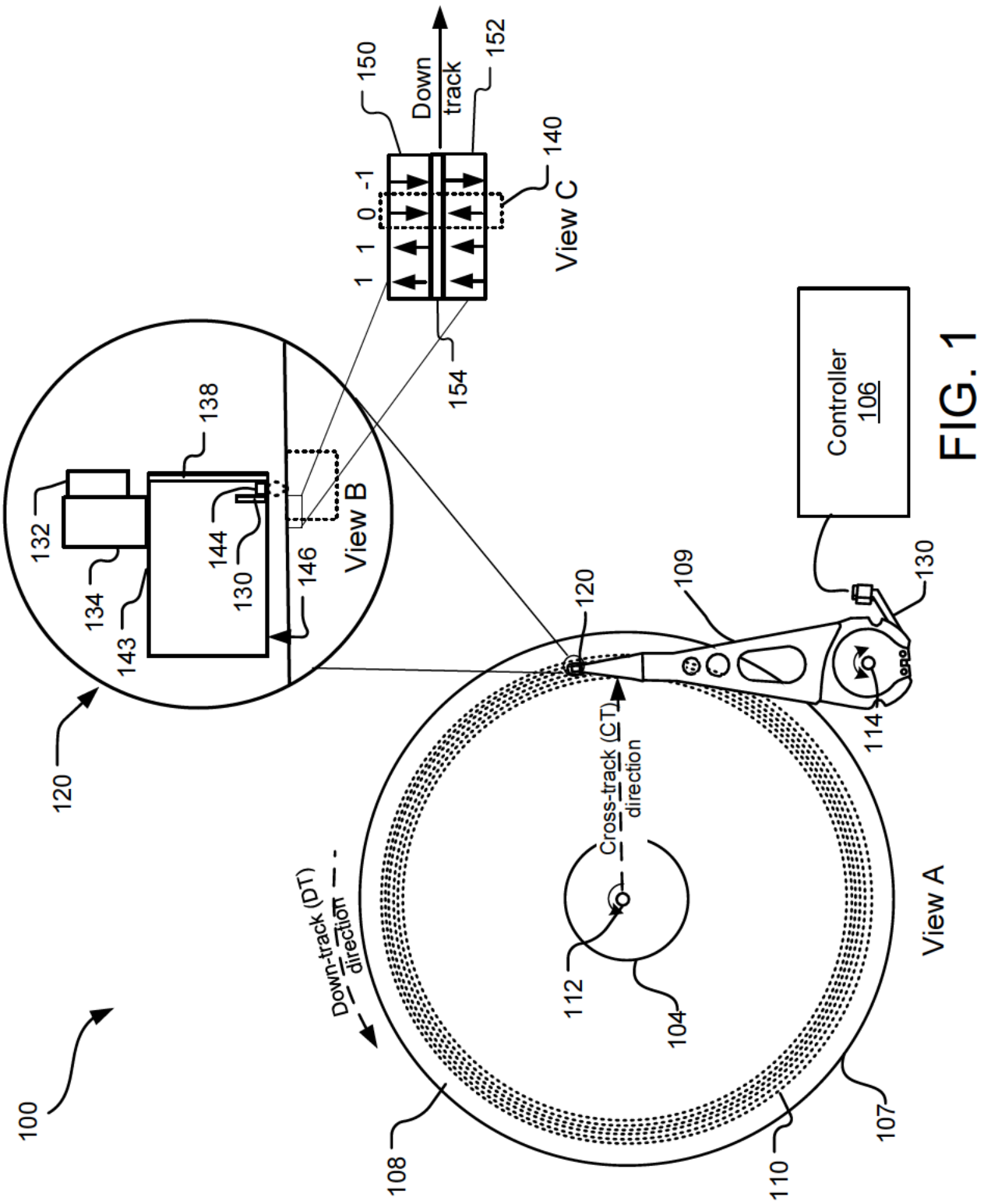

100
120
132
134
143
138
144
130
146
View B
150
Down track
152
140
1 1 0 -1
View C
154
Controller 106
109
120
130
114
Down-track (DT) direction
Cross-track (CT) direction
112
104
108
110
107
View A

FIG. 1

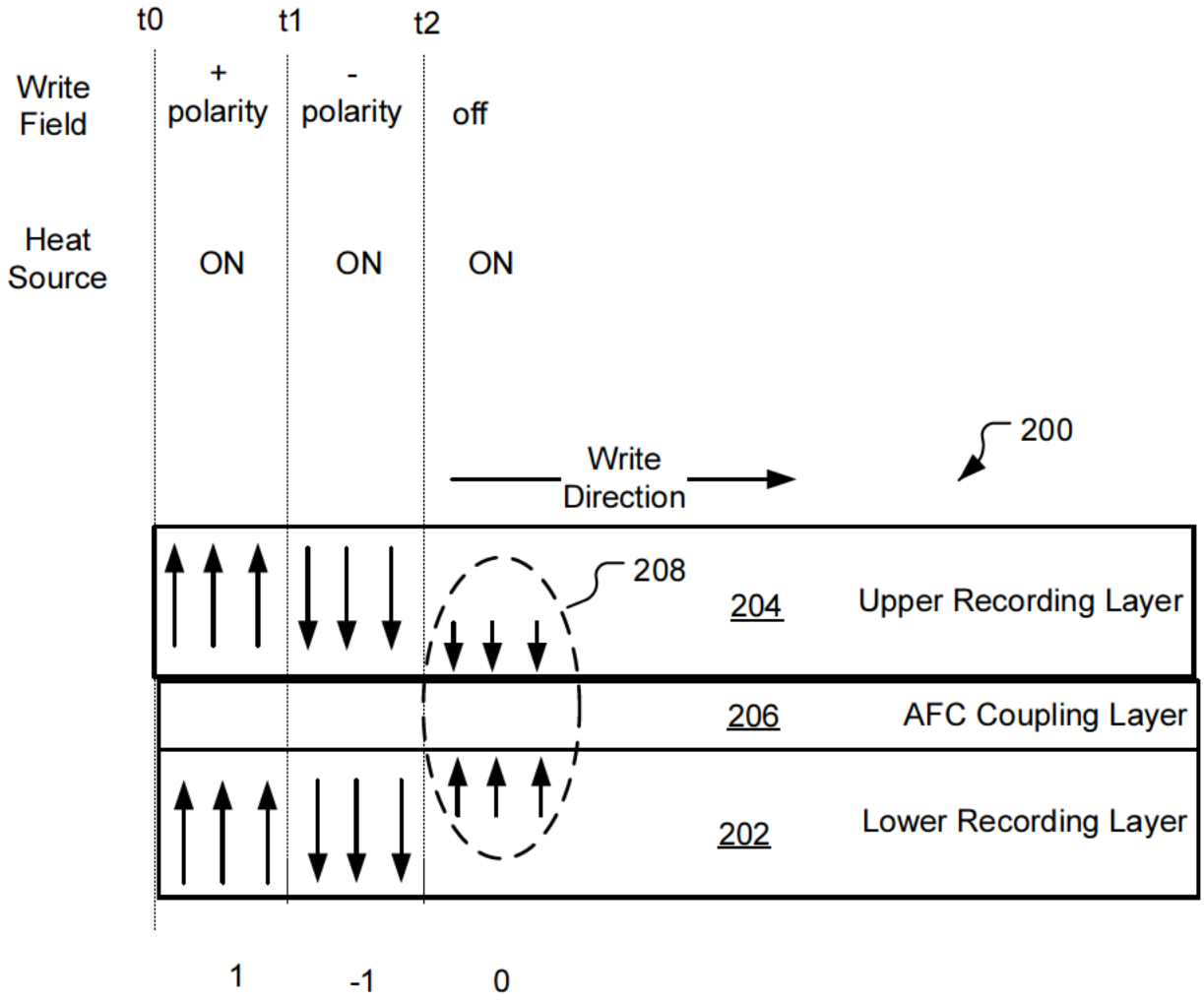

t0
t1
t2
Write Field
+ polarity
- polarity
off
Heat Source
ON
ON
ON
200
Write Direction
208
204
Upper Recording Layer
206
AFC Coupling Layer
202
Lower Recording Layer
1
-1
0

