FIG 1

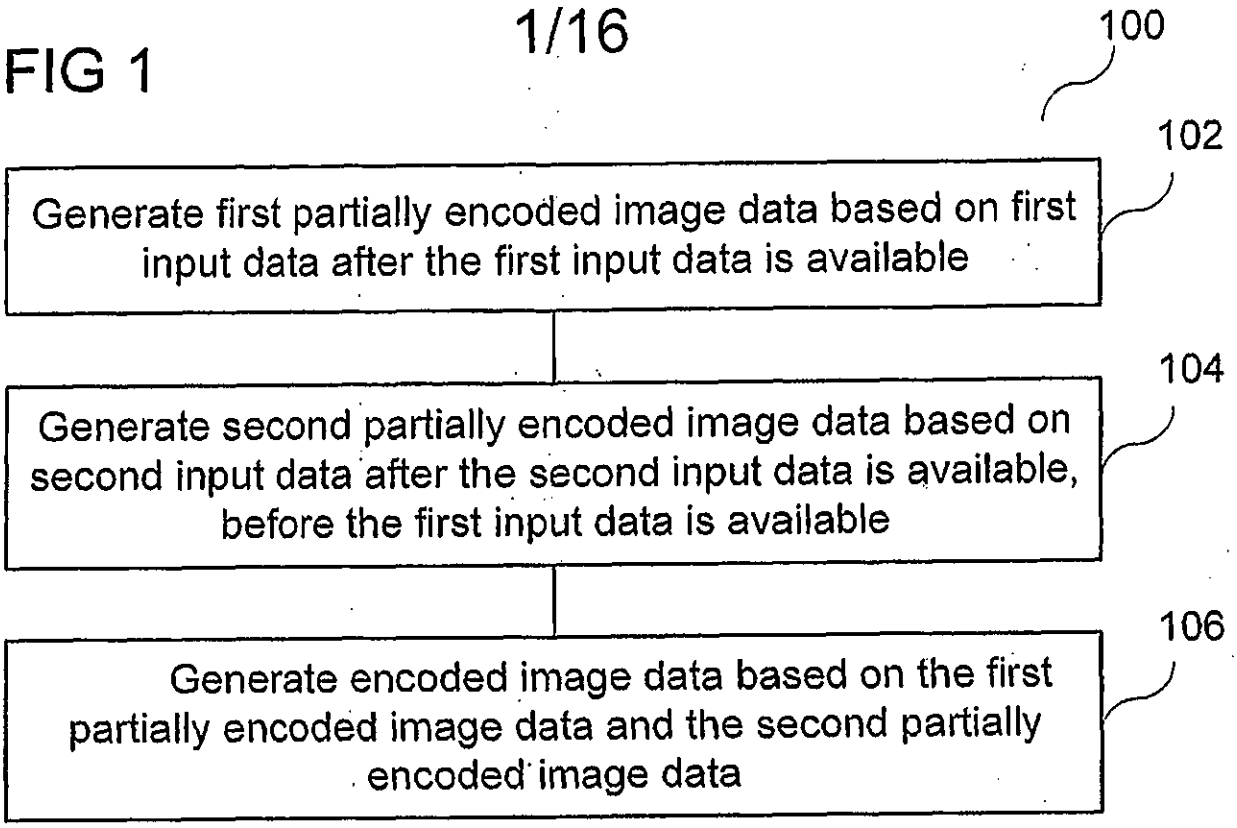

100
102
Generate first partially encoded image data based on first input data after the first input data is available
104
Generate second partially encoded image data based on second input data after the second input data is available, before the first input data is available
106
Generate encoded image data based on the first partially encoded image data and the second partially encoded image data

FIG 2

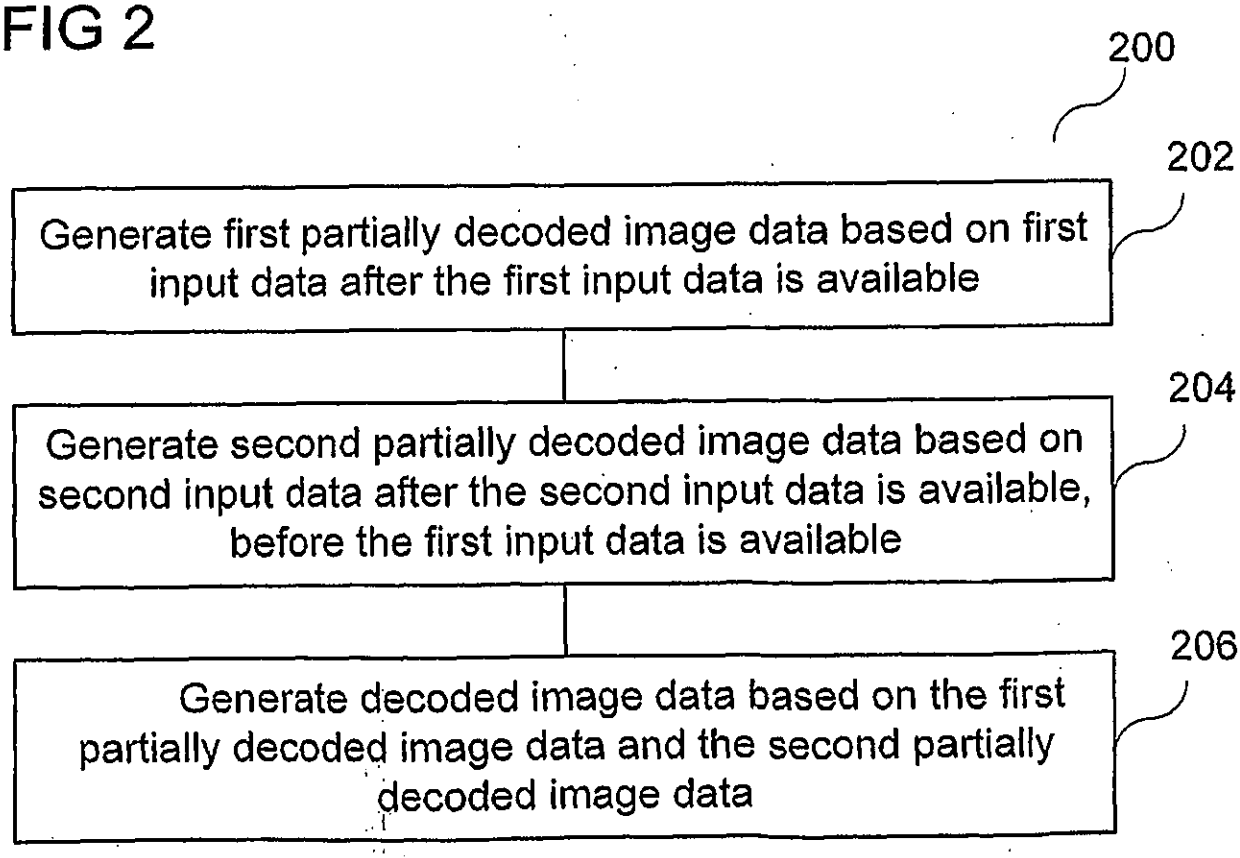

200
202
Generate first partially decoded image data based on first input data after the first input data is available
204
Generate second partially decoded image data based on second input data after the second input data is available, before the first input data is available
206
Generate decoded image data based on the first partially decoded image data and the second partially decoded image data

FIG 3

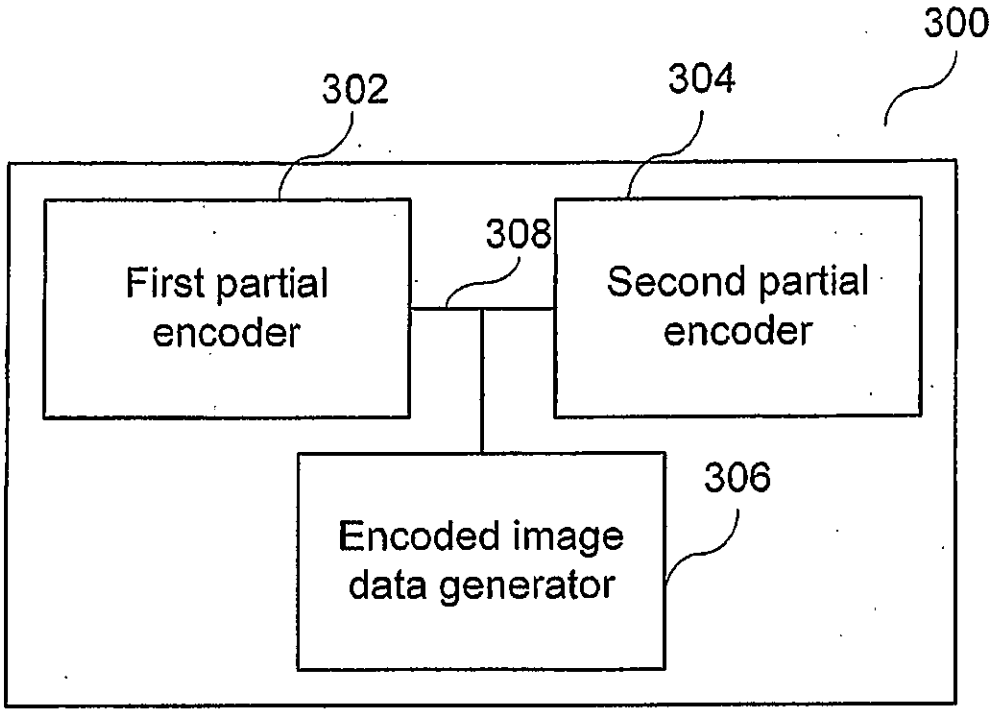

300
302
304
308
First partial encoder
Second partial encoder
306
Encoded image data generator

FIG 4

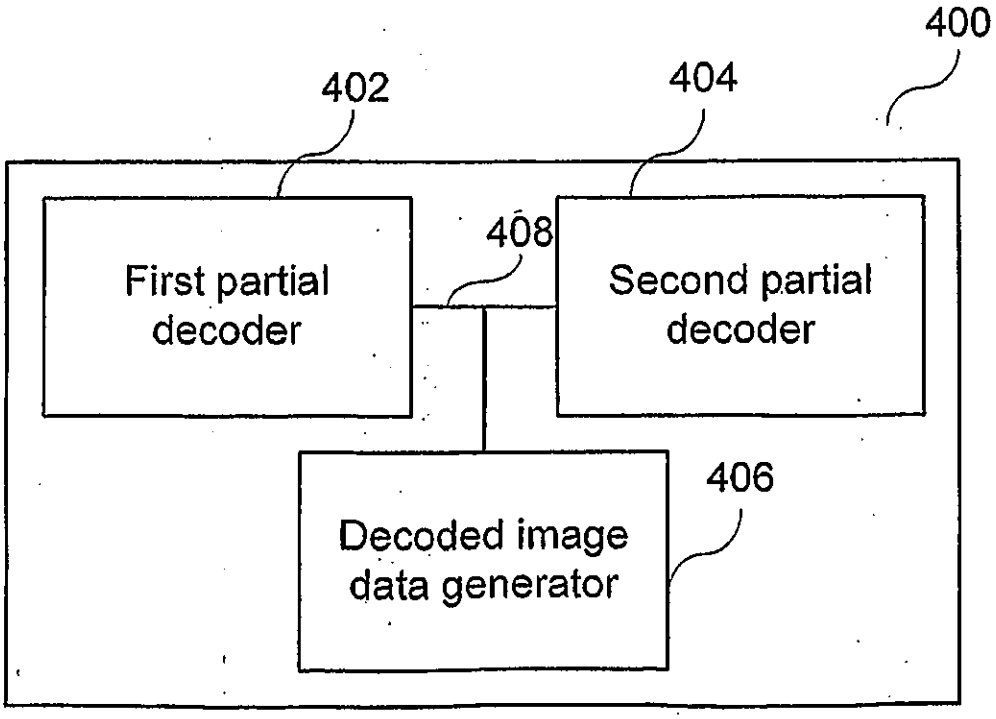

400
402
404
408
First partial decoder
Second partial decoder
406
Decoded image data generator

