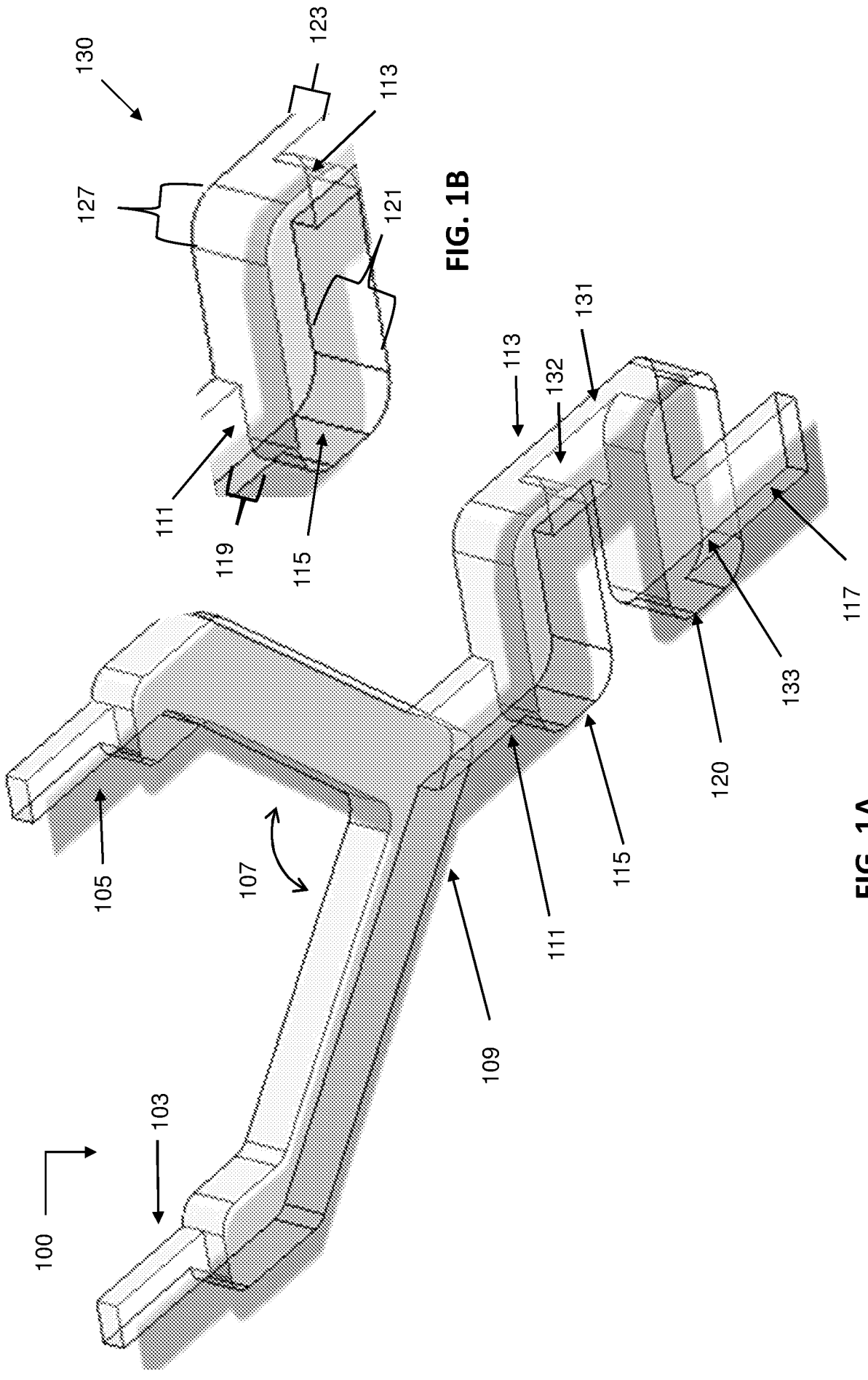

130
123
113
127
121
111
119
115
100
103
105
107
109
111
115
120
133
117
113
132
131

FIG. 1B

FIG. 1A

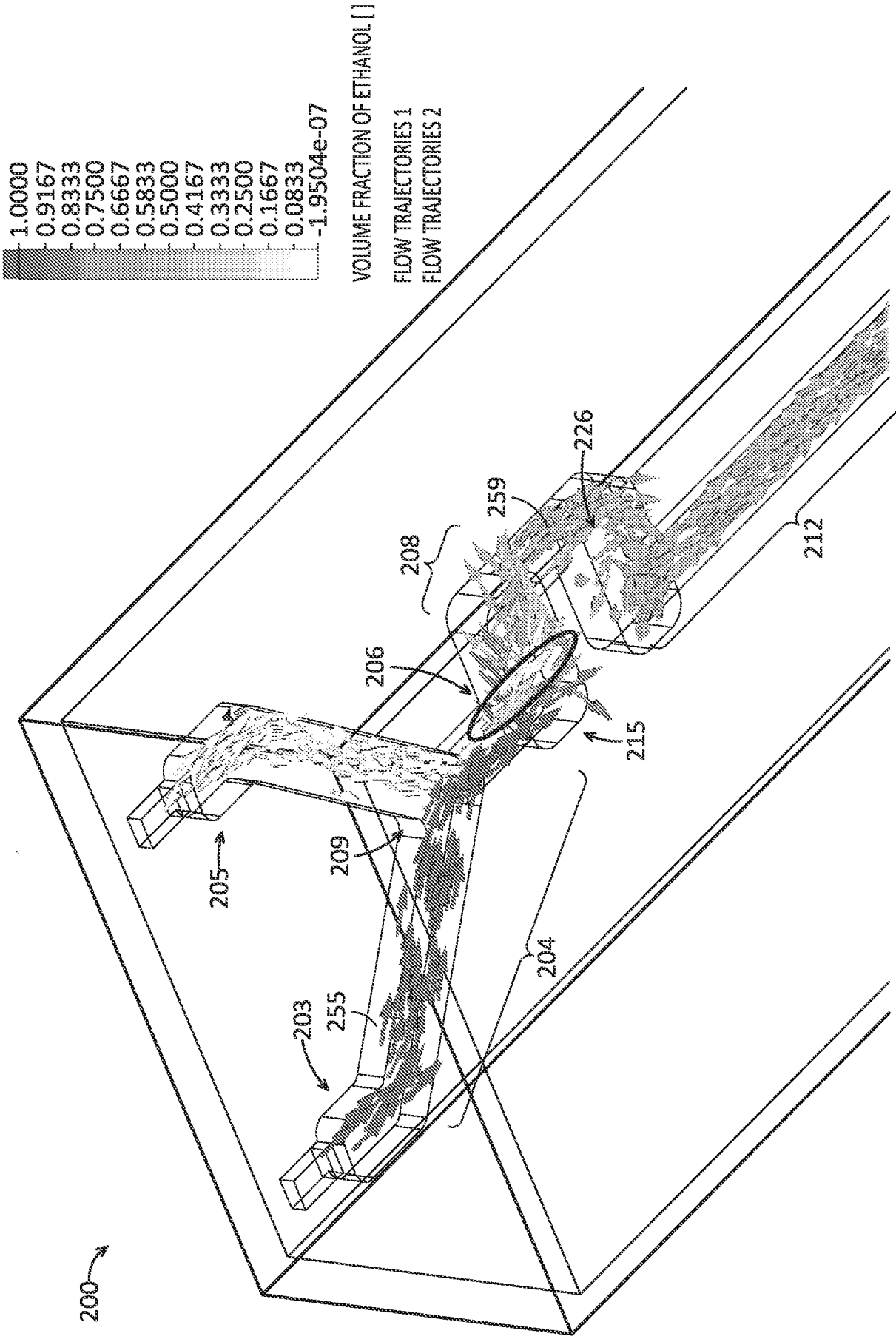

1.0000
0.9167
0.8333
0.7500
0.6667
0.5833
0.5000
0.4167
0.3333
0.2500
0.1667
0.0833
-1.9504e-07
VOLUME FRACTION OF ETHANOL [ ]
FLOW TRAJECTORIES 1
FLOW TRAJECTORIES 2
200
205
206
208
209
212
215
226
255
259
203
204

FIG. 2A

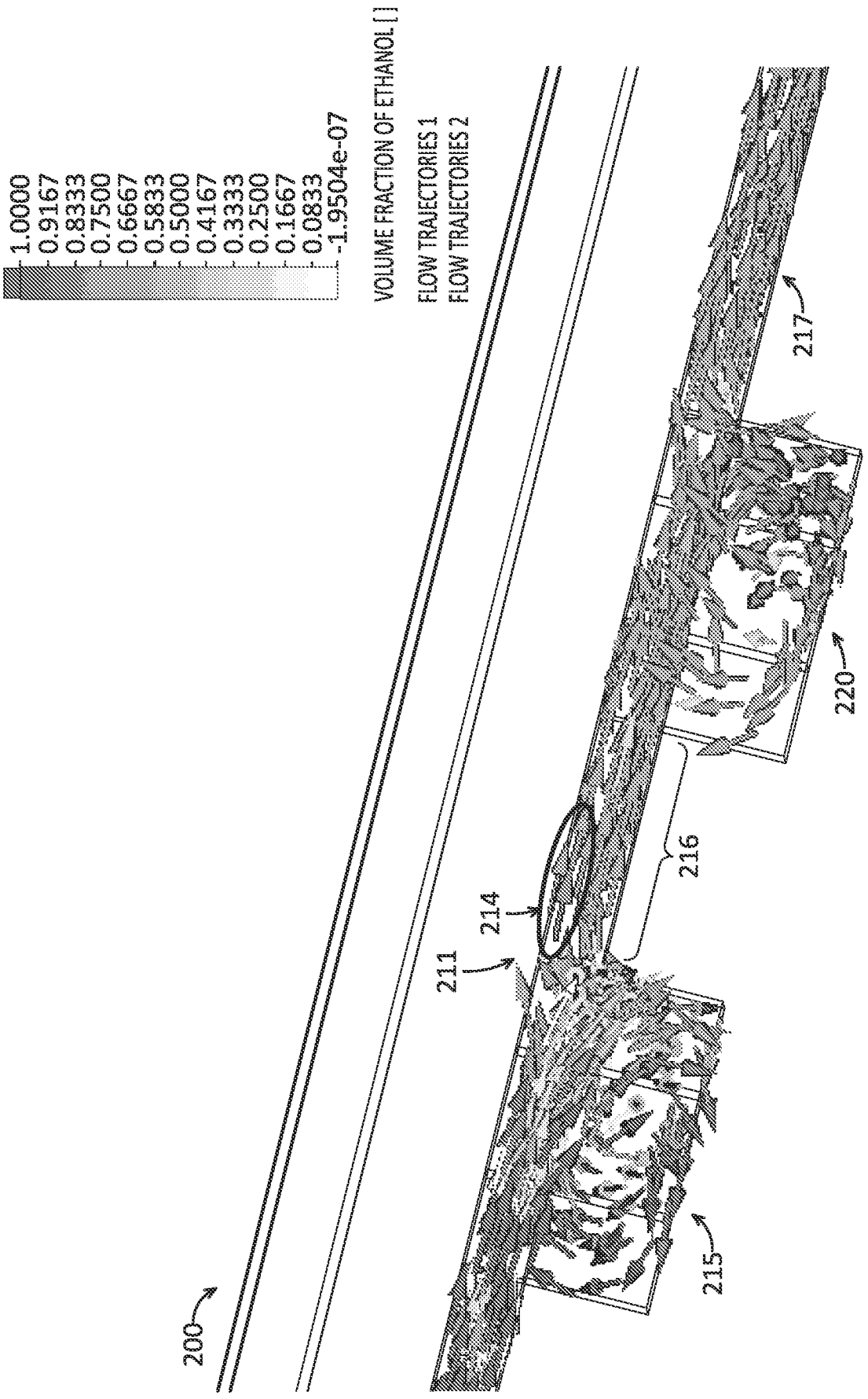

1.0000
0.9167
0.8333
0.7500
0.6667
0.5833
0.5000
0.4167
0.3333
0.2500
0.1667
0.0833
-1.9504e-07
VOLUME FRACTION OF ETHANOL [ ]
FLOW TRAJECTORIES 1
FLOW TRAJECTORIES 2
200
211
214
215
216
217
220

FIG. 2B

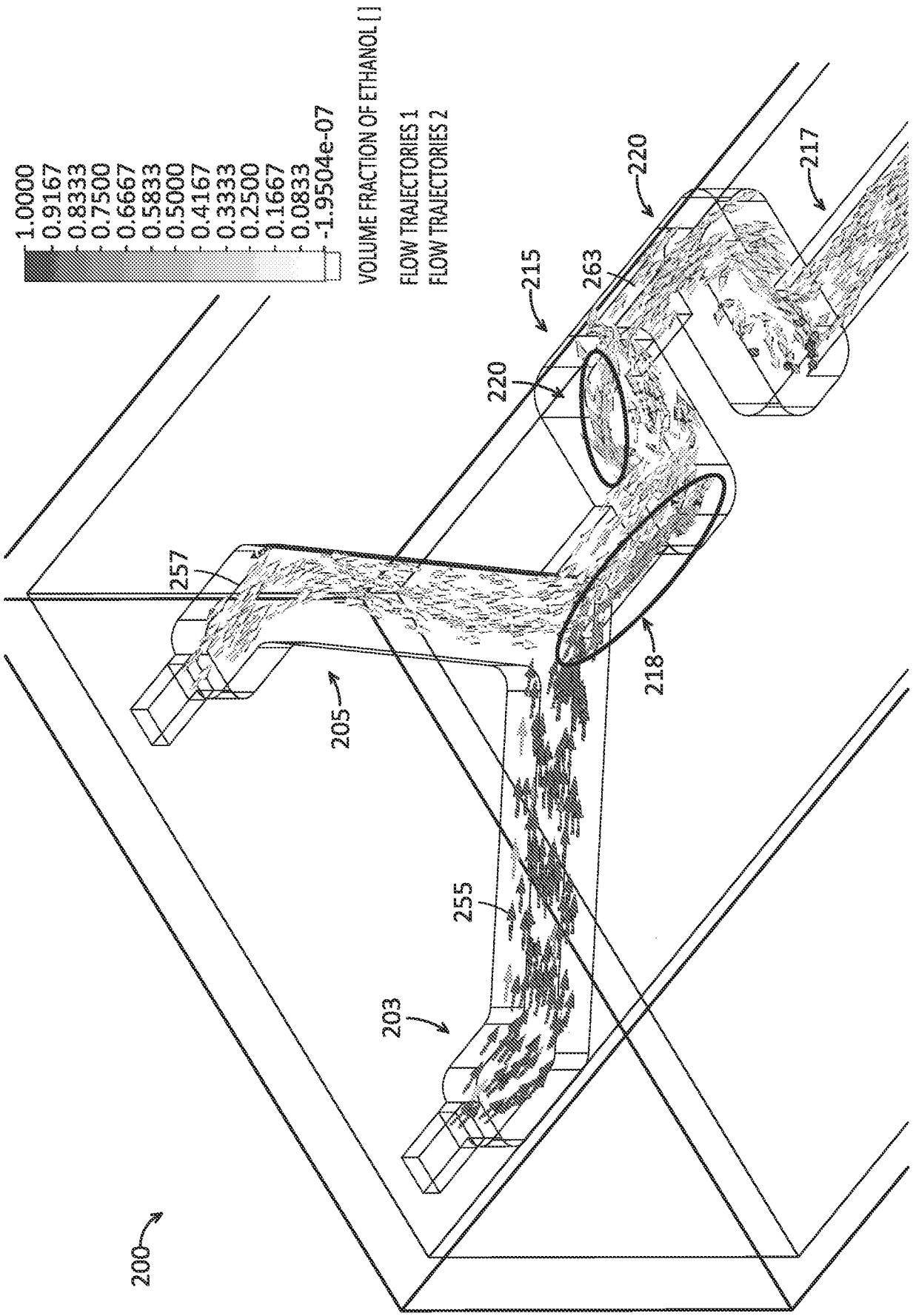

1.0000
0.9167
0.8333
0.7500
0.6667
0.5833
0.5000
0.4167
0.3333
0.2500
0.1667
0.0833
-1.9504e-07
VOLUME FRACTION OF ETHANOL [ ]
FLOW TRAJECTORIES 1
FLOW TRAJECTORIES 2
200
203
205
215
217
218
220
255
257
263