FIG. 2

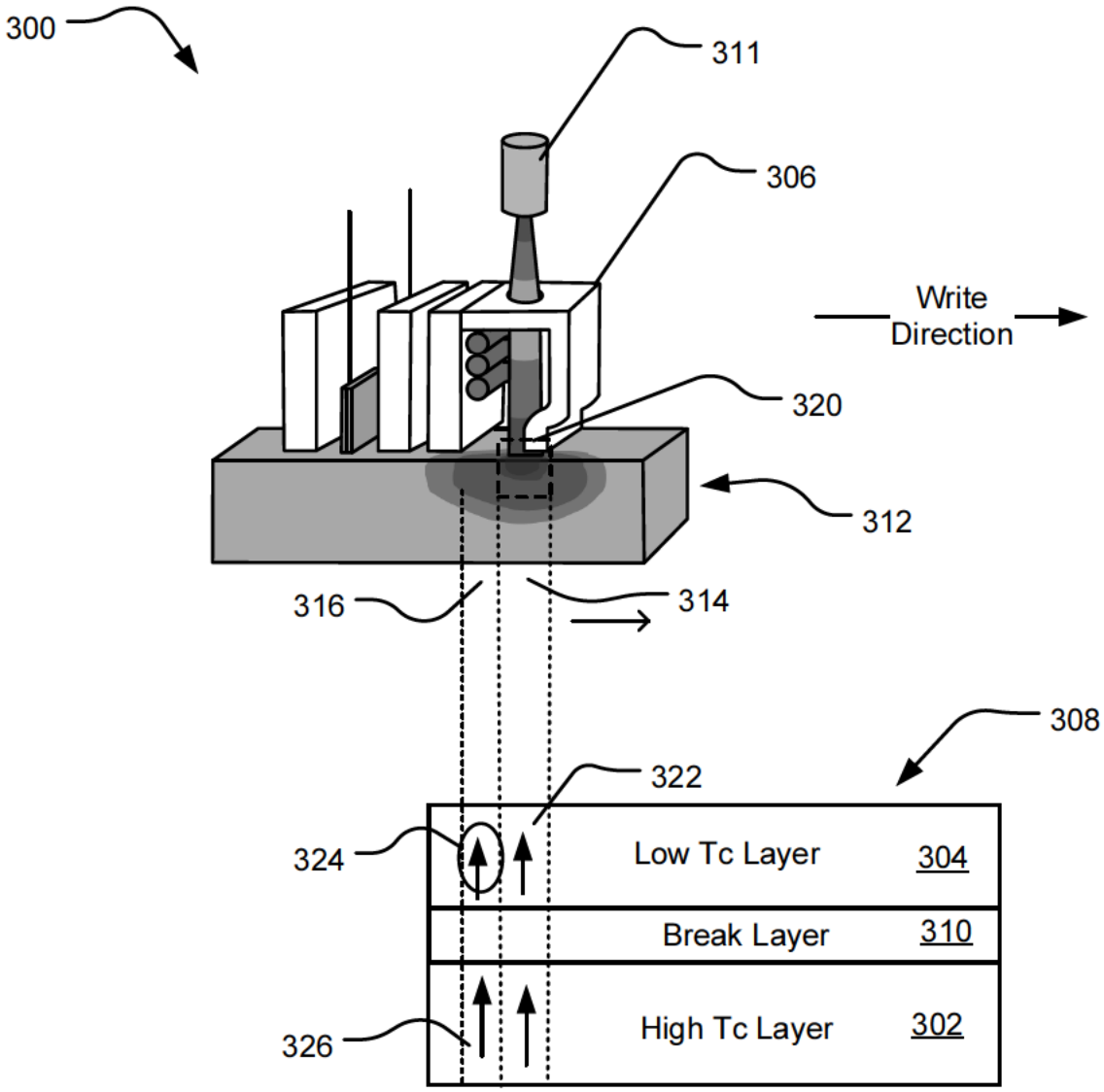

300
311
306
Write
Direction
320
312
316
314
308
322
324
Low Tc Layer
304
Break Layer
310
326
High Tc Layer
302

