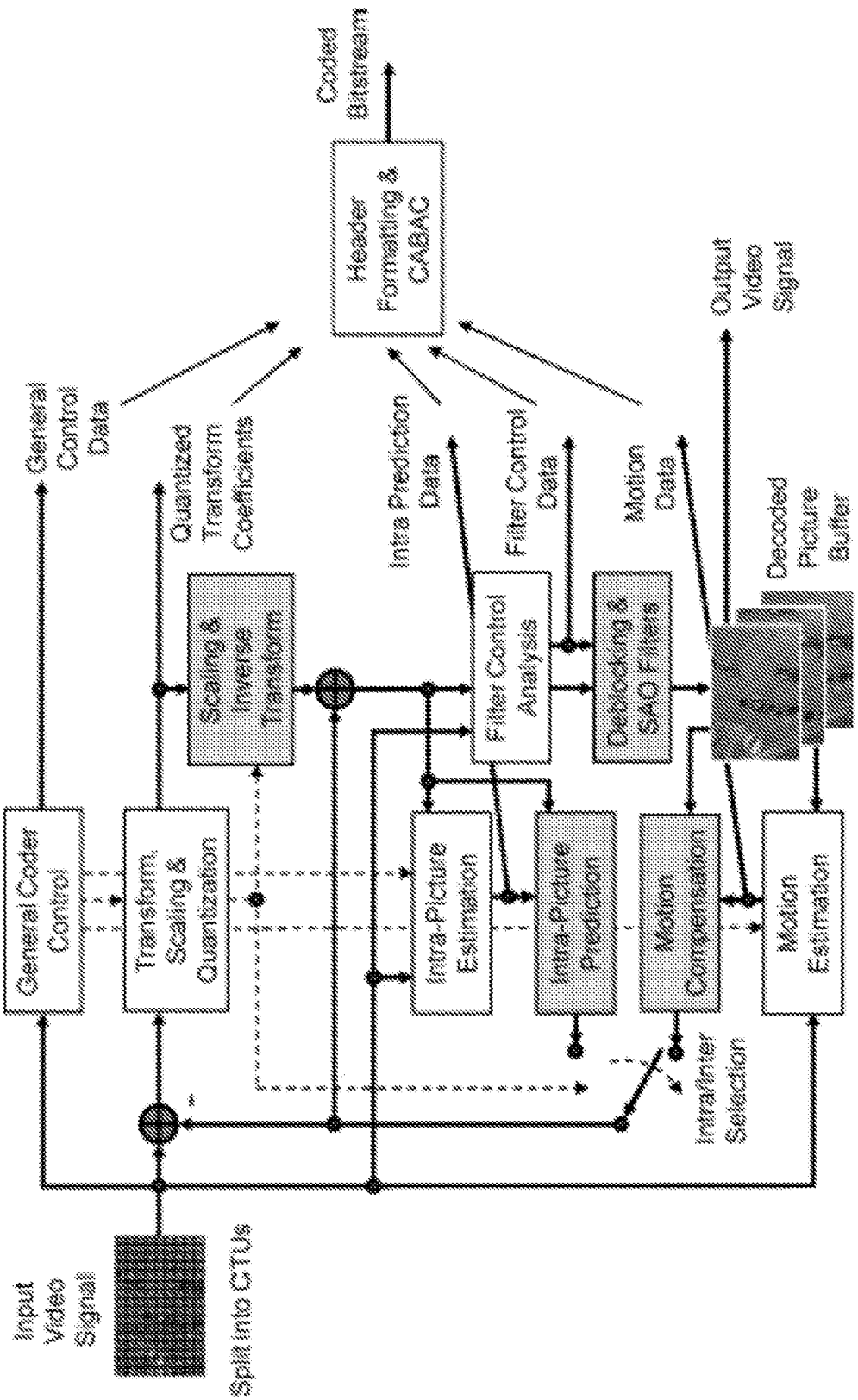


Typical HEVC video encoder (with decoding modeling elements shaded in light gray)

FIG. 1

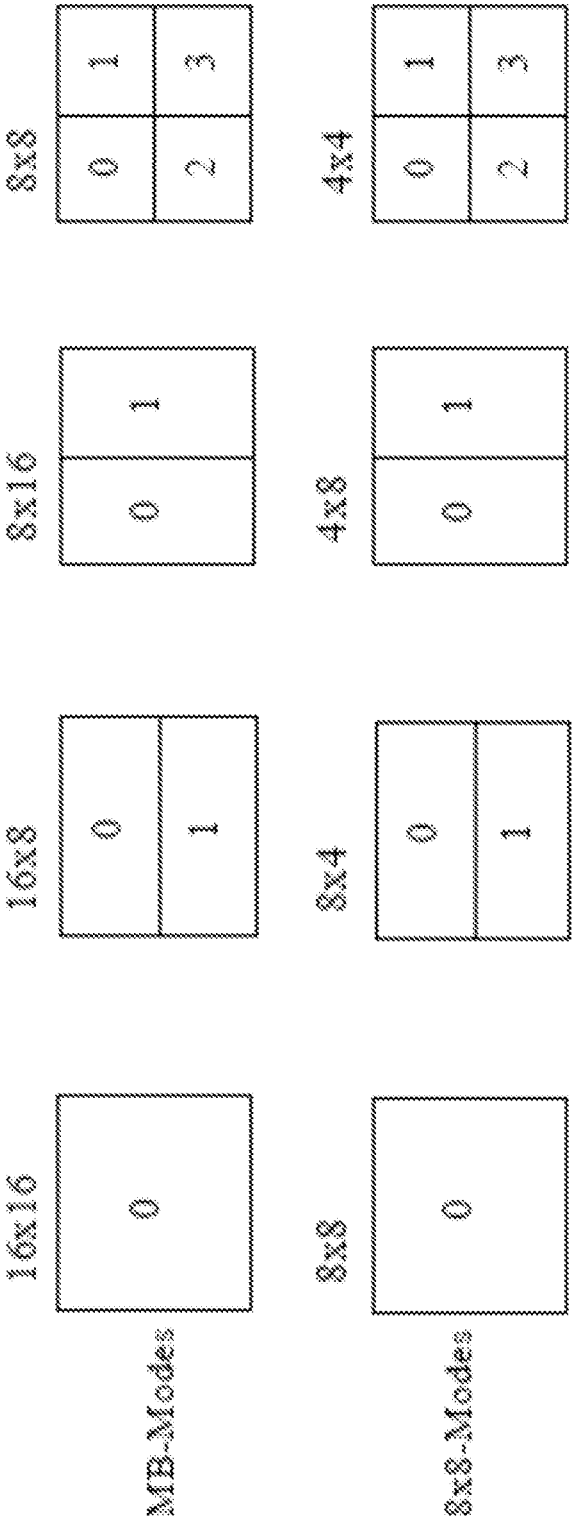

MB-Modes
16x16
0
8x8
0
8x8-Modes
16x8
0
1
8x4
0
1
8x16
0
1
4x8
0
1
8x8
0
1
2
3
4x4
0
1
2
3

FIG. 2

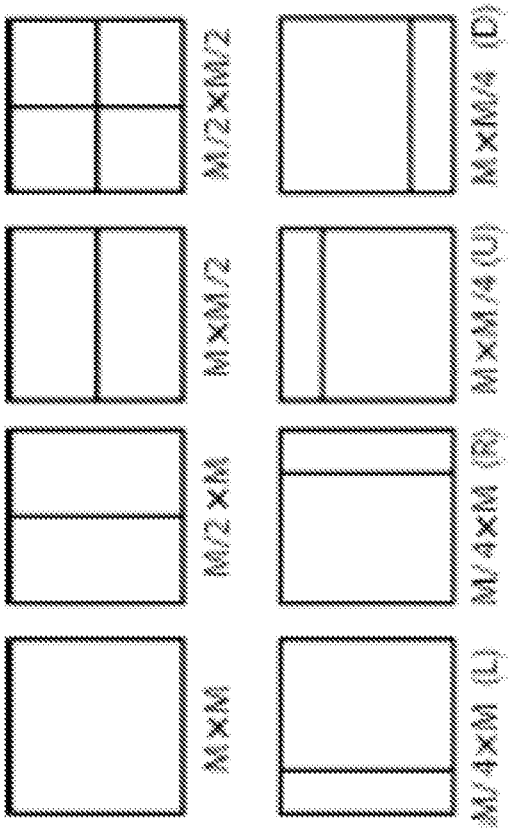
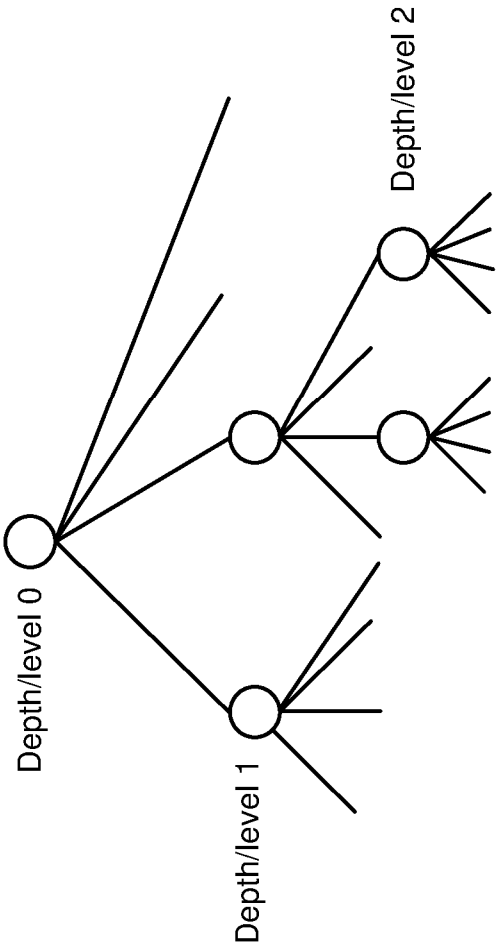


Fig. 3. Modes for splitting a CB into PBs, subject to certain size constraints. For intrapicture-predicted CBs, only $M \times M$ and $M/2 \times M/2$ are supported.

FIG. 3



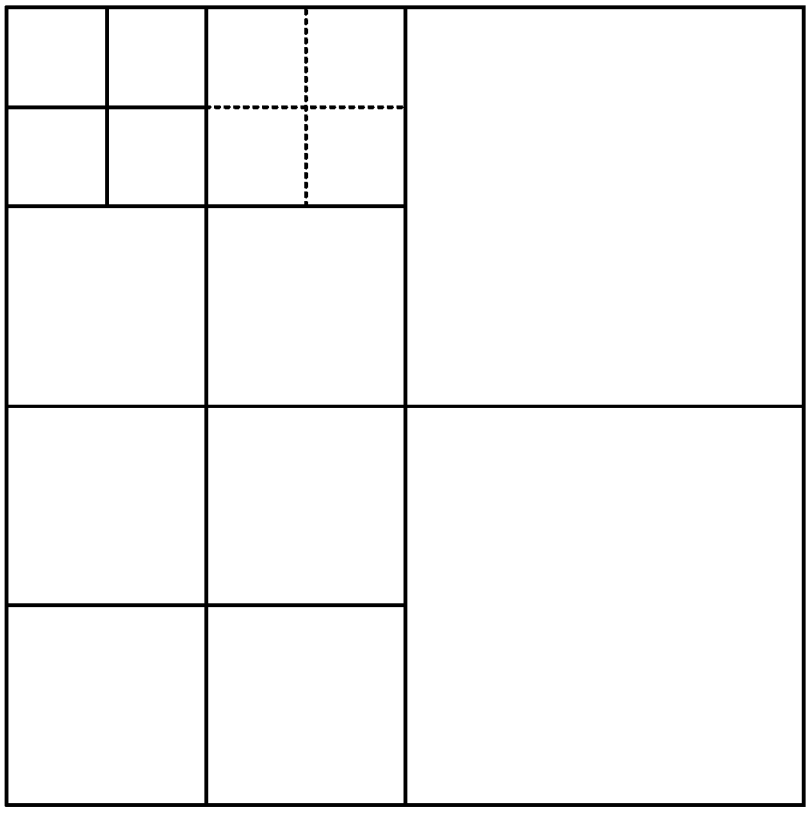


FIG. 4

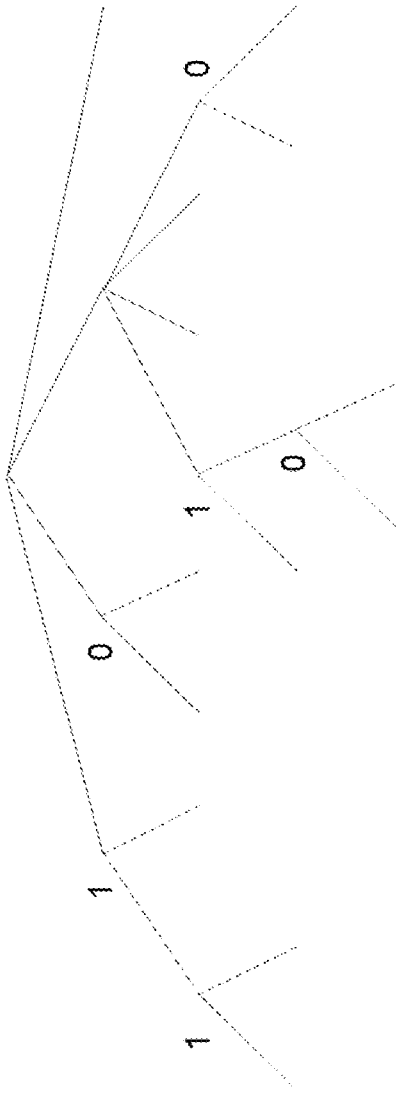
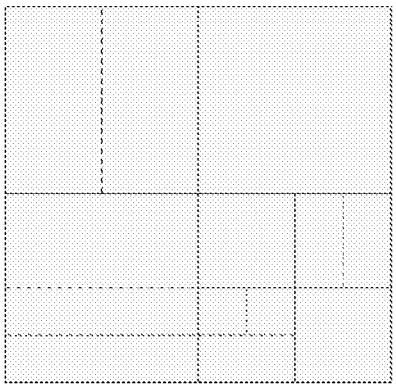