FIG. 2C

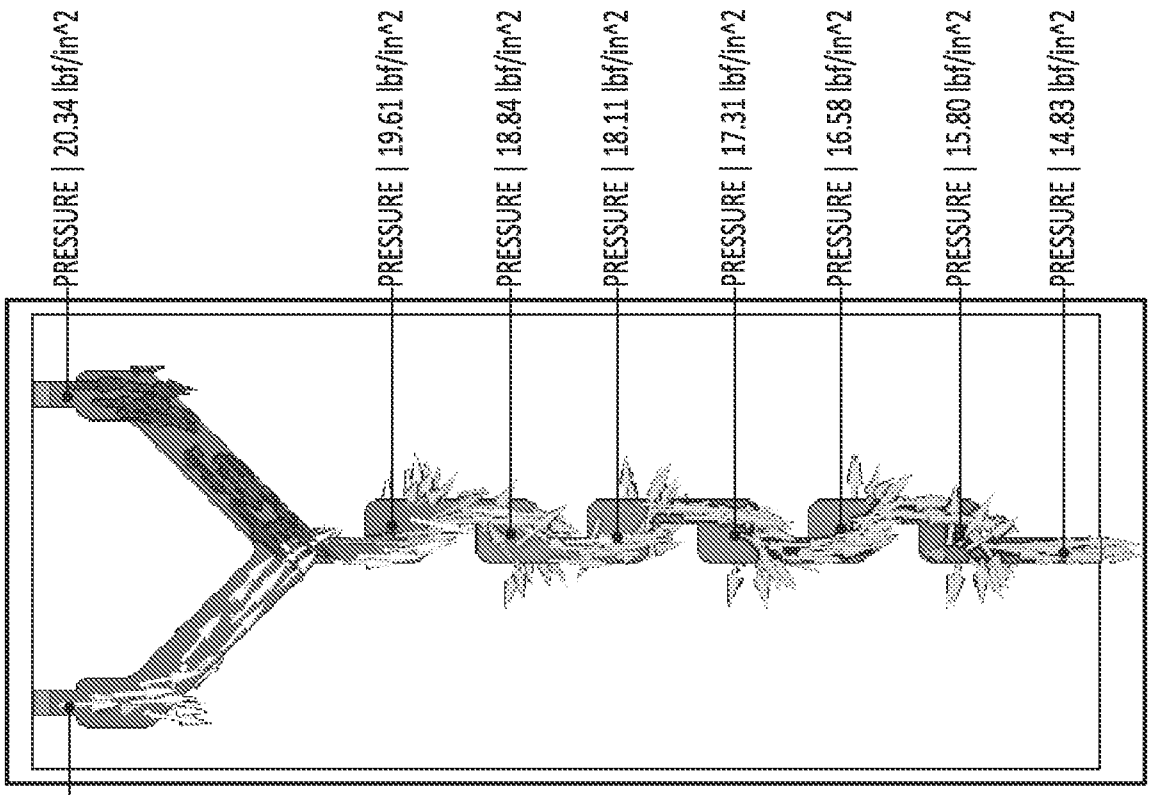

PRESSURE | 20.34 lbf/in^2
PRESSURE | 19.61 lbf/in^2
PRESSURE | 18.84 lbf/in^2
PRESSURE | 18.11 lbf/in^2
PRESSURE | 17.31 lbf/in^2
PRESSURE | 16.58 lbf/in^2
PRESSURE | 15.80 lbf/in^2
PRESSURE | 14.83 lbf/in^2
PRESSURE | 20.36 lbf/in^2

FIG. 2E

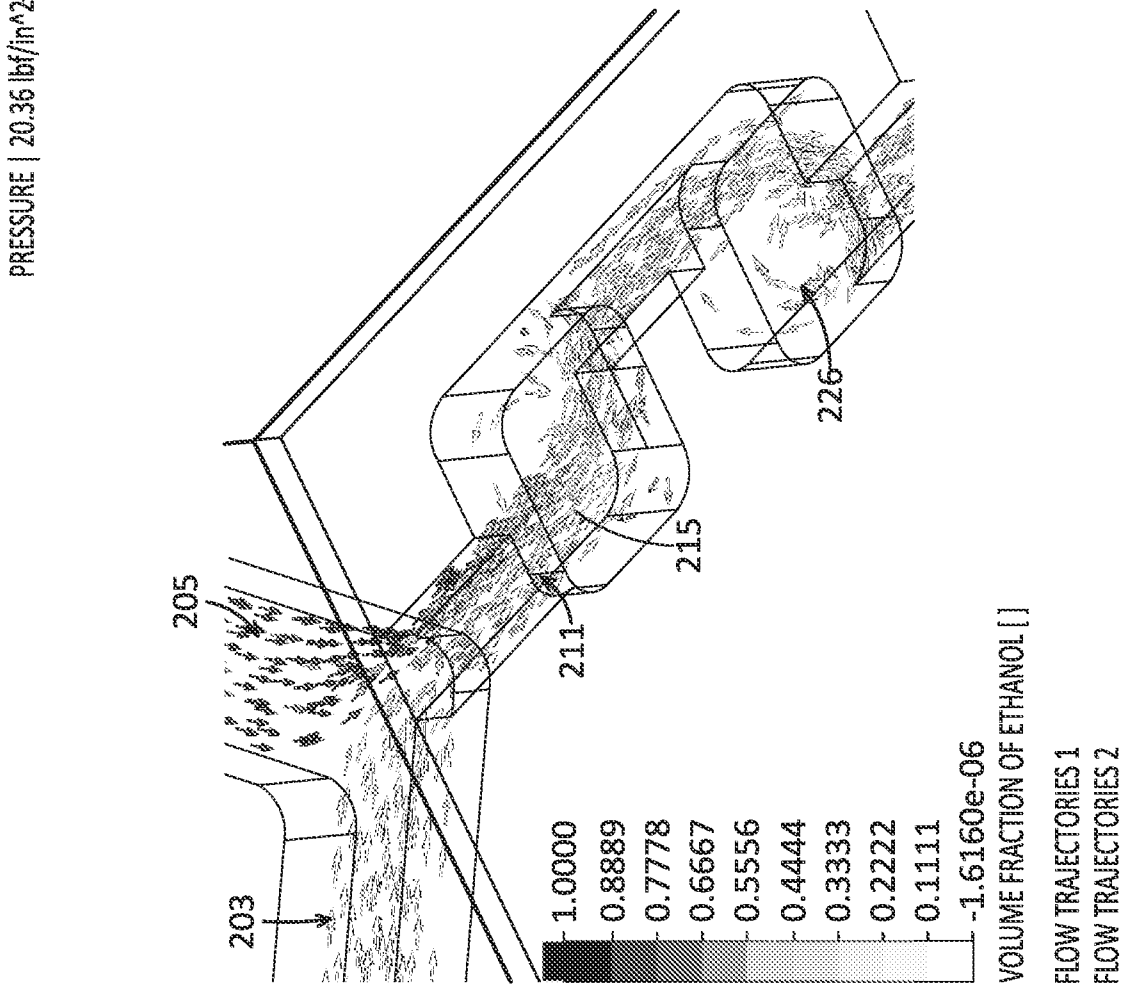

205
203
211
215
226
1.0000
0.8889
0.7778
0.6667
0.5556
0.4444
0.3333
0.2222
0.1111
-1.6160e-06
VOLUME FRACTION OF ETHANOL [ ]
FLOW TRAJECTORIES 1
FLOW TRAJECTORIES 2

FIG. 2D

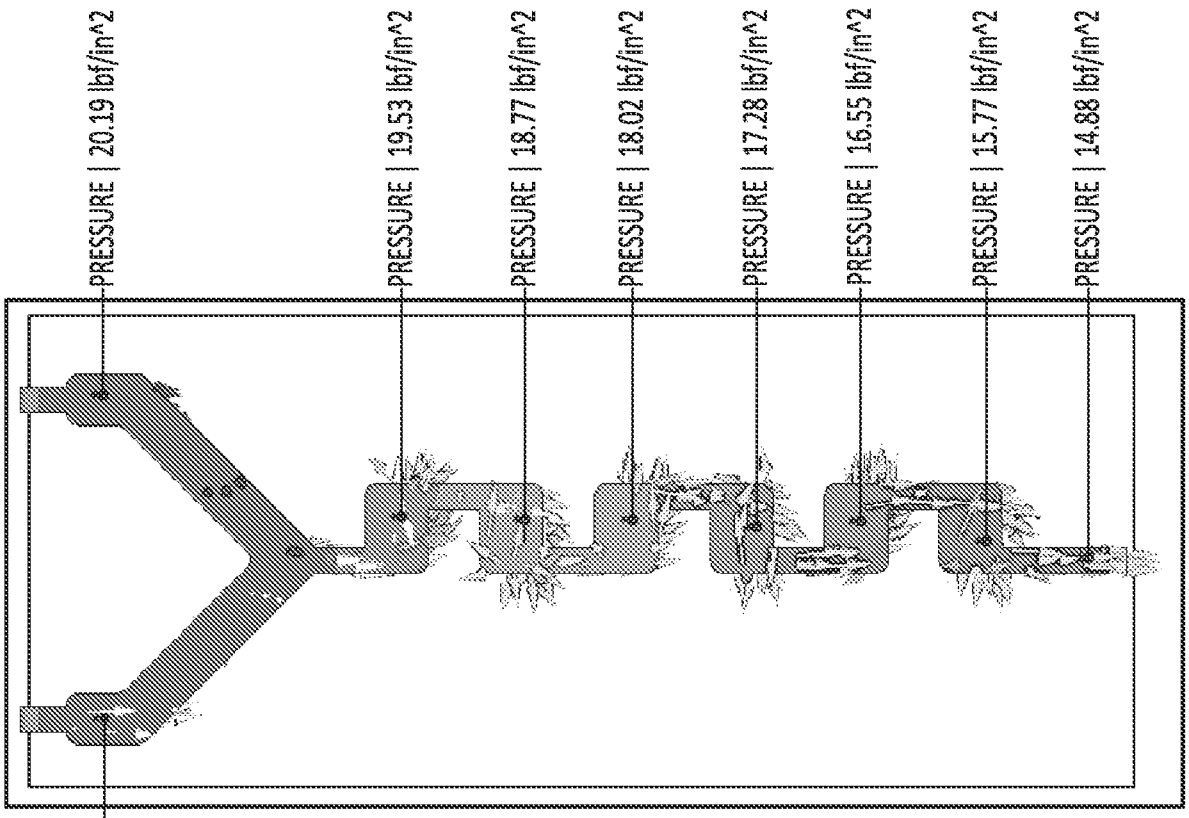

PRESSURE | 20.19 lbf/in^2
PRESSURE | 19.53 lbf/in^2
PRESSURE | 18.77 lbf/in^2
PRESSURE | 18.02 lbf/in^2
PRESSURE | 17.28 lbf/in^2
PRESSURE | 16.55 lbf/in^2
PRESSURE | 15.77 lbf/in^2
PRESSURE | 14.88 lbf/in^2
PRESSURE | 20.19 lbf/in^2

FIG. 2G

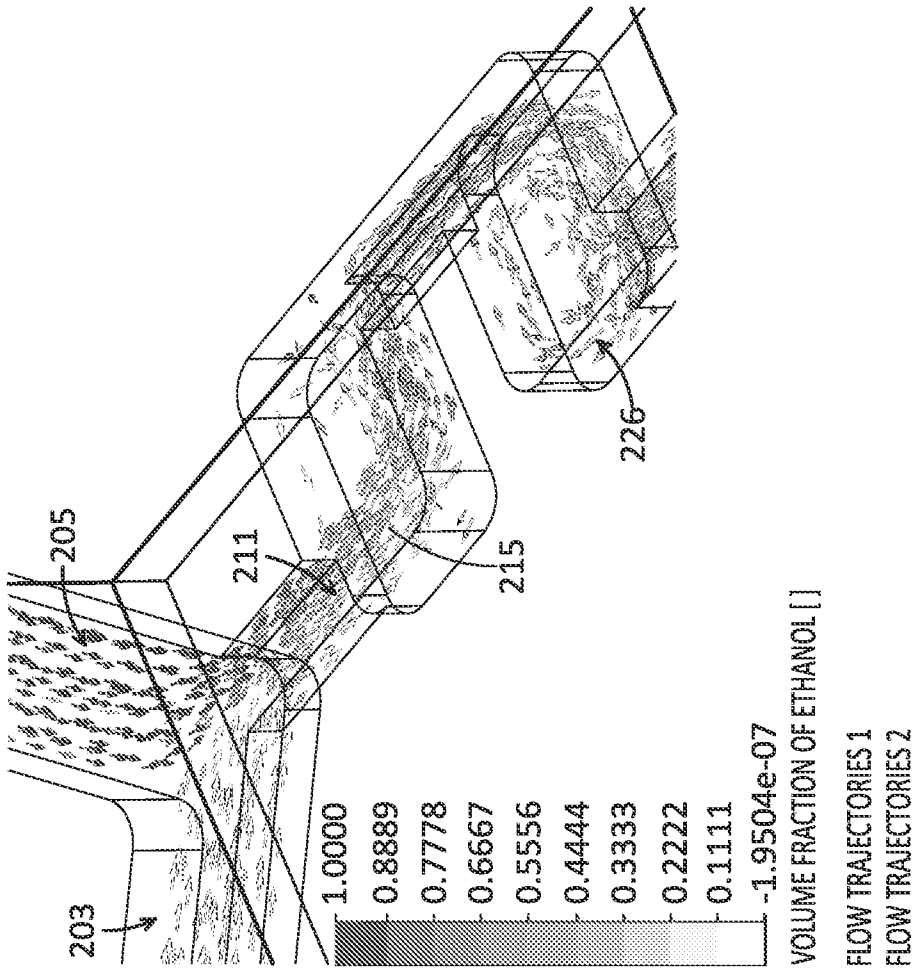

205
211
215
226
203
1.0000
0.8889
0.7778
0.6667
0.5556
0.4444
0.3333
0.2222
0.1111
-1.9504e-07
VOLUME FRACTION OF ETHANOL [ ]
FLOW TRAJECTORIES 1
FLOW TRAJECTORIES 2

