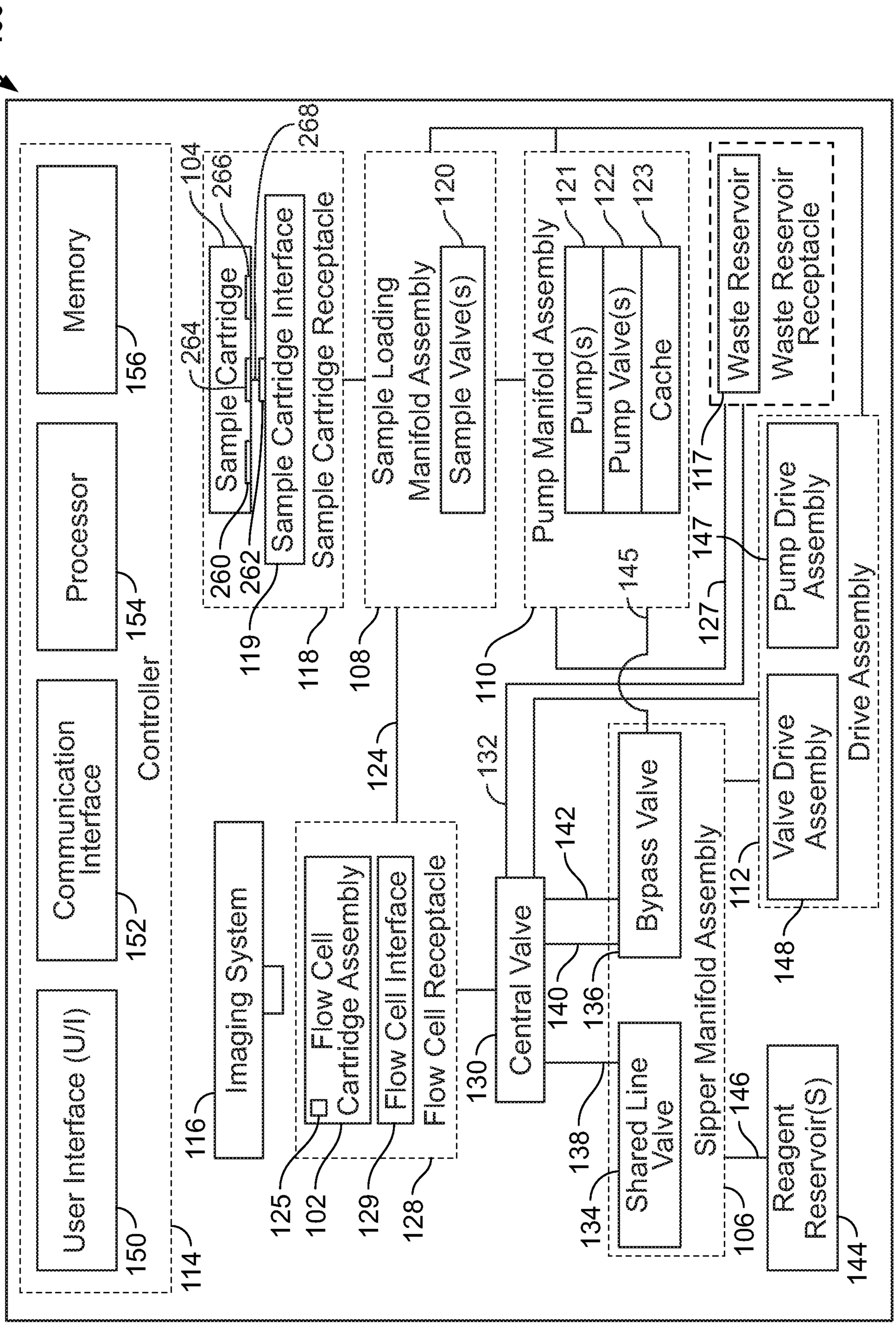

100
Processor
154
Memory
156
Communication Interface
152
Controller
User Interface (U/I)
150
114
Imaging System
116
Sample Cartridge Receptacle
118
Sample Cartridge
119
Sample Cartridge Interface
260
262
264
266
268
104
Sample Loading Manifold Assembly
108
Sample Valve(s)
120
Pump Manifold Assembly
110
Pump(s)
121
Pump Valve(s)
122
Cache
123
145
Waste Reservoir
117
Waste Reservoir Receptacle
127
147
Pump Drive Assembly
Drive Assembly
124
Flow Cell Assembly
125
Flow Cell Cartridge
102
Flow Cell Interface
129
Flow Cell Receptacle
128
132
Central Valve
130
140
142
Bypass Valve
112
Valve Drive Assembly
148
Shared Line Valve
134
138
136
Sipper Manifold Assembly
106
146
Reagent Reservoir(S)
144

FIG. 1A

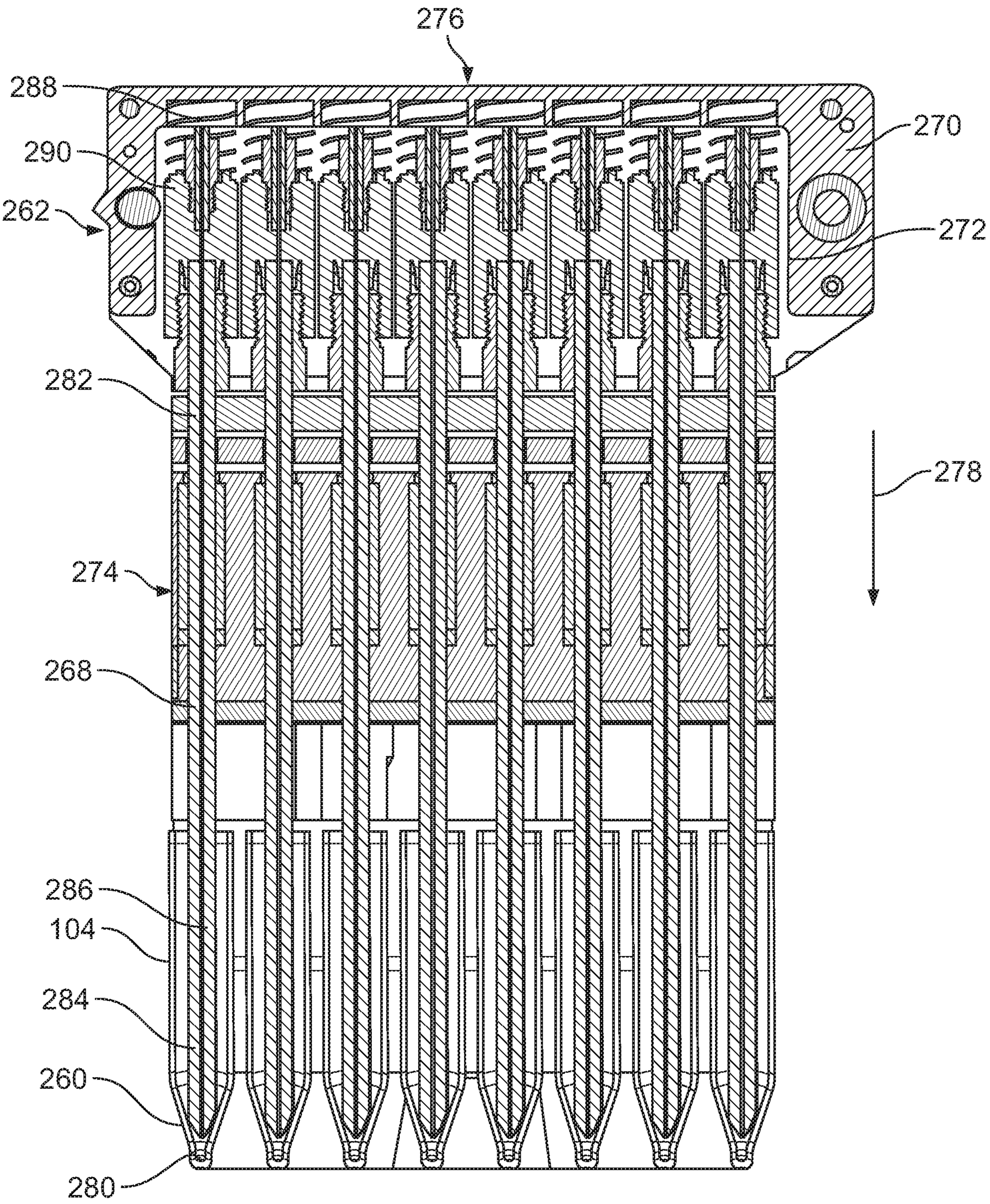
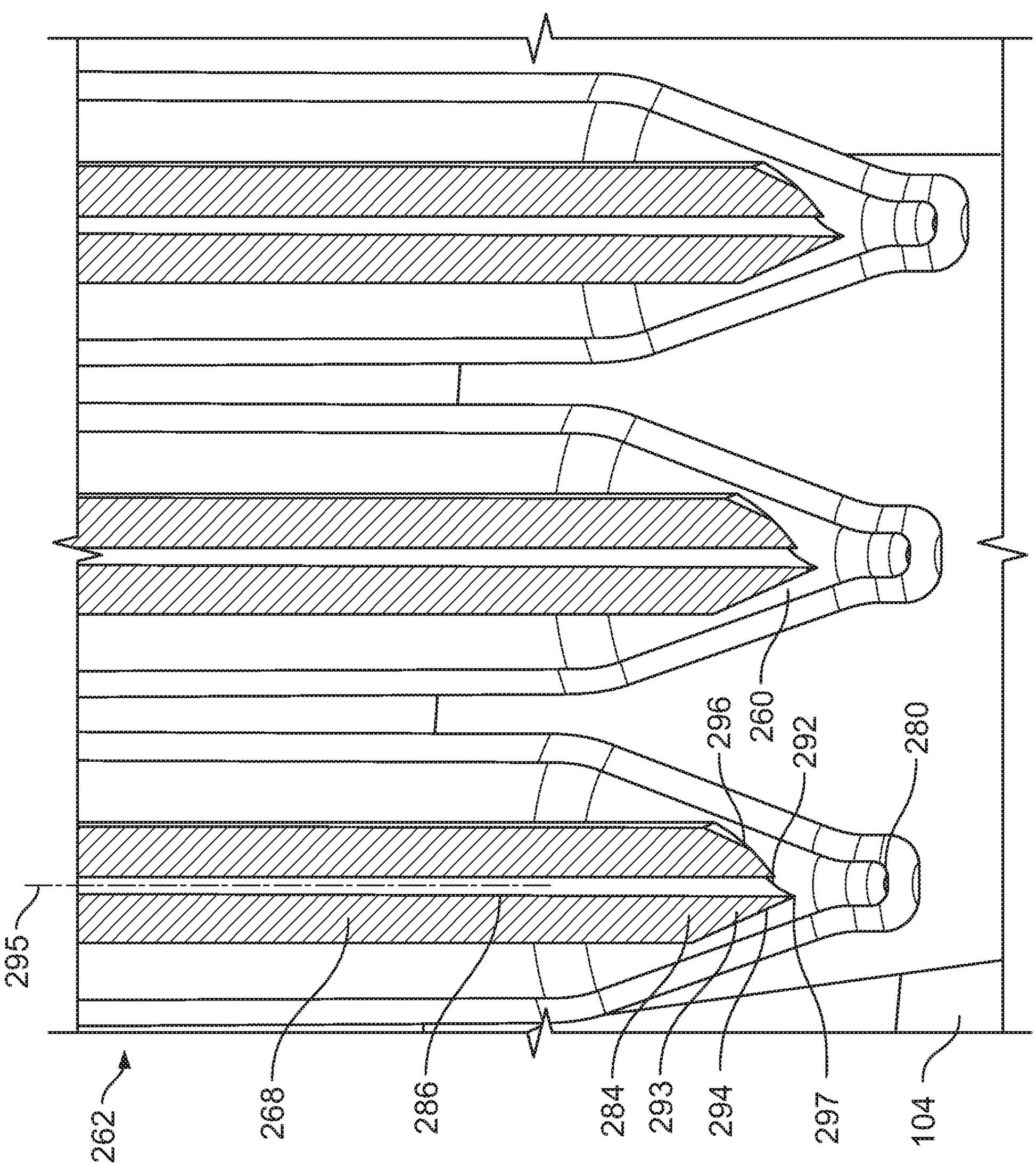


