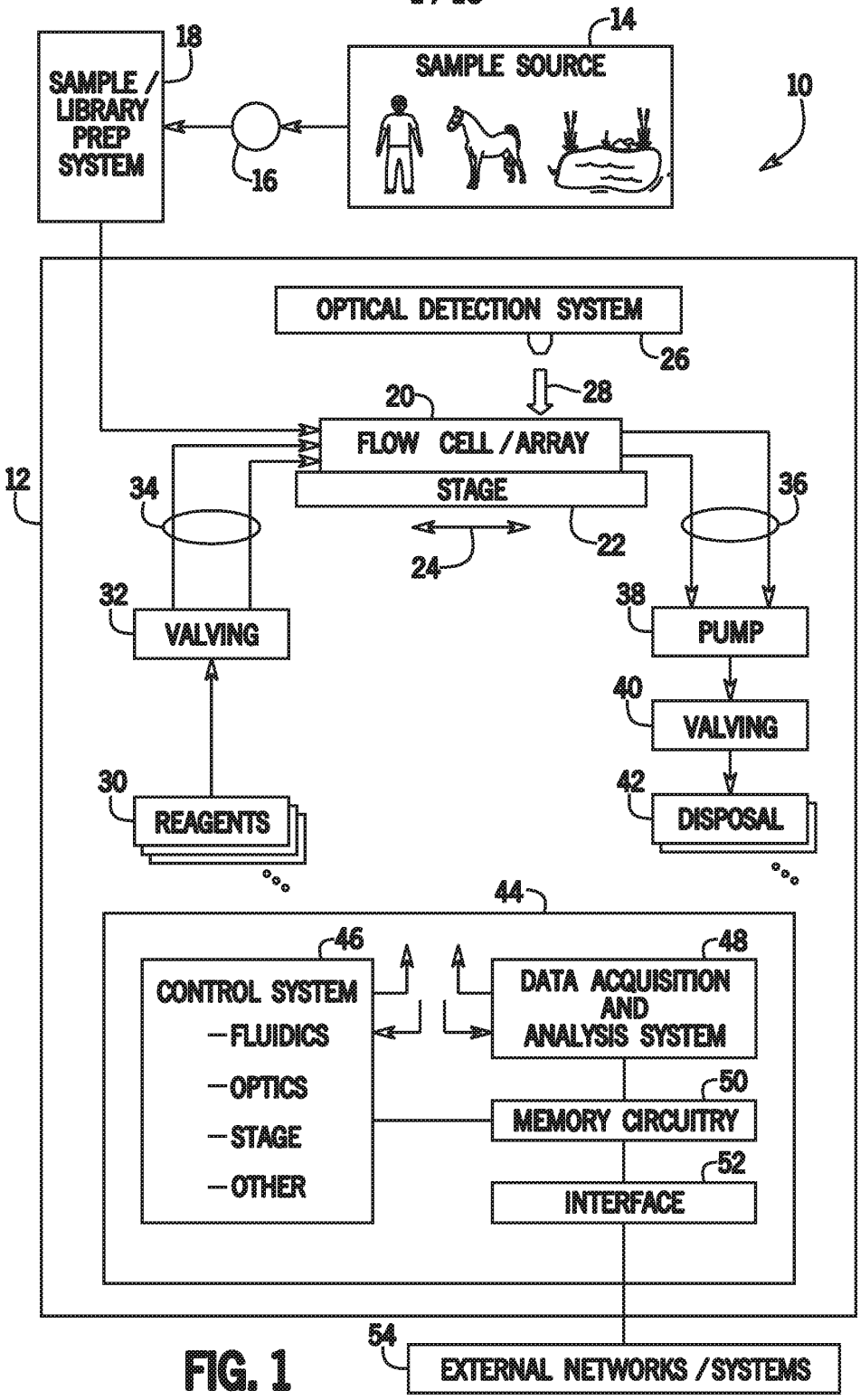

SAMPLE / LIBRARY PREP SYSTEM
18
16
SAMPLE SOURCE
14
10
OPTICAL DETECTION SYSTEM
26
28
20
FLOW CELL / ARRAY
STAGE
22
24
12
34
36
32
VALVING
38
PUMP
40
VALVING
30
REAGENTS
42
DISPOSAL
44
46
CONTROL SYSTEM
FLUIDICS
OPTICS
STAGE
OTHER
48
DATA ACQUISITION AND ANALYSIS SYSTEM
50
MEMORY CIRCUITRY
52
INTERFACE
54
EXTERNAL NETWORKS / SYSTEMS