FIG. 2F

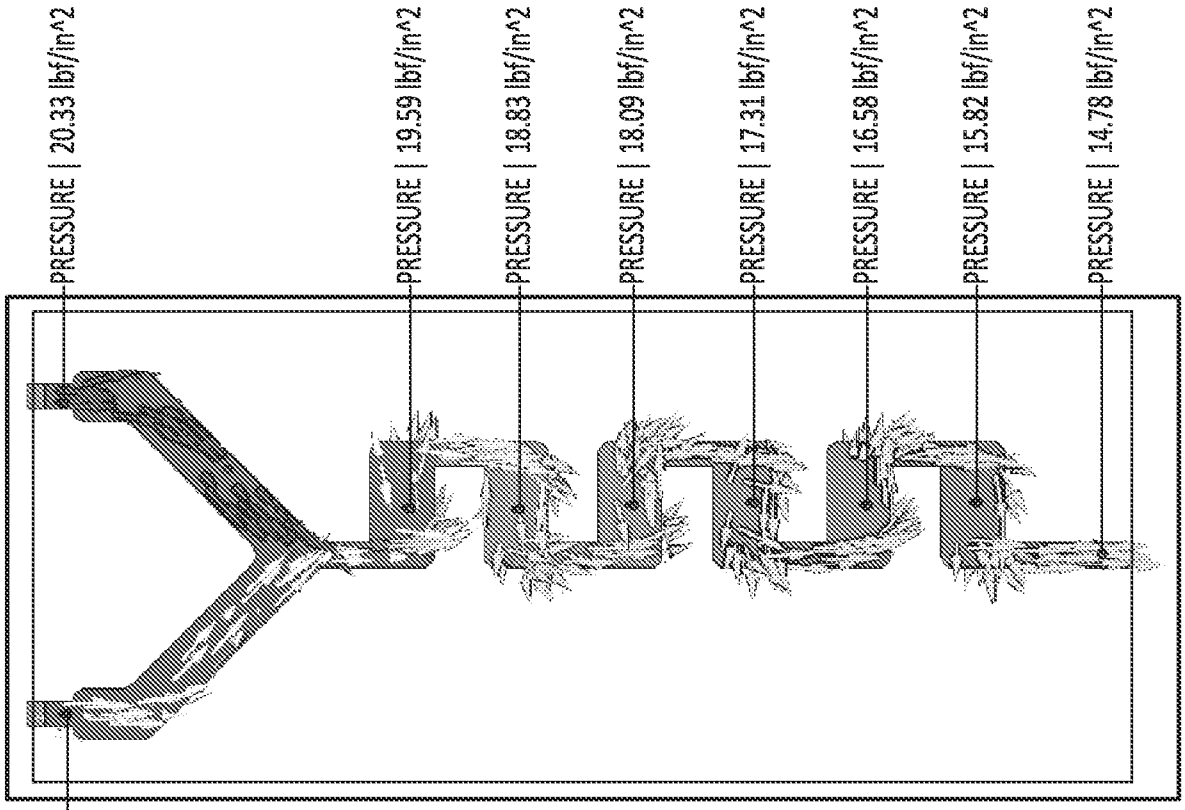

PRESSURE | 20.33 lbf/in^2
PRESSURE | 19.59 lbf/in^2
PRESSURE | 18.83 lbf/in^2
PRESSURE | 18.09 lbf/in^2
PRESSURE | 17.31 lbf/in^2
PRESSURE | 16.58 lbf/in^2
PRESSURE | 15.82 lbf/in^2
PRESSURE | 14.78 lbf/in^2
PRESSURE | 20.37 lbf/in^2

FIG. 2I

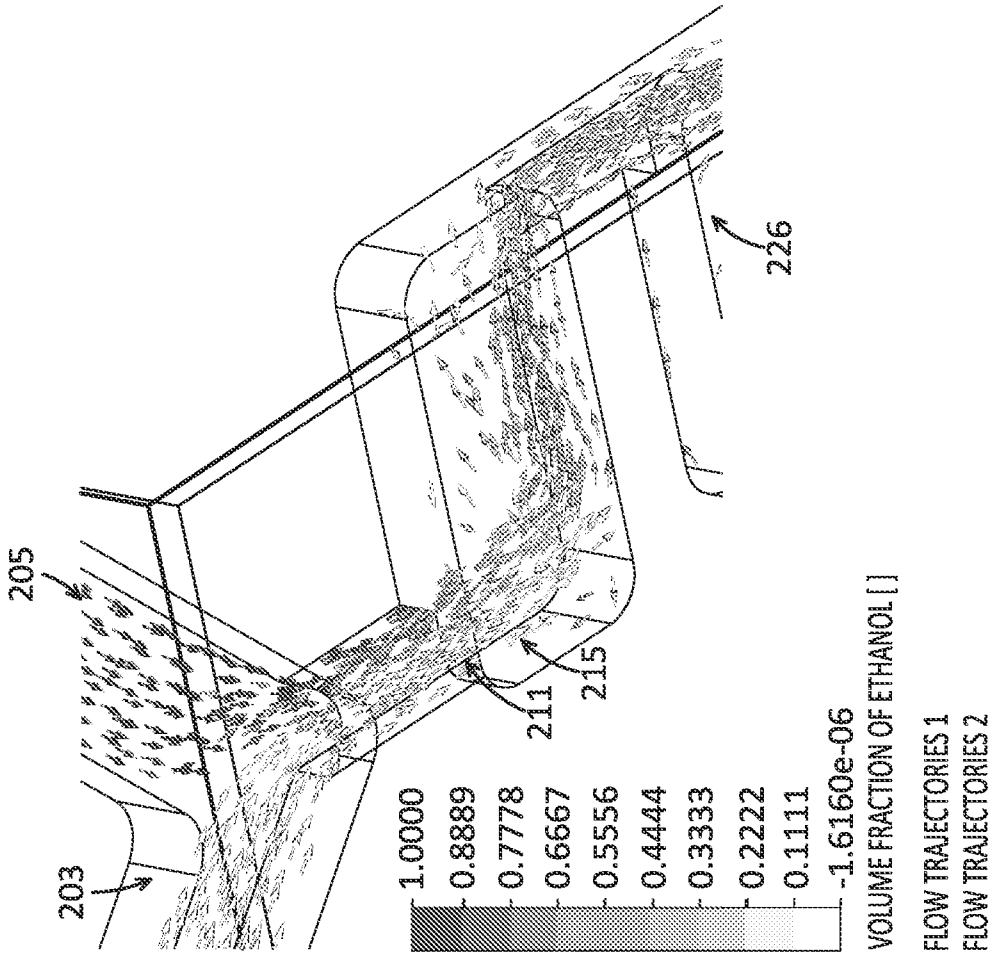

205
203
211
215
226
1.0000
0.8889
0.7778
0.6667
0.5556
0.4444
0.3333
0.2222
0.1111
-1.6160e-06
VOLUME FRACTION OF ETHANOL [ ]
FLOW TRAJECTORIES 1
FLOW TRAJECTORIES 2

FIG. 2H

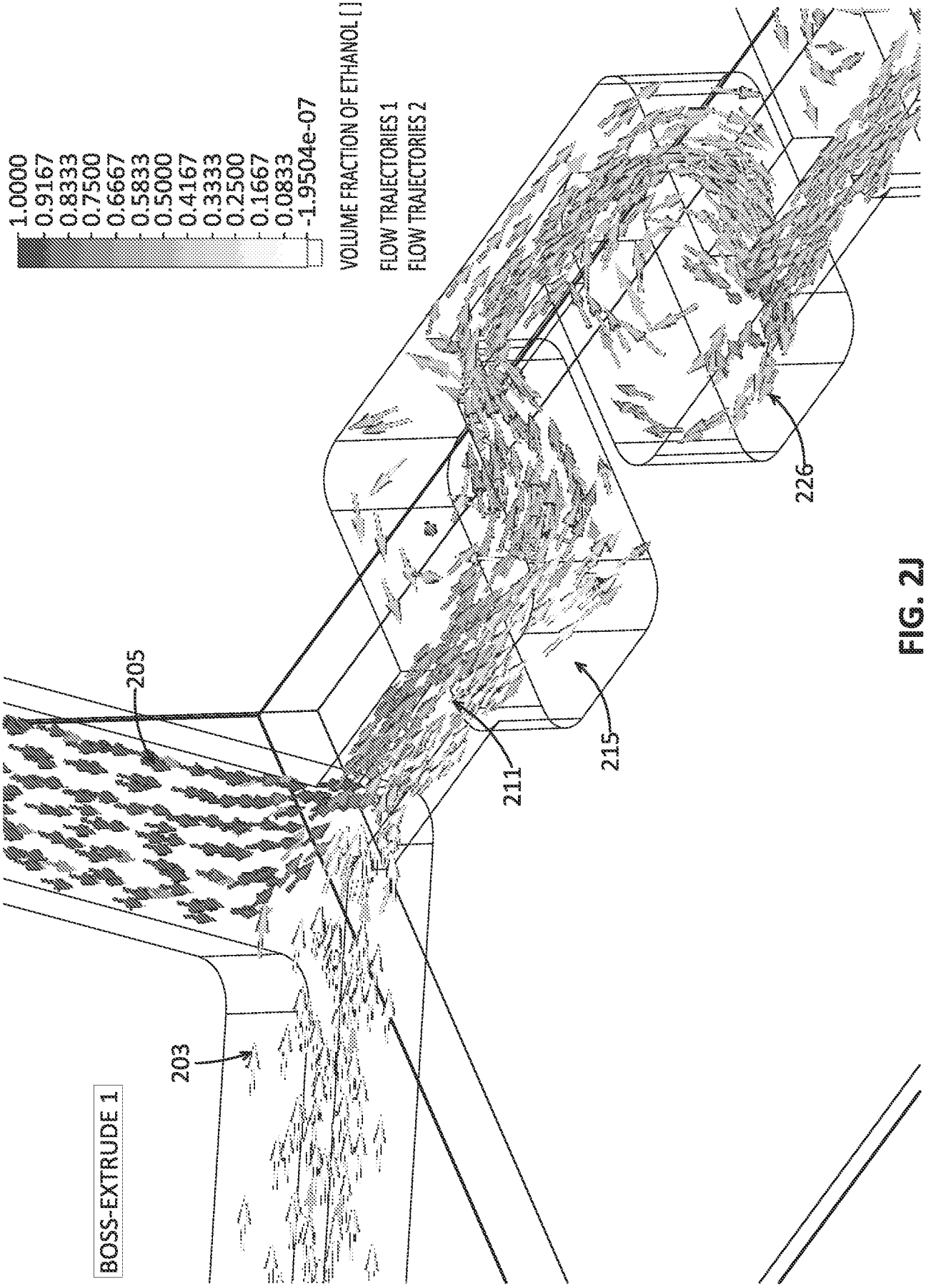

1.0000
0.9167
0.8333
0.7500
0.6667
0.5833
0.5000
0.4167
0.3333
0.2500
0.1667
0.0833
-1.9504e-07
VOLUME FRACTION OF ETHANOL [ ]
FLOW TRAJECTORIES 1
FLOW TRAJECTORIES 2
BOSS-EXTRUDE 1
203
205
211
215
226

FIG. 2J

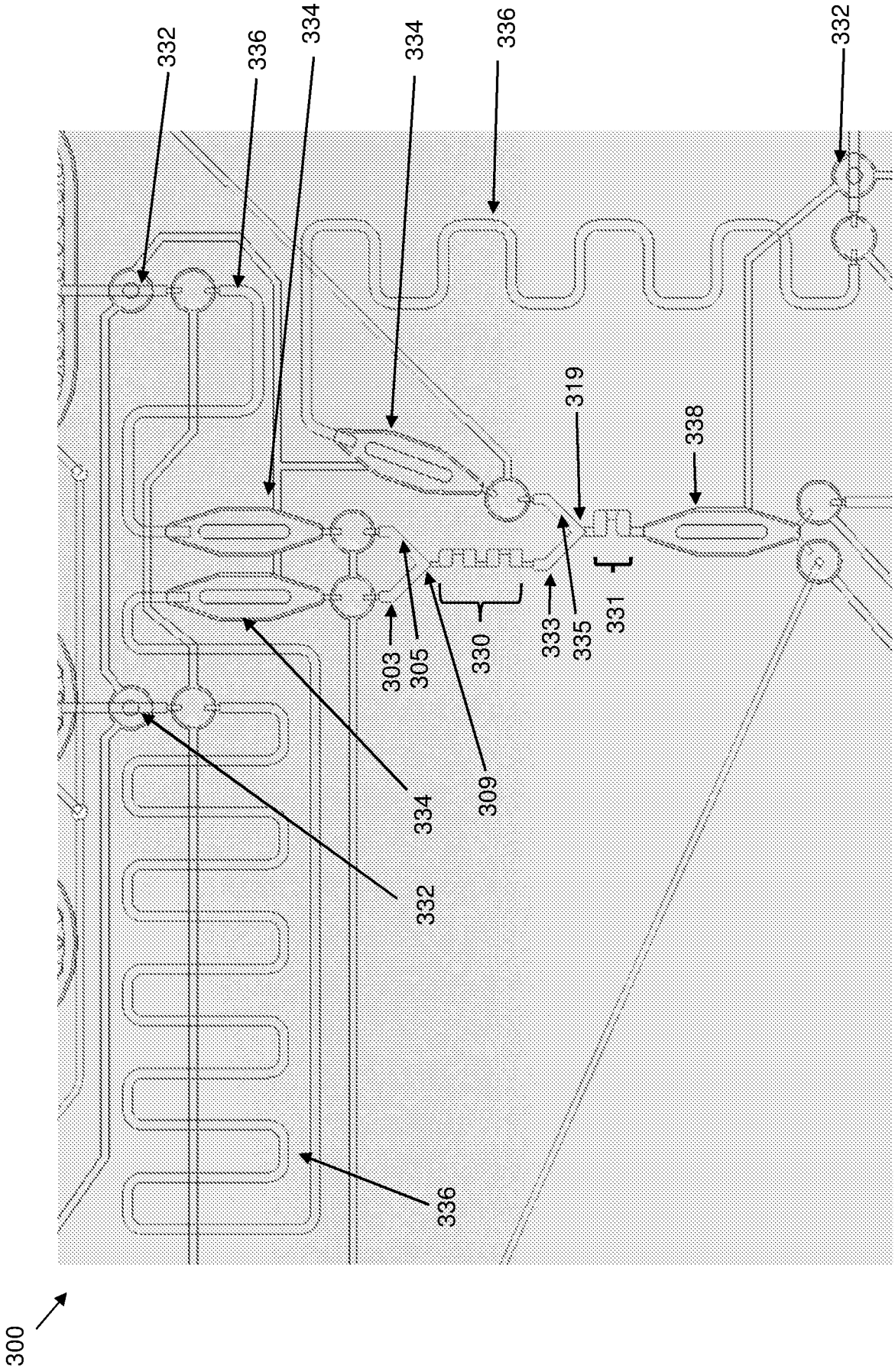

300
332
336
334
334
336
332
319
338
303
305
330
333
335
331
309
334
332
336

FIG. 3A

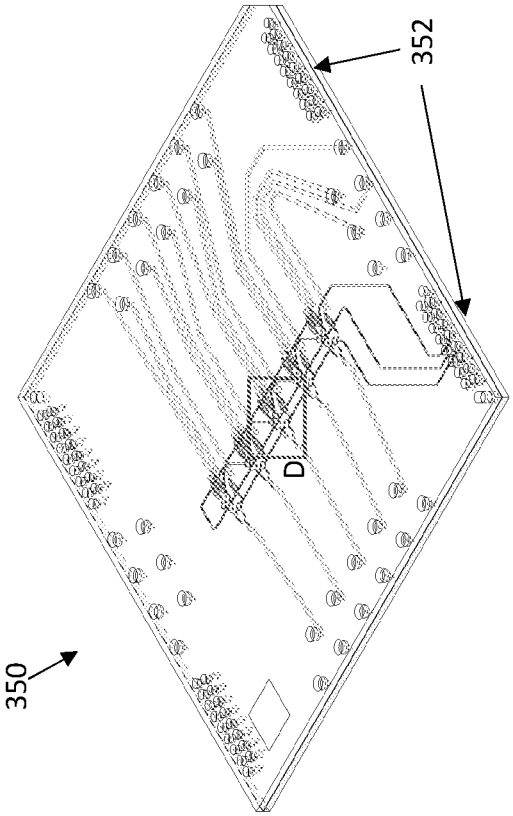

350
352
D

FIG. 3B

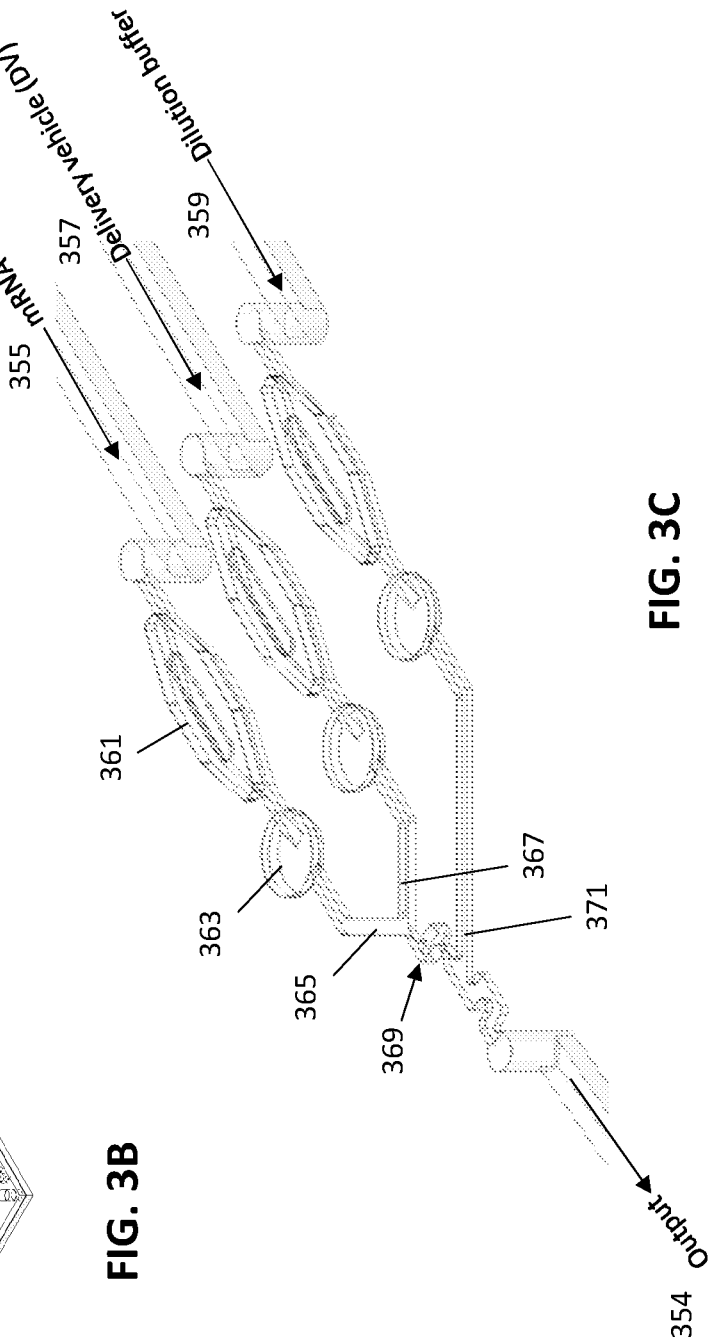

mRNA
355
Delivery Vehicle (DV)
357
Dilution buffer
359
361
363
365
367
369
371
Output
354

