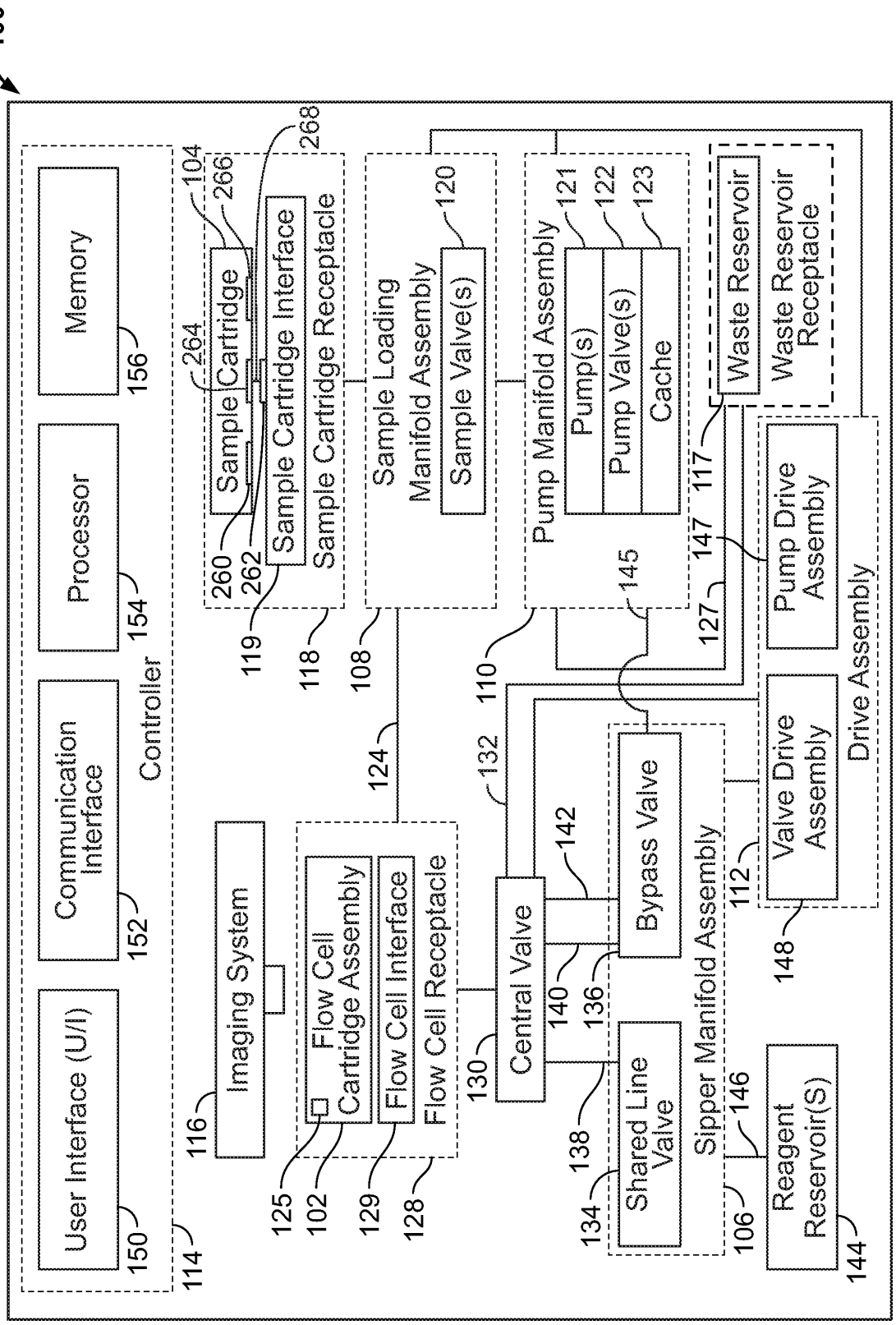

100
Controller
114
User Interface (U/I)
150
Communication Interface
152
Processor
154
Memory
156
Sample Cartridge Receptacle
118
Sample Cartridge Interface
119
Sample Cartridge
104
264
266
268
260
262
Sample Loading Manifold Assembly
108
Sample Valve(s)
120
Pump Manifold Assembly
110
Pump(s)
121
Pump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

