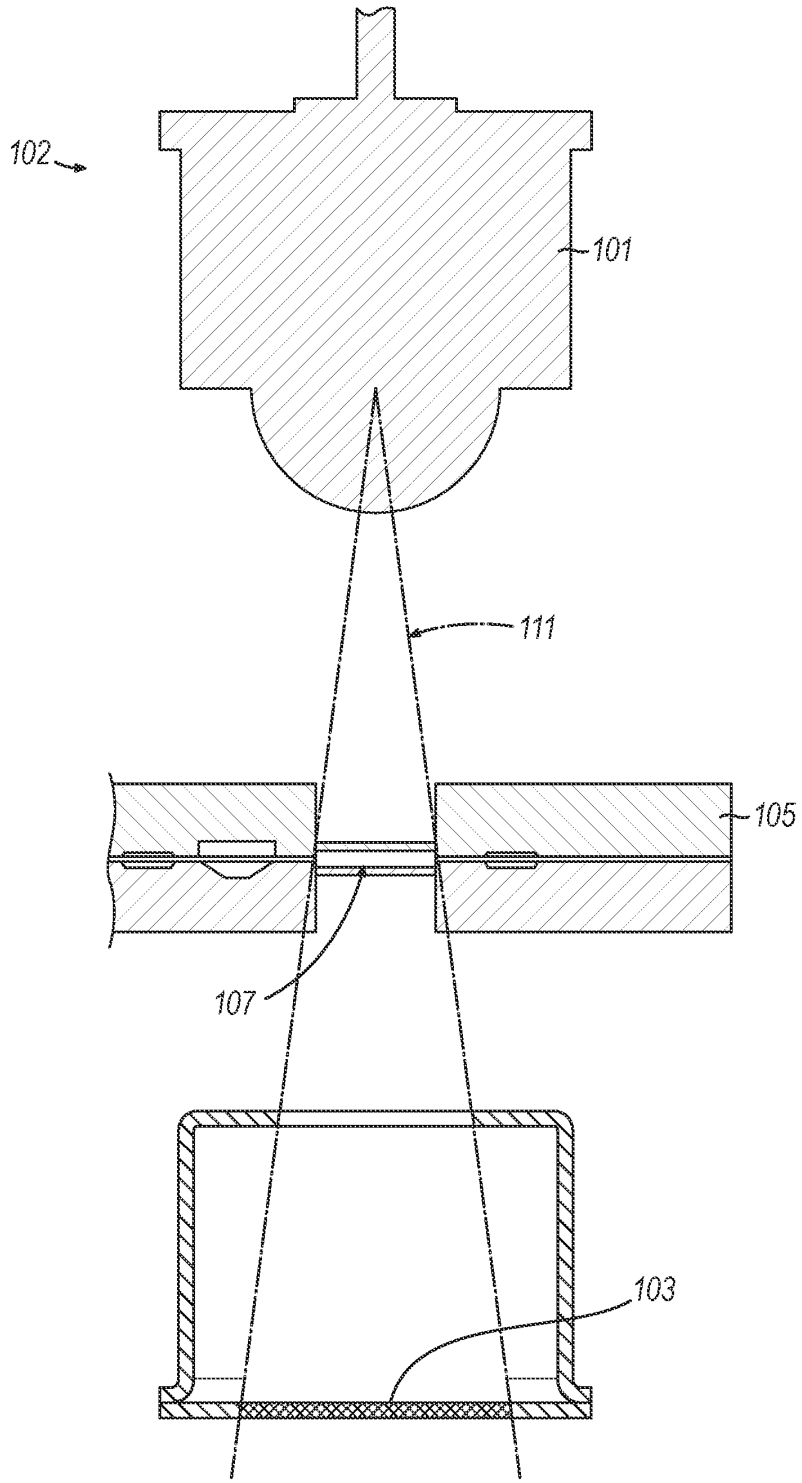


FIG. 1

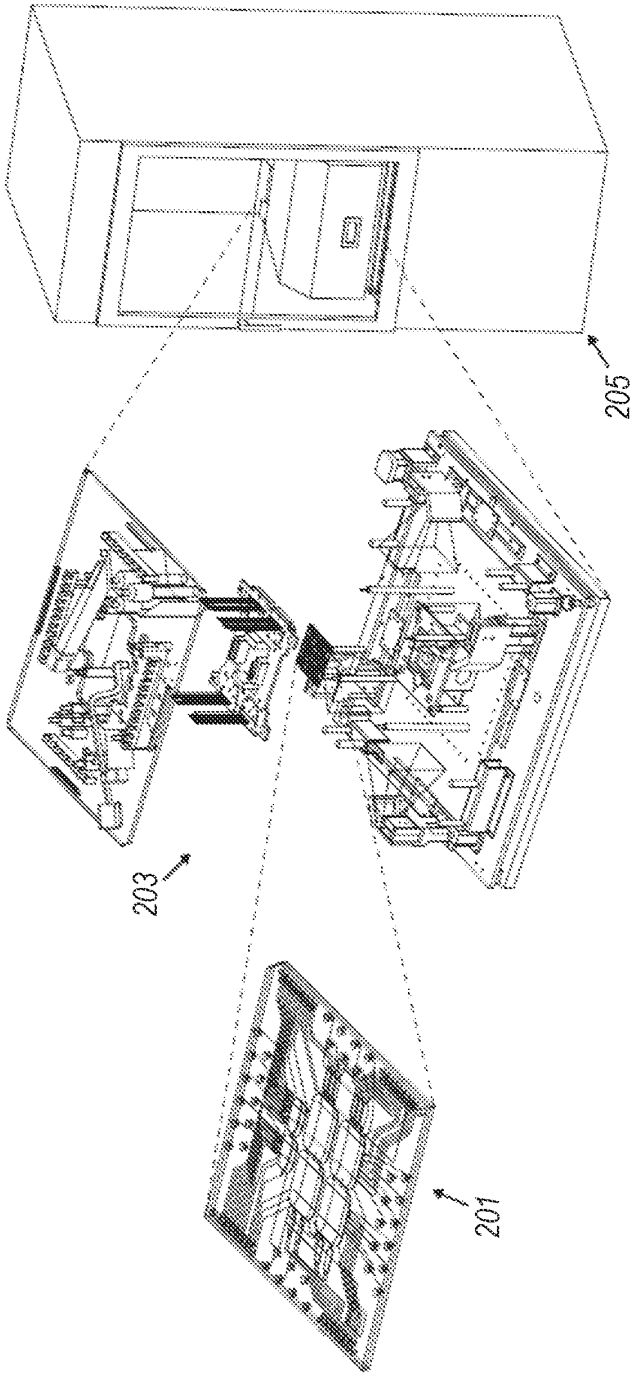


FIG. 2A

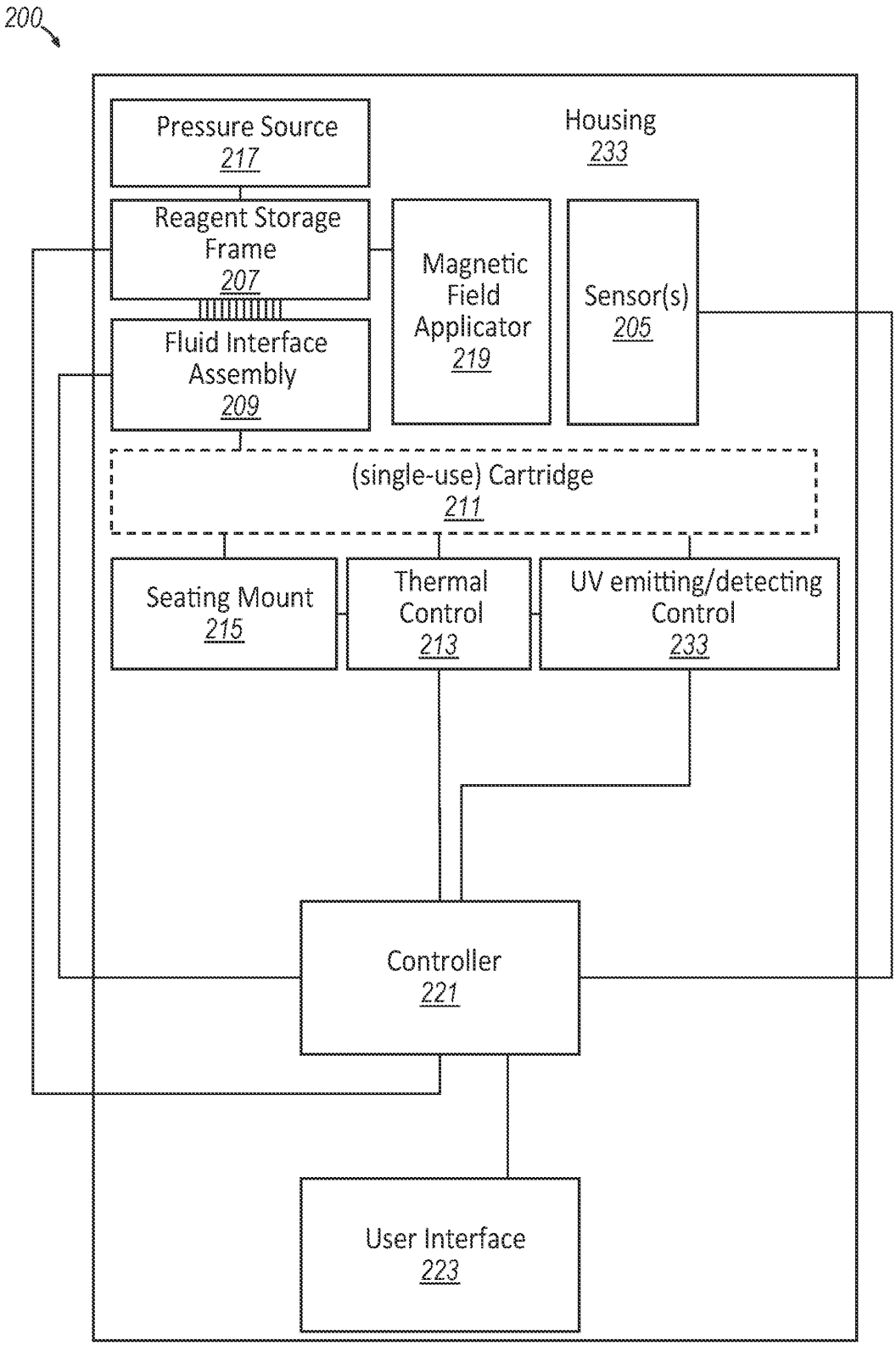

200
Pressure Source
217
Housing
233
Reagent Storage Frame
207
Magnetic Field Applicator
219
Sensor(s)
205
Fluid Interface Assembly
209
(single-use) Cartridge
211
Seating Mount
215
Thermal Control
213
UV emitting/detecting Control
233
Controller
221
User Interface
223

