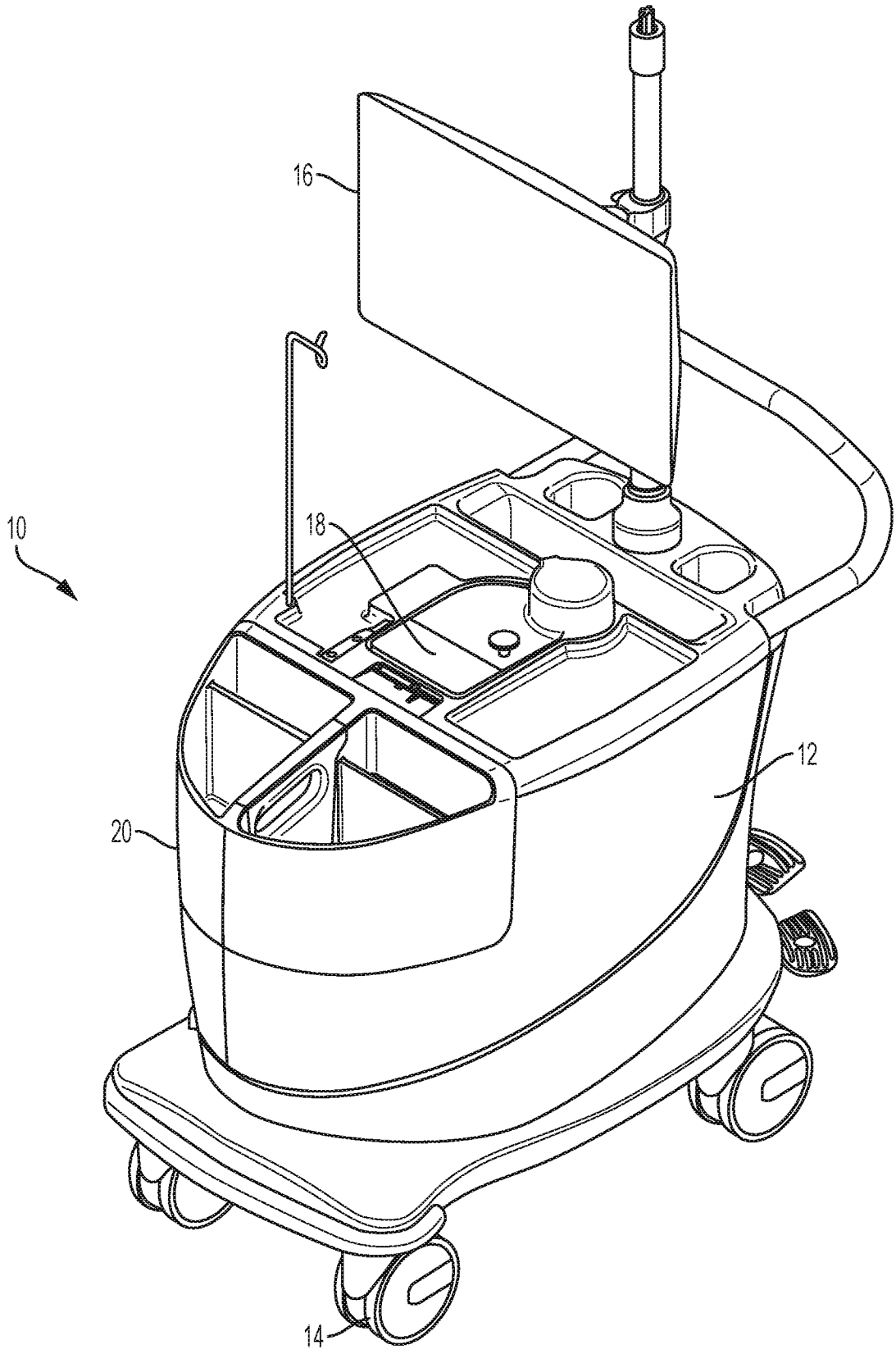


FIG. 1

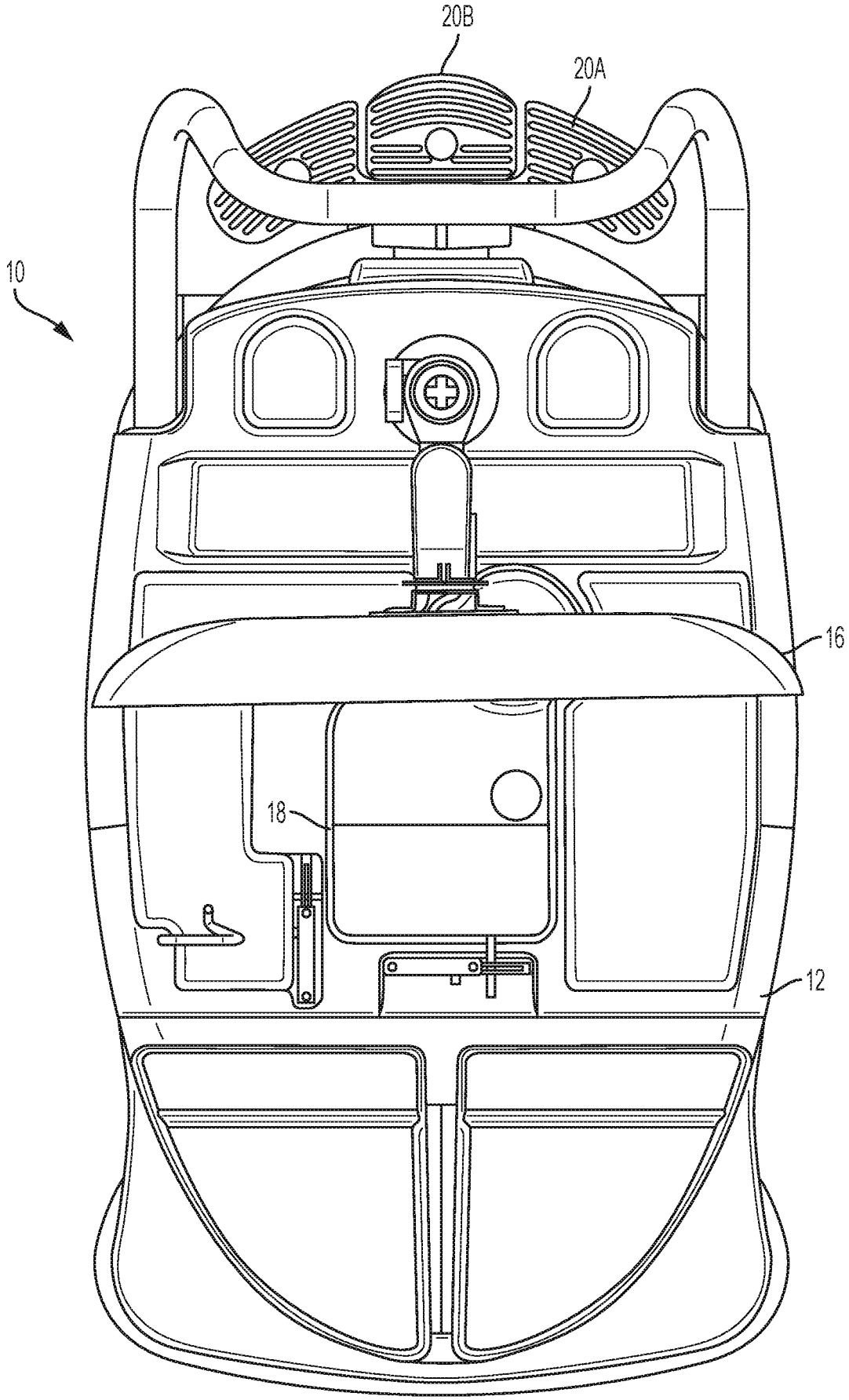


FIG. 2

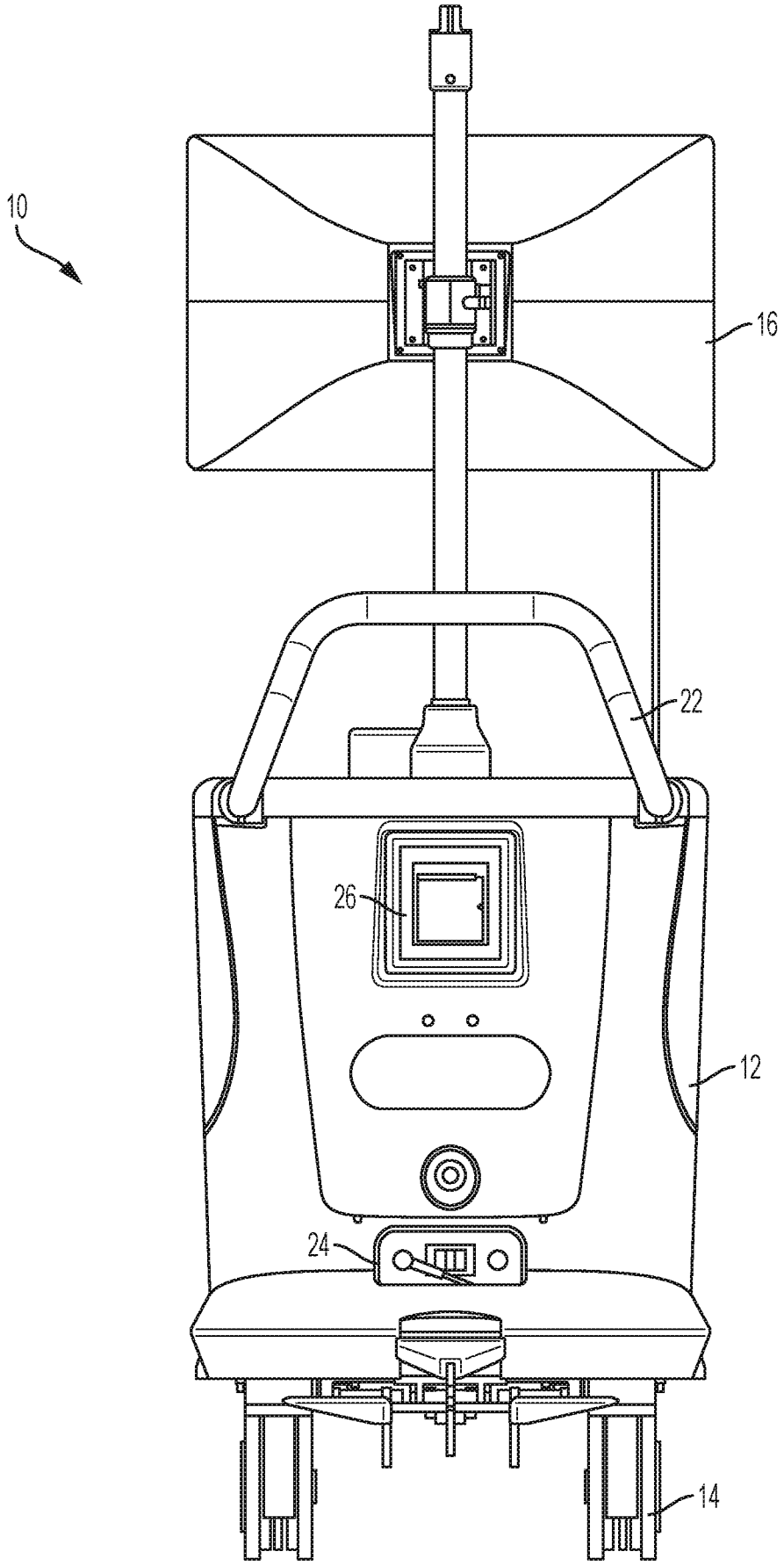


FIG. 3

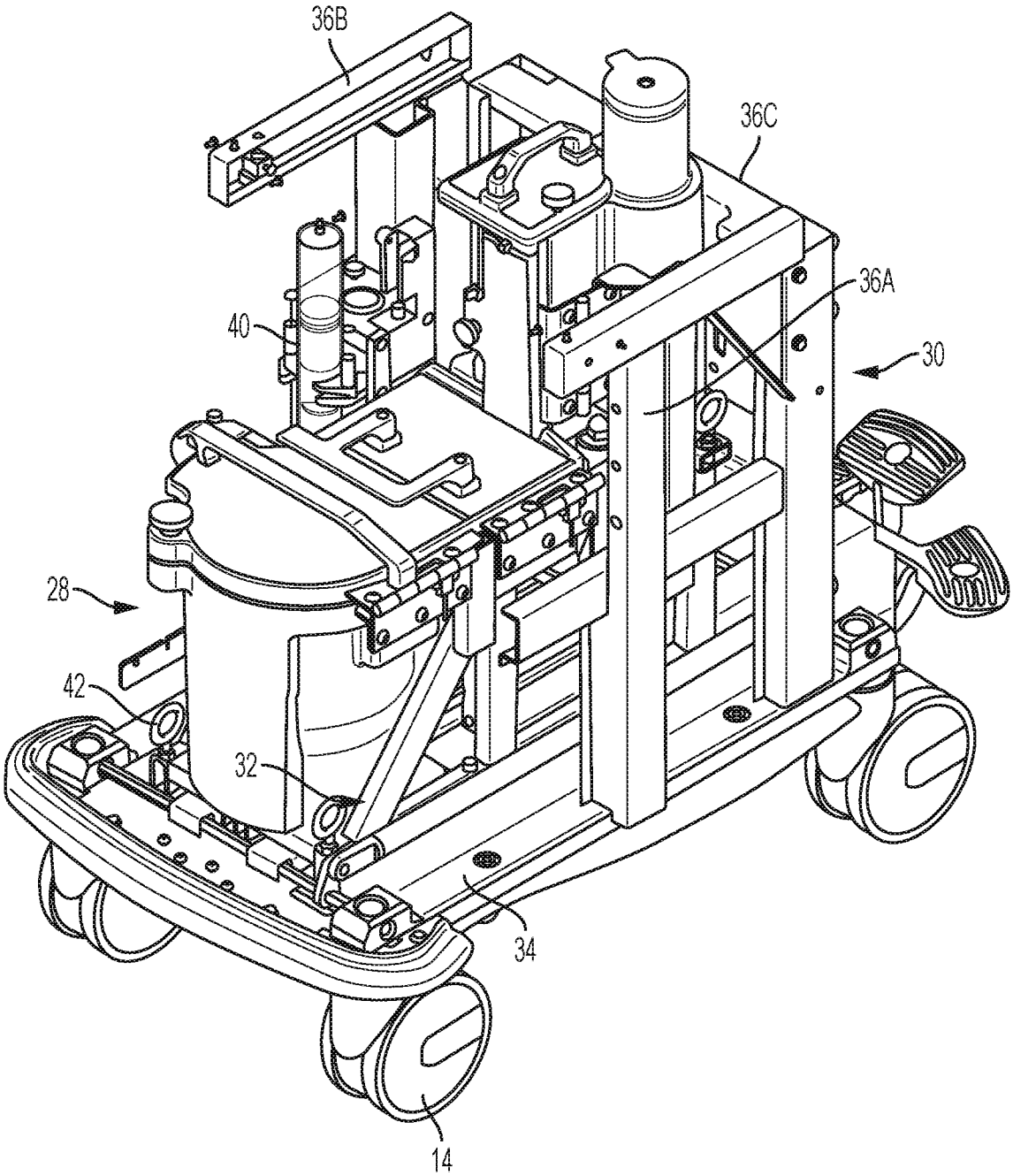


FIG. 4

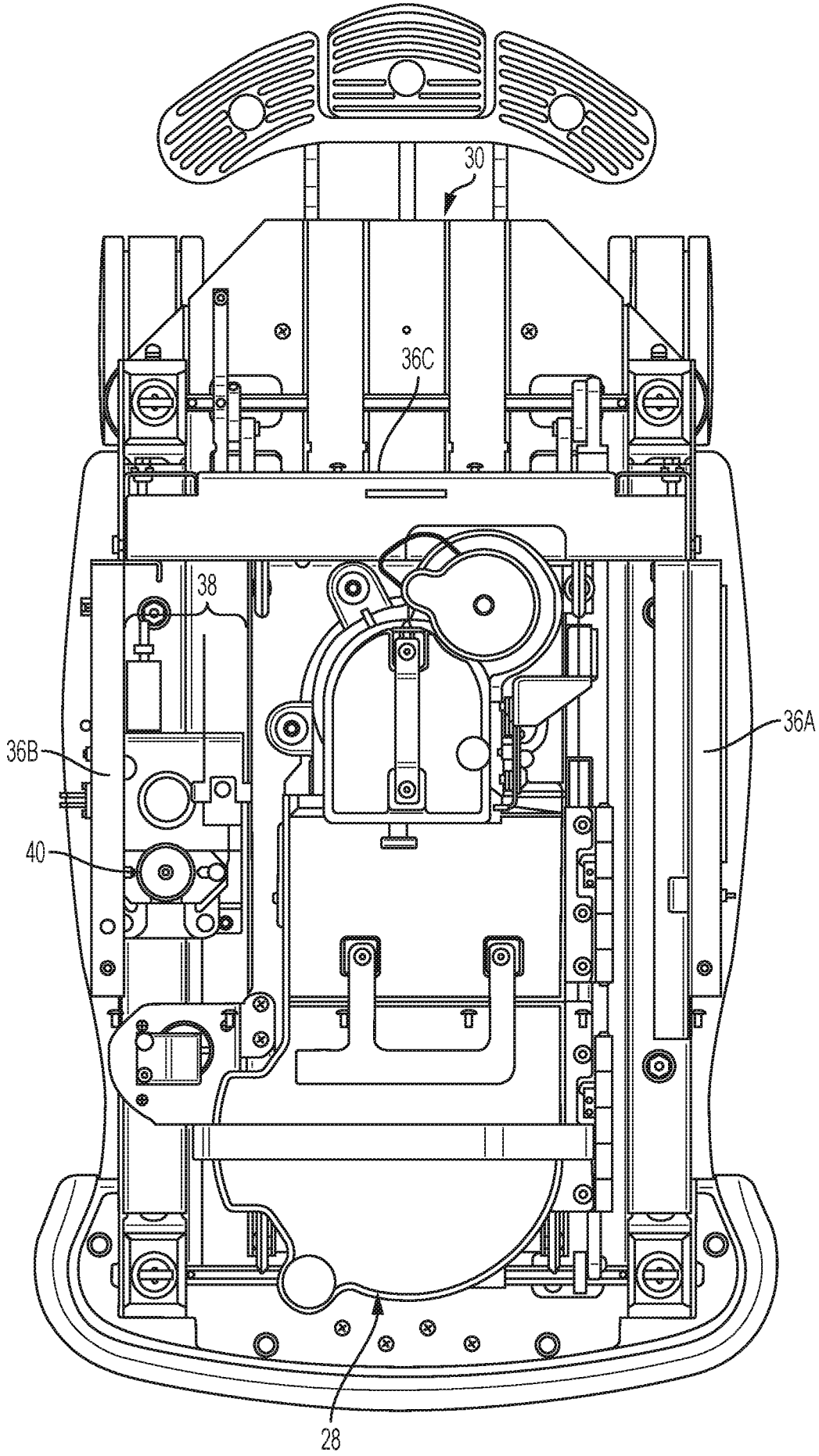