FIG. 5



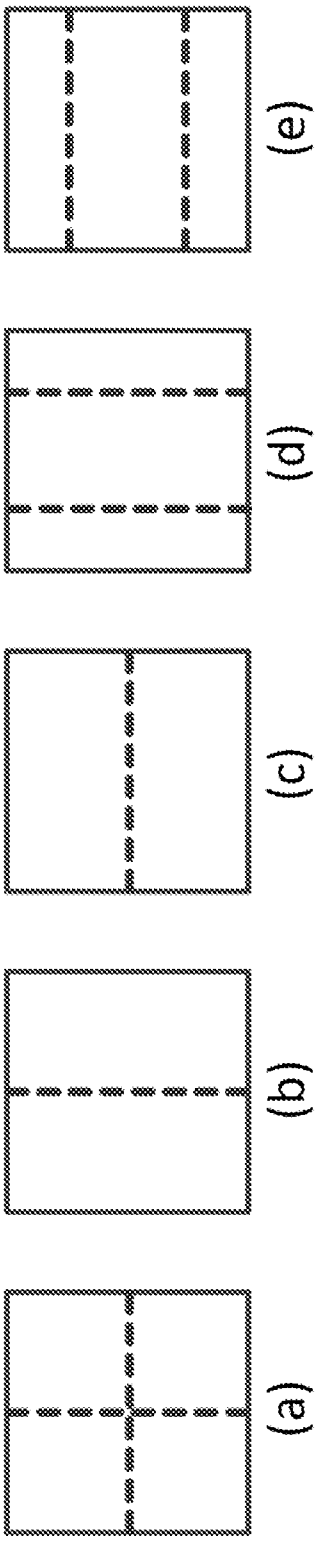


FIG. 6

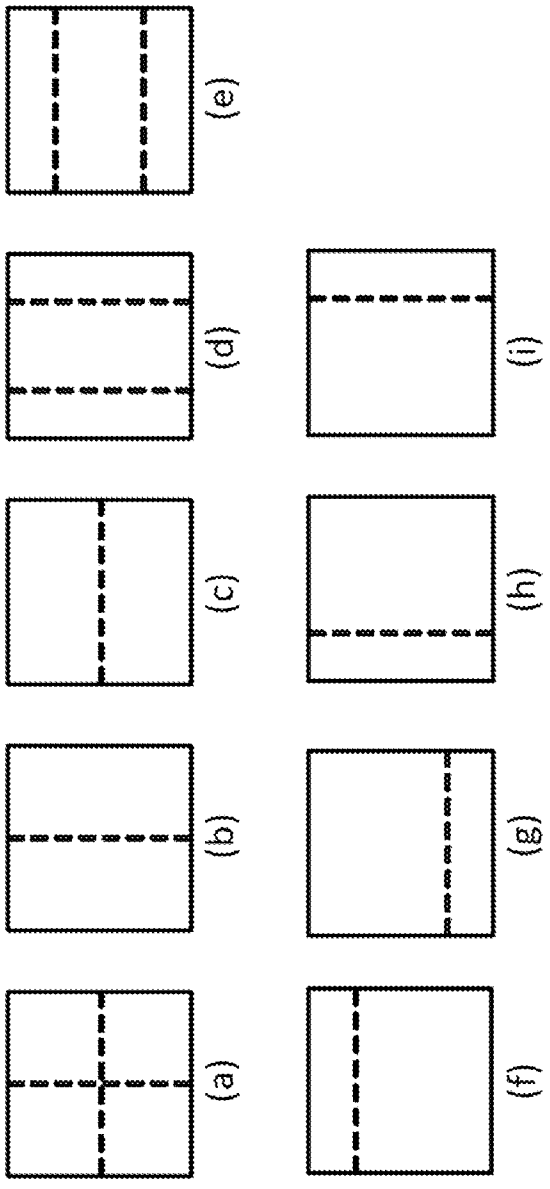


FIG. 7

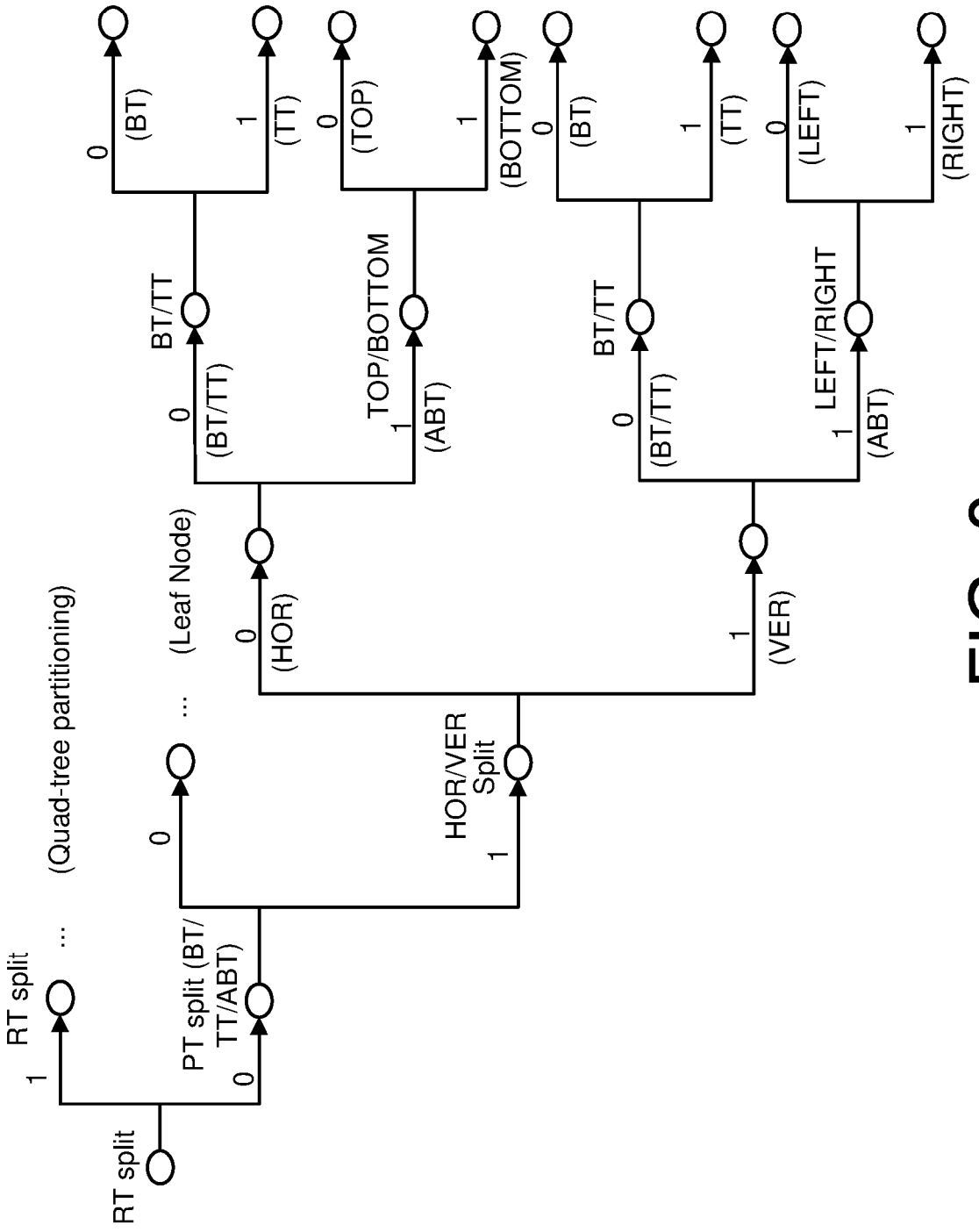

RT split
1
RT split
...
(Quad-tree partitioning)
PT split (BT/TT/ABT)
0
0
...
(Leaf Node)
HOR/VER Split
1
0
(HOR)
1
(VER)
BT/TT
0
(BT/TT)
TOP/BOTTOM
1
(ABT)
BT/TT
0
(BT/TT)
LEFT/RIGHT
1
(ABT)
0
(BT)
1
(TT)
0
(TOP)
1
(BOTTOM)
0
(BT)
1
(TT)
0
(LEFT)
1
(RIGHT)

FIG. 8

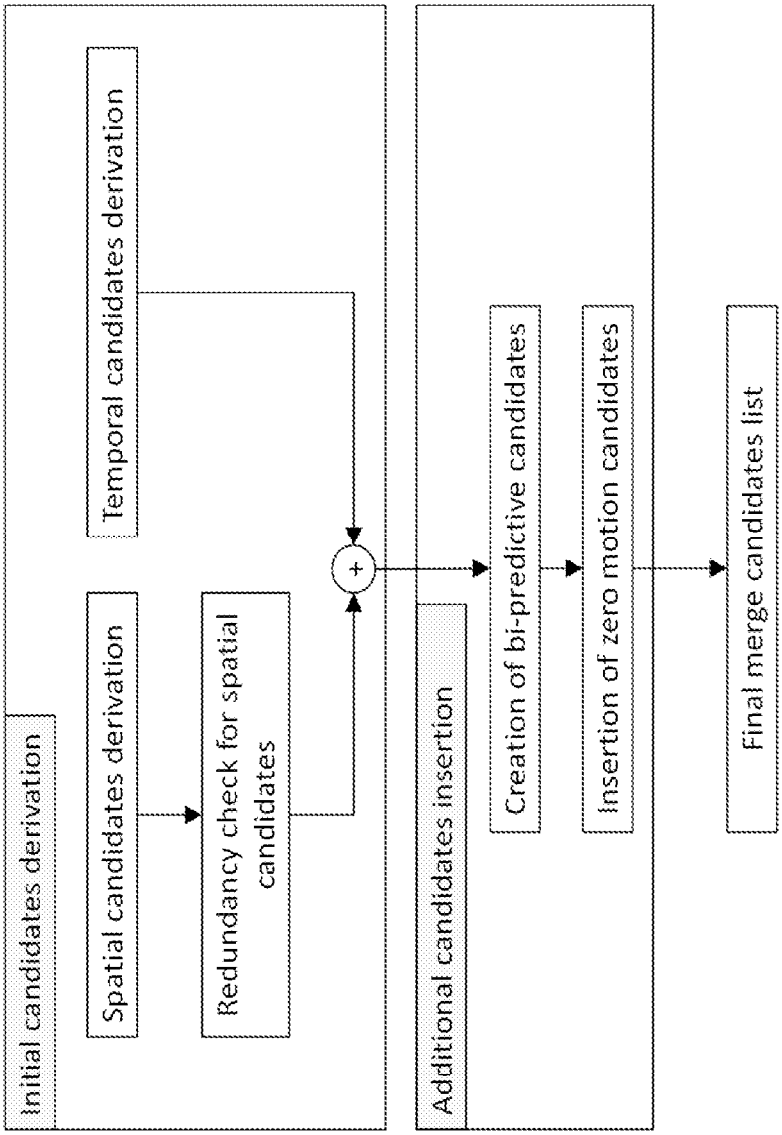

Initial candidates derivation
Spatial candidates derivation
Redundancy check for spatial candidates
Temporal candidates derivation
+
Additional candidates insertion
Creation of bi-predictive candidates
insertion of zero motion candidates
Final merge candidates list

