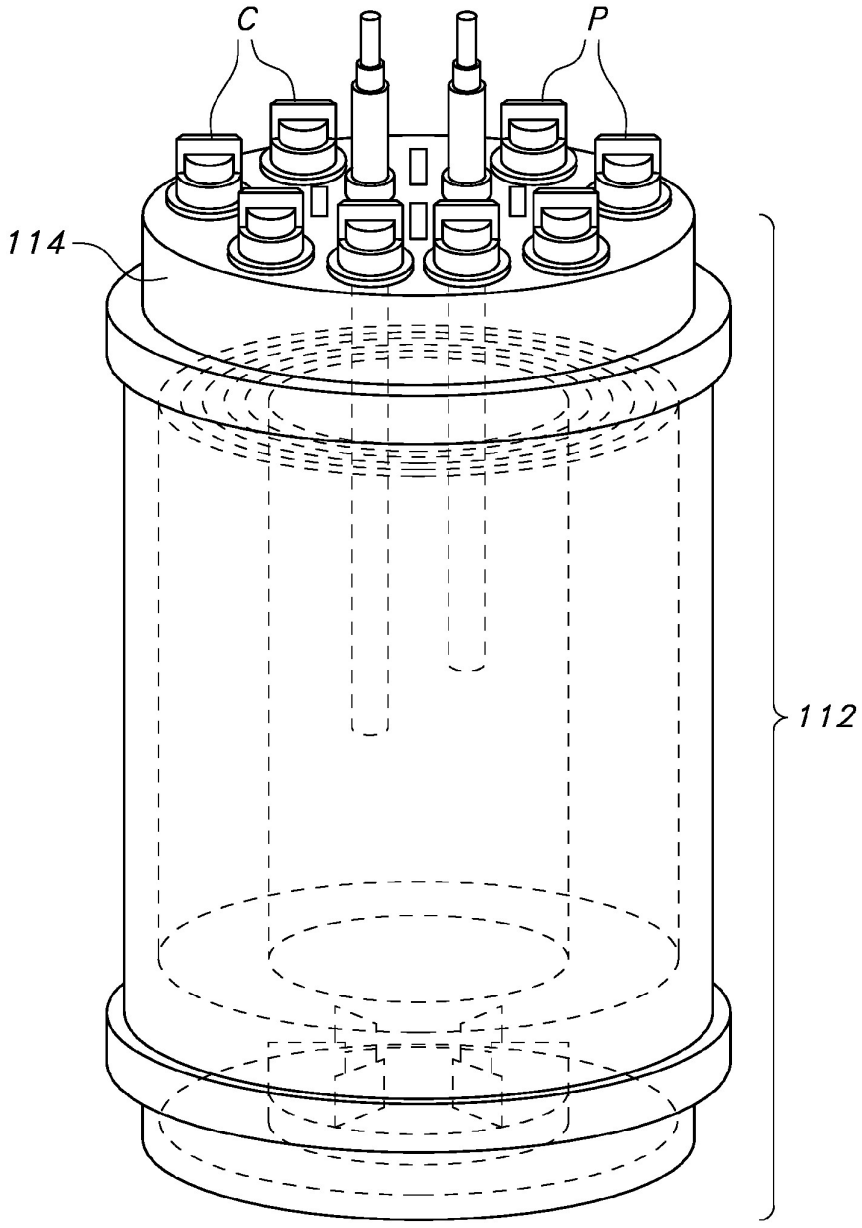


FIG. 1

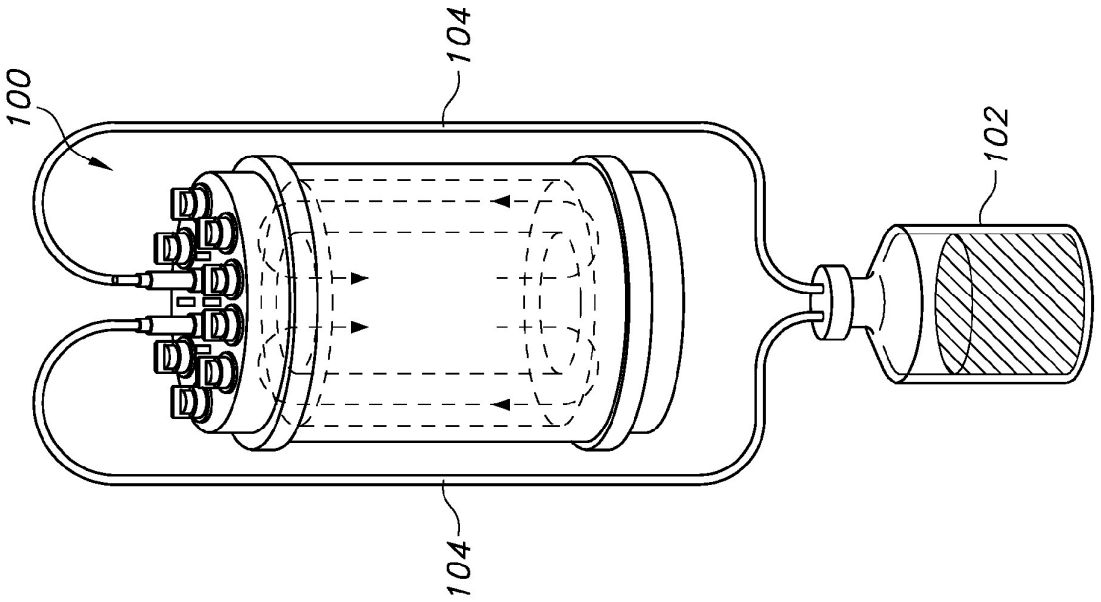


FIG. 2C

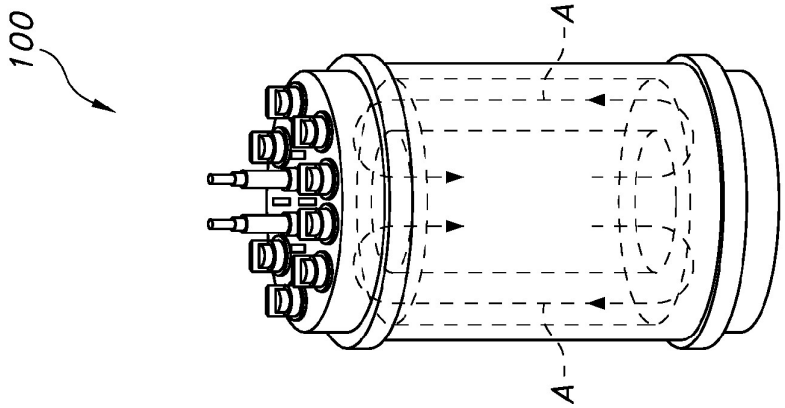


FIG. 2B

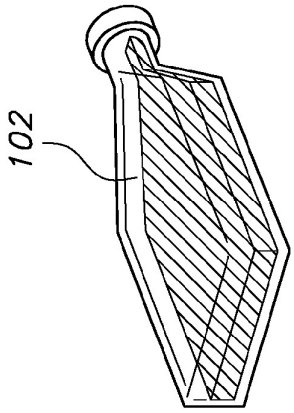


FIG. 2A

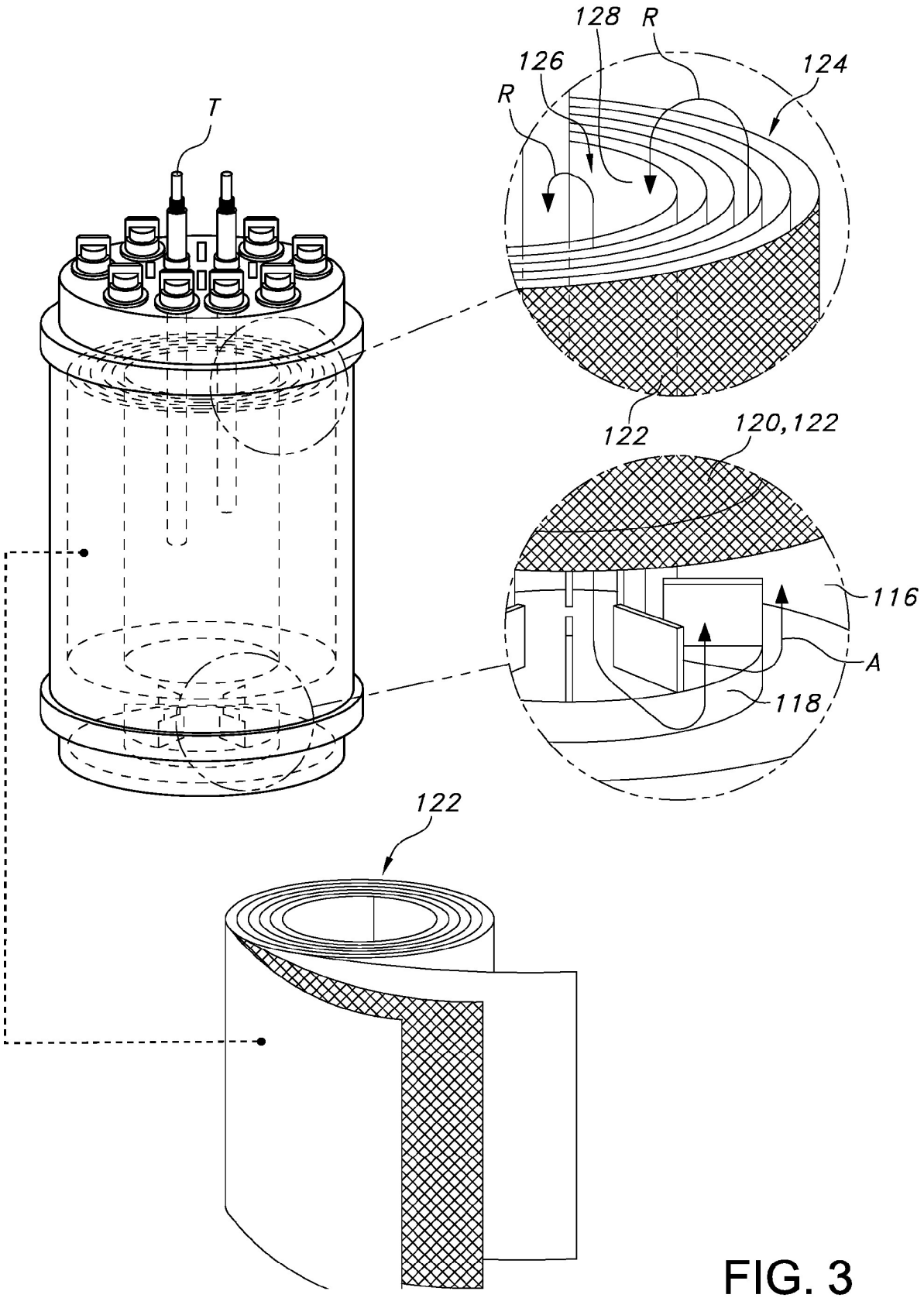


FIG. 3

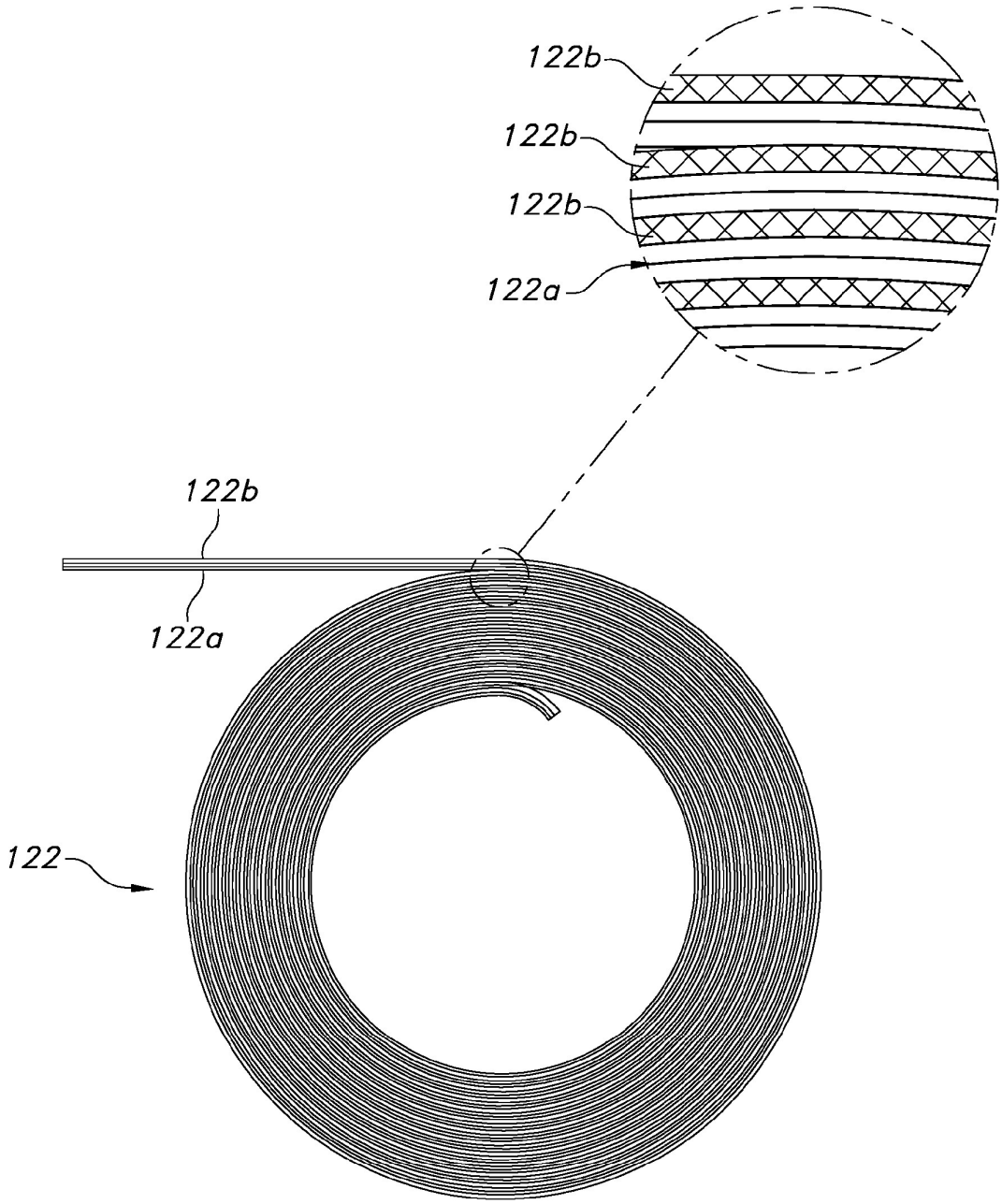


FIG. 3A