FIG. 1

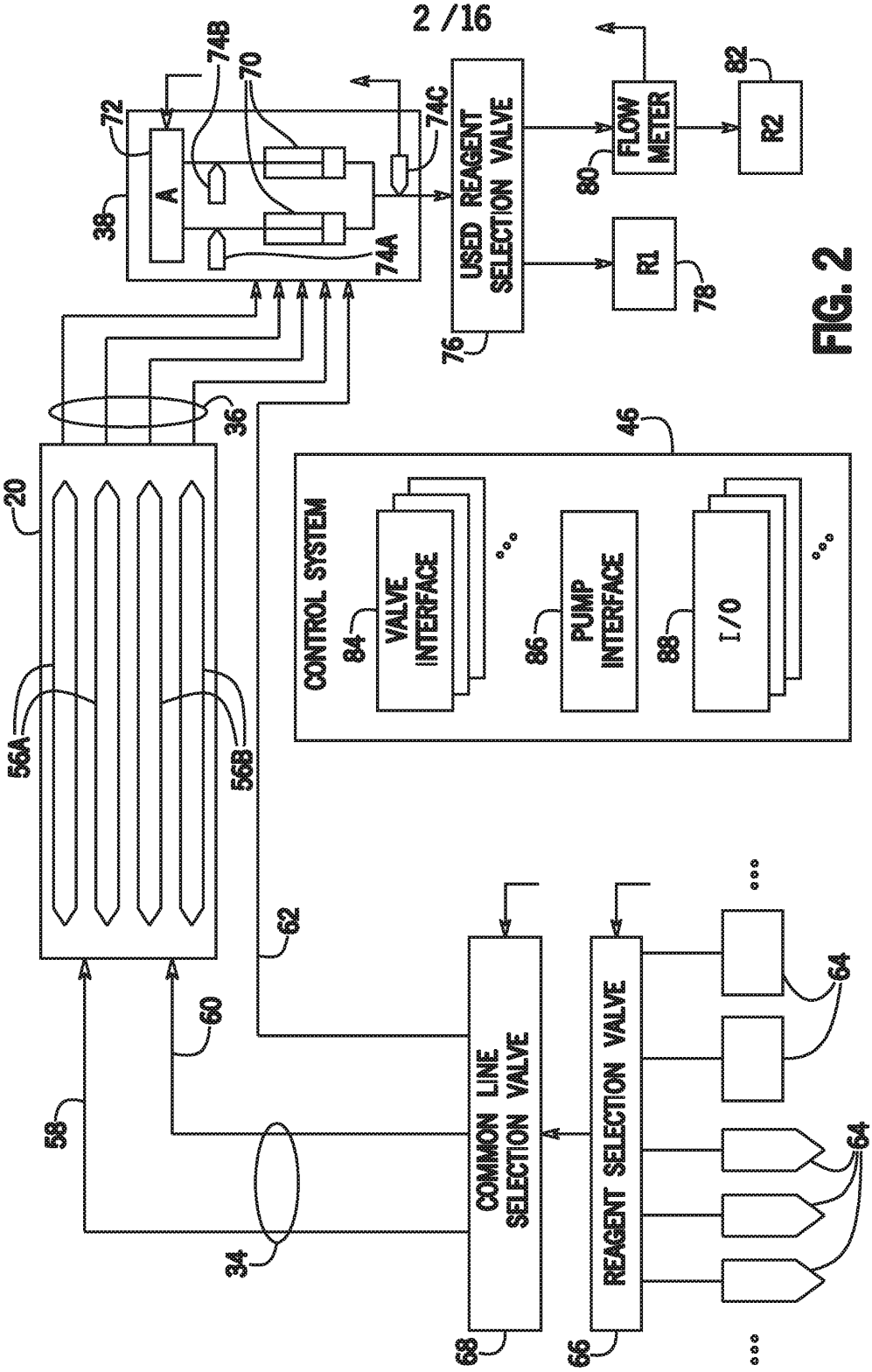

74B
70
72
74C
82
USED REAGENT SELECTION VALVE
FLOW METER
R2
A
38
80
74A
R1
78
76
36
46
20
CONTROL SYSTEM
VALVE INTERFACE
84
PUMP INTERFACE
86
I/O
88
56A
56B
62
60
58
COMMON LINE SELECTION VALVE
REAGENT SELECTION VALVE
64
34
68
66

FIG. 2

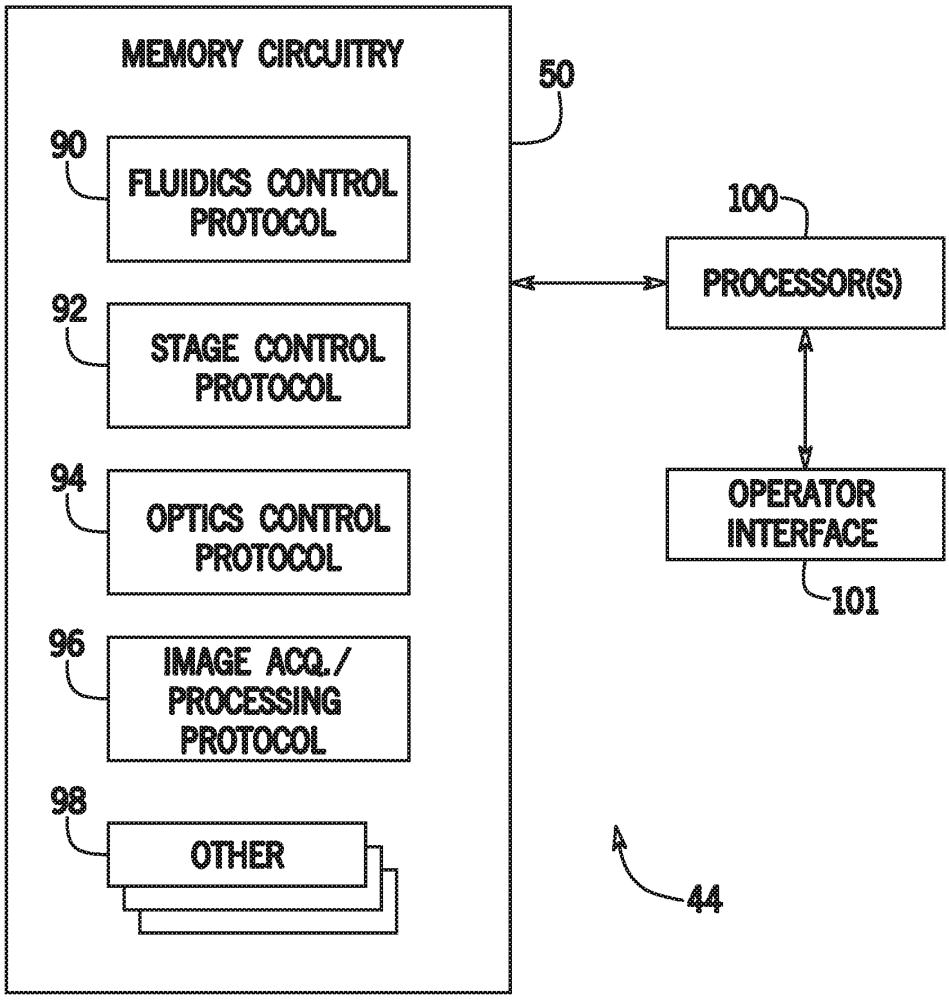

MEMORY CIRCUITRY
50
90
FLUIDICS CONTROL PROTOCOL
92
STAGE CONTROL PROTOCOL
94
OPTICS CONTROL PROTOCOL
96
IMAGE ACQ./ PROCESSING PROTOCOL
98
OTHER
100
PROCESSOR(S)
OPERATOR INTERFACE
101
44