FIG. 3

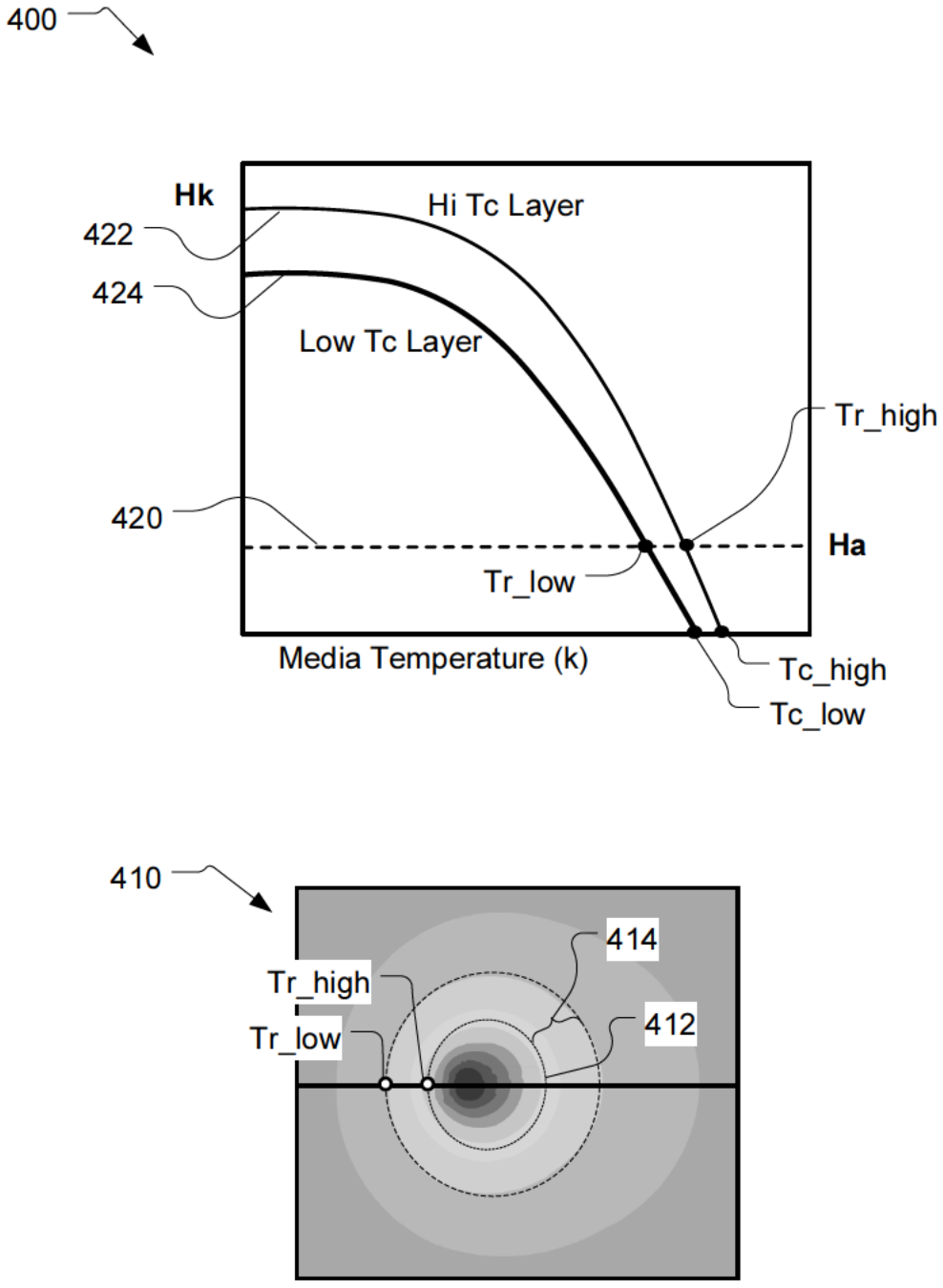

400
Hk
Hi Tc Layer
422
424
Low Tc Layer
Tr_high
420
Ha
Tr_low
Media Temperature (k)
Tc_high
Tc_low
410
414
Tr_high
412
Tr_low

FIG. 4

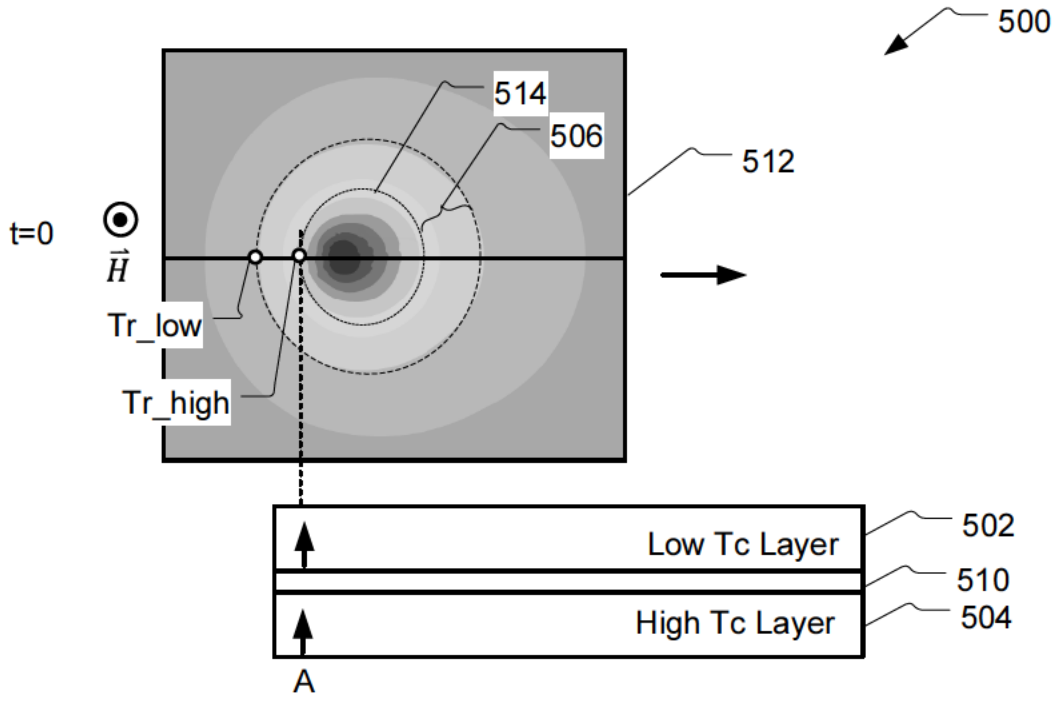

500
514
506
512
t=0
$\vec{H}$
Tr_low
Tr_high
Low Tc Layer
High Tc Layer
502
510
504
A

FIG. 5A

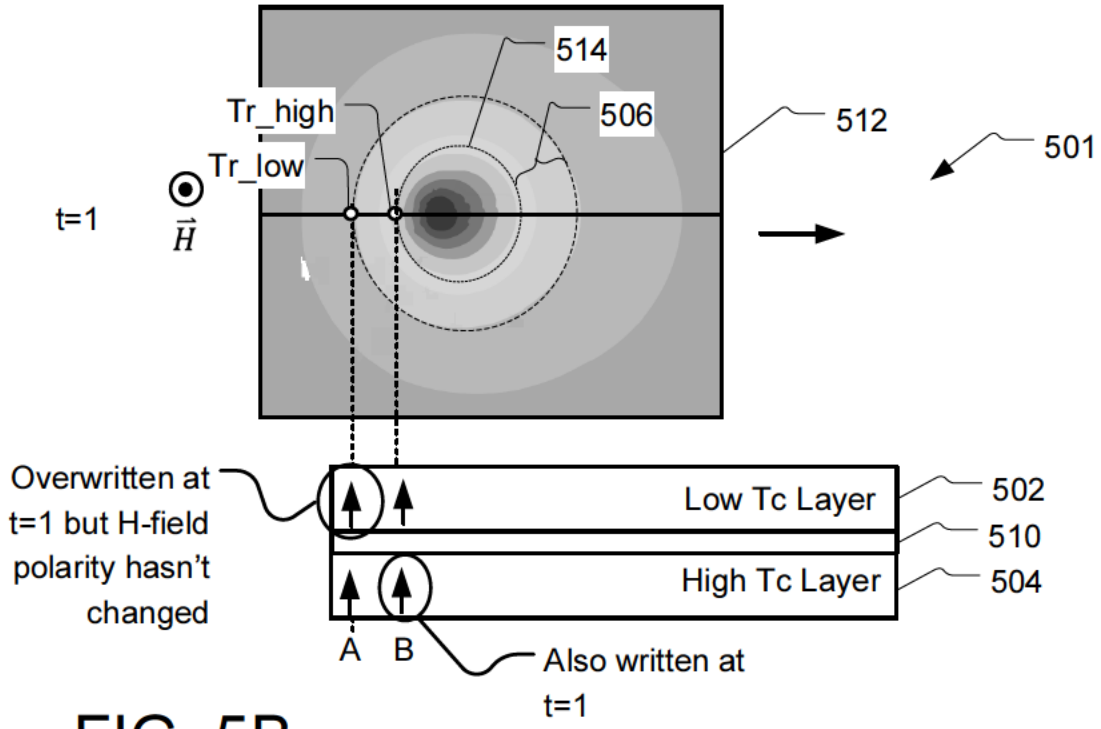

514
Tr_high
506
512
501
Tr_low
t=1
$\vec{H}$
Overwritten at t=1 but H-field polarity hasn't changed
Low Tc Layer
High Tc Layer
502
510
504
A
B
Also written at t=1