FIG 5

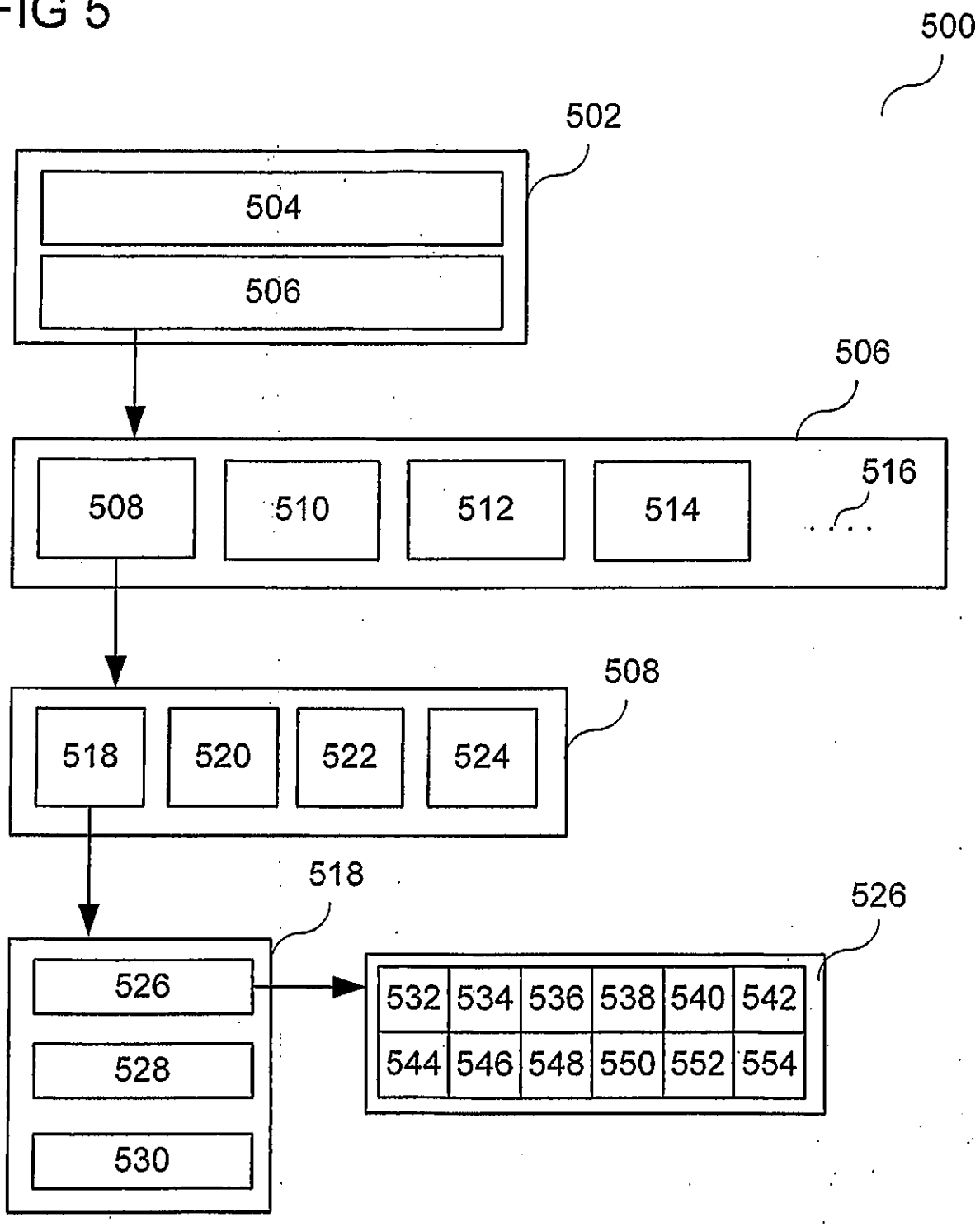

500
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536
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552
554

FIG 6

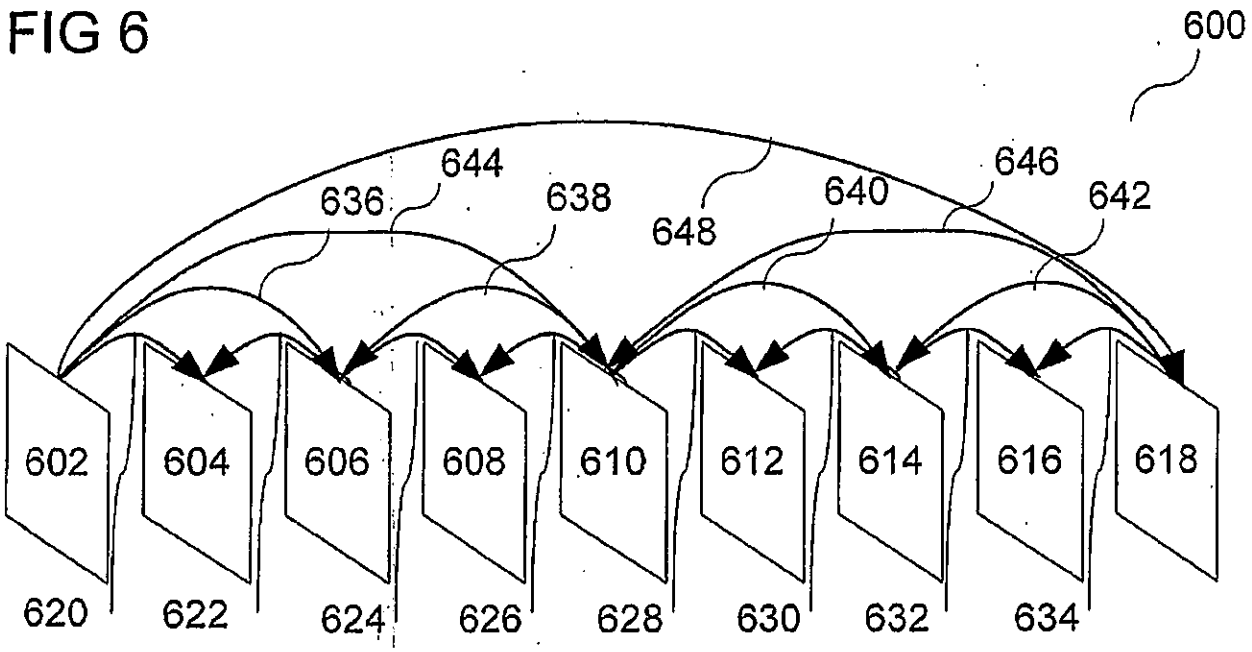

600
644
636
638
648
640
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642
602
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606
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630
632
634