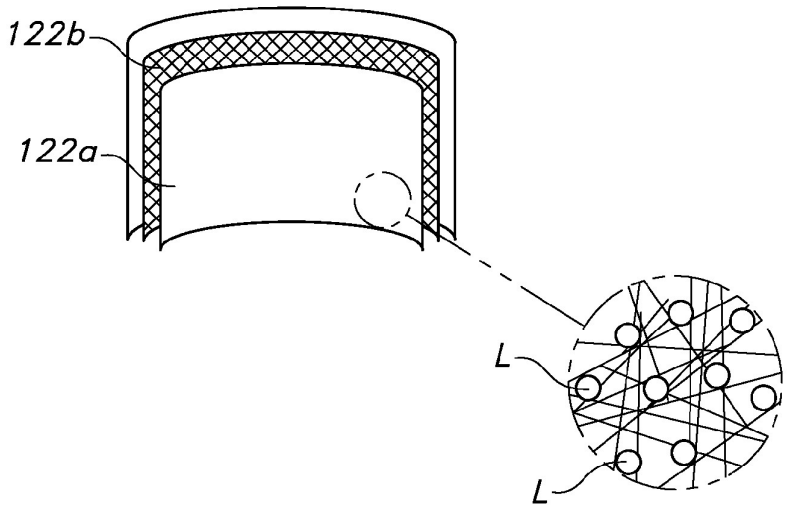


FIG. 3B

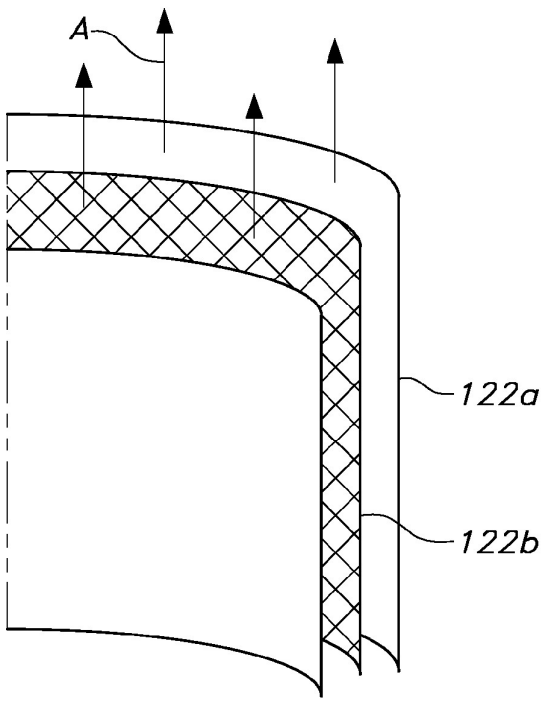


FIG. 3C

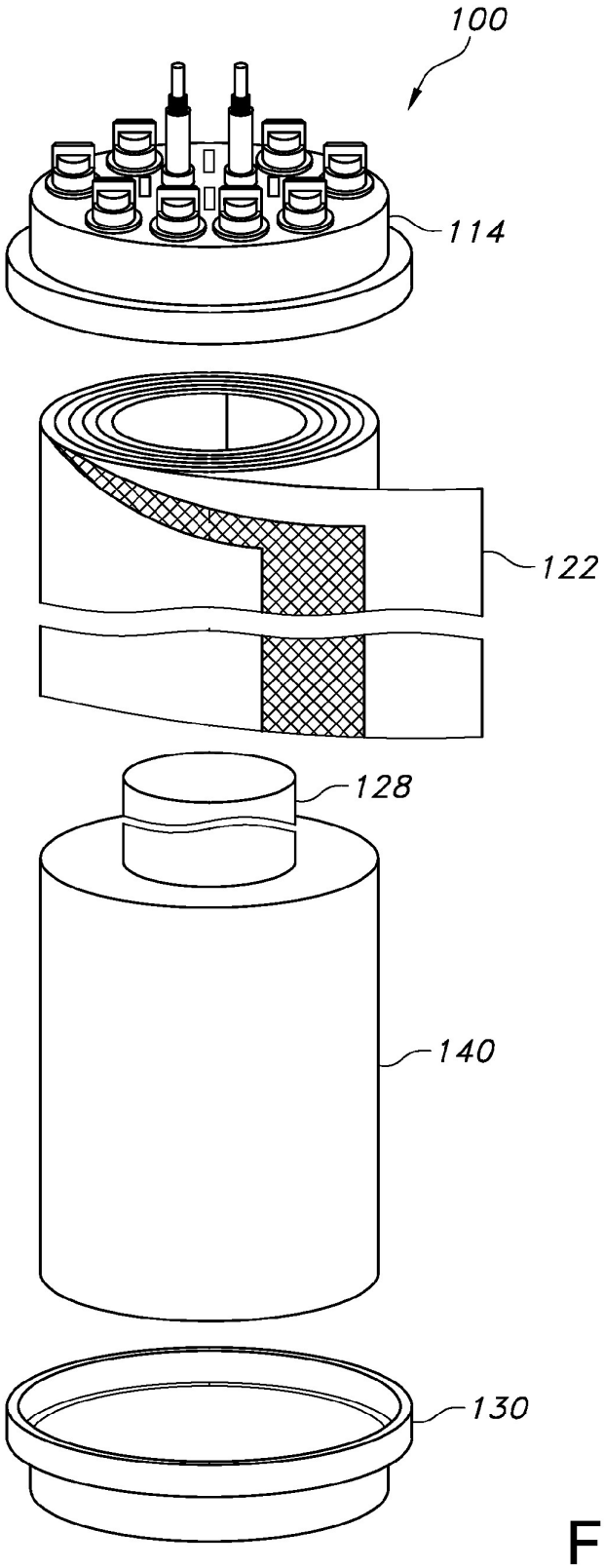


FIG. 4

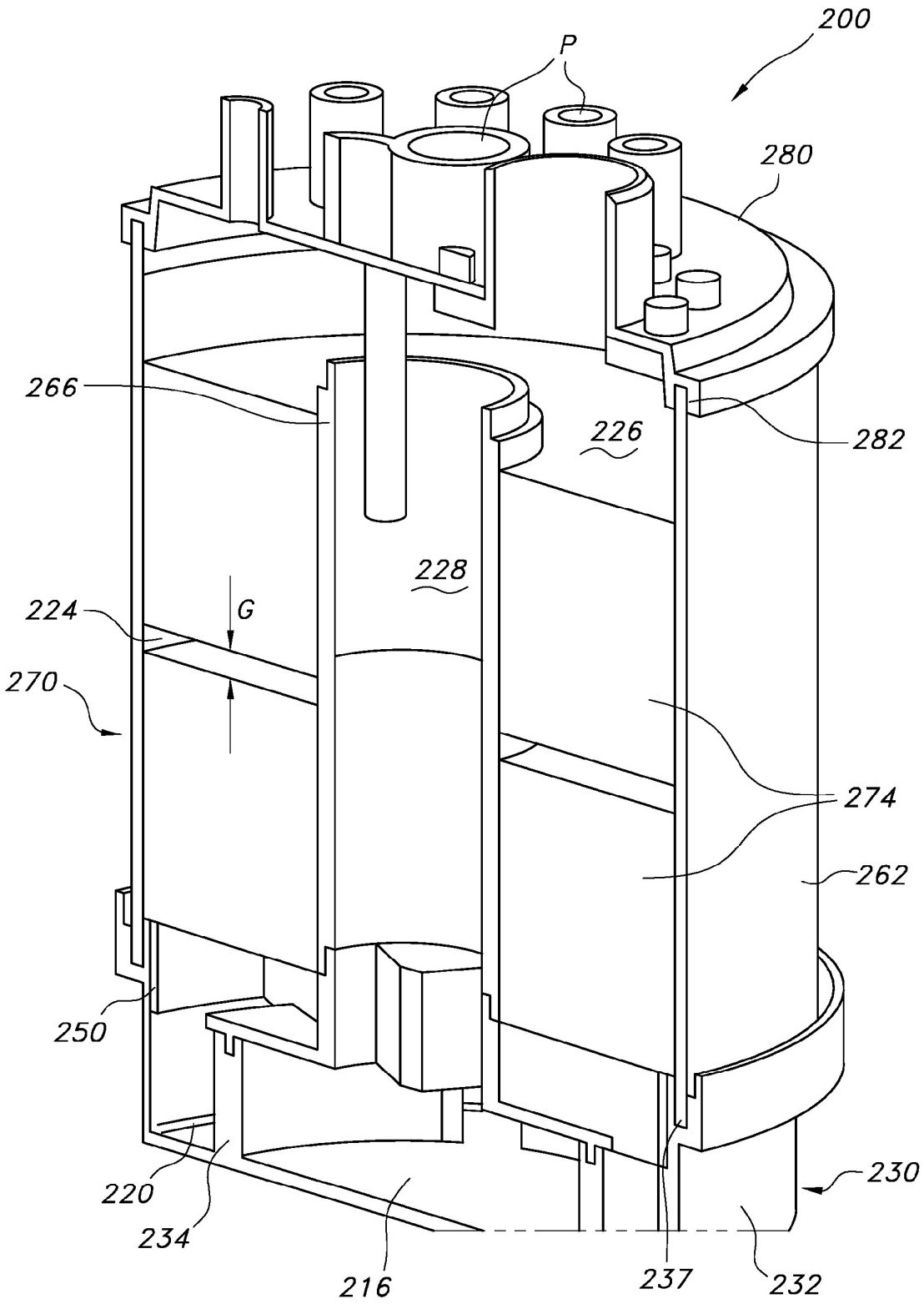

200
P
280
266
226
282
228
224
G
270
274
262
250
220
234
216
237
232
230

FIG. 5

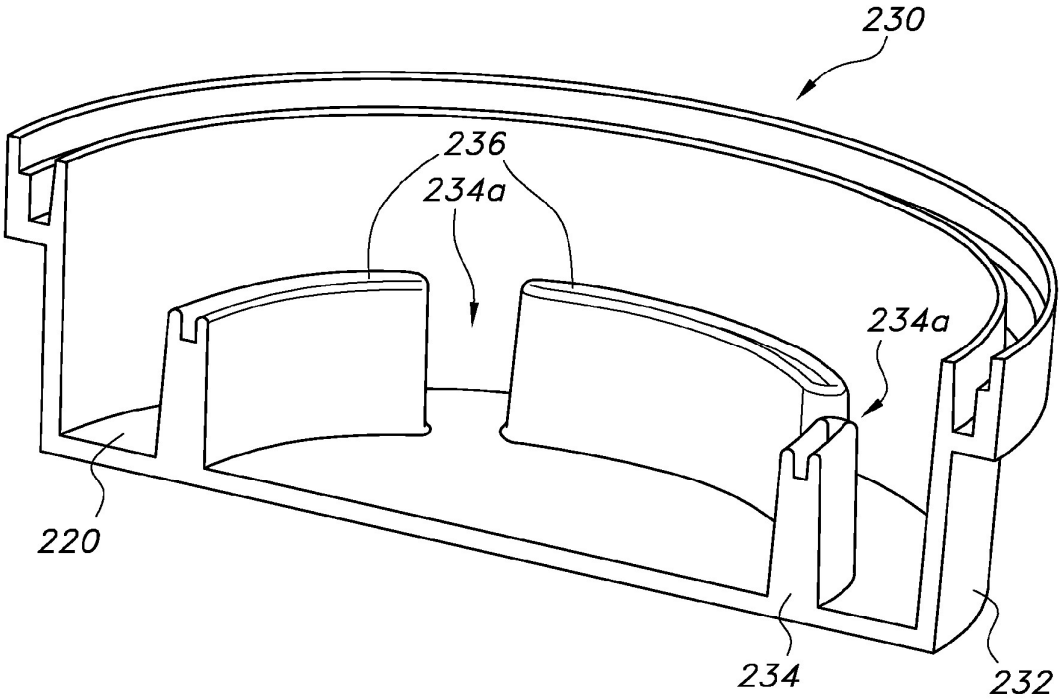