FIG. 5

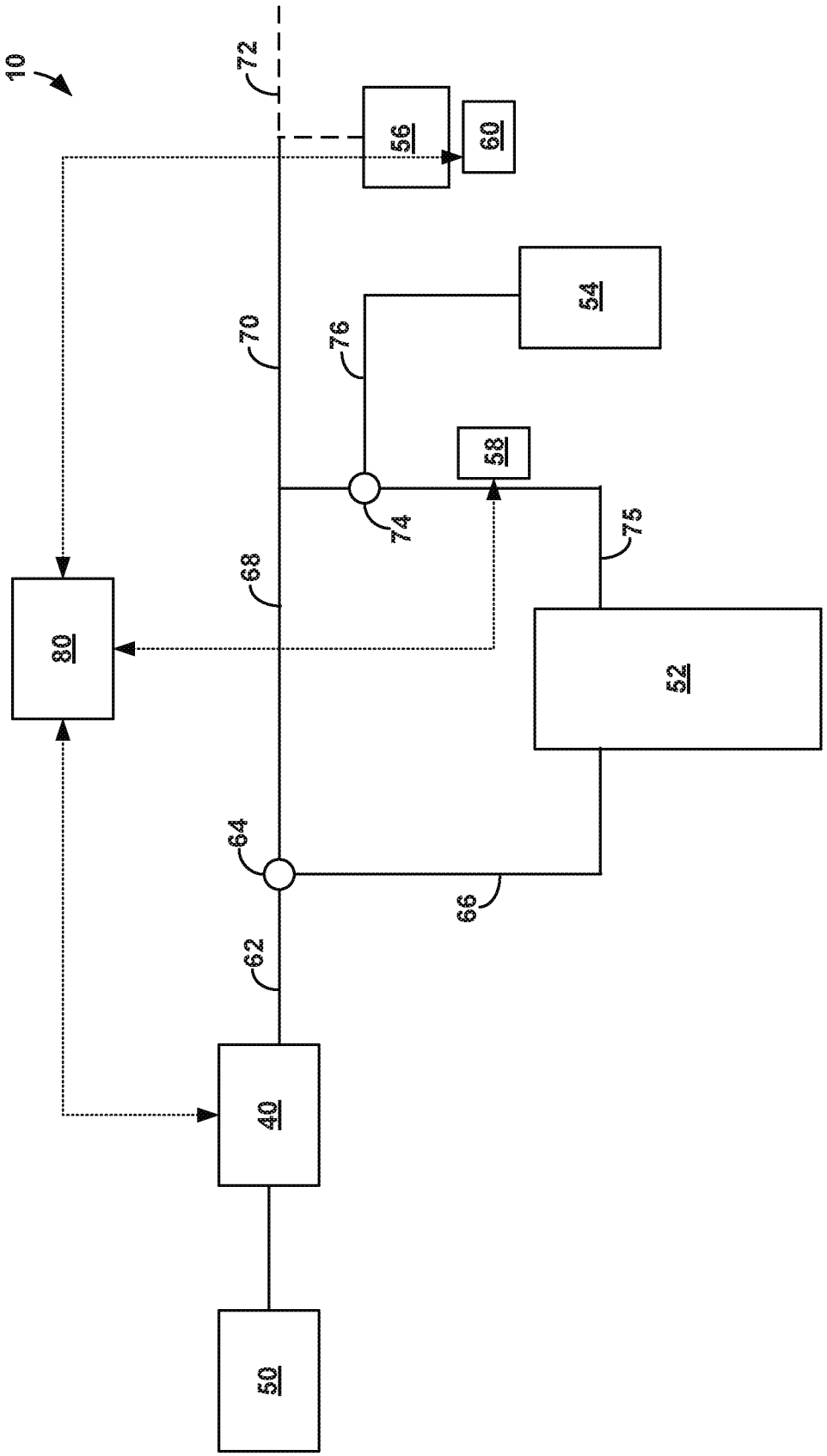


FIG. 6

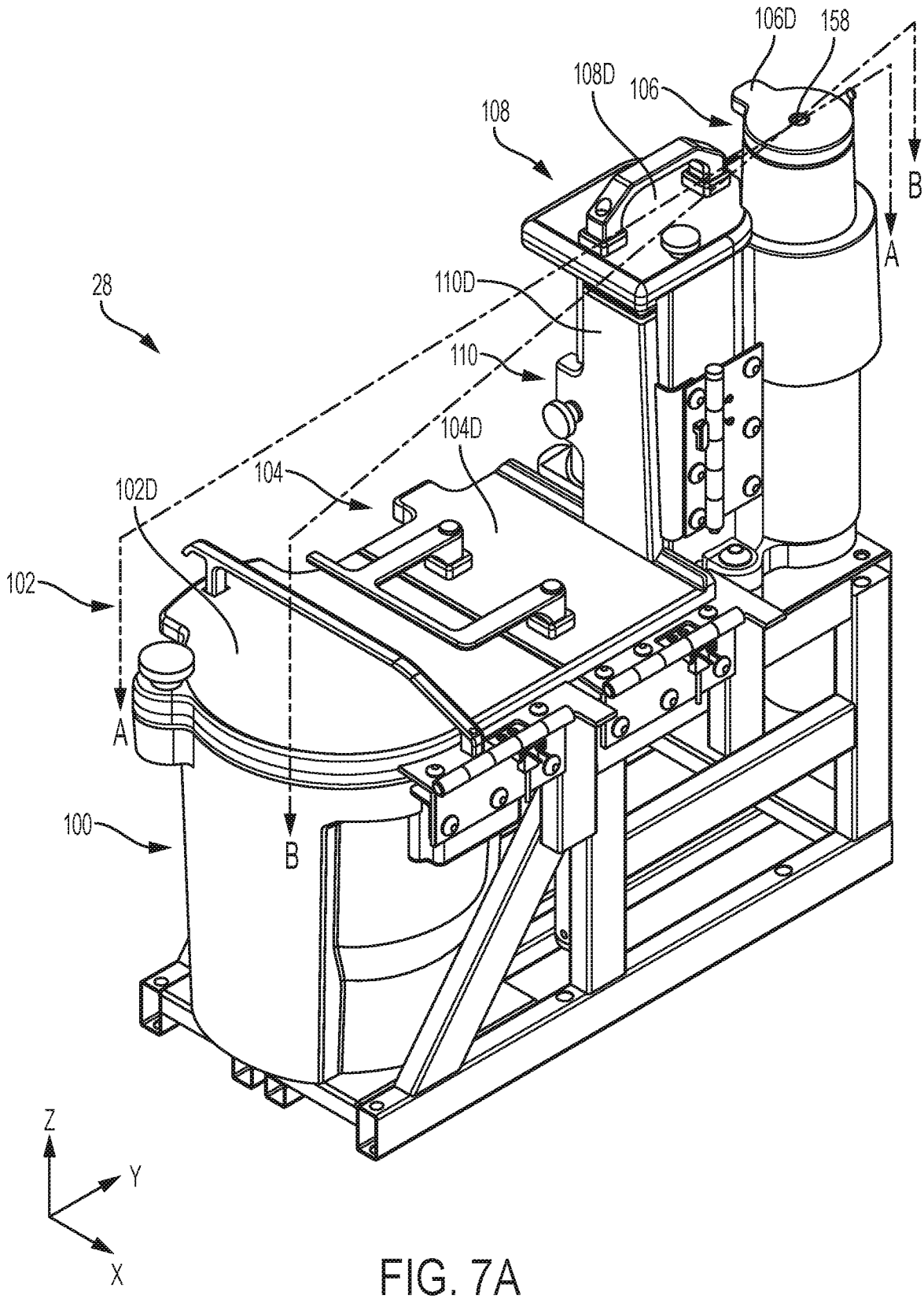

106D
158
108D
106
108
B
A
28
110D
110
104D
104
102D
102
A
100
B
Z
Y
X

FIG. 7A

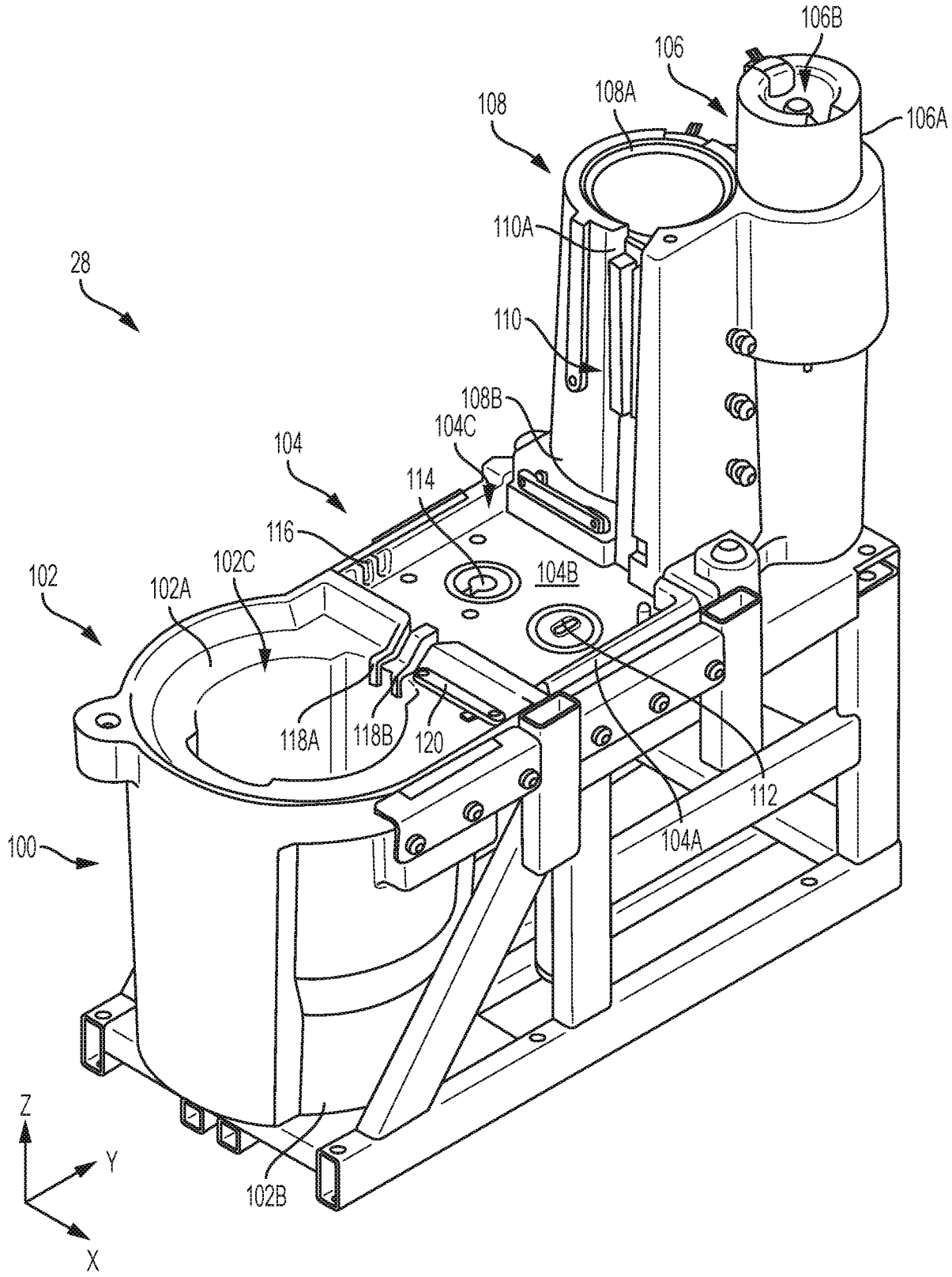