FIG. 9

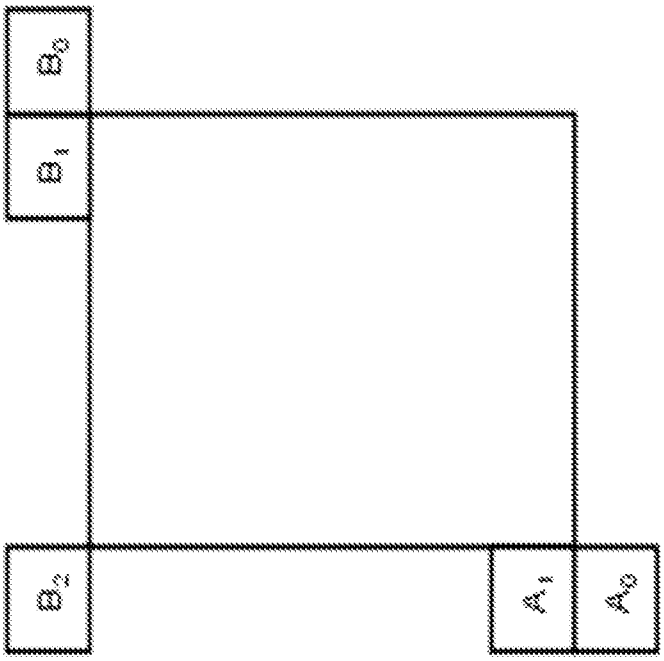


FIG. 10

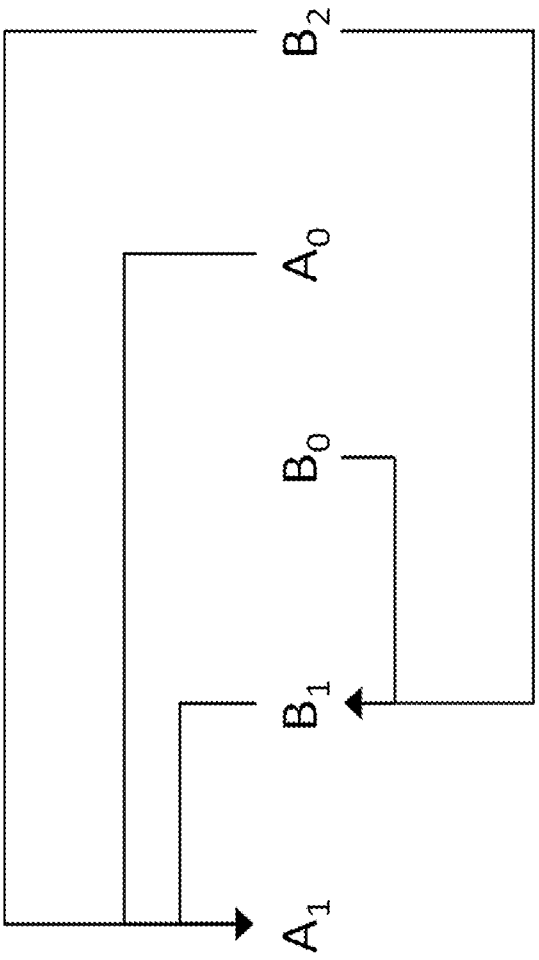


FIG. 11

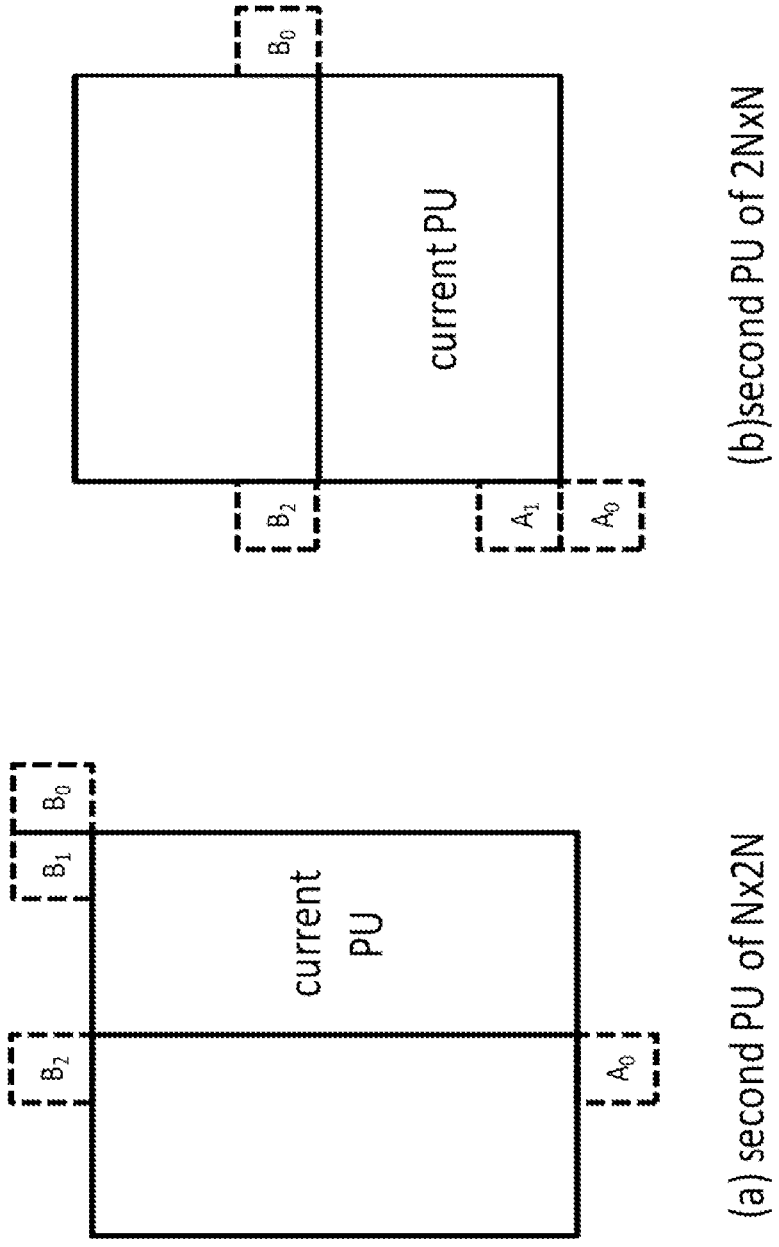

B0
current PU
B2
A1
A0
(b)second PU of 2NxN
B0
B1
current PU
B2
A0
(a) second PU of Nx2N

FIG. 12

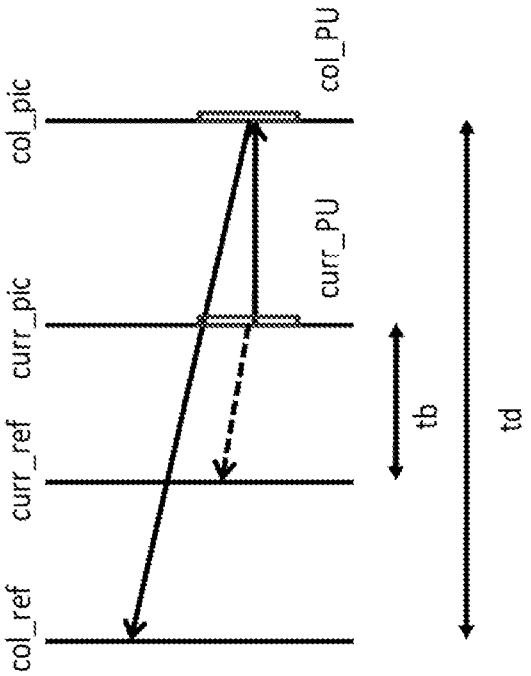


FIG. 13

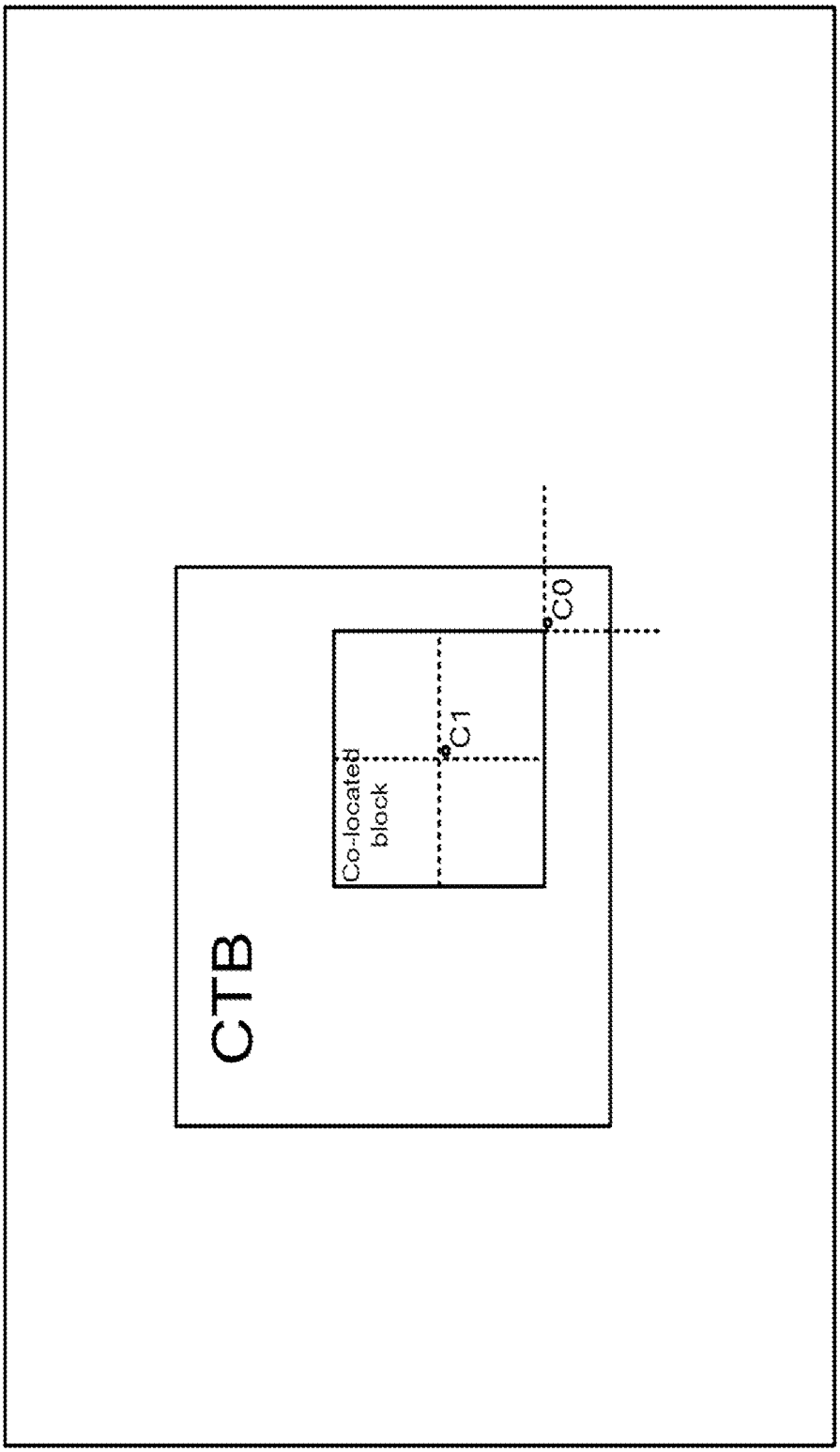


FIG. 14

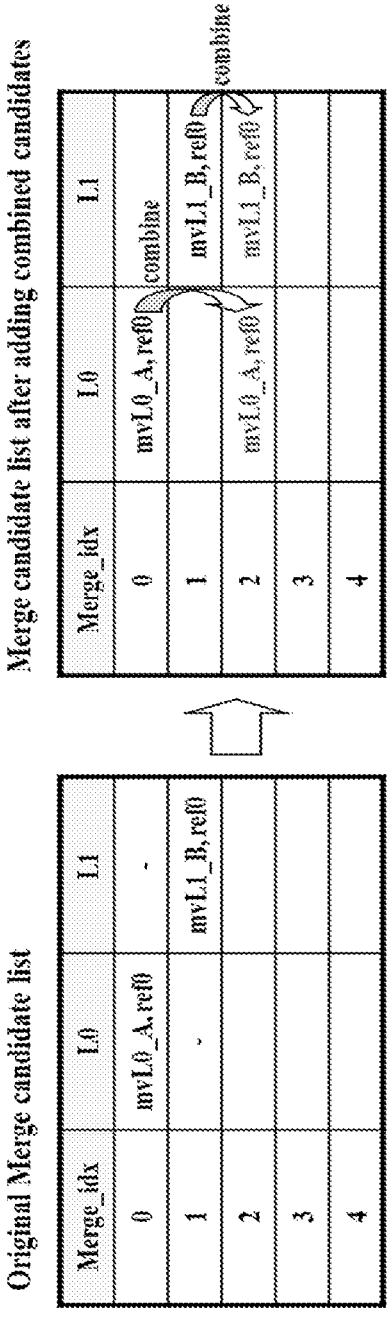

Original Merge candidate list
Merge_idx
L0
L1
0
mvL0_A, ref0
-
1
-
mvL1_B, ref0
2
3
4
Merge candidate list after adding combined candidates
Merge_idx
L0
L1
0
mvL0_A, ref0
combine
1
mvL1_B, ref0
combine
2
mvL0_A, ref0
mvL1_B, ref0
3
4