FIG. 2B

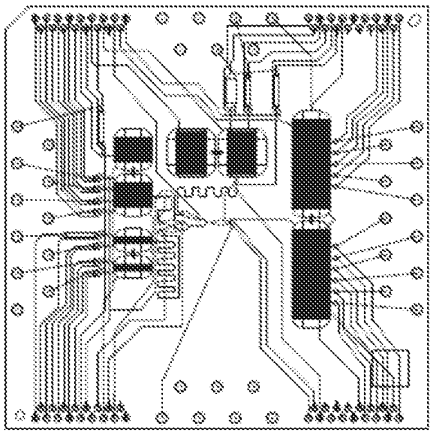


FIG. 3C

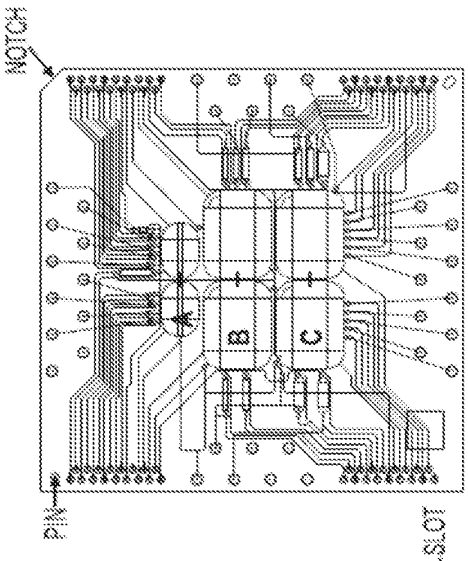


FIG. 3B

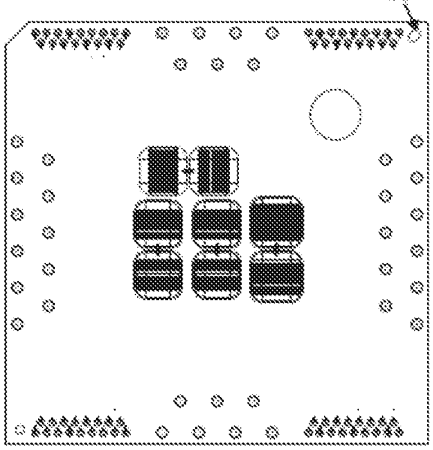


FIG. 3A

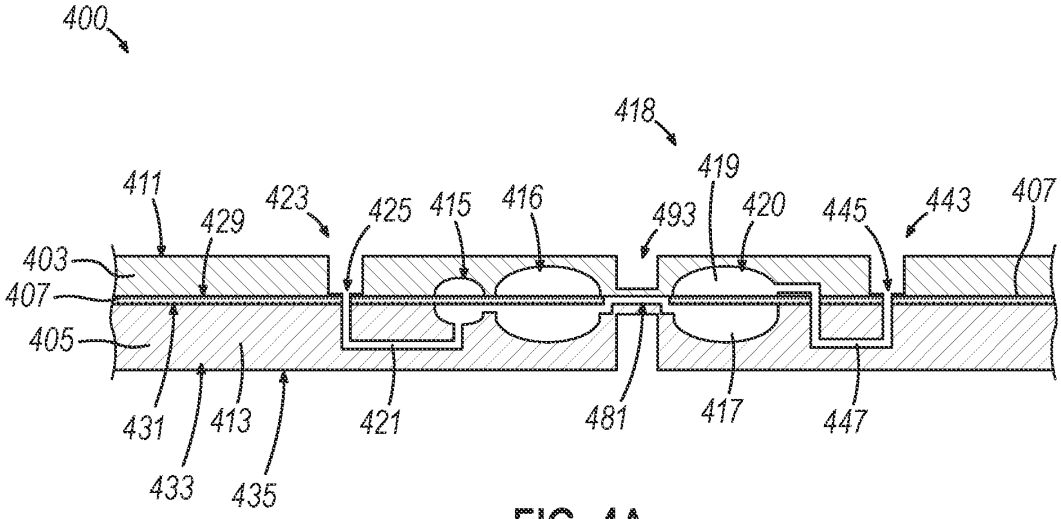

400
418
419
411
423
425
415
416
493
420
445
443
407
429
403
407
405
431
413
421
481
417
447
433
435

FIG. 4A

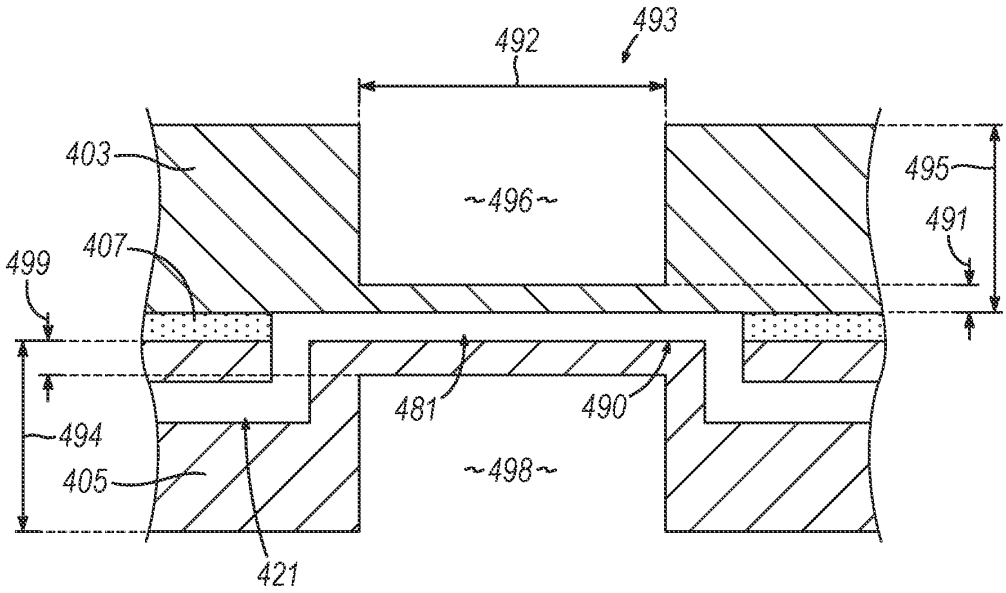

492
493
403
~496~
495
491
407
499
494
481
490
405
~498~
421

FIG. 4B

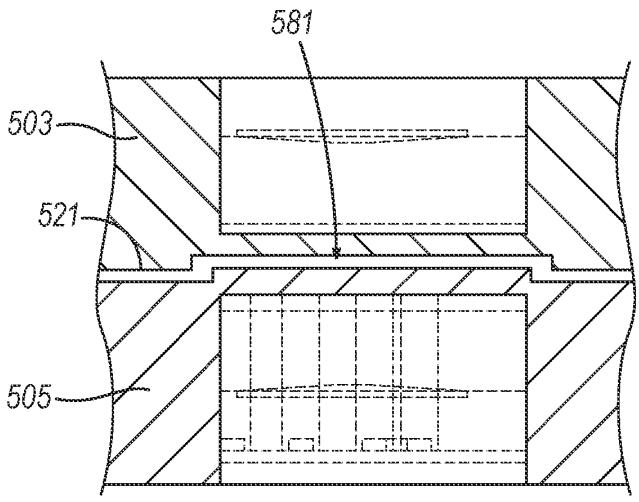

581
503
521
505

FIG. 5

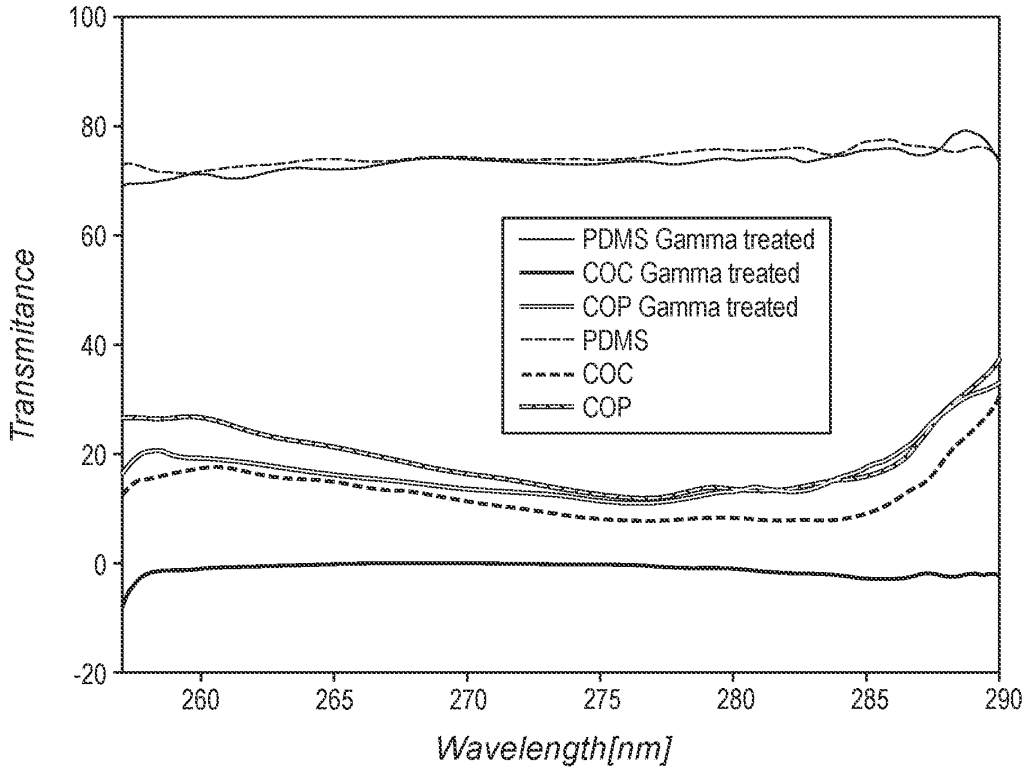

100
80
60
40
20
0
-20
Transmitance
260
265
270
275
280
285
290
Wavelength[nm]
PDMS Gamma treated
COC Gamma treated
COP Gamma treated
PDMS
COC
COP