FIG. 3C

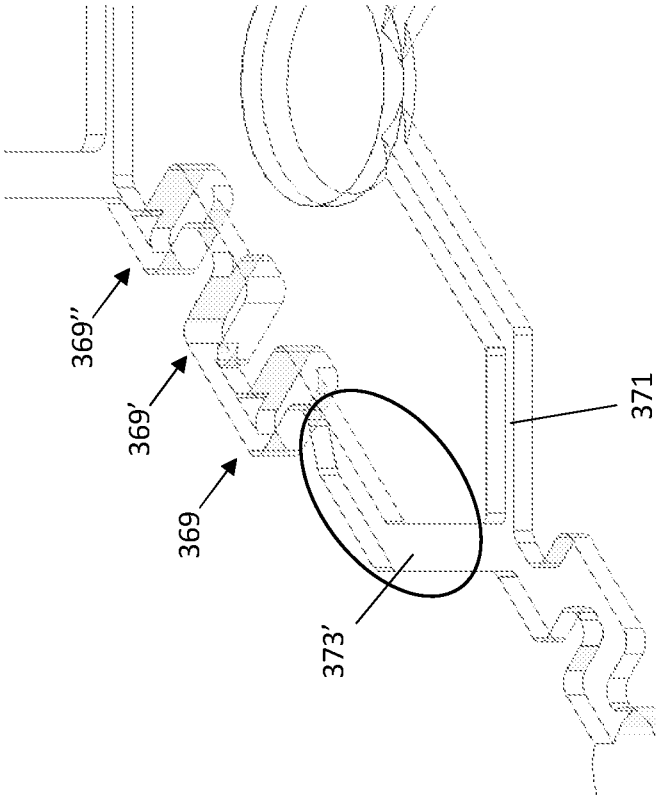


FIG. 3E

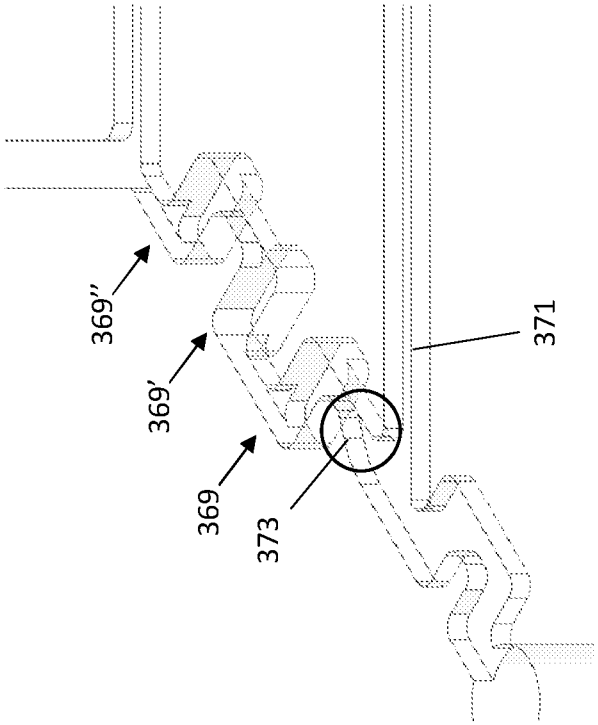


FIG. 3D

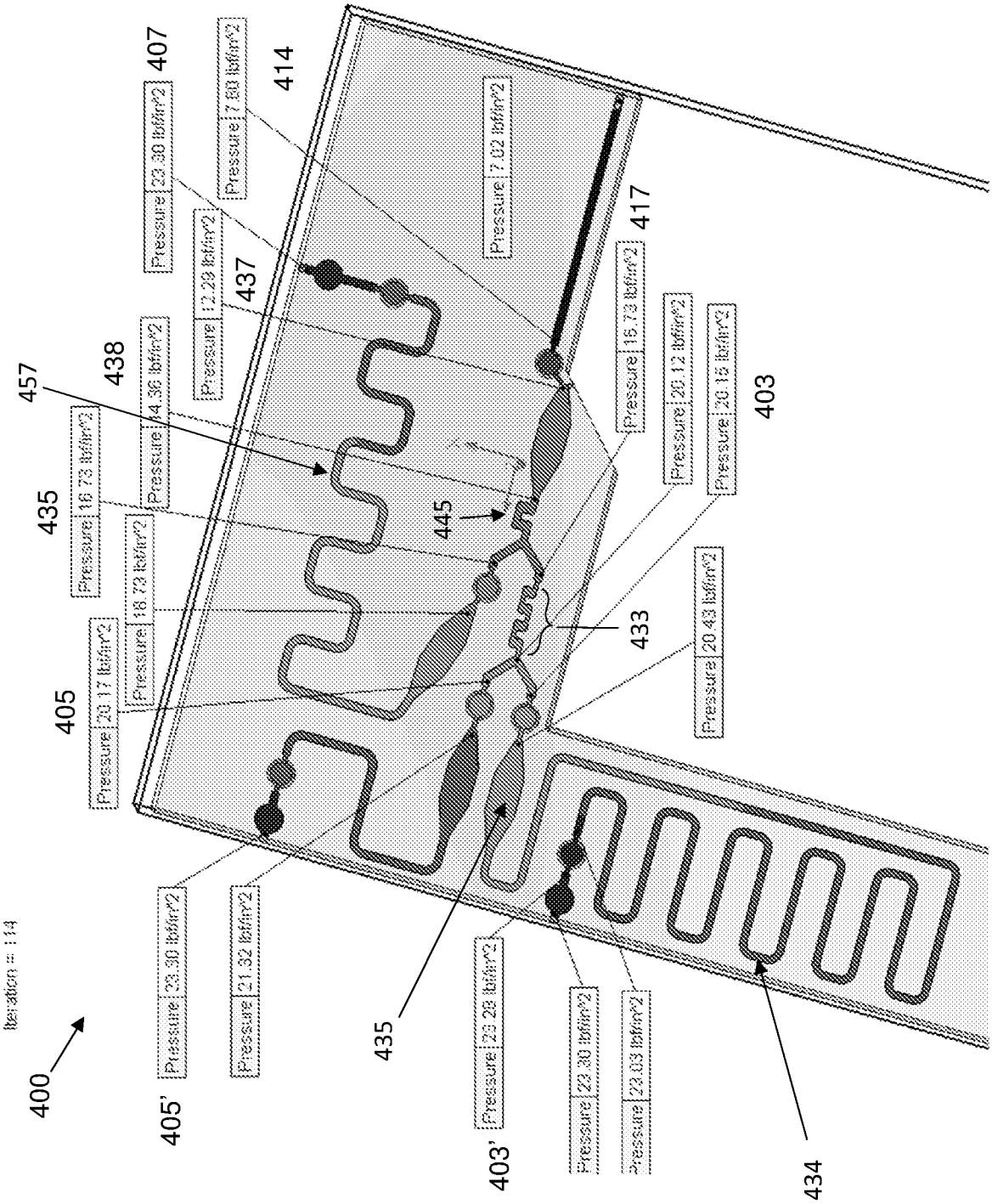

Iteration = 114
400
405'
Pressure 23.30 lbf/in^2
Pressure 21.32 lbf/in^2
435
403'
Pressure 23.29 lbf/in^2
Pressure 23.30 lbf/in^2
Pressure 23.03 lbf/in^2
434
405
Pressure 20.17 lbf/in^2
Pressure 18.73 lbf/in^2
435
Pressure 16.73 lbf/in^2
457
438
Pressure 14.36 lbf/in^2
Pressure 12.29 lbf/in^2
437
Pressure 7.80 lbf/in^2
407
Pressure 23.30 lbf/in^2
414
Pressure 7.02 lbf/in^2
417
Pressure 16.73 lbf/in^2
Pressure 20.12 lbf/in^2
Pressure 20.18 lbf/in^2
403
445
433
Pressure 20.43 lbf/in^2

FIG. 4

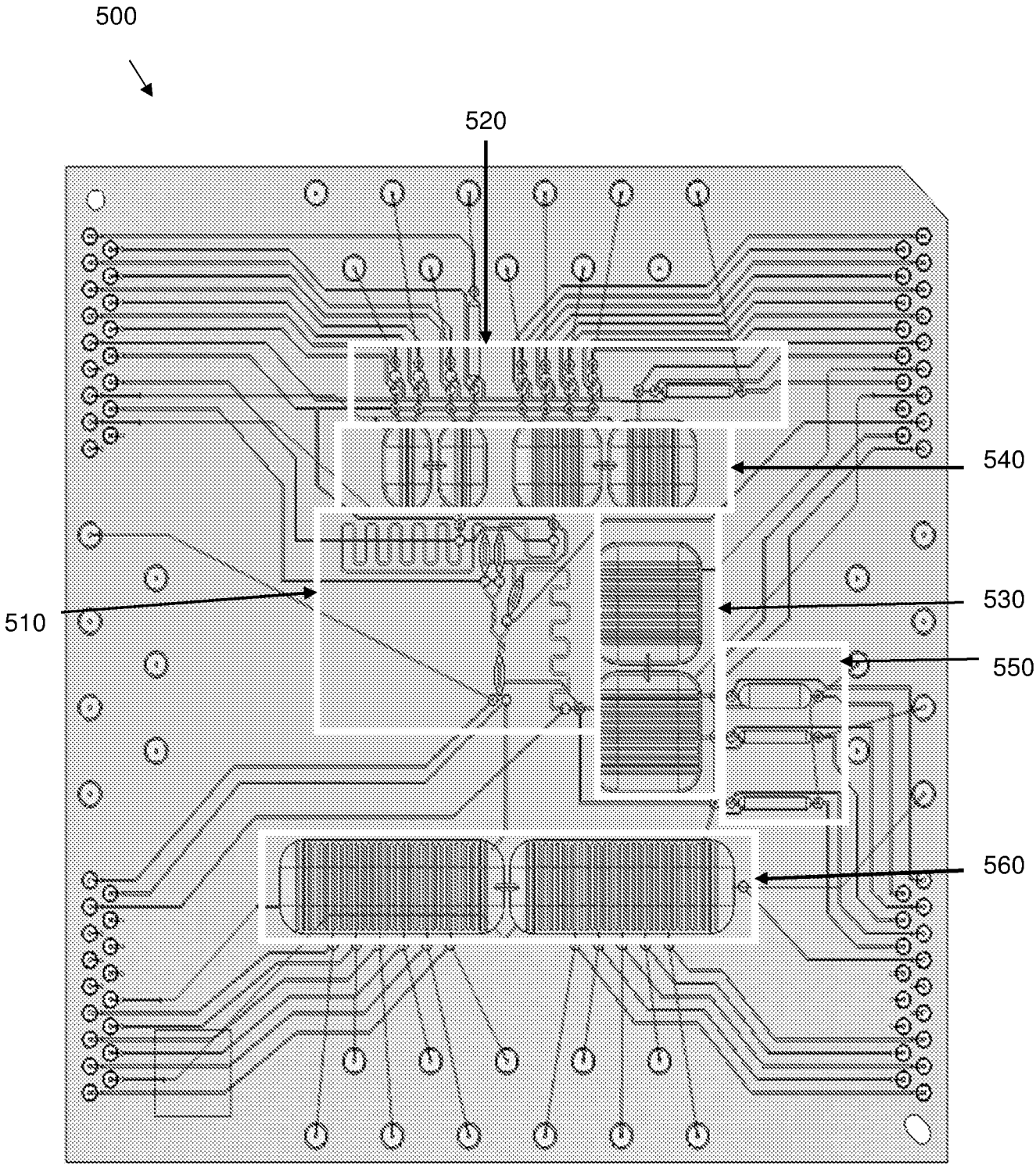


FIG. 5

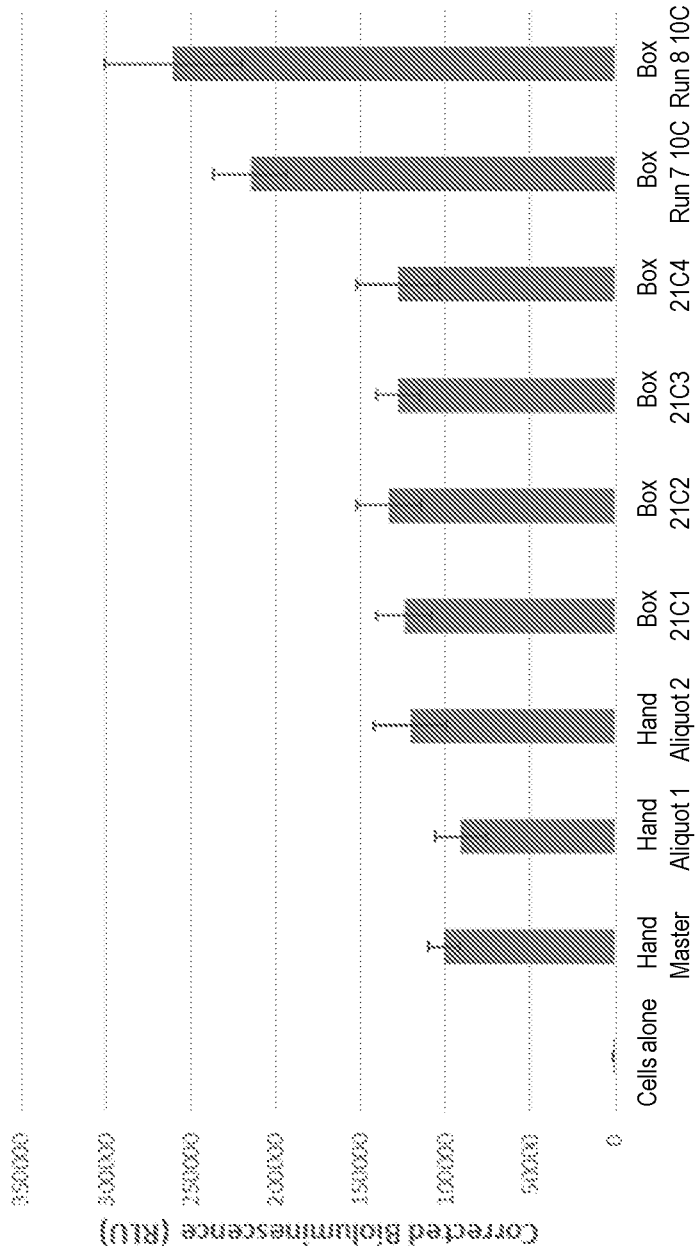

Corrected Bioluminescence (RLU)
350000
300000
250000
200000
150000
100000
50000
0
Cells alone
Hand Master
Hand Aliquot 1
Hand Aliquot 2
Box 21C1
Box 21C2
Box 21C3
Box 21C4
Box Run 7 10C
Box Run 8 10C