FIG 7

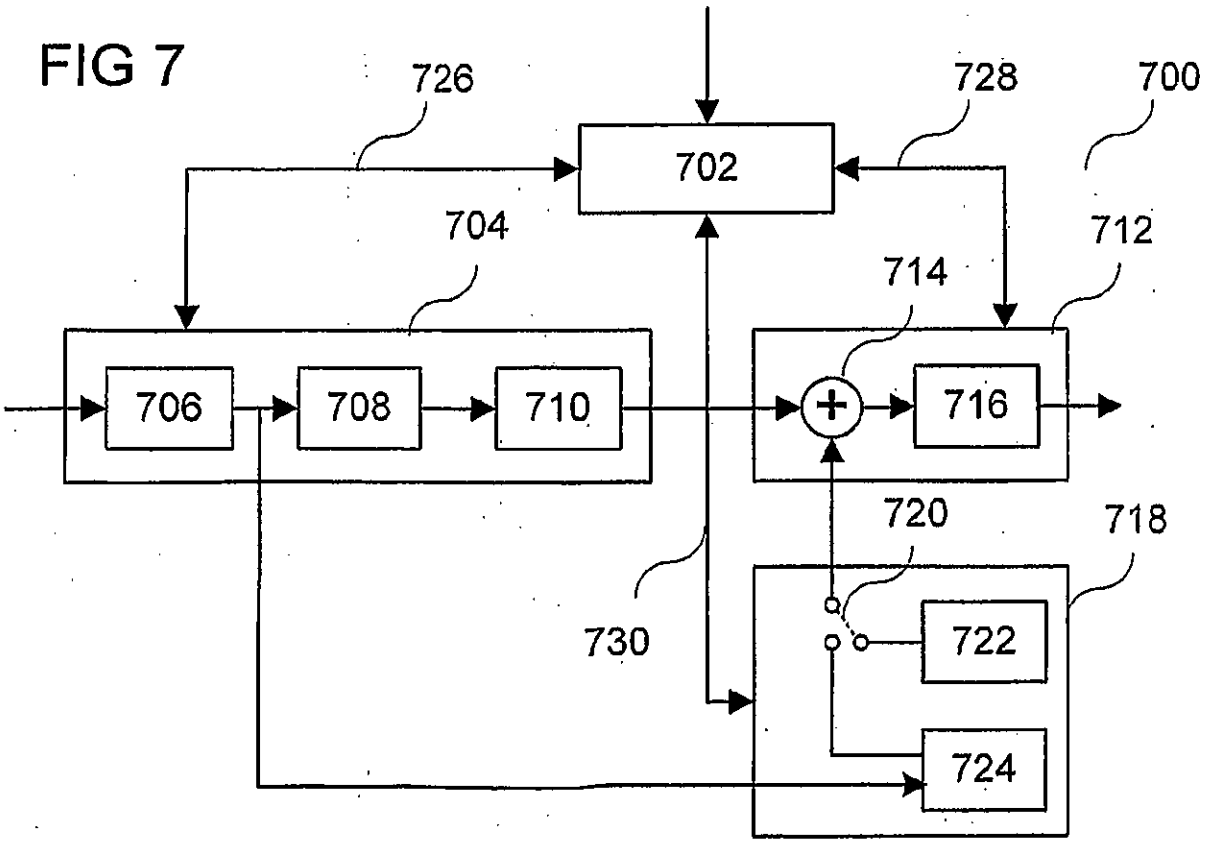

726
728
700
702
704
712
714
706
708
710
716
720
718
730
722
724

FIG 8

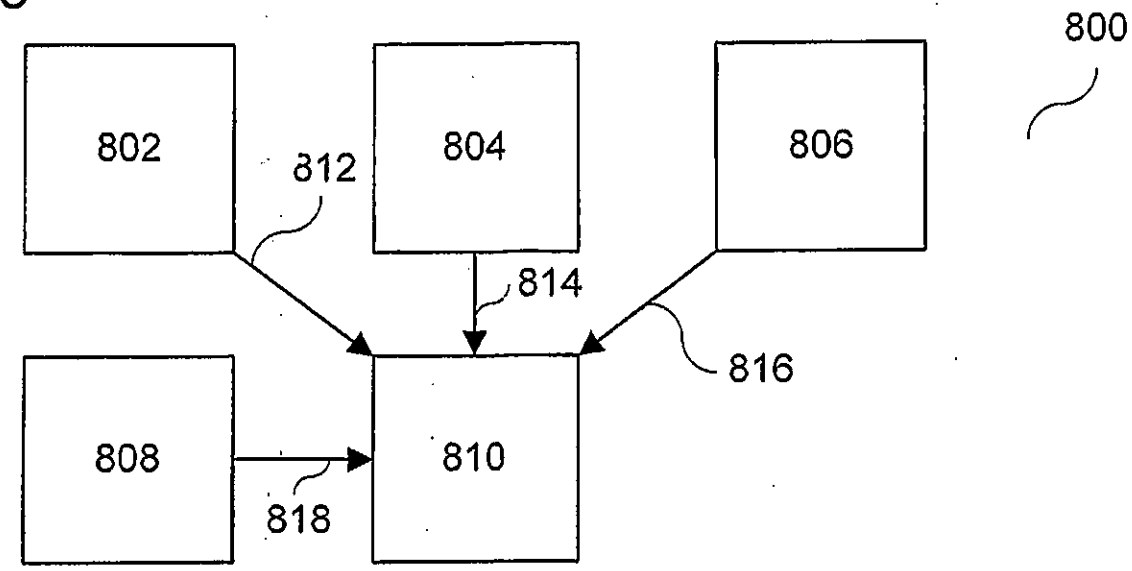

800
802
804
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812
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810
818

FIG 9

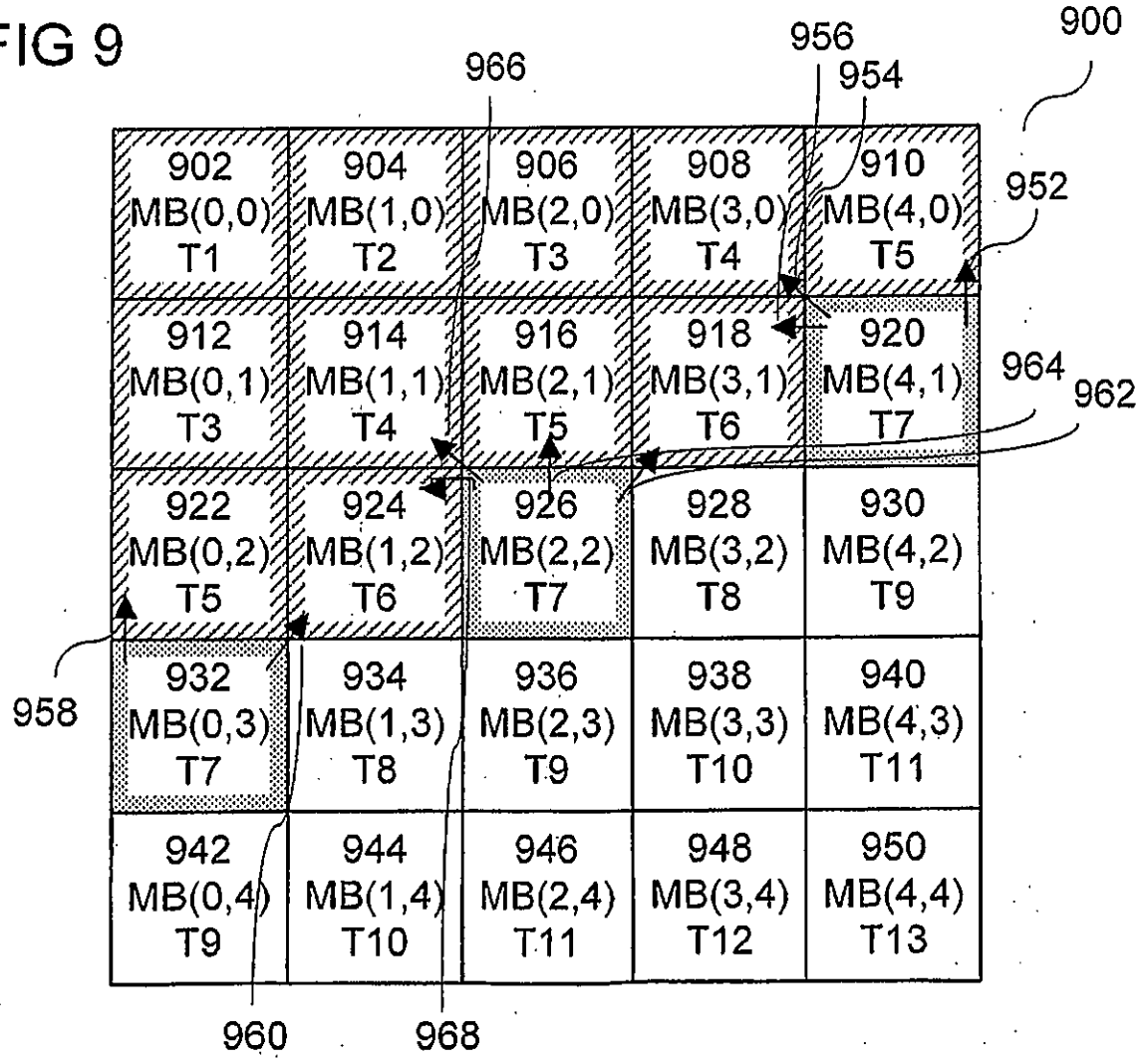

900
966
956
954
952
902 MB(0,0) T1
904 MB(1,0) T2
906 MB(2,0) T3
908 MB(3,0) T4
910 MB(4,0) T5
912 MB(0,1) T3
914 MB(1,1) T4
916 MB(2,1) T5
918 MB(3,1) T6
920 MB(4,1) T7
964
962
922 MB(0,2) T5
924 MB(1,2) T6
926 MB(2,2) T7
928 MB(3,2) T8
930 MB(4,2) T9
958
932 MB(0,3) T7
934 MB(1,3) T8
936 MB(2,3) T9
938 MB(3,3) T10
940 MB(4,3) T11
942 MB(0,4) T9
944 MB(1,4) T10
946 MB(2,4) T11
948 MB(3,4) T12
950 MB(4,4) T13
960
968