FIG. 1B

FIG. 1C



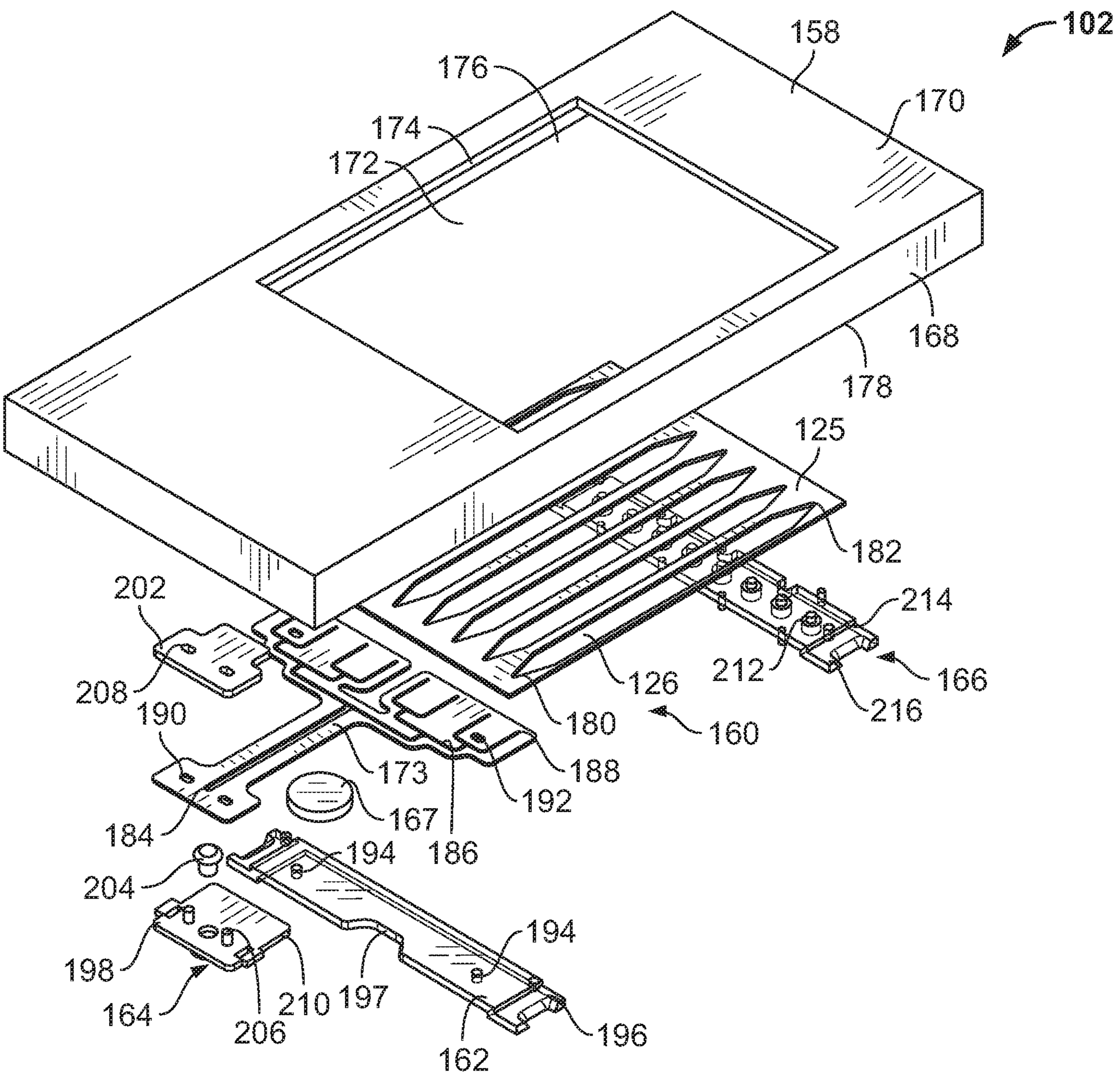

102
158
176
170
174
172
168
178
125
182
202
214
208
212
166
126
216
190
180
160
173
188
192
167
184
186
194
204
194
198
197
164
210
206
196
162