FIG. 5B

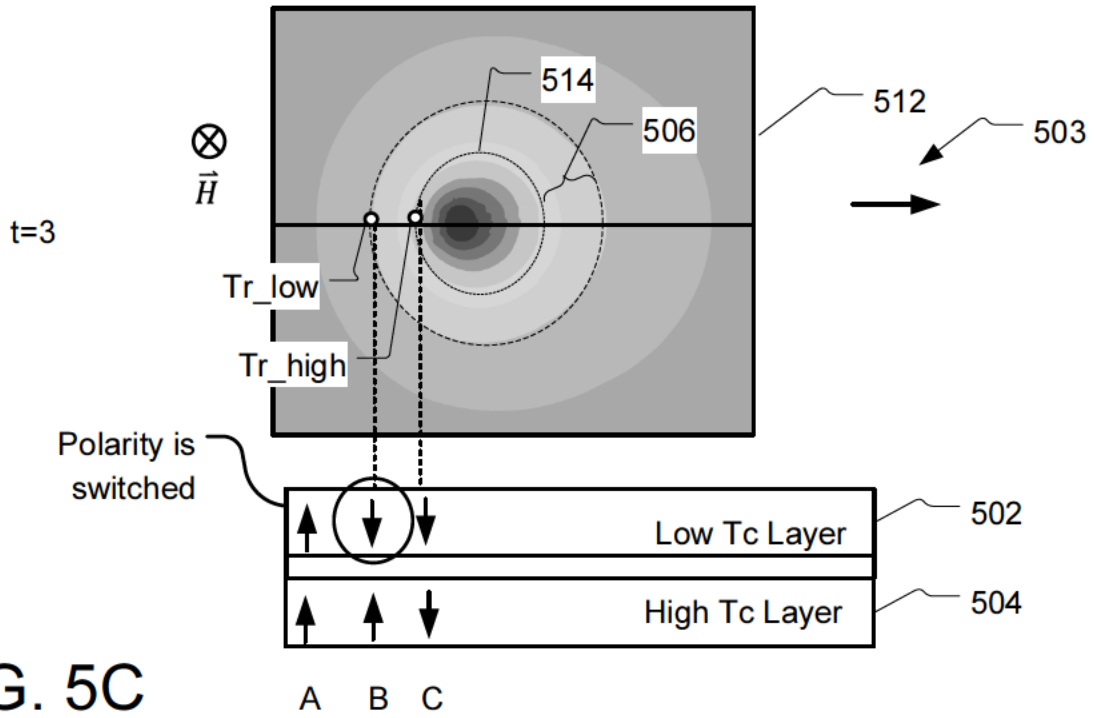

514
506
512
503
$\vec{H}$
t=3
Tr_low
Tr_high
Polarity is switched
Low Tc Layer
High Tc Layer
502
504
A
B
C

FIG. 5C

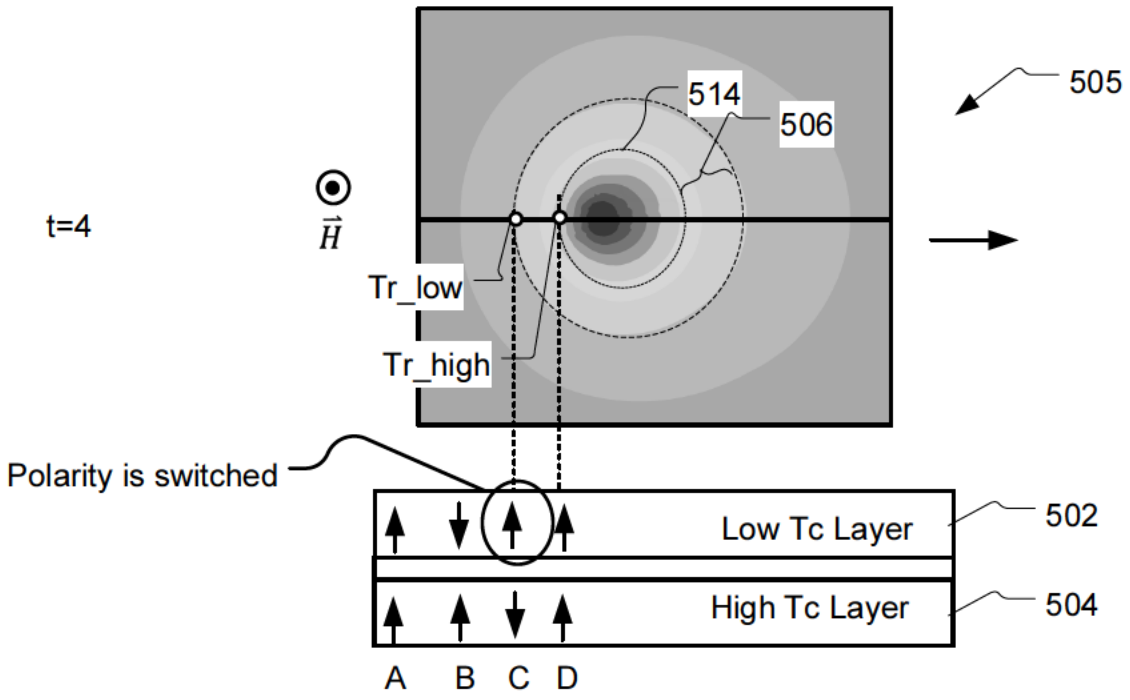

505
514
506
$\vec{H}$
t=4
Tr_low
Tr_high
Polarity is switched
Low Tc Layer
High Tc Layer
502
504
A
B
C
D