FIG 10A

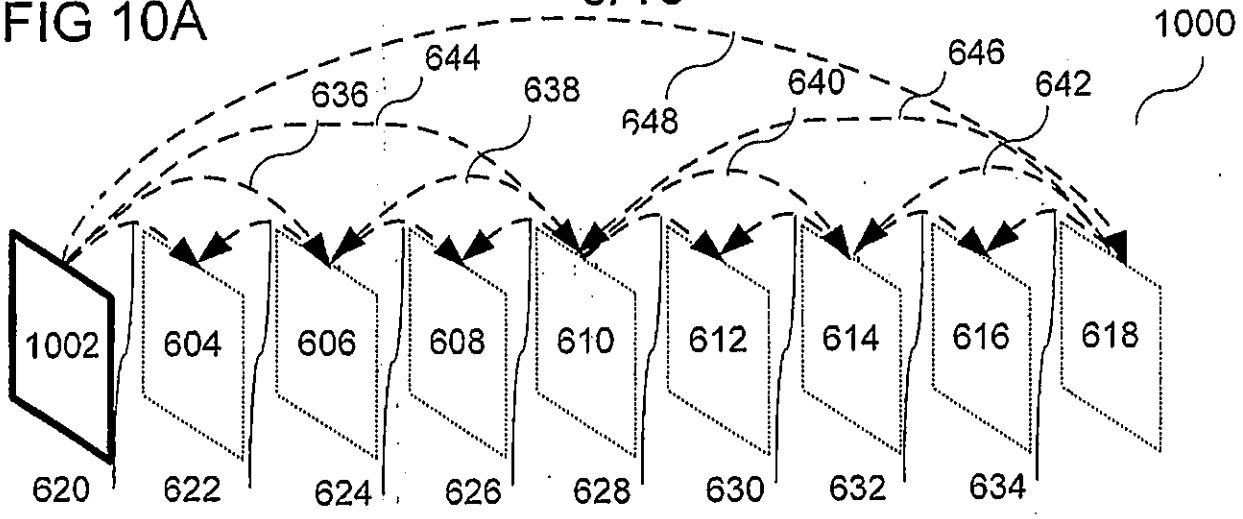


FIG 10B

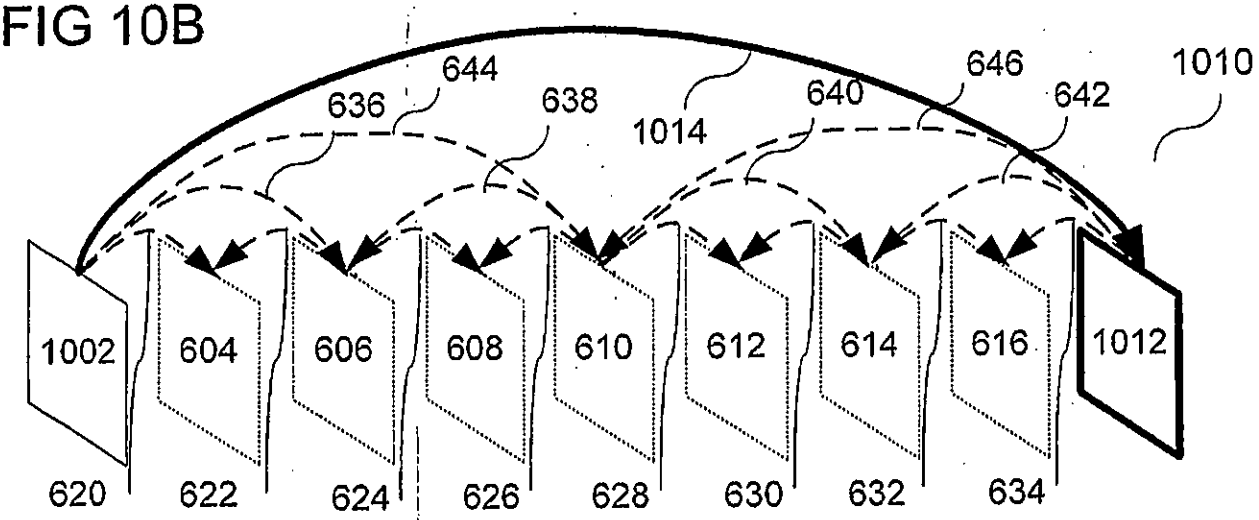


FIG 10C

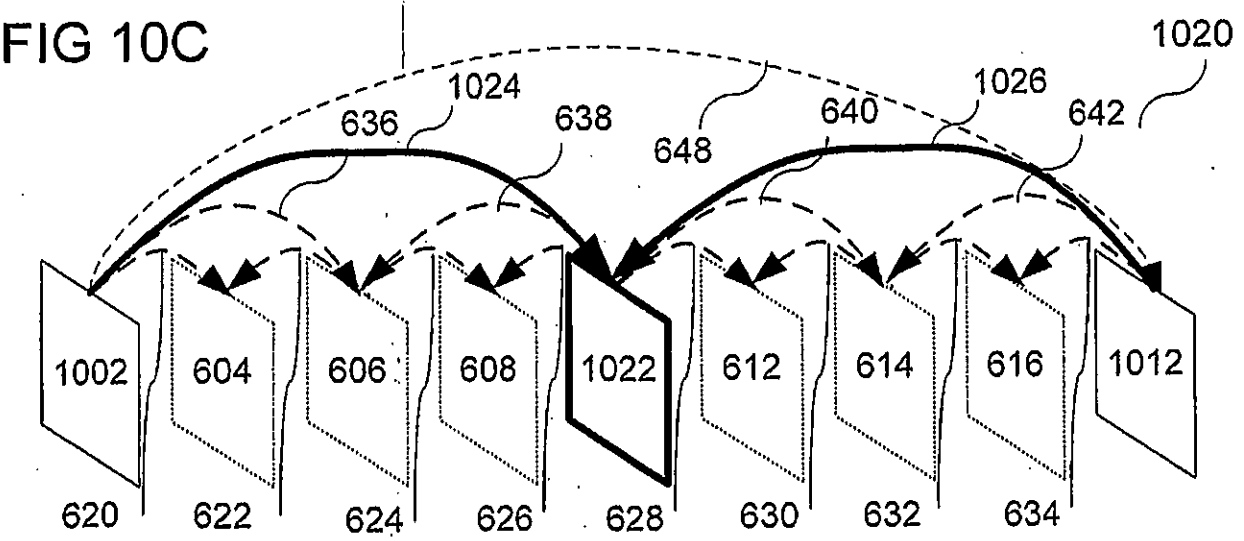


FIG 10D

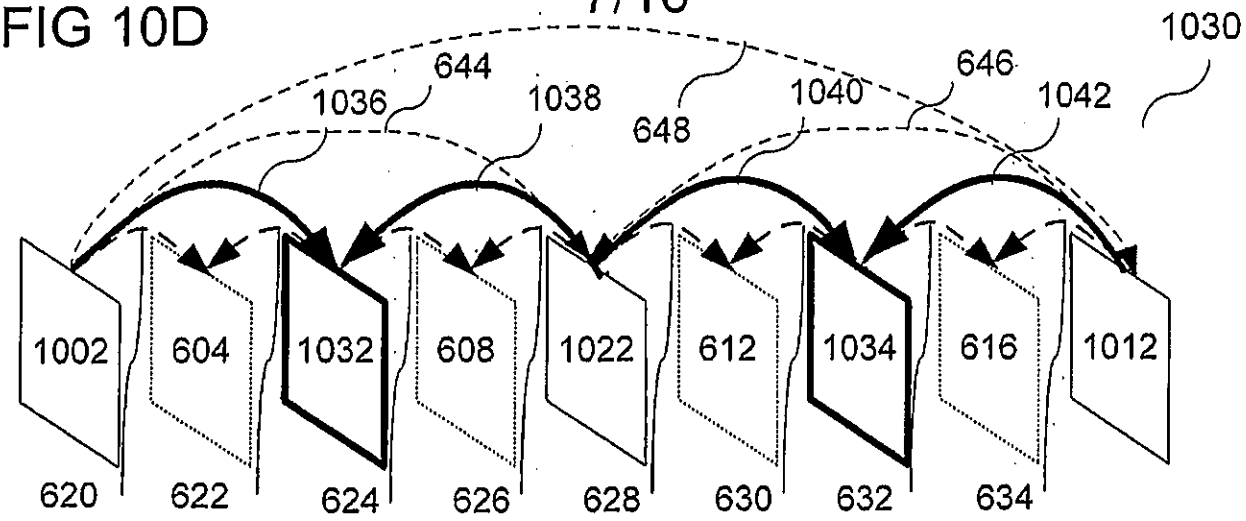


FIG 10E

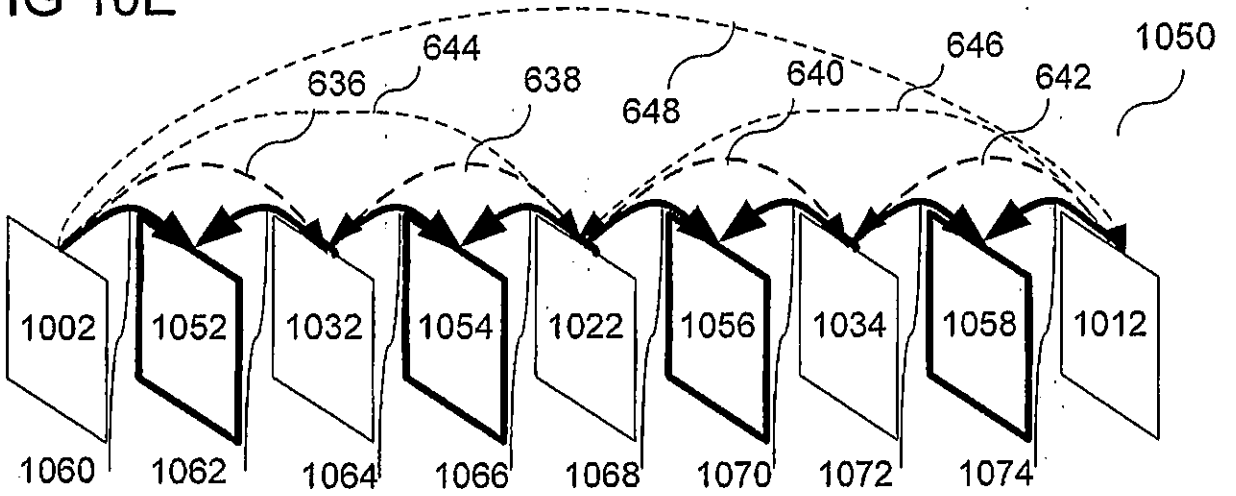


FIG 10F