FIG. 1A

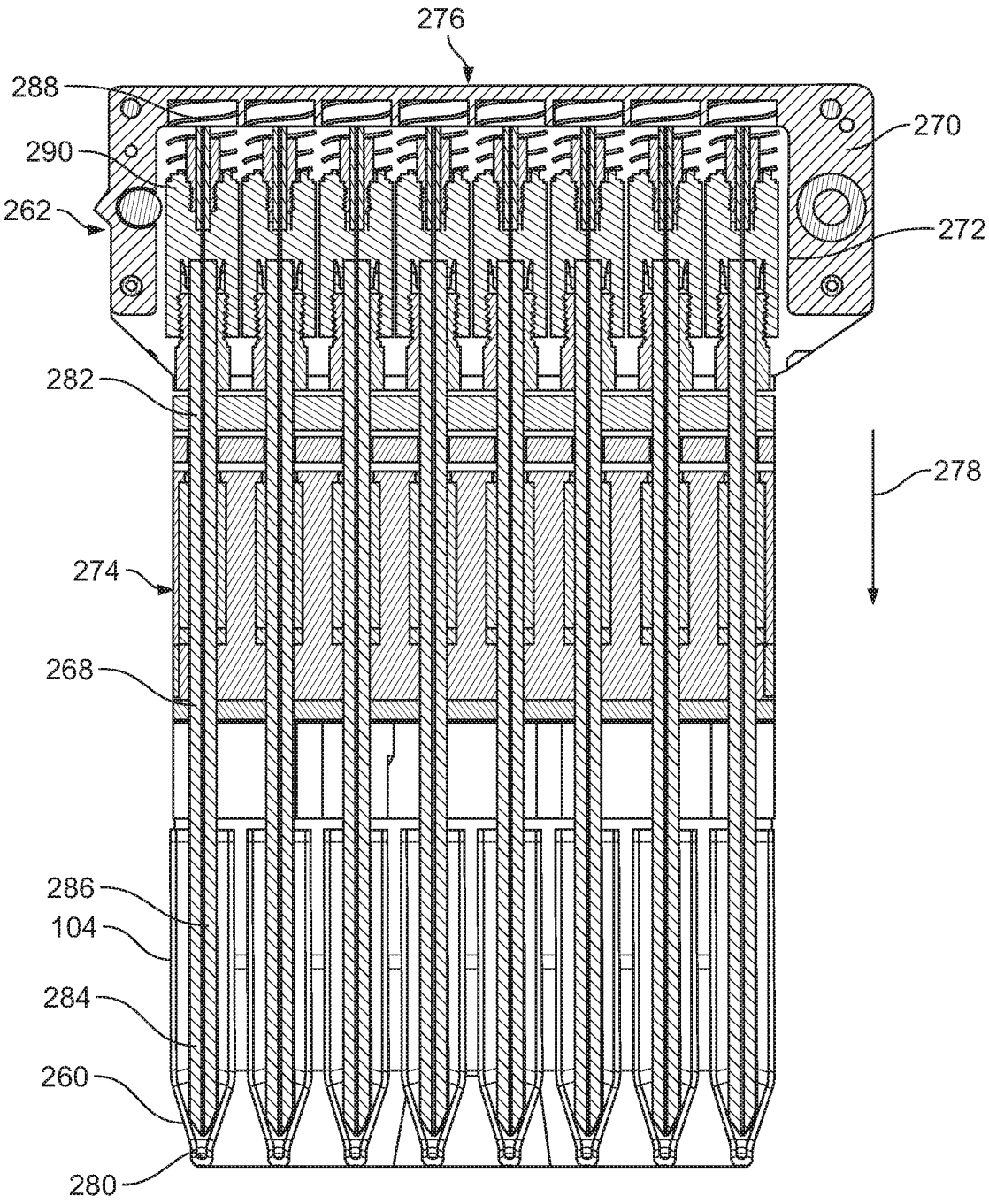


FIG. 1B

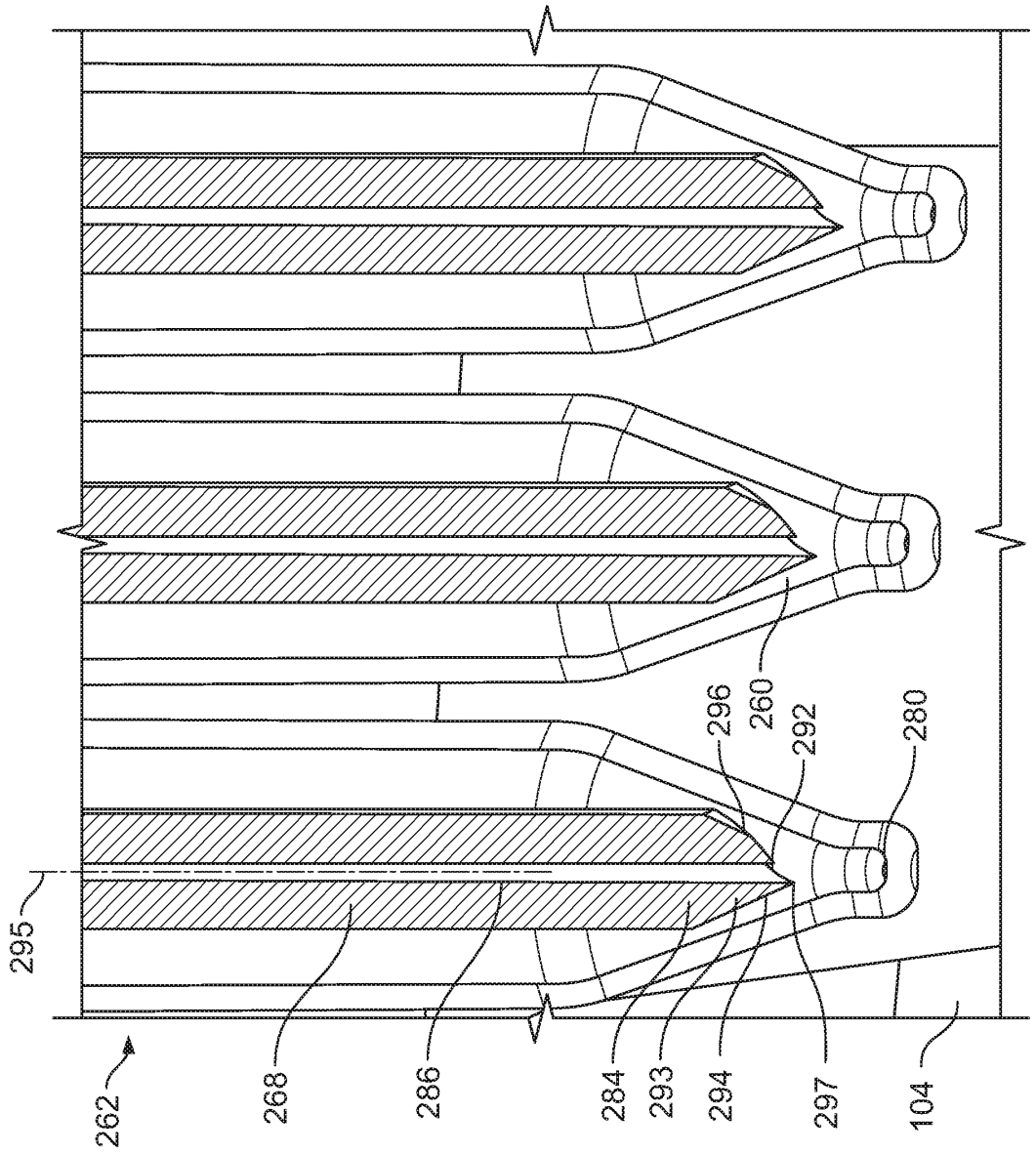


FIG. 1C

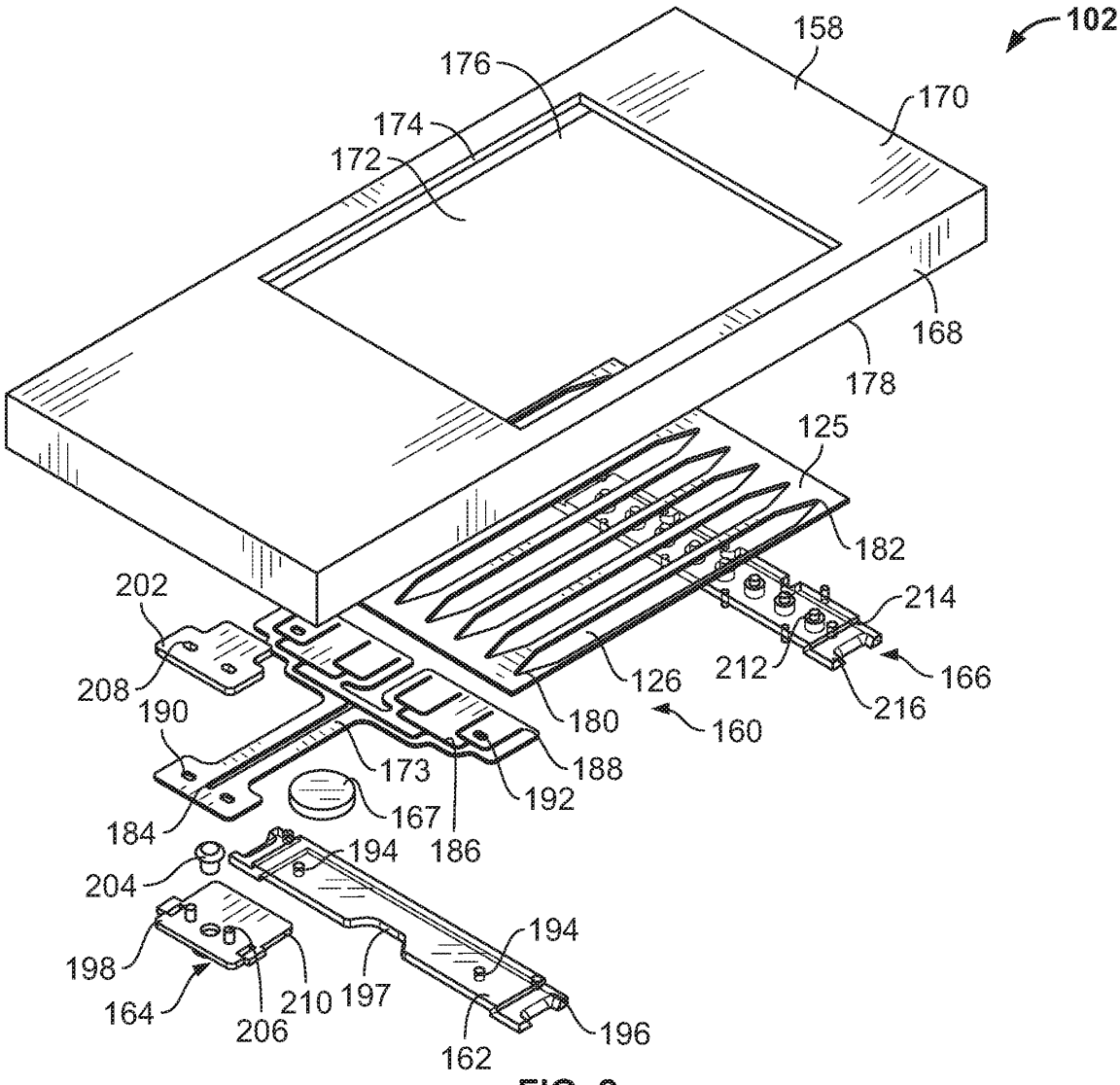

102
158
176
170
174
172
168
178
125
182
202
214
208
190
212
166
126
216
180
160
173
188
192
167
184
186
194
204
194
198
164
210
197
196
206
162