FIG. 3

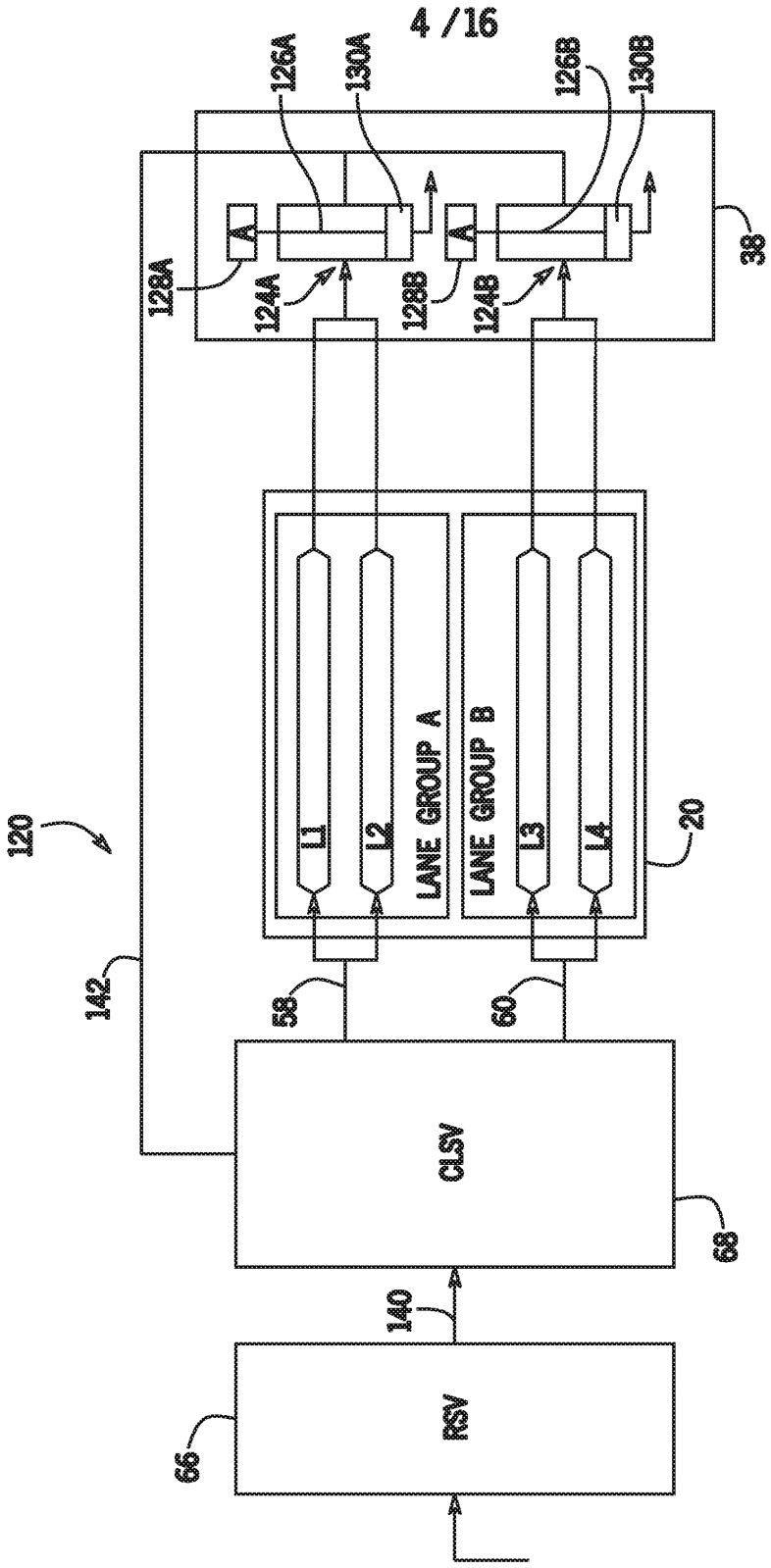

126A
130A
126B
130B
38
128A
124A
128B
124B
120
L1
L2
LANE GROUP A
LANE GROUP B
L3
L4
20
142
58
60
CLSV
68
140
RSV
66

FIG. 4

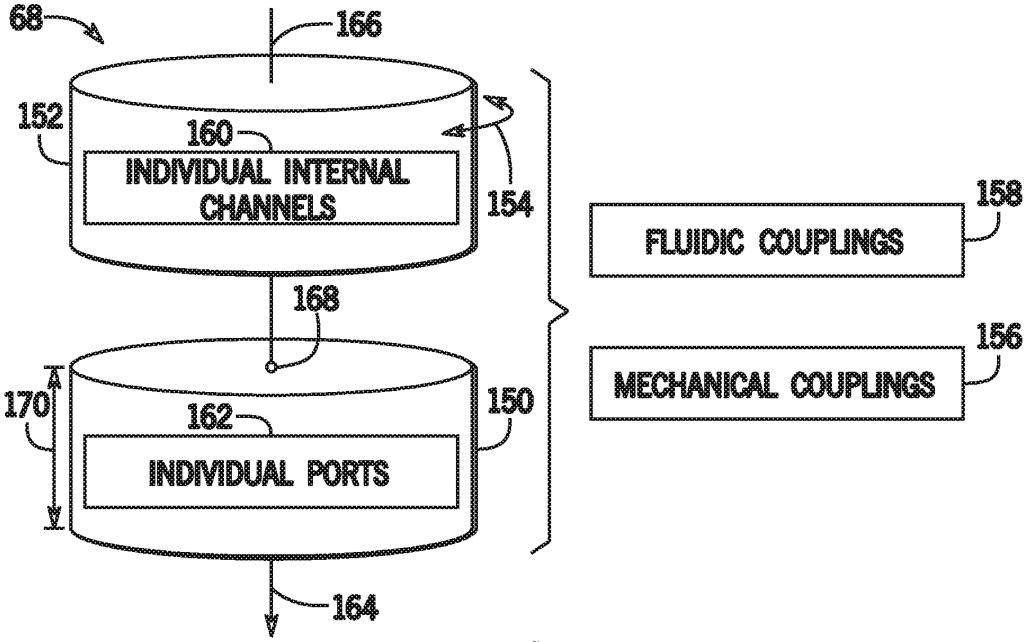

68
166
152
160
INDIVIDUAL INTERNAL CHANNELS
154
158
FLUIDIC COUPLINGS
168
156
MECHANICAL COUPLINGS
170
162
150
INDIVIDUAL PORTS
164