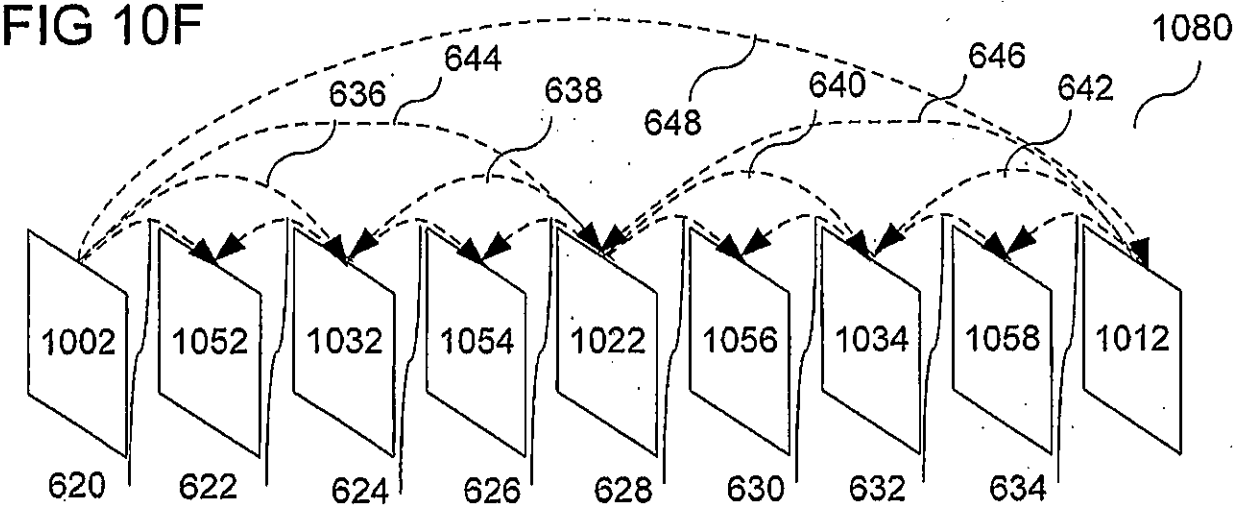


FIG 11A

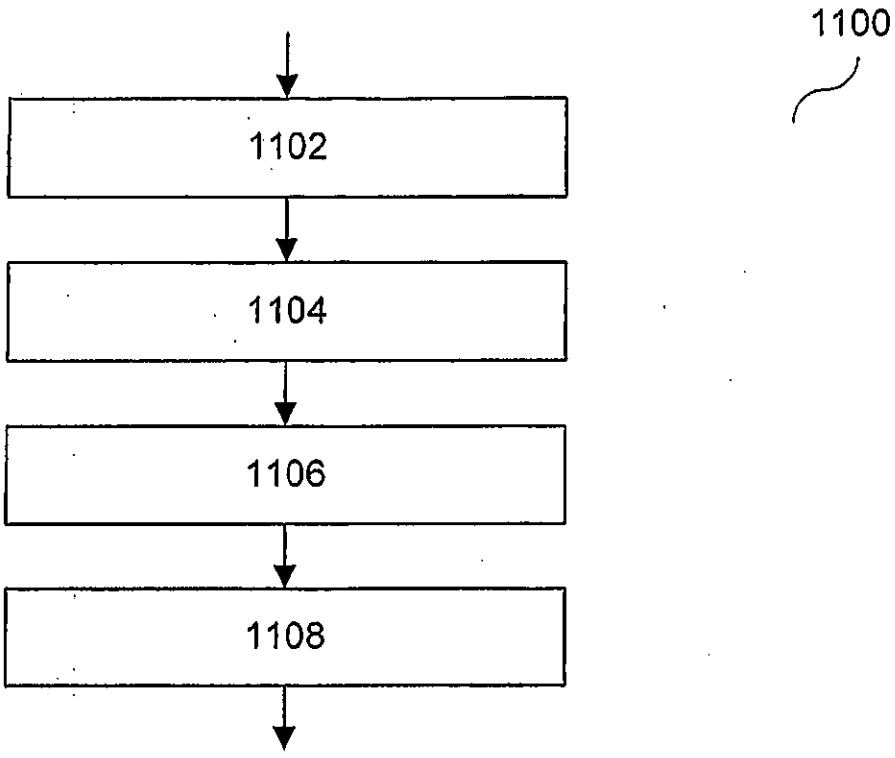


FIG 11B

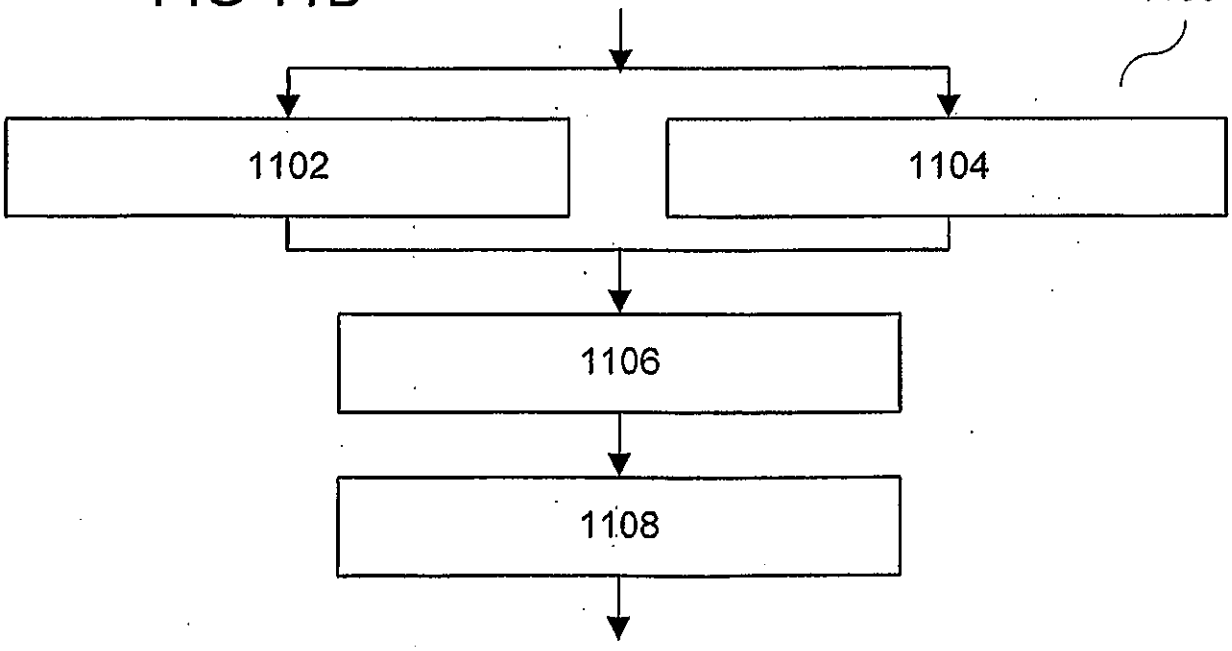


FIG 12

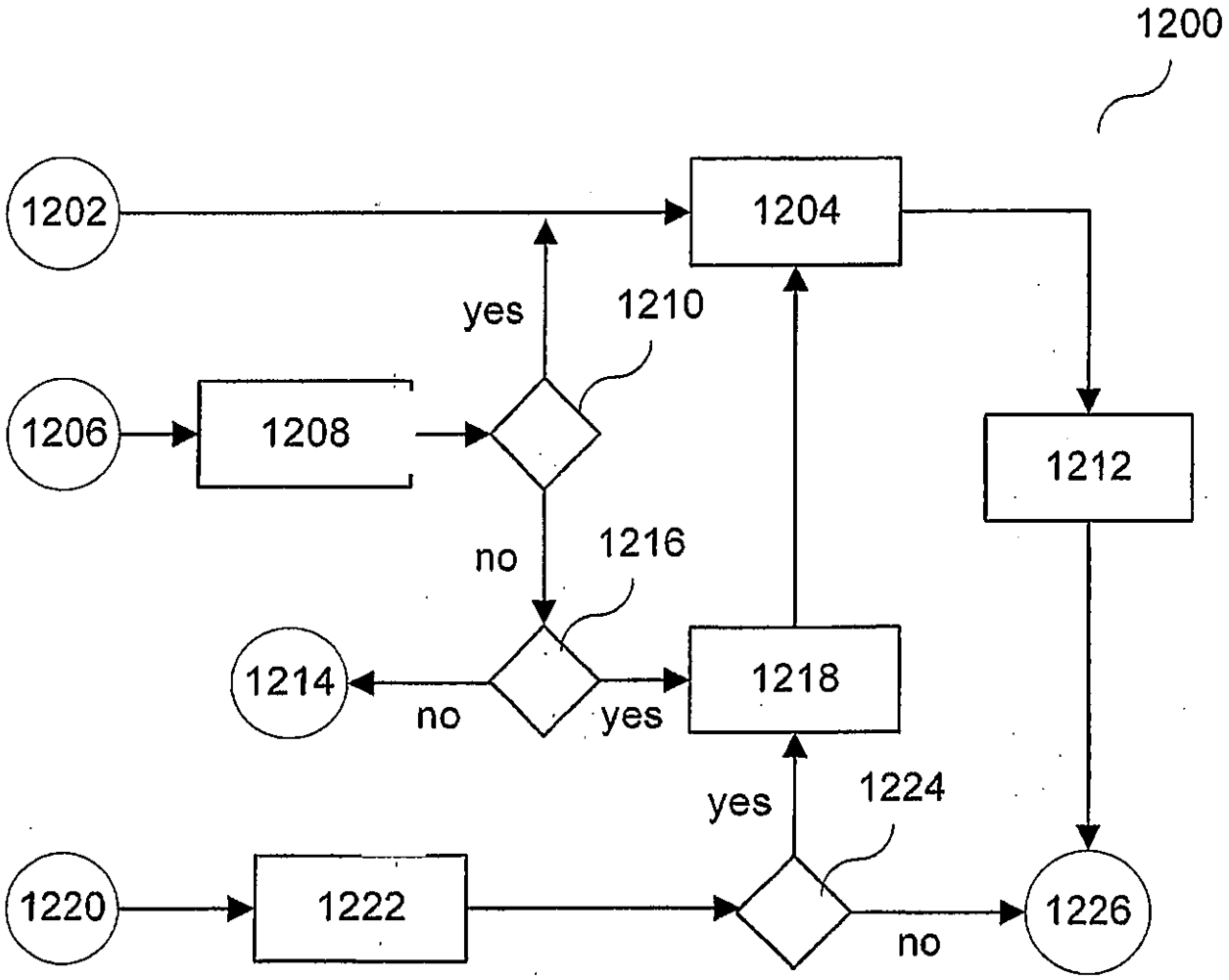

1200
1202
1204
yes
1210
1206
1208
1212
no
1216
1214
no
yes
1218
yes
1224
1220
1222
1226
no