FIG. 6

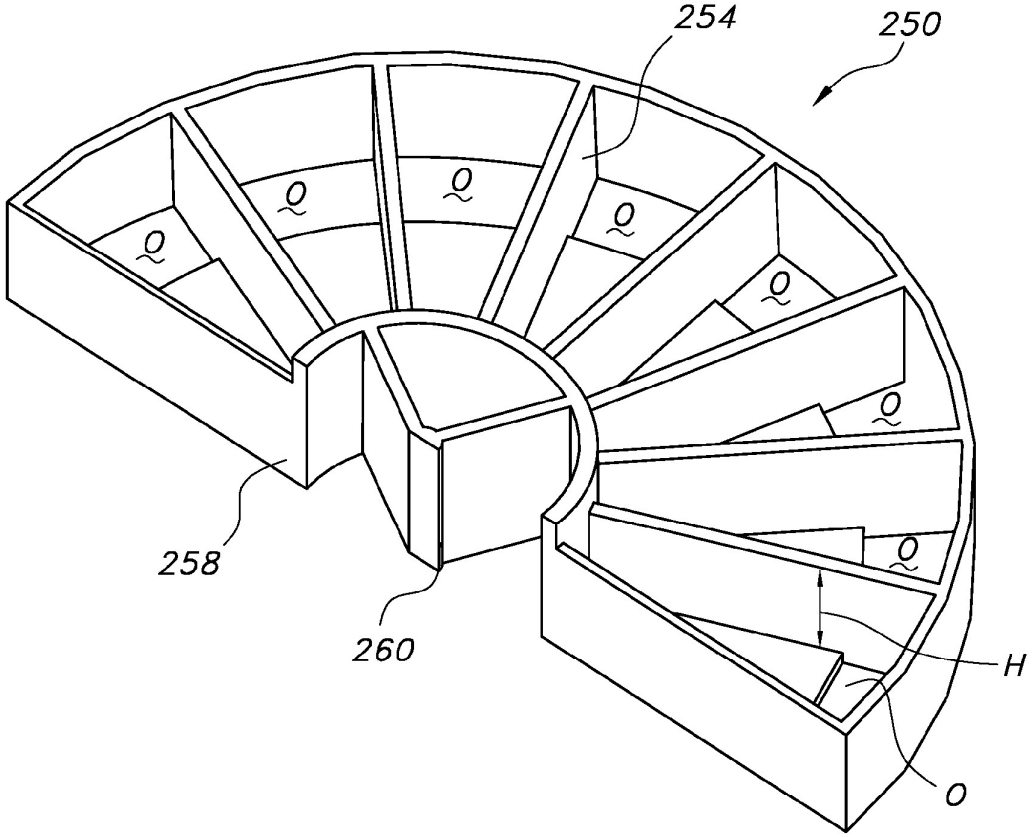


FIG. 7

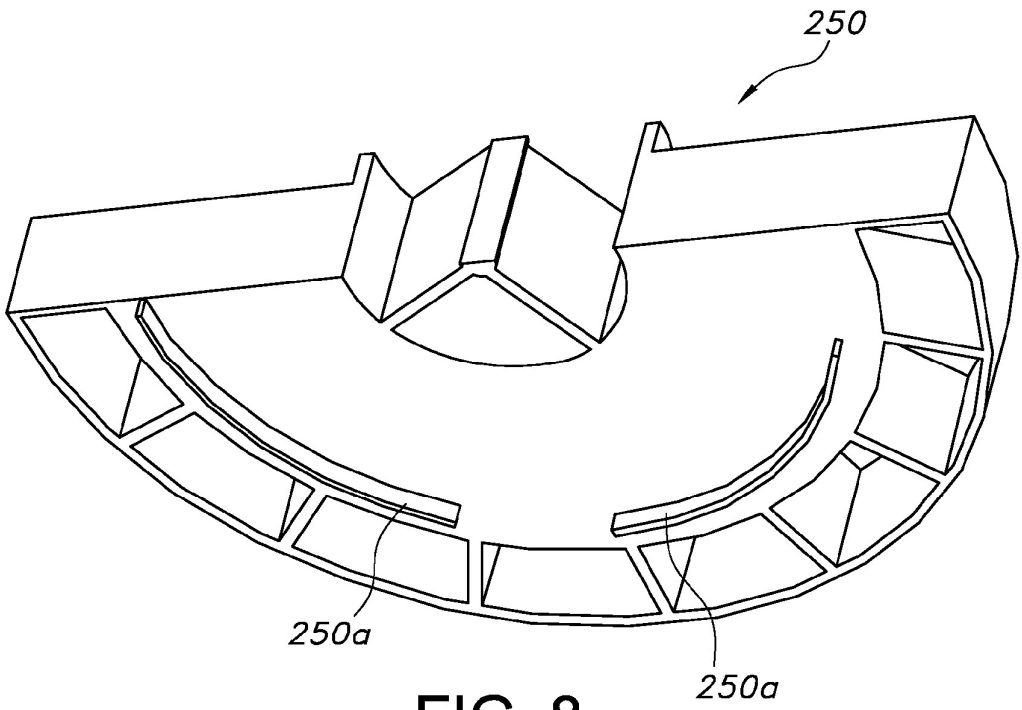


FIG. 8

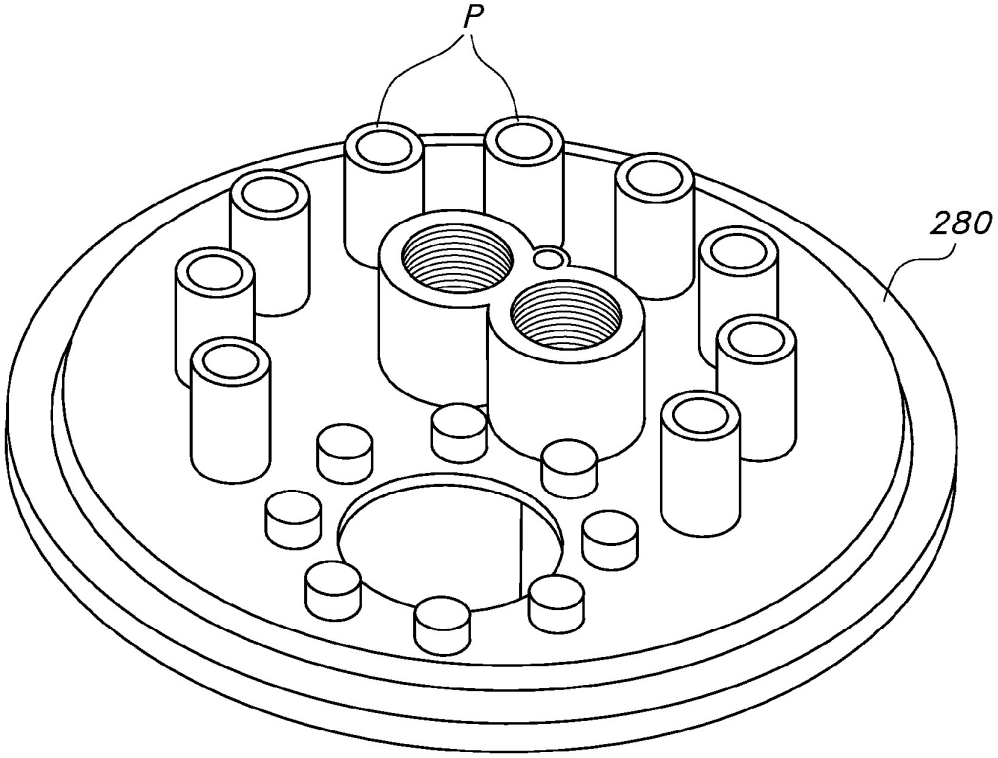


FIG. 9

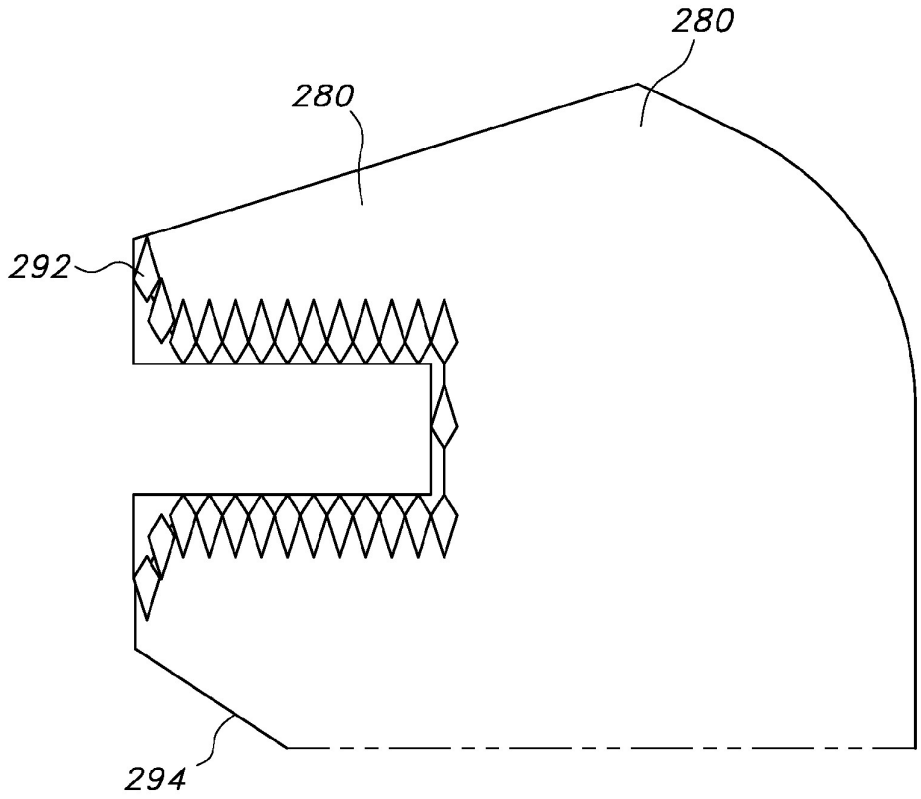


FIG. 10

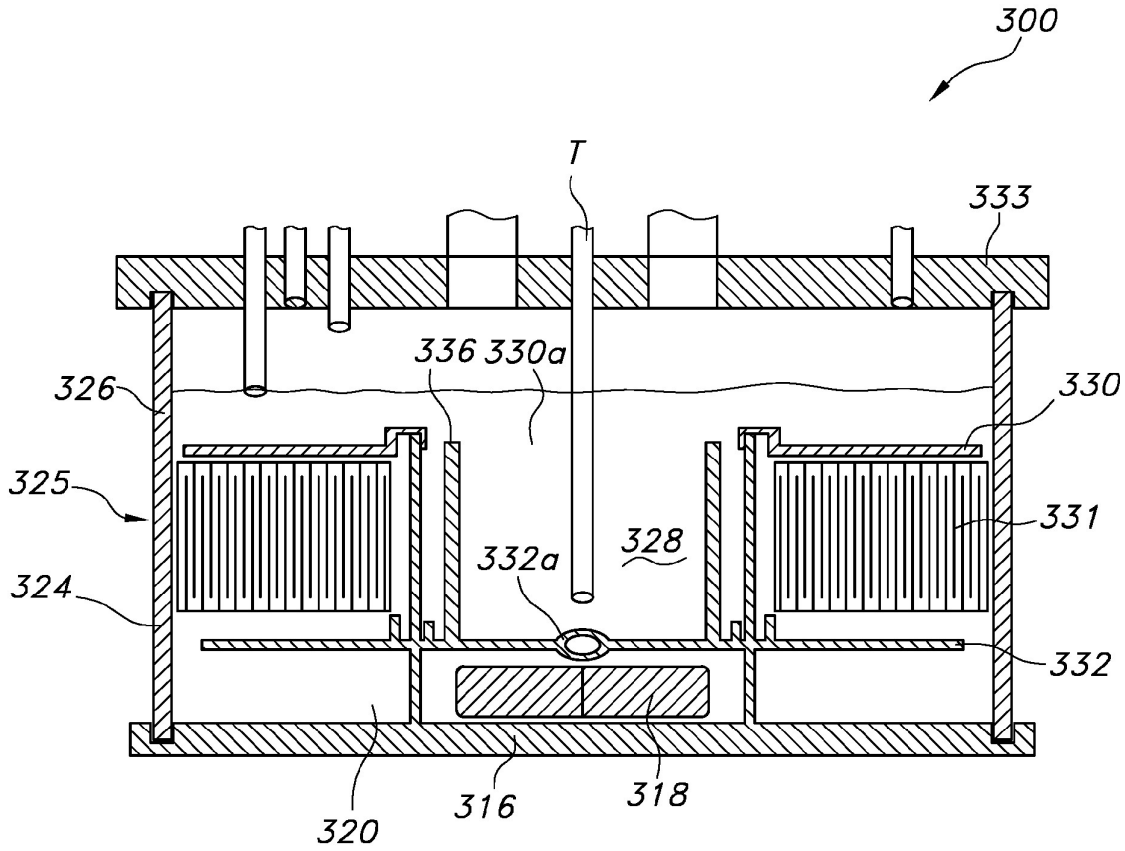


FIG. 11

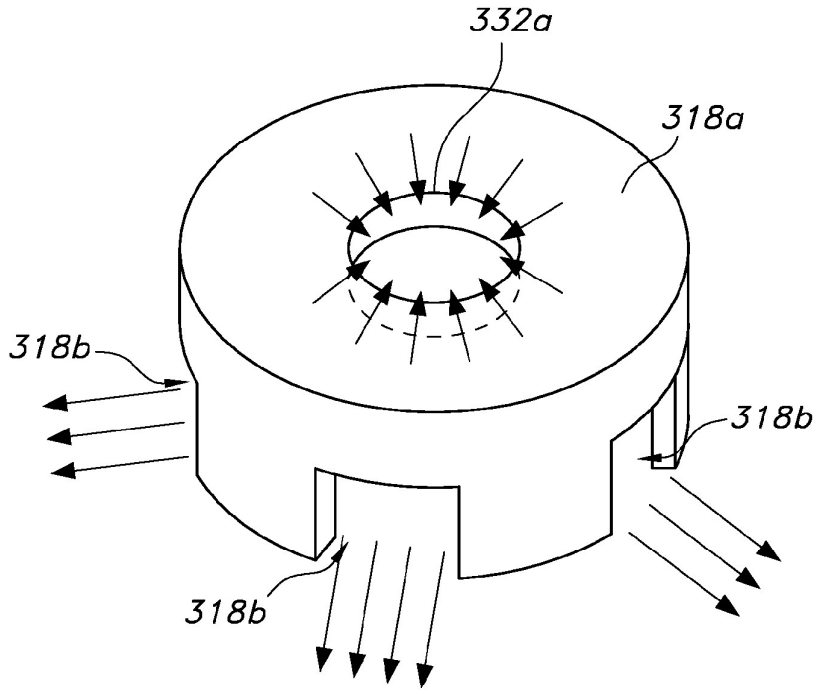