FIG. 15

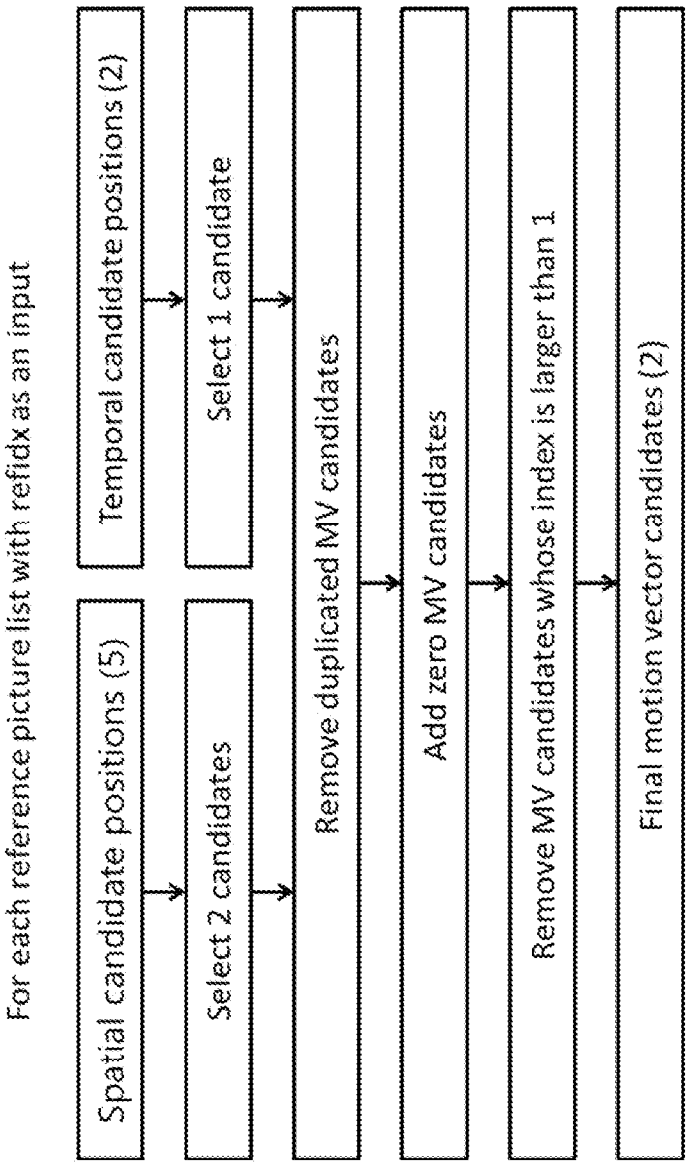

For each reference picture list with refidx as an input
Spatial candidate positions (5)
Select 2 candidates
Temporal candidate positions (2)
Select 1 candidate
Remove duplicated MV candidates
Add zero MV candidates
Remove MV candidates whose index is larger than 1
Final motion vector candidates (2)

FIG. 16

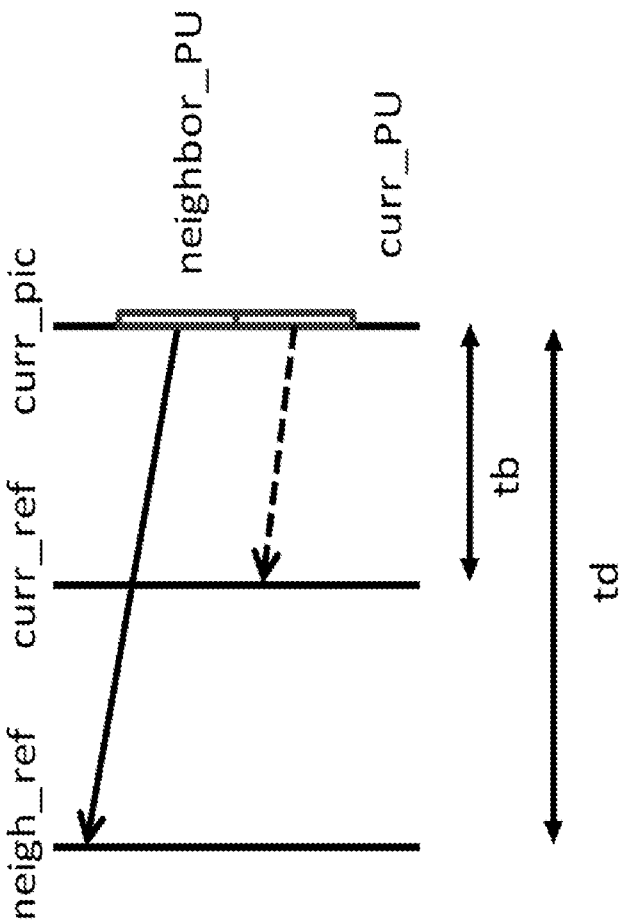


FIG. 17

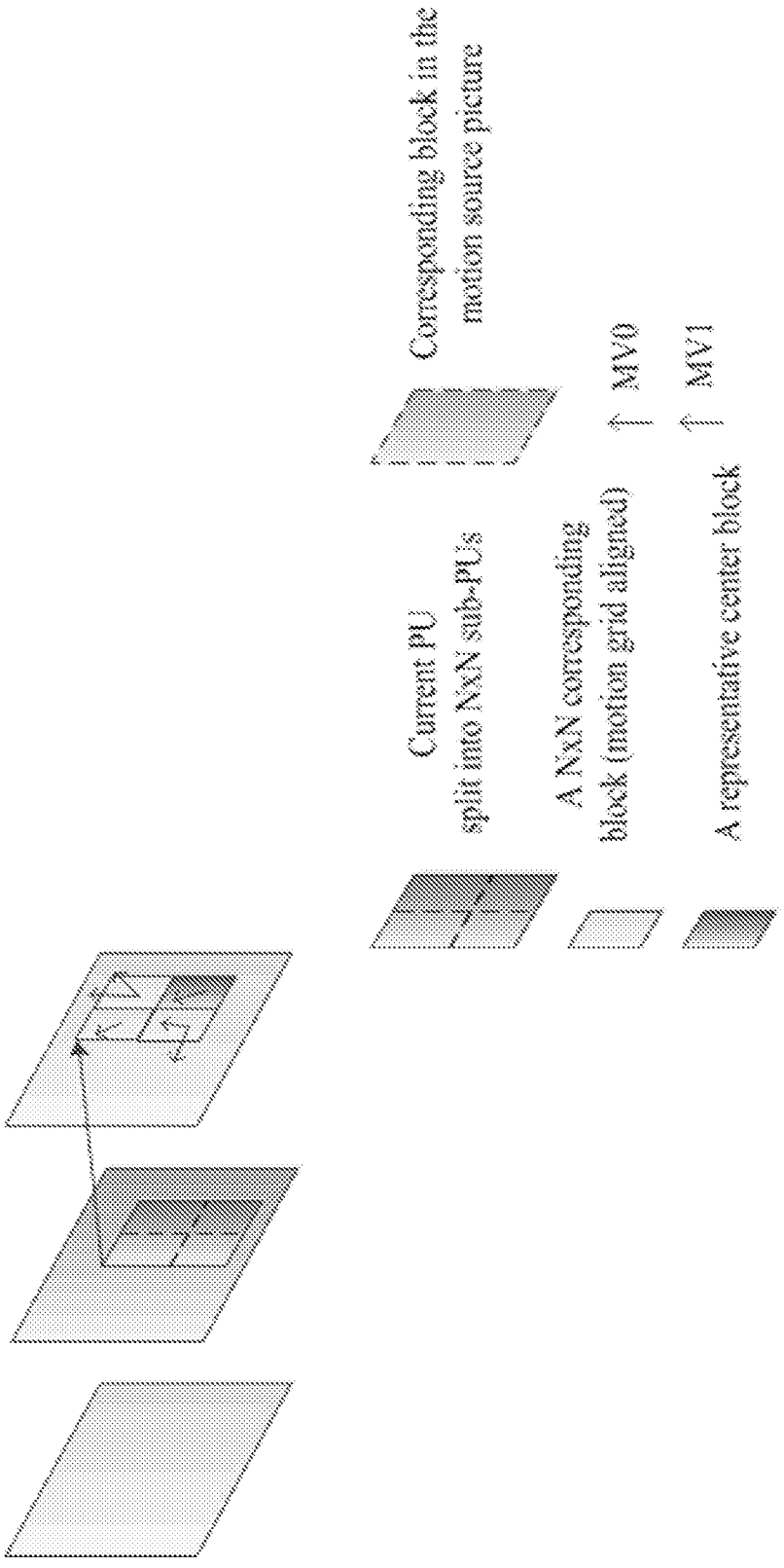

Corresponding block in the motion source picture
Current PU split into NxN sub-PUs
A NxN corresponding block (motion grid aligned)
MV0
MV1
A representative center block