FIG. 2

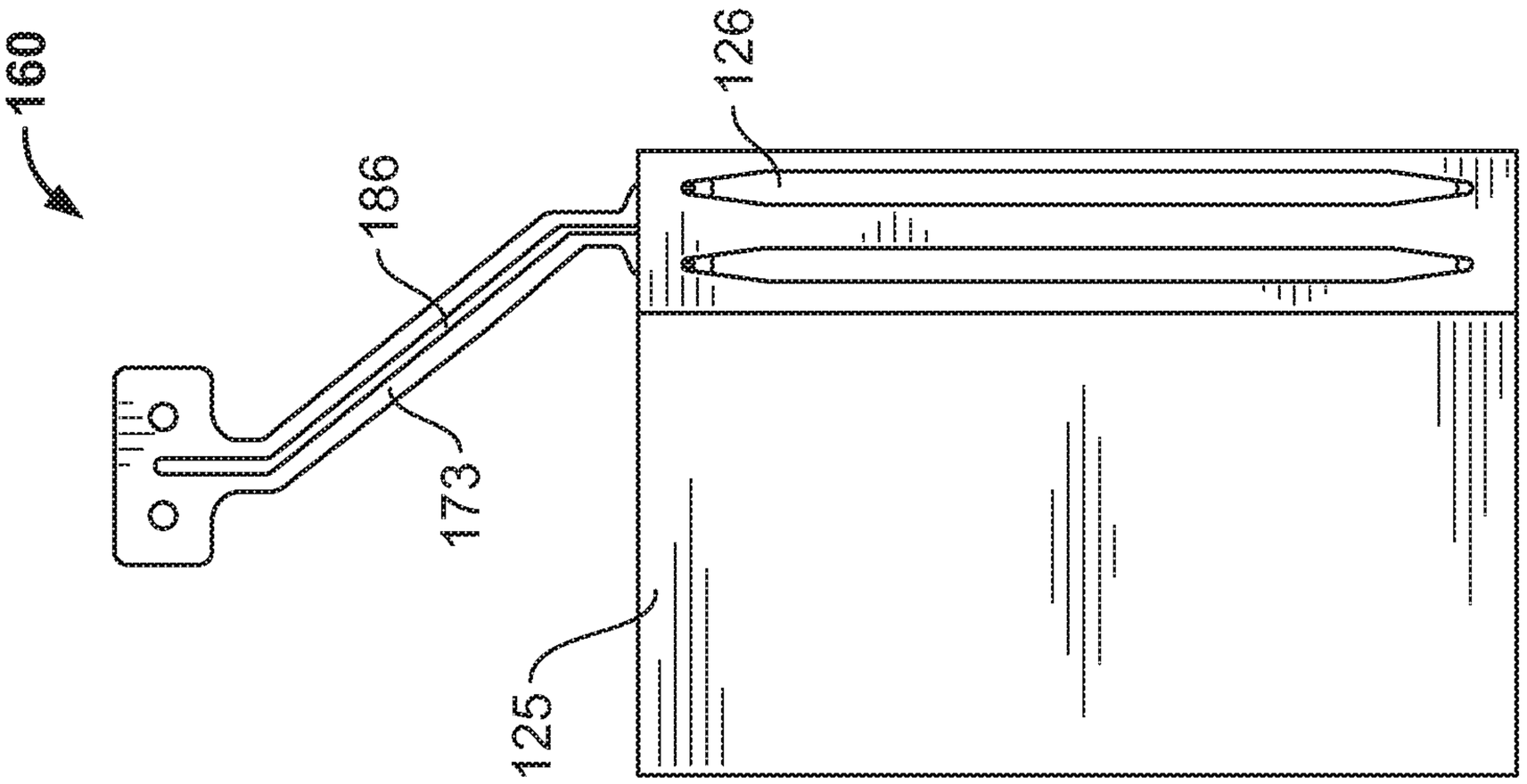


FIG. 5

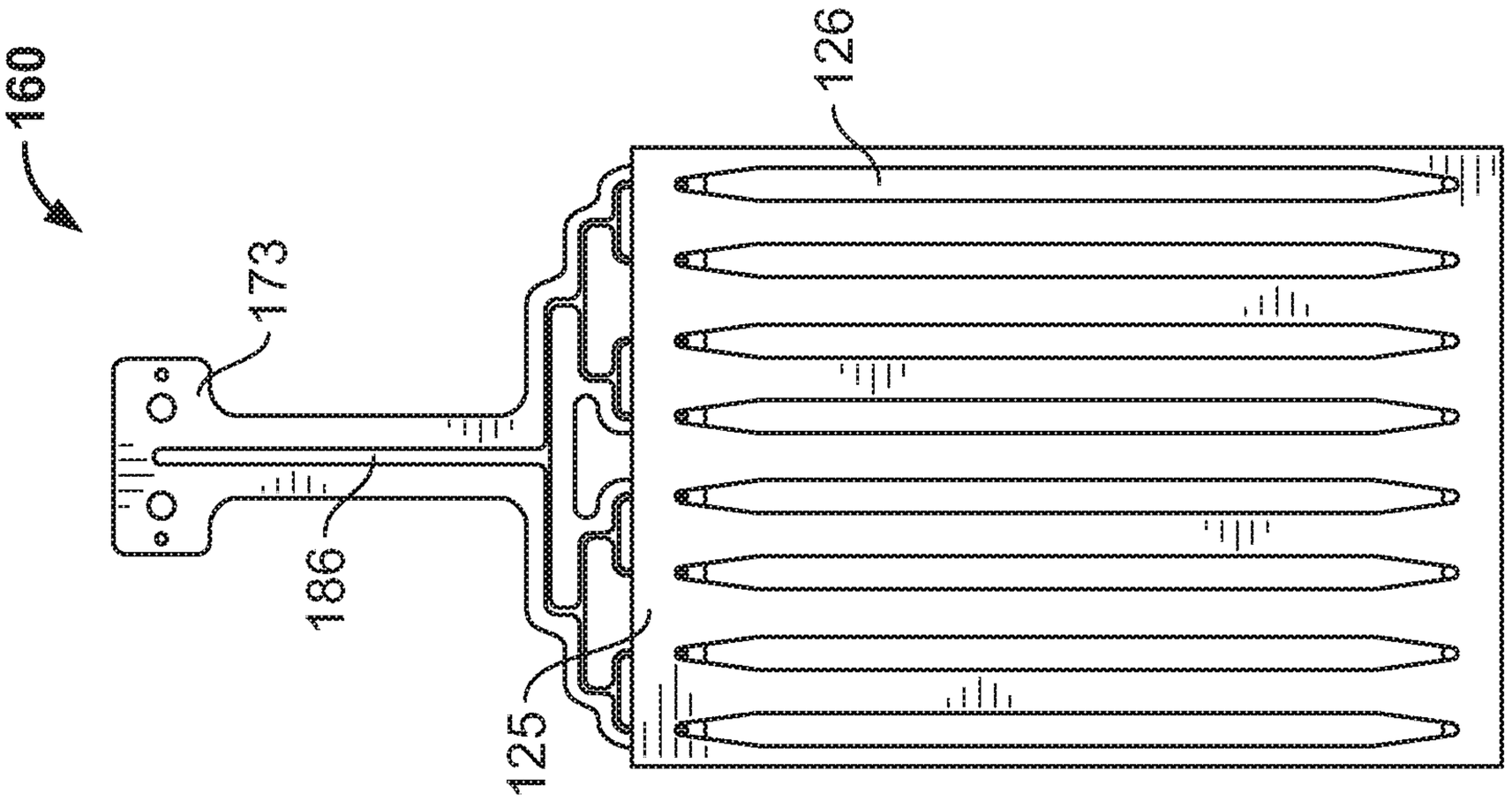


FIG. 4

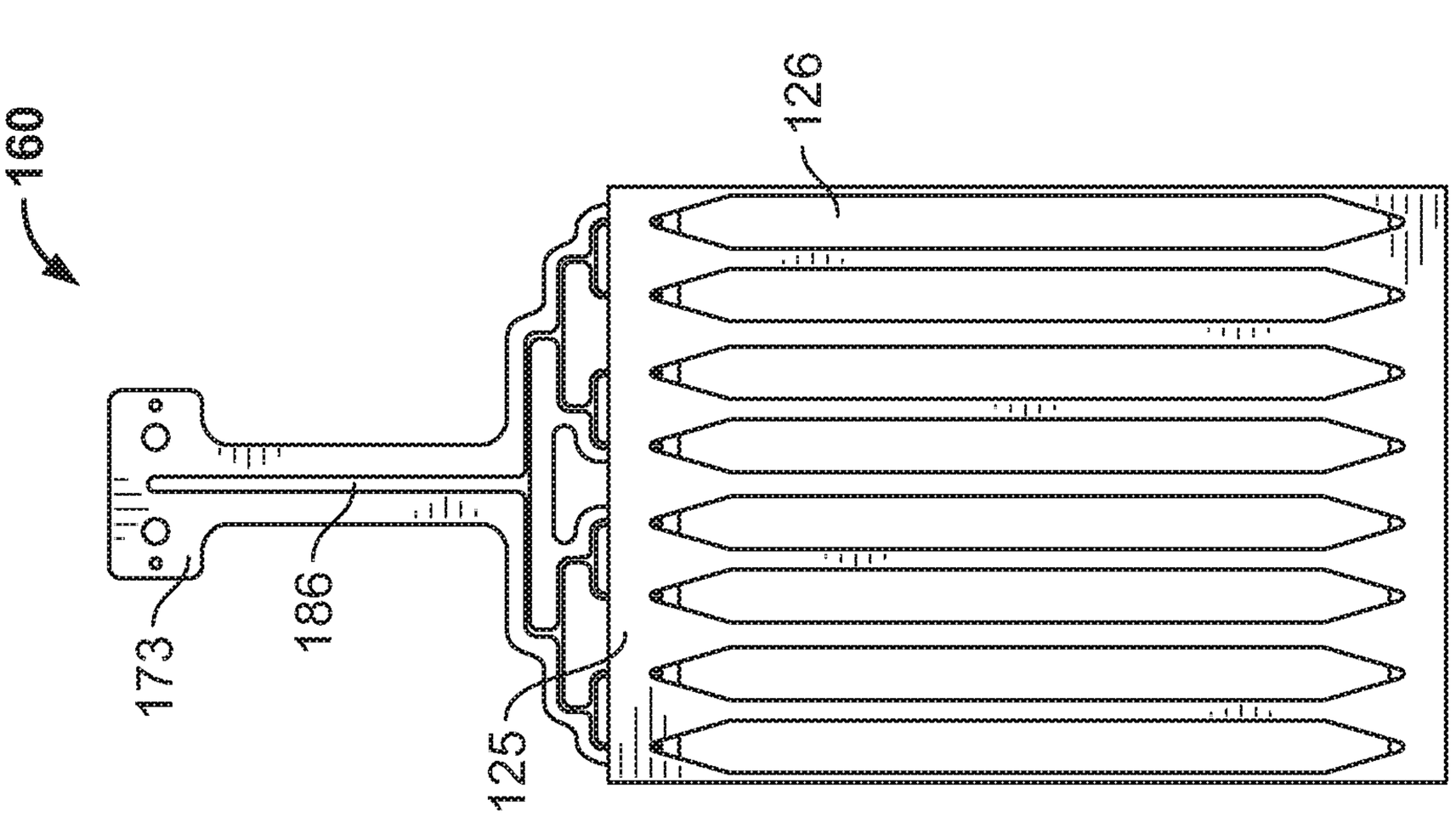


FIG. 3

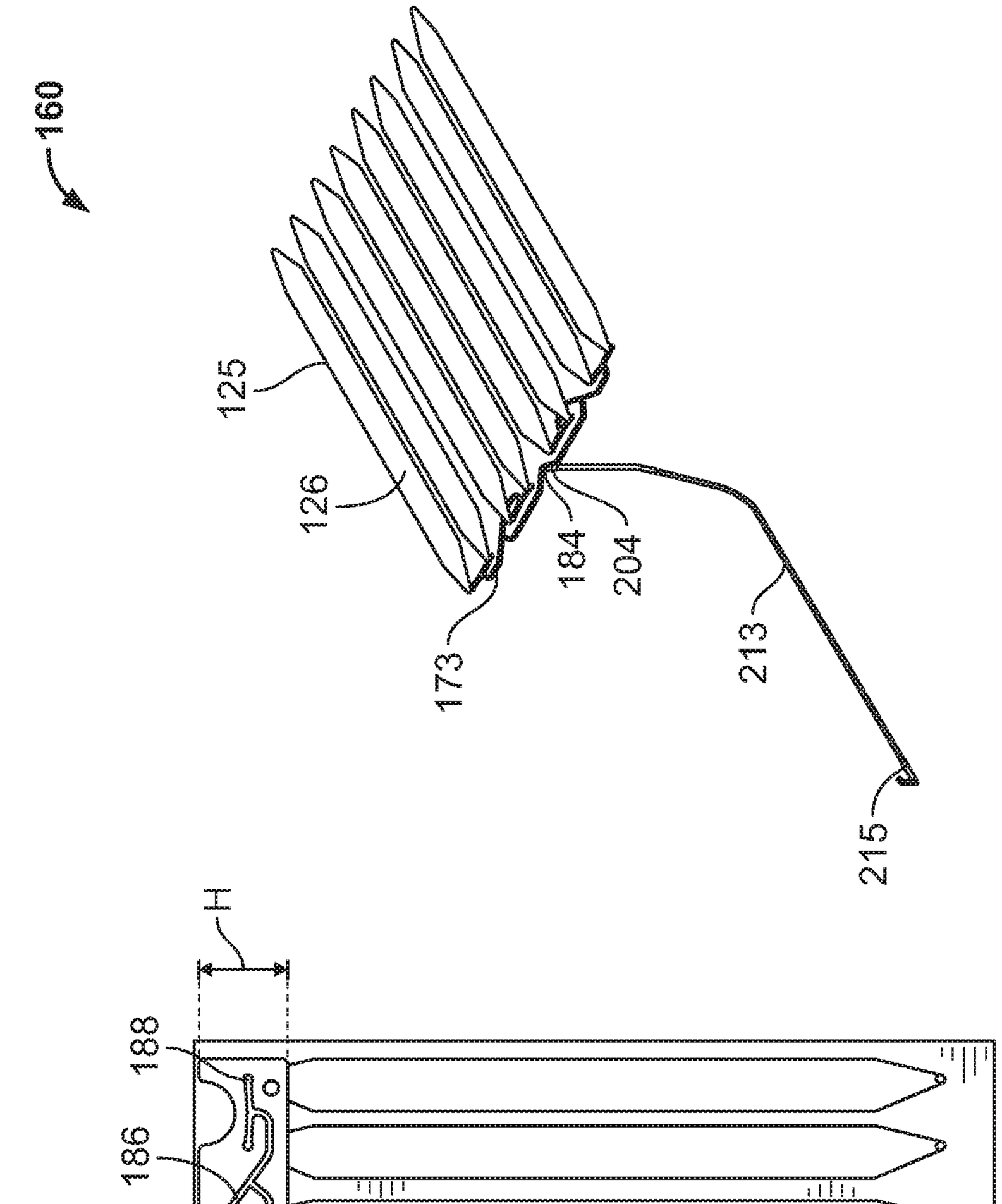

160
125
126
184
204
213
215
173
H
188
186
184
186
188
160
173
126
125

FIG. 6B

FIG. 6A