FIG. 6

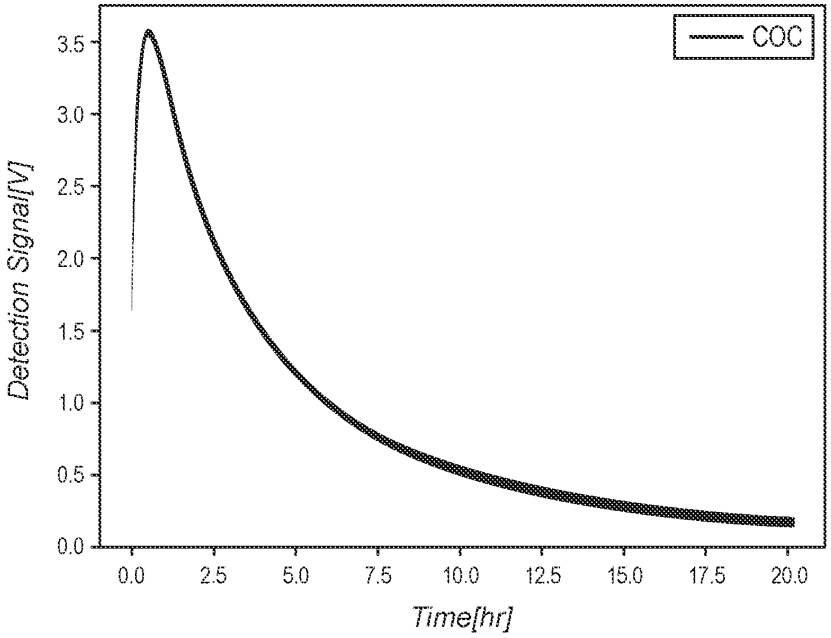

COC
Detection Signal[V]
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
Time[hr]

FIG. 7

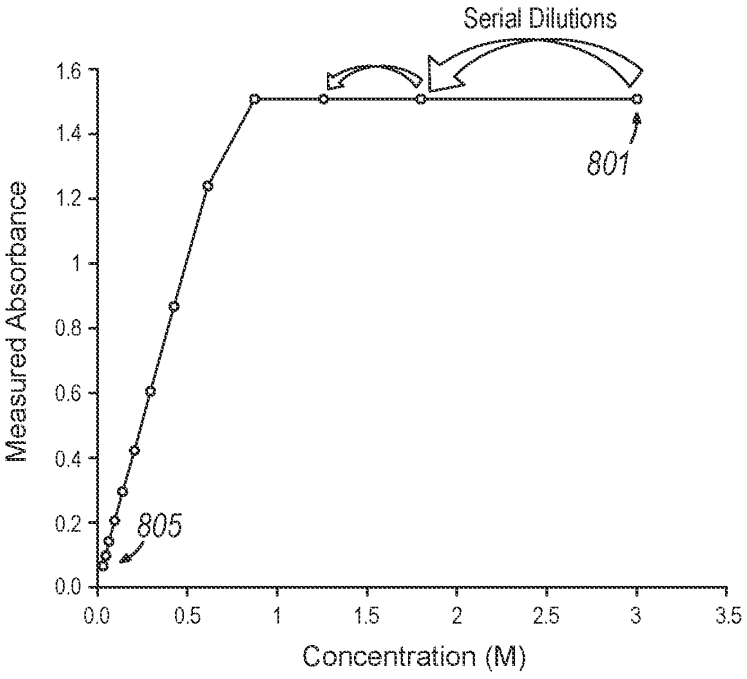

Serial Dilutions
801
805
Measured Absorbance
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0.0
0.0
0.5
1
1.5
2
2.5
3
3.5
Concentration (M)

FIG. 8

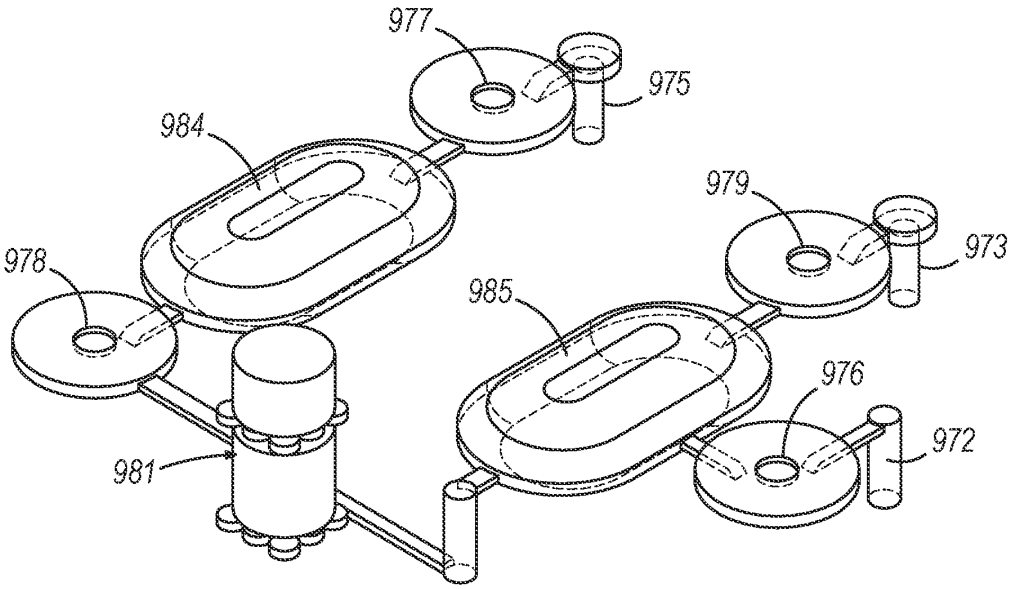


FIG. 9

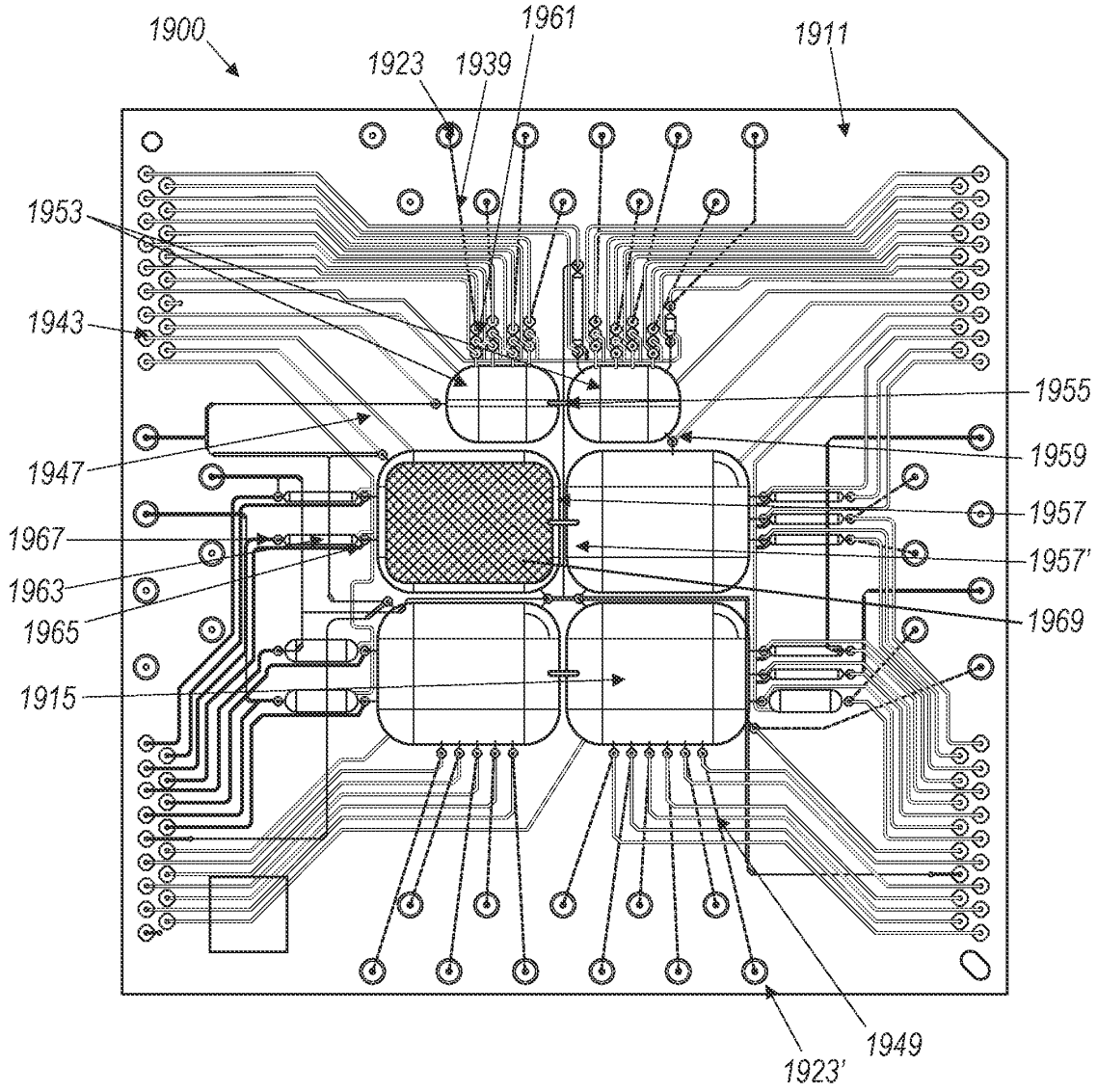

1900
1961
1923
1939
1911
1953
1943
1955
1947
1959
1957
1967
1957'
1963
1969
1965
1915
1949
1923'