FIG. 2

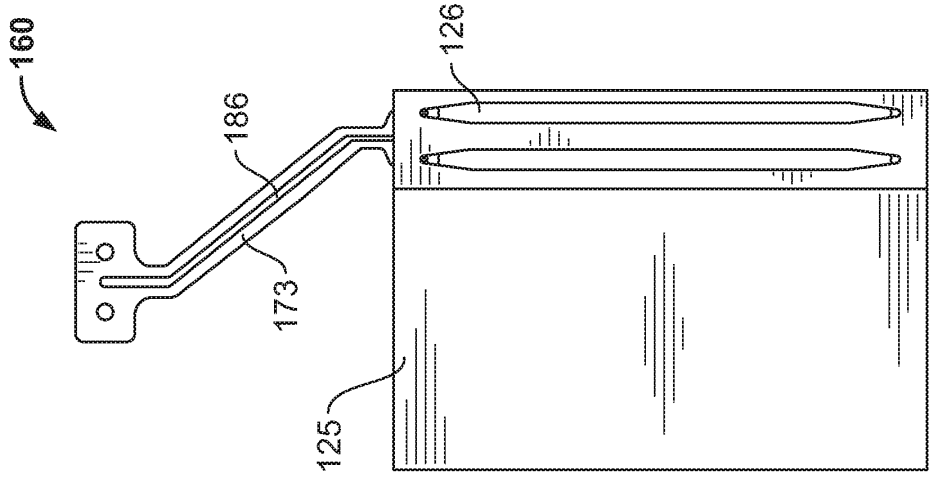


FIG. 5

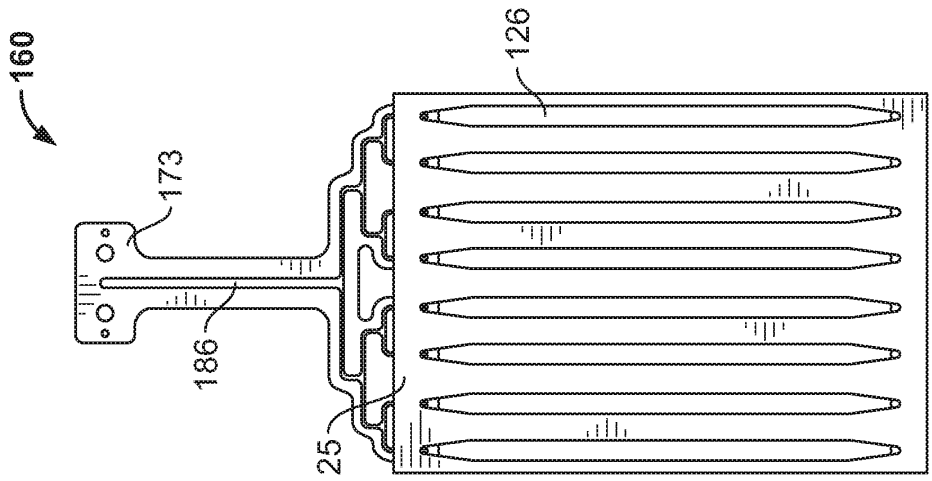


FIG. 4

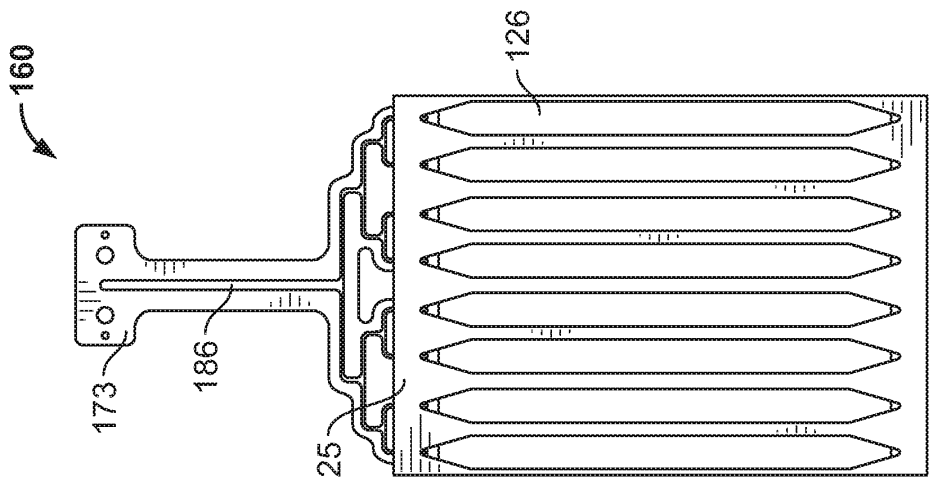


FIG. 3

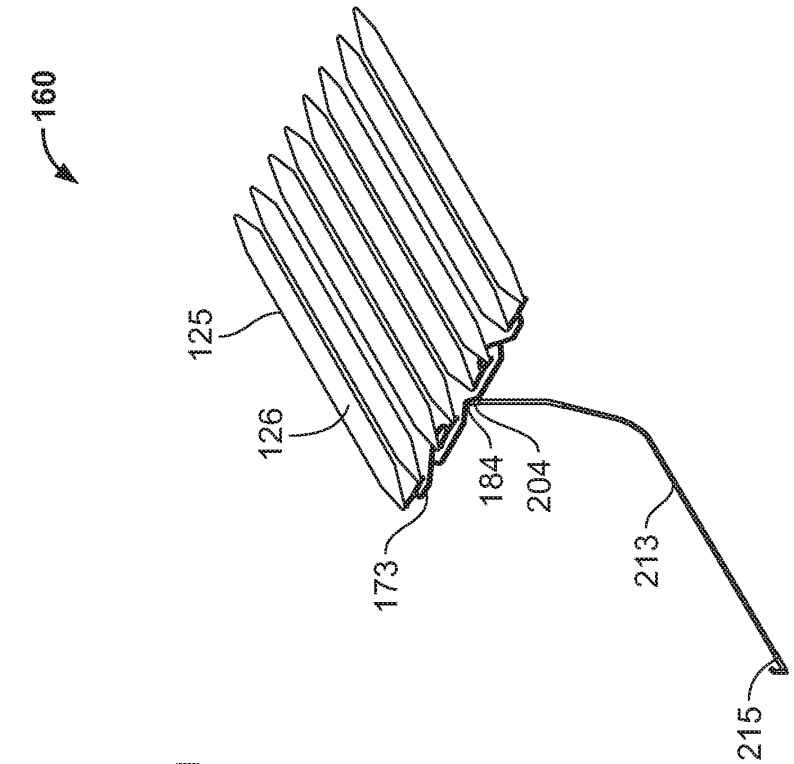

160
125
126
184
204
173
213
215

FIG. 6B

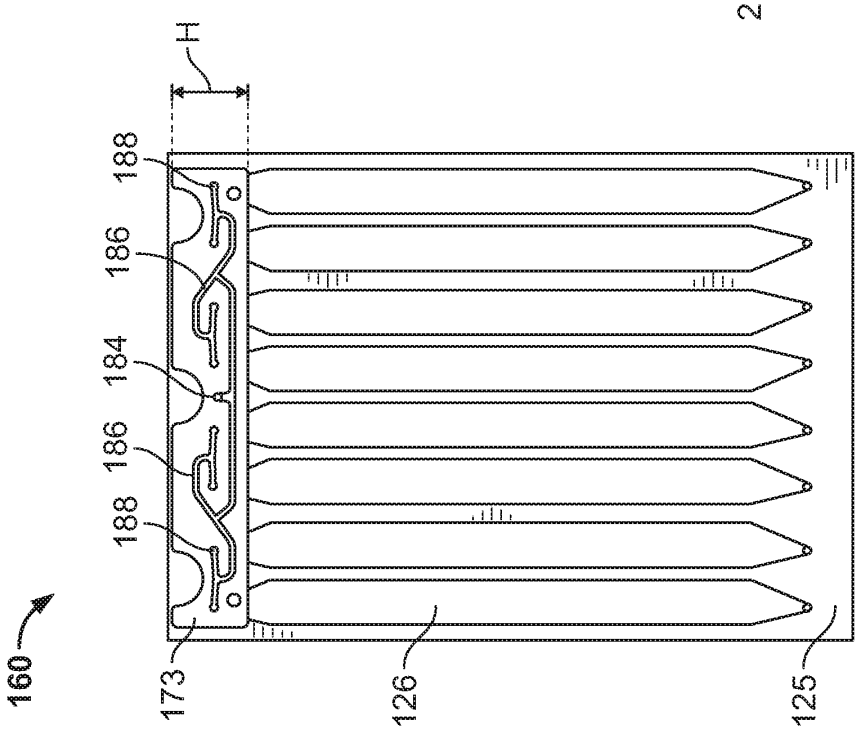

160
H
188
186
184
186
188
173
126