FIG. 11A

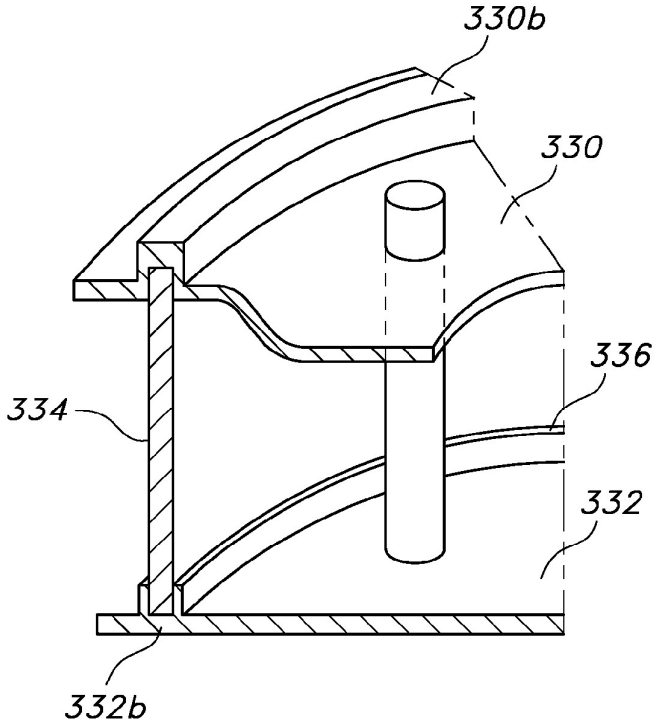


FIG. 11B

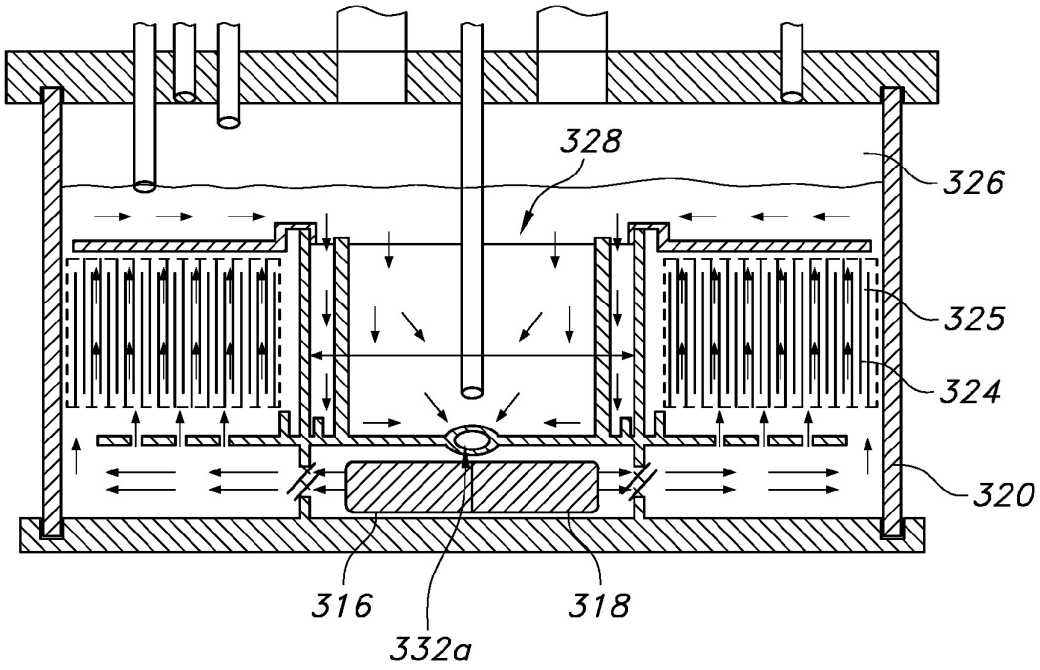


FIG. 12

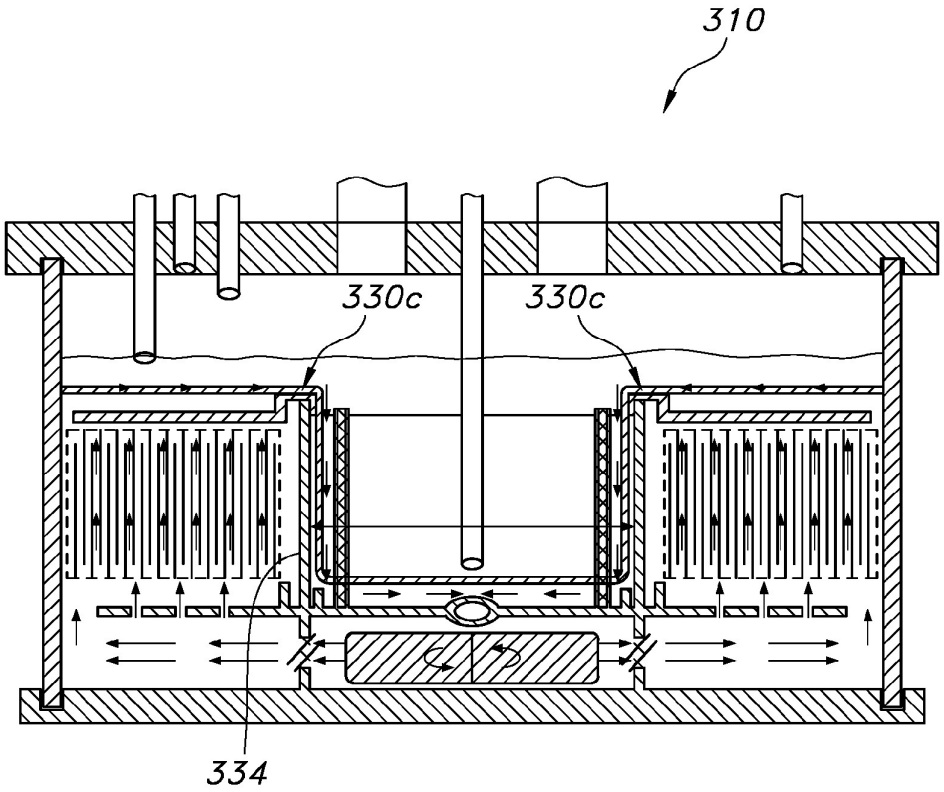


FIG. 13

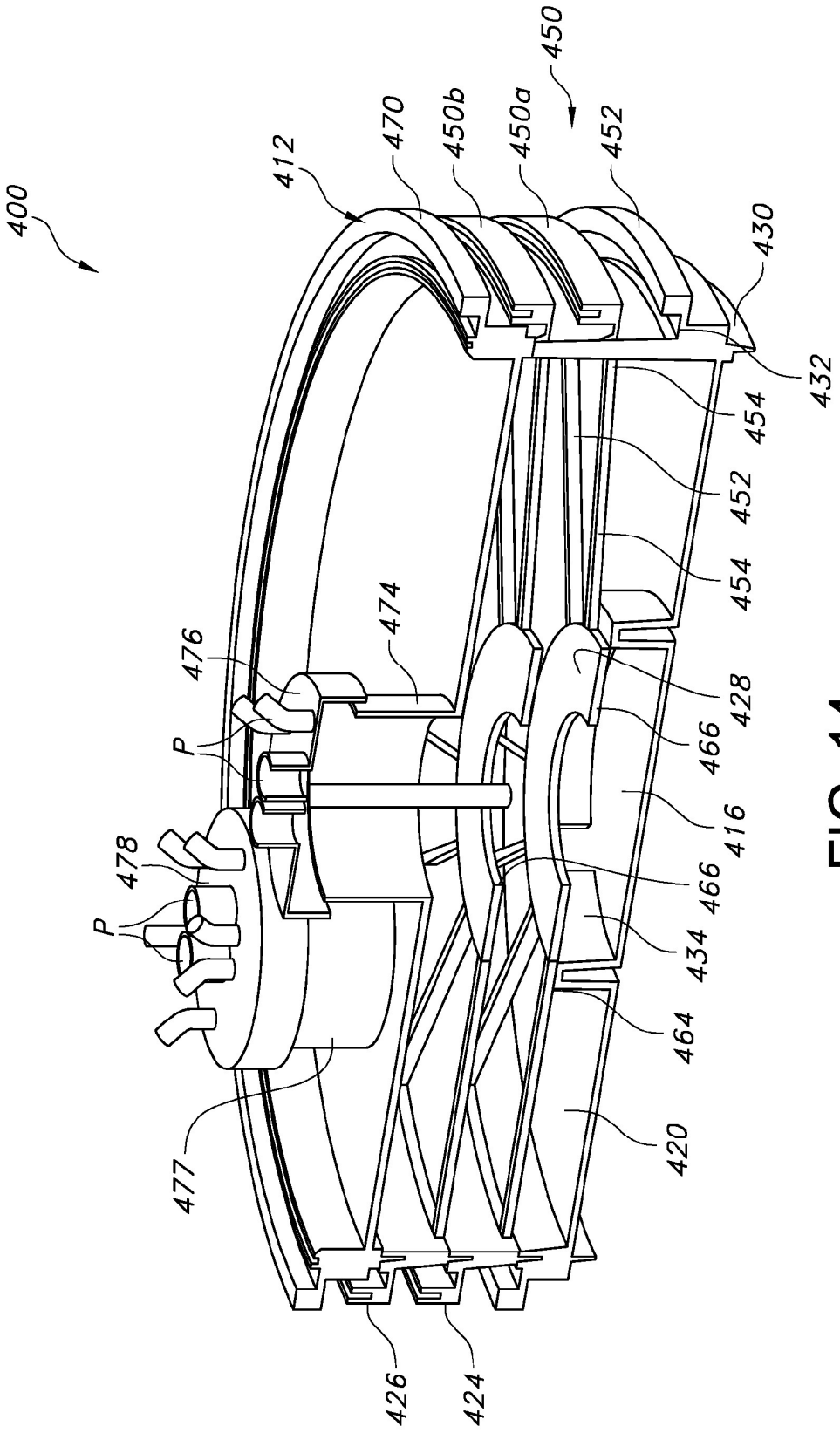

400
412
470
450b
450a
450
452
430
432
454
452
454
474
476
P
428
466
416
478
P
466
434
464
420
477
426
424