FIG. 10A

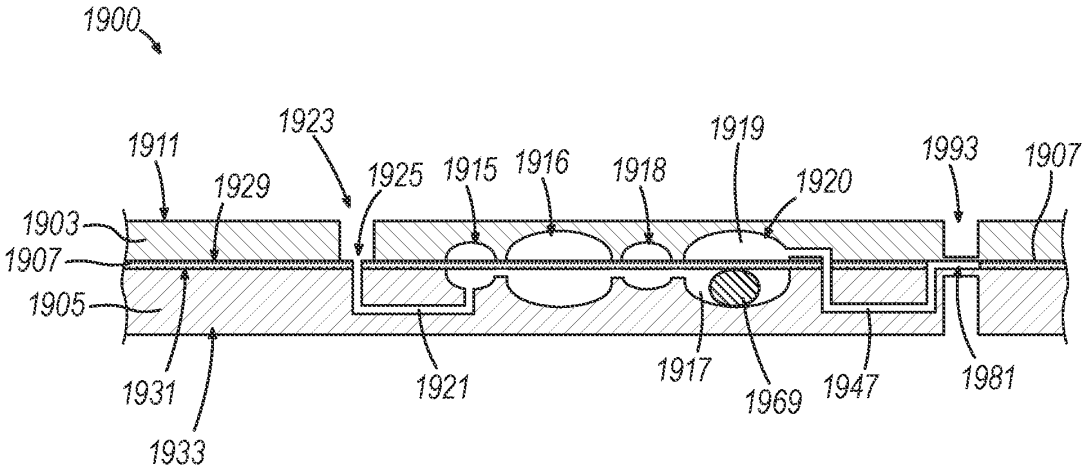


FIG. 10B

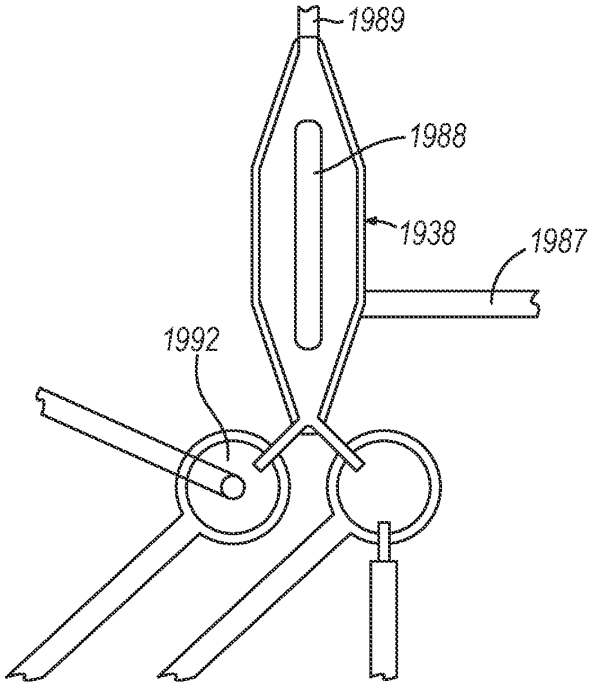


FIG. 10C

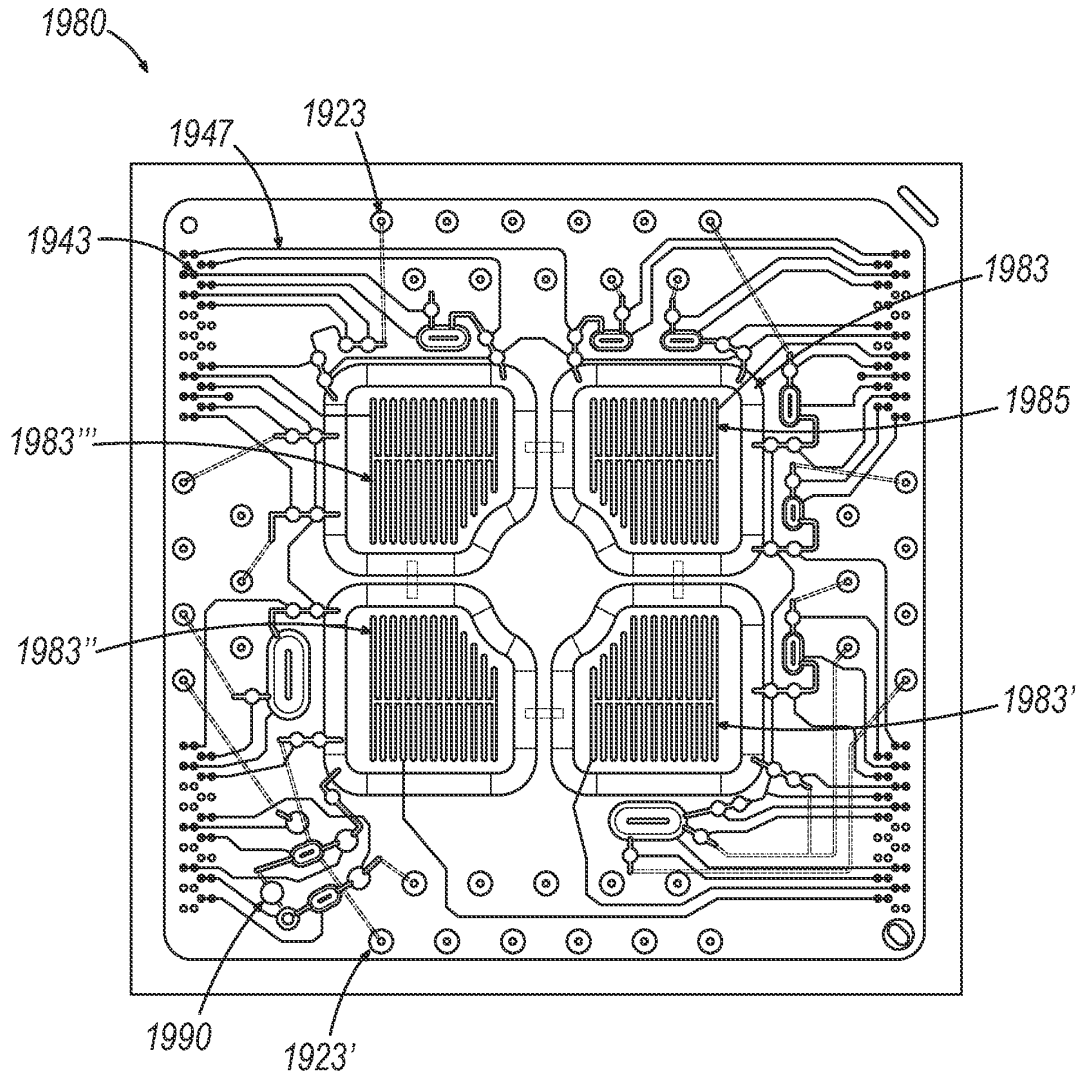


FIG. 10D

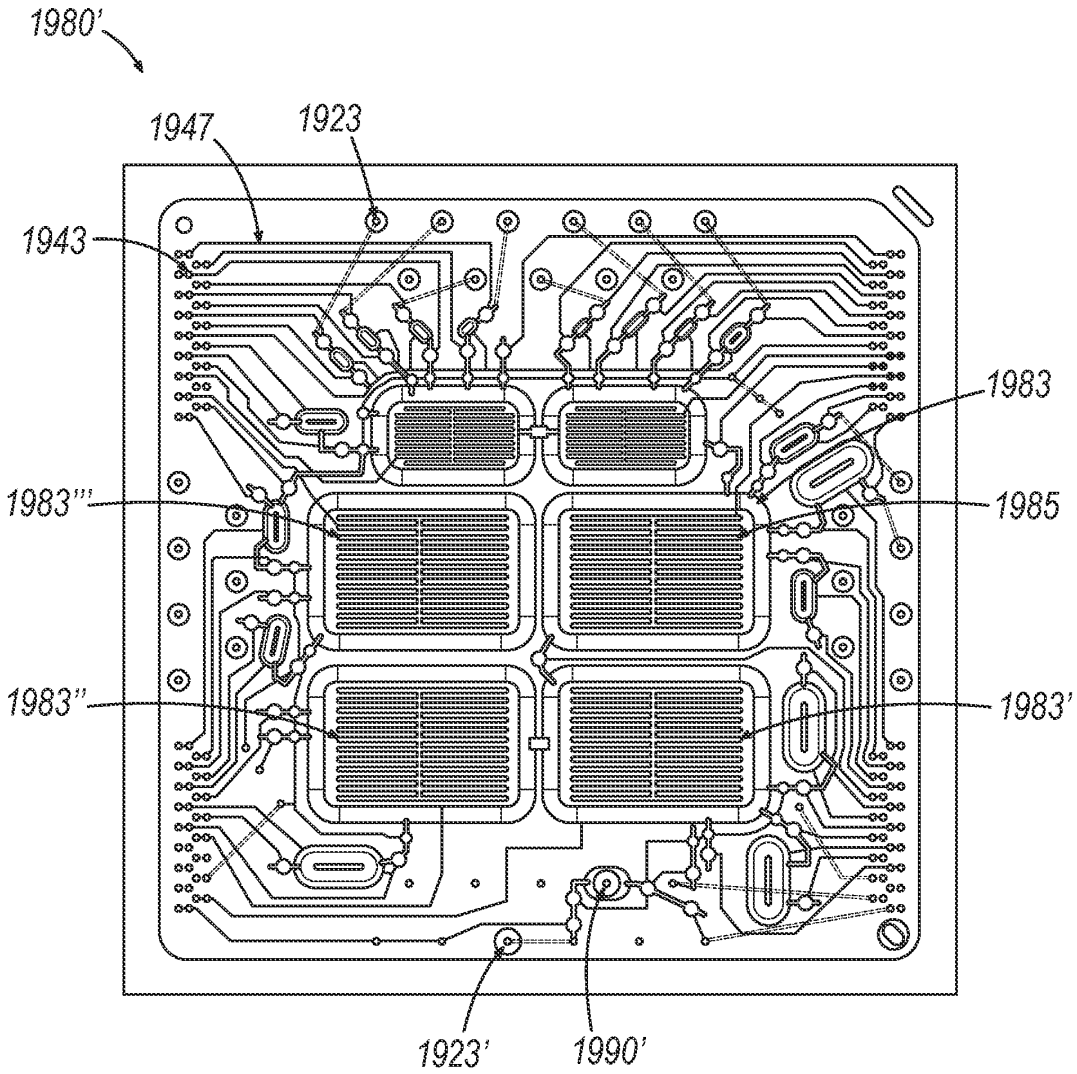


FIG. 10E

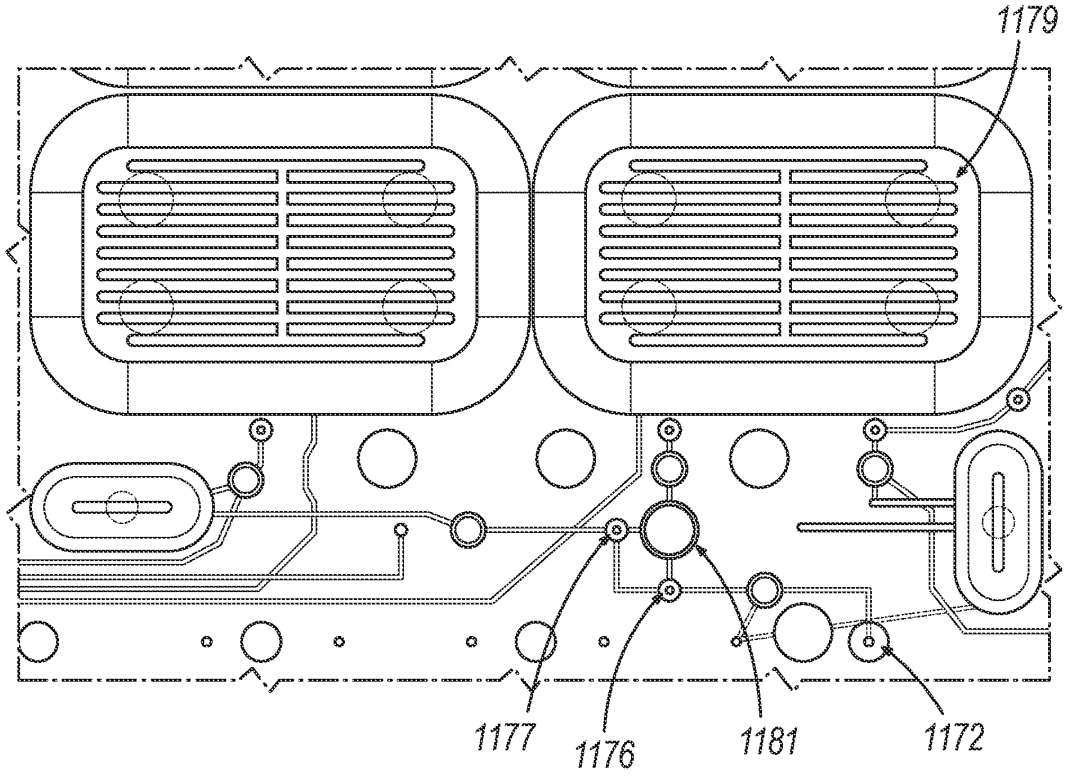


FIG. 11A

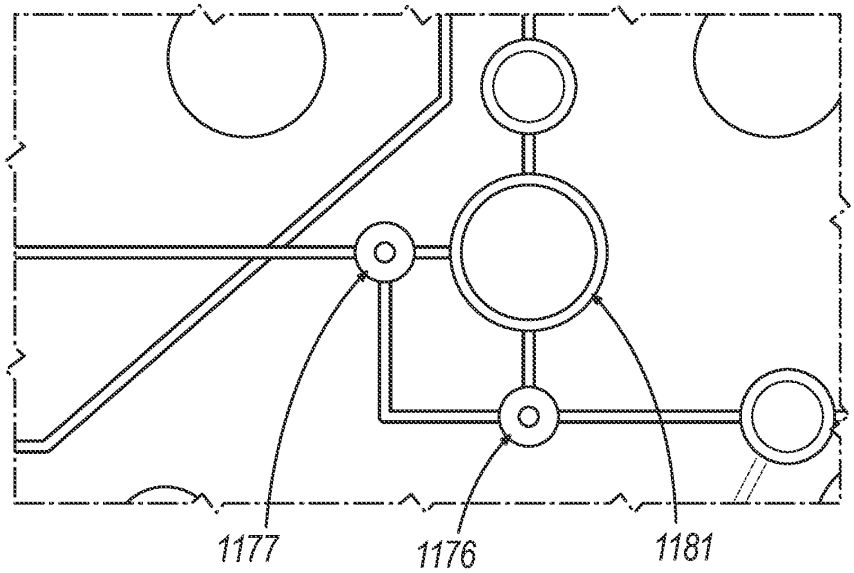


FIG. 11B

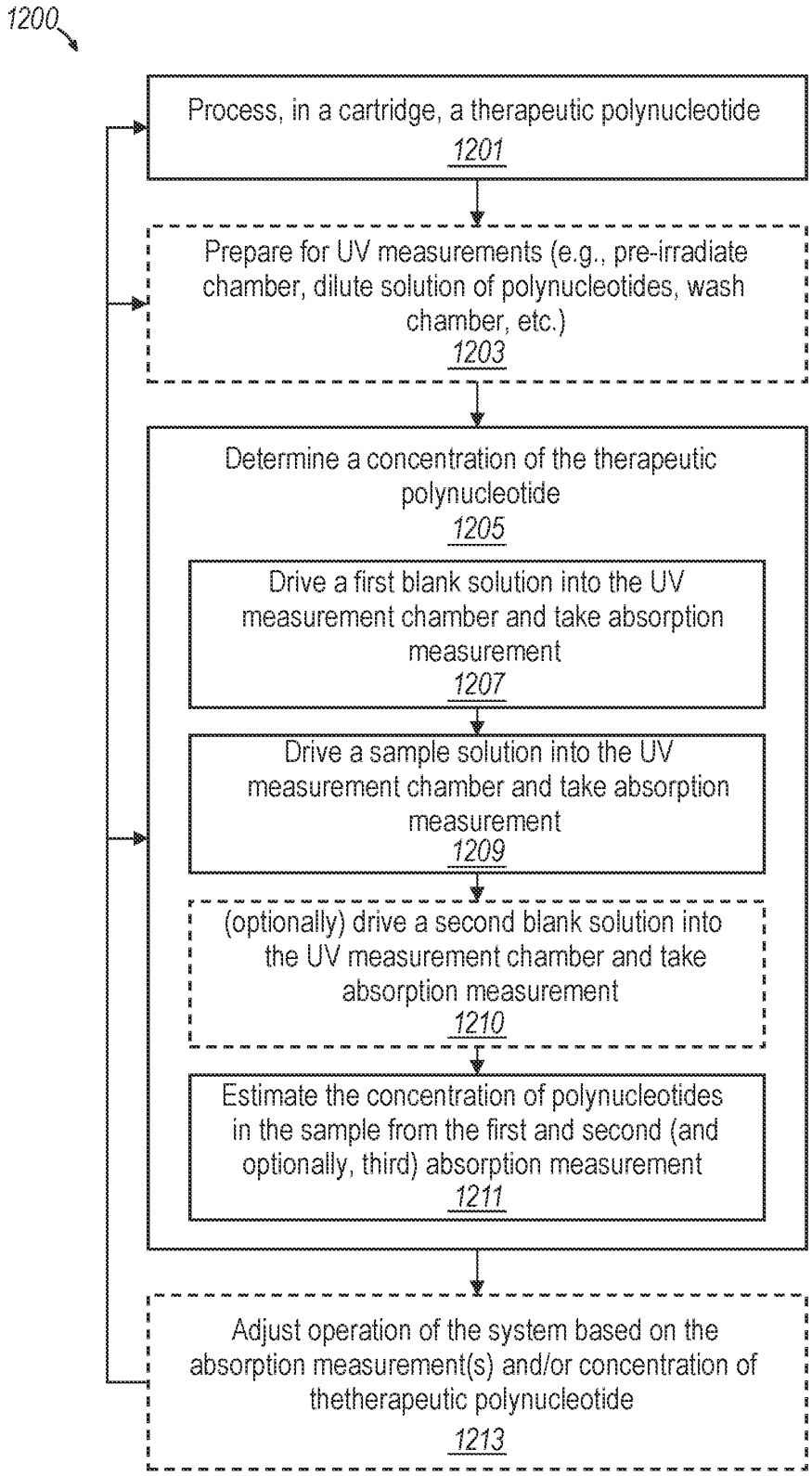

1200
Process, in a cartridge, a therapeutic polynucleotide
1201
Prepare for UV measurements (e.g., pre-irradiate chamber, dilute solution of polynucleotides, wash chamber, etc.)
1203
Determine a concentration of the therapeutic polynucleotide
1205
Drive a first blank solution into the UV measurement chamber and take absorption measurement
1207
Drive a sample solution into the UV measurement chamber and take absorption measurement
1209
(optionally) drive a second blank solution into the UV measurement chamber and take absorption measurement
1210
Estimate the concentration of polynucleotides in the sample from the first and second (and optionally, third) absorption measurement
1211
Adjust operation of the system based on the absorption measurement(s) and/or concentration of thetherapeutic polynucleotide
1213