125

FIG. 6A

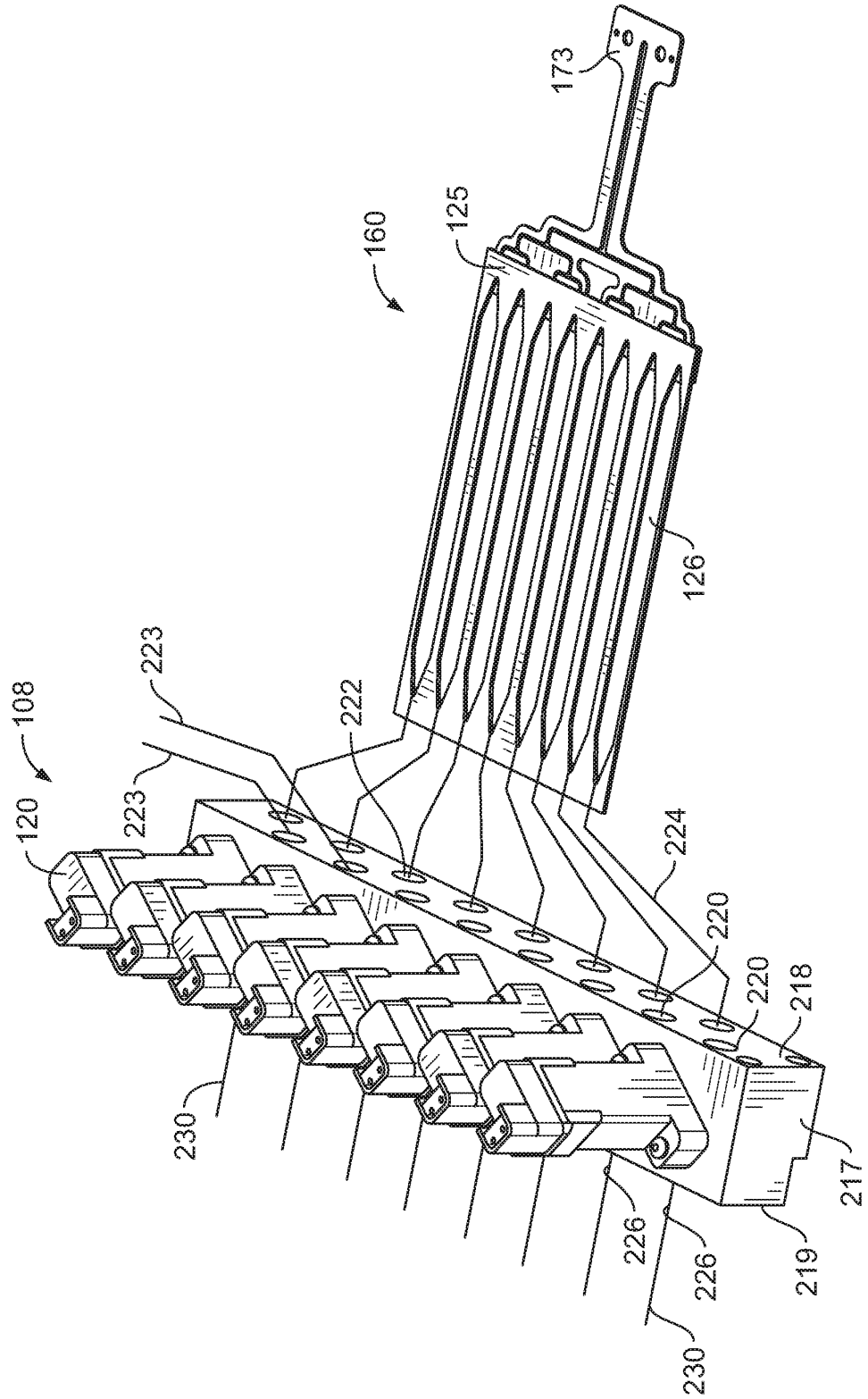

173
125
160
126
223
108
222
120
223
224
220
220
218
230
217
226
219
226
230

FIG. 7

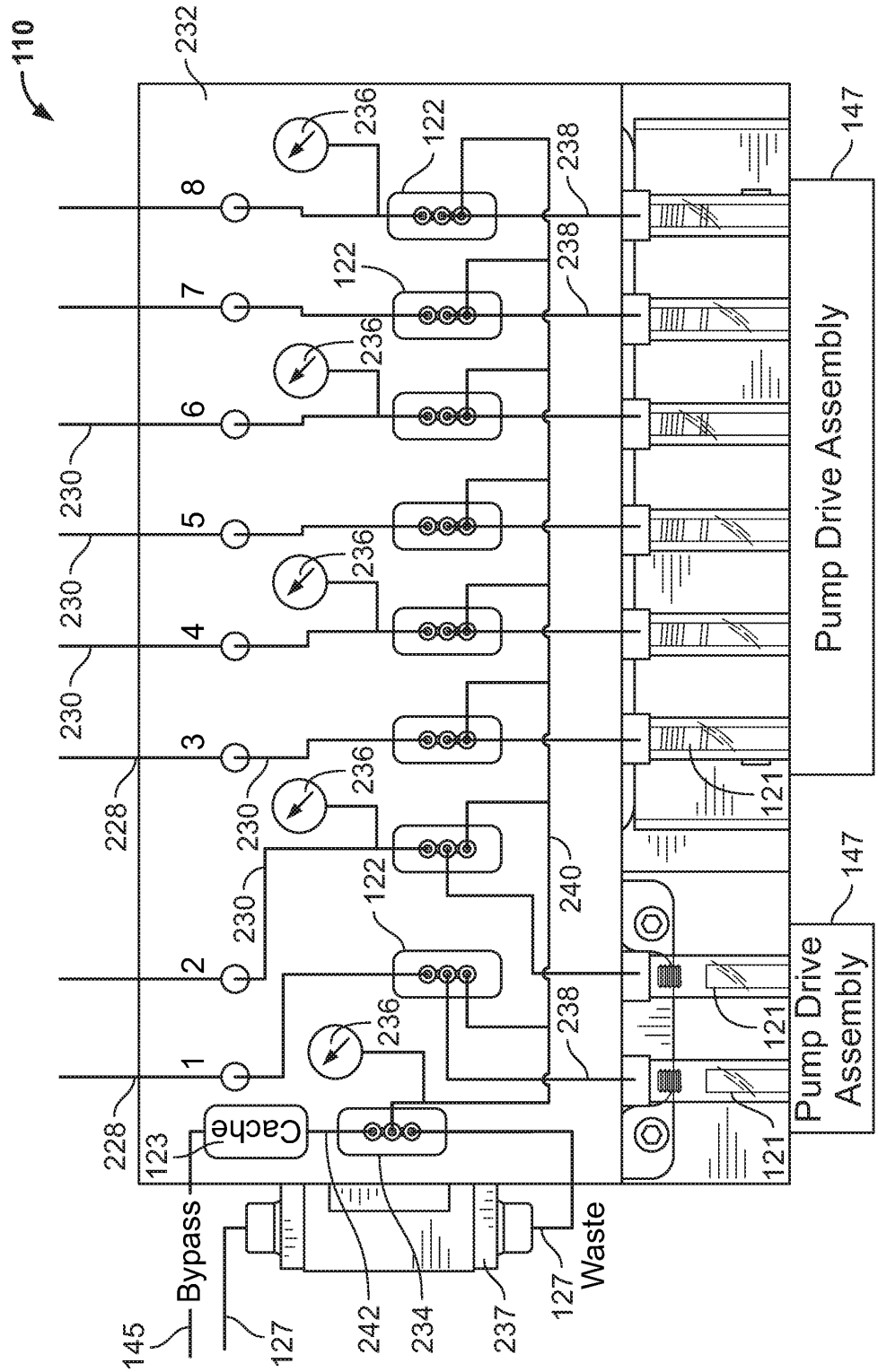

110
232
236
122
238
8
7
6
5
4
3
2
1
230
228
240
123
Cache
Bypass
Waste
145
127
242
234
237
121
147
Pump Drive Assembly
Pump Drive Assembly