106B
106
108
108A
106A
110A
28
110
108B
104C
104
114
116
102C
102
102A
104B
118A
118B
120
112
104A
100
Z
Y
X
102B

FIG. 7B

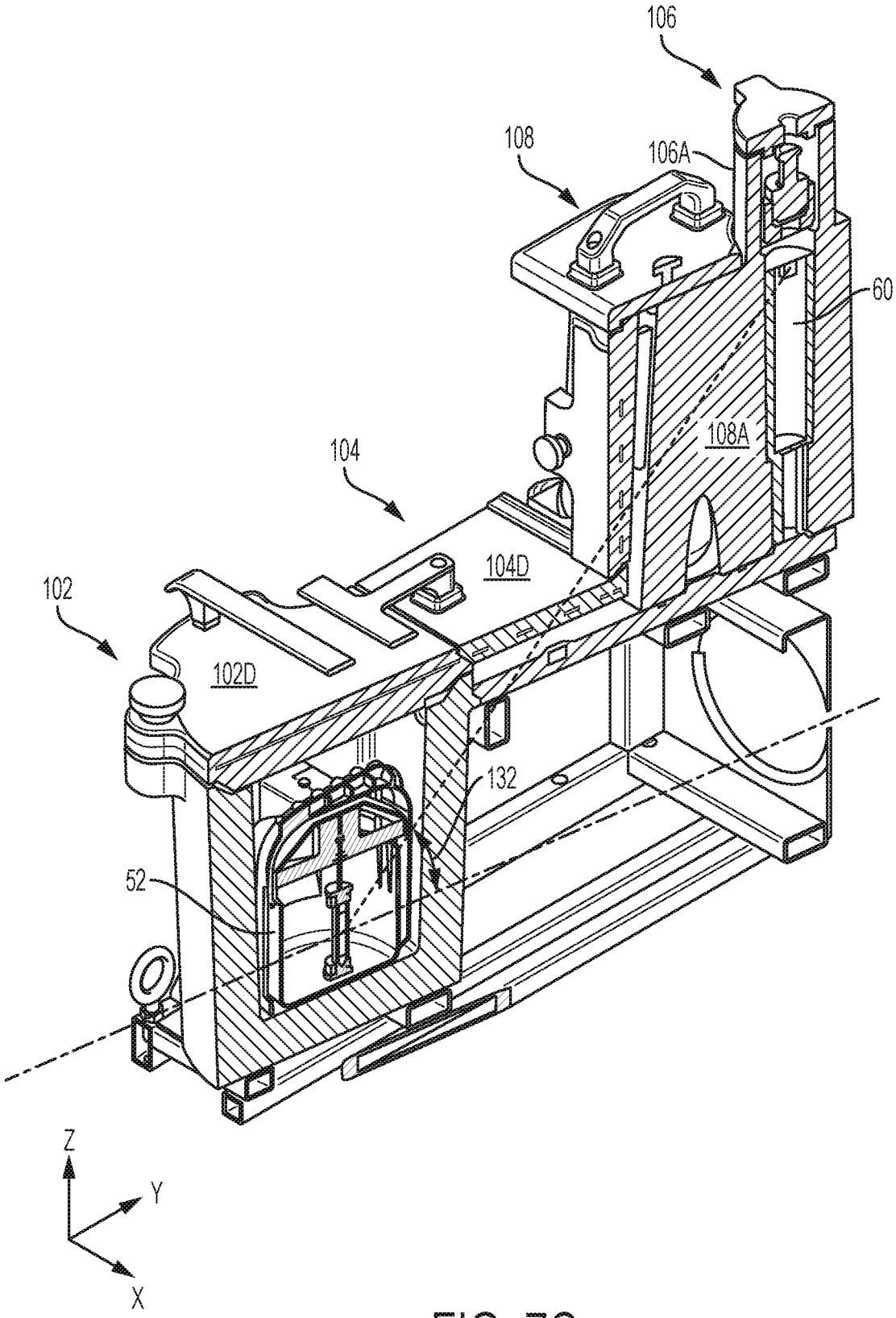


FIG. 7C

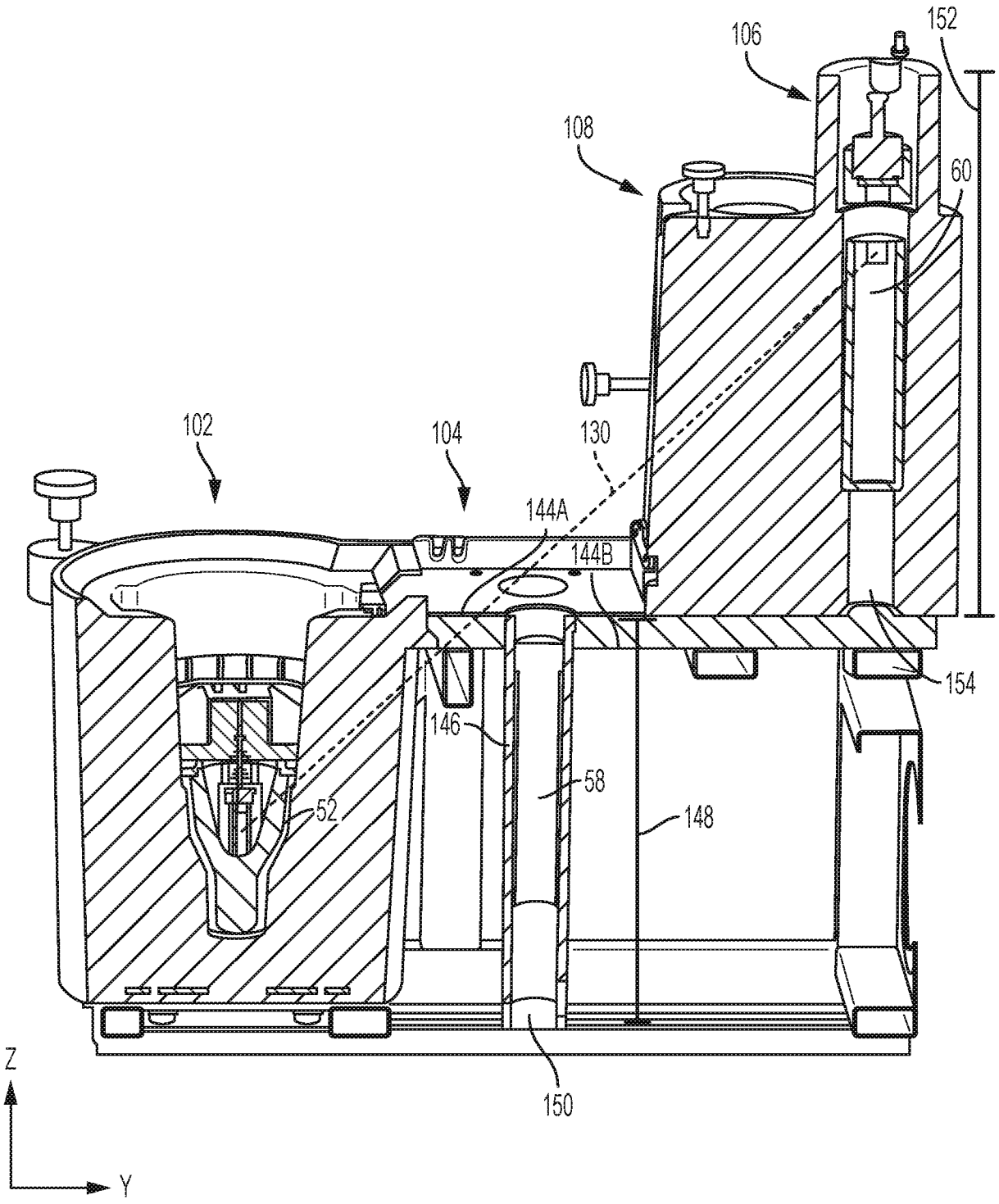