FIG 13A

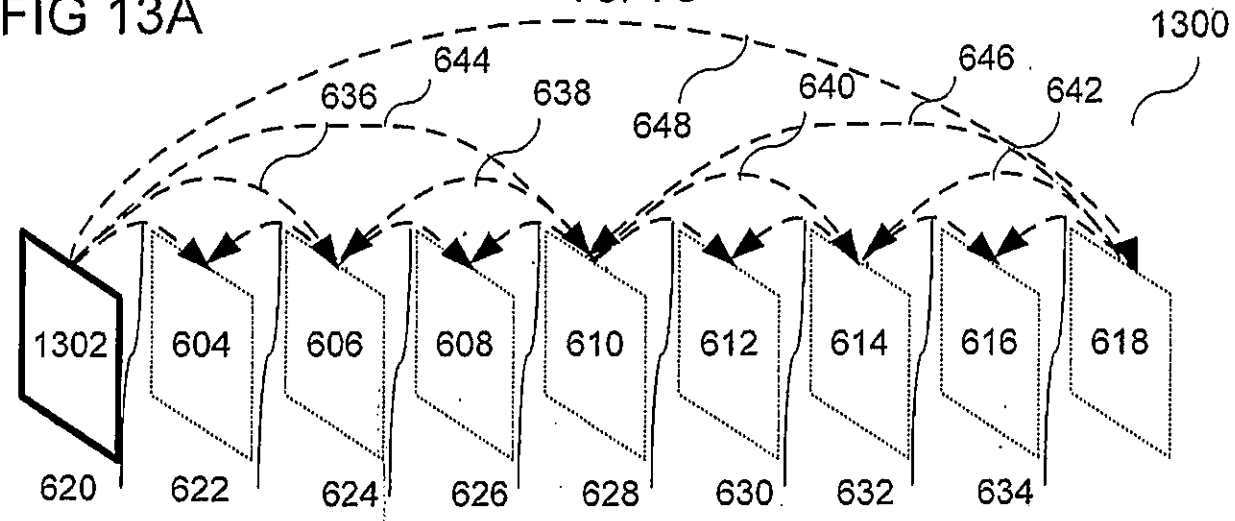


FIG 13B

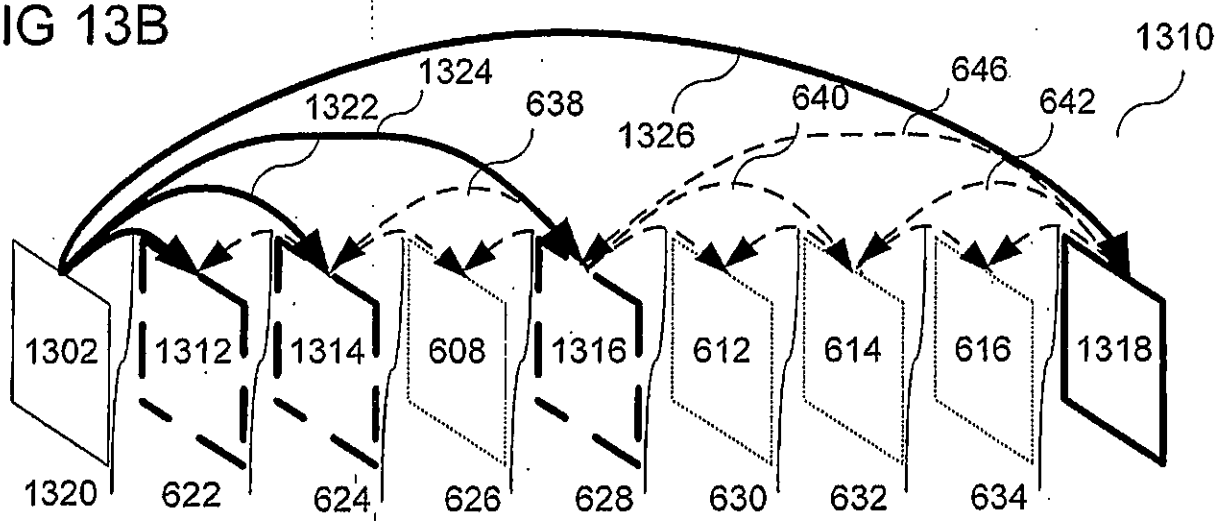


FIG 13C

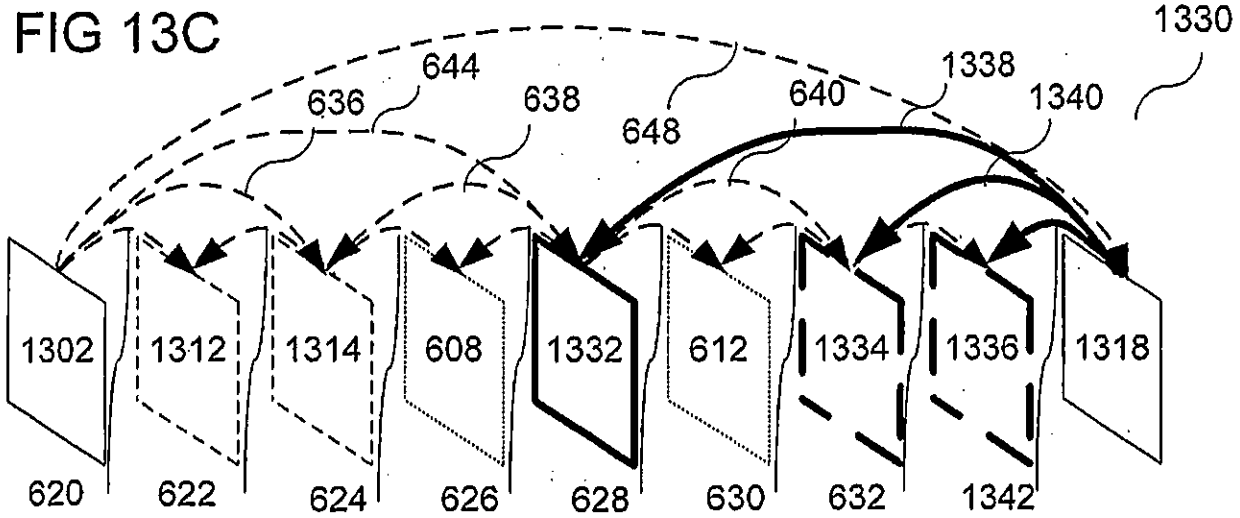


FIG 13D

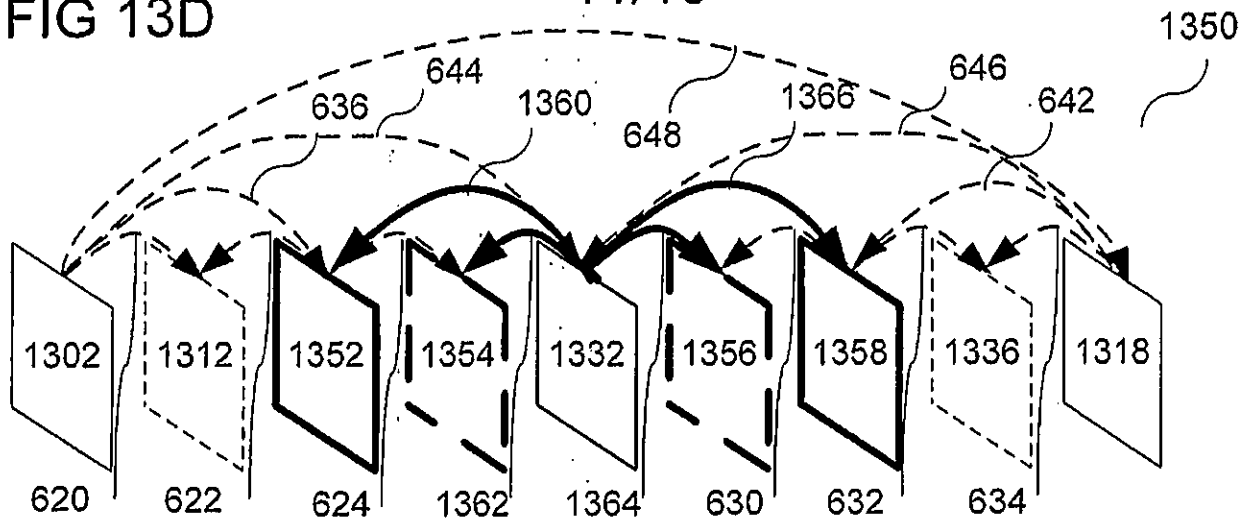


FIG 13E

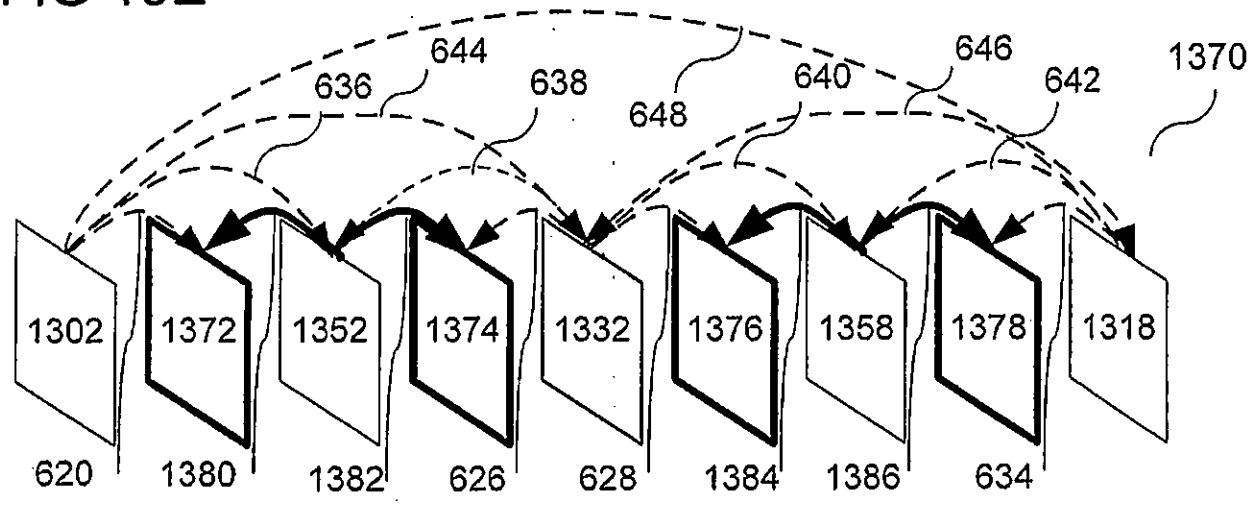


FIG 13F

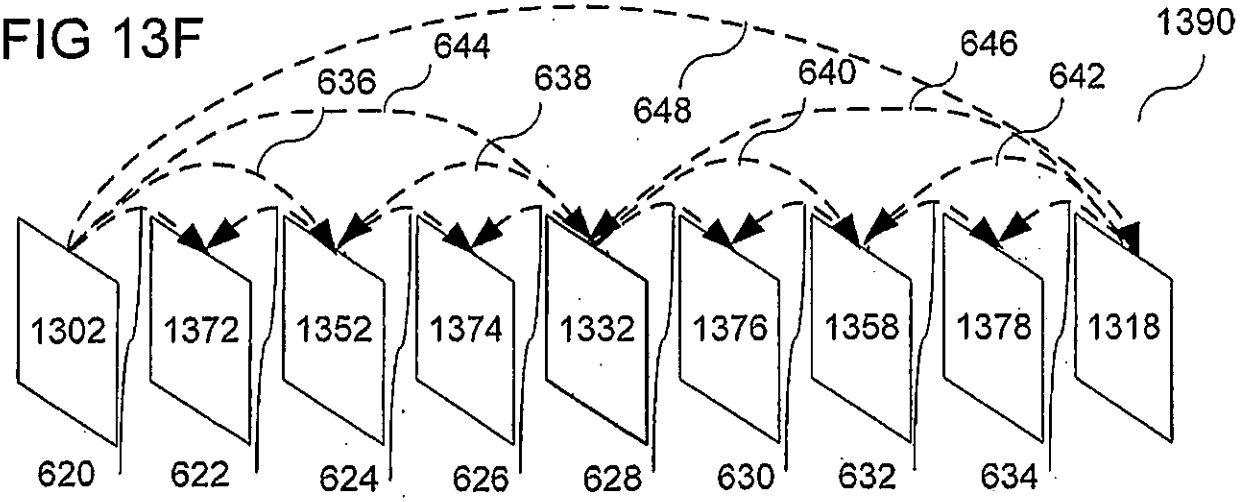


FIG 14

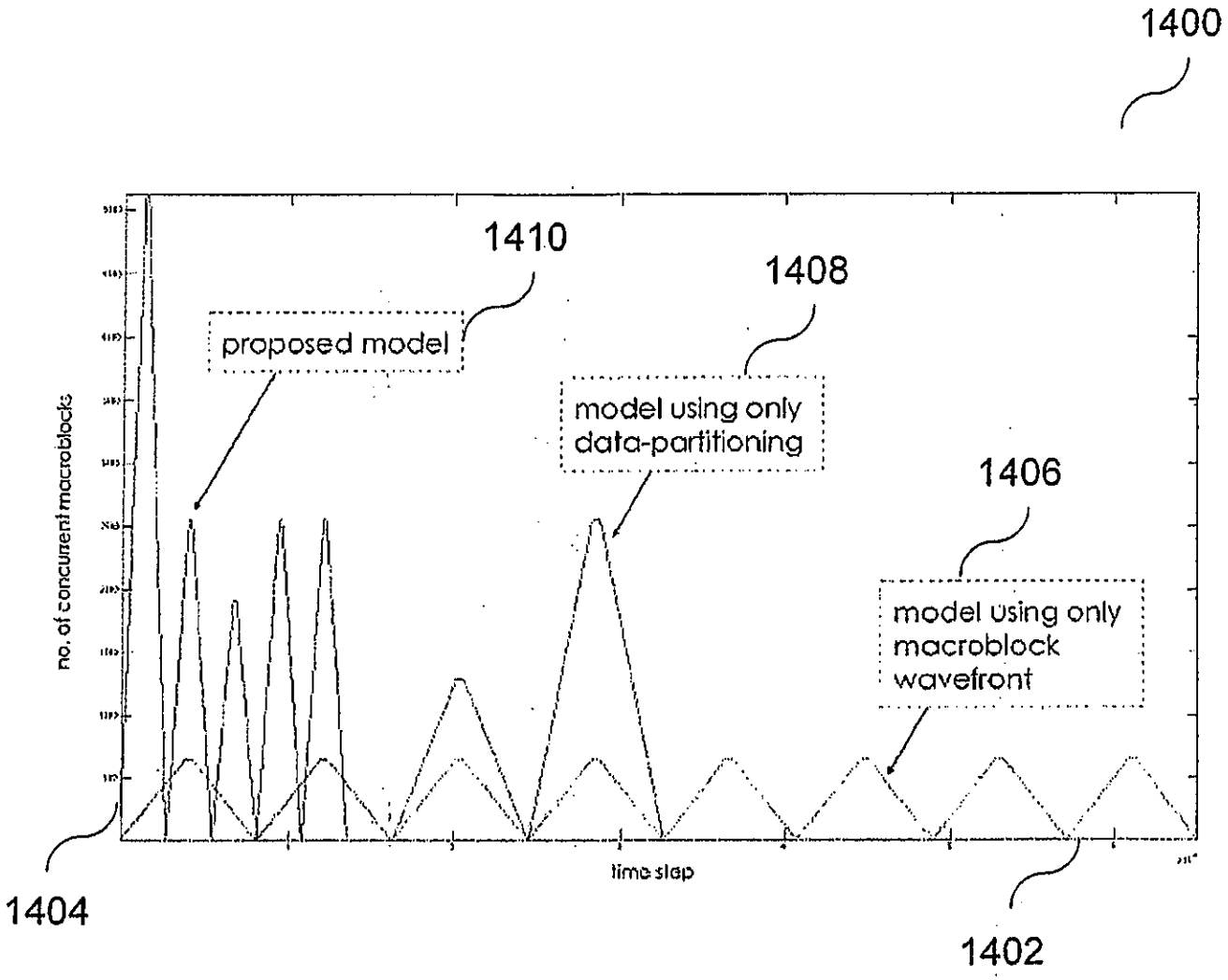

1400
1410
1408
1406
proposed model
model using only data-partitioning
model using only macroblock wavefront
no. of concurrent macroblocks
time step
1404
1402