FIG. 8

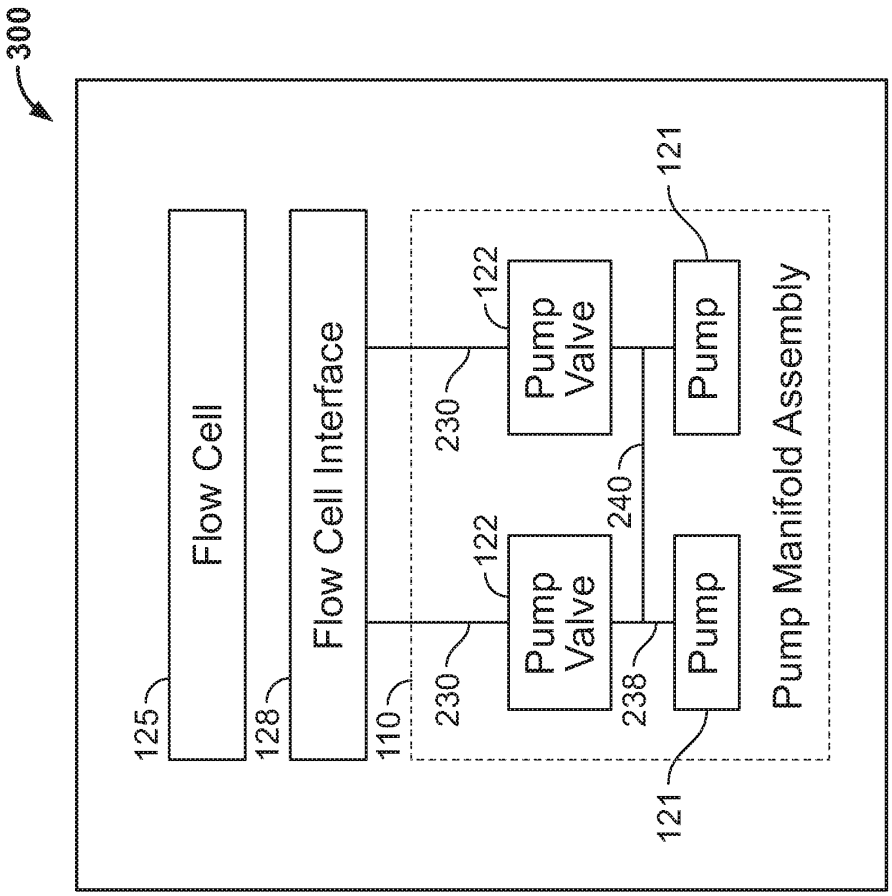

300
Flow Cell
Flow Cell Interface
Pump Manifold Assembly
Pump Valve
Pump Valve
Pump
Pump
125
128
110
230
230
122
122
121
121
240
238

FIG. 9

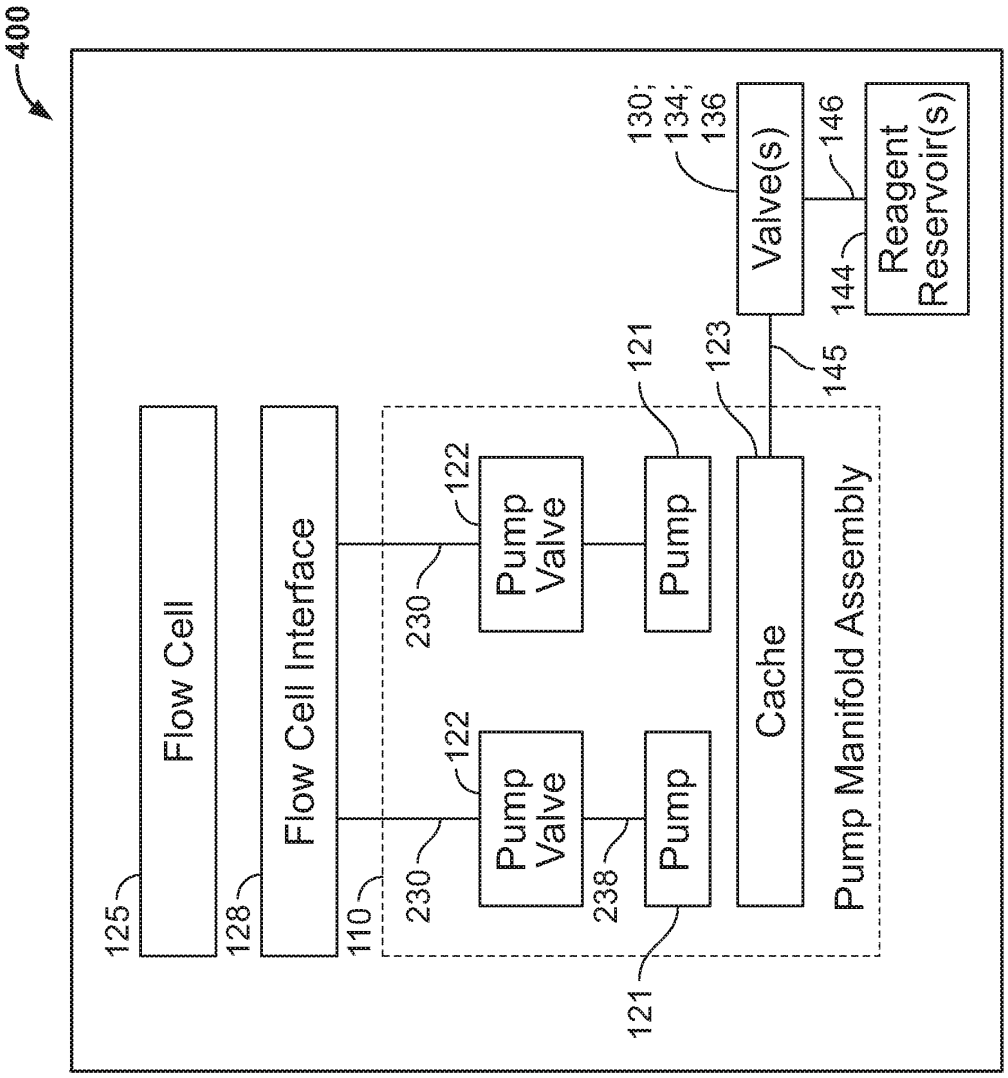

400
Flow Cell
125
Flow Cell Interface
128
110
Pump Manifold Assembly
Pump Valve
122
230
Pump
121
238
Cache
123
145
Valve(s)
130; 134; 136
146
Reagent Reservoir(s)
144