FIG. 7D

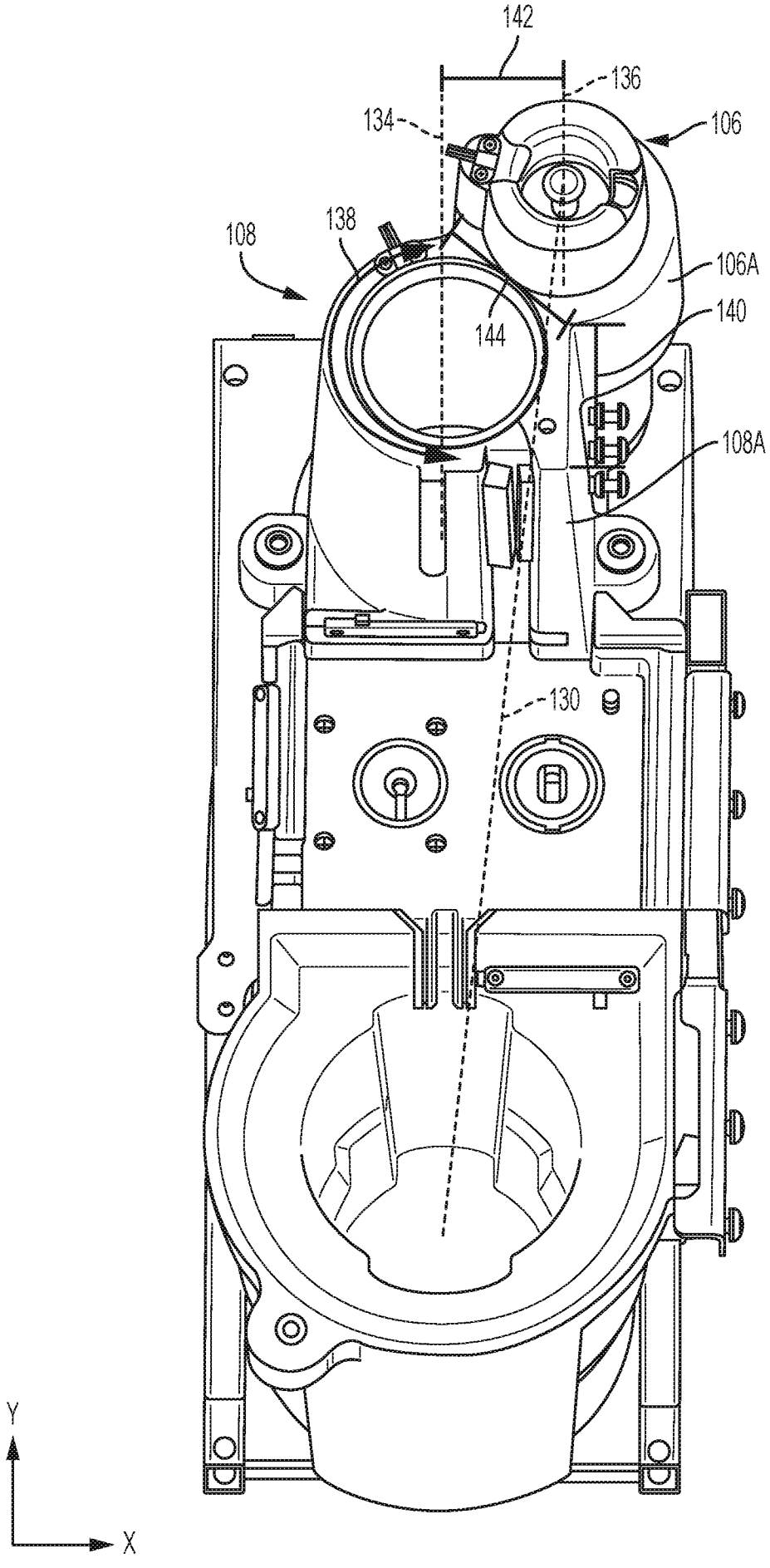


FIG. 7E

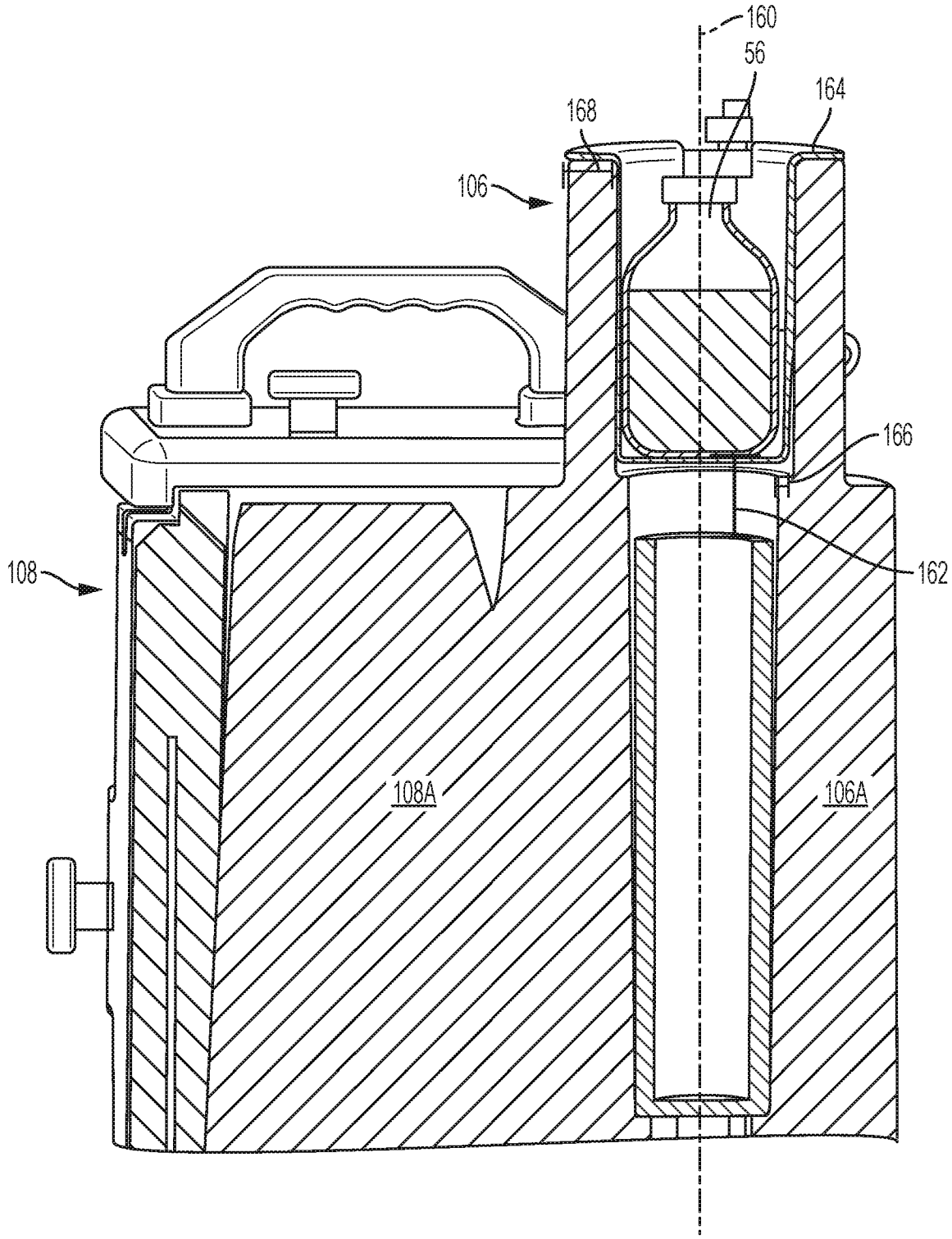


FIG. 7F

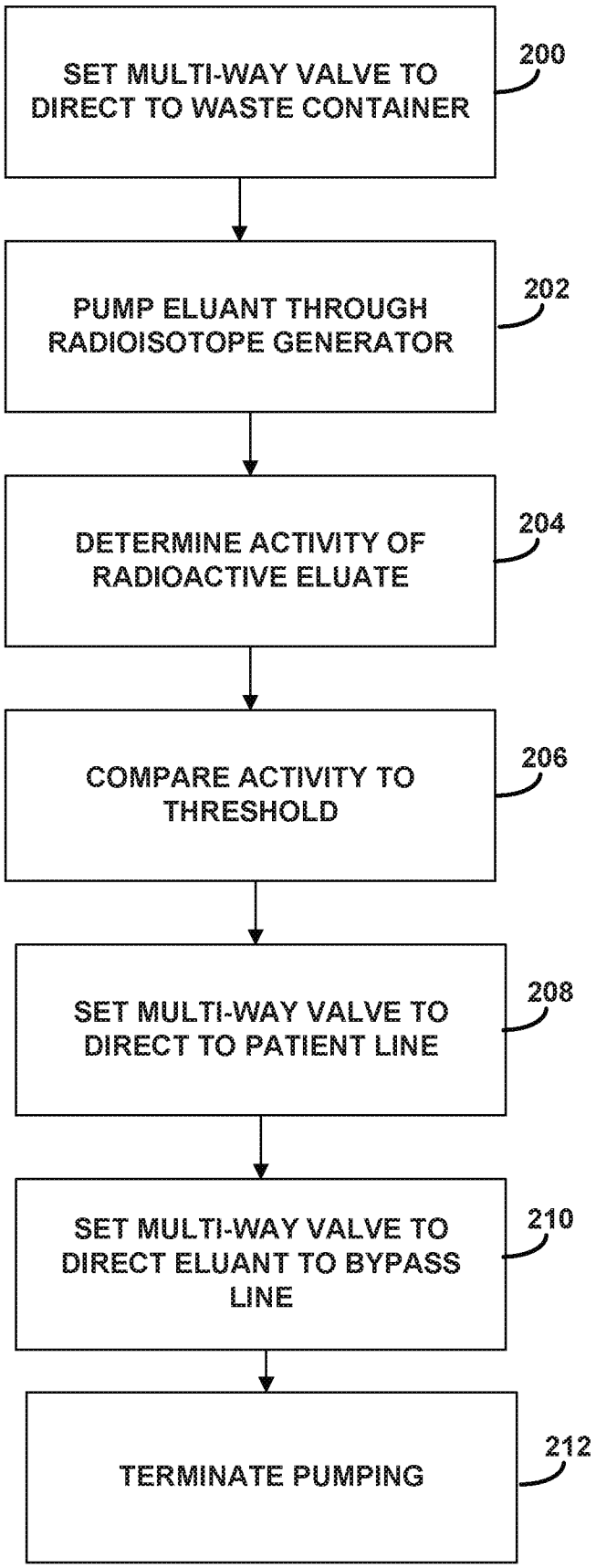

SET MULTI-WAY VALVE TO DIRECT TO WASTE CONTAINER
200
PUMP ELUANT THROUGH RADIOISOTOPE GENERATOR
202
DETERMINE ACTIVITY OF RADIOACTIVE ELUATE
204
COMPARE ACTIVITY TO THRESHOLD
206
SET MULTI-WAY VALVE TO DIRECT TO PATIENT LINE
208
SET MULTI-WAY VALVE TO DIRECT ELUANT TO BYPASS LINE
210
TERMINATE PUMPING
212