FIG. 5D

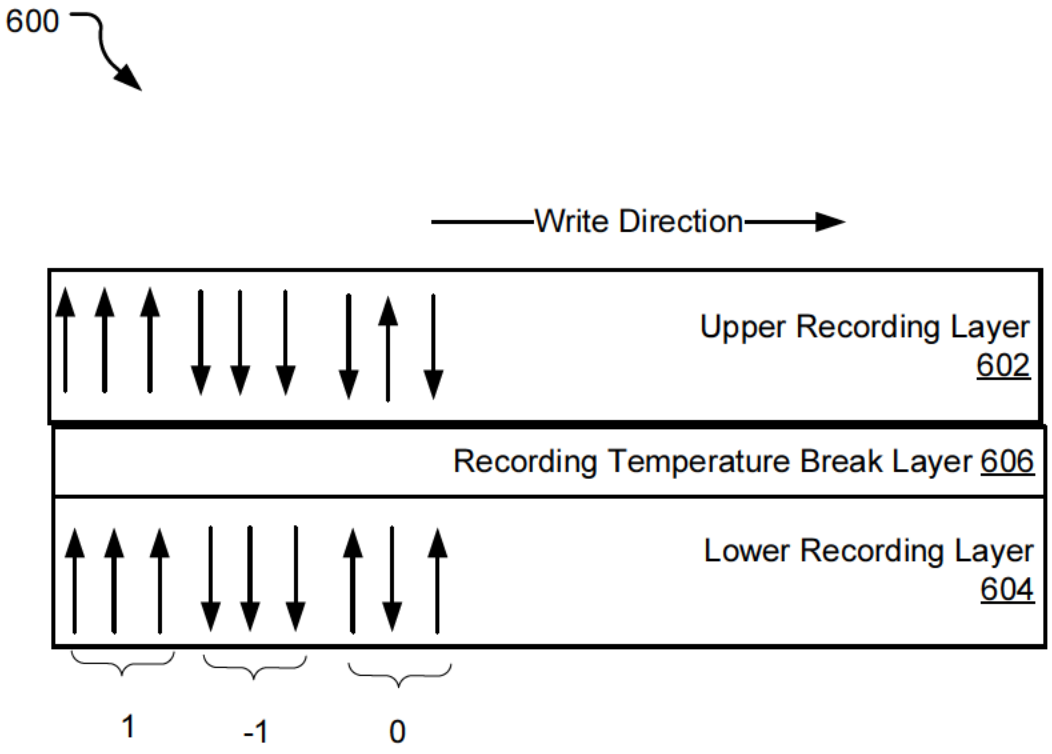

600
Write Direction
Upper Recording Layer
602
Recording Temperature Break Layer 606
Lower Recording Layer
604
1
-1
0

FIG. 6A

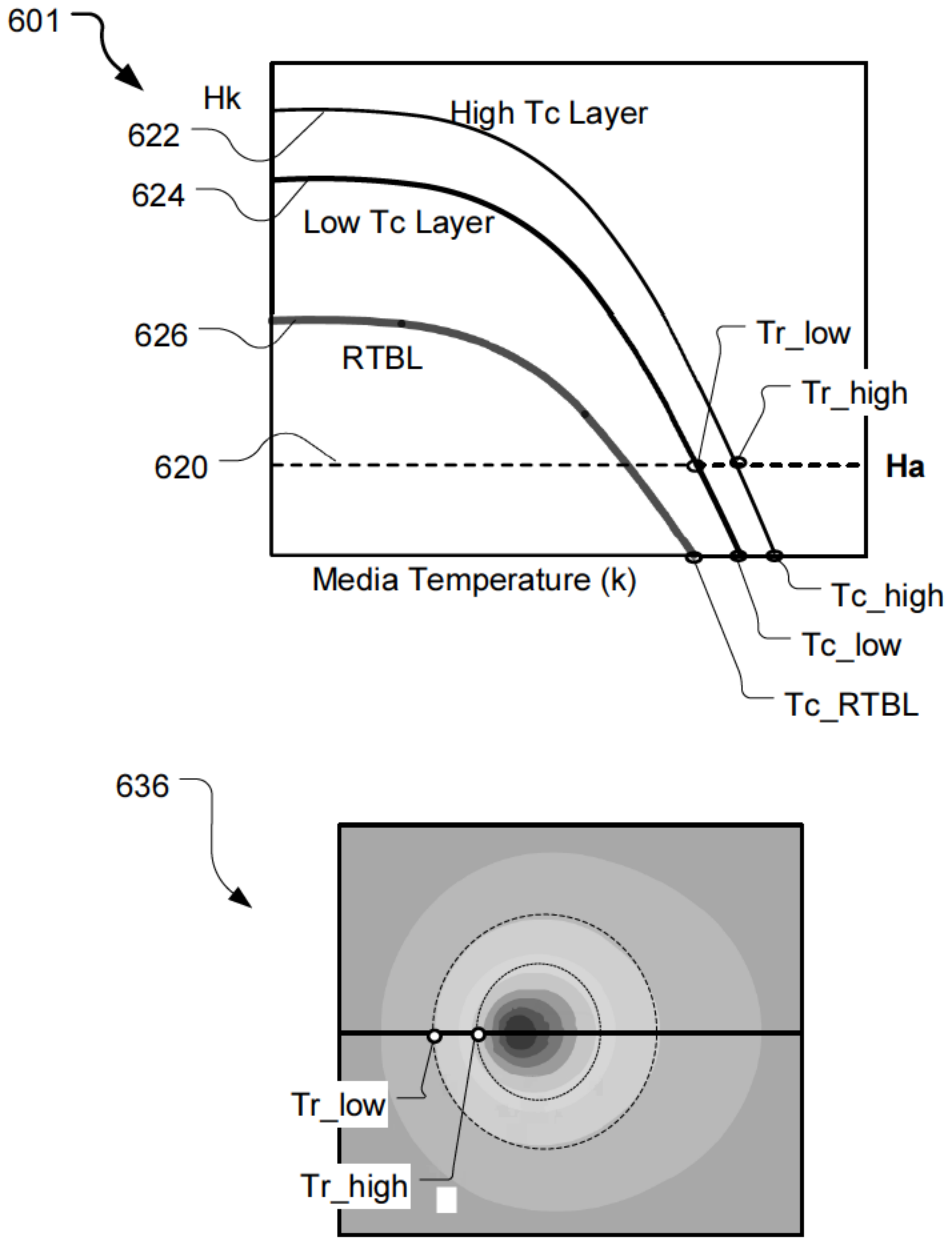

601
Hk
622
624
626
620
High Tc Layer
Low Tc Layer
RTBL
Tr_low
Tr_high
Ha
Media Temperature (k)
Tc_high
Tc_low
Tc_RTBL
636
Tr_low
Tr_high