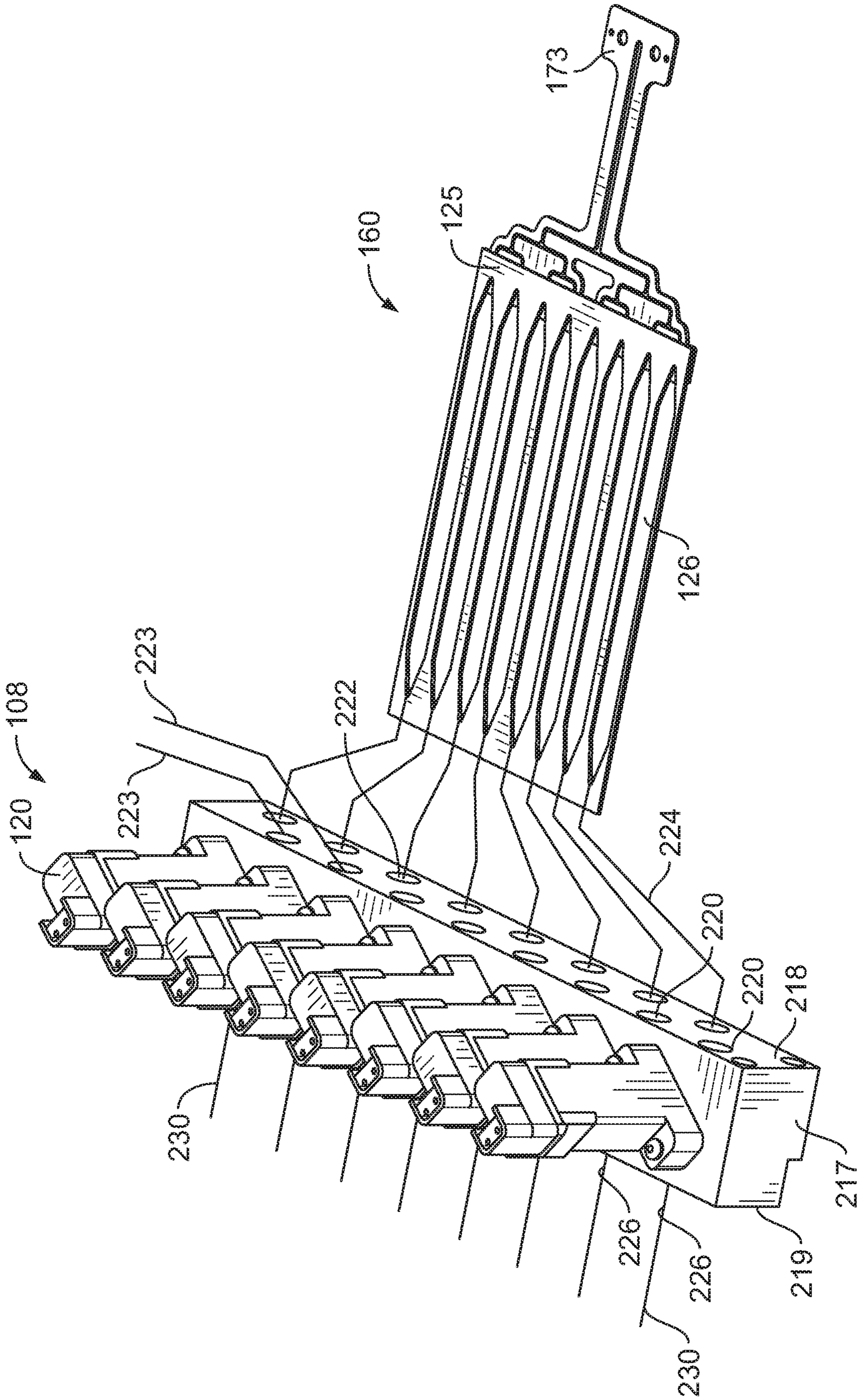

173
160
125
126
108
223
222
120
223
224
220
220
218
230
226
226
219
217
230

FIG. 7

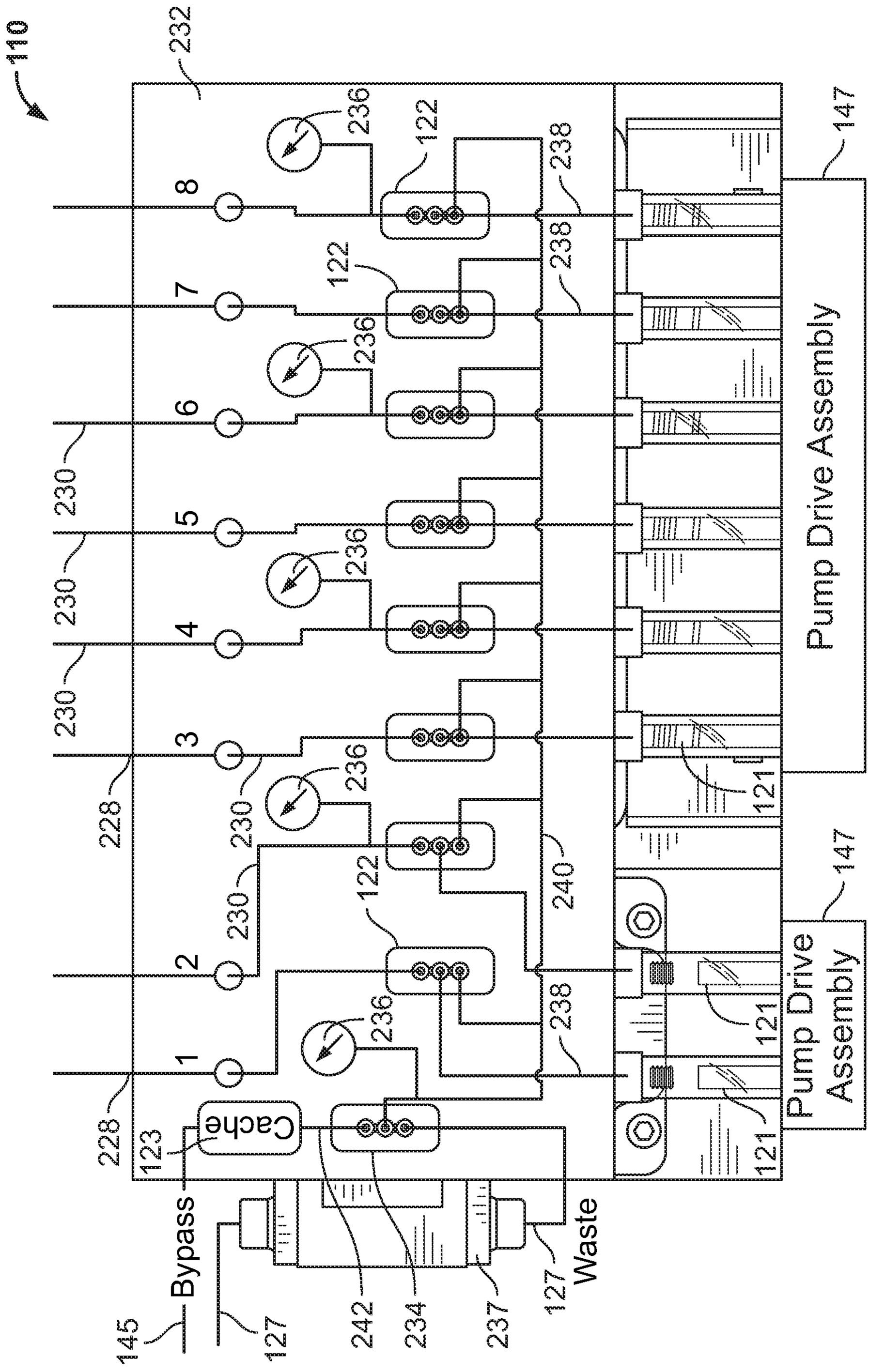

110
232
236
122
238
147
8
7
6
5
4
3
2
1
230
228
240
123
Cache
Bypass
Waste
Pump Drive Assembly
121
127
145
242
234
237