FIG 15

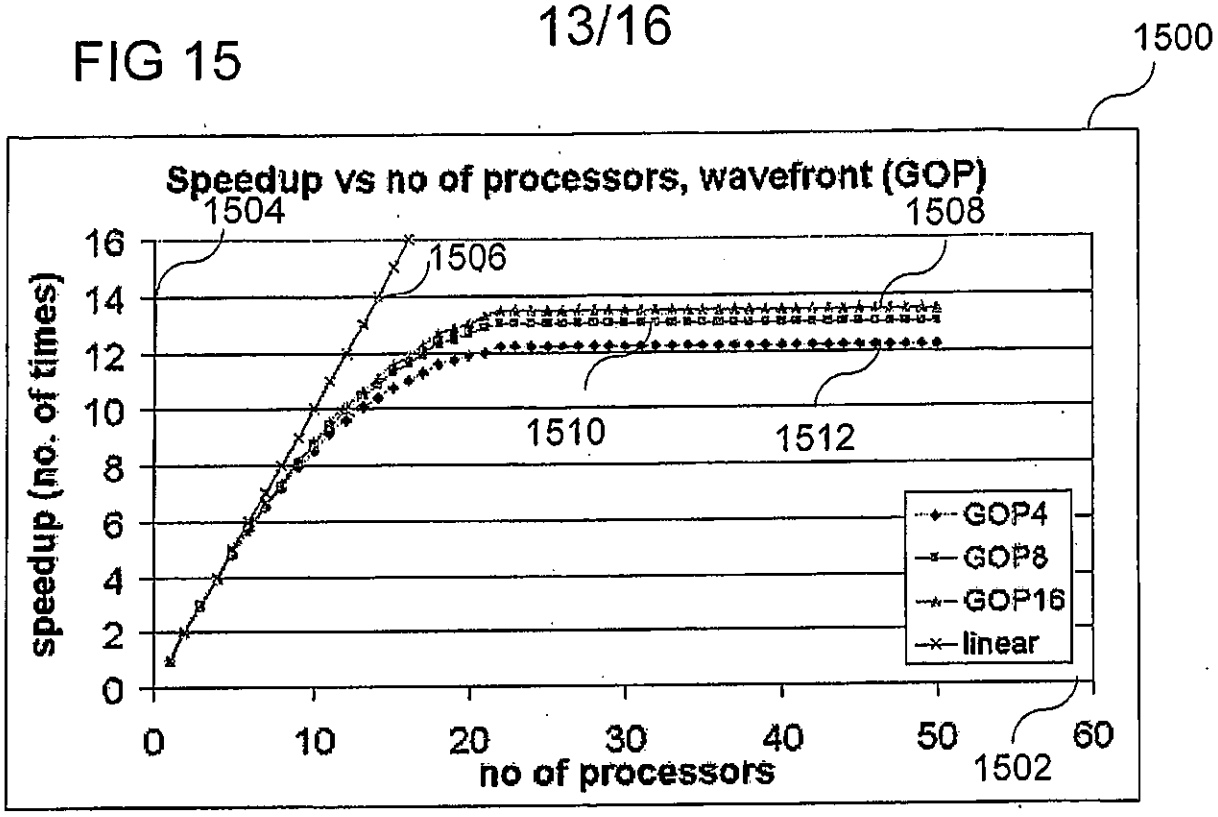

1500
Speedup vs no of processors, wavefront (GOP)
1504
1508
1506
1510
1512
1502
speedup (no. of times)
no of processors
GOP4
GOP8
GOP16
linear
0
2
4
6
8
10
12
14
16
0
10
20
30
40
50
60

FIG 16

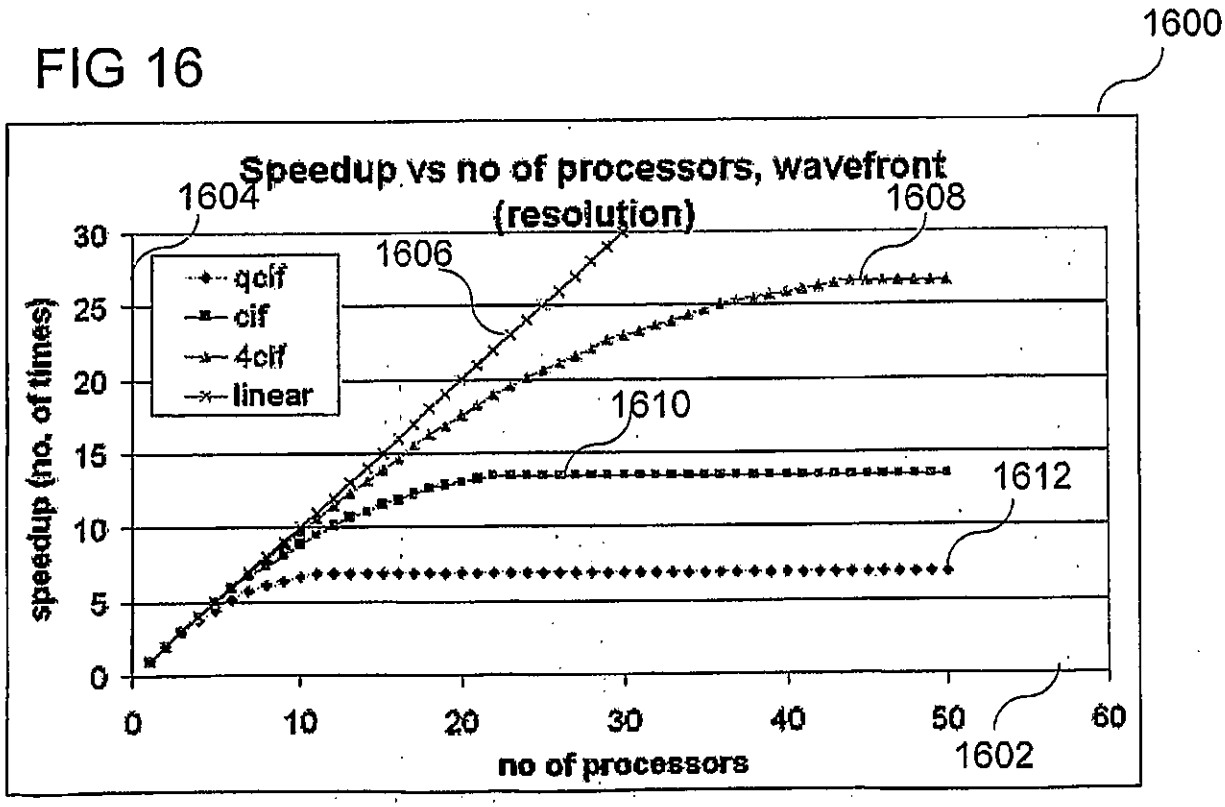

1600
Speedup vs no of processors, wavefront (resolution)
1604
1608
1606
1610
1612
1602
speedup (no. of times)
no of processors
qcif
cif
4cif
linear
0
5
10
15
20
25
30
0
10
20
30
40
50
60

FIG 17

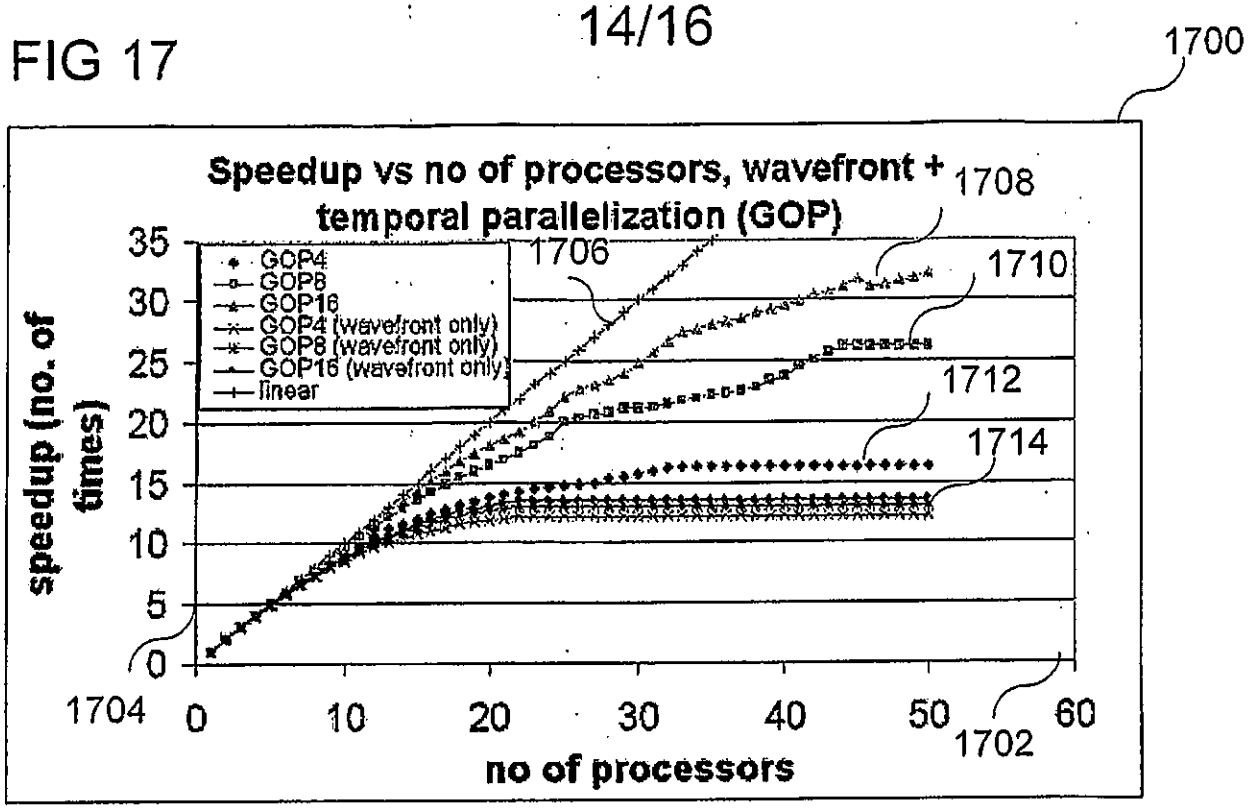

1700
Speedup vs no of processors, wavefront + temporal parallelization (GOP)
1708
1706
1710
1712
1714
GOP4
GOP8
GOP16
GOP4 (wavefront only)
GOP8 (wavefront only)
GOP16 (wavefront only)
linear
speedup (no. of times)
35
30
25
20
15
10
5
0
1704
0
10
20
30
40
50
60
1702
no of processors