FIG. 6B

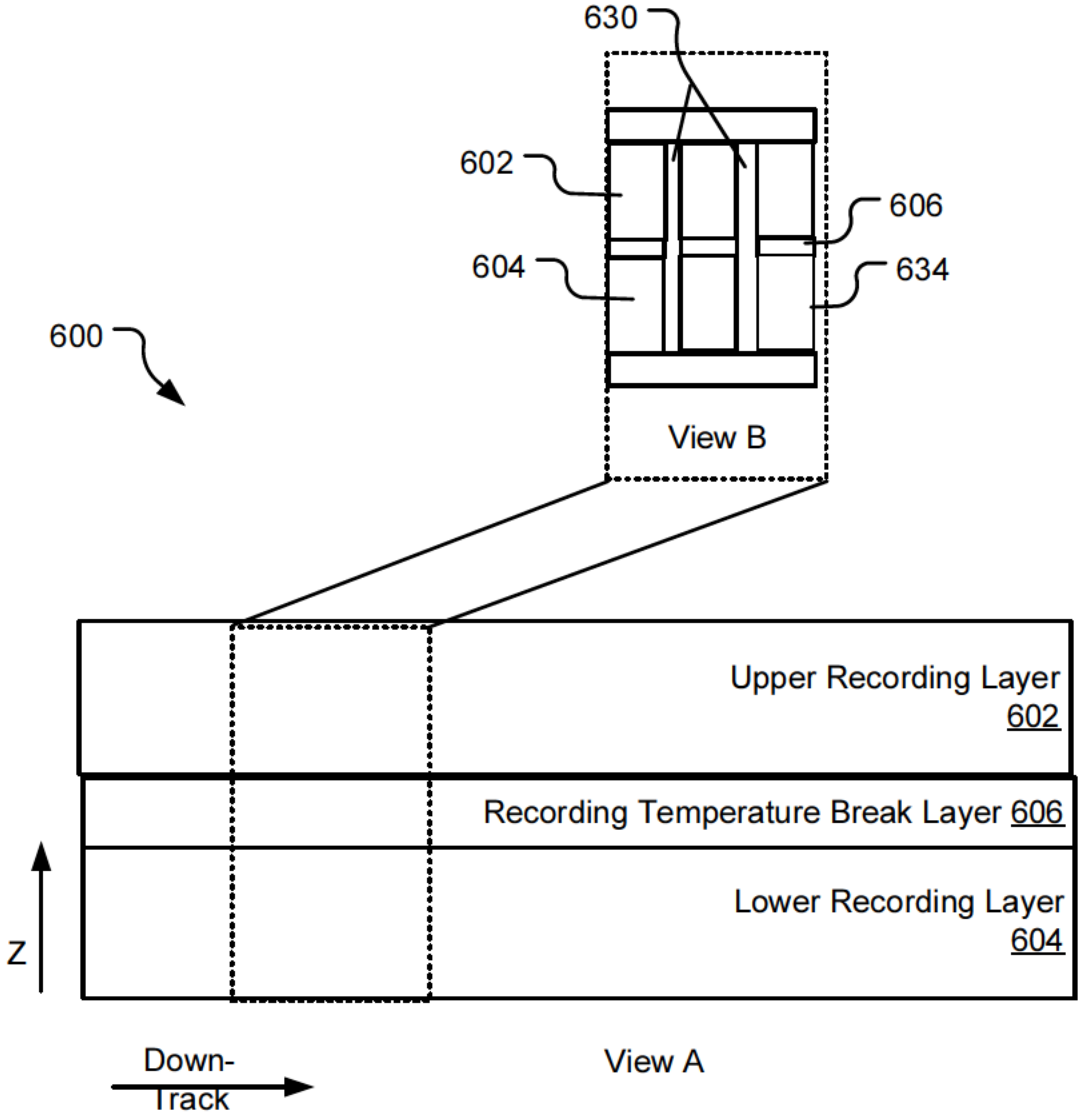

630
602
606
604
634
600
View B
Upper Recording Layer
602
Recording Temperature Break Layer 606
Lower Recording Layer
604
Z
Down-
Track
View A

FIG. 6C

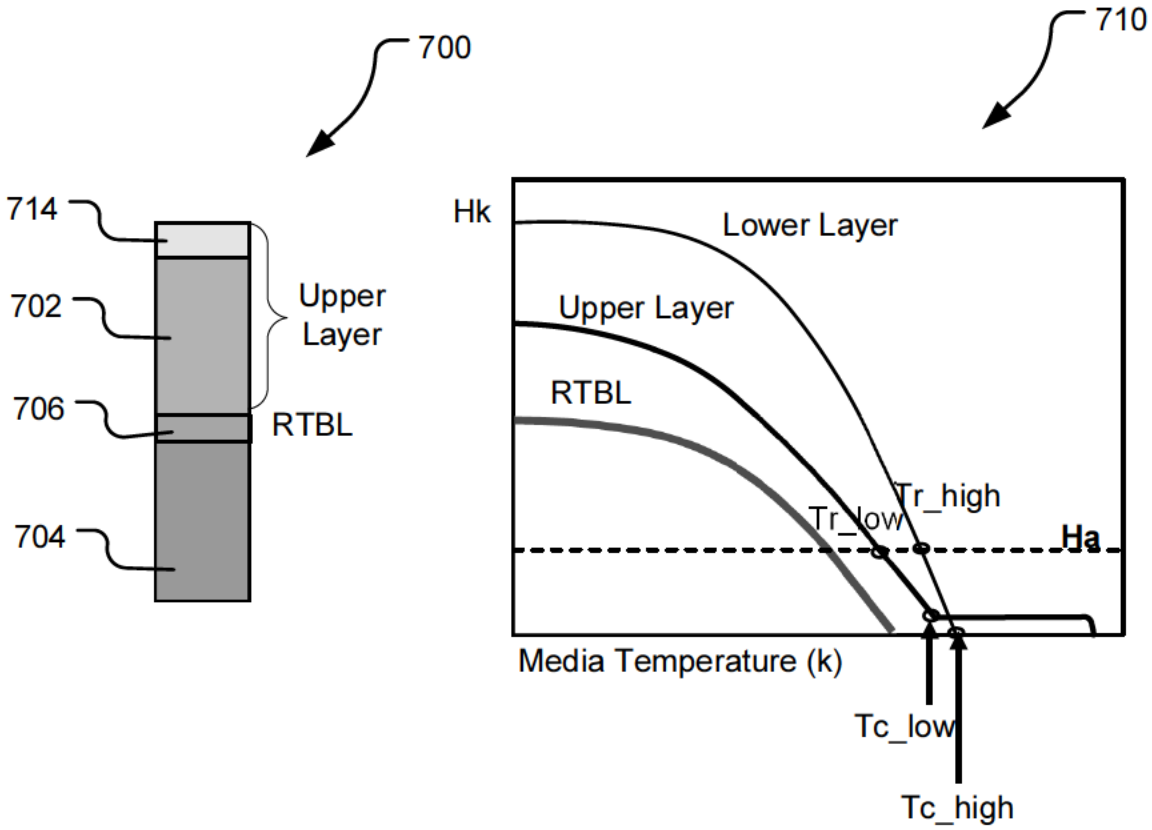

700
710
714
702
706
704
Upper Layer
RTBL
Hk
Lower Layer
Upper Layer
RTBL
Tr_high
Tr_low
Ha
Media Temperature (k)
Tc_low
Tc_high