FIG. 8

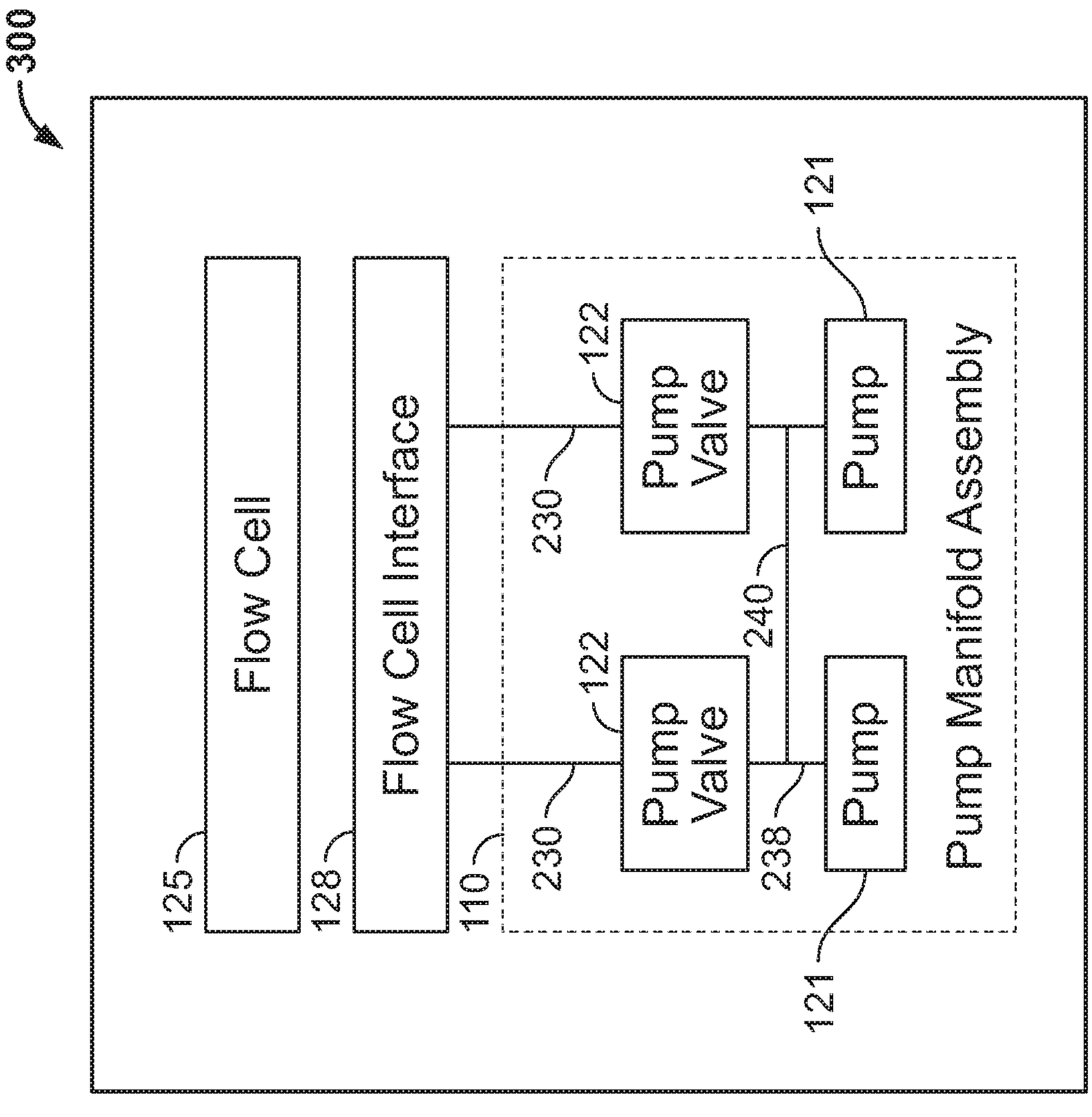

300
Flow Cell
125
Flow Cell Interface
128
110
Pump Manifold Assembly
Pump Valve
122
230
Pump
121
238
240

FIG. 9

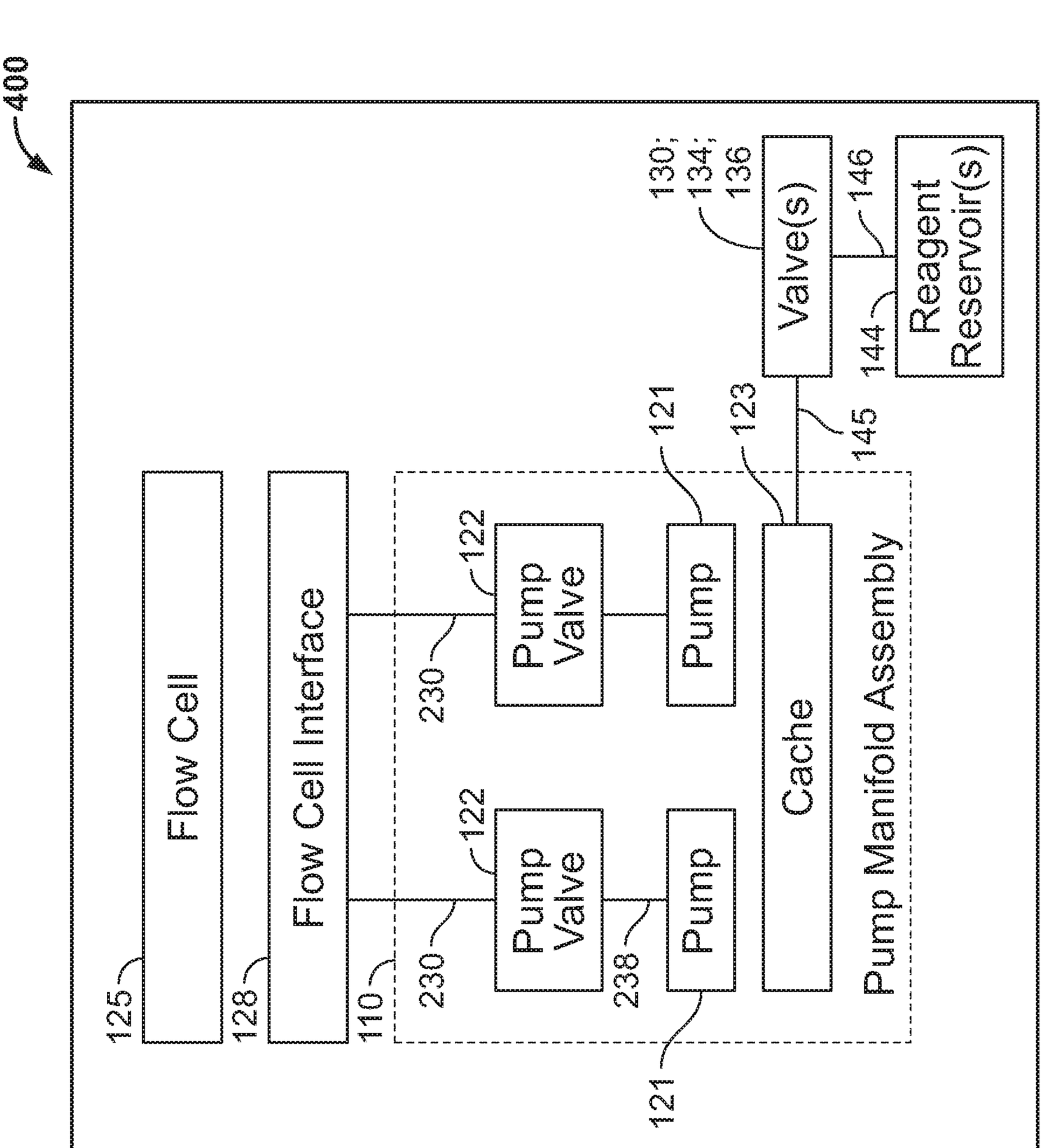

400
130;
134;
136
Valve(s)
146
144
Reagent
Reservoir(s)
121
123
145
125
Flow Cell
128
Flow Cell Interface
110
230
122
Pump
Valve
Pump
Cache
Pump Manifold Assembly
238
121