FIG. 10

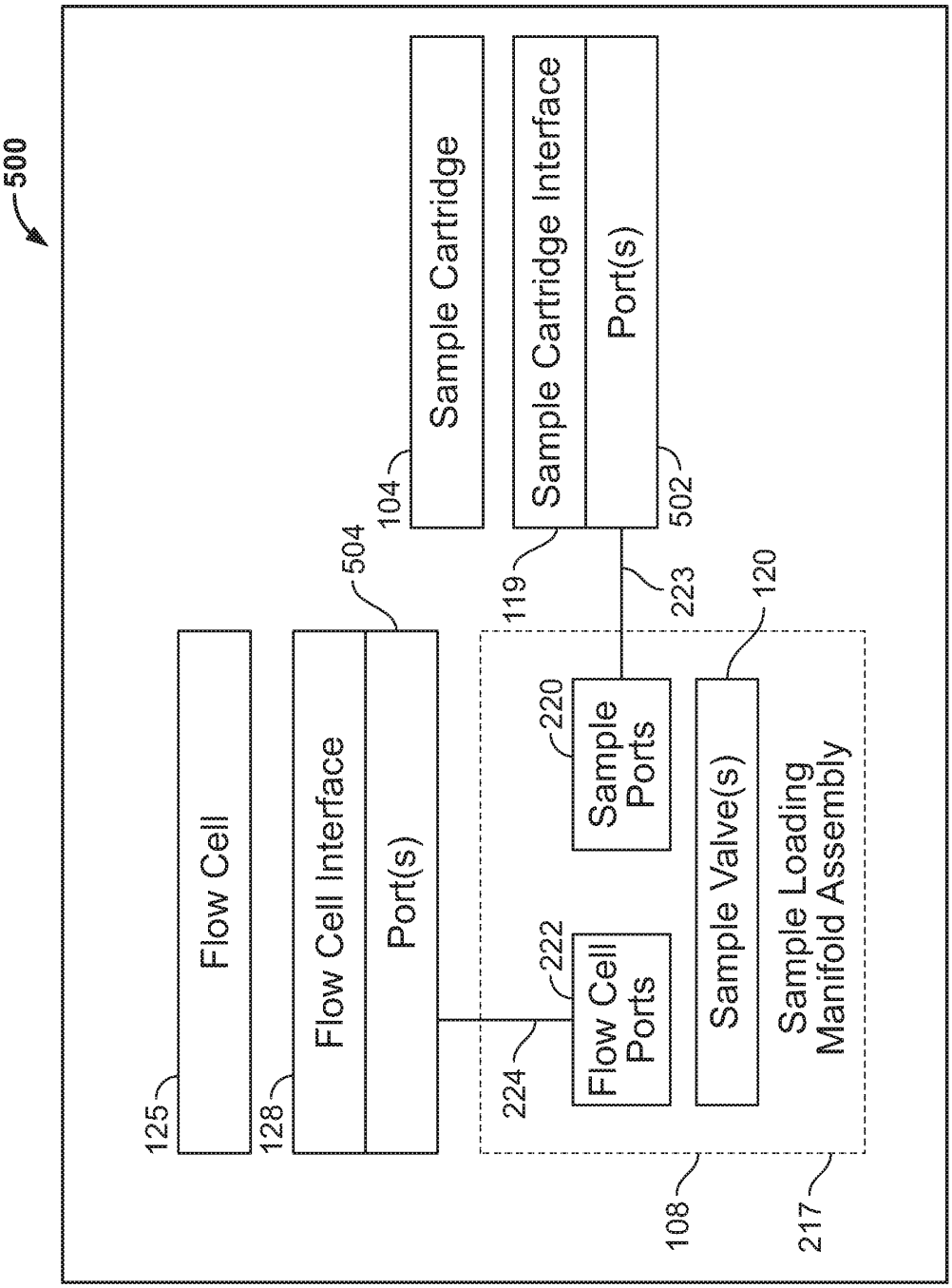

500
Sample Cartridge
104
Sample Cartridge Interface
Port(s)
502
119
223
120
504
Flow Cell
125
Flow Cell Interface
Port(s)
128
220
Sample Ports
222
Flow Cell Ports
224
Sample Valve(s)
Sample Loading Manifold Assembly
108
217

FIG. 11

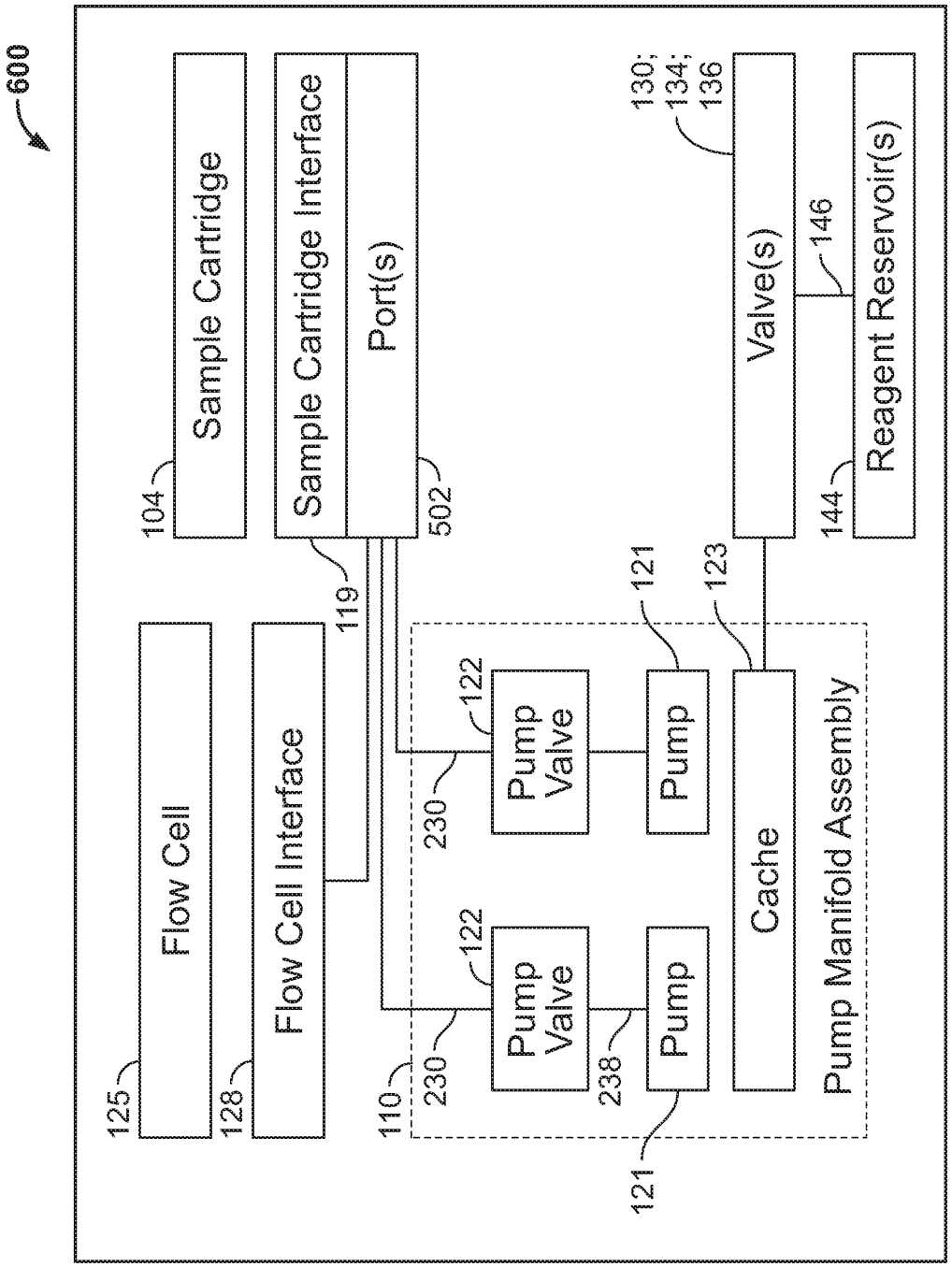

600
Sample Cartridge
104
Sample Cartridge Interface
Port(s)
502
119
130;
134;
136
Valve(s)
146
Reagent Reservoir(s)
144
Flow Cell
125
Flow Cell Interface
128
110
230
Pump
Valve
122
Pump
121
Cache
123
238
Pump Manifold Assembly