FIG. 18

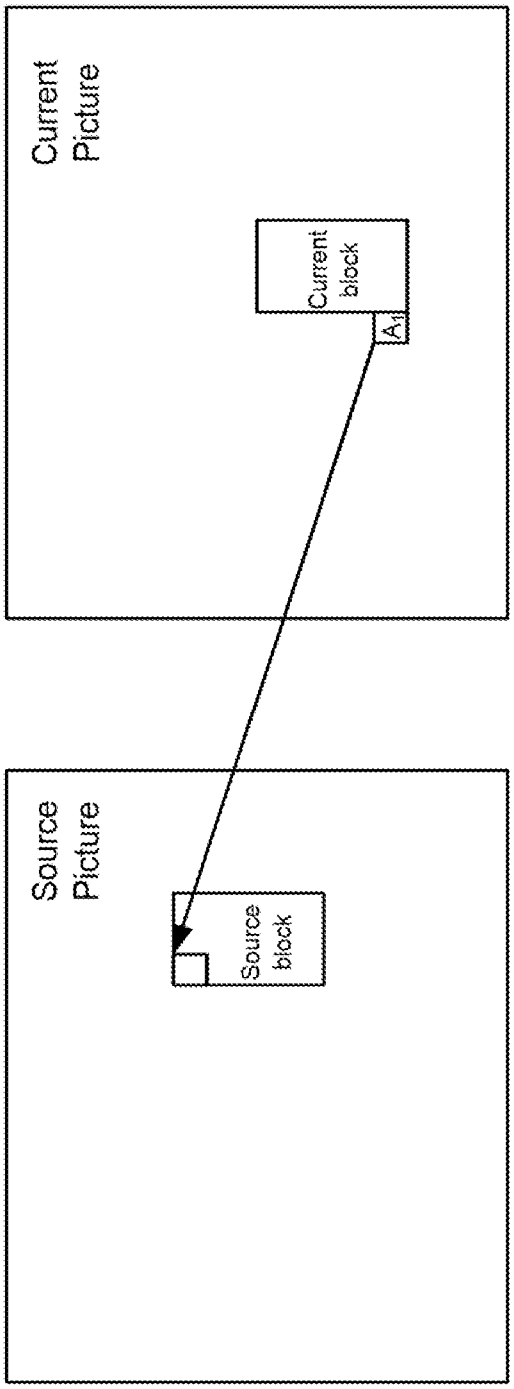

Current Picture
Current block
A_1
Source Picture
Source block

FIG. 19

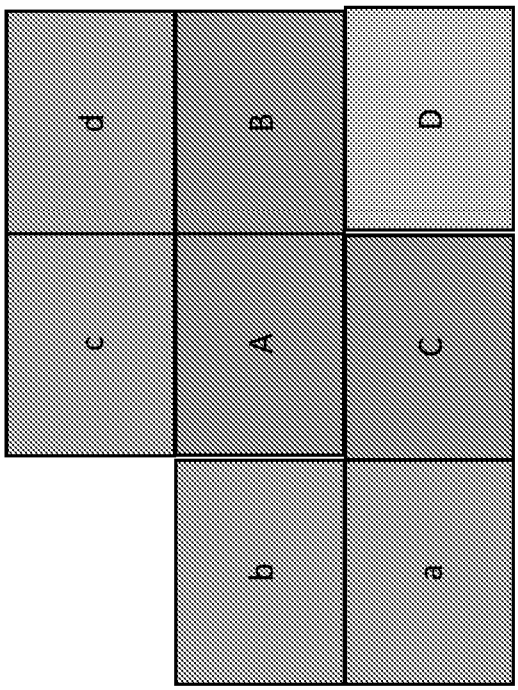


FIG. 20

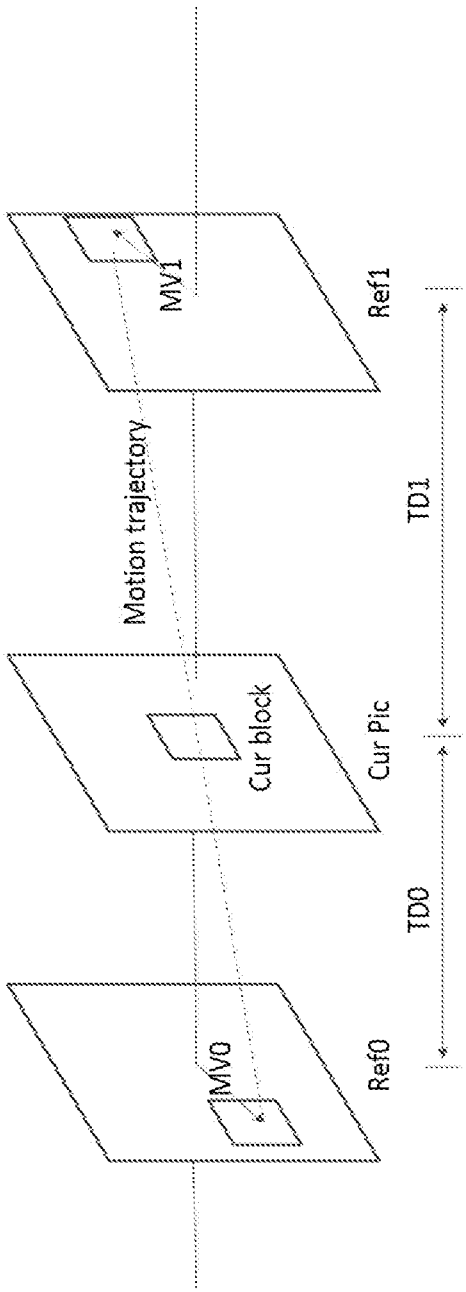

MV1
Ref1
Motion trajectory
TD1
Cur block
Cur Pic
TD0
MV0
Ref0

FIG. 21

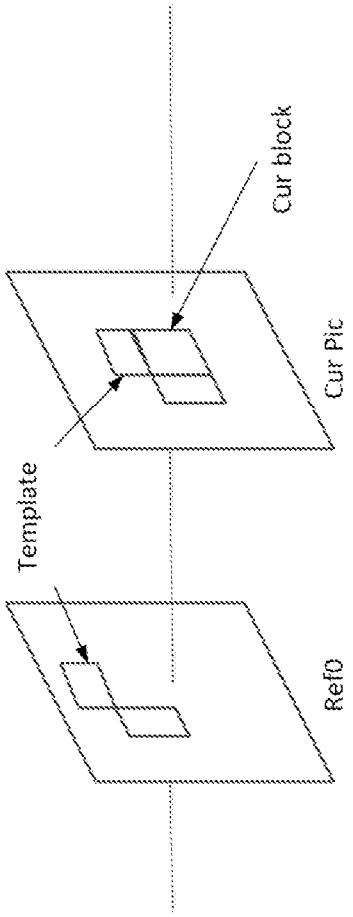


FIG. 22

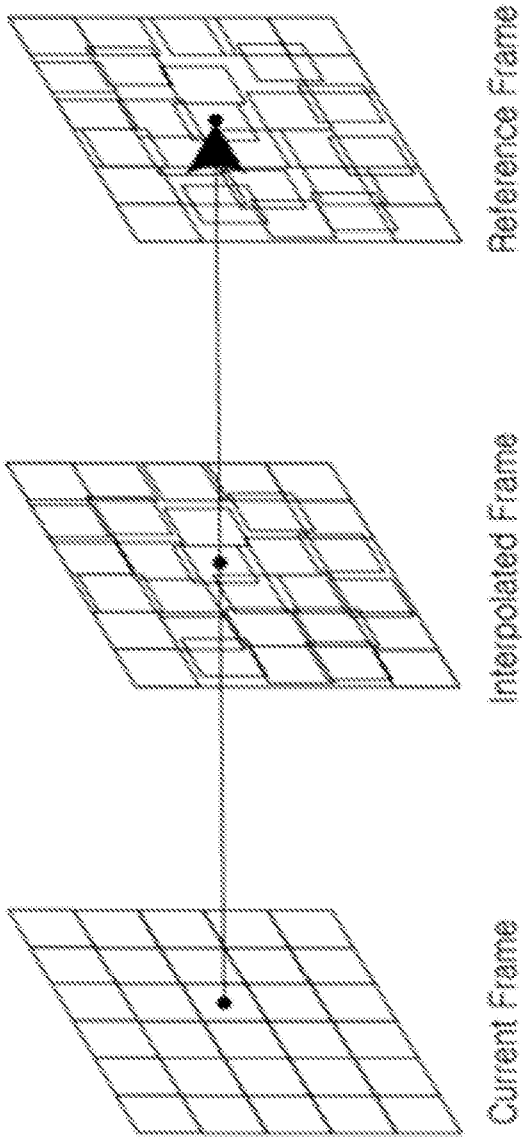


FIG. 23

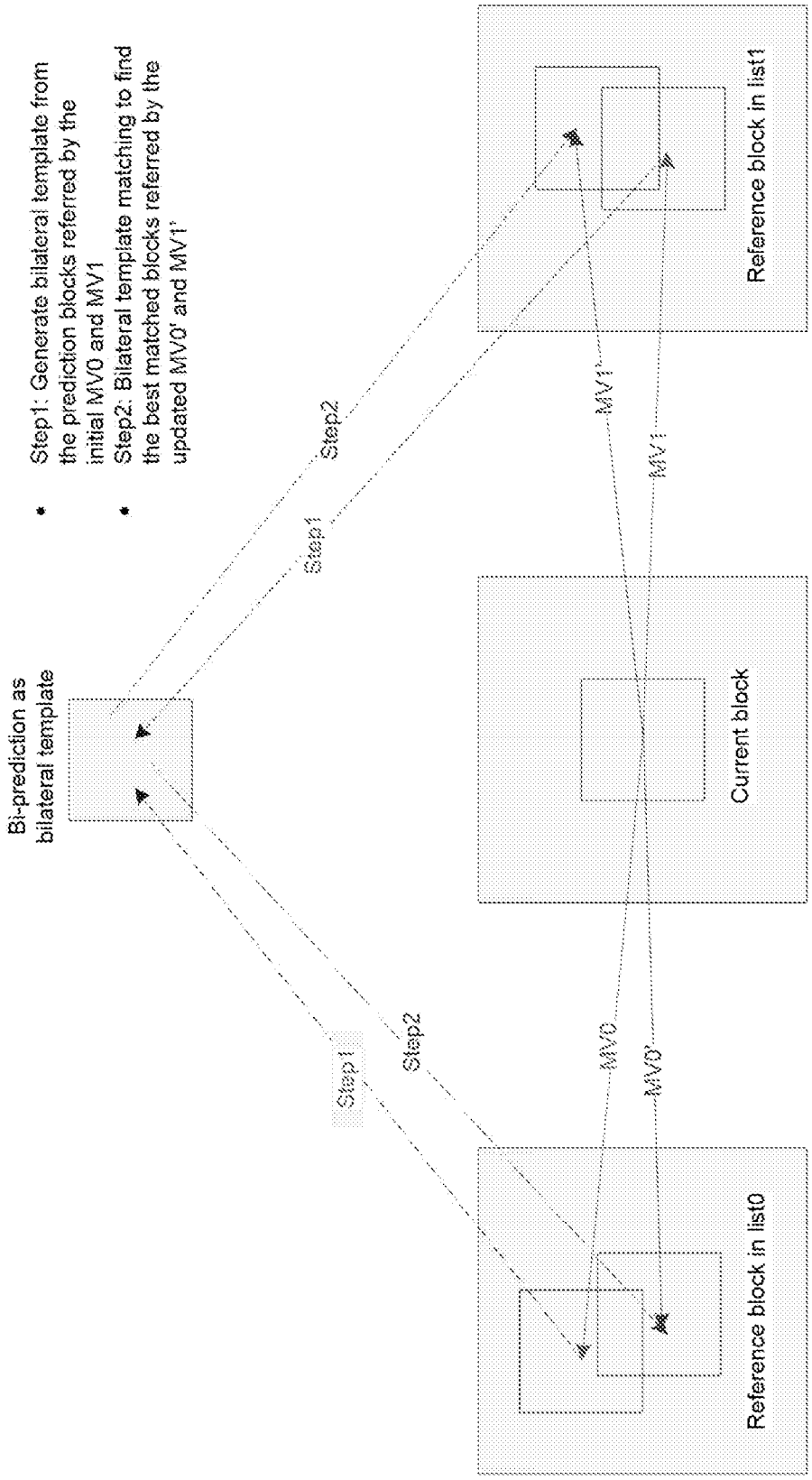

Step1: Generate bilateral template from the prediction blocks referred by the initial MV0 and MV1
Step2: Bilateral template matching to find the best matched blocks referred by the updated MV0' and MV1'
Bi-prediction as bilateral template
Step1
Step2
Step1
Step2
MV0
MV0'
MV1
MV1'
Reference block in list0
Current block
Reference block in list1