FIG. 6

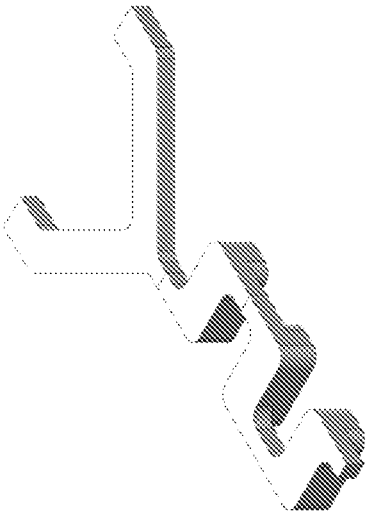


FIG. 7A

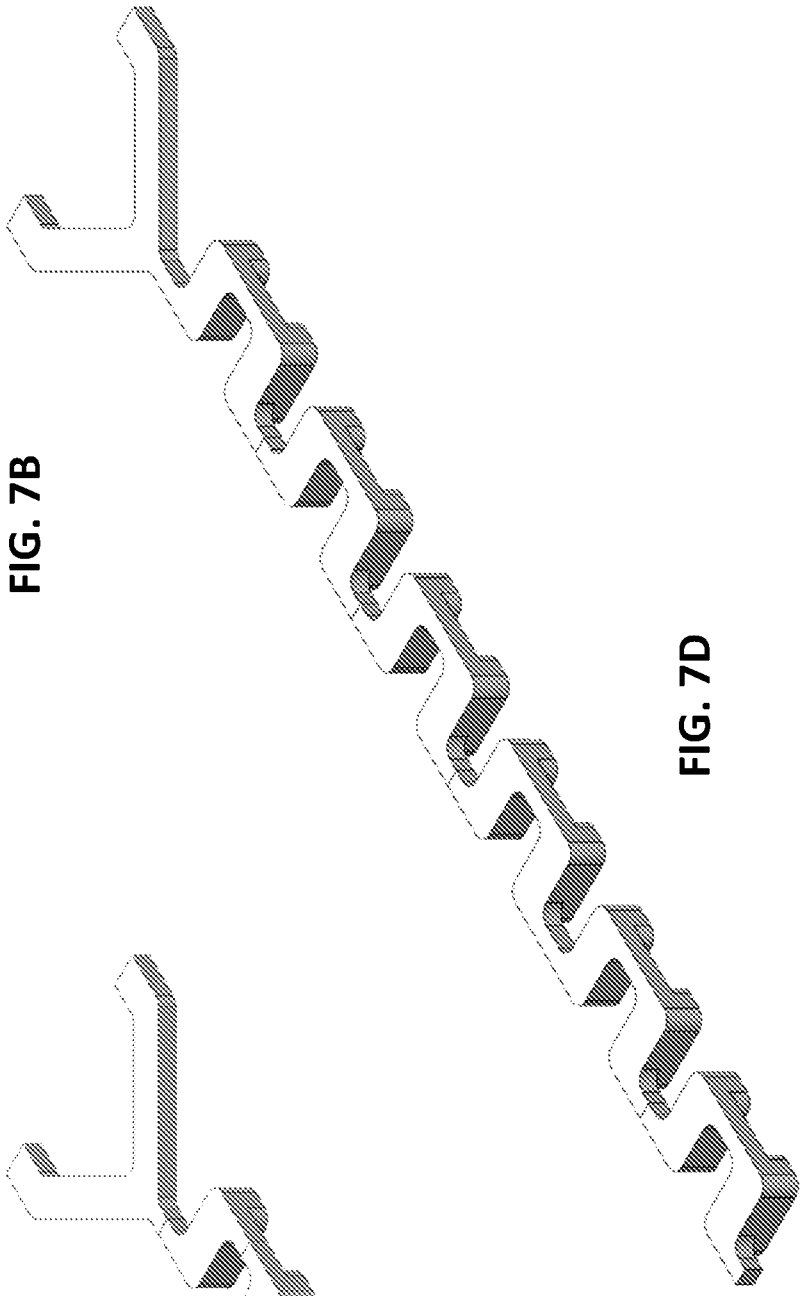


FIG. 7B

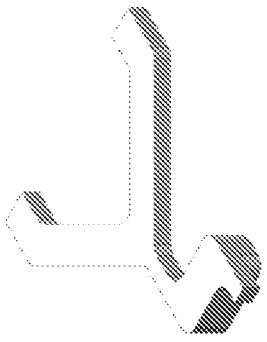


FIG. 7C

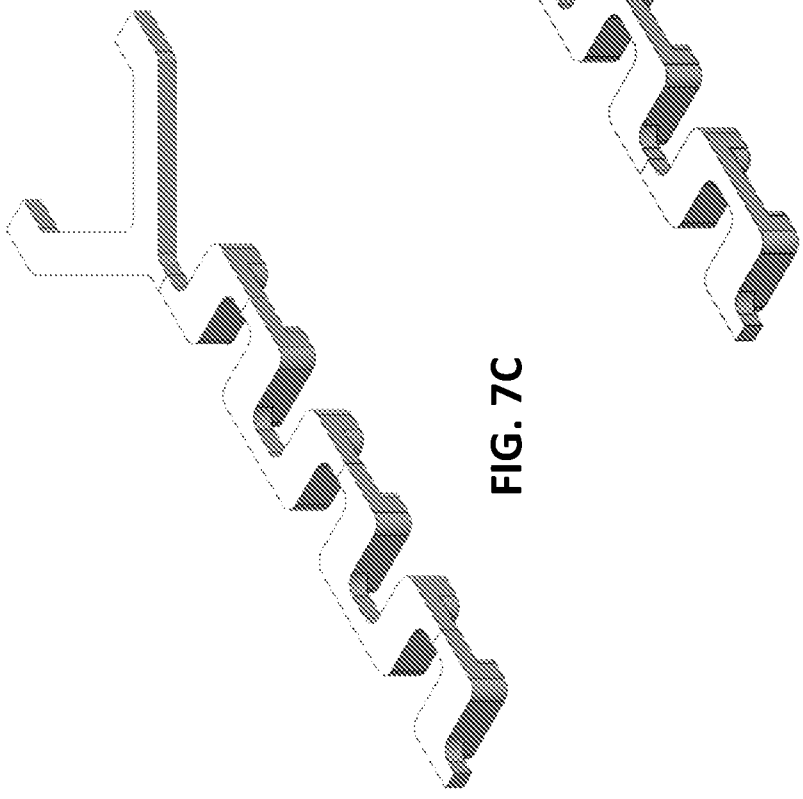


FIG. 7D

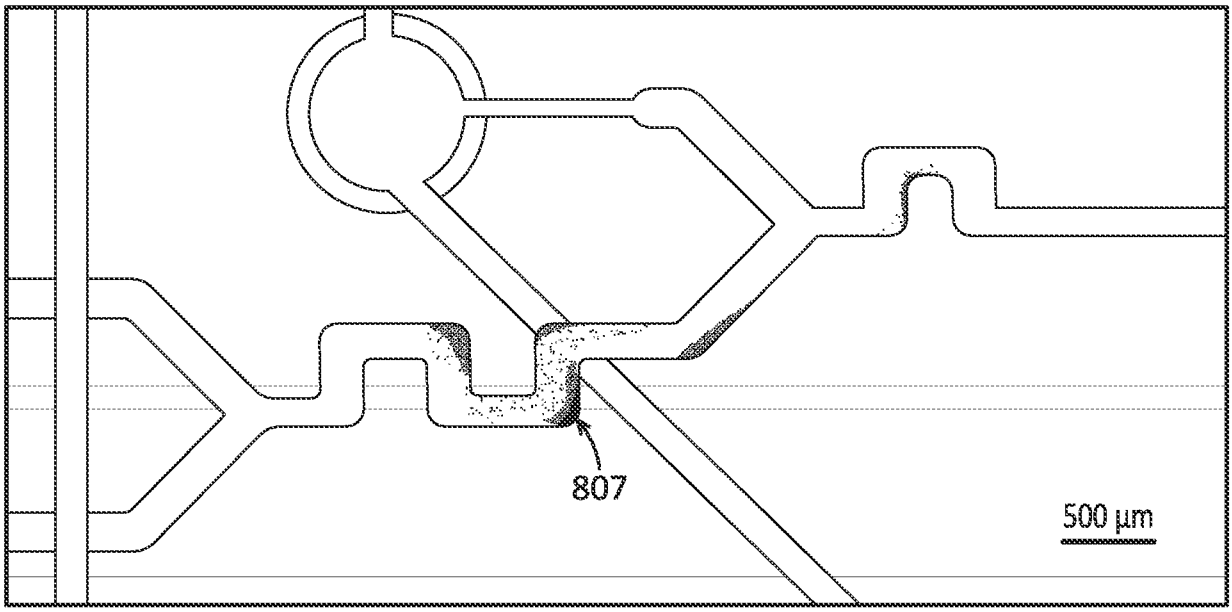


FIG. 8

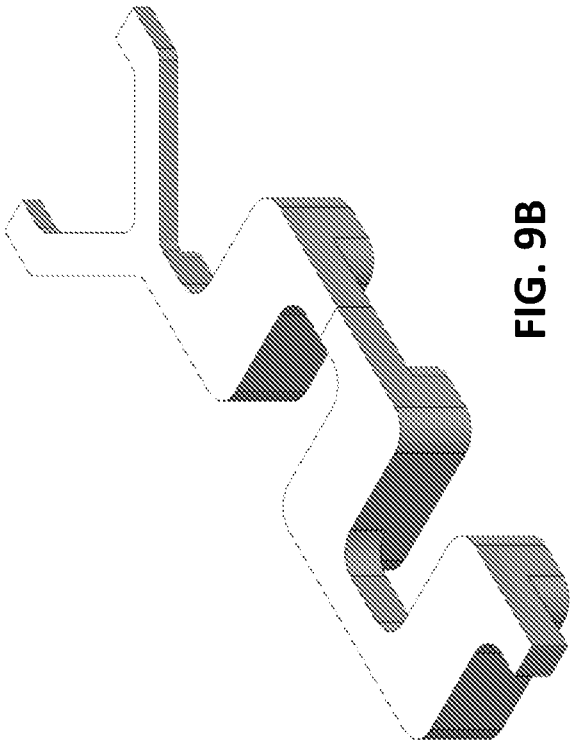


FIG. 9B

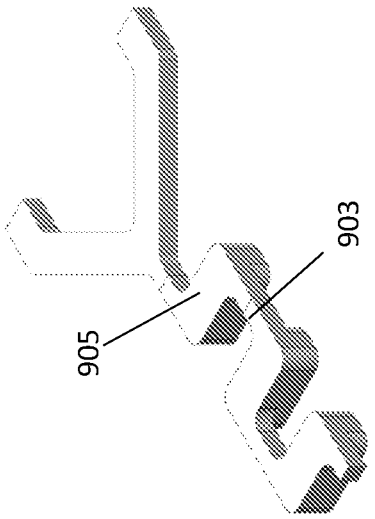


FIG. 9A

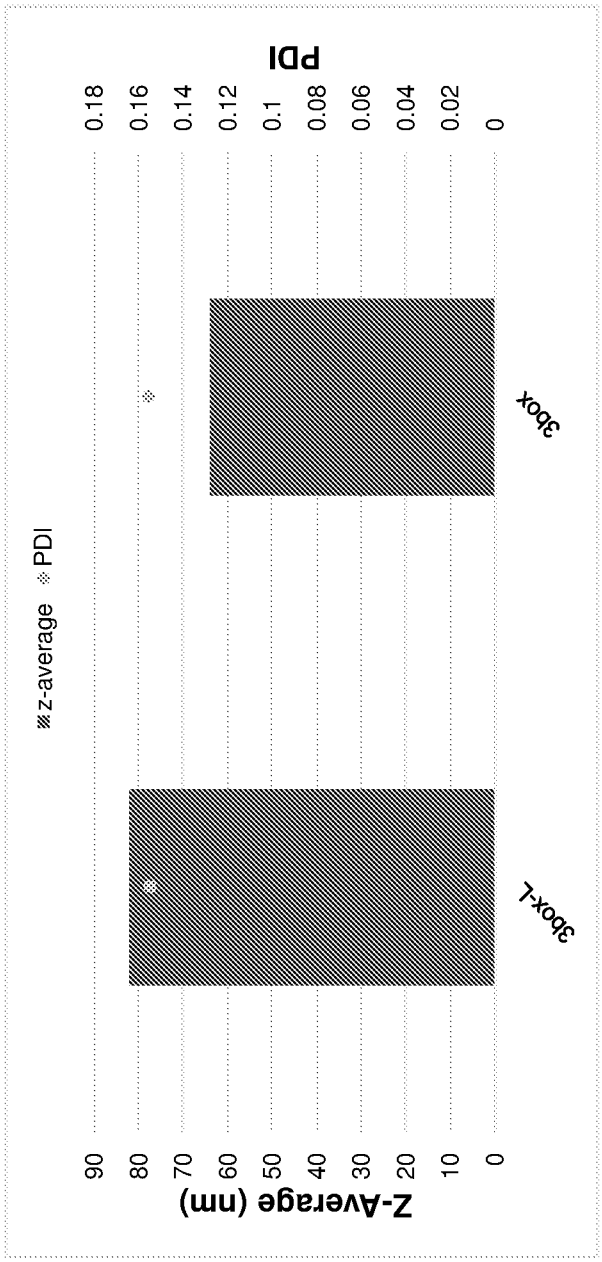


FIG. 9C

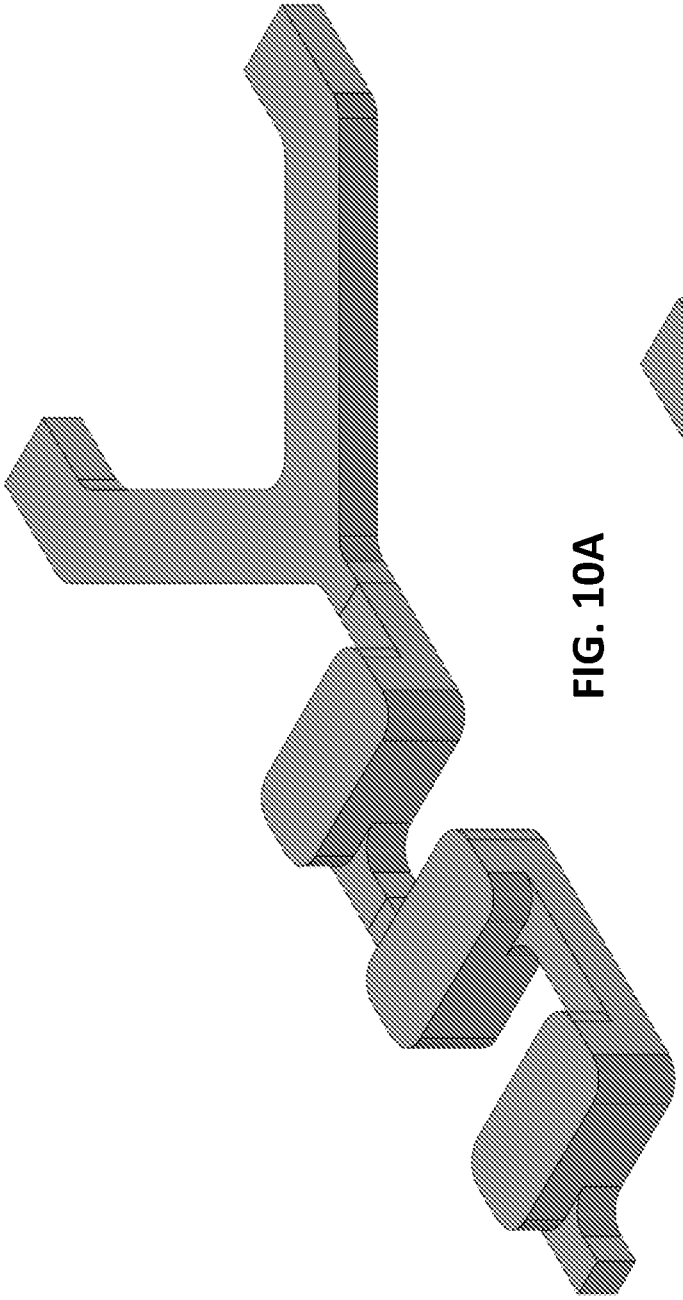


FIG. 10A

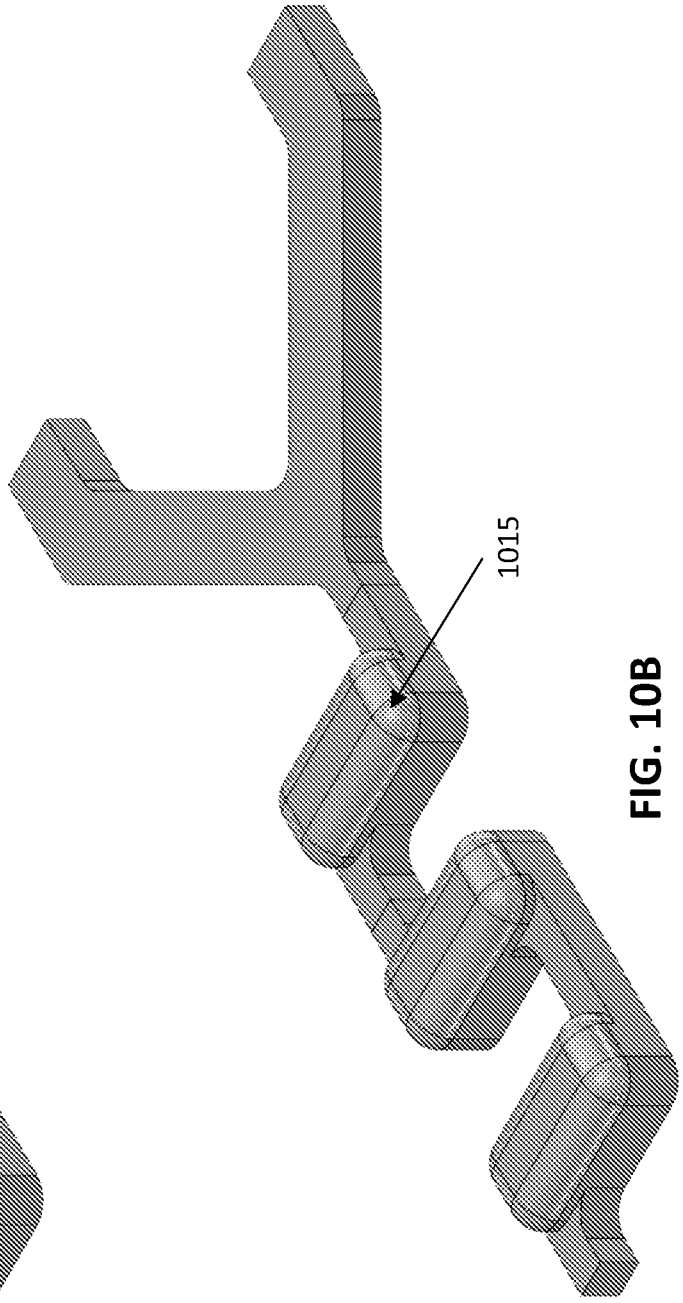