FIG. 7

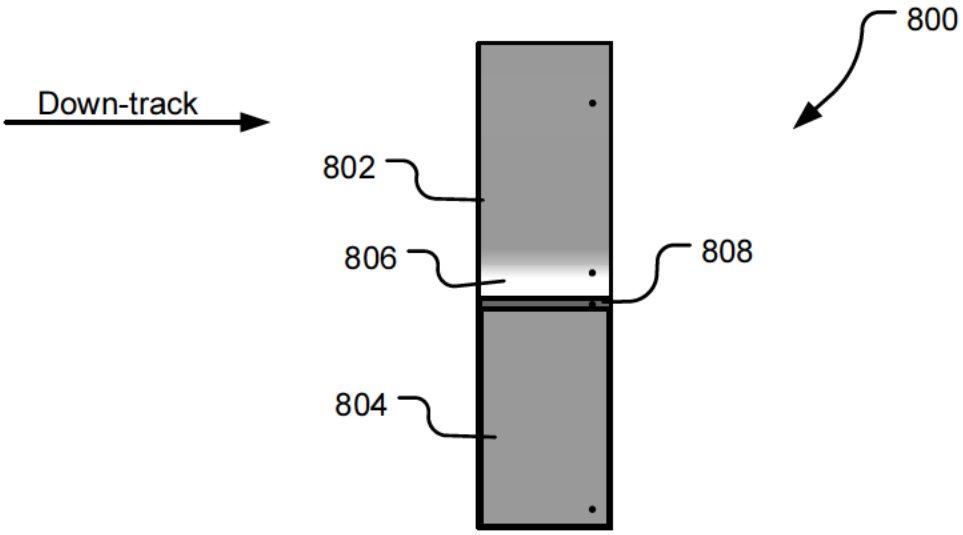

800
Down-track
802
806
808
804

FIG. 8

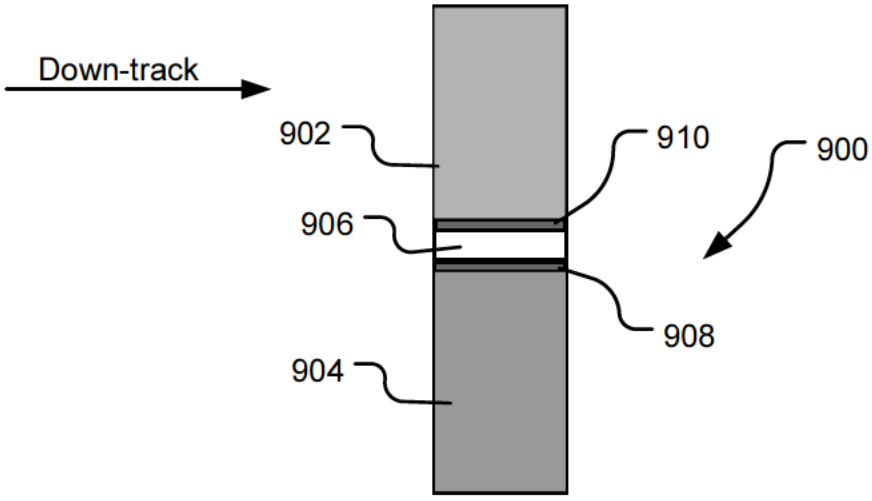

Down-track
902
910
900
906
908
904

FIG. 9

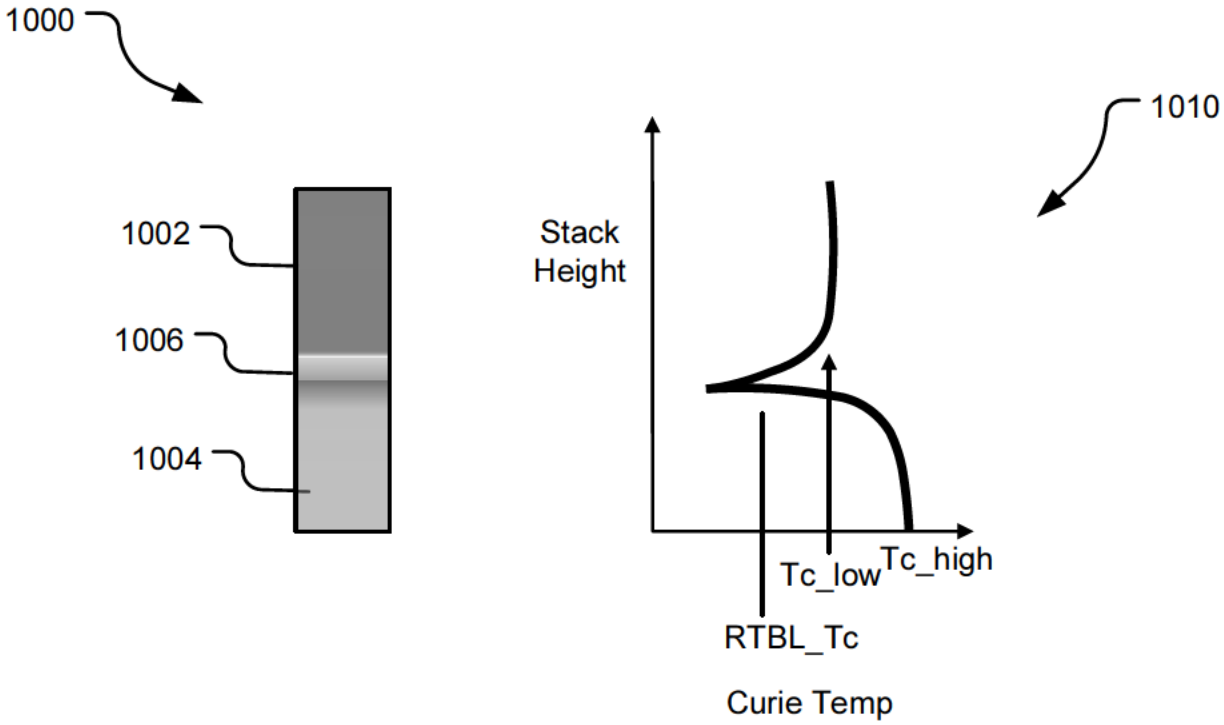

1000
1002
1006
1004
1010
Stack
Height
Tc_low
Tc_high
RTBL_Tc
Curie Temp

FIG. 10

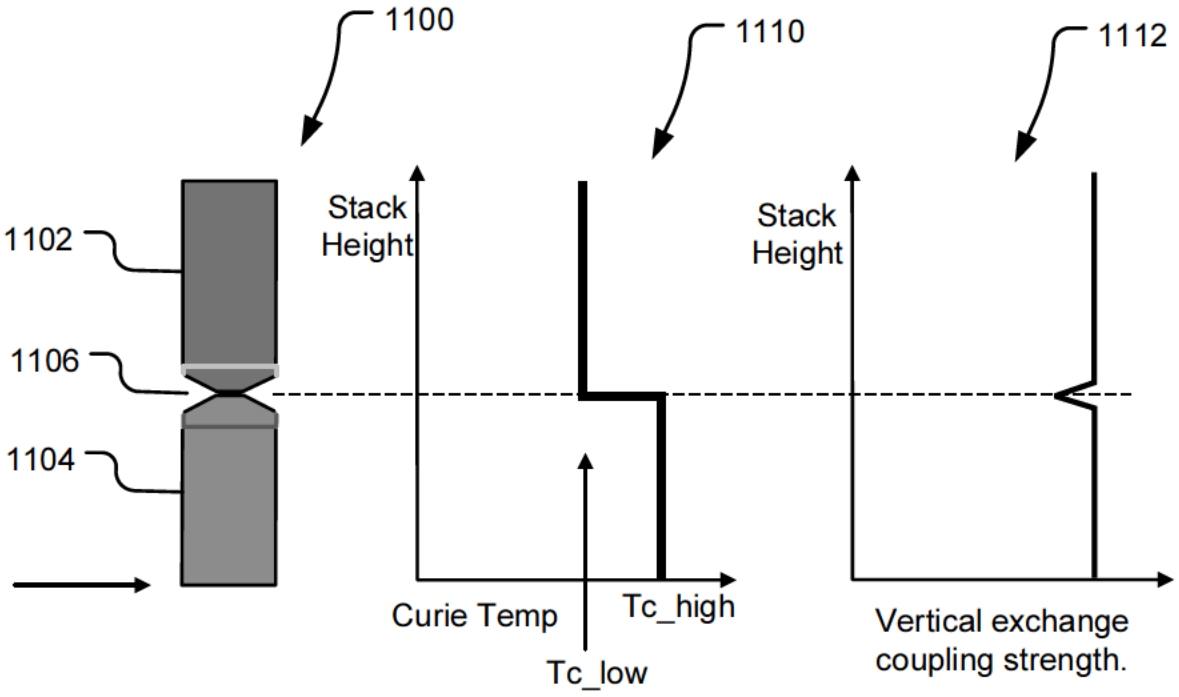

1100
1110
1112
1102
1106
1104
Stack Height
Stack Height
Curie Temp
Tc_high
Tc_low
Vertical exchange coupling strength.