FIG. 10

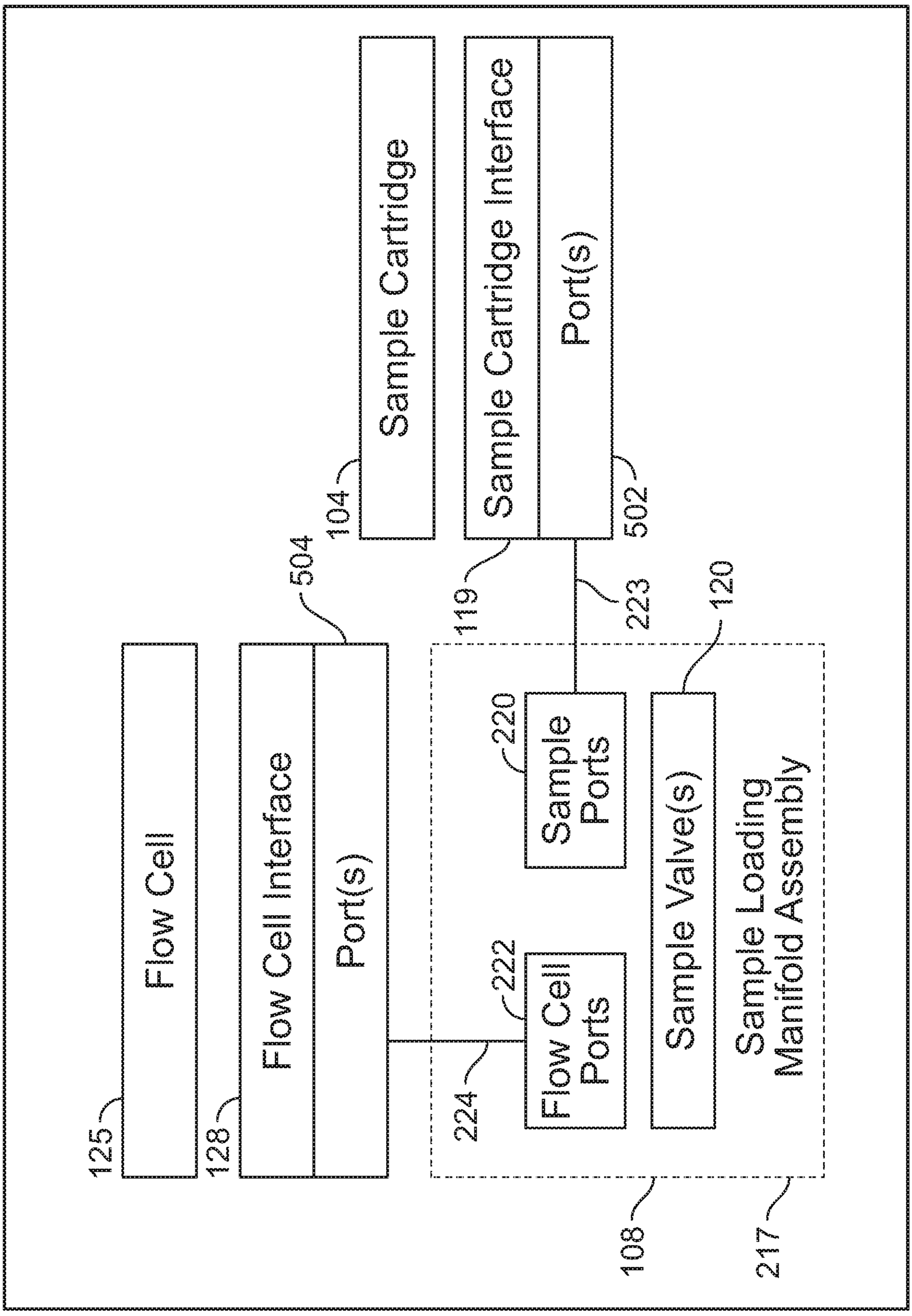

500
Sample Cartridge
104
Sample Cartridge Interface
Port(s)
502
504
119
223
120
220
Sample Ports
Sample Valve(s)
222
Flow Cell Ports
Sample Loading Manifold Assembly
224
Flow Cell
125
Flow Cell Interface
128
Port(s)
108
217

FIG. 11

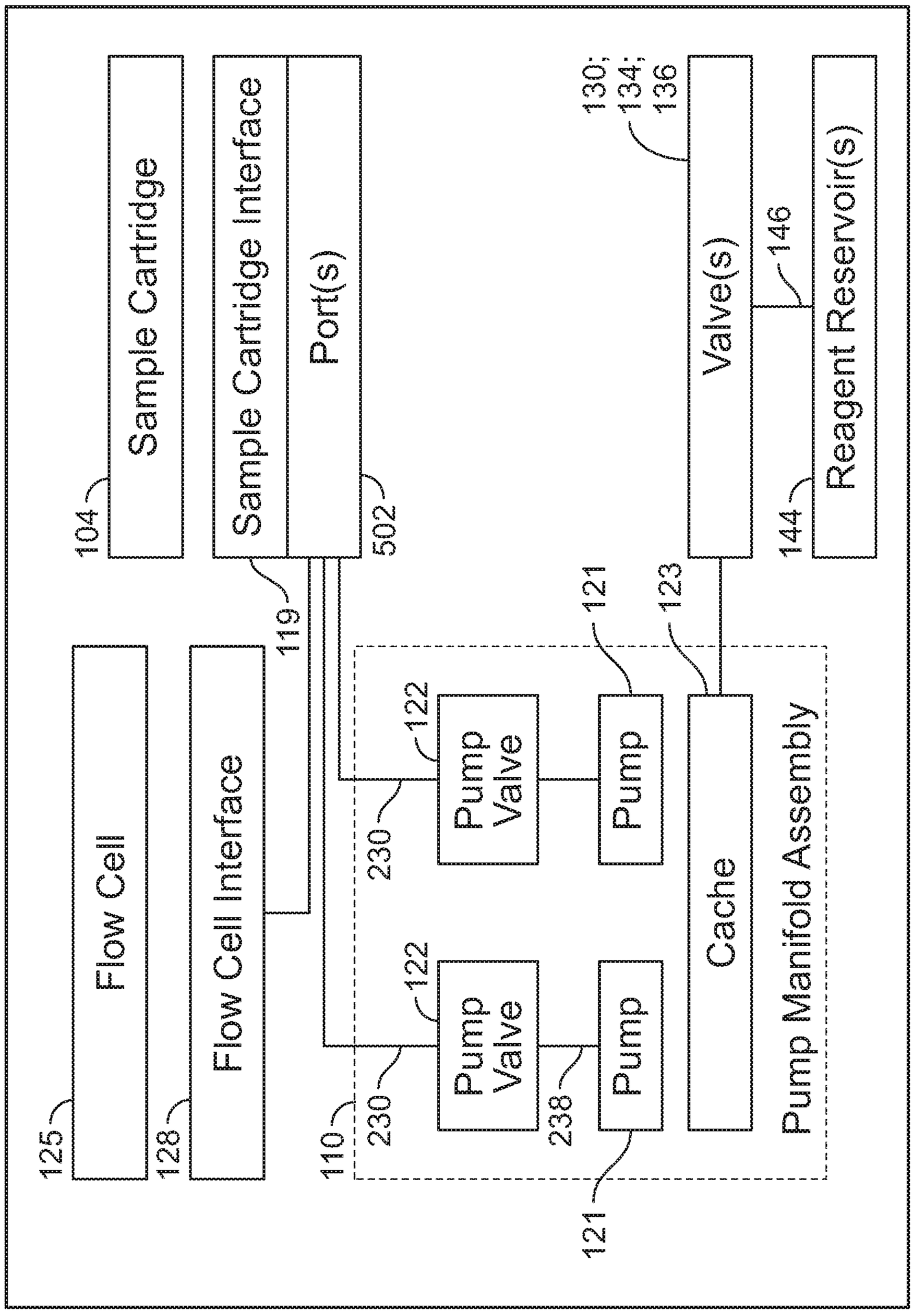

600
Sample Cartridge
104
Sample Cartridge Interface
Port(s)
502
119
Flow Cell
Flow Cell Interface
125
128
110
230
122
Pump Valve
Pump
Cache
Pump Manifold Assembly
121
123
130;
134;
136
Valve(s)
146
144
Reagent Reservoir(s)