FIG. 14

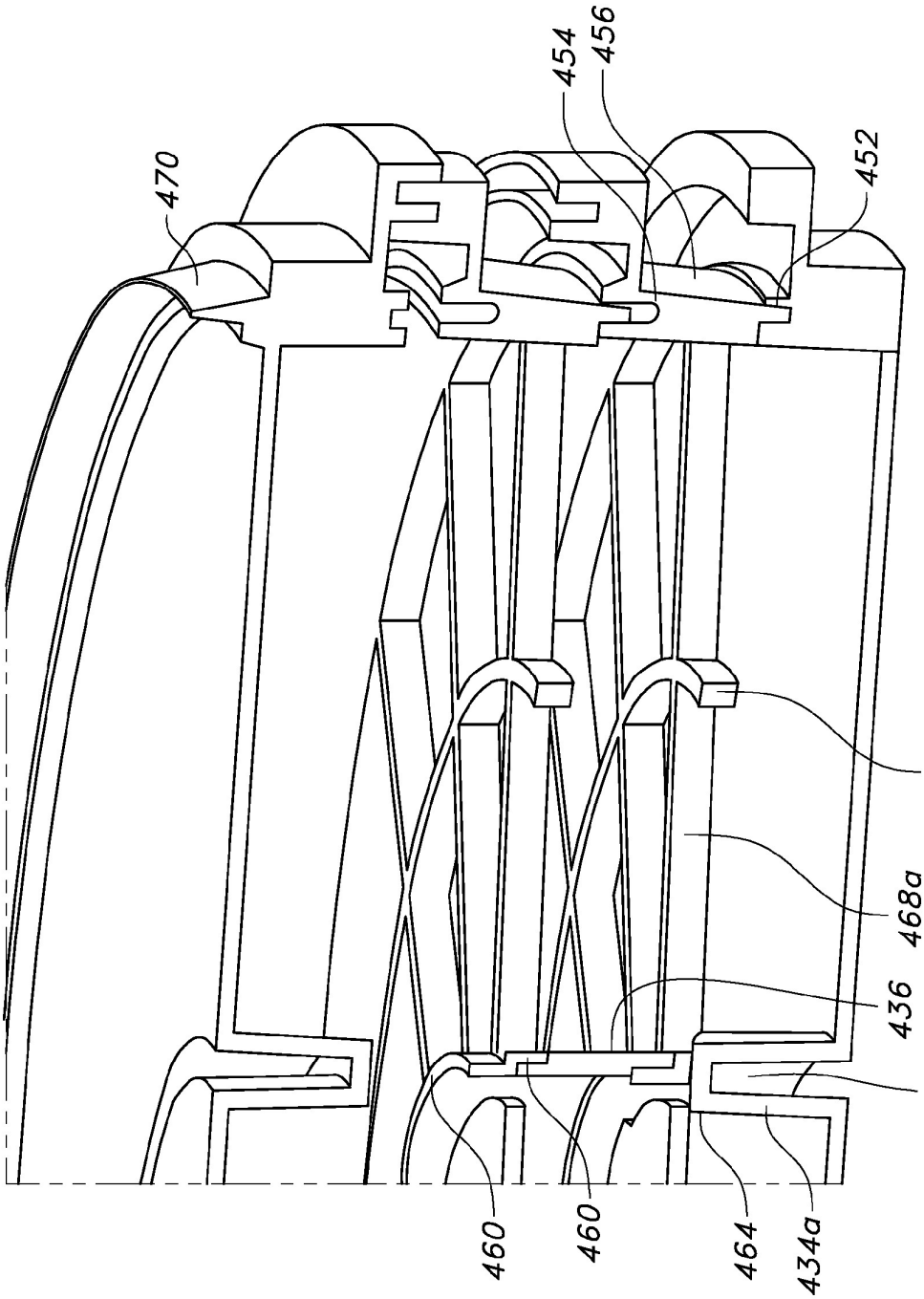


FIG. 15

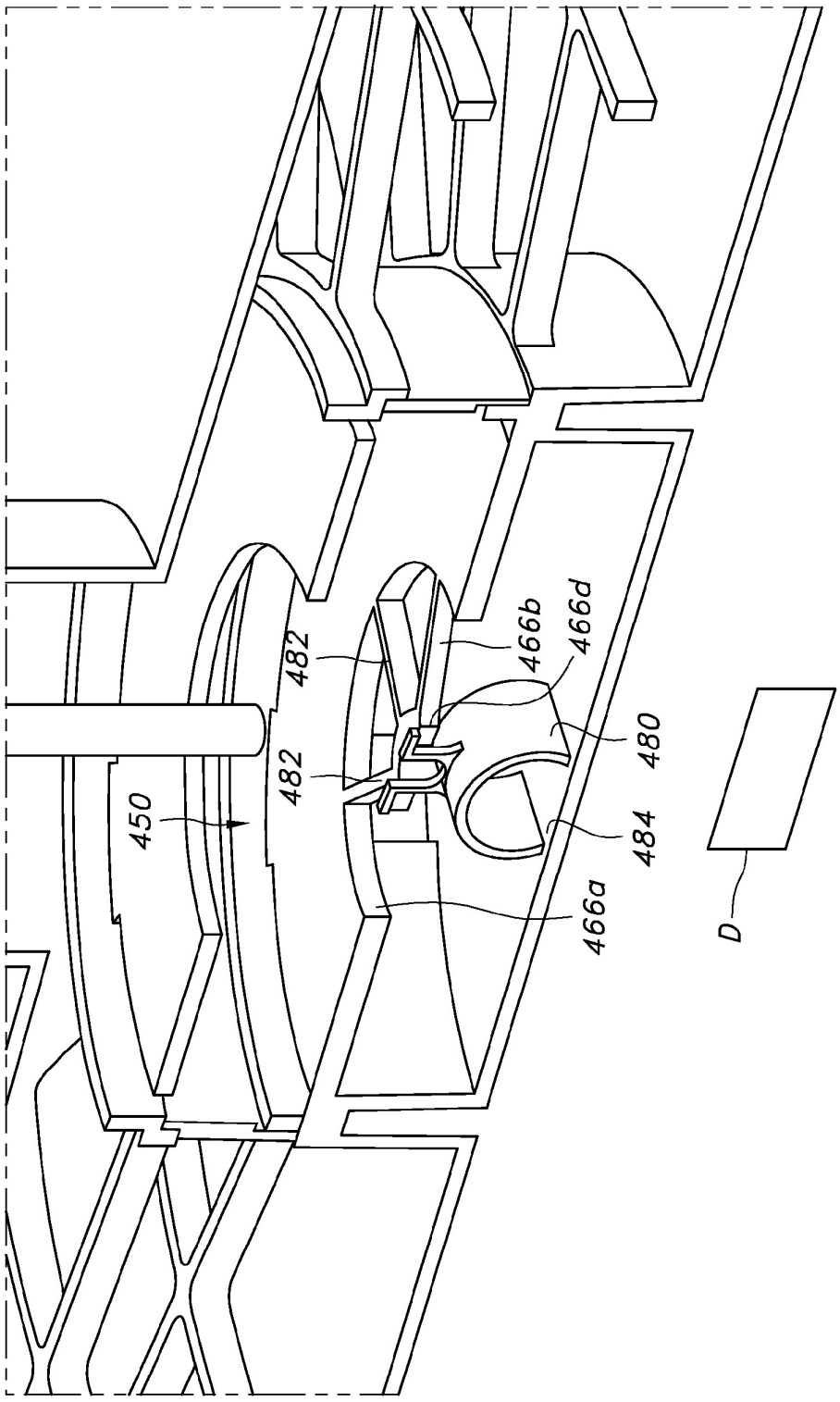


FIG. 16

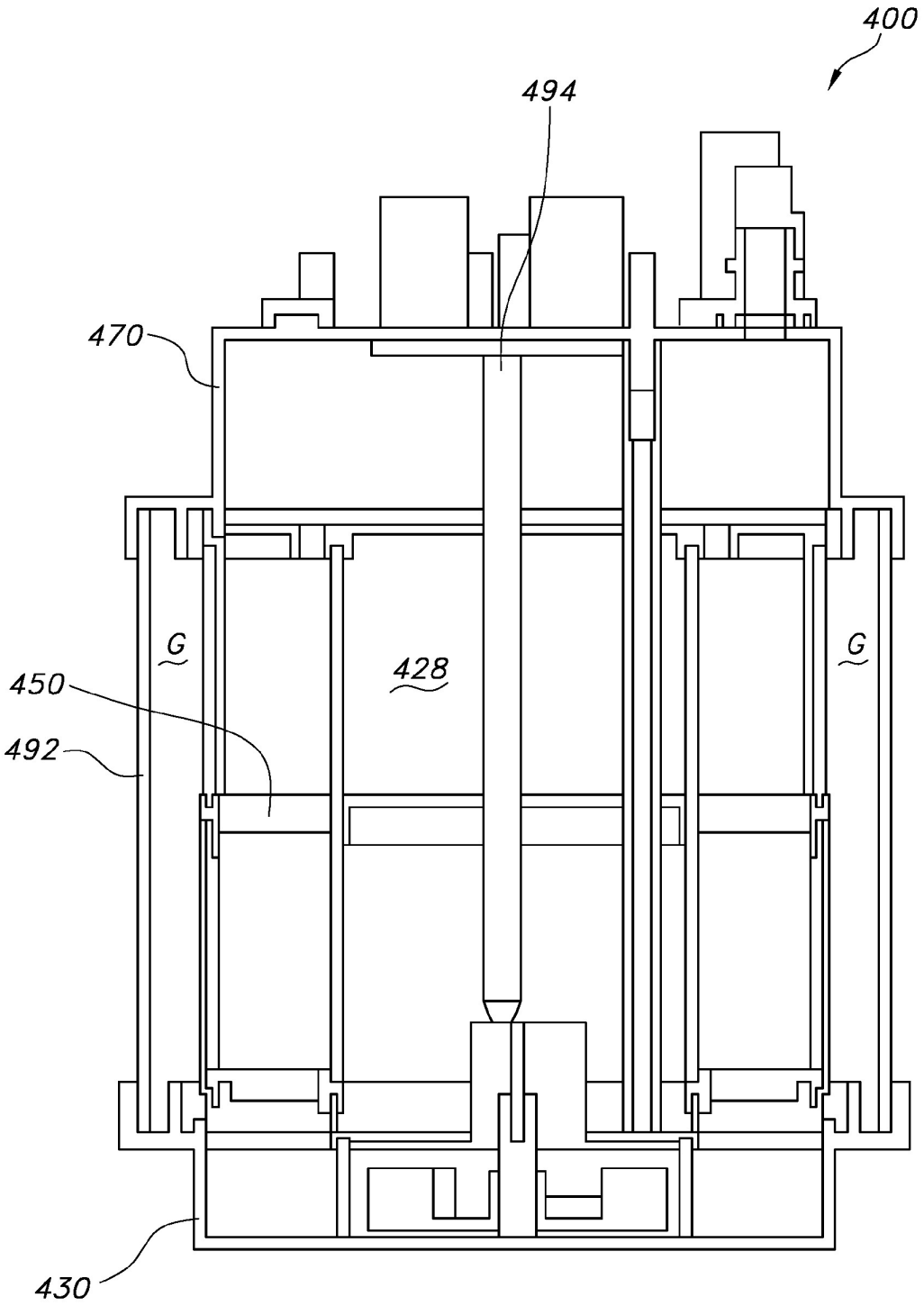


FIG. 16A

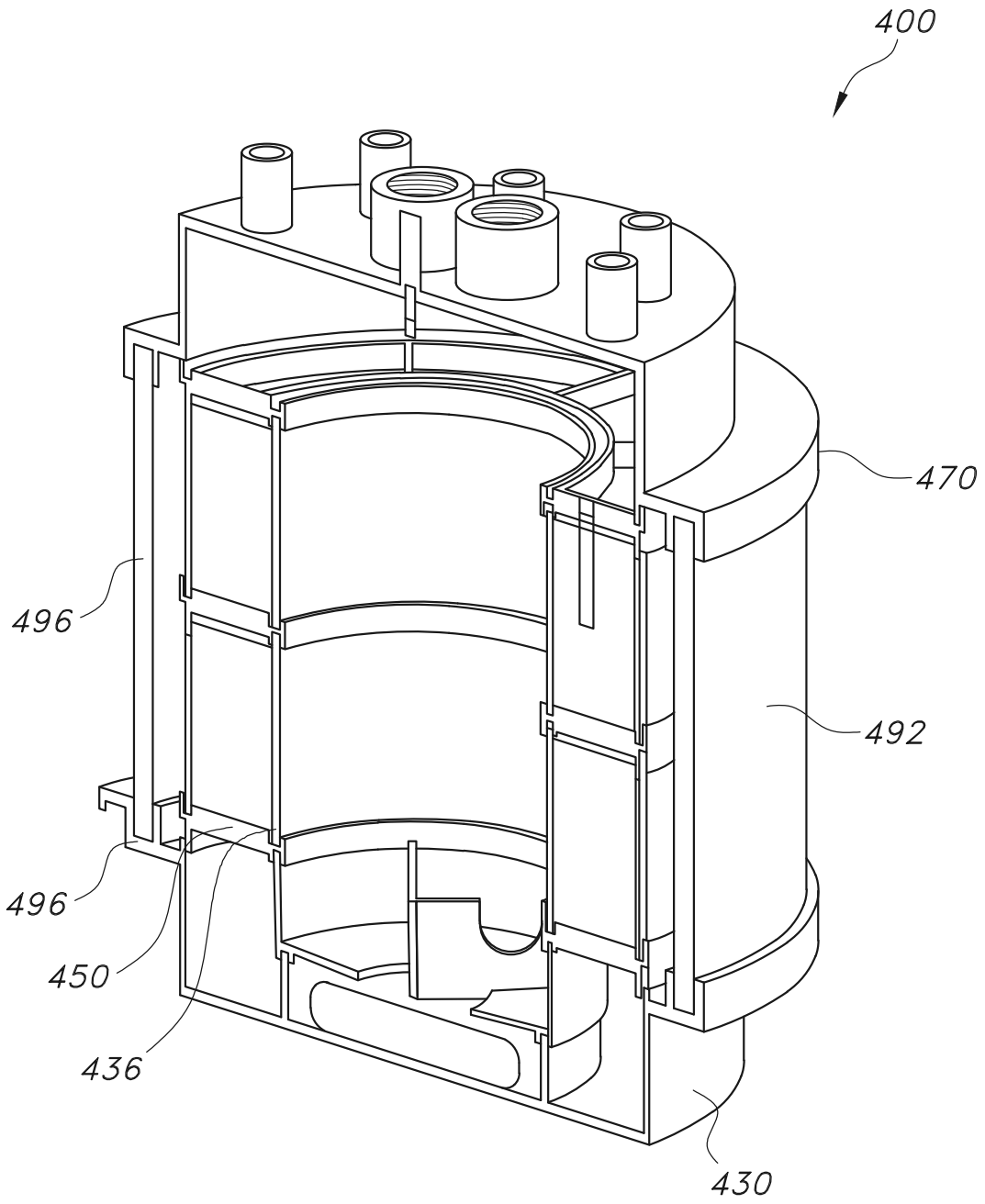


FIG. 16B

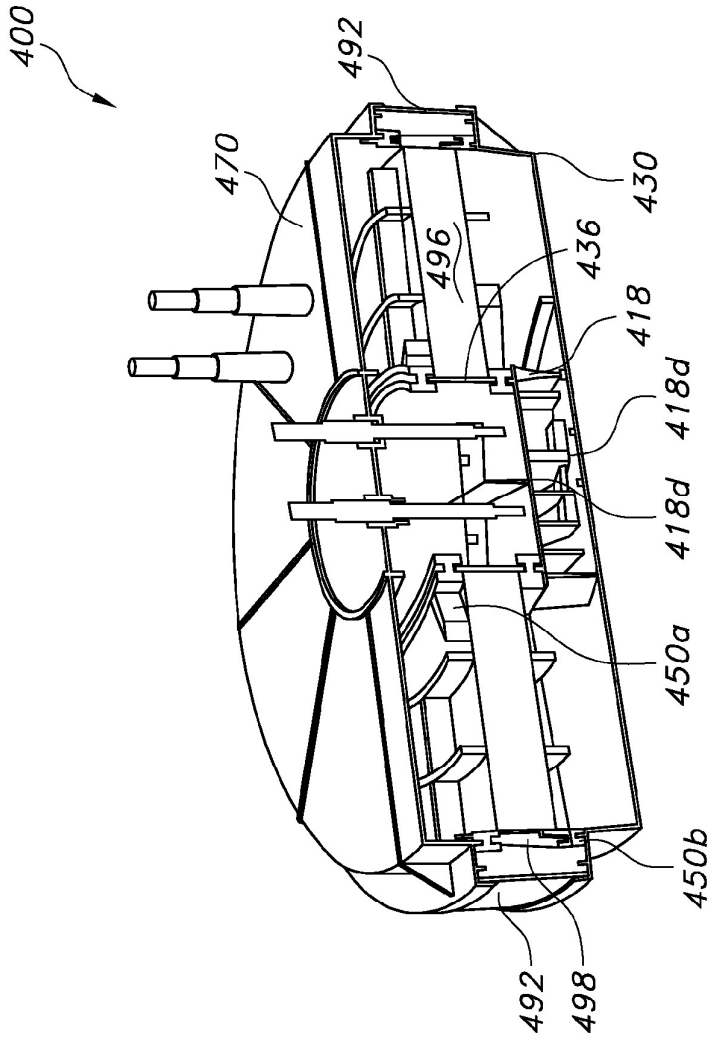


FIG. 16C

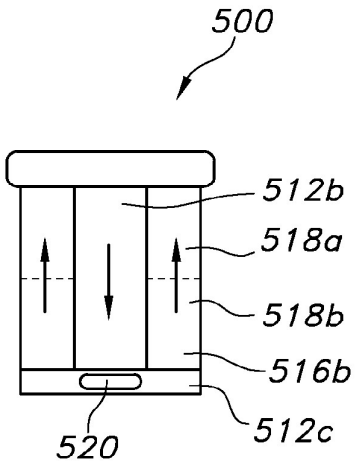


FIG. 17