FIG. 5

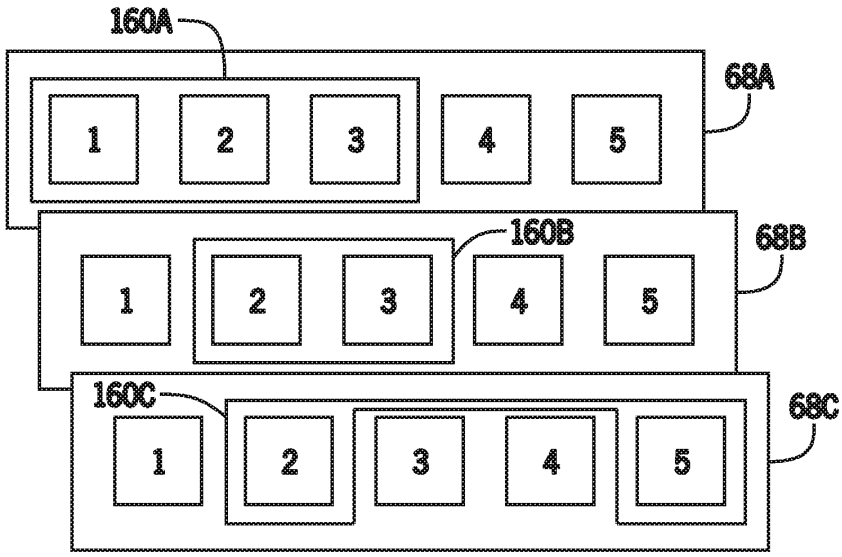

160A
68A
1
2
3
4
5
160B
68B
1
2
3
4
5
160C
68C
1
2
3
4
5

FIG. 6

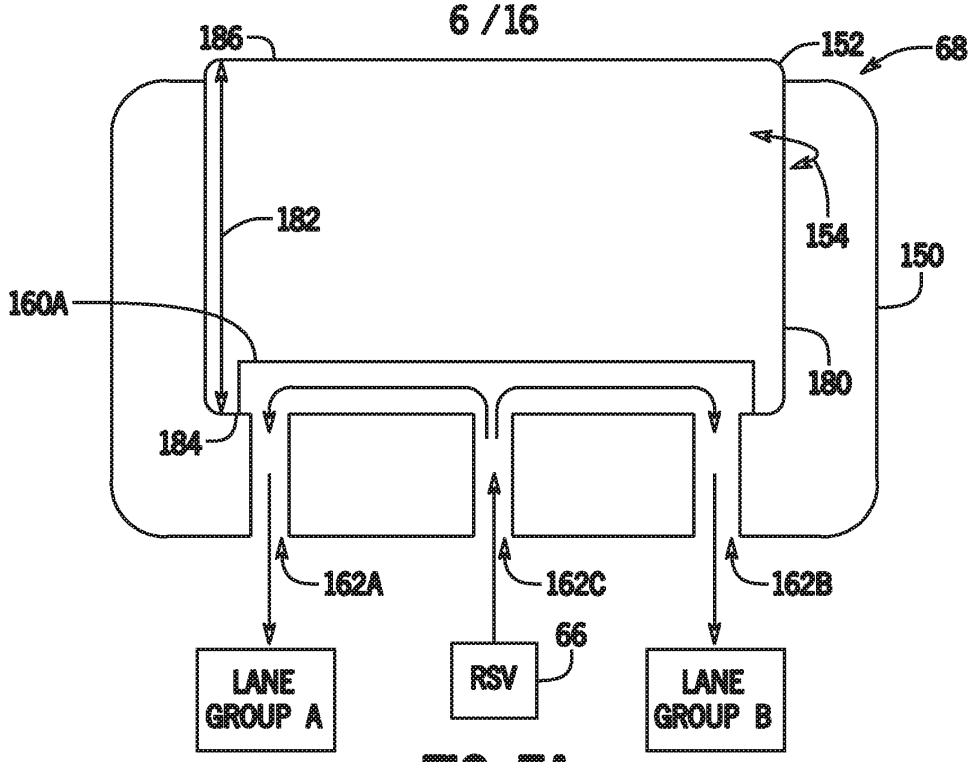

186
152
68
182
154
150
160A