FIG. 12

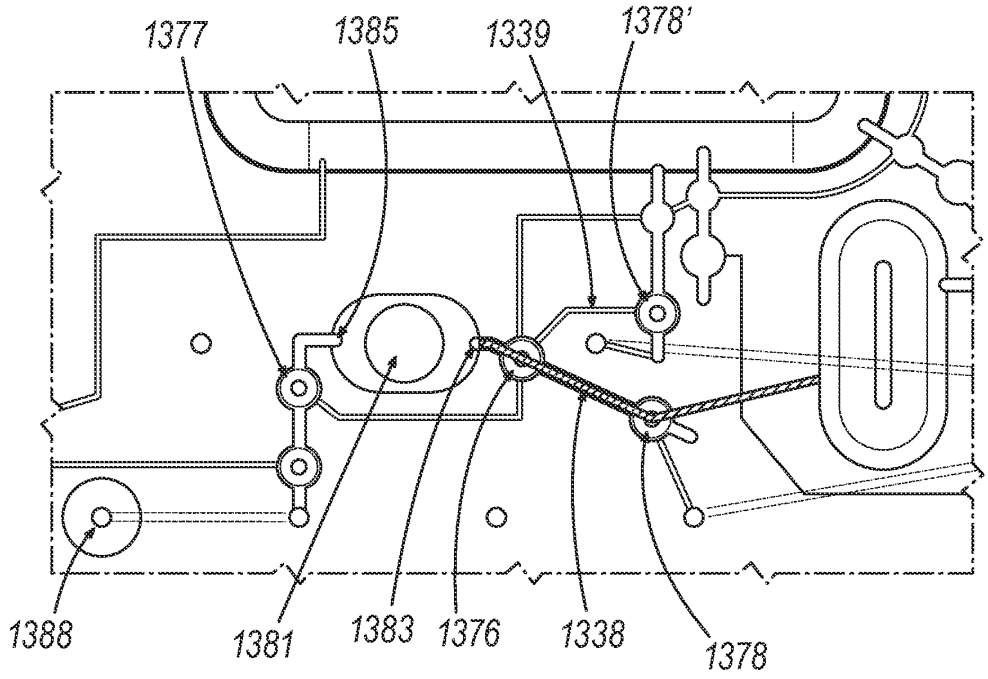


FIG. 13A

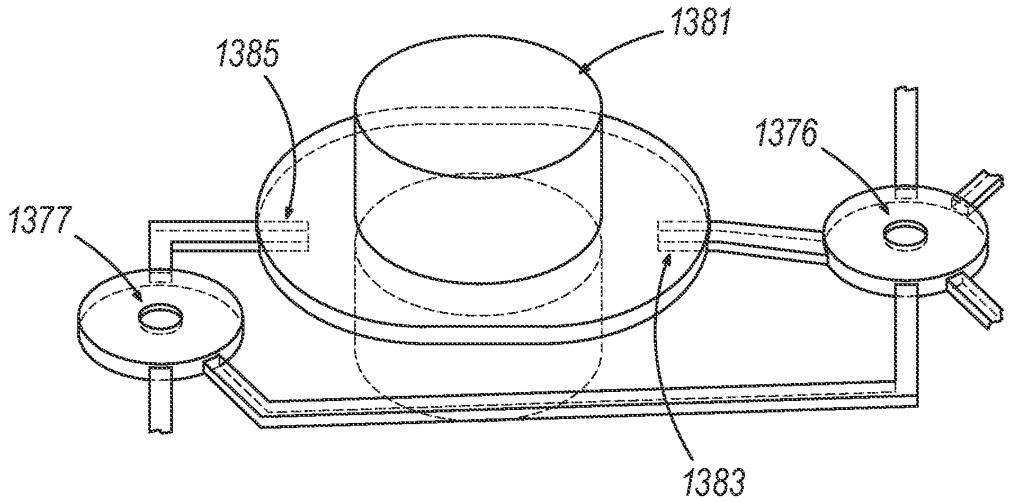


FIG. 13B

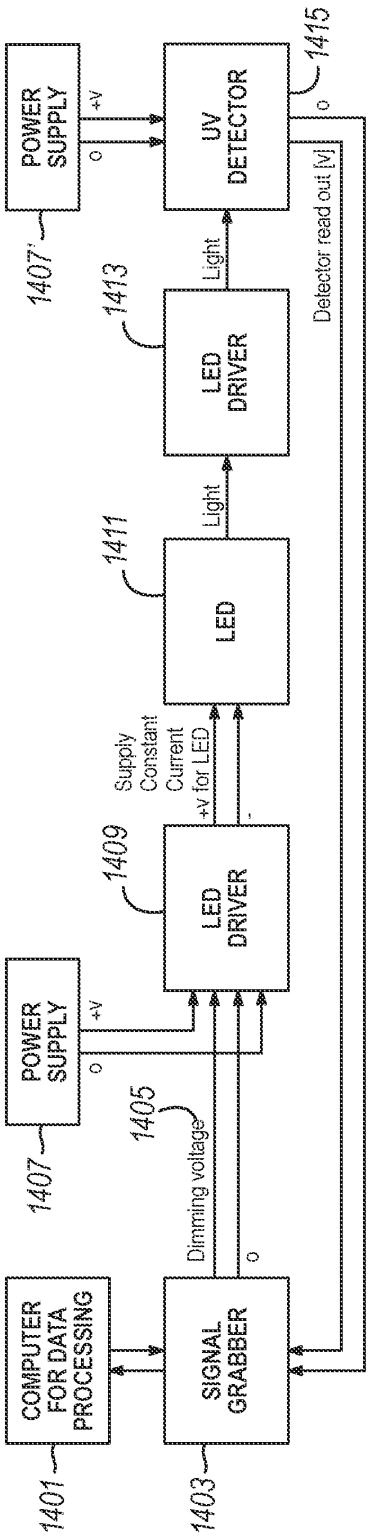

COMPUTER FOR DATA PROCESSING
1401
SIGNAL GRABBER
1403
Dimming voltage
1405
POWER SUPPLY
1407
LED DRIVER
1409
Supply Constant Current +v for LED
LED
1411
Light
LED DRIVER
1413
Light
UV DETECTOR
1415
Detector read out [V]
POWER SUPPLY
1407'
+V
0