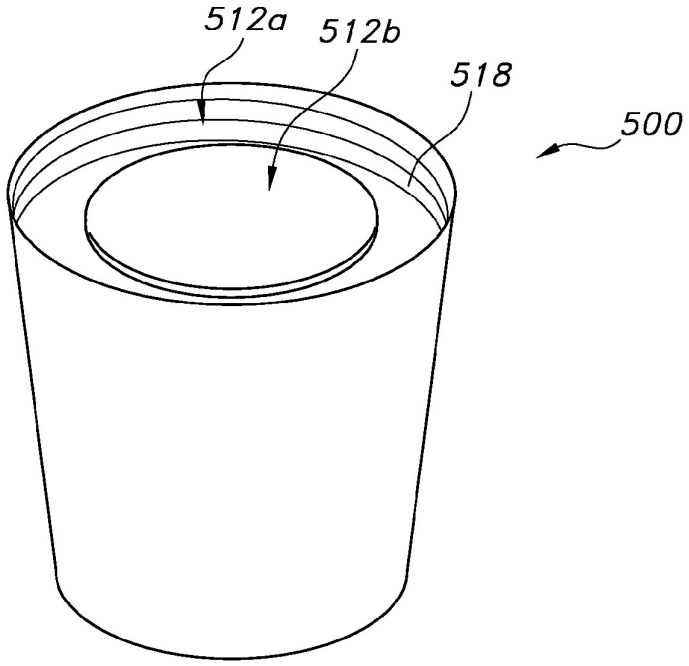


FIG. 18

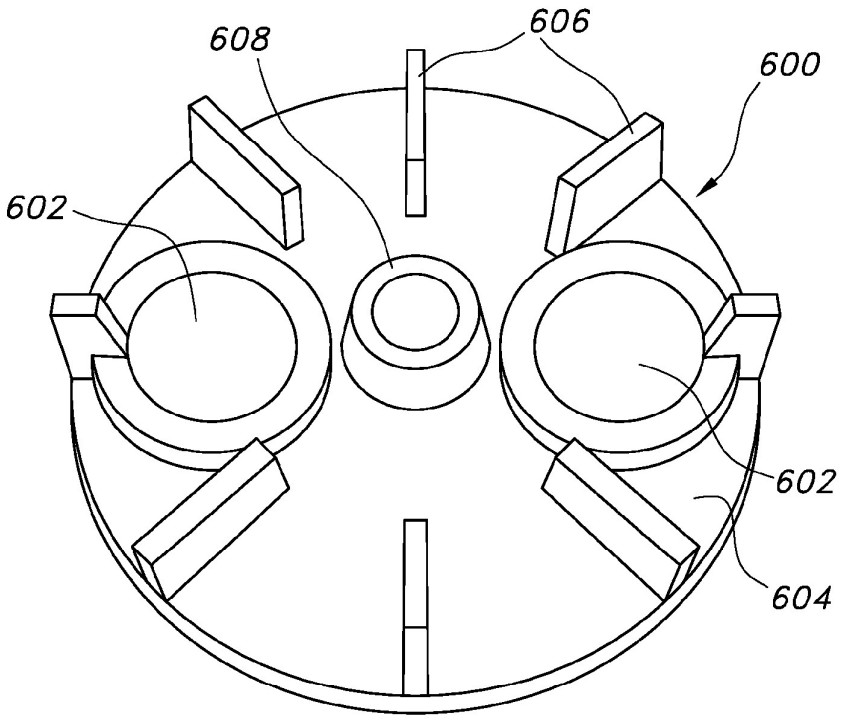


FIG. 19

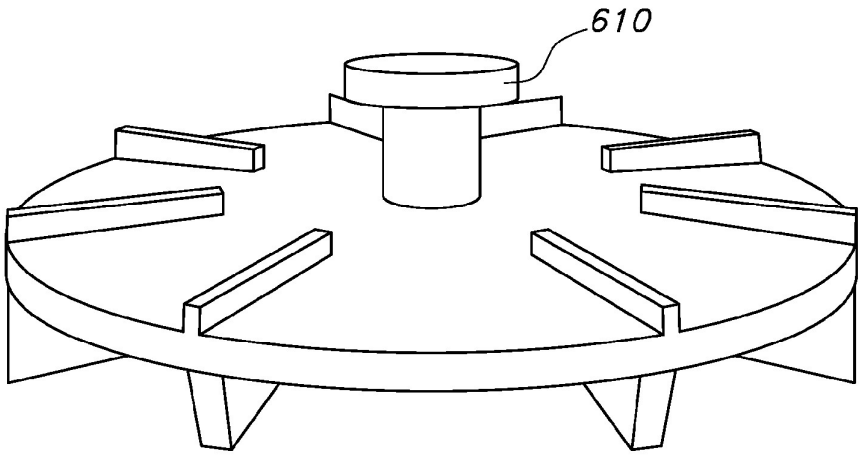
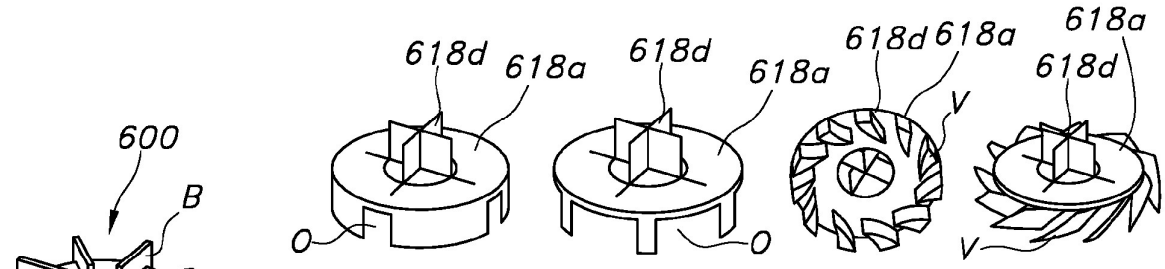


FIG. 20



Max RPM	420	380		380
FF RPM	380	330		350
Max RPM	440	420	430	390
FF RPM	340	340	350	340
Max RPM	390	350		
FF RPM	300	310		
Max RPM				
FF RPM				