FIG. 12

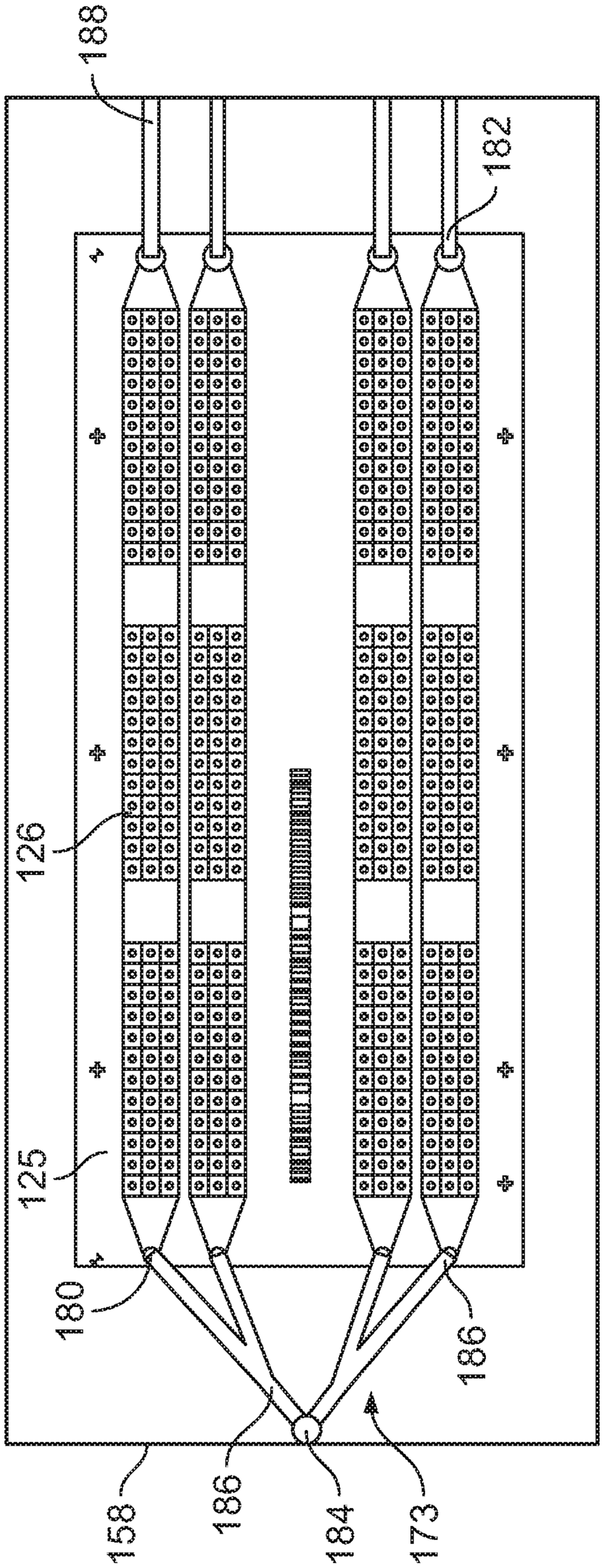


FIG. 13A

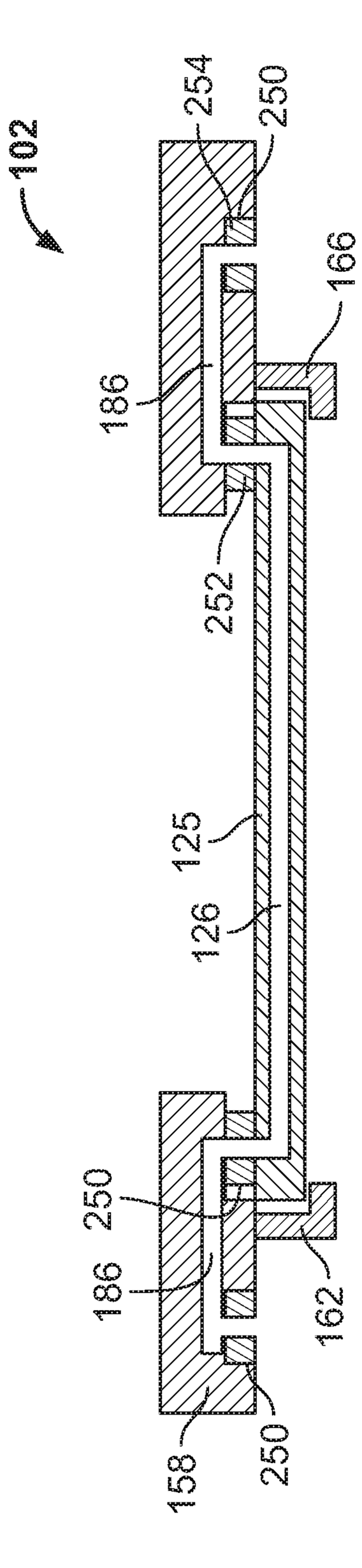


FIG. 13B

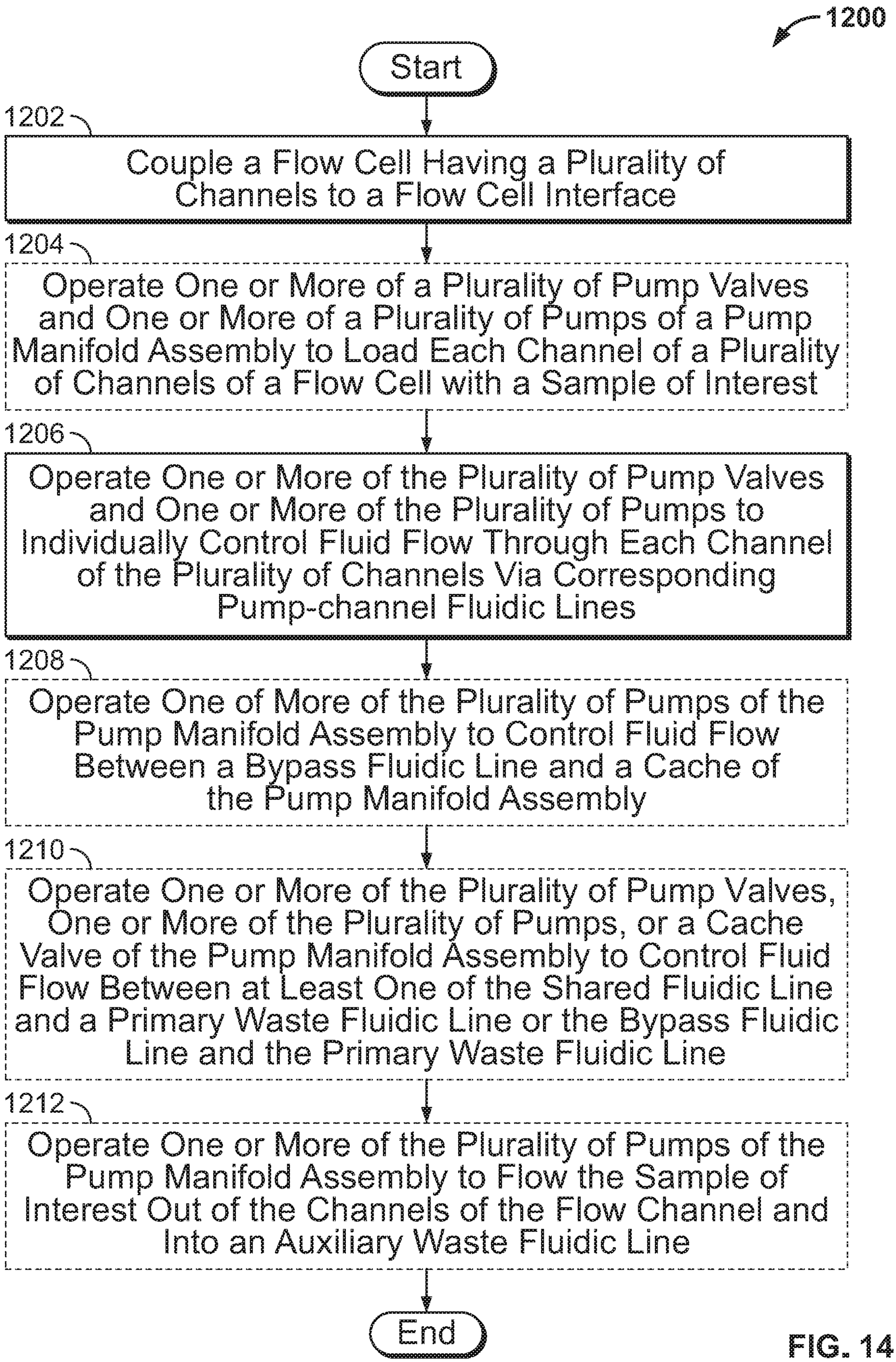

1200
Start
1202
Couple a Flow Cell Having a Plurality of Channels to a Flow Cell Interface
1204
Operate One or More of a Plurality of Pump Valves and One or More of a Plurality of Pumps of a Pump Manifold Assembly to Load Each Channel of a Plurality of Channels of a Flow Cell with a Sample of Interest
1206
Operate One or More of the Plurality of Pump Valves and One or More of the Plurality of Pumps to Individually Control Fluid Flow Through Each Channel of the Plurality of Channels Via Corresponding Pump-channel Fluidic Lines
1208
Operate One of More of the Plurality of Pumps of the Pump Manifold Assembly to Control Fluid Flow Between a Bypass Fluidic Line and a Cache of the Pump Manifold Assembly
1210
Operate One or More of the Plurality of Pump Valves, One or More of the Plurality of Pumps, or a Cache Valve of the Pump Manifold Assembly to Control Fluid Flow Between at Least One of the Shared Fluidic Line and a Primary Waste Fluidic Line or the Bypass Fluidic Line and the Primary Waste Fluidic Line
1212
Operate One or More of the Plurality of Pumps of the Pump Manifold Assembly to Flow the Sample of Interest Out of the Channels of the Flow Channel and Into an Auxiliary Waste Fluidic Line
End

FIG. 14

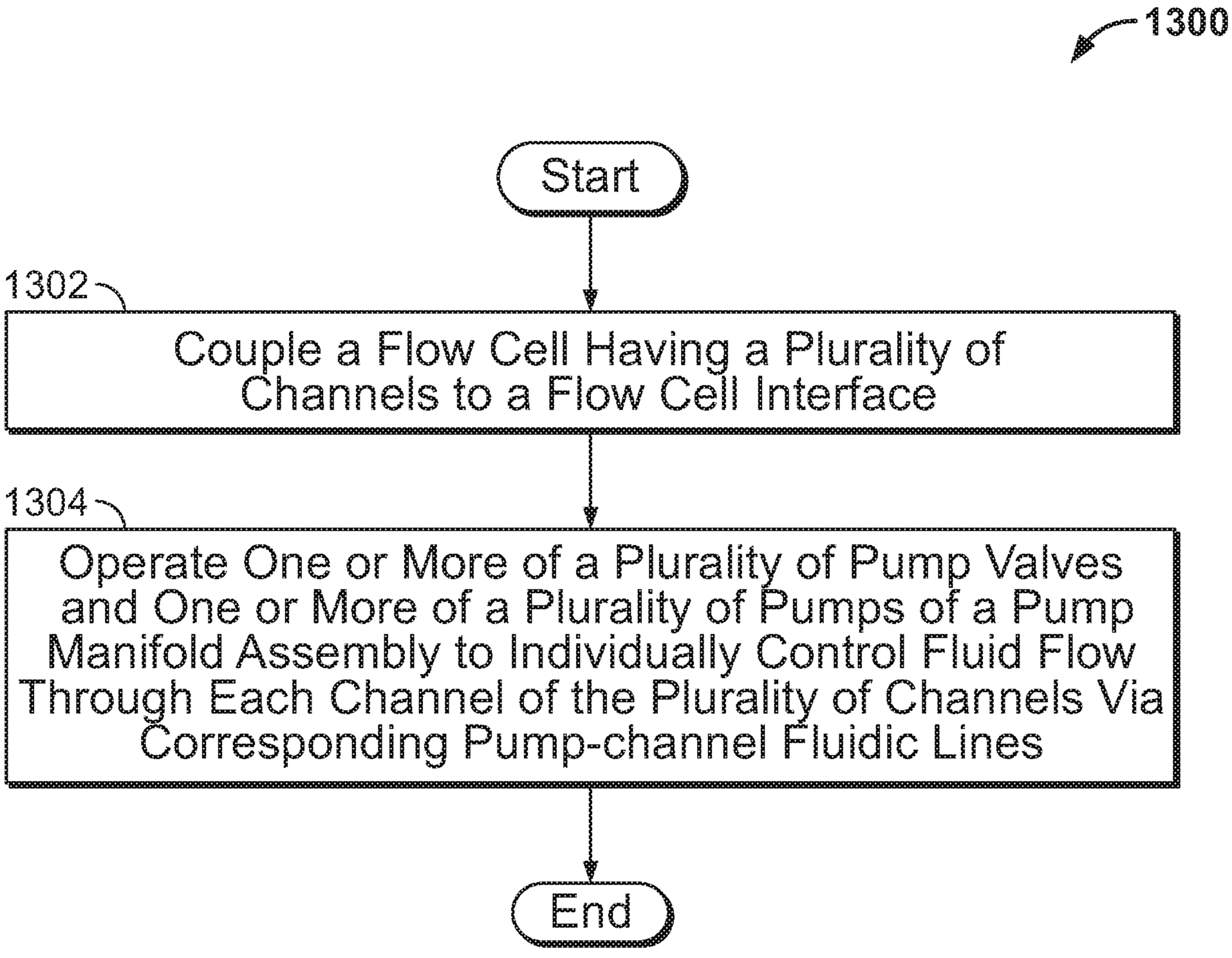

1300
Start
1302
Couple a Flow Cell Having a Plurality of Channels to a Flow Cell Interface
1304
Operate One or More of a Plurality of Pump Valves and One or More of a Plurality of Pumps of a Pump Manifold Assembly to Individually Control Fluid Flow Through Each Channel of the Plurality of Channels Via Corresponding Pump-channel Fluidic Lines
End