180
184
162A
162C
162B
66
RSV
LANE GROUP A
LANE GROUP B

FIG. 7A

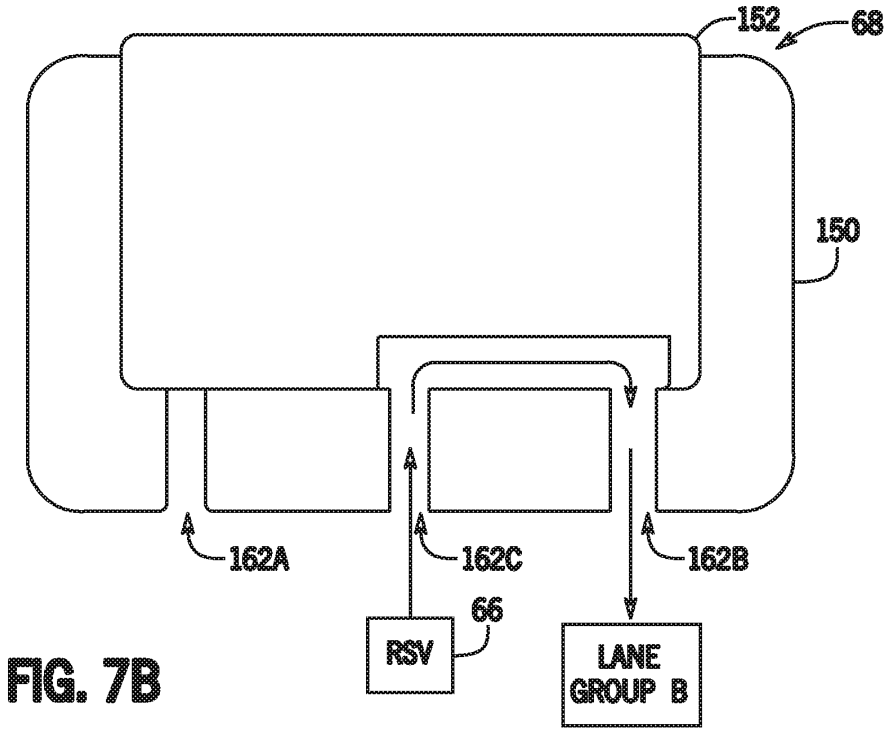
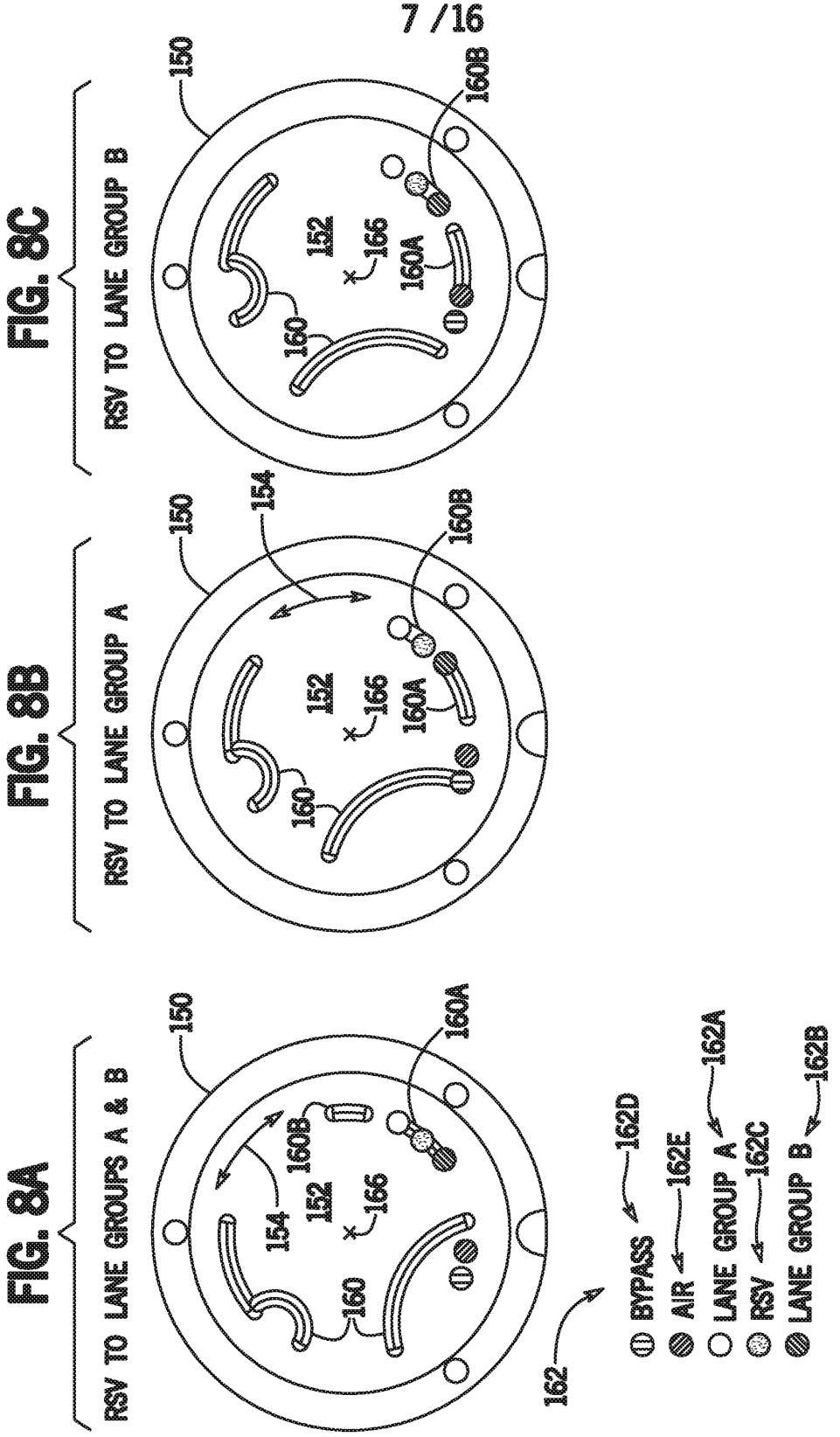
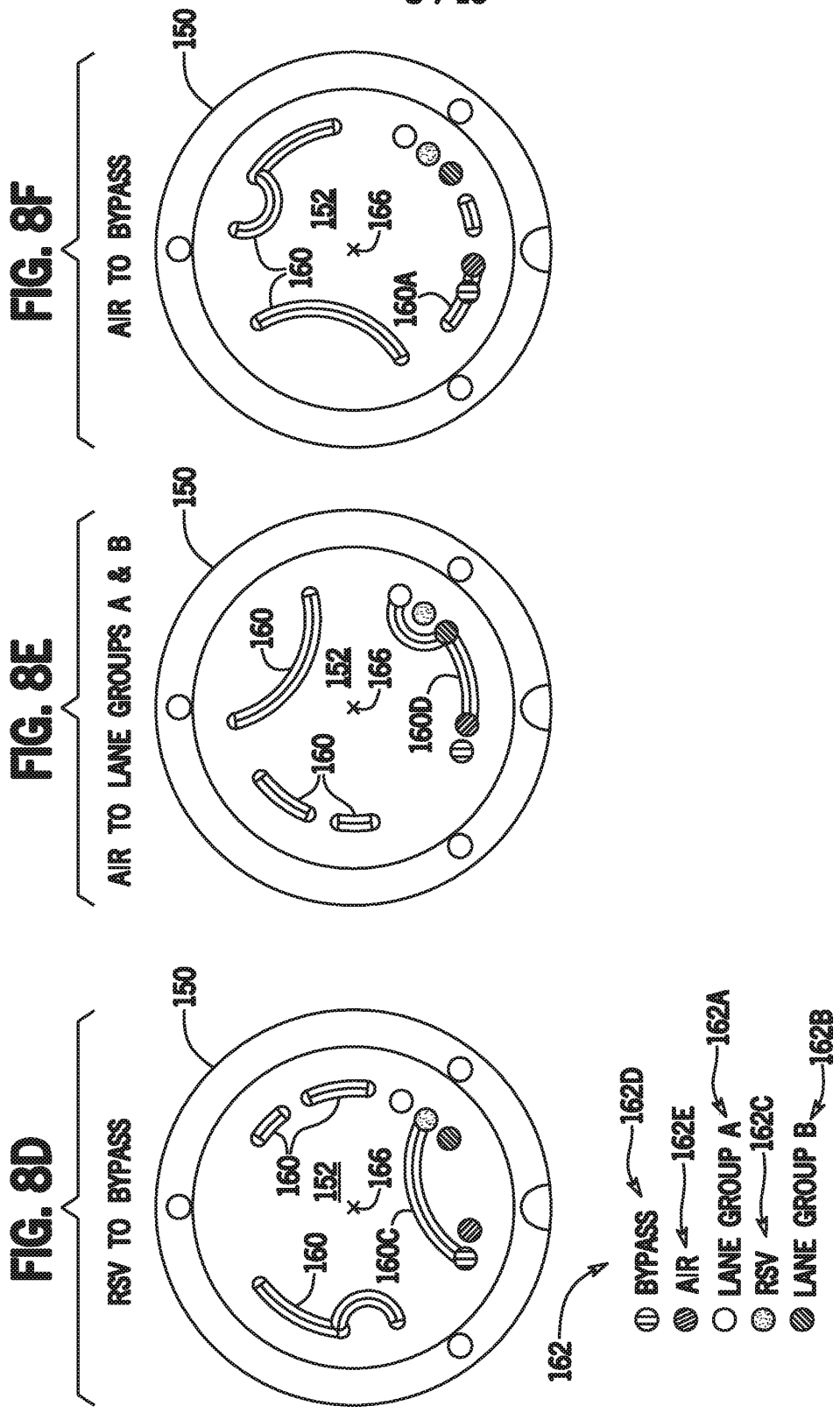