FIG. 21

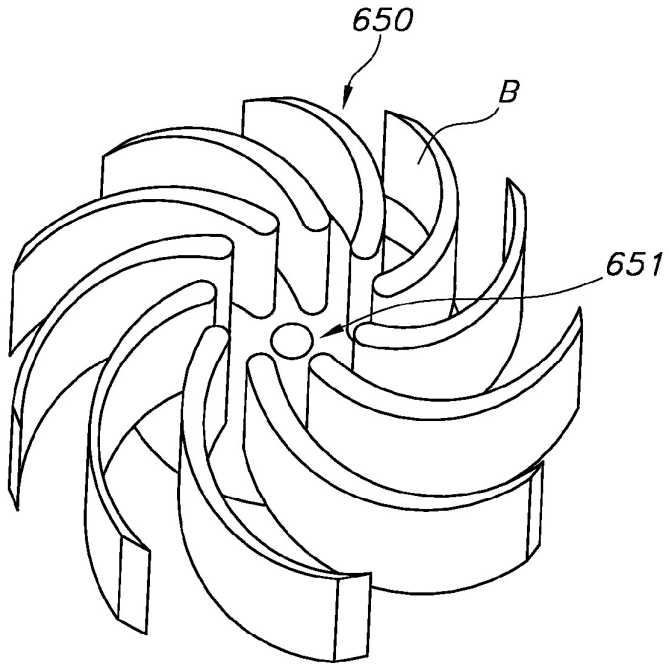


FIG. 22

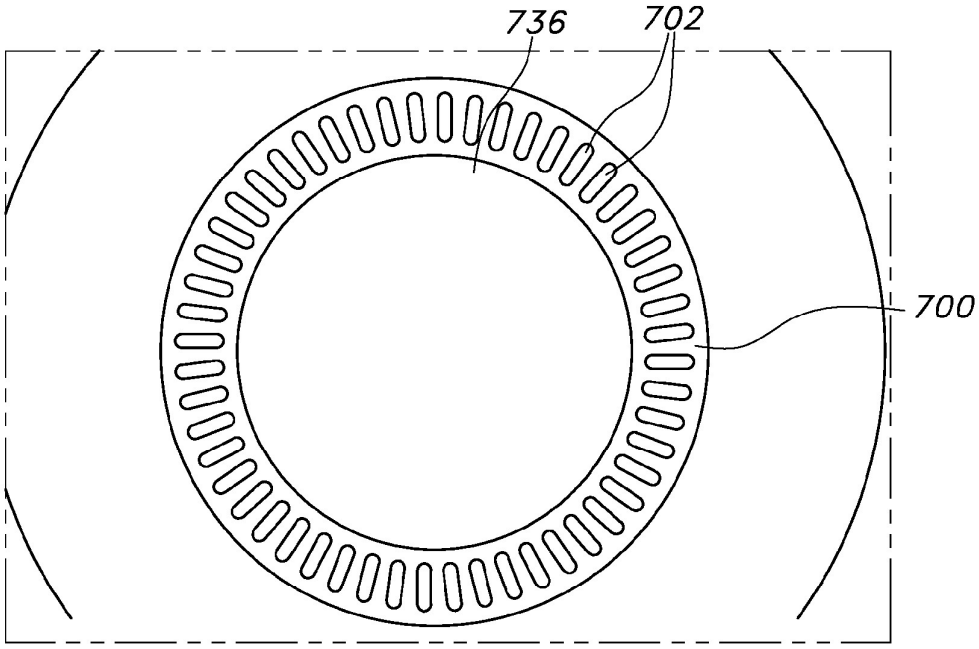


FIG. 23

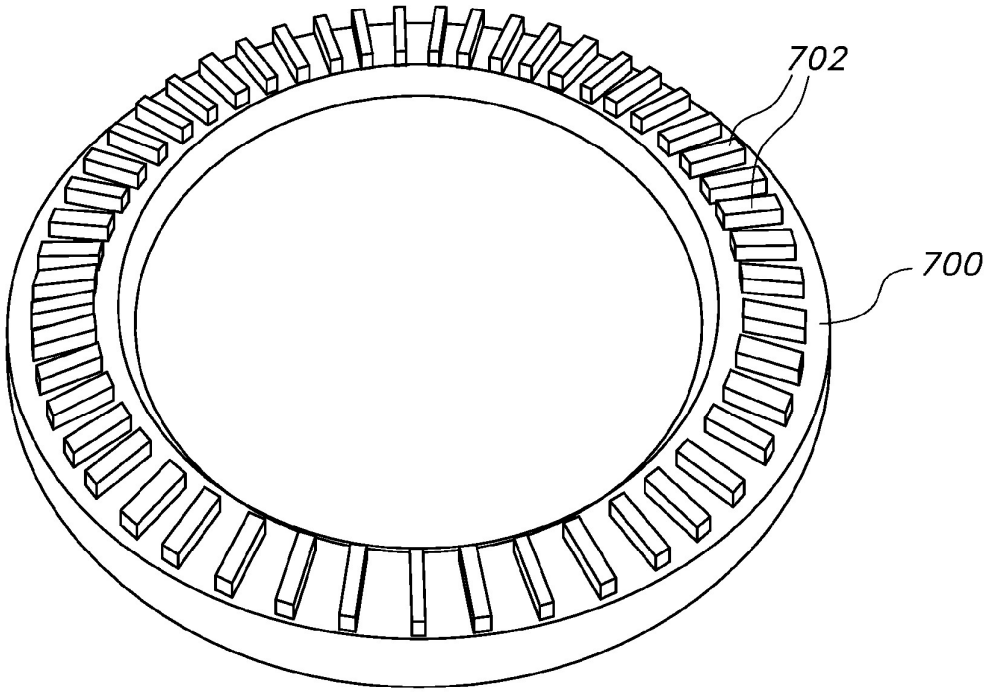


FIG. 24

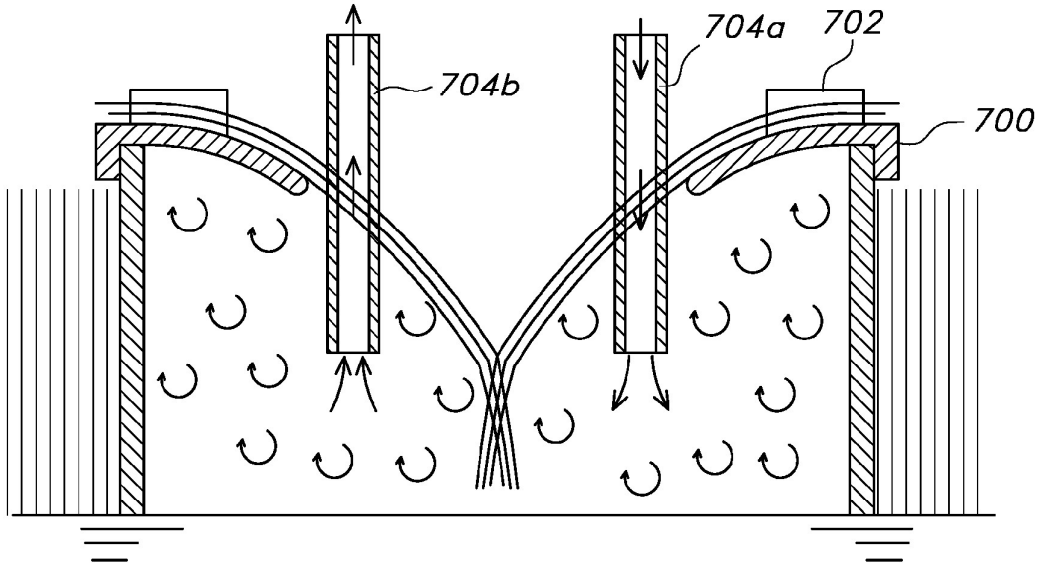


FIG. 25

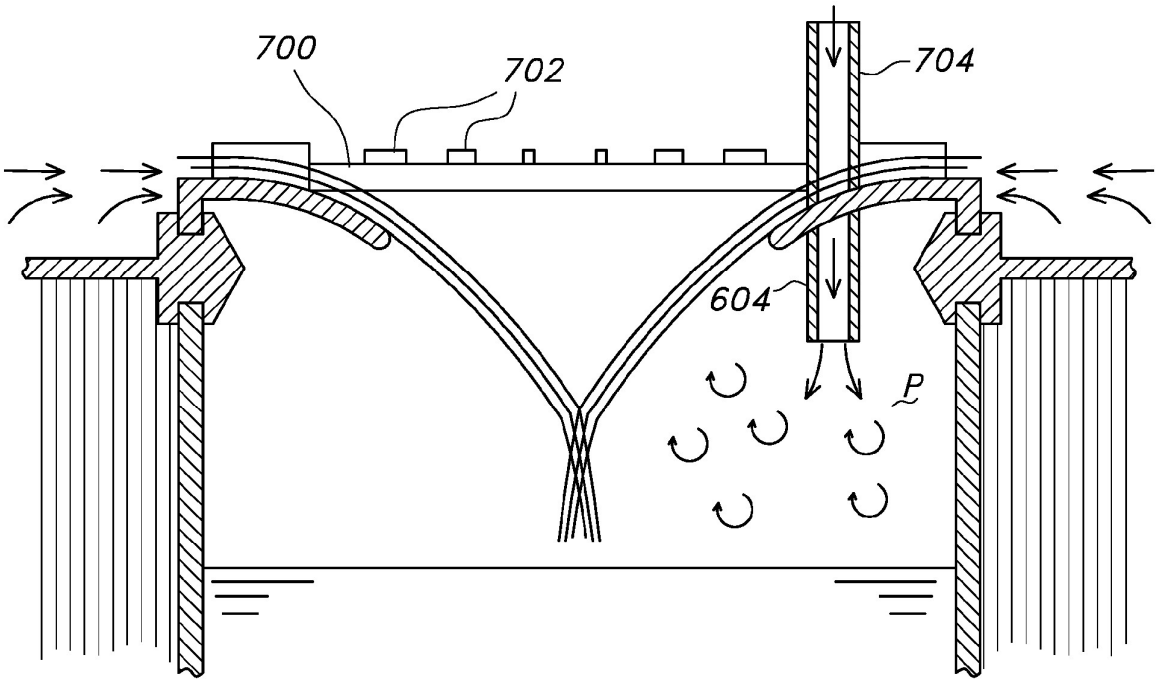


FIG. 26

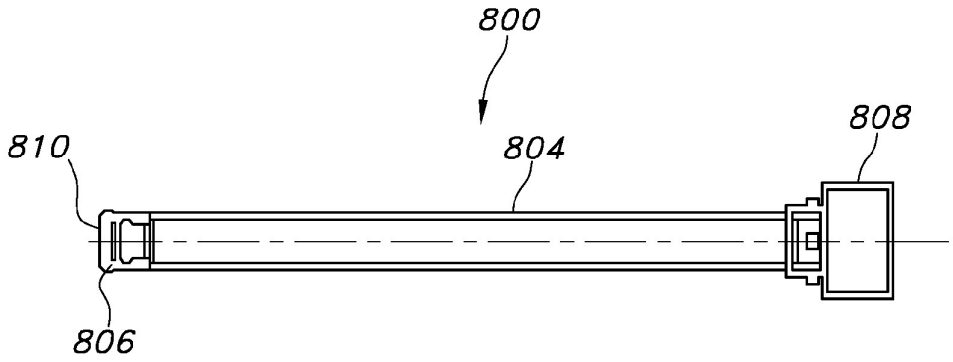


FIG. 27

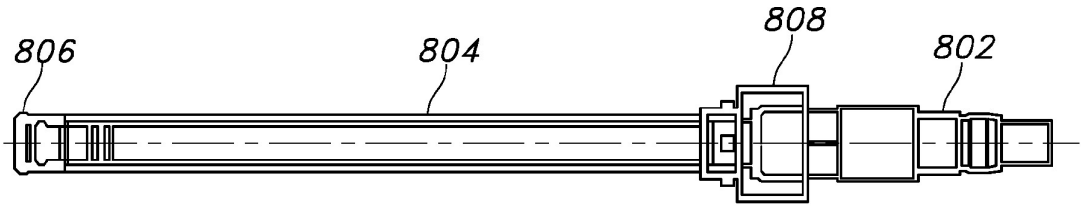


FIG. 28

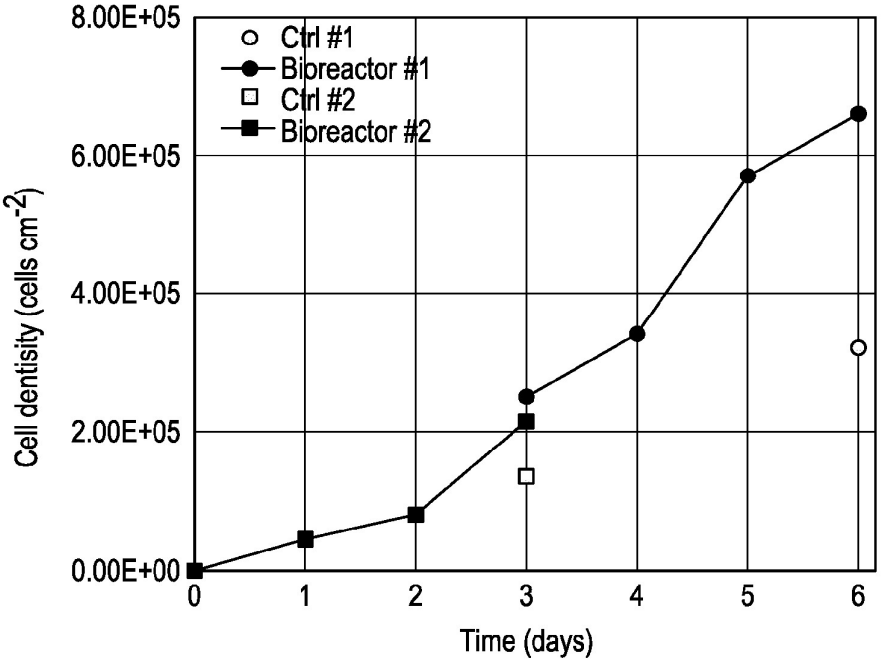

8.00E+05
6.00E+05
4.00E+05
2.00E+05
0.00E+00
Cell dentisity (cells cm-2)
Ctrl #1
Bioreactor #1
Ctrl #2
Bioreactor #2
0
1
2
3
4
5
6
Time (days)

FIG. 29

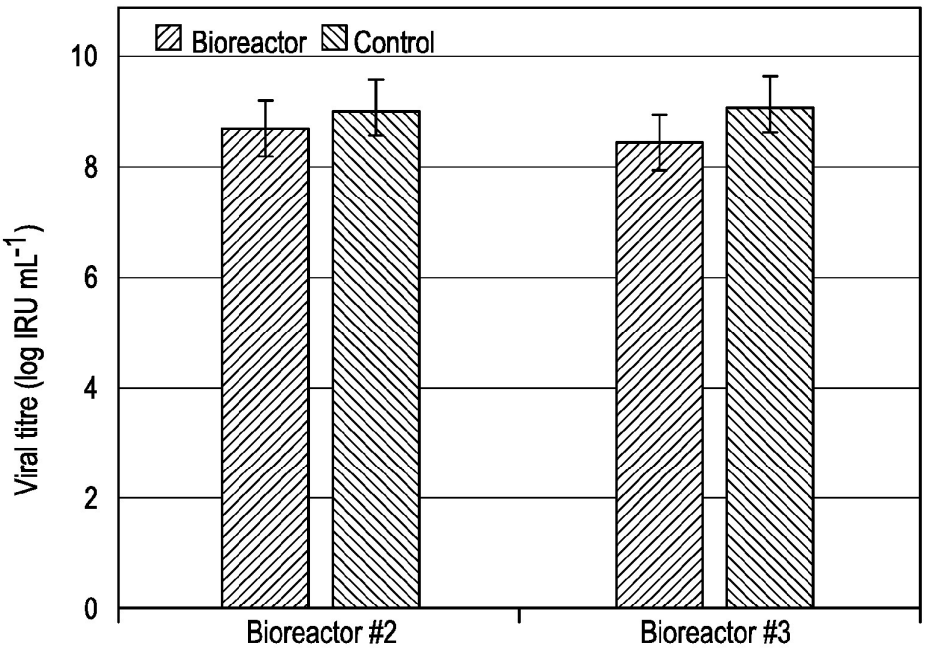

Bioreactor
Control
10
8
6
4
2
0
Viral titre (log IRU mL-1)
Bioreactor #2
Bioreactor #3

FIG. 30

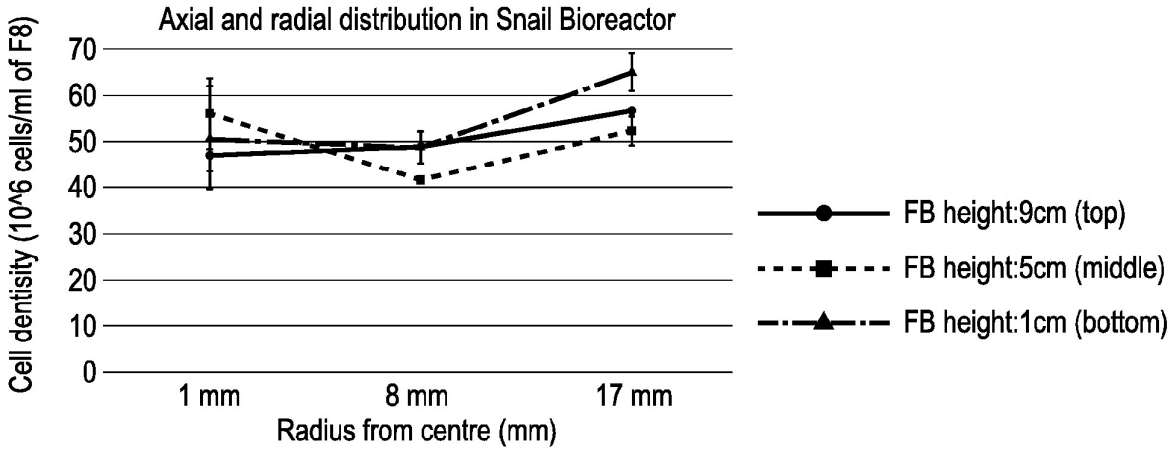

Axial and radial distribution in Snail Bioreactor
Cell dentisity (10^6 cells/ml of F8)
70
60
50
40
30
20
10
0
1 mm
8 mm
17 mm
Radius from centre (mm)
FB height:9cm (top)
FB height:5cm (middle)
FB height:1cm (bottom)

FIG. 31

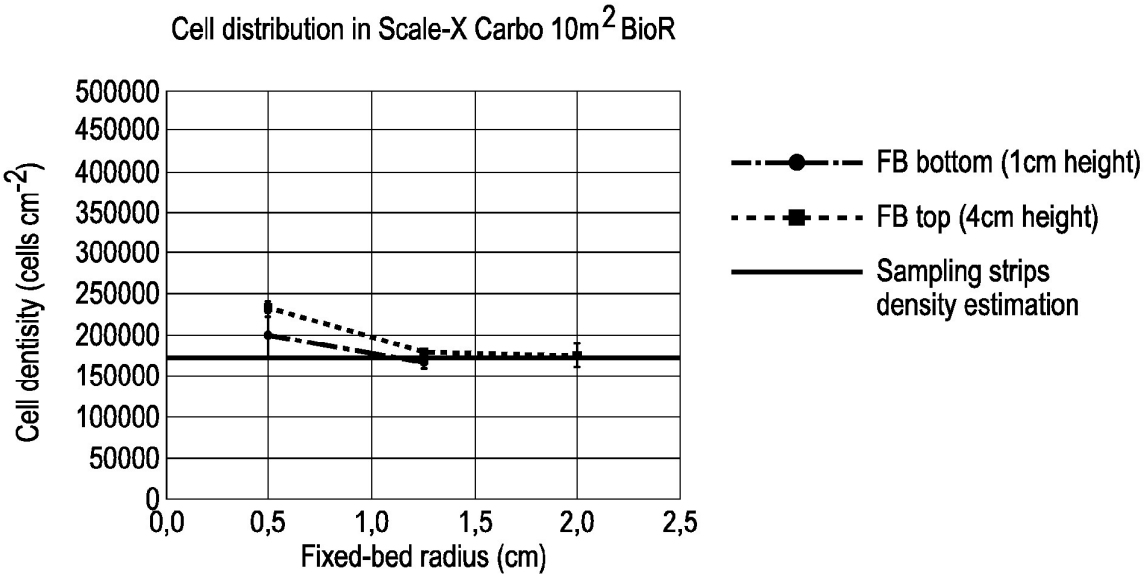

Cell distribution in Scale-X Carbo 10m2 BioR
Cell dentisity (cells cm-2)
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
0,0
0,5
1,0
1,5
2,0
2,5
Fixed-bed radius (cm)
FB bottom (1cm height)
FB top (4cm height)
Sampling strips density estimation