FIG. 12

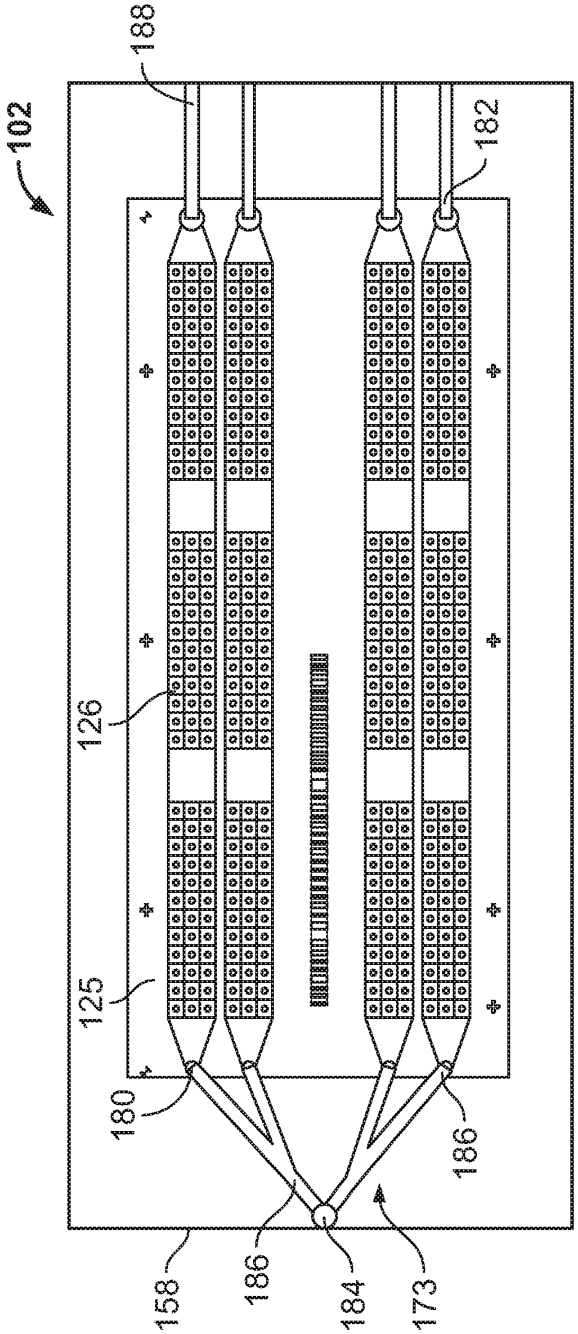


FIG. 13A

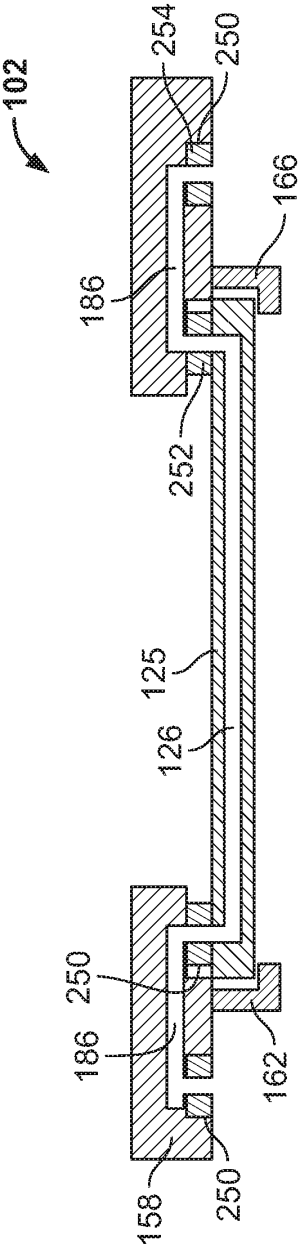


FIG. 13B

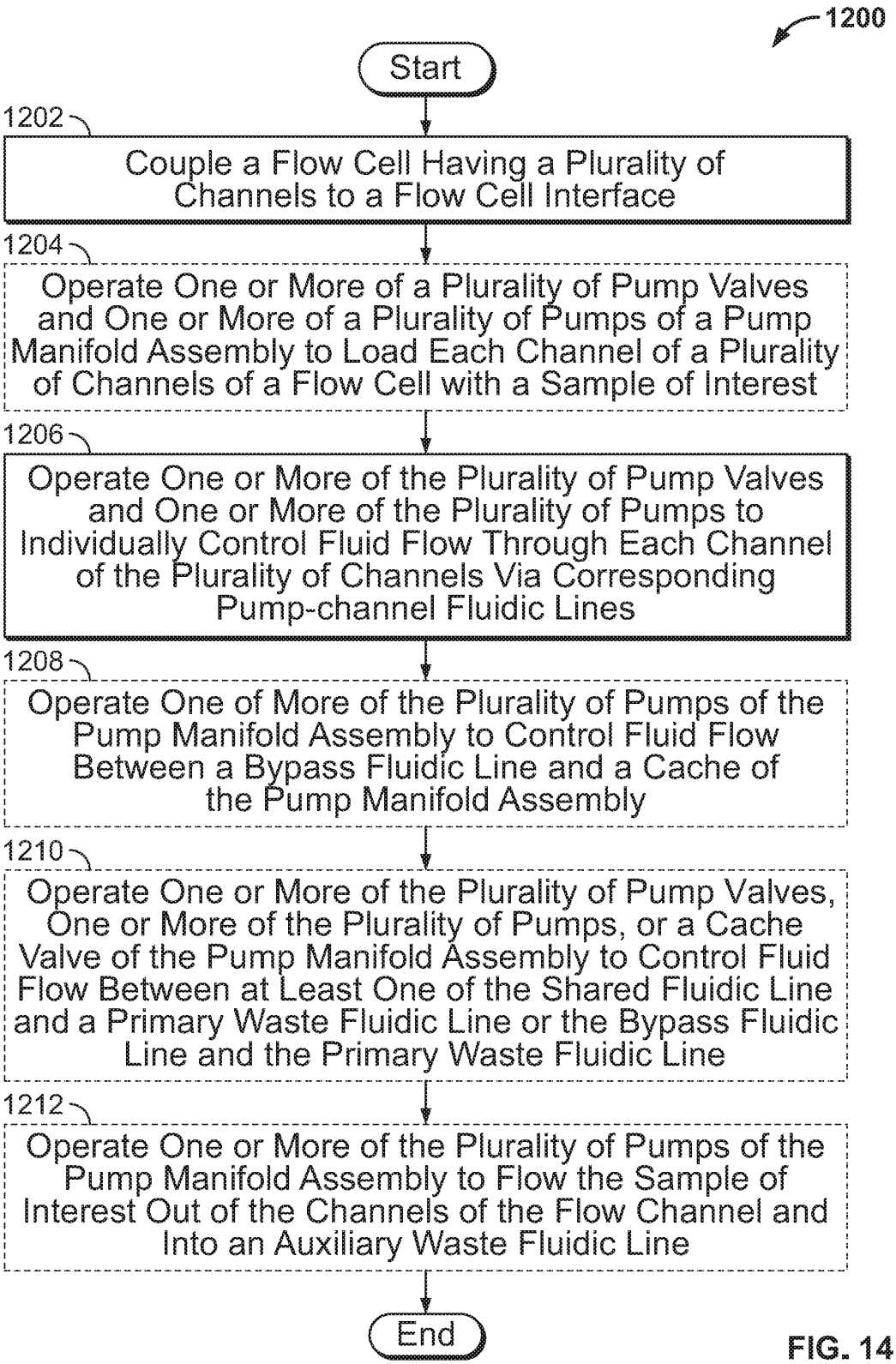

1200
Start
1202
Couple a Flow Cell Having a Plurality of Channels to a Flow Cell Interface
1204
Operate One or More of a Plurality of Pump Valves and One or More of a Plurality of Pumps of a Pump Manifold Assembly to Load Each Channel of a Plurality of Channels of a Flow Cell with a Sample of Interest
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

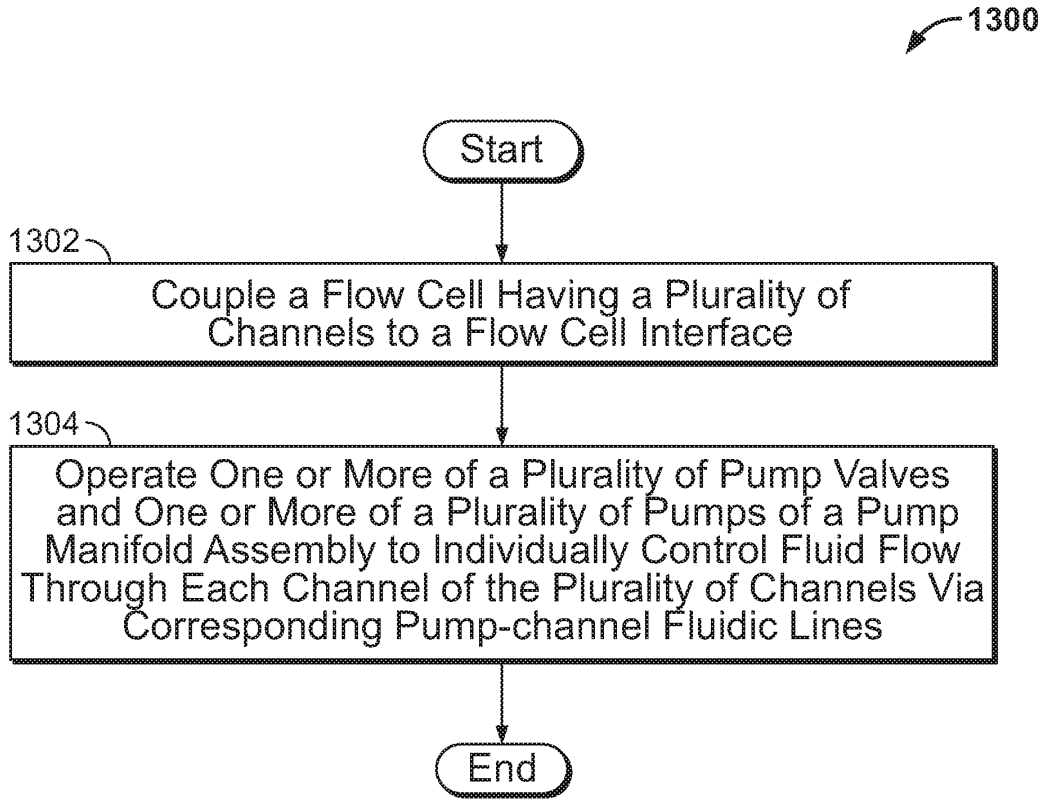

1300
Start
1302
Couple a Flow Cell Having a Plurality of Channels to a Flow Cell Interface
1304
Operate One or More of a Plurality of Pump Valves and One or More of a Plurality of Pumps of a Pump Manifold Assembly to Individually Control Fluid Flow Through Each Channel of the Plurality of Channels Via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