FIG. 24

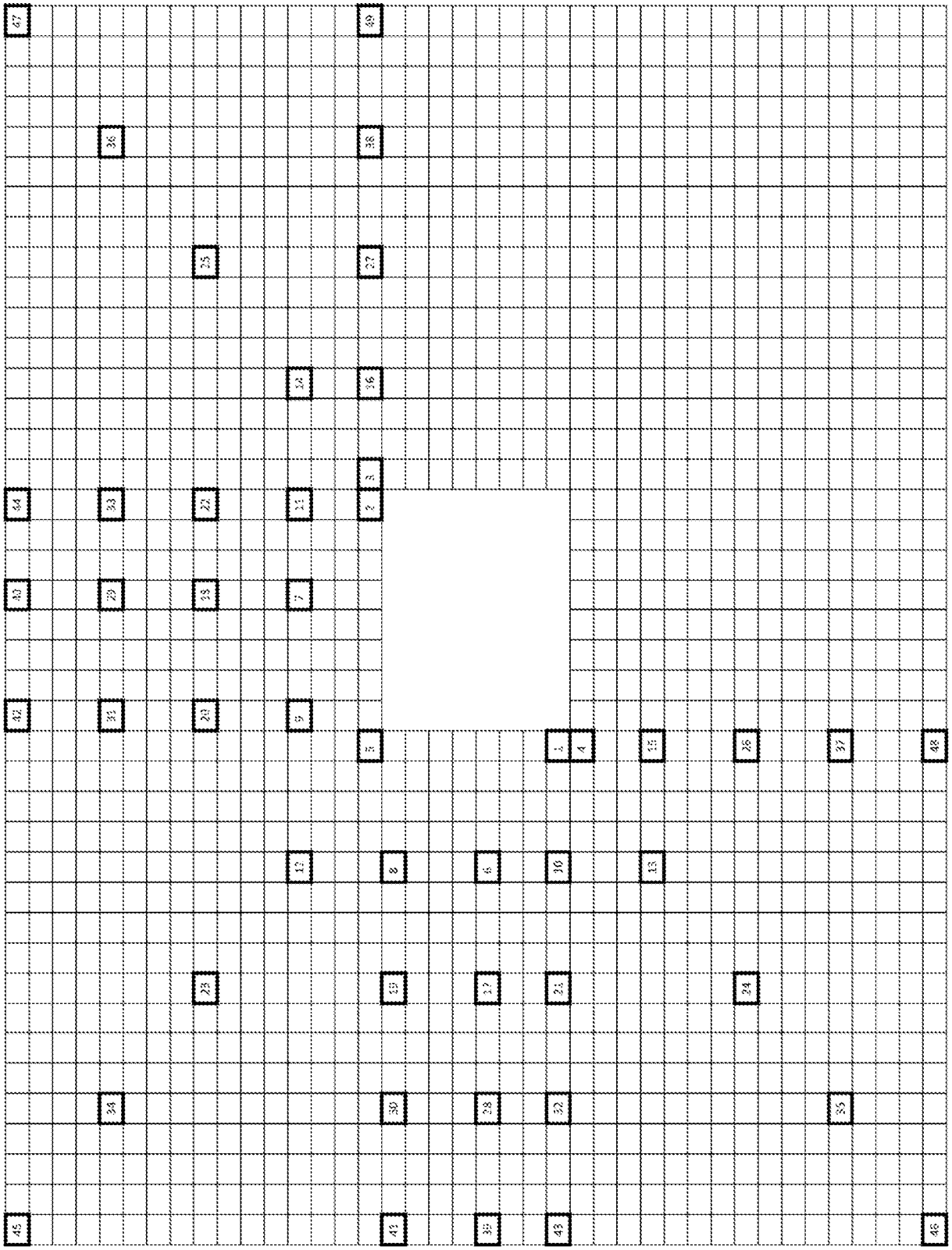

47
49
36
38
25
27
22
16
3
44
33
23
11
2
43
29
24
7
42
31
20
9
8
1
4
15
26
37
48
12
8
6
16
13
28
19
17
21
24
34
30
28
32
35
45
41
39
43
46

FIG. 25

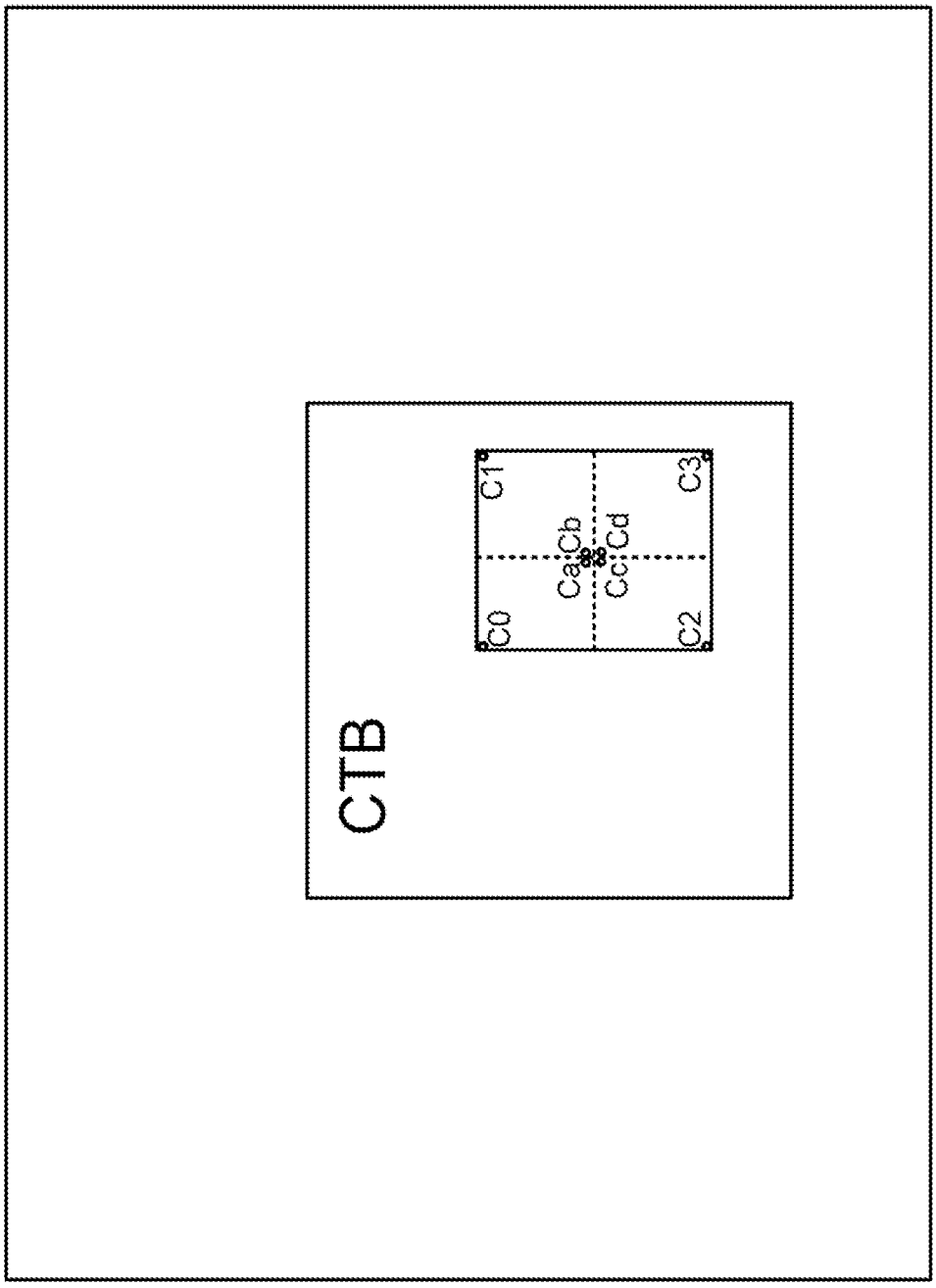


FIG. 26

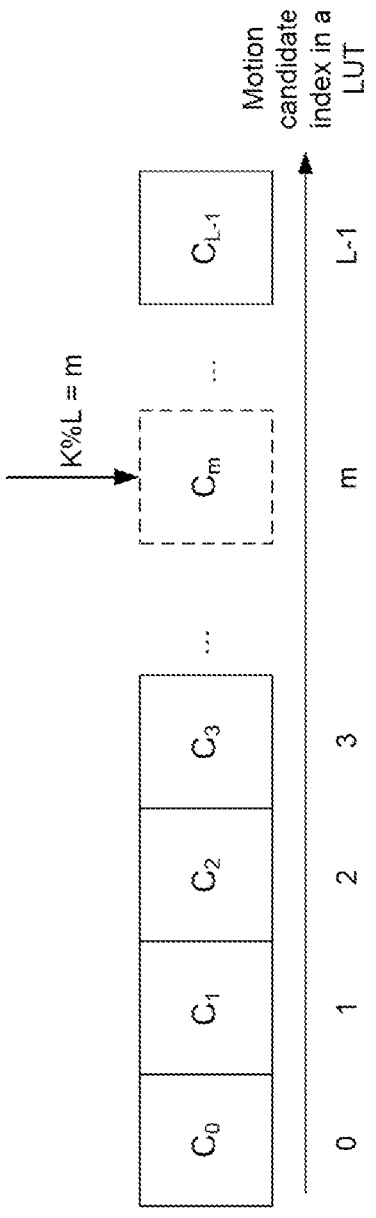


FIG. 27A

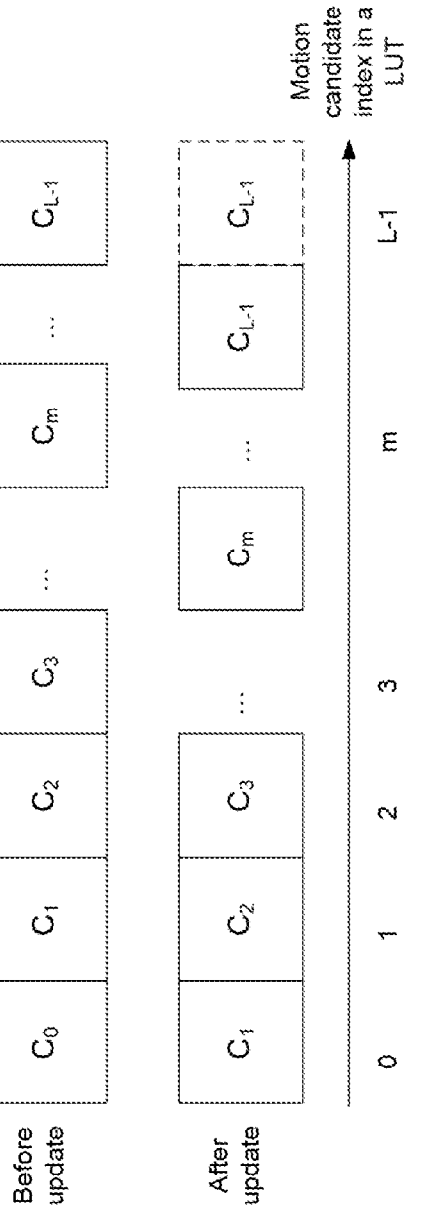

Before update
After update
C_0
C_1
C_2
C_3
...
C_m
...
C_{L-1}
0
1
2
3
m
L-1
Motion candidate index in a LUT

FIG. 27B

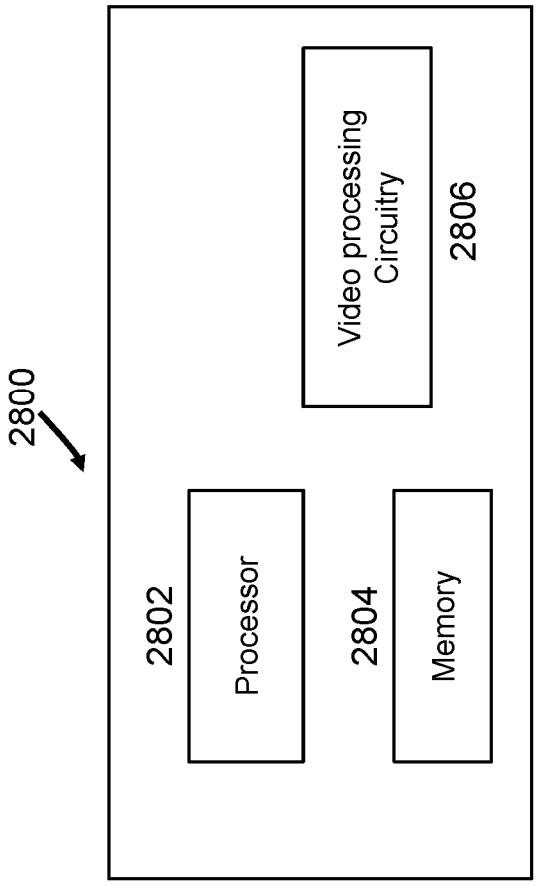

2800
2802
Processor
2804
Memory
Video processing Circuitry
2806

FIG. 28

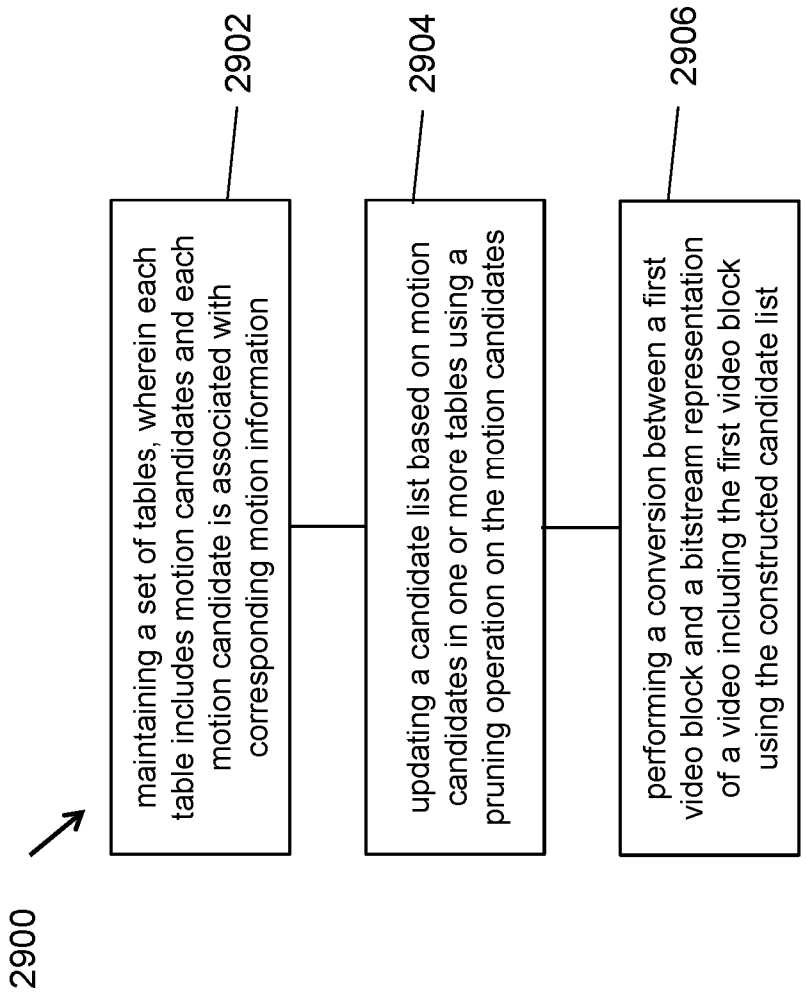

2900
maintaining a set of tables, wherein each table includes motion candidates and each motion candidate is associated with corresponding motion information
2902
updating a candidate list based on motion candidates in one or more tables using a pruning operation on the motion candidates
2904
performing a conversion between a first video block and a bitstream representation of a video including the first video block using the constructed candidate list
2906

