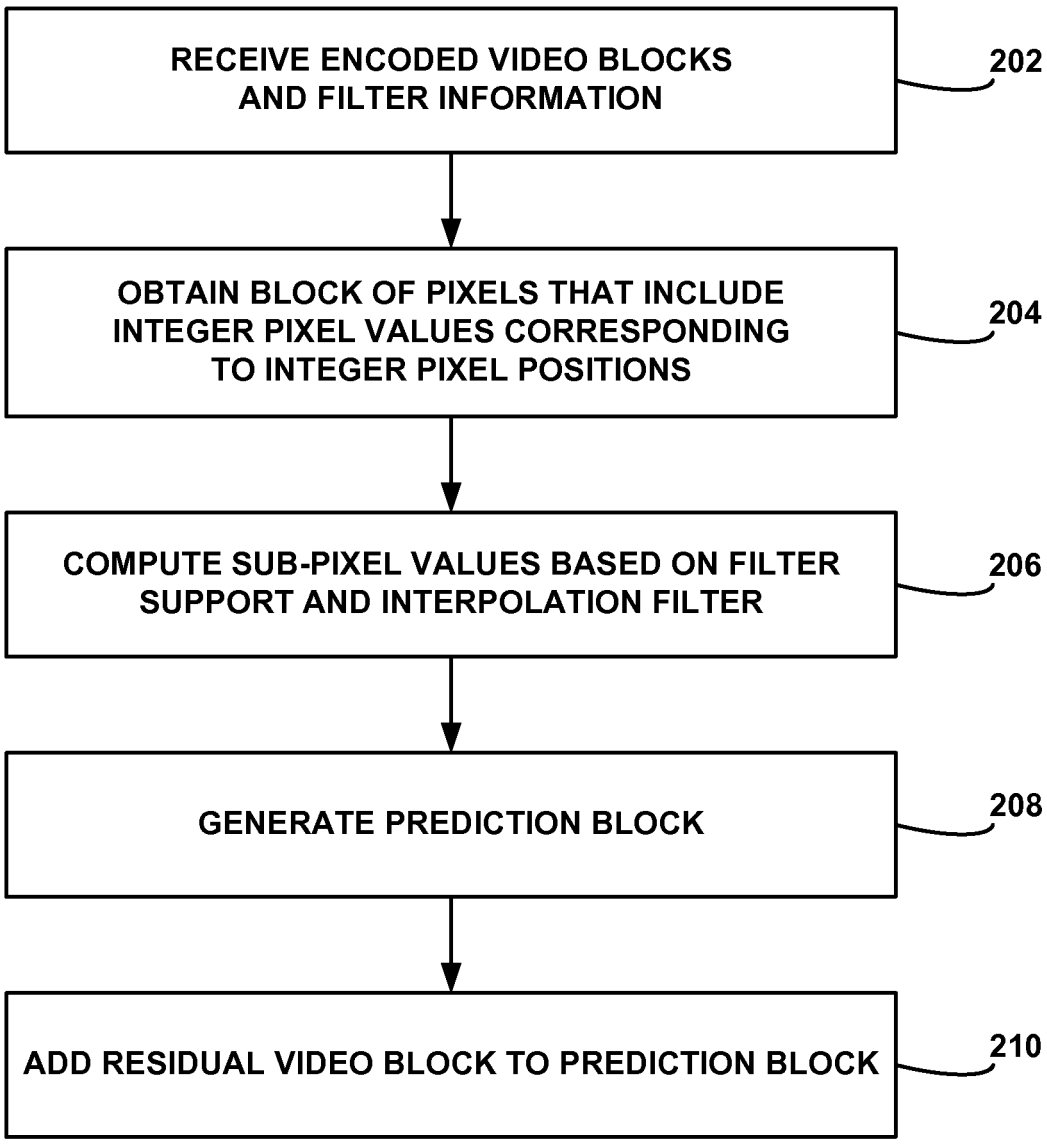

RECEIVE ENCODED VIDEO BLOCKS AND FILTER INFORMATION
202
OBTAIN BLOCK OF PIXELS THAT INCLUDE INTEGER PIXEL VALUES CORRESPONDING TO INTEGER PIXEL POSITIONS
204
COMPUTE SUB-PIXEL VALUES BASED ON FILTER SUPPORT AND INTERPOLATION FILTER
206
GENERATE PREDICTION BLOCK
208
ADD RESIDUAL VIDEO BLOCK TO PREDICTION BLOCK
210

FIG. 16