FIG. 10B

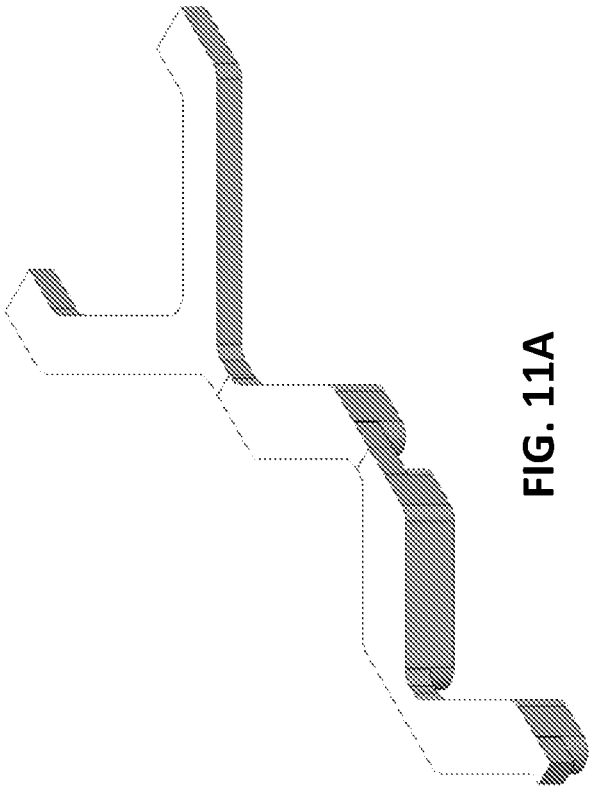


FIG. 11A

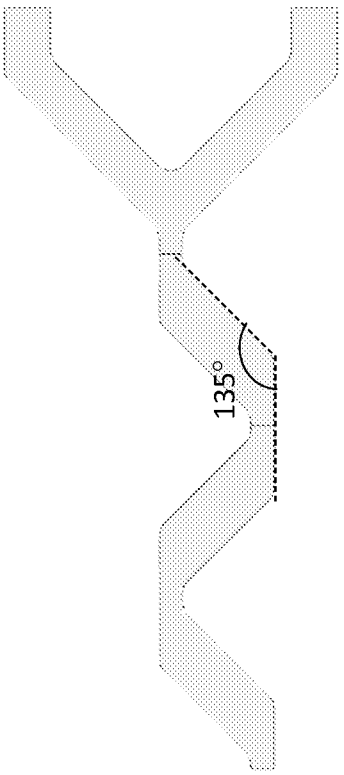


FIG. 11B

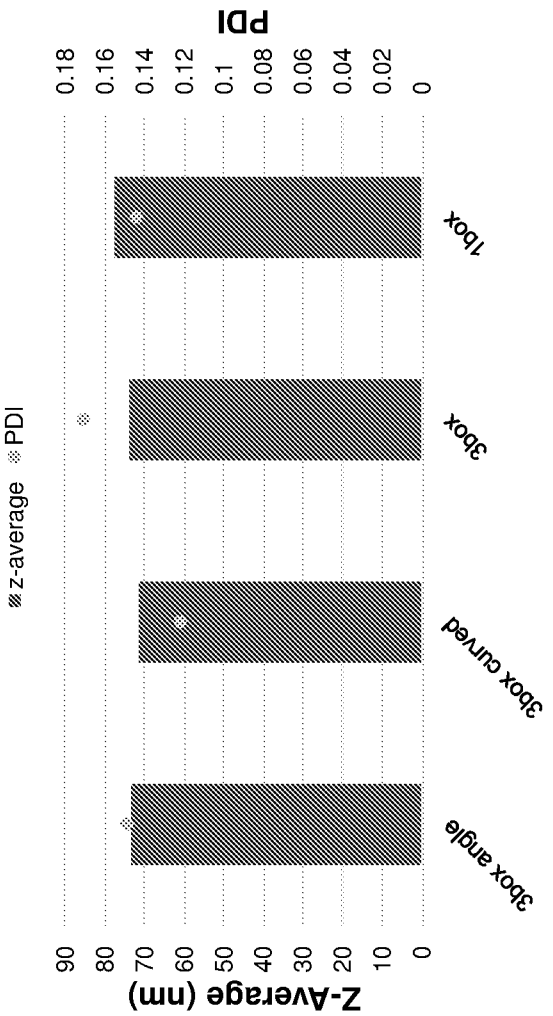


FIG. 11C

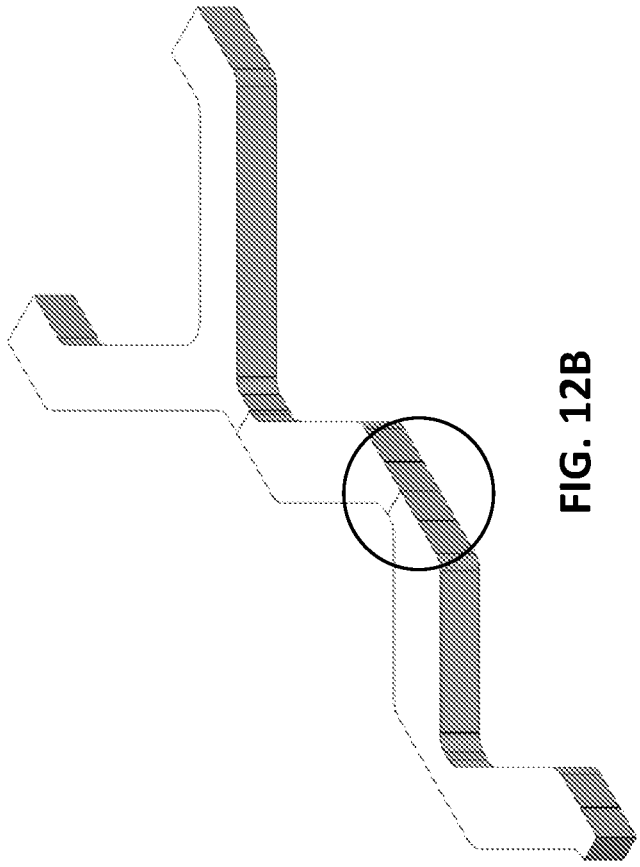


FIG. 12B

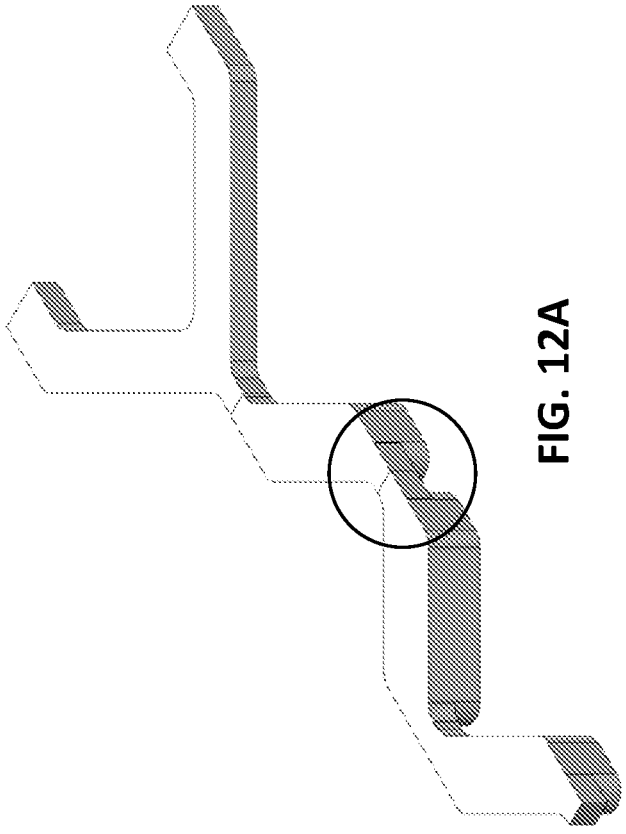


FIG. 12A

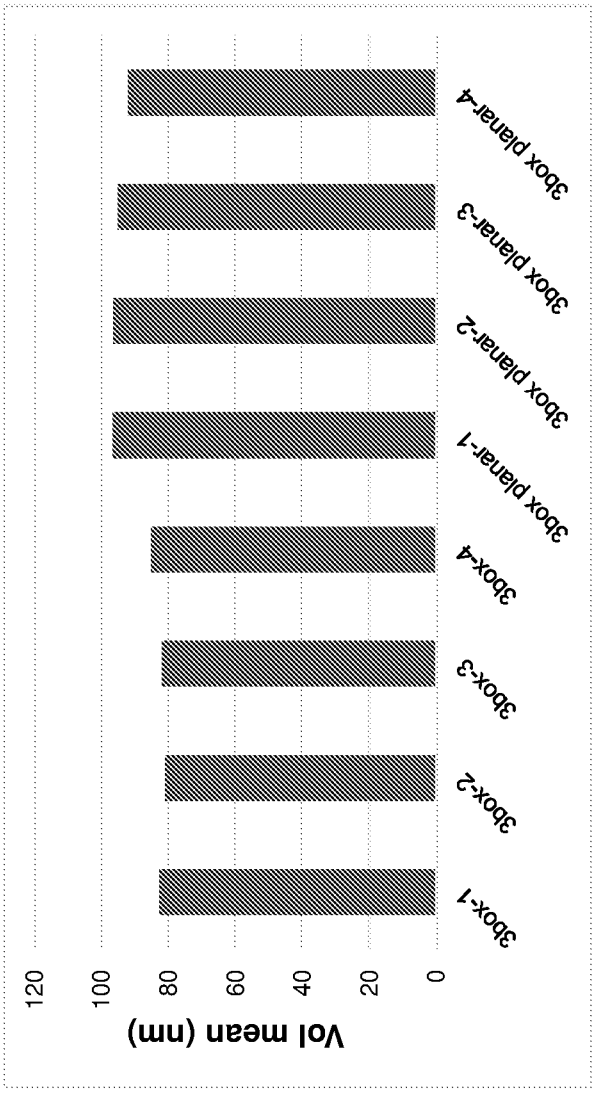


FIG. 12C

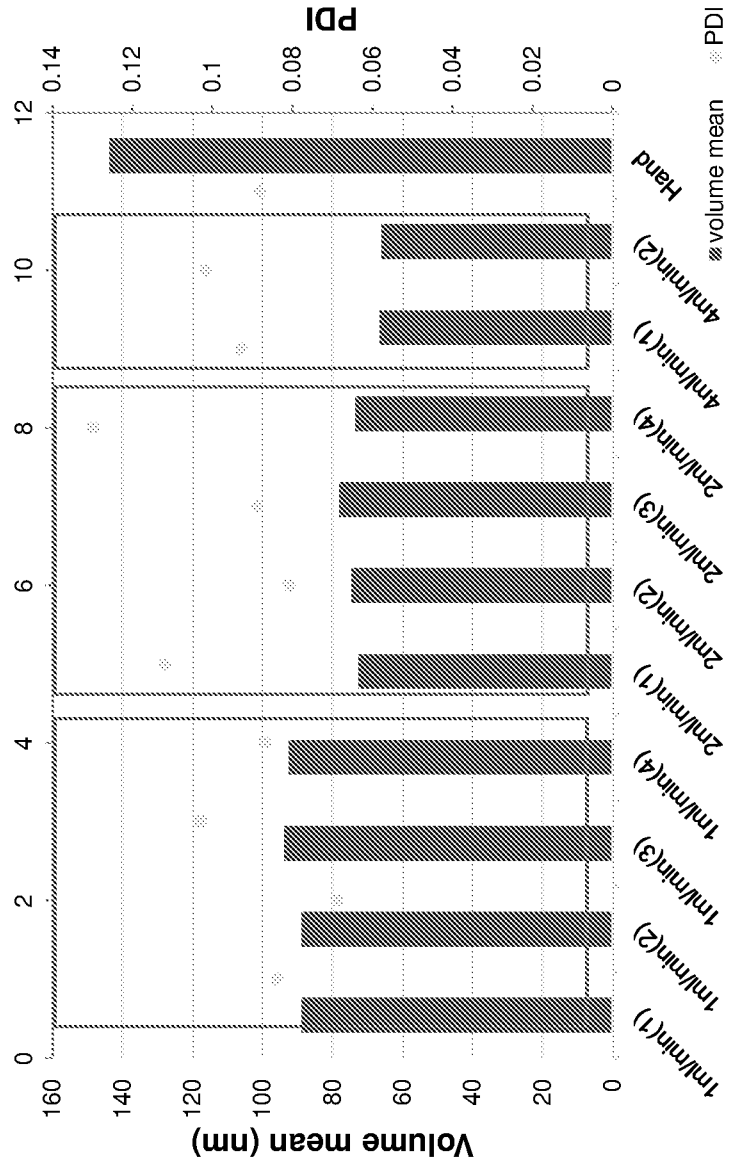

Volume mean (nm)
PDI
volume mean
PDI
1ml/min(1)
1ml/min(2)
1ml/min(3)
1ml/min(4)
2ml/min(1)
2ml/min(2)
2ml/min(3)
2ml/min(4)
4ml/min(1)
4ml/min(2)
Hand