152
68
150
162A
162C
162B
66
RSV
LANE GROUP B

FIG. 7B


FIG. 8A
RSV TO LANE GROUPS A & B
FIG. 8B
RSV TO LANE GROUP A
FIG. 8C
RSV TO LANE GROUP B
150
154
160B
160A
152
166
160
162
BYPASS
AIR
LANE GROUP A
RSV
LANE GROUP B
162D
162E
162A
162C
162B


FIG. 8D
RSV TO BYPASS
150
160
152
166
160C
160
162
BYPASS
162D
AIR
162E
LANE GROUP A
162A
RSV
162C
LANE GROUP B
162B
FIG. 8E
AIR TO LANE GROUPS A & B
150
160
152
166
160D
160
FIG. 8F
AIR TO BYPASS
150
160
152
166
160A

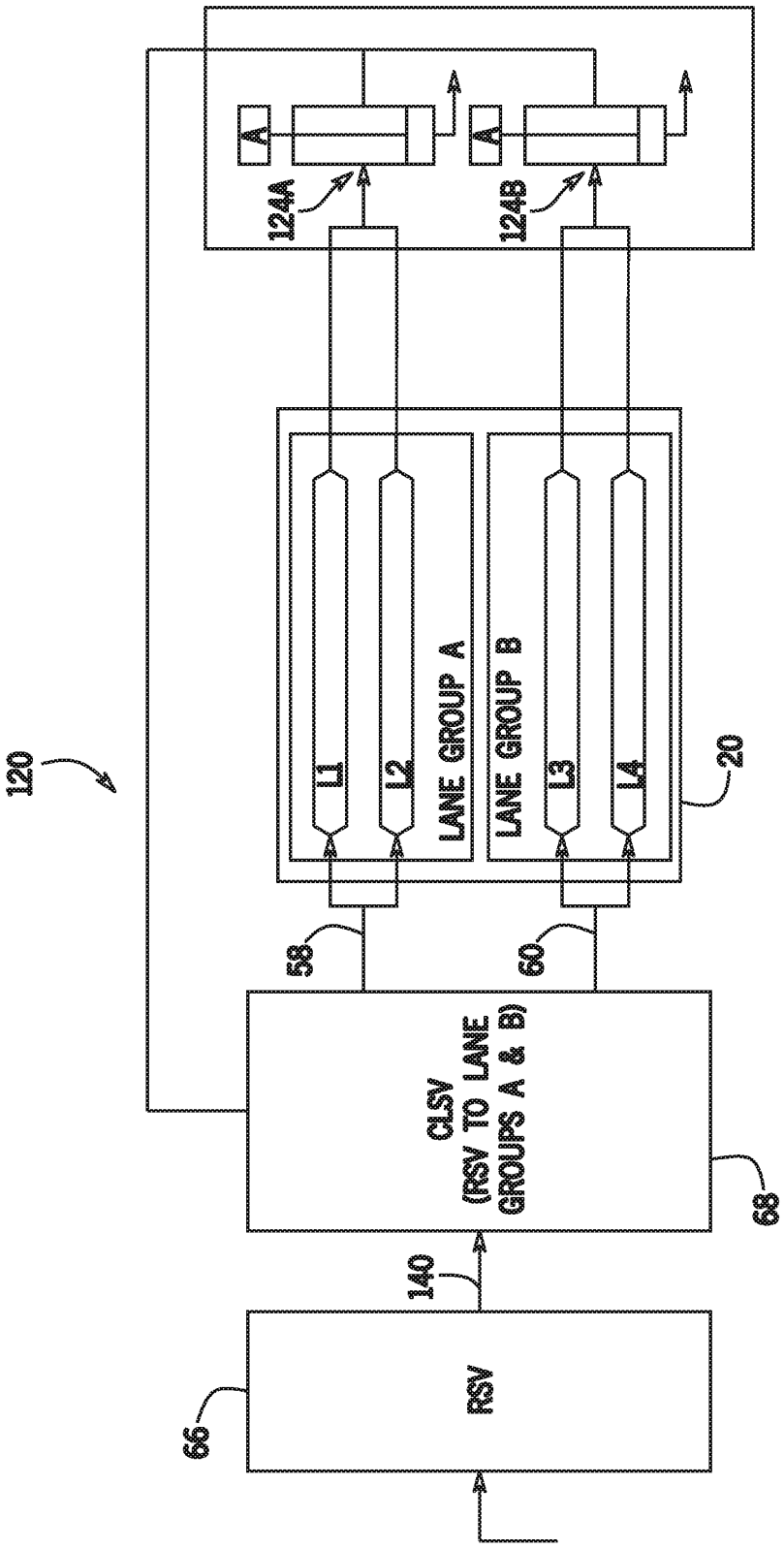

A
A
124A
124B
LANE GROUP A