FIG. 32

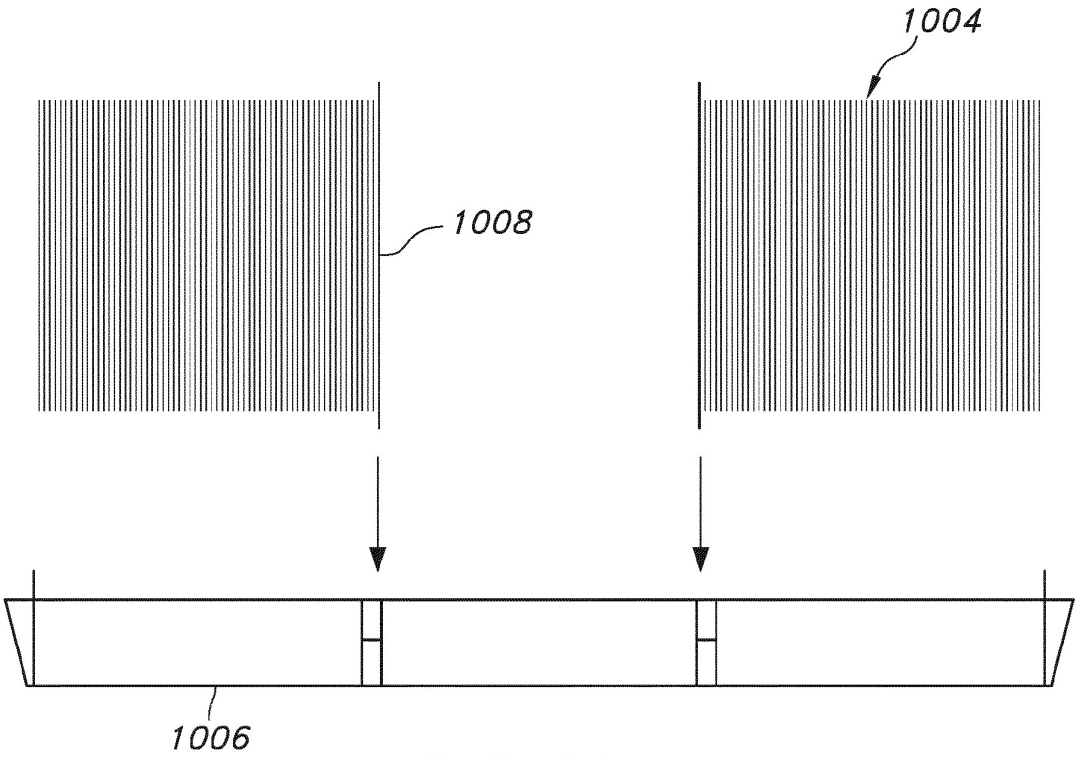


FIG. 33

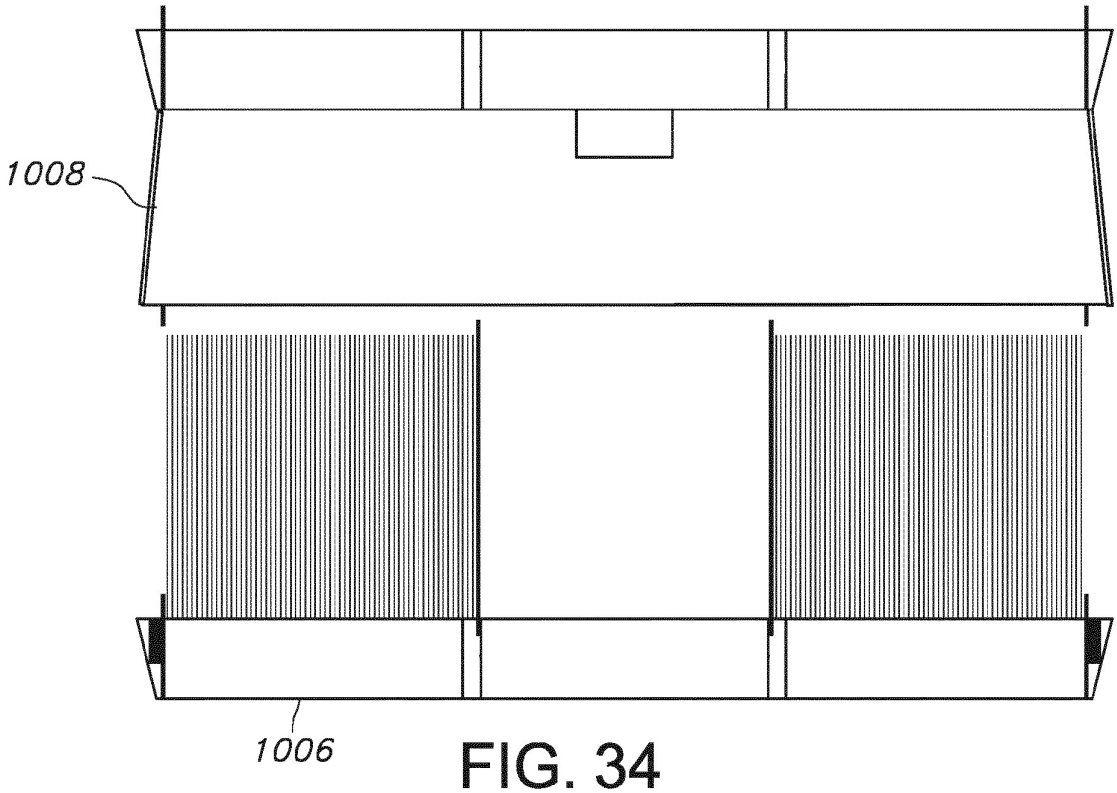


FIG. 34

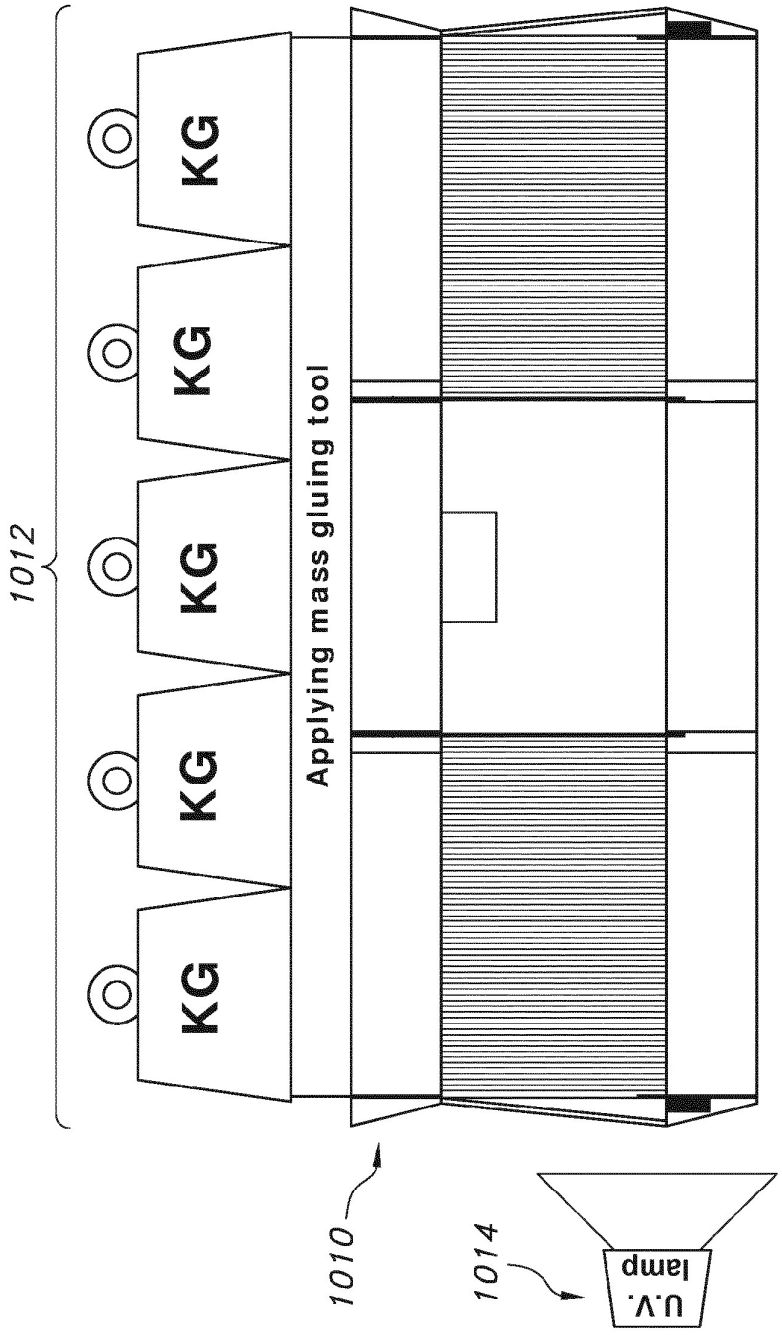

1012
KG
KG
KG
KG
KG
Applying mass gluing tool
1010
1014
U.V. lamp

FIG. 35

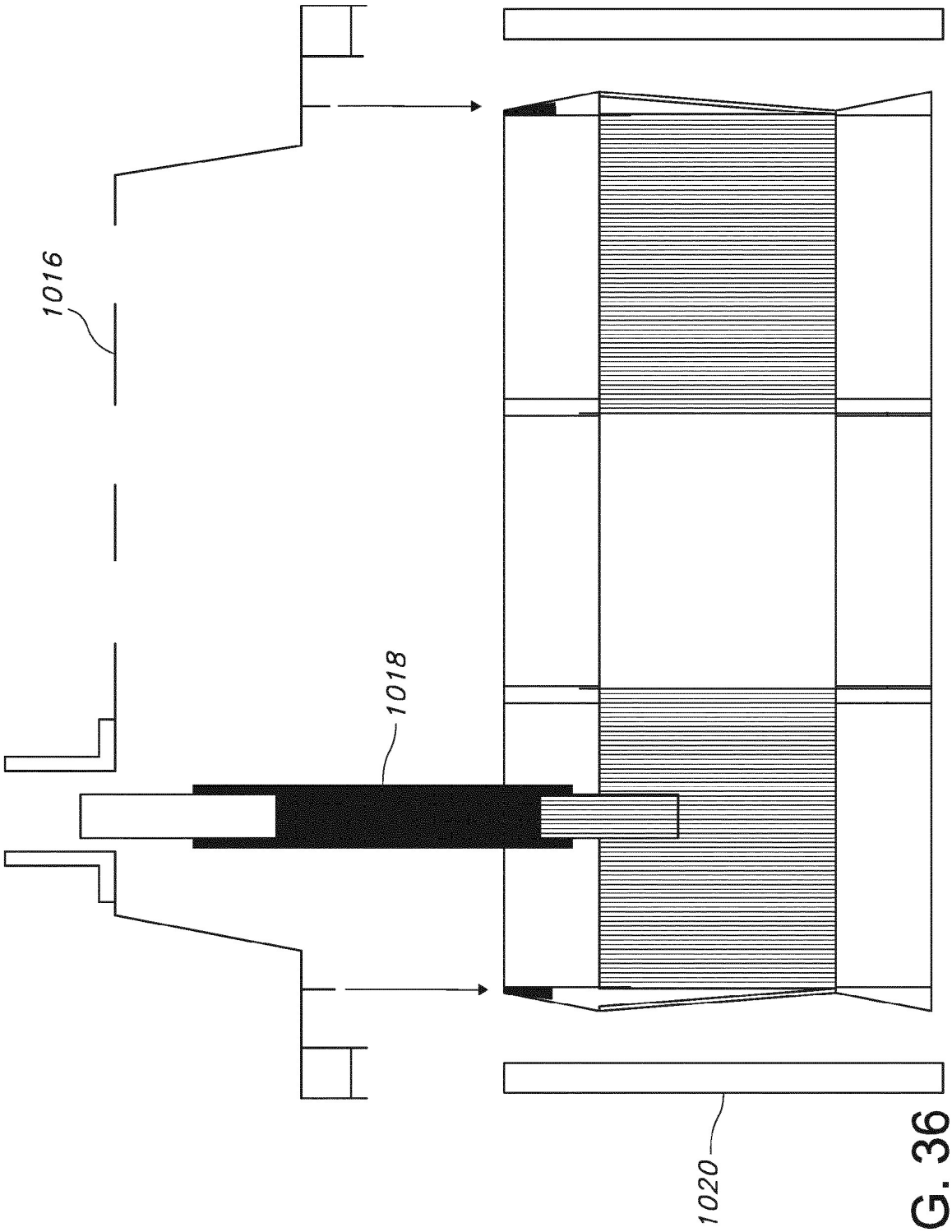


FIG. 36

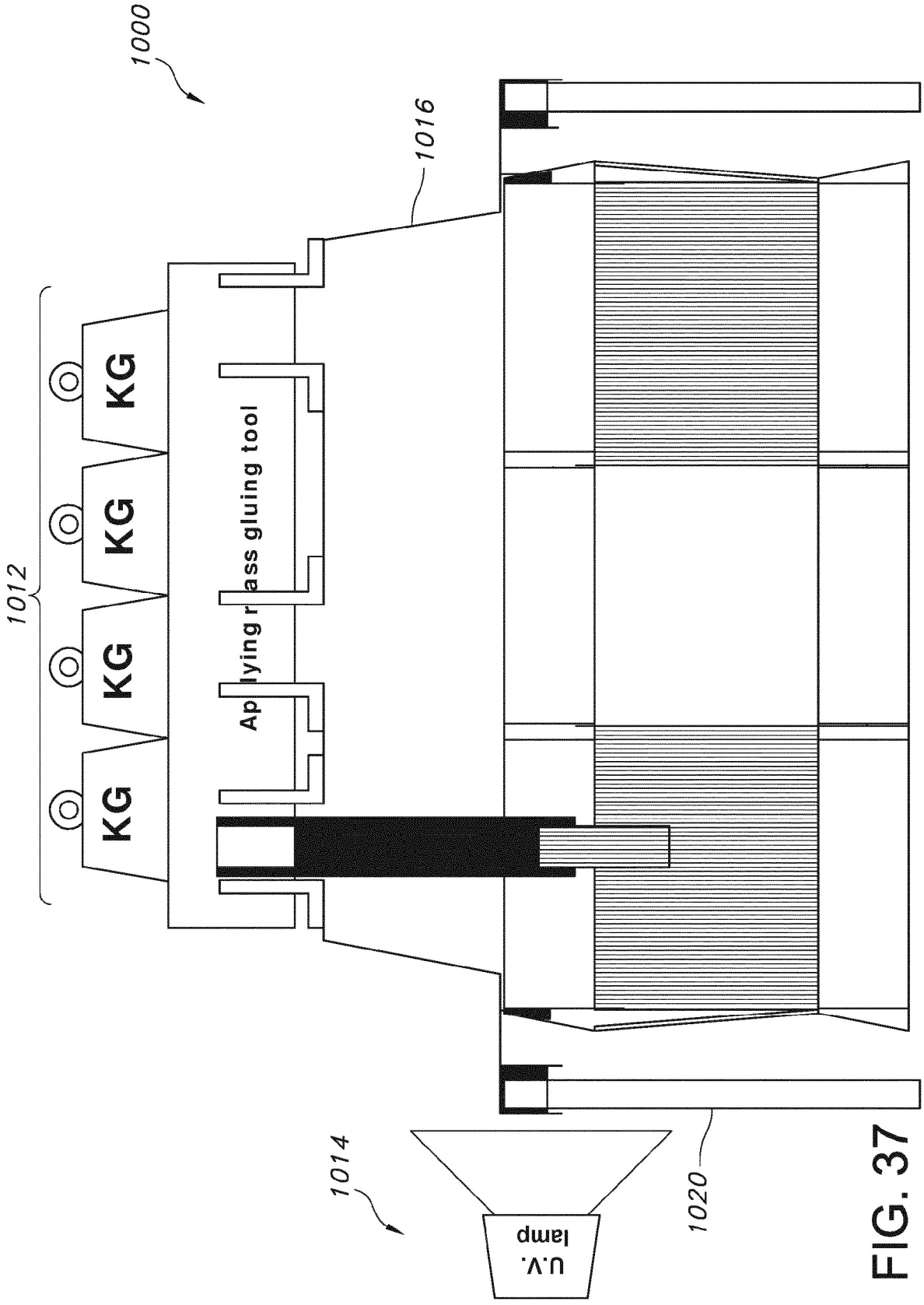

1000
1016
1012
KG
KG
KG
KG
Applying glass gluing tool
1014
U.V. lamp
1020

FIG. 37

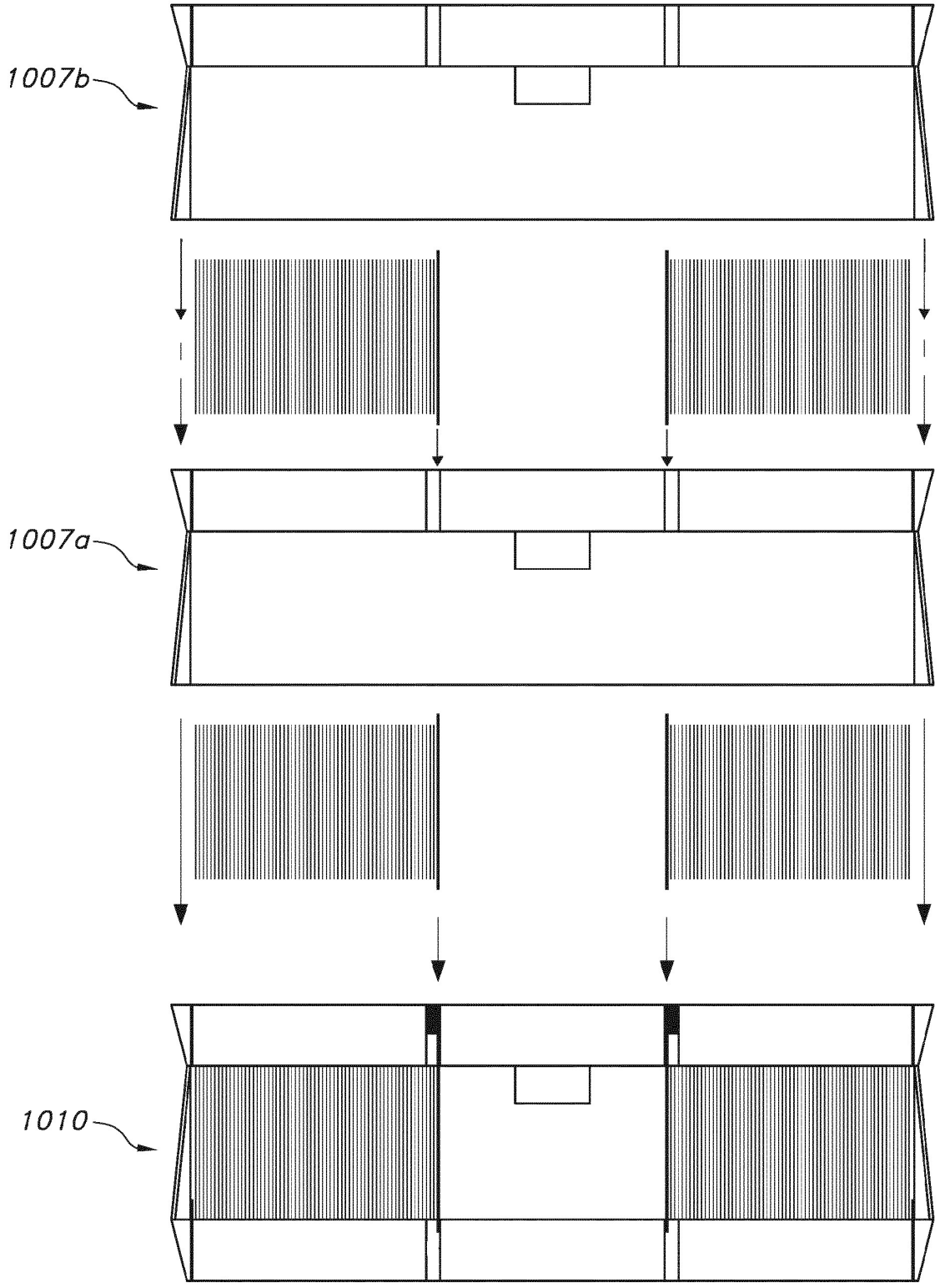


FIG. 38