FIG. 13

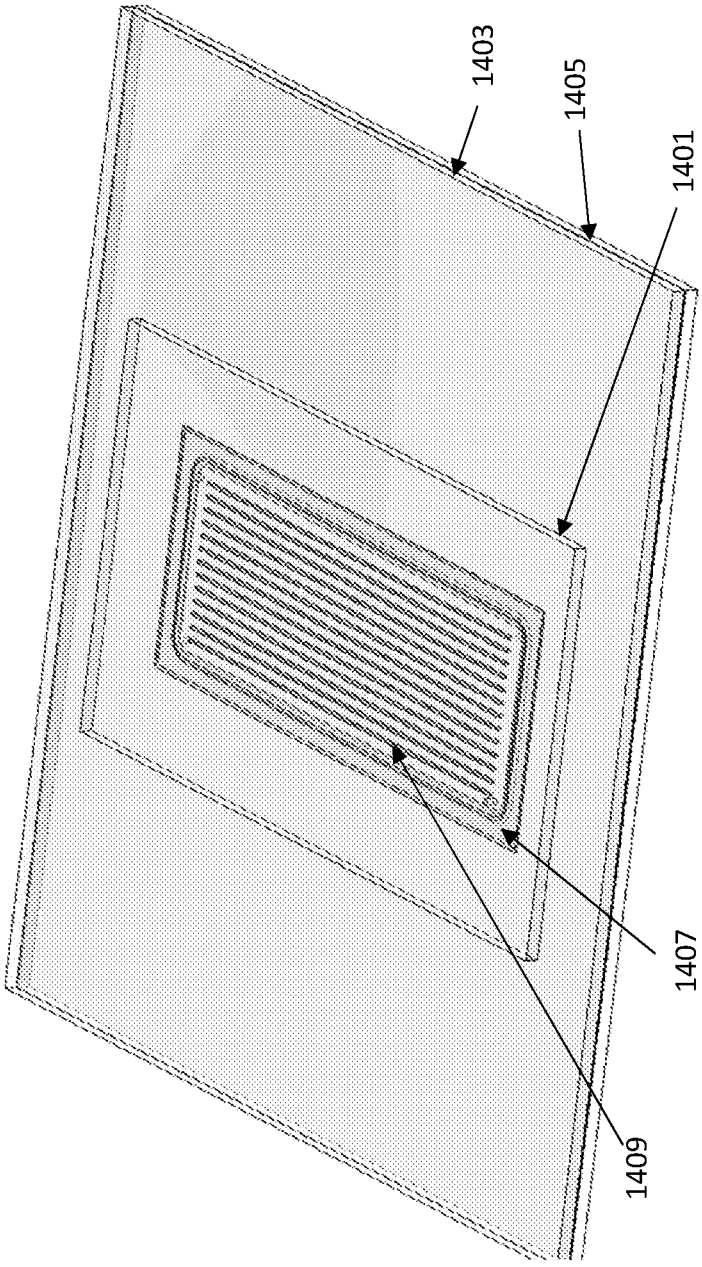


FIG. 14A

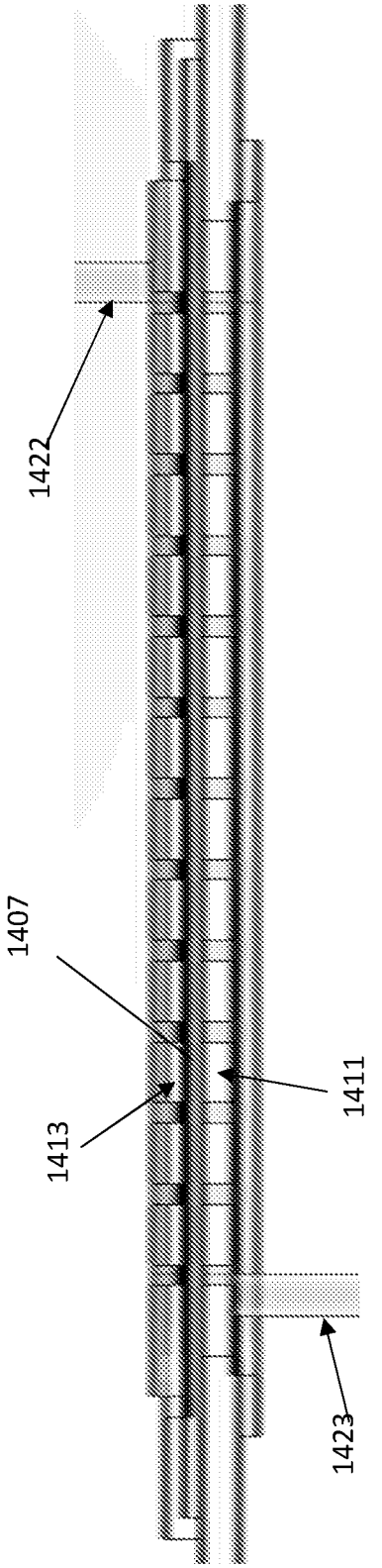


FIG. 14B

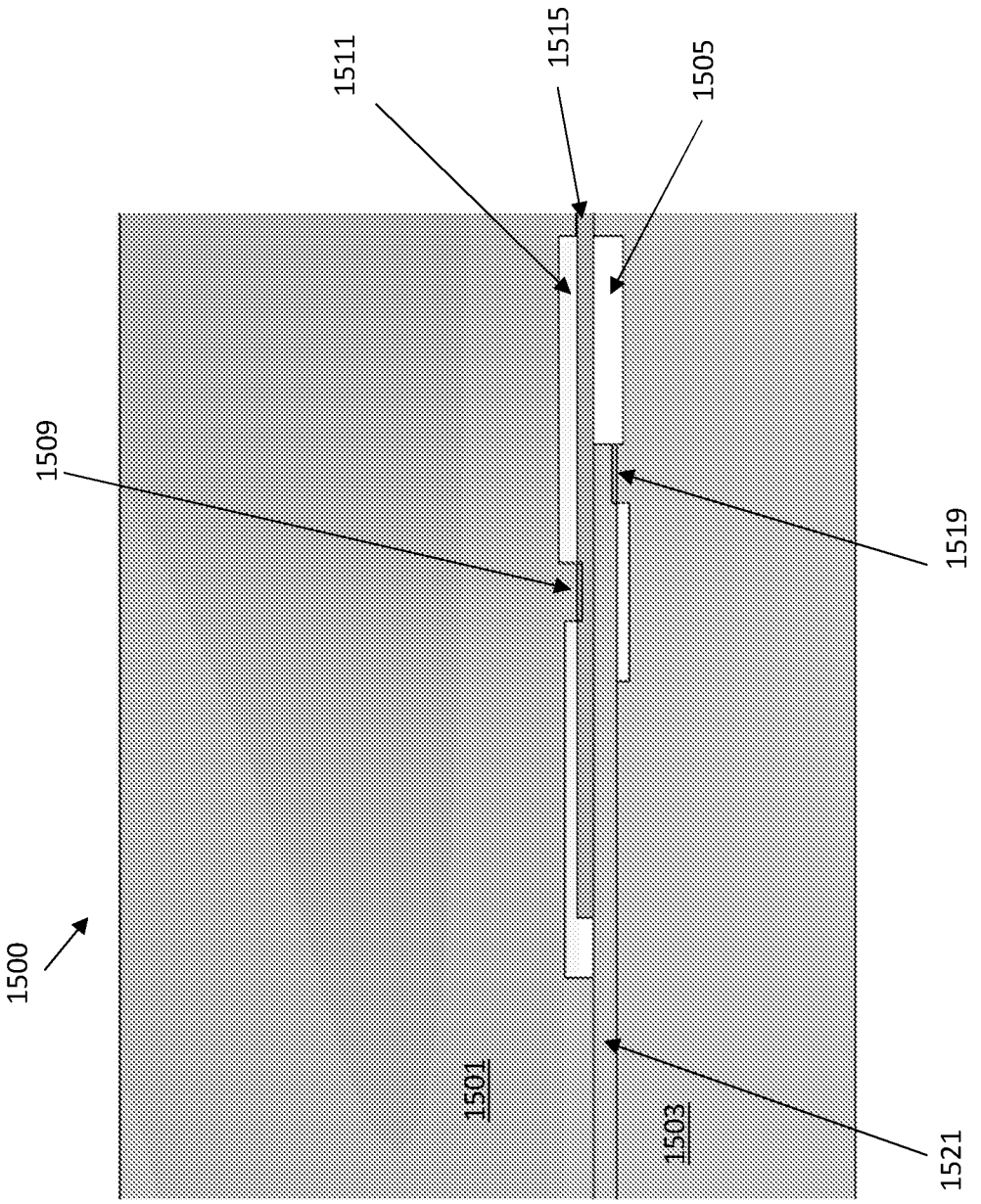


FIG. 15

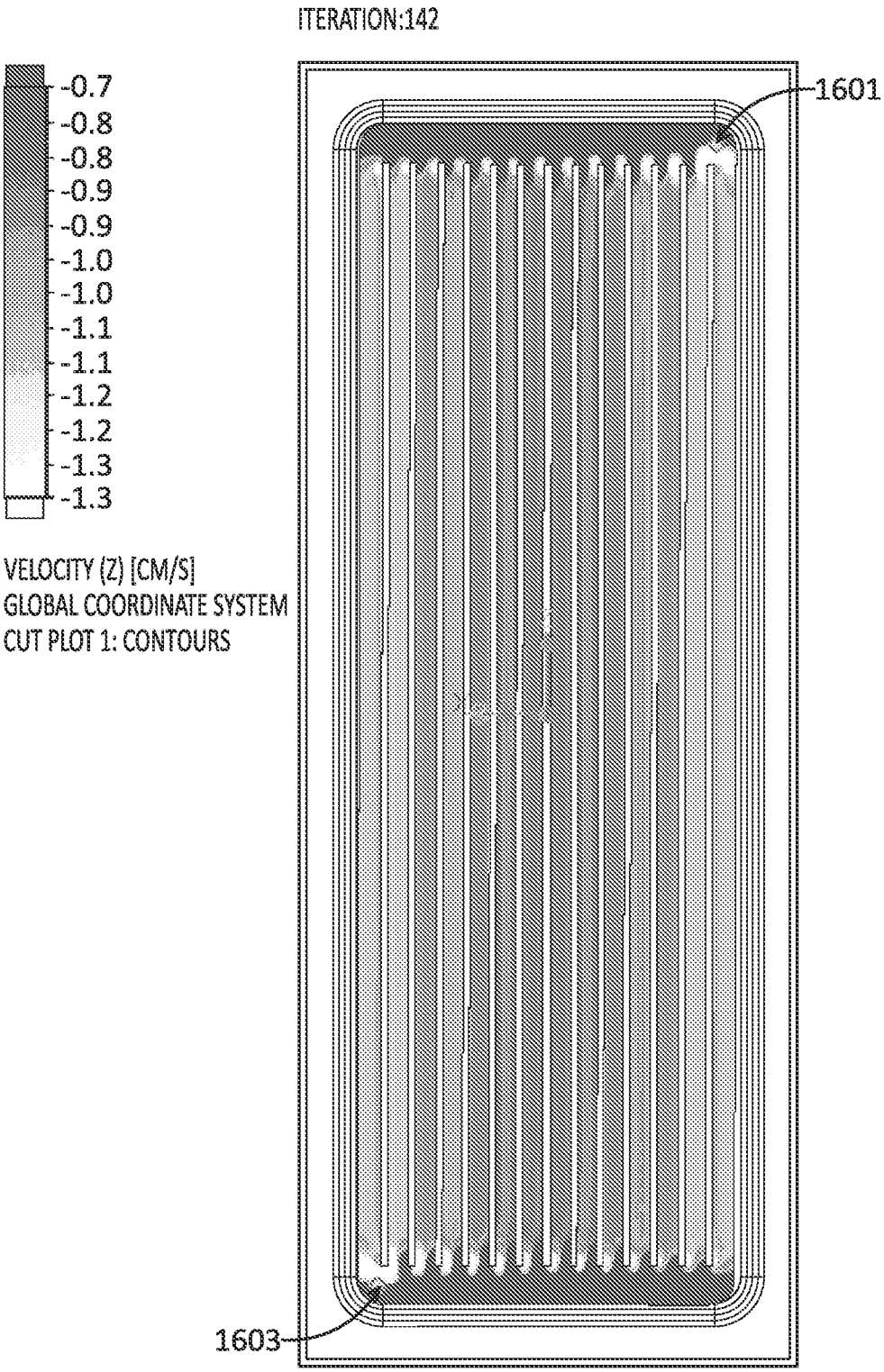

ITERATION:142
-0.7
-0.8
-0.8
-0.9
-0.9
-1.0
-1.0
-1.1
-1.1
-1.2
-1.2
-1.3
-1.3
VELOCITY (Z) [CM/S]
GLOBAL COORDINATE SYSTEM
CUT PLOT 1: CONTOURS
1601
1603