FIG 18

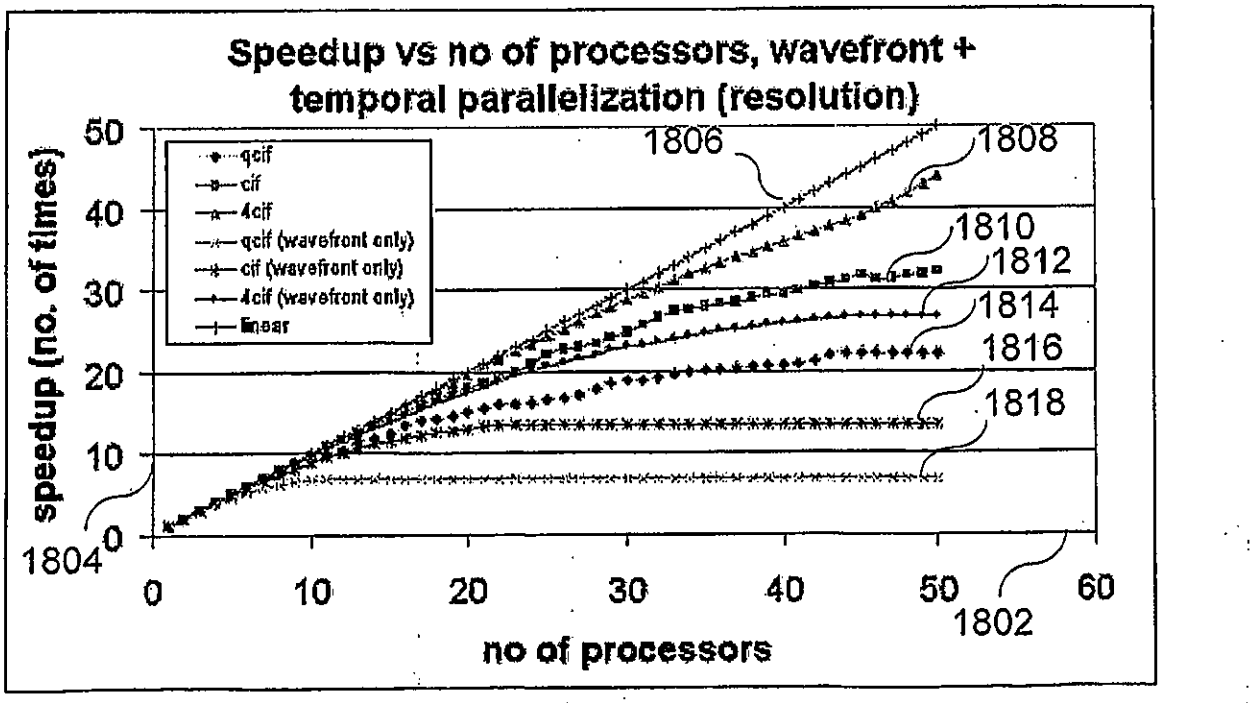

1800
Speedup vs no of processors, wavefront + temporal parallelization (resolution)
1806
1808
1810
1812
1814
1816
1818
qcif
cif
4cif
qcif (wavefront only)
cif (wavefront only)
4cif (wavefront only)
linear
speedup (no. of times)
50
40
30
20
10
0
1804
0
10
20
30
40
50
60
1802
no of processors

FIG 19

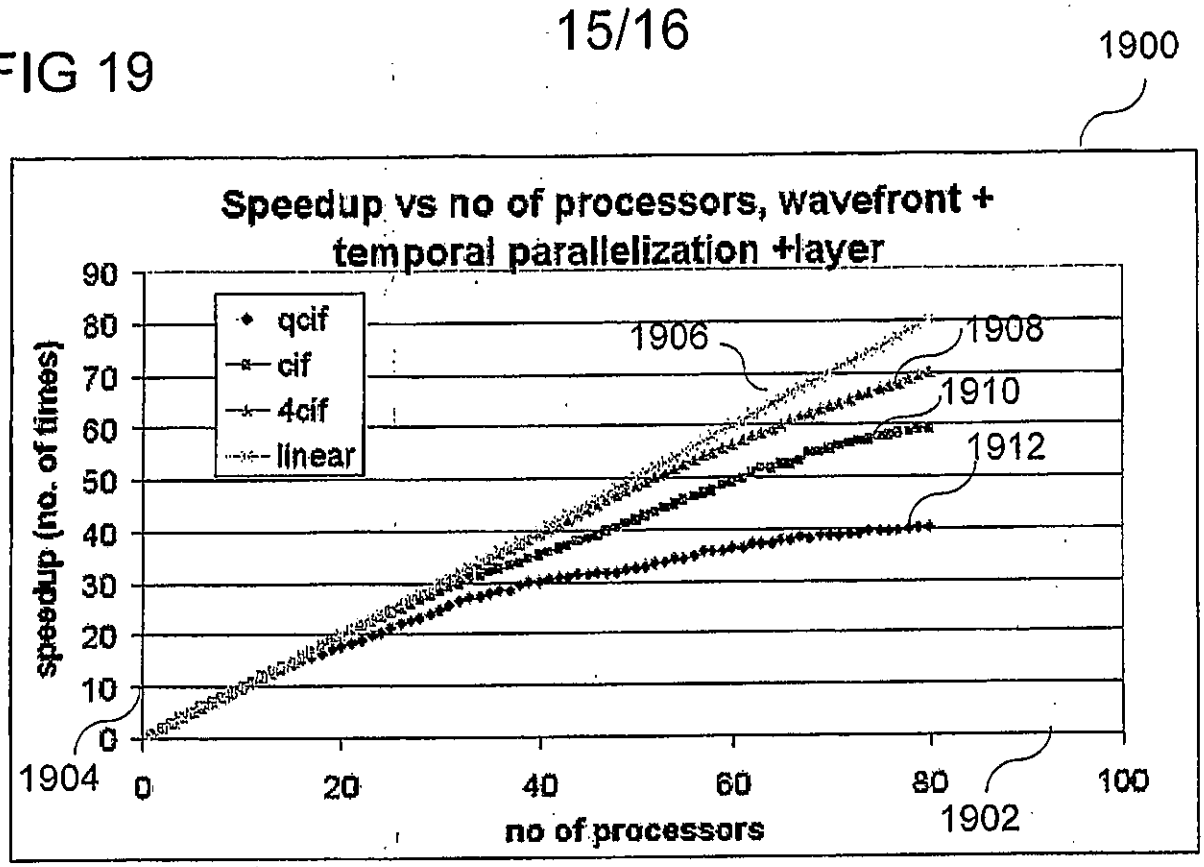
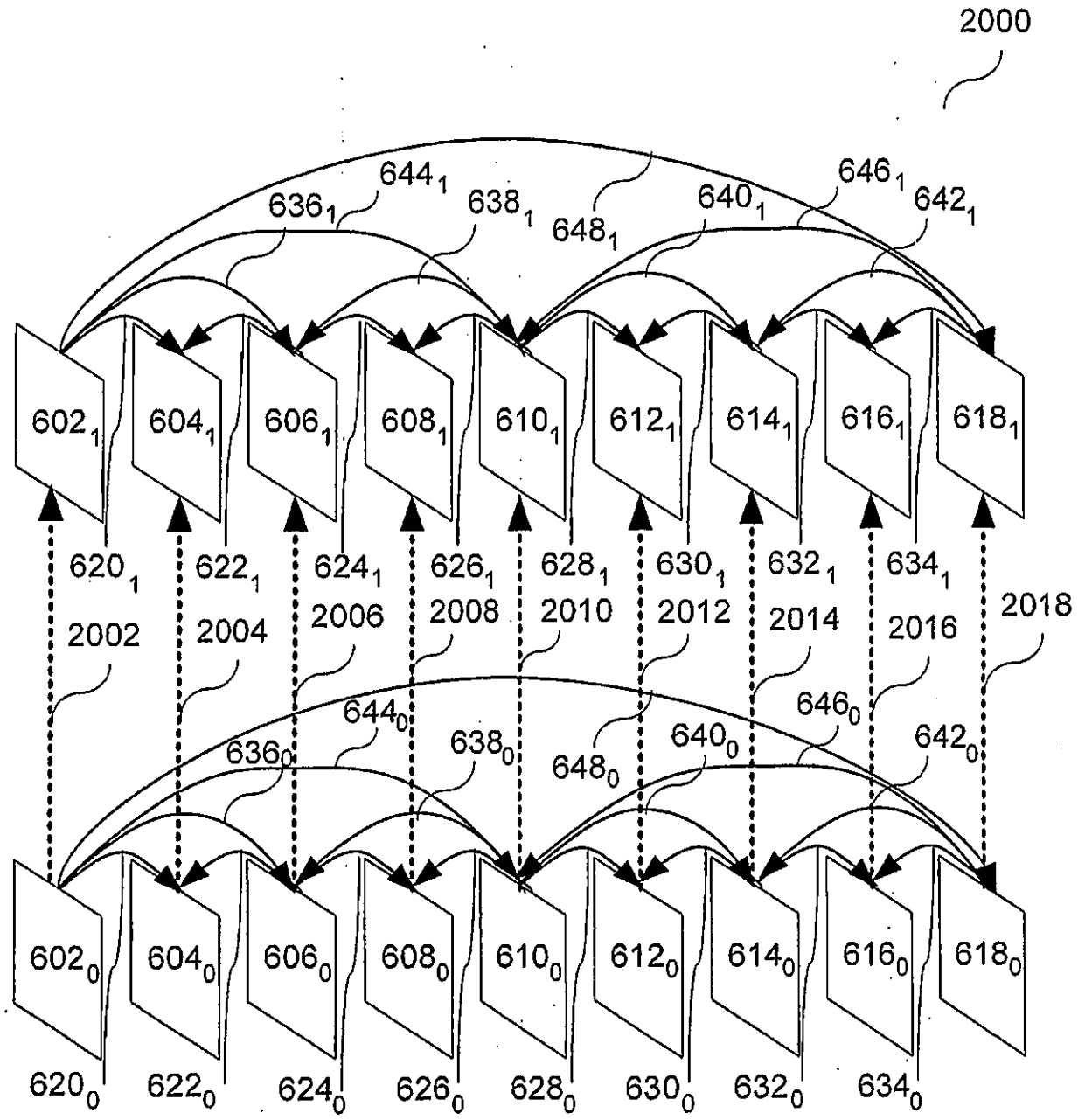

1900
Speedup vs no of processors, wavefront + temporal parallelization +layer
qcif
cif
4cif
linear
speedup (no. of times)
no of processors
0
10
20
30
40
50
60
70
80
90
0
20
40
60
80
100
1904
1906
1908
1910
1912
1902

FIG 20


2000
644_1
636_1
638_1
648_1
640_1
646_1
642_1
602_1
604_1
606_1
608_1
610_1
612_1
614_1
616_1
618_1
620_1
622_1
624_1
626_1
628_1
630_1
632_1
634_1
2002
2004
2006
2008
2010
2012
2014
2016
2018
644_0
636_0
638_0
648_0
640_0
646_0
642_0
602_0
604_0
606_0
608_0
610_0
612_0
614_0
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622_0
624_0
626_0
628_0
630_0
632_0
634_0