FIG. 15

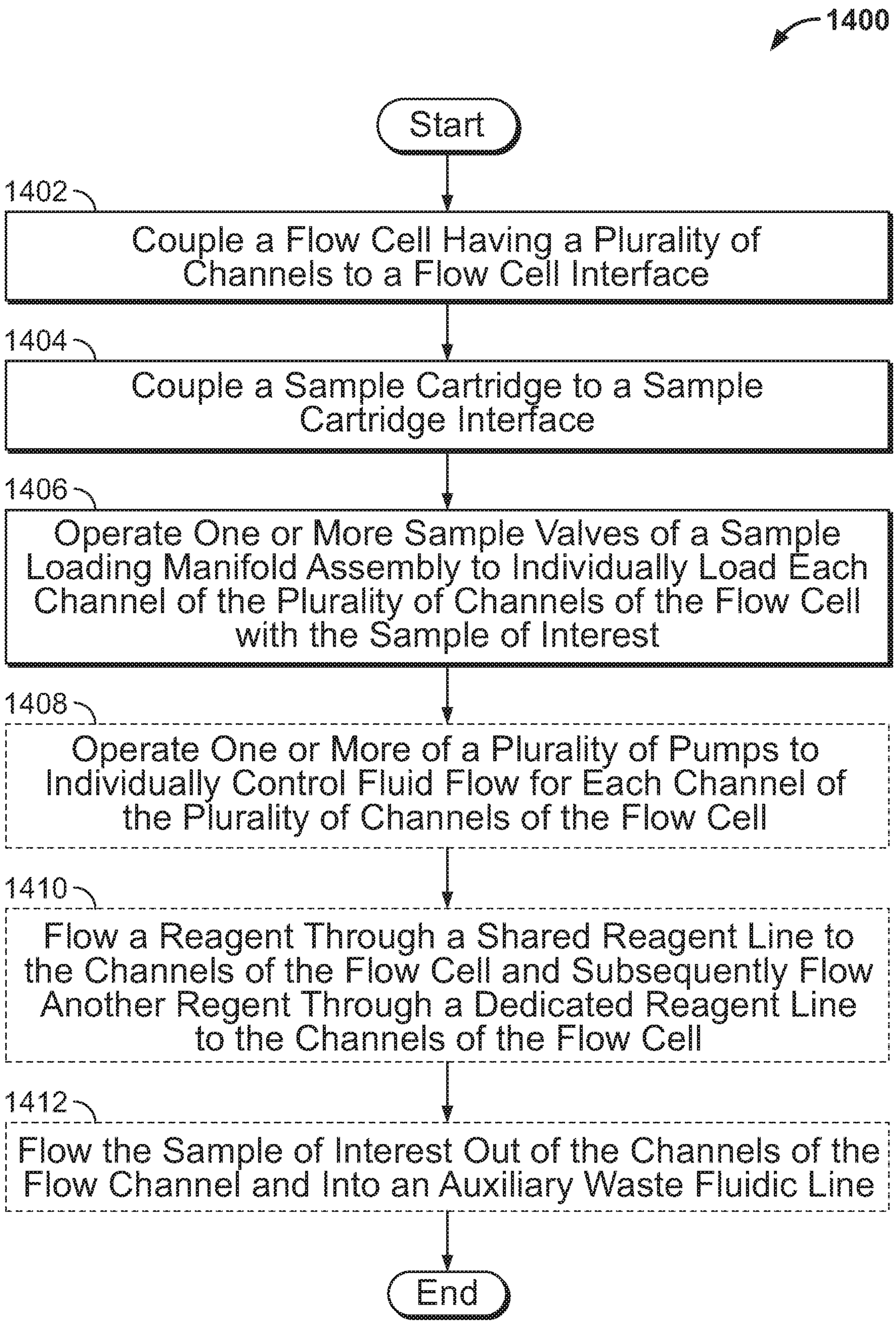

1400
Start
1402
Couple a Flow Cell Having a Plurality of Channels to a Flow Cell Interface
1404
Couple a Sample Cartridge to a Sample Cartridge Interface
1406
Operate One or More Sample Valves of a Sample Loading Manifold Assembly to Individually Load Each Channel of the Plurality of Channels of the Flow Cell with the Sample of Interest
1408
Operate One or More of a Plurality of Pumps to Individually Control Fluid Flow for Each Channel of the Plurality of Channels of the Flow Cell
1410
Flow a Reagent Through a Shared Reagent Line to the Channels of the Flow Cell and Subsequently Flow Another Regent Through a Dedicated Reagent Line to the Channels of the Flow Cell
1412
Flow the Sample of Interest Out of the Channels of the Flow Channel and Into an Auxiliary Waste Fluidic Line
End

FIG. 16

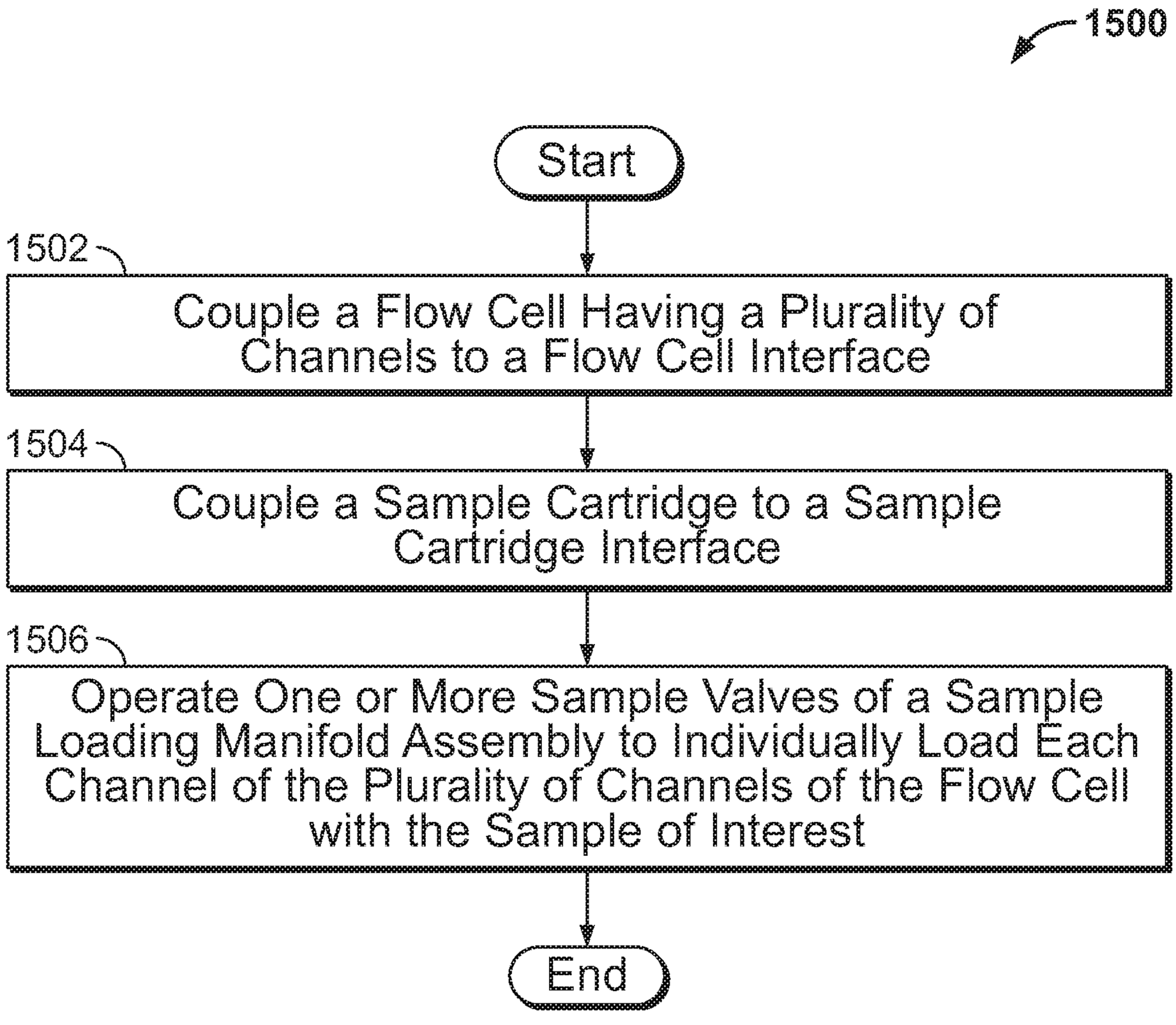

1500
Start
1502
Couple a Flow Cell Having a Plurality of Channels to a Flow Cell Interface
1504
Couple a Sample Cartridge to a Sample Cartridge Interface
1506
Operate One or More Sample Valves of a Sample Loading Manifold Assembly to Individually Load Each Channel of the Plurality of Channels of the Flow Cell with the Sample of Interest
End

FIG. 17