FIG. 11

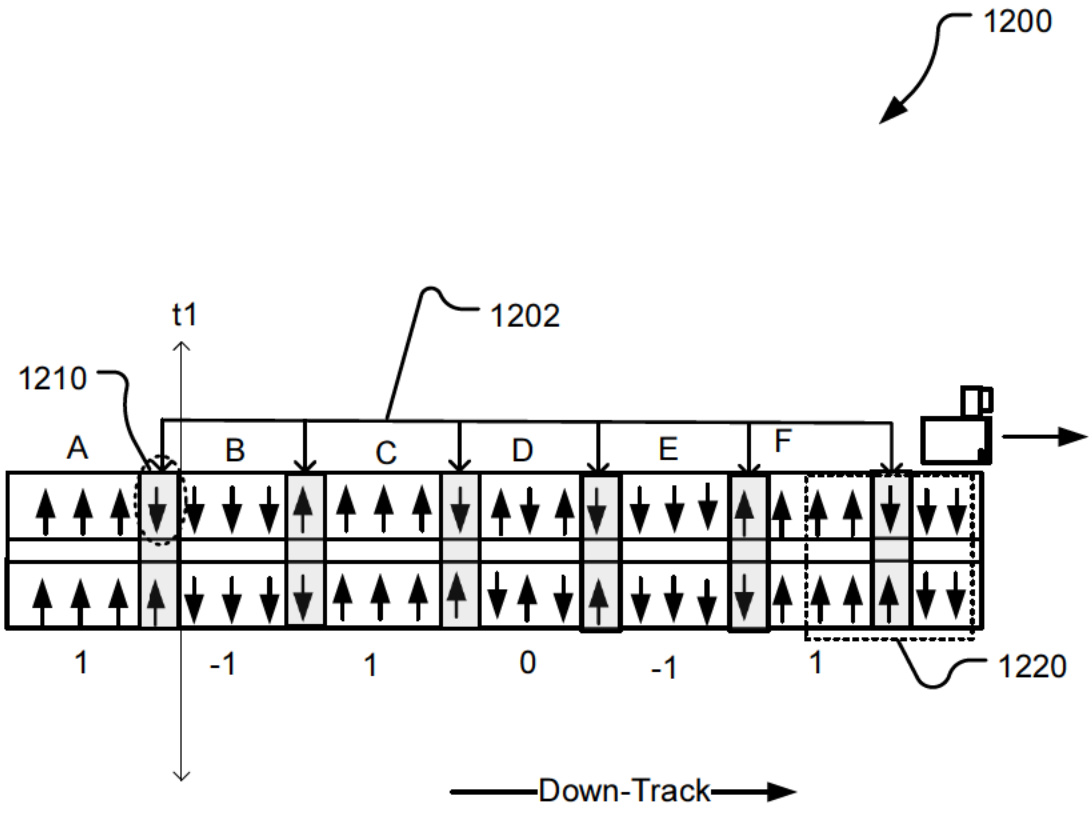
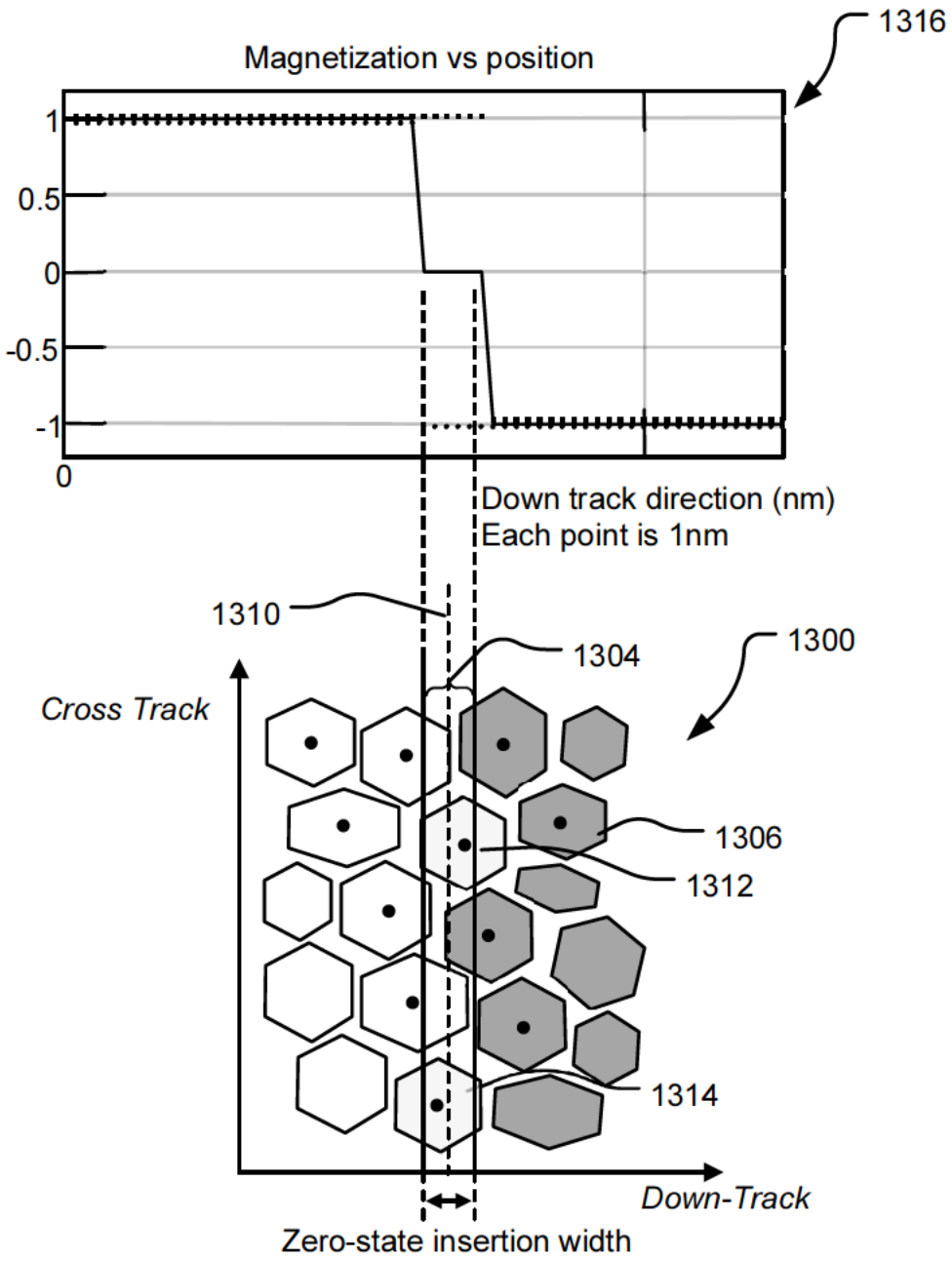


FIG. 12


1316
Magnetization vs position
1
0.5
0
-0.5
-1
0
Down track direction (nm)
Each point is 1nm
1310
1304
1300
Cross Track
1306
1312
1314
Down-Track
Zero-state insertion width