FIG. 15

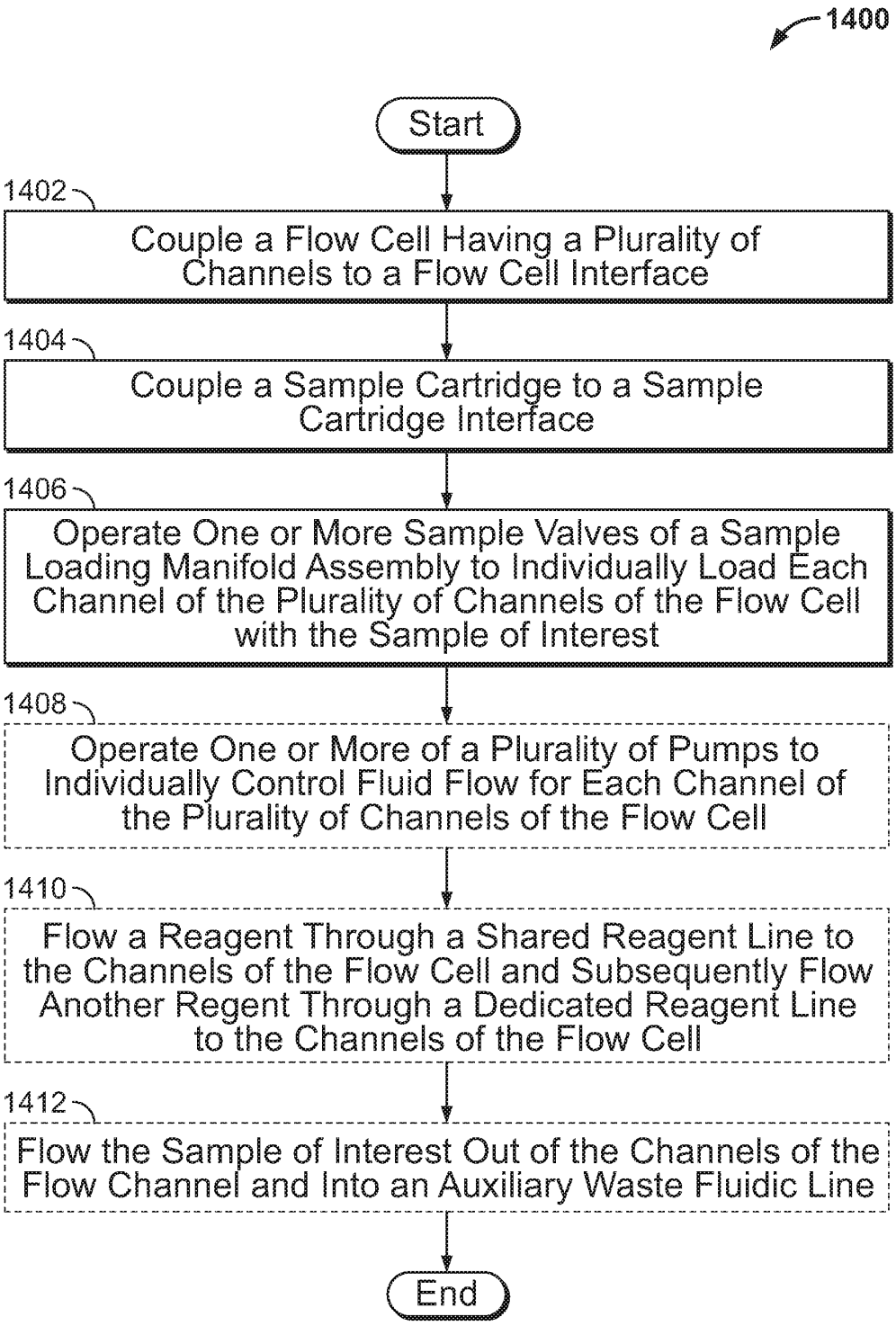

1400
Start
1402
Couple a Flow Cell Having a Plurality of Channels to a Flow Cell Interface
1404
Couple a Sample Cartridge to a Sample Cartridge Interface
1406
Operate One or More Sample Valves of a Sample Loading Manifold Assembly to Individually Load Each Channel of the Plurality of Channels of the 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

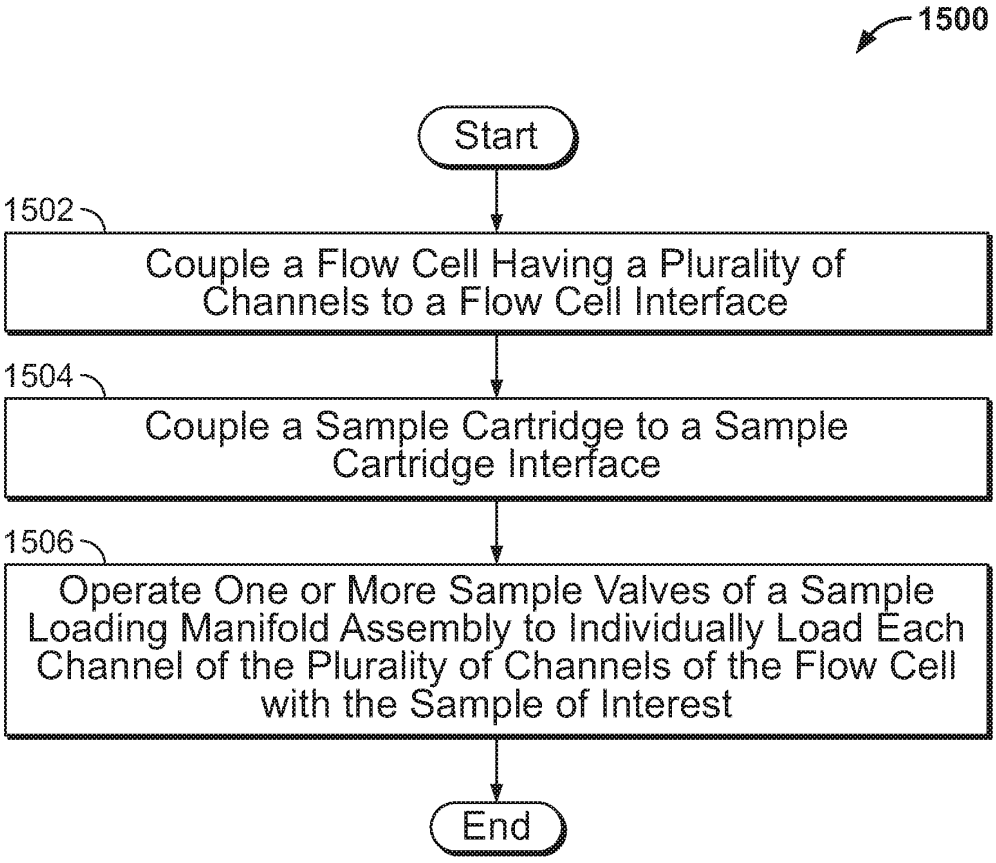

1500
Start
1502
Couple a Flow Cell Having a Plurality of Channels to a Flow Cell Interface
1504
Couple a Sample Cartridge to a Sample Cartridge Interface
1506
Operate One or More Sample Valves of a Sample Loading Manifold Assembly to Individually Load Each Channel of the Plurality of Channels of the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

FIG. 17