FIG. 14

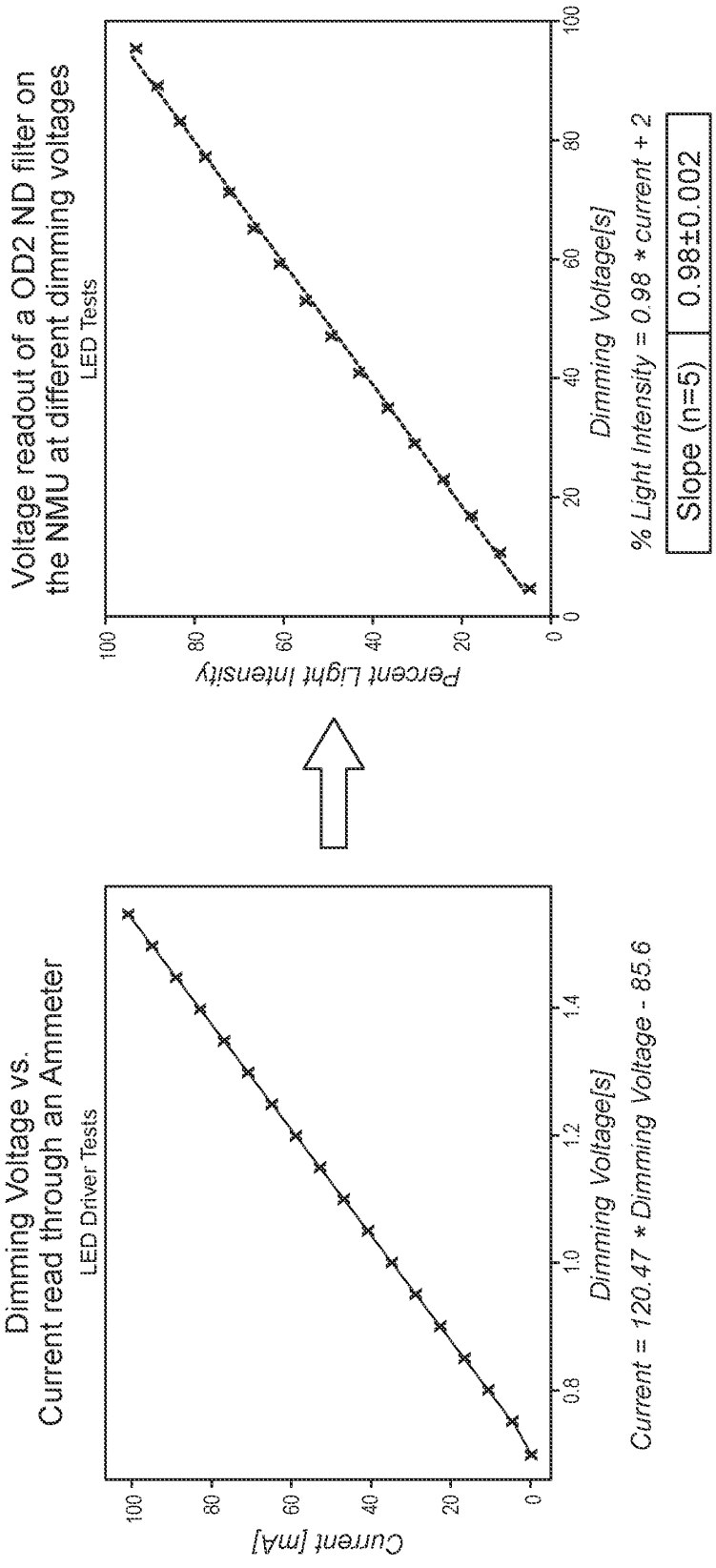


FIG. 15A

FIG. 15B

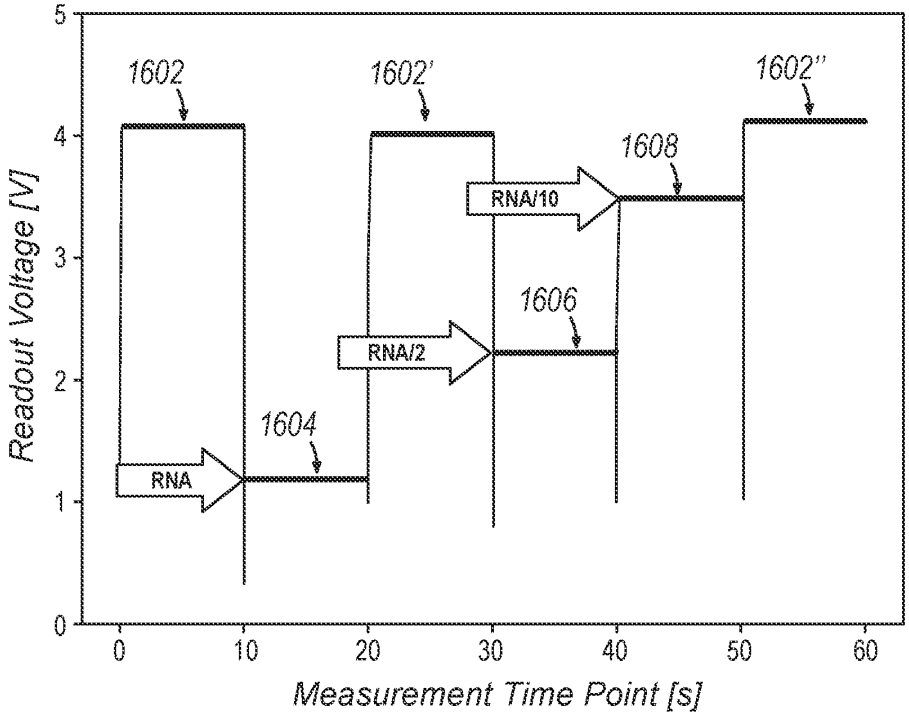


FIG. 16A

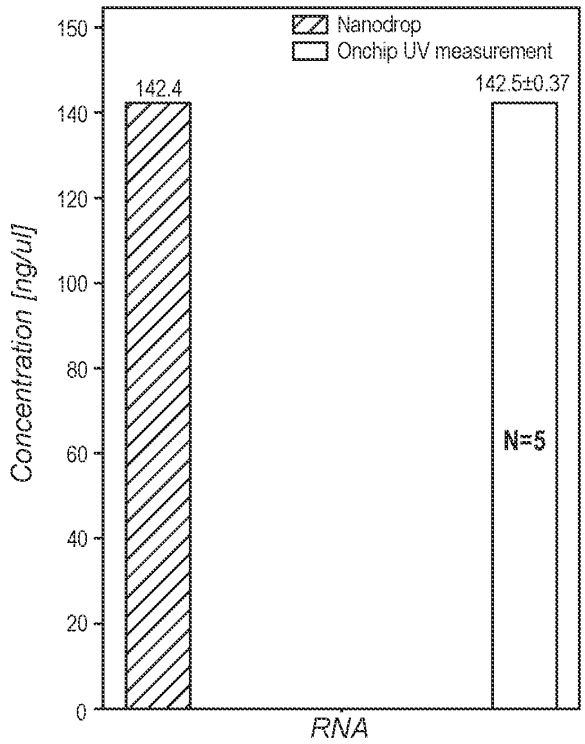


FIG. 16B

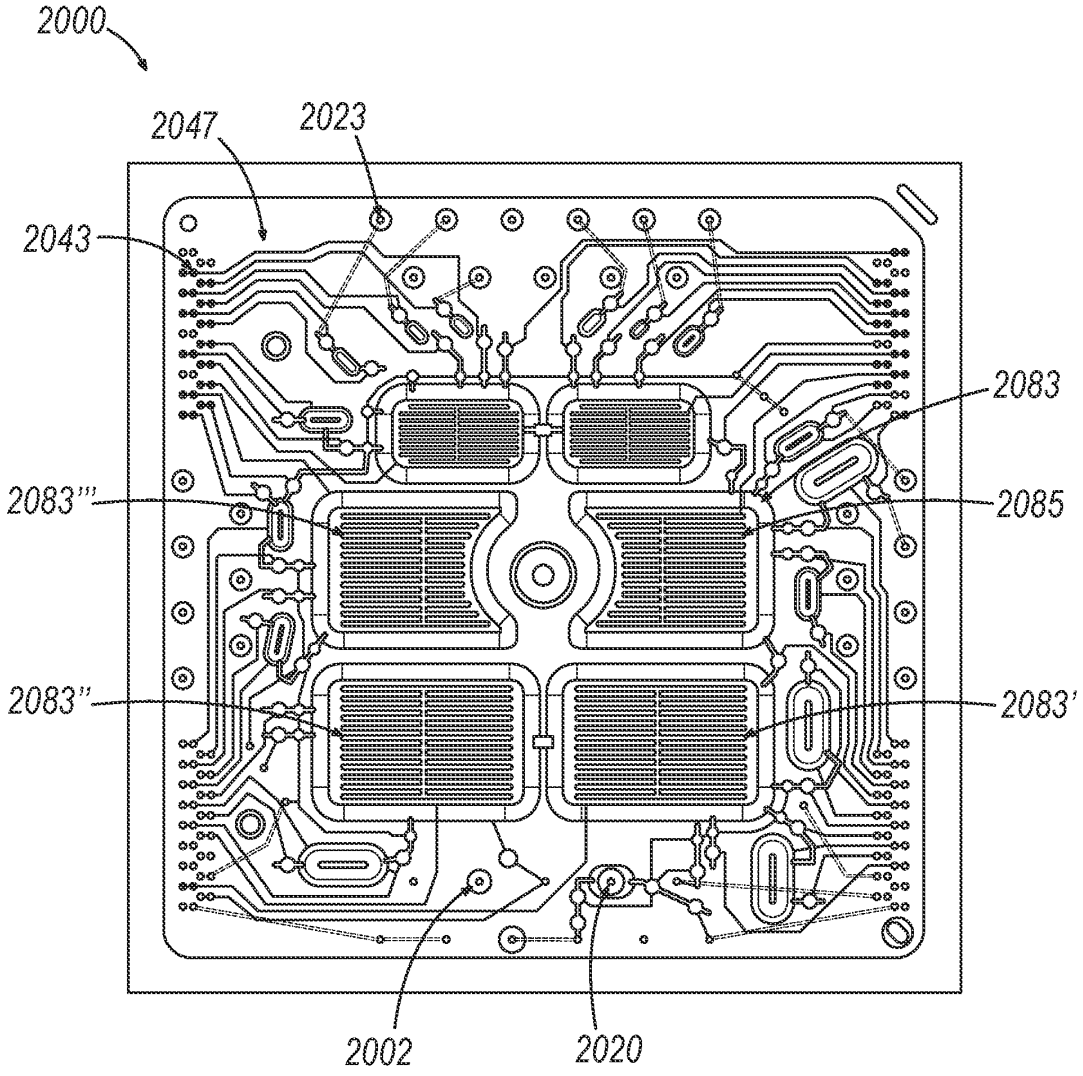


FIG. 17

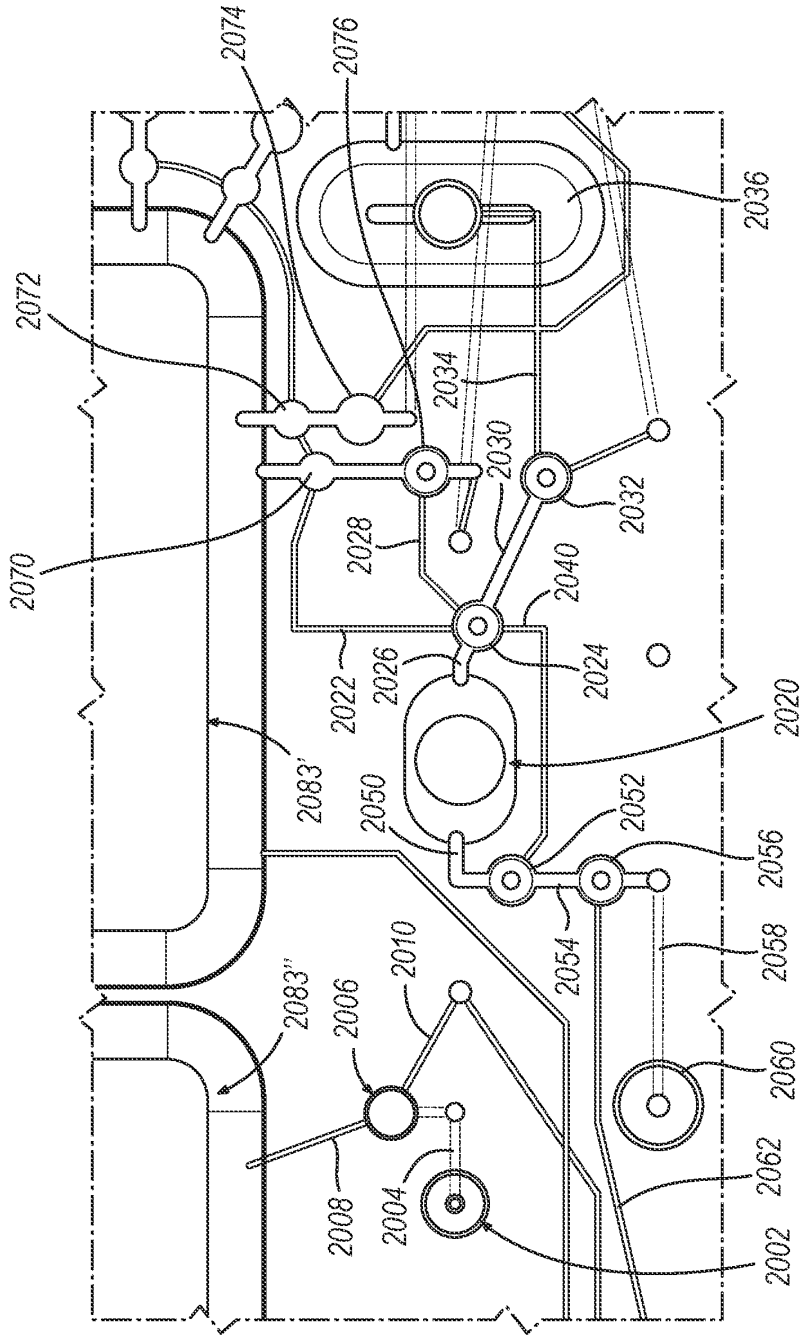

2074
2076
2036
2072
2034
2030
2032
2028
2070
2040
2024
2026
2022
2020
2083'
2050
2052
2056
2054
2058
2010
2083''
2006
2060
2062
2008
2004
2002

FIG. 18

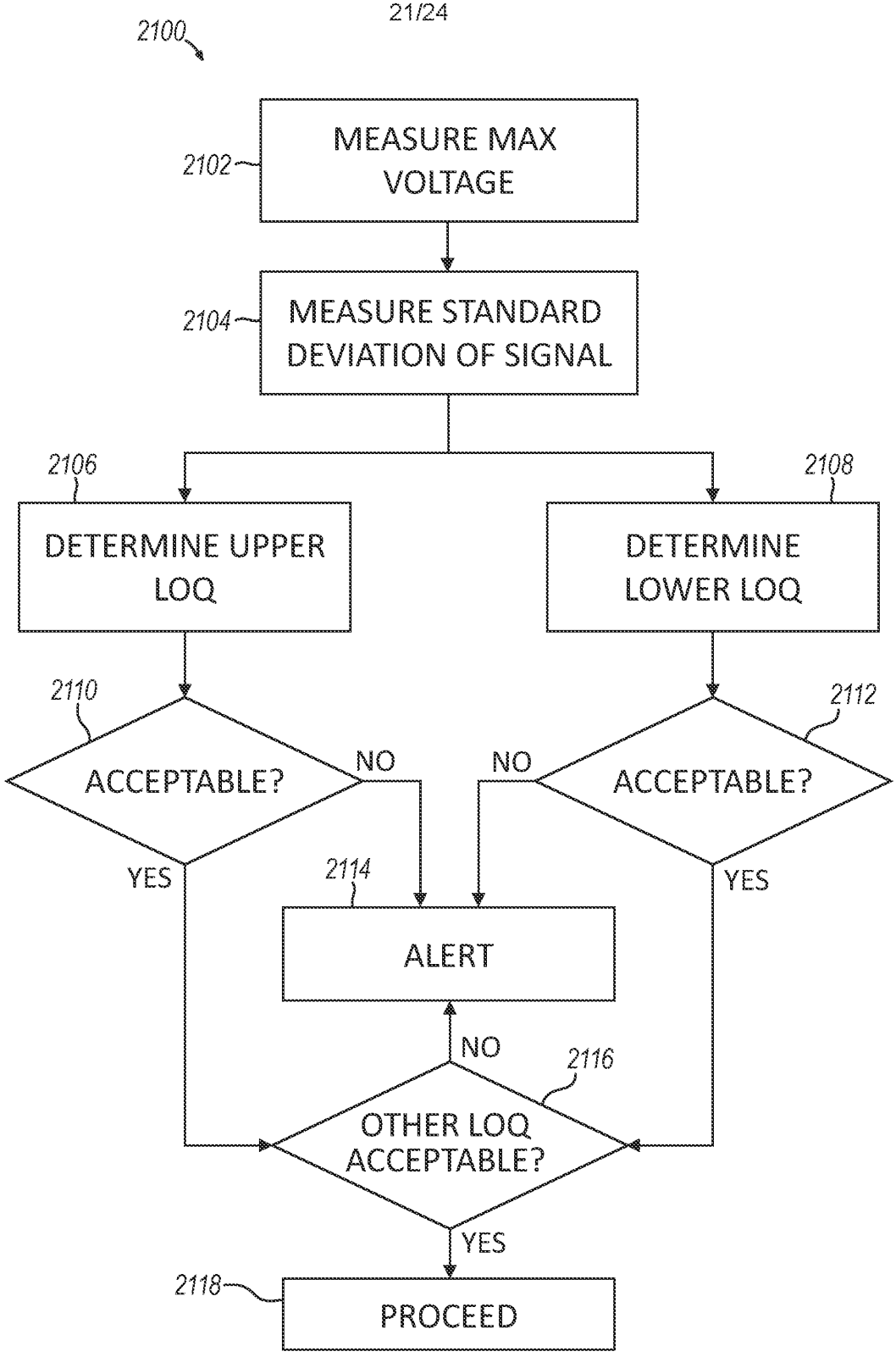

2100
2102
MEASURE MAX VOLTAGE
2104
MEASURE STANDARD DEVIATION OF SIGNAL
2106
DETERMINE UPPER LOQ
2108
DETERMINE LOWER LOQ
2110
ACCEPTABLE?
NO
YES
2112
ACCEPTABLE?
NO
YES
2114
ALERT
NO
2116
OTHER LOQ ACCEPTABLE?
YES
2118
PROCEED