LANE GROUP B
L1
L2
L3
L4
20
120
58
60
CLSV
(RSV TO LANE
GROUPS A & B)
68
140
RSV
66

FIG. 9A

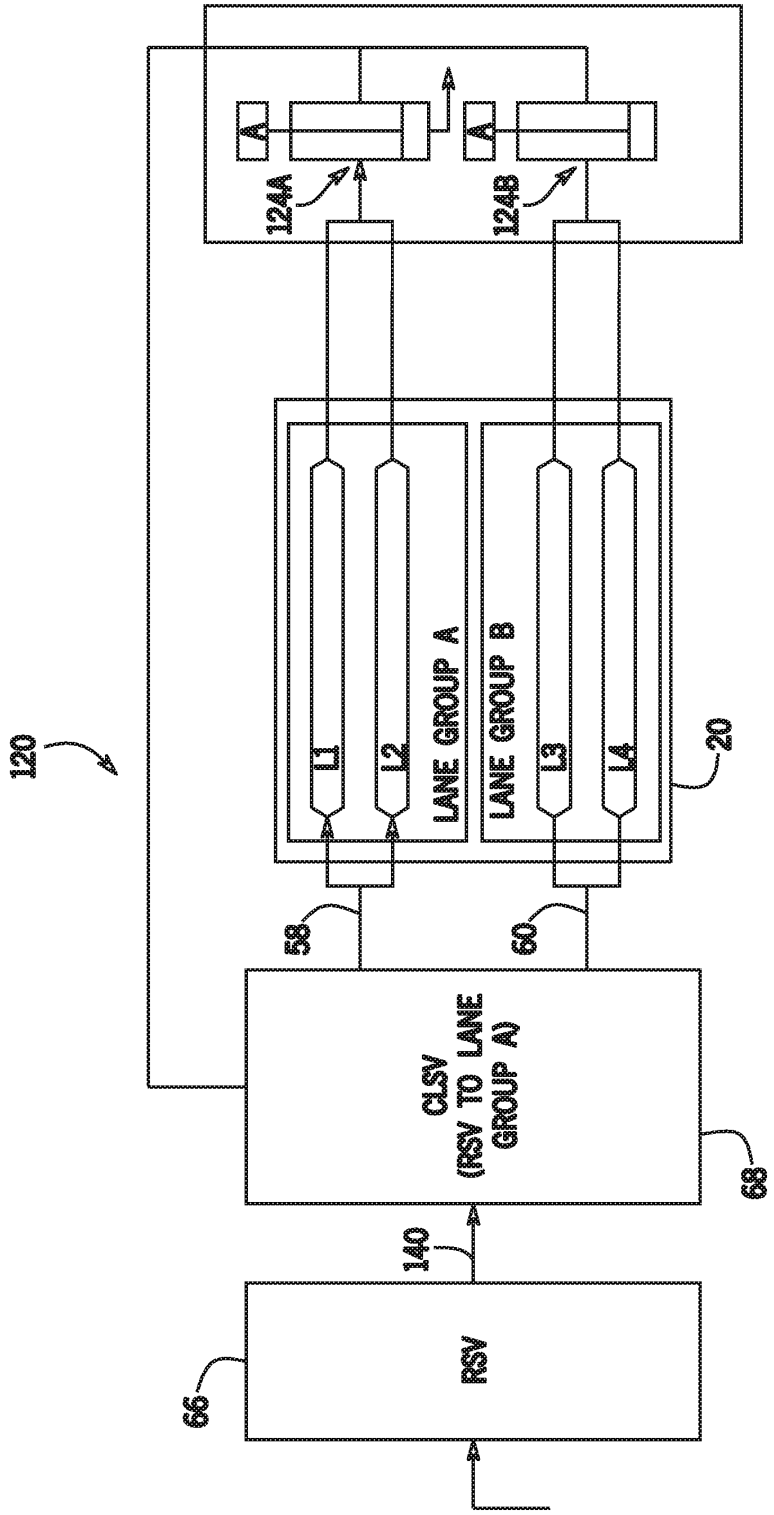

A
A
124A
124B
L1
L2
LANE GROUP A
LANE GROUP B
L3
L4
20
120
58
60
CLSV
(RSV TO LANE
GROUP A)
68
140
RSV
66

FIG. 9B

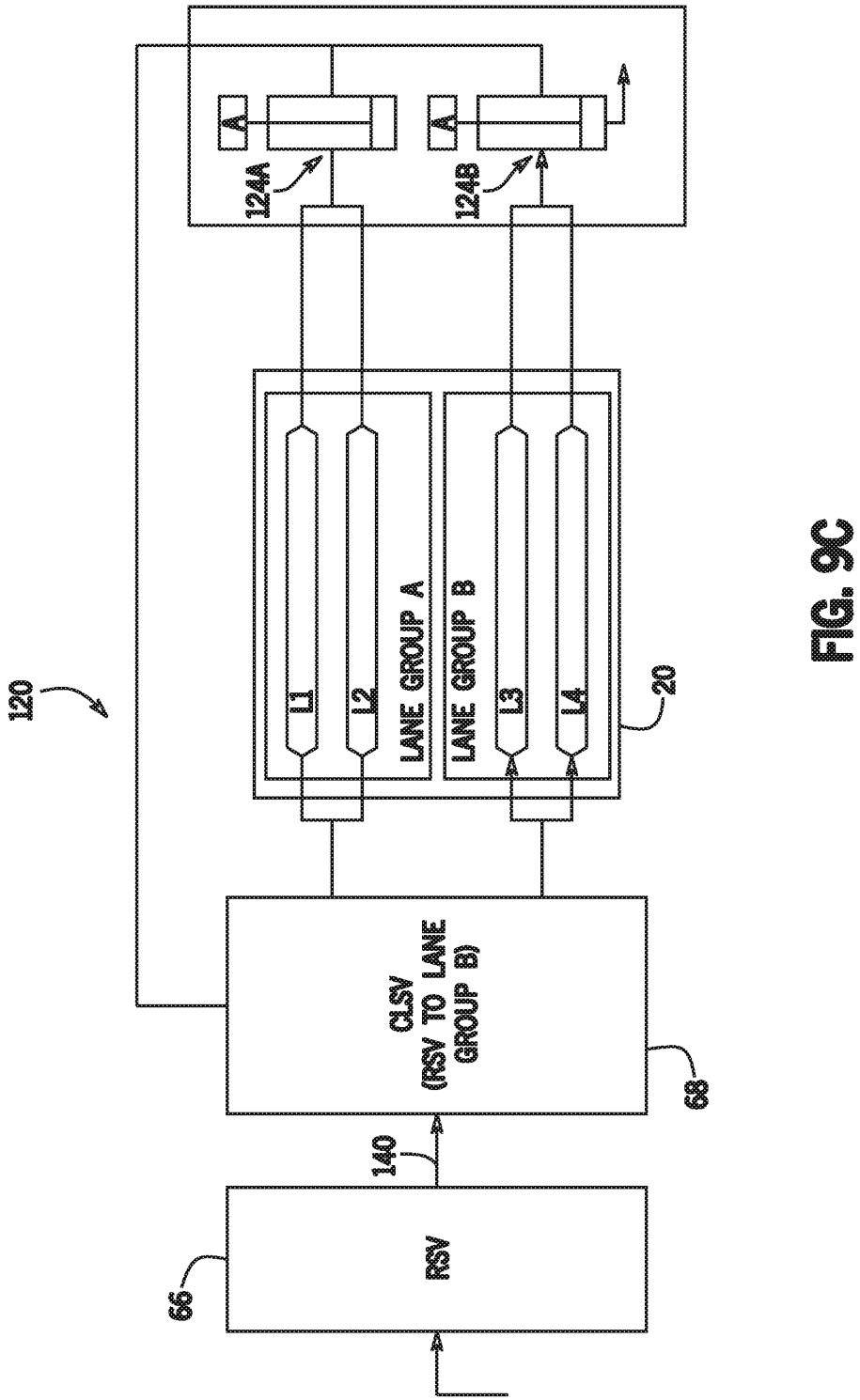

120
124A
124B
L1
L2
LANE GROUP A
LANE GROUP B
L3
L4
20
CLSV
(RSV TO LANE
GROUP B)
68
140
RSV
66

FIG. 9C

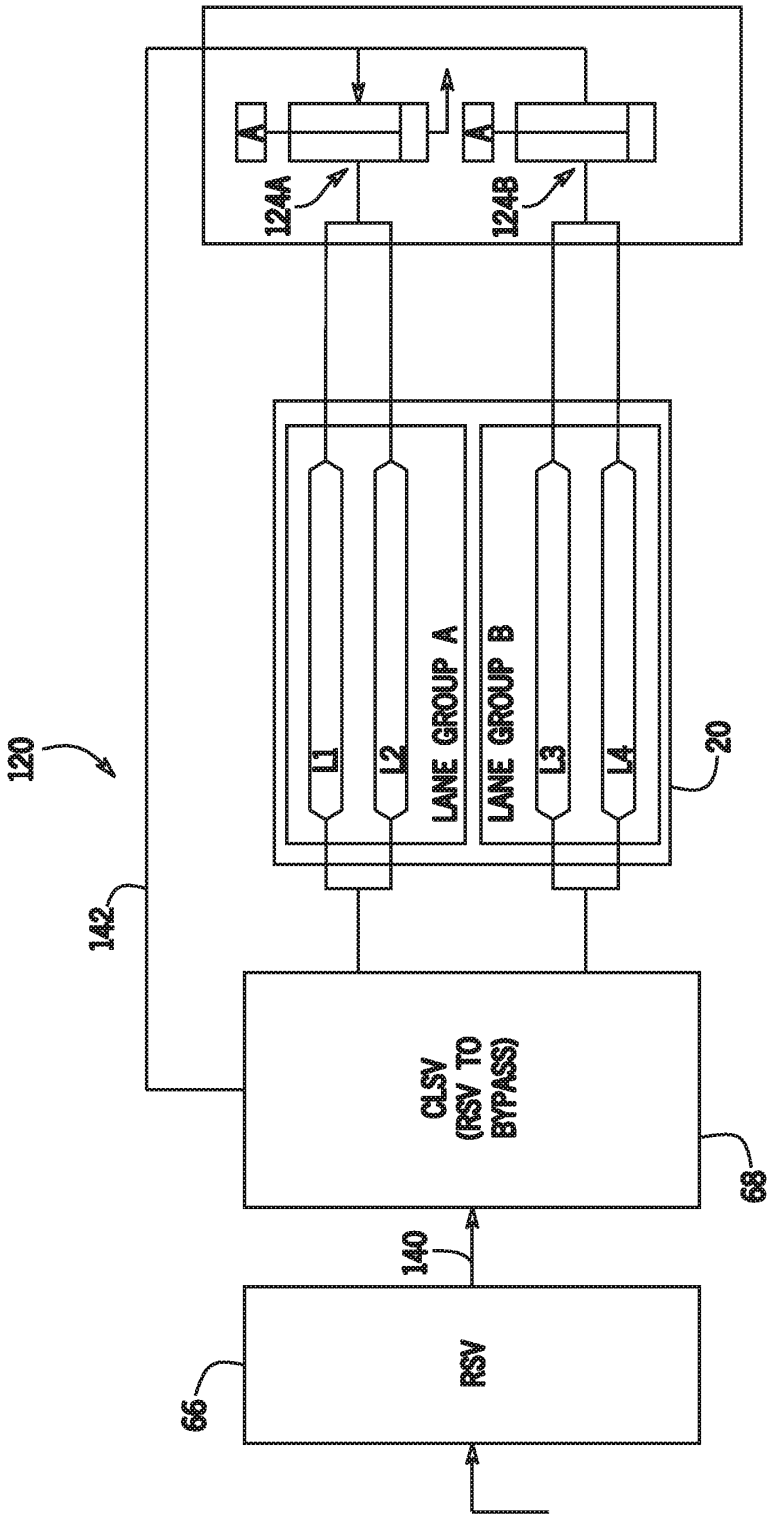

A
A
124A
124B
L1
L2
LANE GROUP A
LANE GROUP B
L3
L4
20
120
142
CLSV
(RSV TO
BYPASS)