FIG. 8

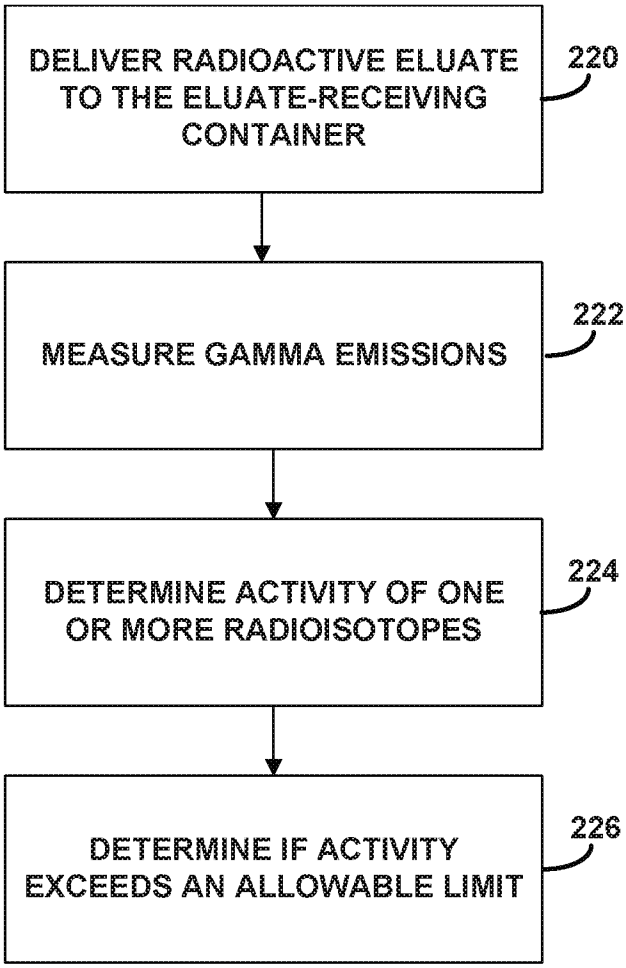

DELIVER RADIOACTIVE ELUATE TO THE ELUATE-RECEIVING CONTAINER
220
MEASURE GAMMA EMISSIONS
222
DETERMINE ACTIVITY OF ONE OR MORE RADIOISOTOPES
224
DETERMINE IF ACTIVITY EXCEEDS AN ALLOWABLE LIMIT
226

FIG. 9

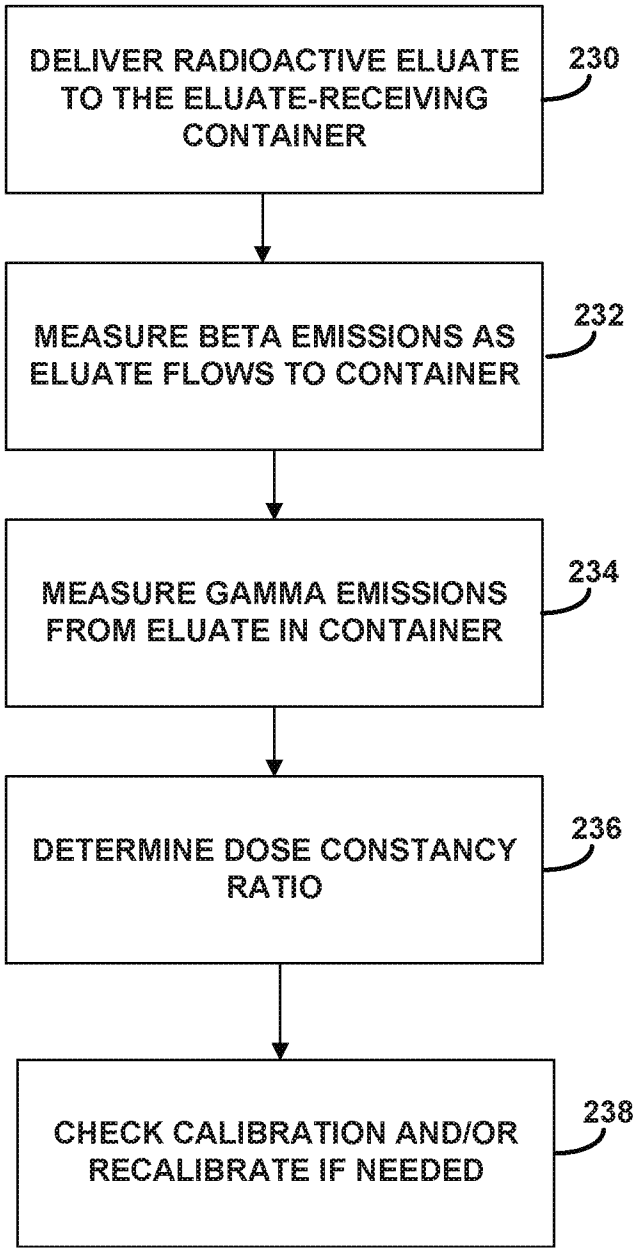

DELIVER RADIOACTIVE ELUATE TO THE ELUATE-RECEIVING CONTAINER
230
MEASURE BETA EMISSIONS AS ELUATE FLOWS TO CONTAINER
232
MEASURE GAMMA EMISSIONS FROM ELUATE IN CONTAINER
234
DETERMINE DOSE CONSTANCY RATIO
236
CHECK CALIBRATION AND/OR RECALIBRATE IF NEEDED
238

FIG. 10

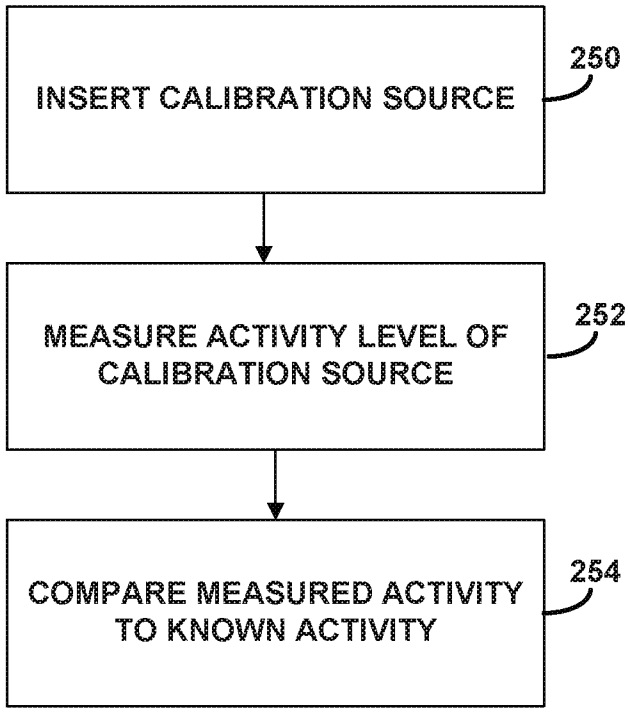

INSERT CALIBRATION SOURCE
250
MEASURE ACTIVITY LEVEL OF CALIBRATION SOURCE
252
COMPARE MEASURED ACTIVITY TO KNOWN ACTIVITY
254

FIG. 11

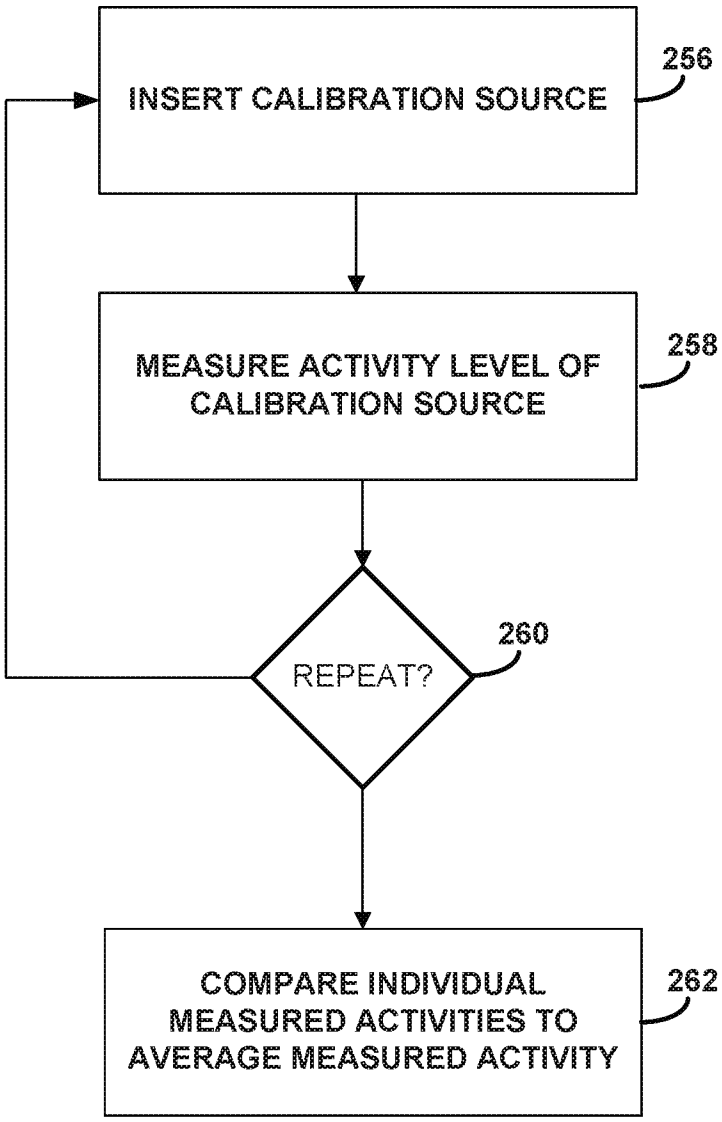

INSERT CALIBRATION SOURCE
256
MEASURE ACTIVITY LEVEL OF CALIBRATION SOURCE
258
REPEAT?
260
COMPARE INDIVIDUAL MEASURED ACTIVITIES TO AVERAGE MEASURED ACTIVITY
262