FIG. 16

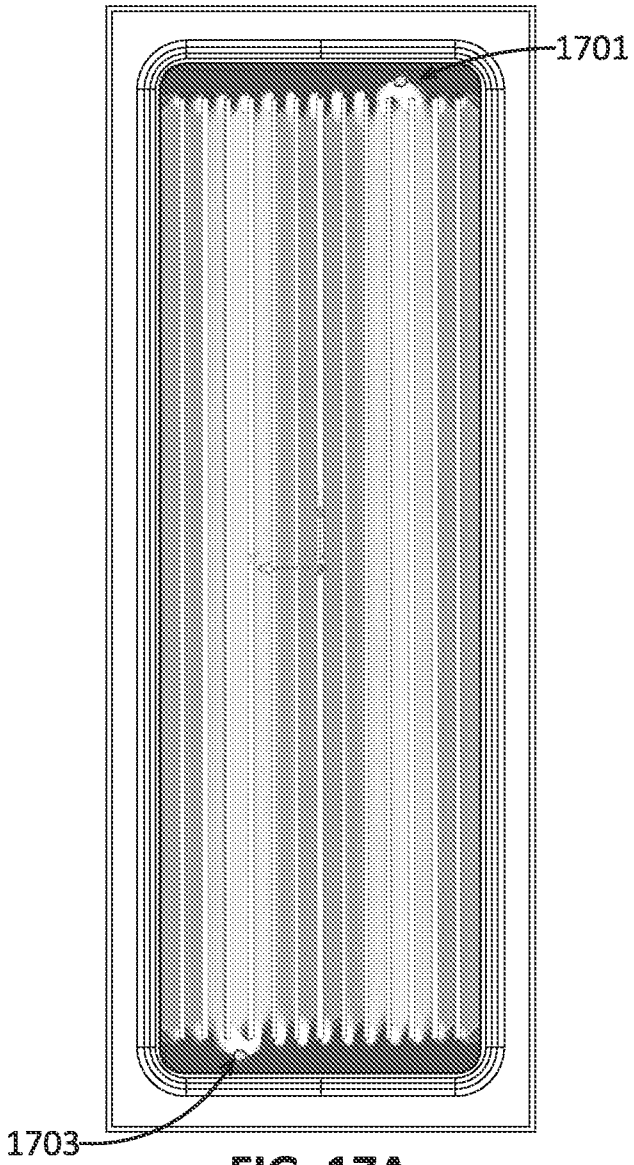


FIG. 17A

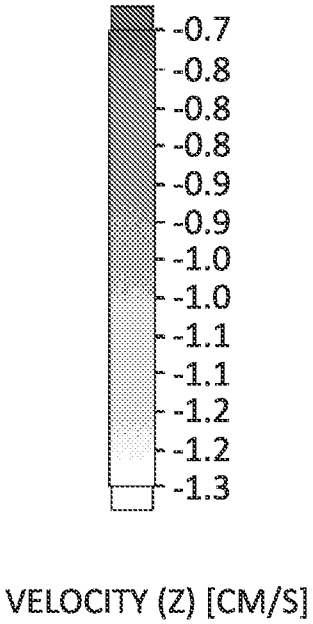


FIG. 17B

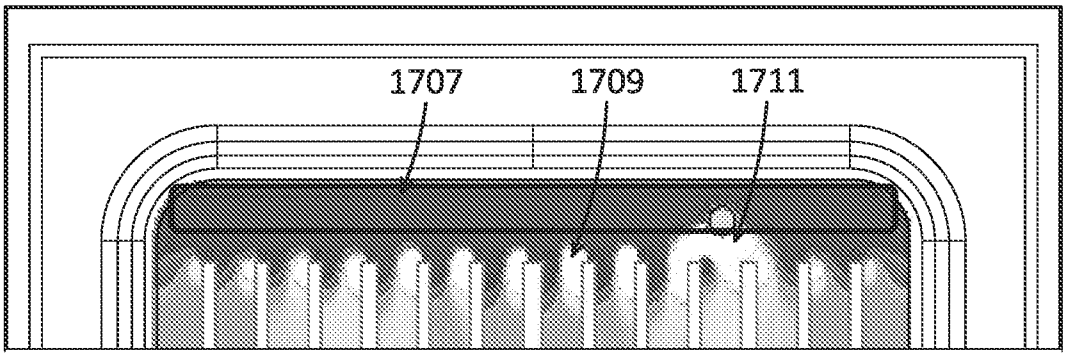


FIG. 17C

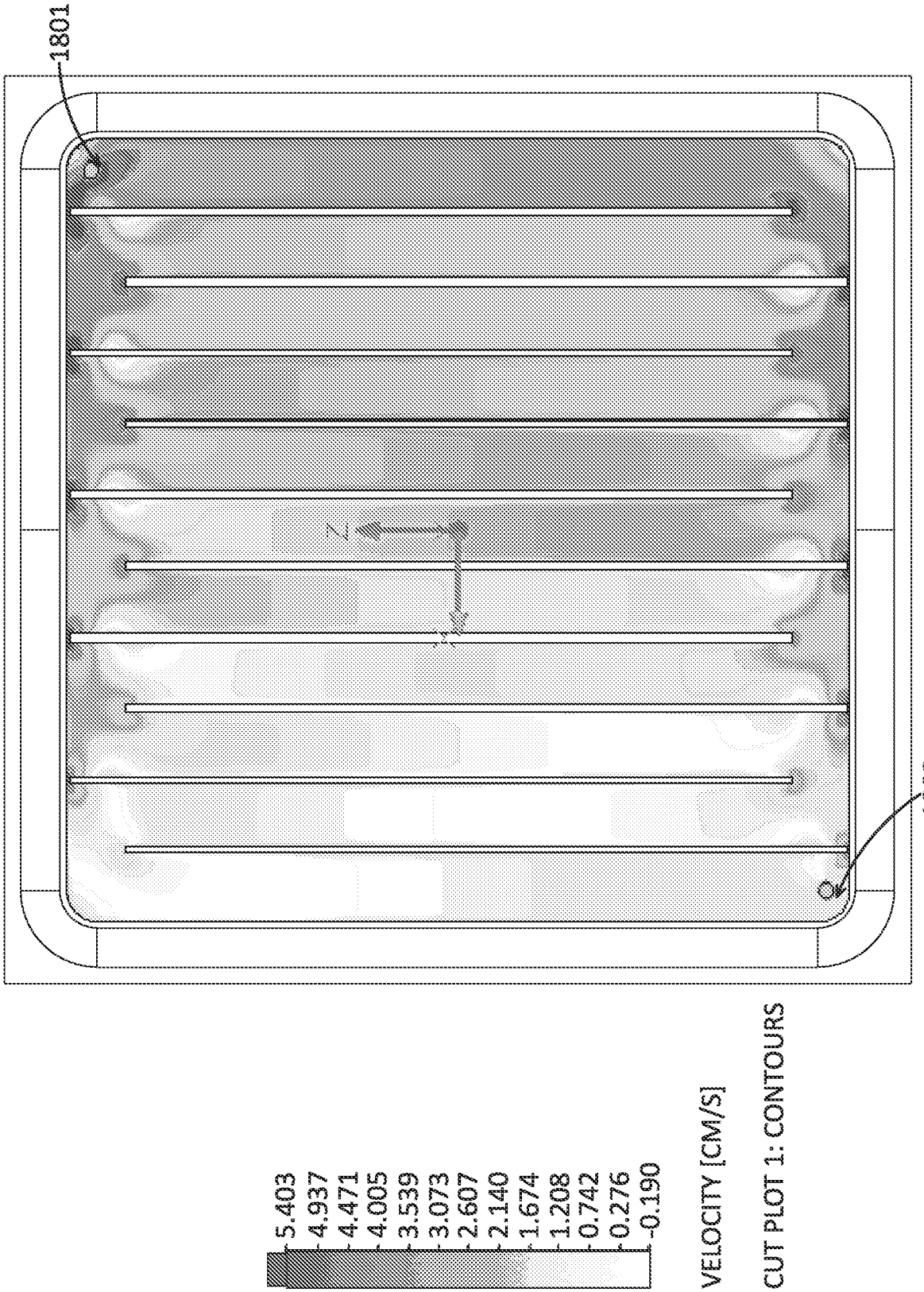

1801
1803
CUT PLOT 1: CONTOURS
VELOCITY [CM/S]
5.403
4.937
4.471
4.005
3.539
3.073
2.607
2.140
1.674
1.208
0.742
0.276
-0.190

FIG. 18

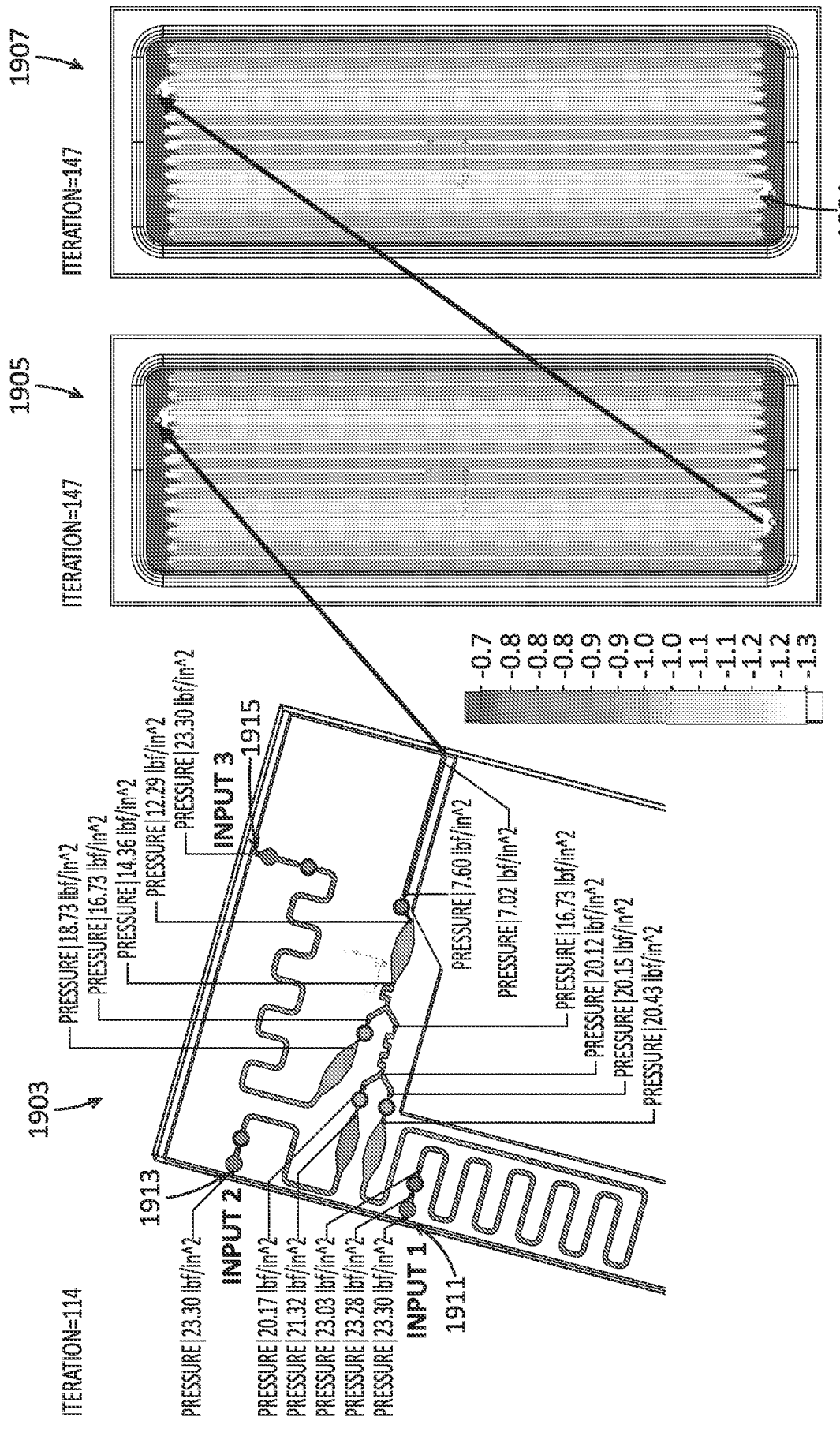

1907
ITERATION=147
1931
1905
ITERATION=147
-0.7
-0.8
-0.8
-0.8
-0.9
-0.9
-1.0
-1.0
-1.1
-1.1
-1.2
-1.2
-1.3
VELOCITY (Z) [CM/S]
GLOBAL COORDINATE SYSTEM
CUT PLOT 1: CONTOURS
1903
ITERATION=114
1913
1915
1911
INPUT 1
INPUT 2
INPUT 3
PRESSURE | 23.30 lbf/in^2
PRESSURE | 20.17 lbf/in^2
PRESSURE | 21.32 lbf/in^2
PRESSURE | 23.03 lbf/in^2
PRESSURE | 23.28 lbf/in^2
PRESSURE | 23.30 lbf/in^2
PRESSURE | 18.73 lbf/in^2
PRESSURE | 16.73 lbf/in^2
PRESSURE | 14.36 lbf/in^2
PRESSURE | 12.29 lbf/in^2
PRESSURE | 23.30 lbf/in^2
PRESSURE | 7.60 lbf/in^2
PRESSURE | 7.02 lbf/in^2
PRESSURE | 16.73 lbf/in^2
PRESSURE | 20.12 lbf/in^2
PRESSURE | 20.15 lbf/in^2
PRESSURE | 20.43 lbf/in^2

FIG. 19

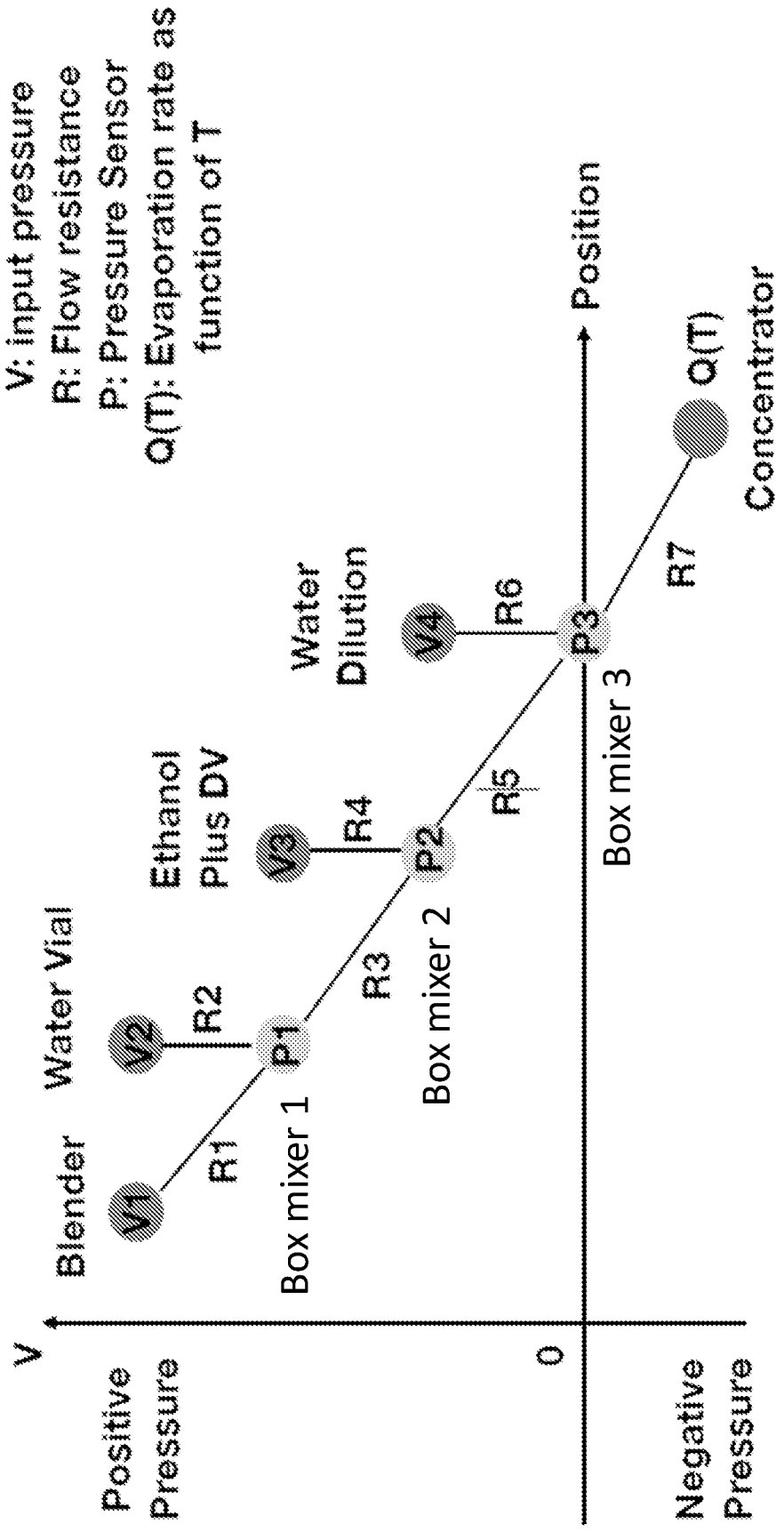

V: input pressure
R: Flow resistance
P: Pressure Sensor
Q(T): Evaporation rate as function of T
V
Positive Pressure
0
Negative Pressure
Position
Blender
Water Vial
Ethanol Plus DV
Water Dilution
Concentrator
V1
V2
V3
V4
R1
R2
R3
R4
R5
R6
R7
P1
P2
P3
Q(T)
Box mixer 1
Box mixer 2
Box mixer 3

FIG. 20