FIG. 19

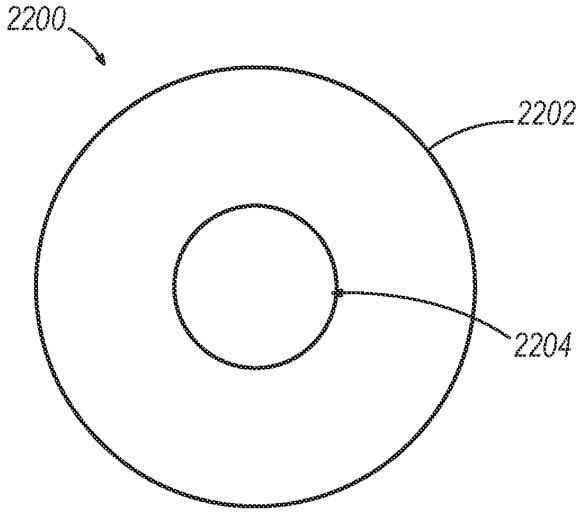

2200
2202
2204

FIG. 20

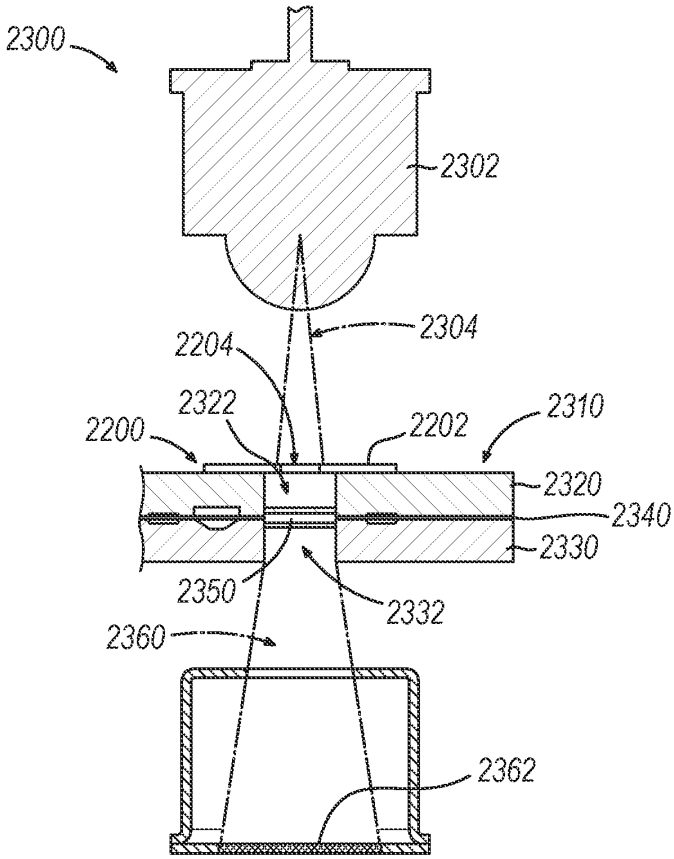

2300
2302
2304
2204
2322
2200
2202
2310
2320
2340
2330
2350
2332
2360
2362

FIG. 21

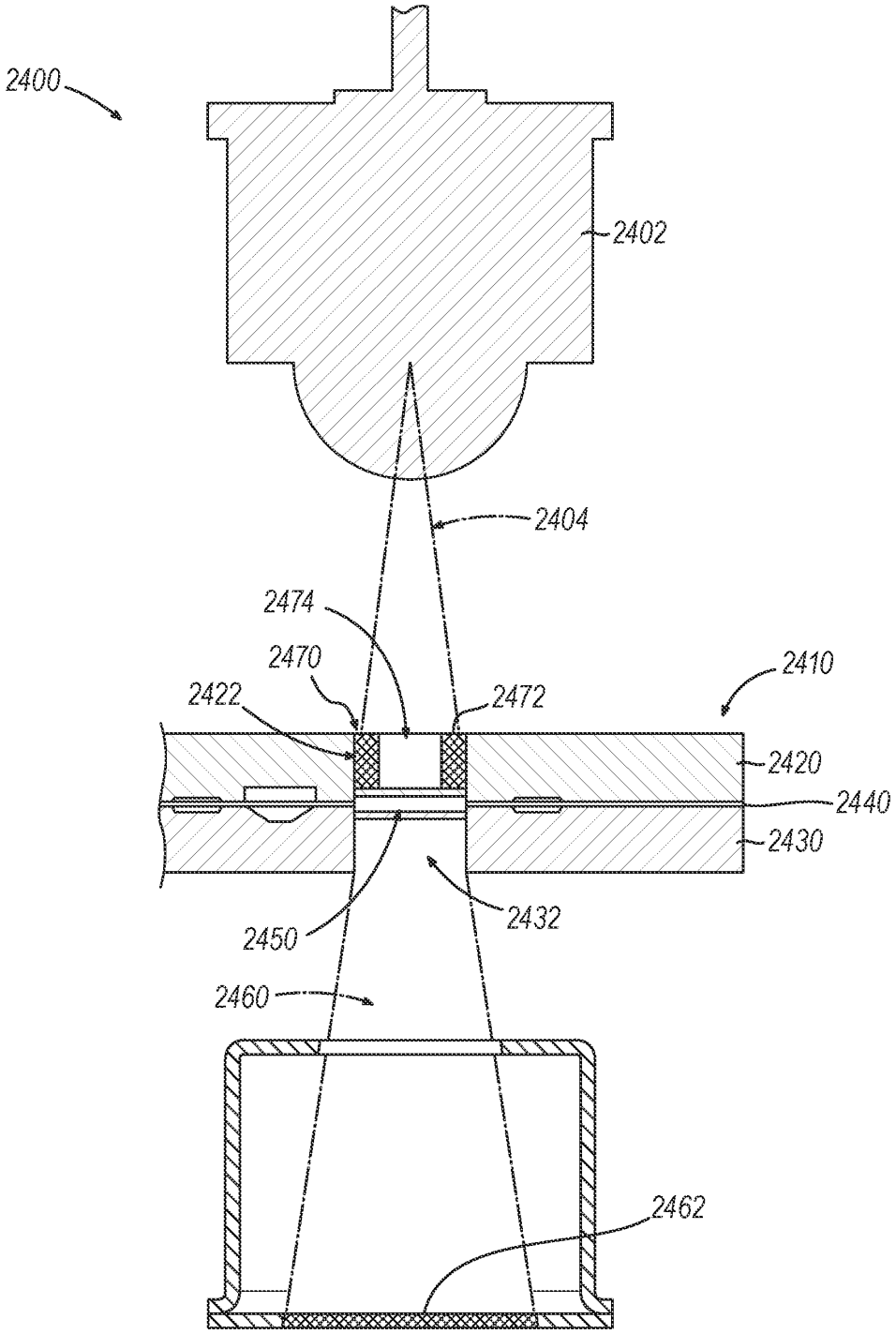

2400
2402
2404
2474
2470
2422
2472
2410
2420
2440
2430
2450
2432
2460
2462

FIG. 22

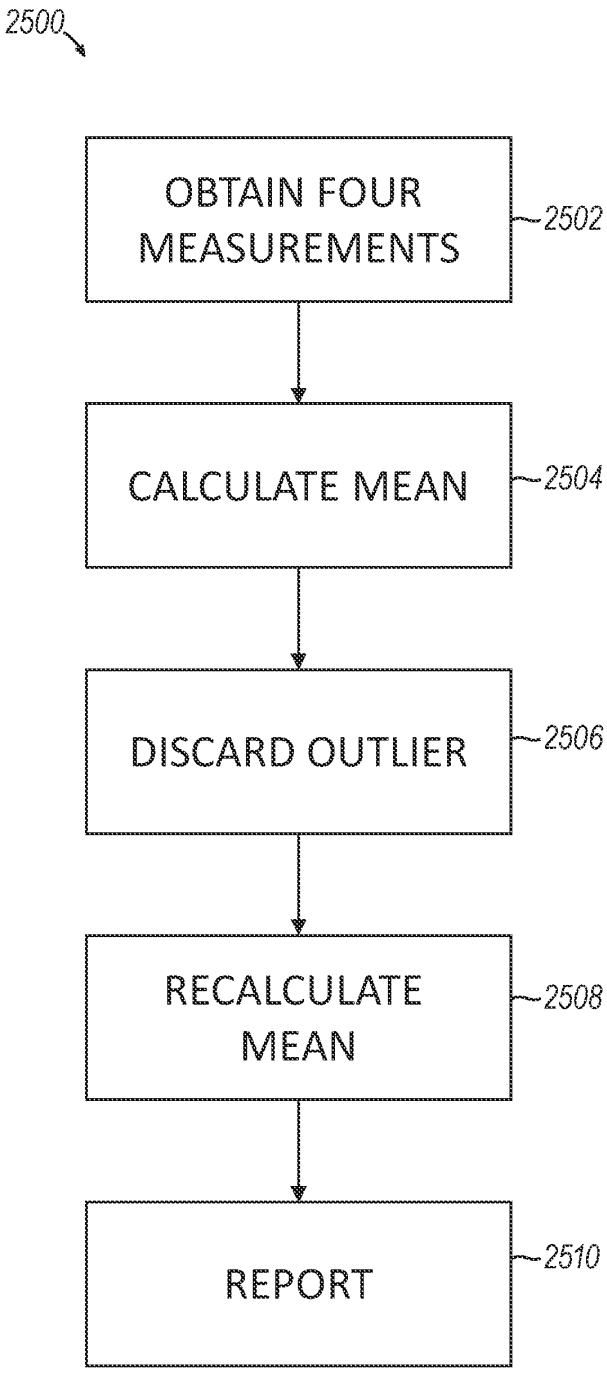

2500
OBTAIN FOUR MEASUREMENTS
2502
CALCULATE MEAN
2504
DISCARD OUTLIER
2506
RECALCULATE MEAN
2508
REPORT
2510

FIG. 23