FIG. 12

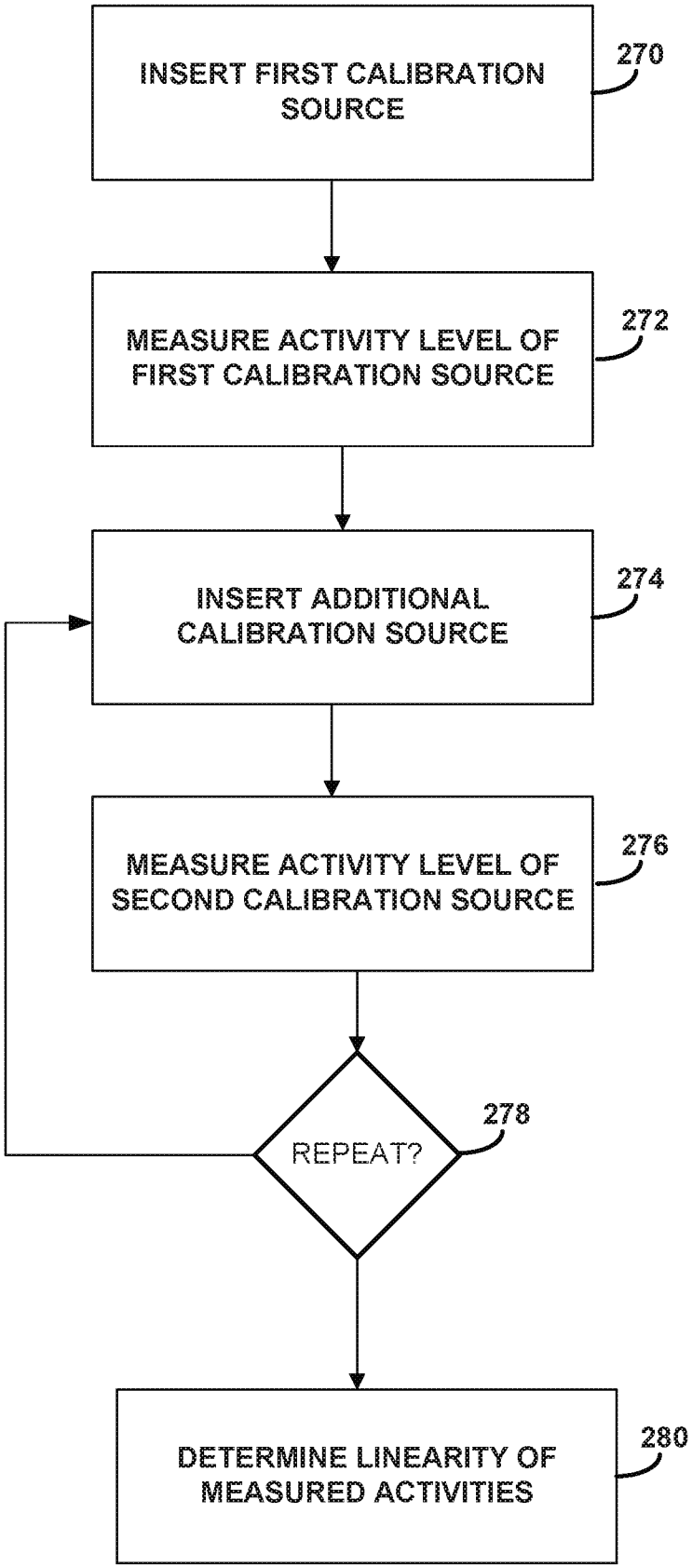

INSERT FIRST CALIBRATION SOURCE
270
MEASURE ACTIVITY LEVEL OF FIRST CALIBRATION SOURCE
272
INSERT ADDITIONAL CALIBRATION SOURCE
274
MEASURE ACTIVITY LEVEL OF SECOND CALIBRATION SOURCE
276
REPEAT?
278
DETERMINE LINEARITY OF MEASURED ACTIVITIES
280

FIG. 13

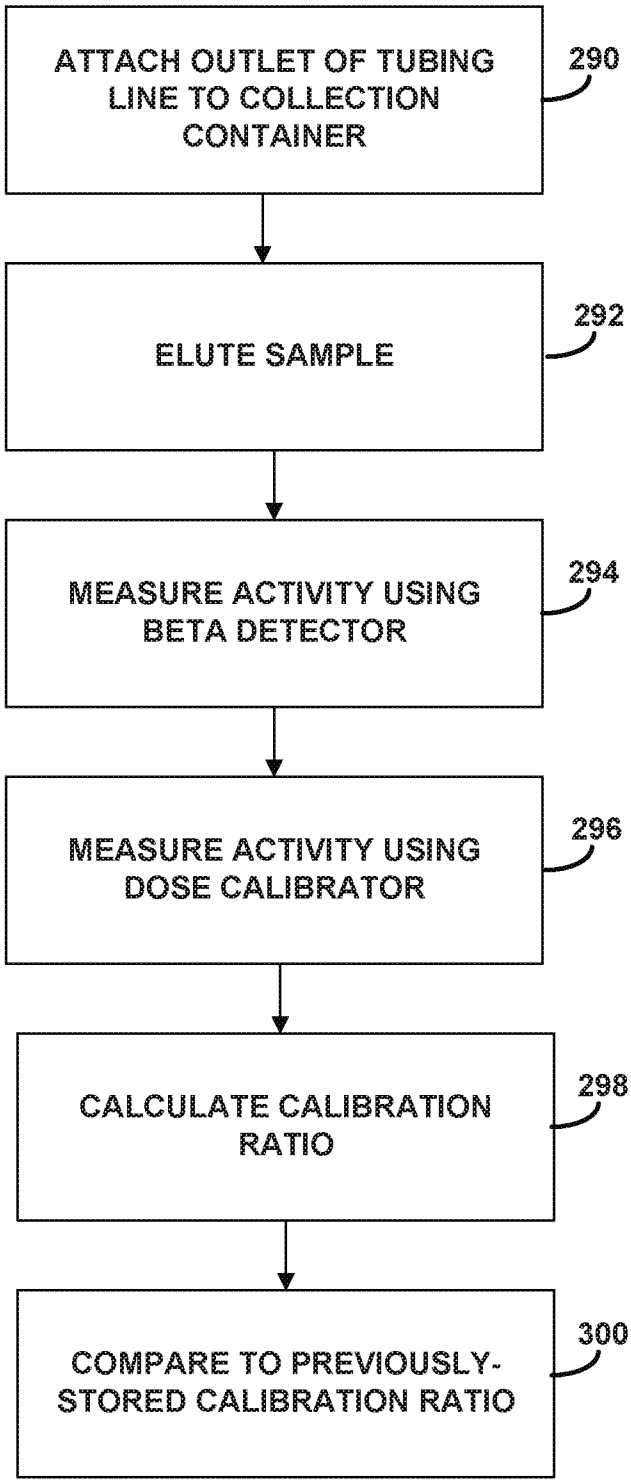

ATTACH OUTLET OF TUBING LINE TO COLLECTION CONTAINER
290
ELUTE SAMPLE
292
MEASURE ACTIVITY USING BETA DETECTOR
294
MEASURE ACTIVITY USING DOSE CALIBRATOR
296
CALCULATE CALIBRATION RATIO
298
COMPARE TO PREVIOUSLY-STORED CALIBRATION RATIO
300