FIG. 29

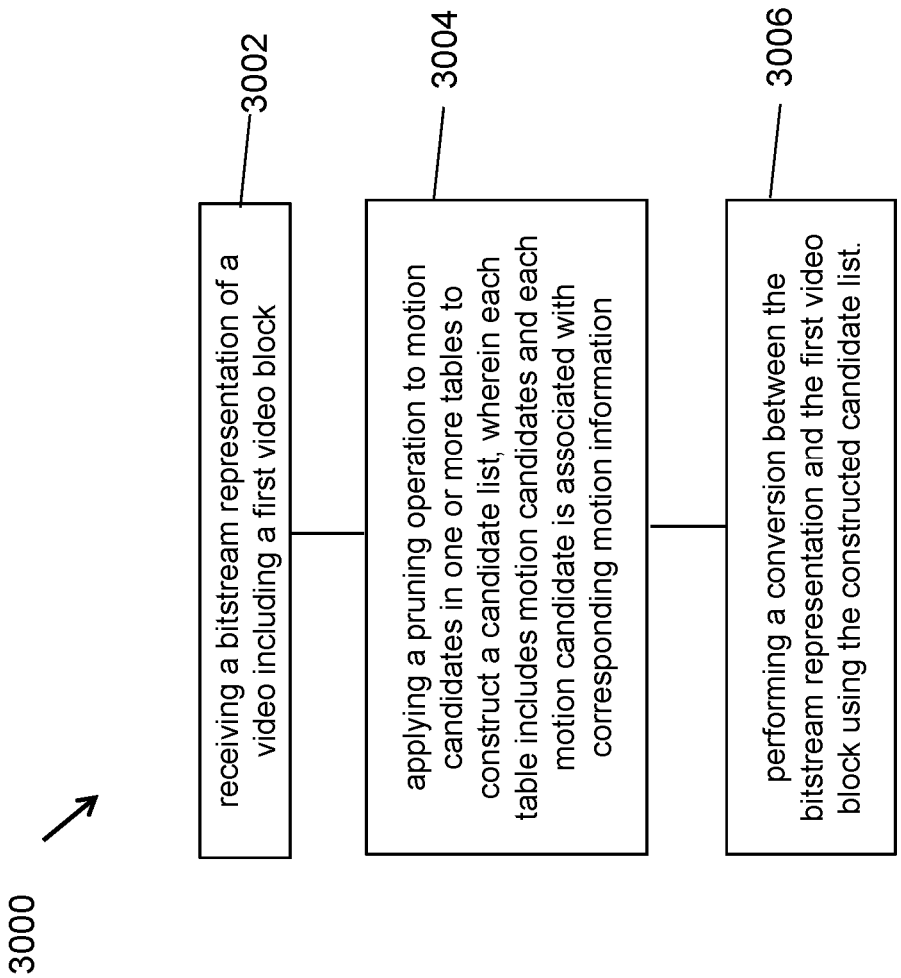

3000
receiving a bitstream representation of a video including a first video block
3002
applying a pruning operation to motion candidates in one or more tables to construct a candidate list, wherein each table includes motion candidates and each motion candidate is associated with corresponding motion information
3004
performing a conversion between the bitstream representation and the first video block using the constructed candidate list.
3006

FIG. 30

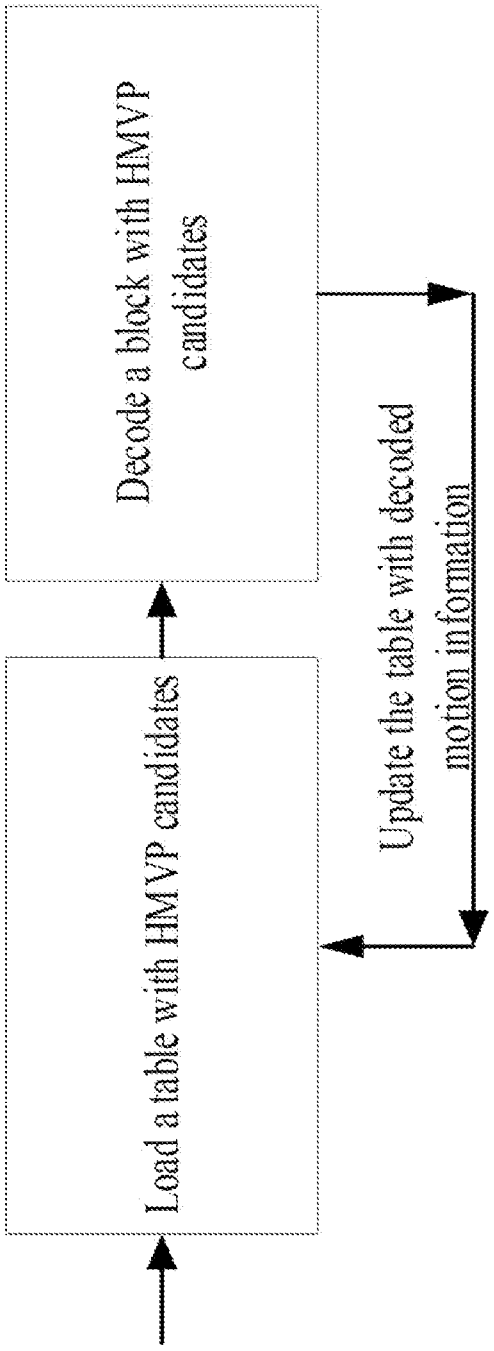

Load a table with HMVP candidates
Decode a block with HMVP candidates
Update the table with decoded motion information

FIG. 31

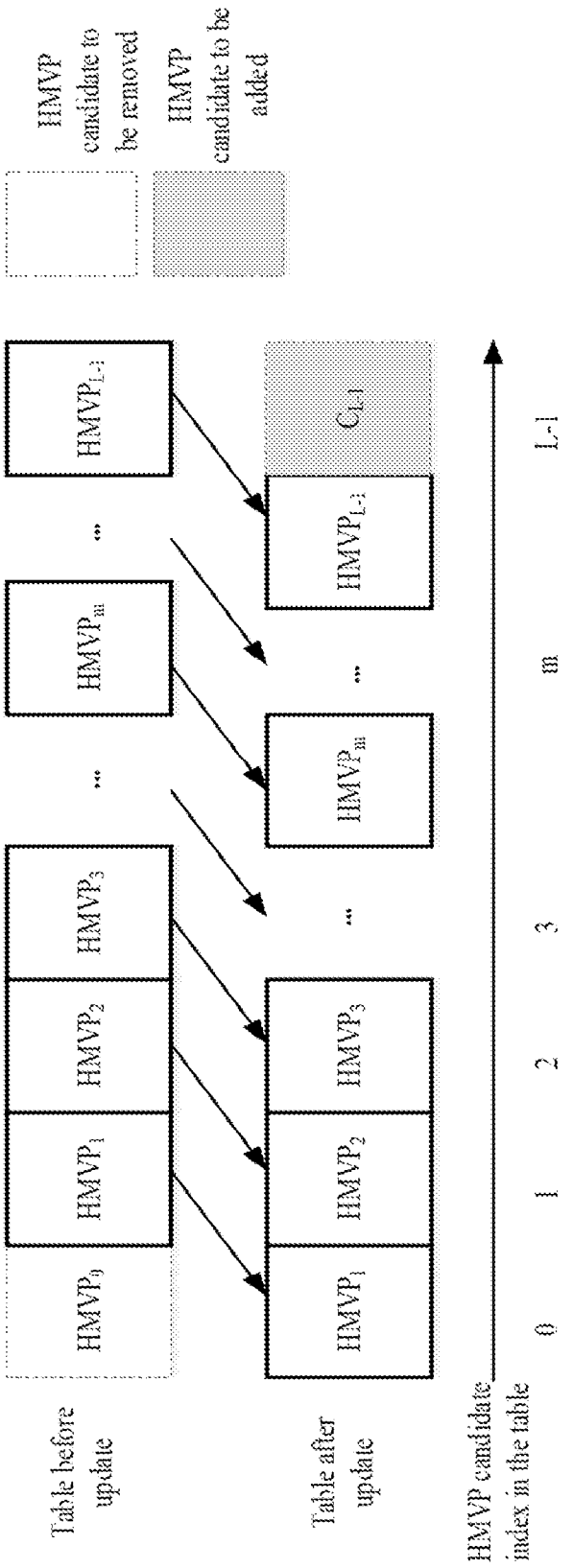

HMVP candidate to be removed
HMVP candidate to be added
Table before update
Table after update
HMVP candidate index in the table
0
1
2
3
m
L-1
HMVP0
HMVP1
HMVP2
HMVP3
HMVPm
HMVPL-1
HMVP1
HMVP2
HMVP3
HMVPm
HMVPL-1
CL-1

FIG. 32

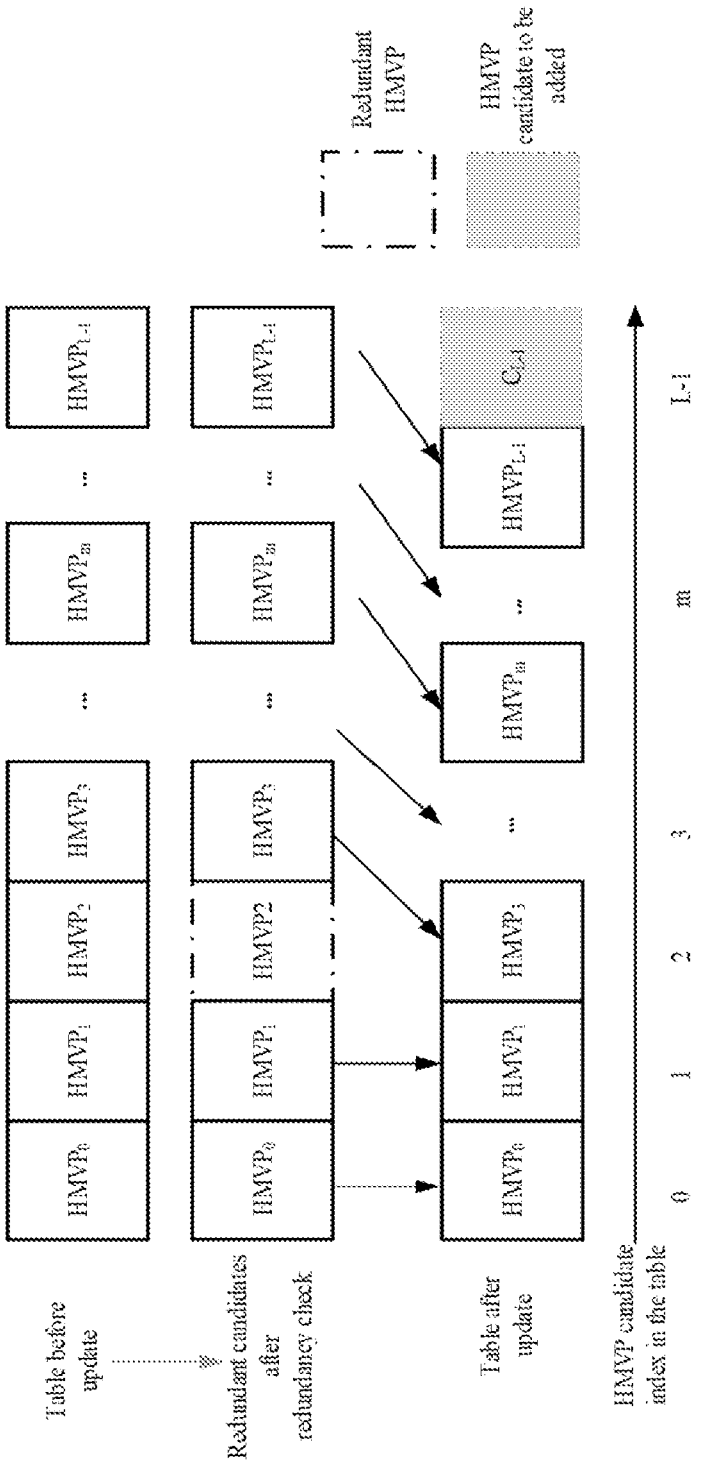

Redundant HMVP
HMVP candidate to be added
Table before update
Redundant candidates after redundancy check
Table after update
HMVP candidate index in the table
0
1
2
3
m
L-1
HMVP2