FIG. 14

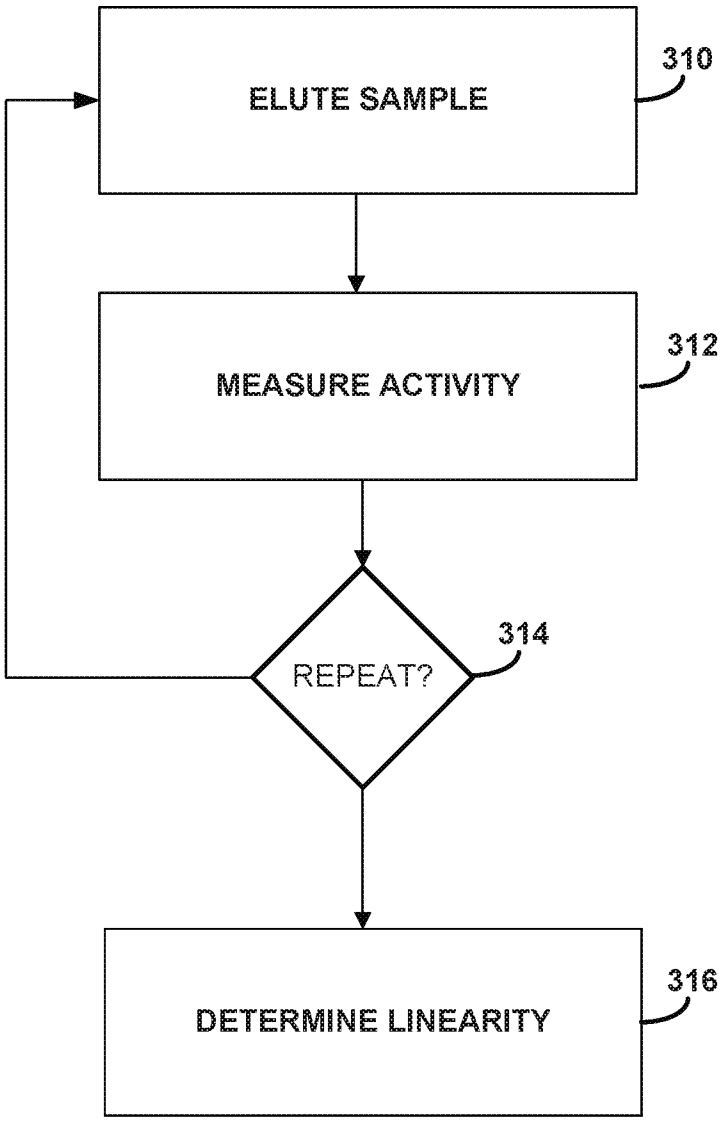

ELUTE SAMPLE
310
MEASURE ACTIVITY
312
REPEAT?
314
DETERMINE LINEARITY
316

FIG. 15

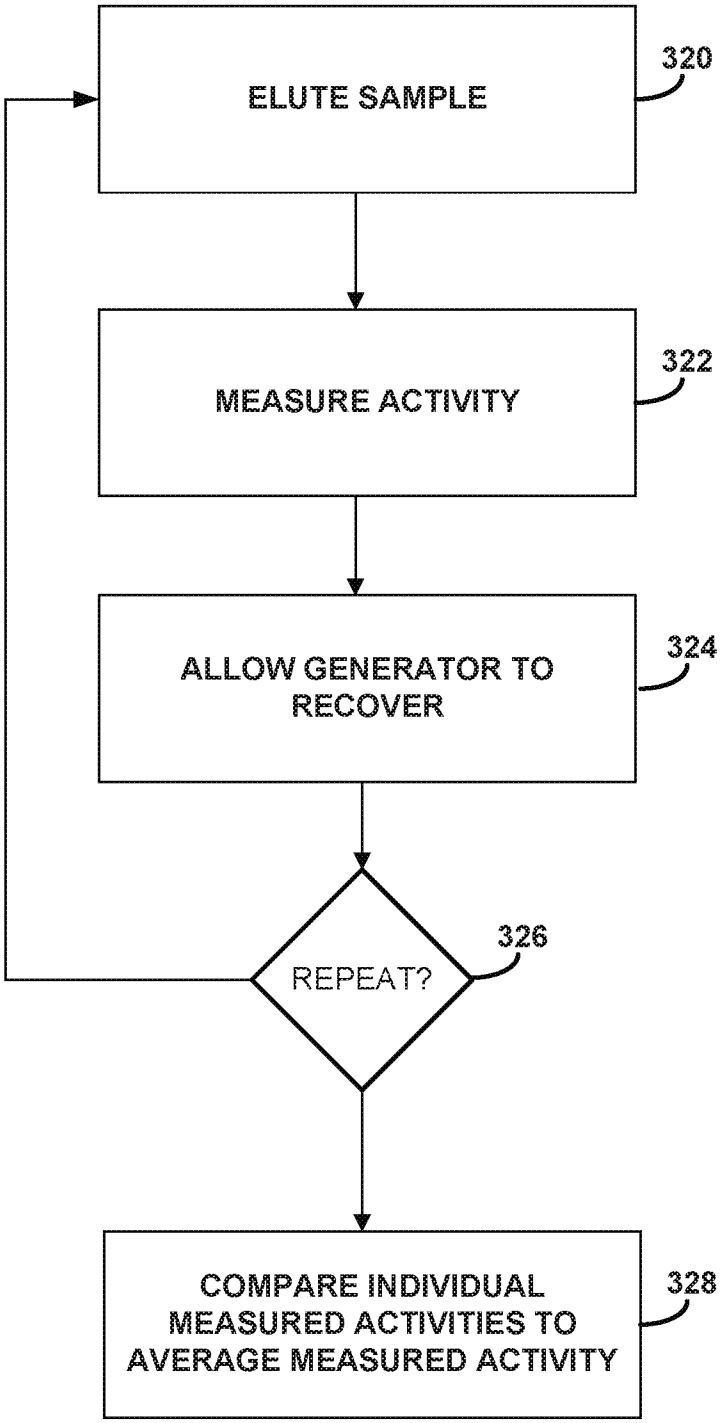

ELUTE SAMPLE
320
MEASURE ACTIVITY
322
ALLOW GENERATOR TO RECOVER
324
REPEAT?
326
COMPARE INDIVIDUAL MEASURED ACTIVITIES TO AVERAGE MEASURED ACTIVITY
328

FIG. 16

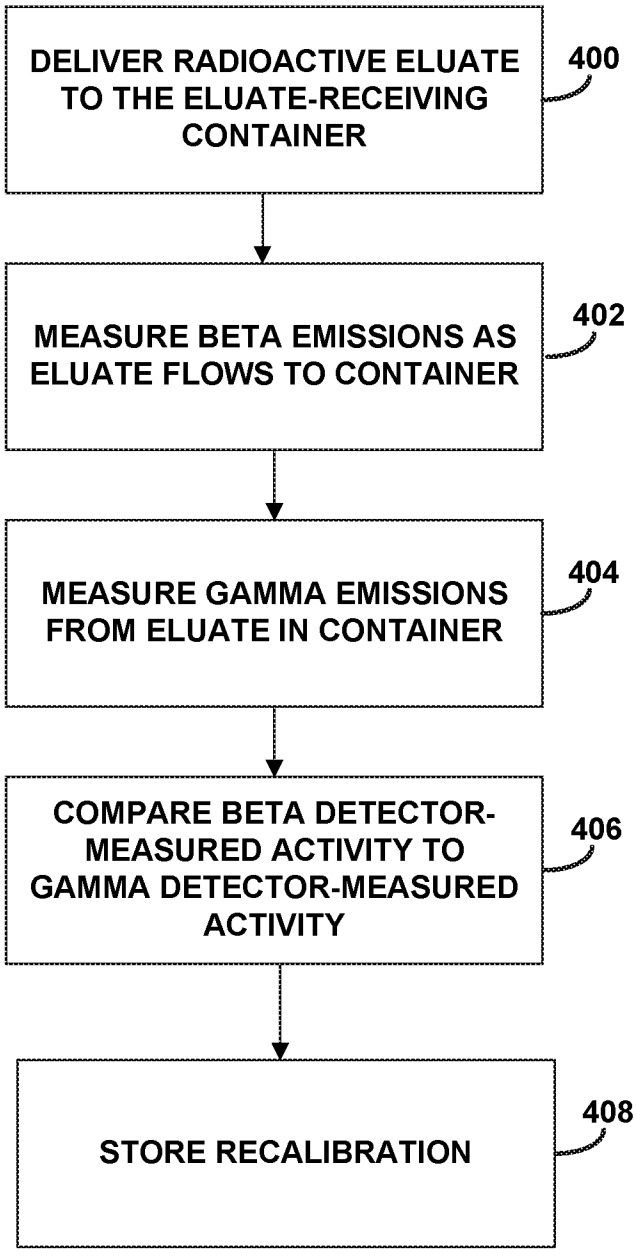

DELIVER RADIOACTIVE ELUATE TO THE ELUATE-RECEIVING CONTAINER
400
MEASURE BETA EMISSIONS AS ELUATE FLOWS TO CONTAINER
402
MEASURE GAMMA EMISSIONS FROM ELUATE IN CONTAINER
404
COMPARE BETA DETECTOR-MEASURED ACTIVITY TO GAMMA DETECTOR-MEASURED ACTIVITY
406
STORE RECALIBRATION
408

FIG. 17

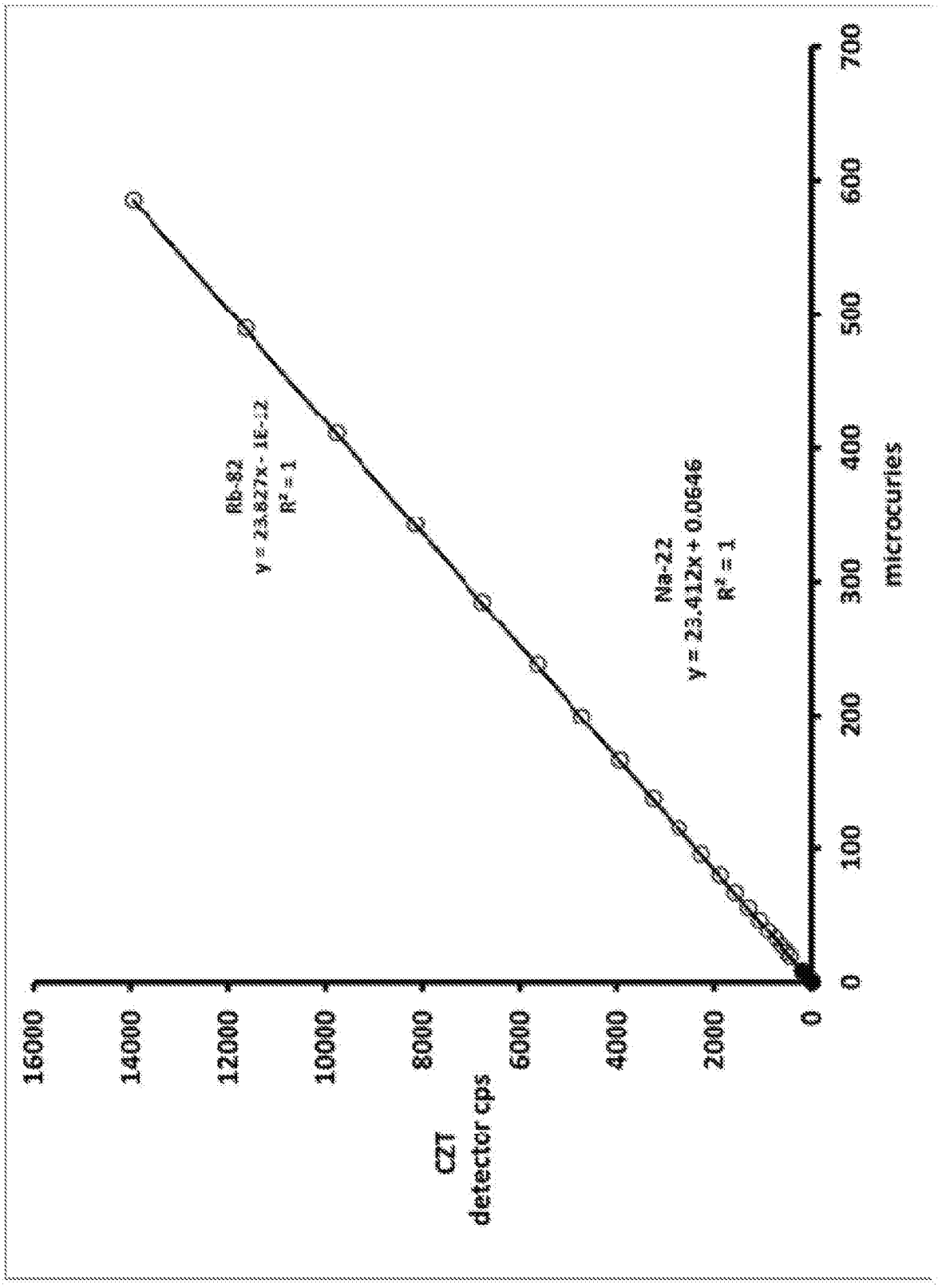

16000
14000
12000
10000
8000
6000
4000
2000
0
CZT
detector cps
0
100
200
300
400
500
600
700
microcuries
Rb-82
y = 23.827x - 1E-12
R² = 1
Na-22
y = 23.412x + 0.0646
R² = 1

FIG. 18