FIG. 33A

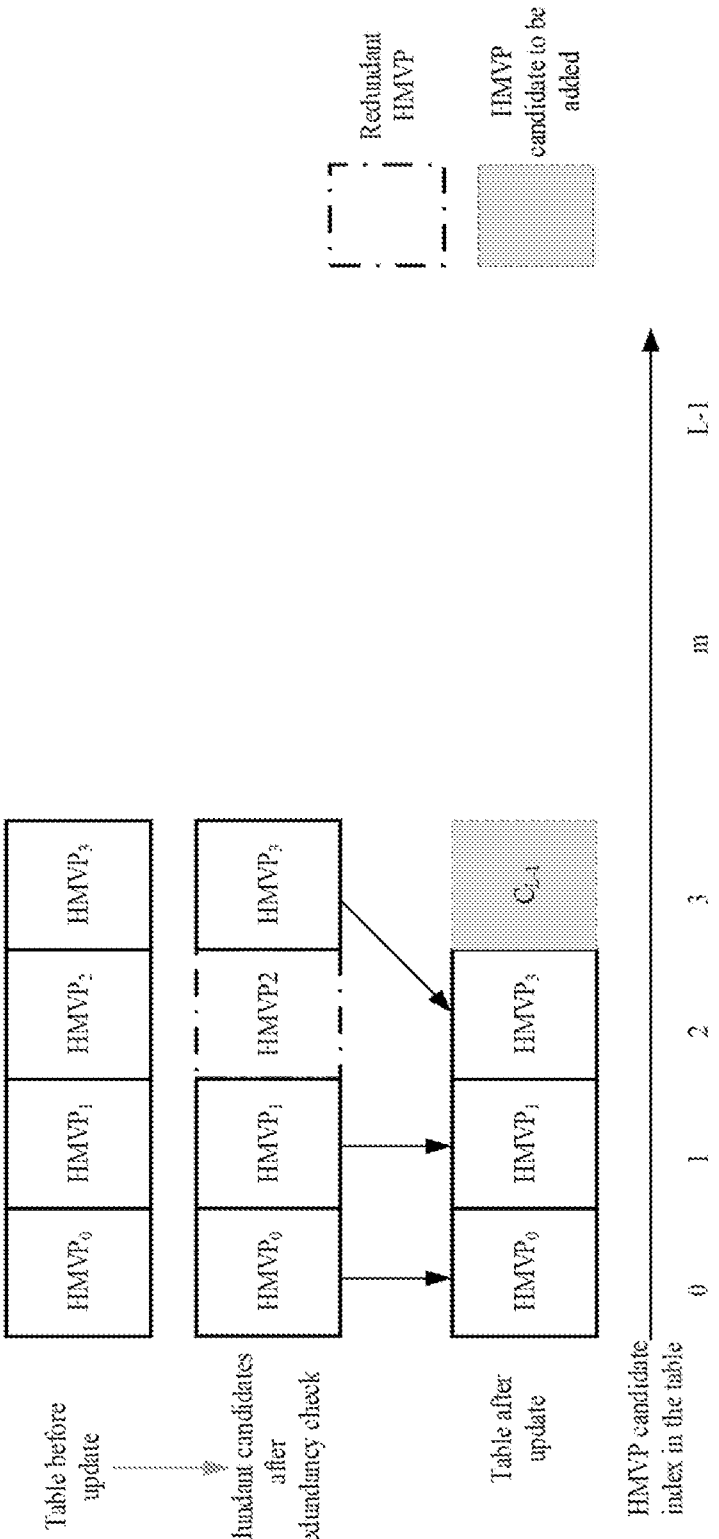

Redundant HMVP
HMVP candidate to be added
Table before update
Redundant candidates after redundancy check
Table after update
HMVP candidate index in the table
HMVP0
HMVP1
HMVP2
HMVP3
Cnew
0
1
2
3
m
L-1

FIG. 33B

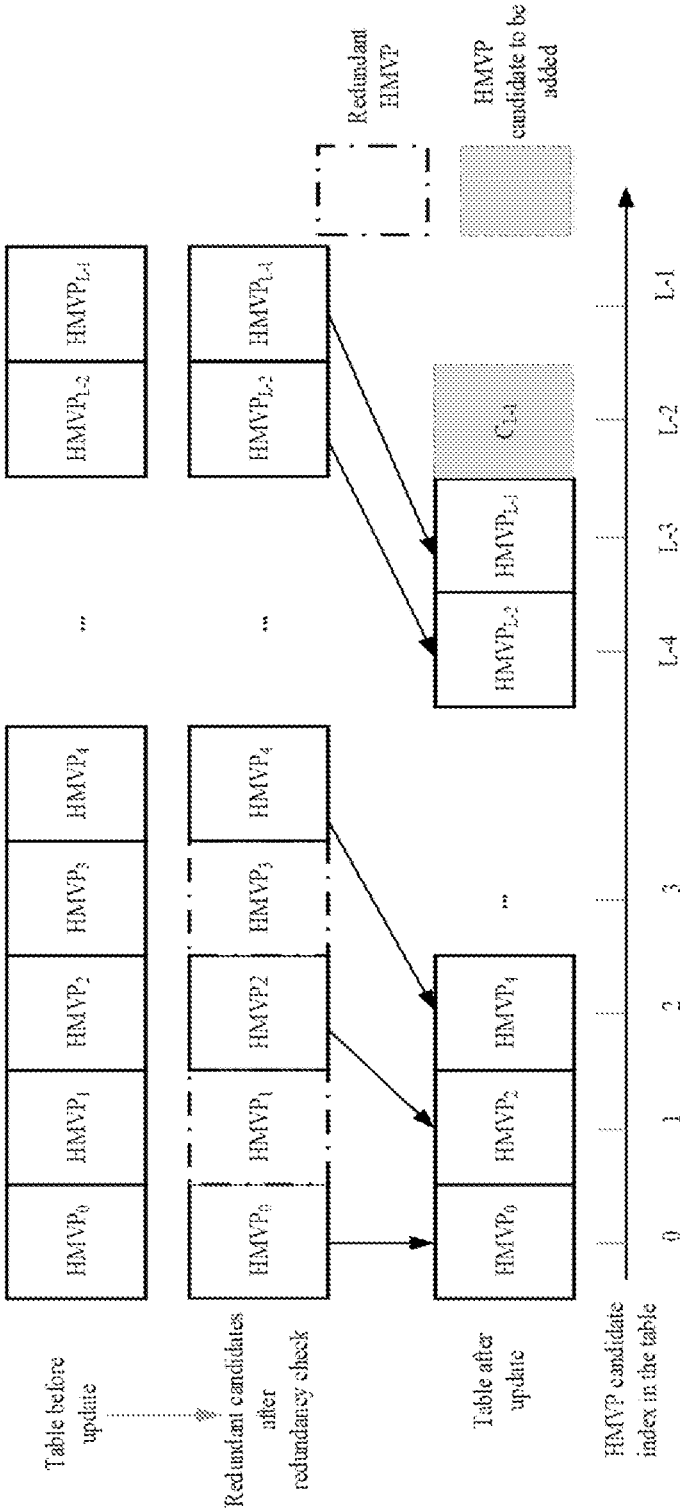


Table before update
Redundant candidates after redundancy check
Table after update
HMVP candidate index in the table
Redundant HMVP
HMVP candidate to be added
HMVP0
HMVP1
HMVP2
HMVP3
HMVP4
HMVPL-4
HMVPL-3
HMVPL-2
HMVPL-1
C-4
0
1
2
3
L-4
L-3
L-2
L-1

FIG. 34A

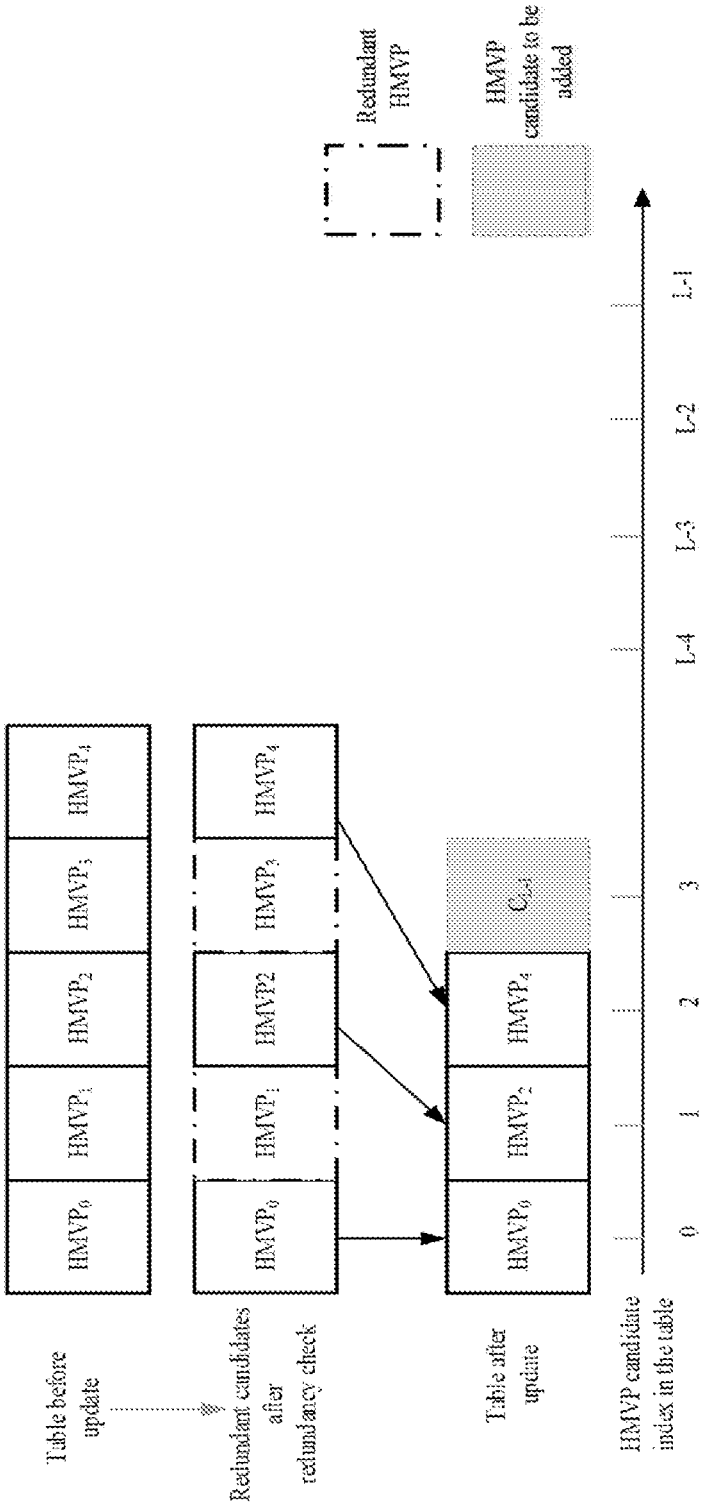

Redundant HMVP
HMVP candidate to be added
HMVP0
HMVP1
HMVP2
HMVP3
HMVP4
HMVP2
C-3
0
1
2
3
L-4
L-3
L-2
L-1
Table before update
Redundant candidates after redundancy check
Table after update
HMVP candidate index in the table

FIG. 34B