68
140
RSV
66

FIG. 9D

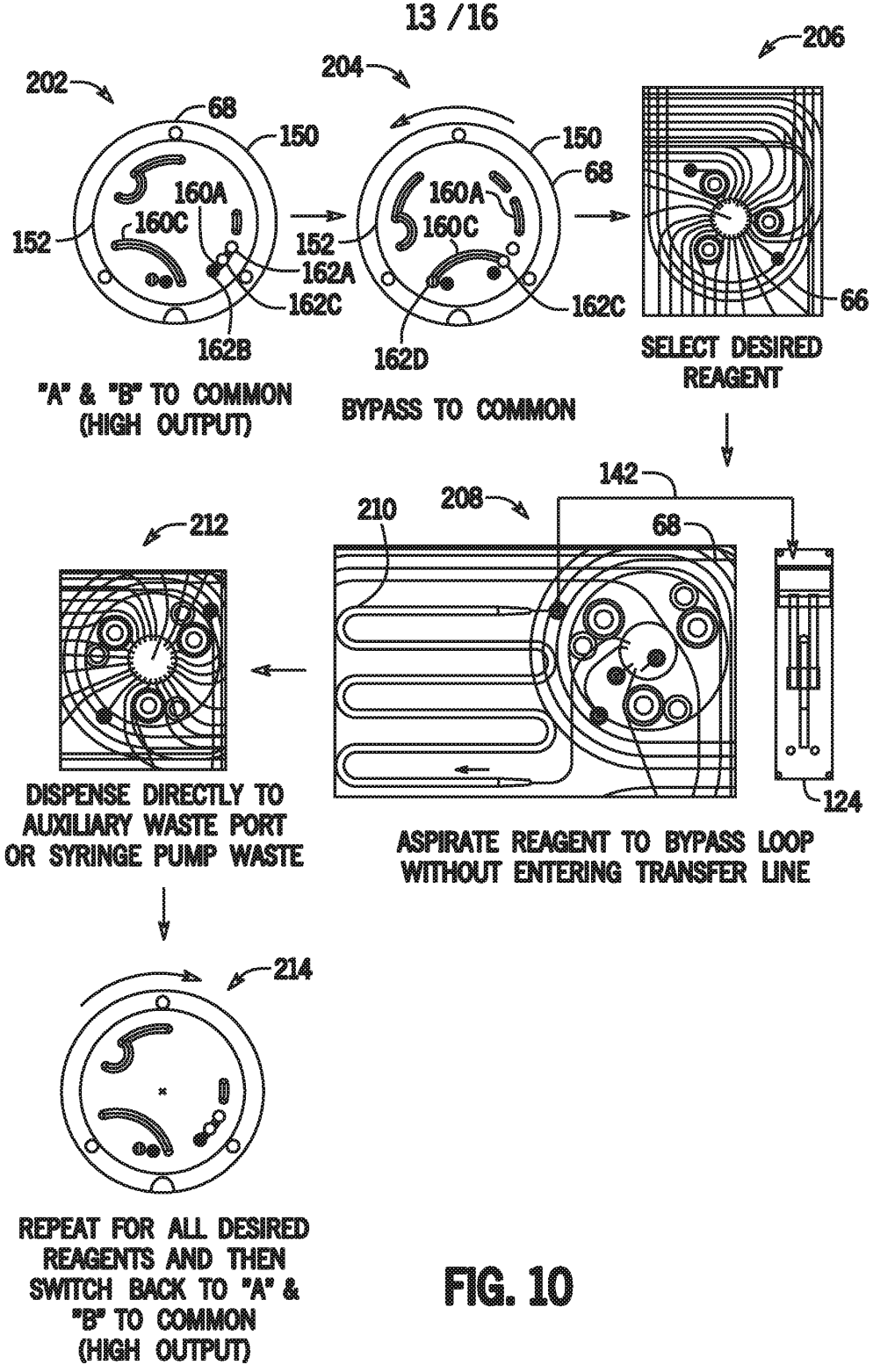

202
68
150
160A
160C
152
162A
162C
162B
"A" & "B" TO COMMON
(HIGH OUTPUT)
204
150
68
160A
160C
152
162C
162D
BYPASS TO COMMON
206
66
SELECT DESIRED
REAGENT
142
208
210
68
124
ASPIRATE REAGENT TO BYPASS LOOP
WITHOUT ENTERING TRANSFER LINE
212
DISPENSE DIRECTLY TO
AUXILIARY WASTE PORT
OR SYRINGE PUMP WASTE
214
REPEAT FOR ALL DESIRED
REAGENTS AND THEN
SWITCH BACK TO "A" &
"B" TO COMMON
(HIGH OUTPUT)

FIG. 10

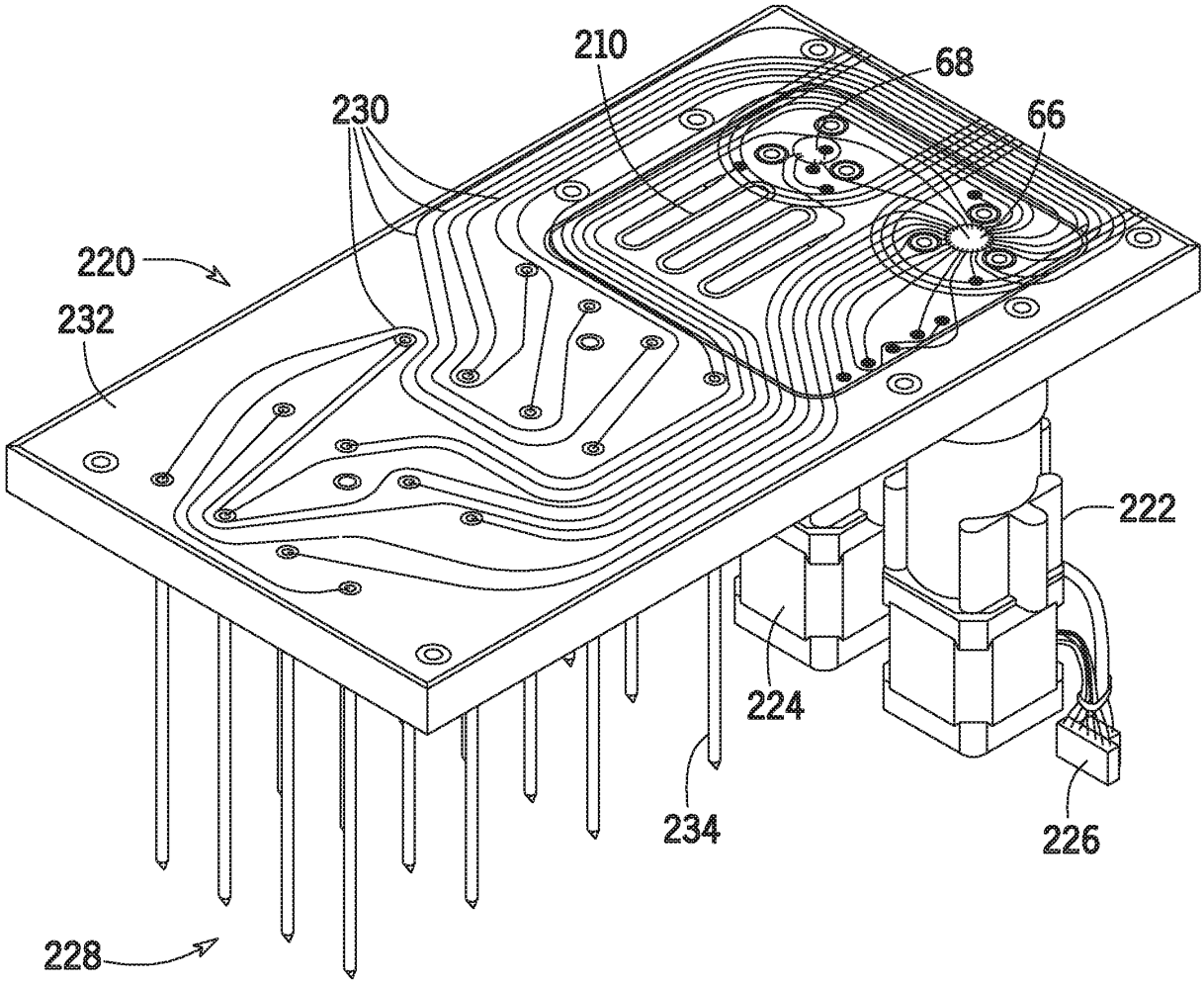



FIG. 11

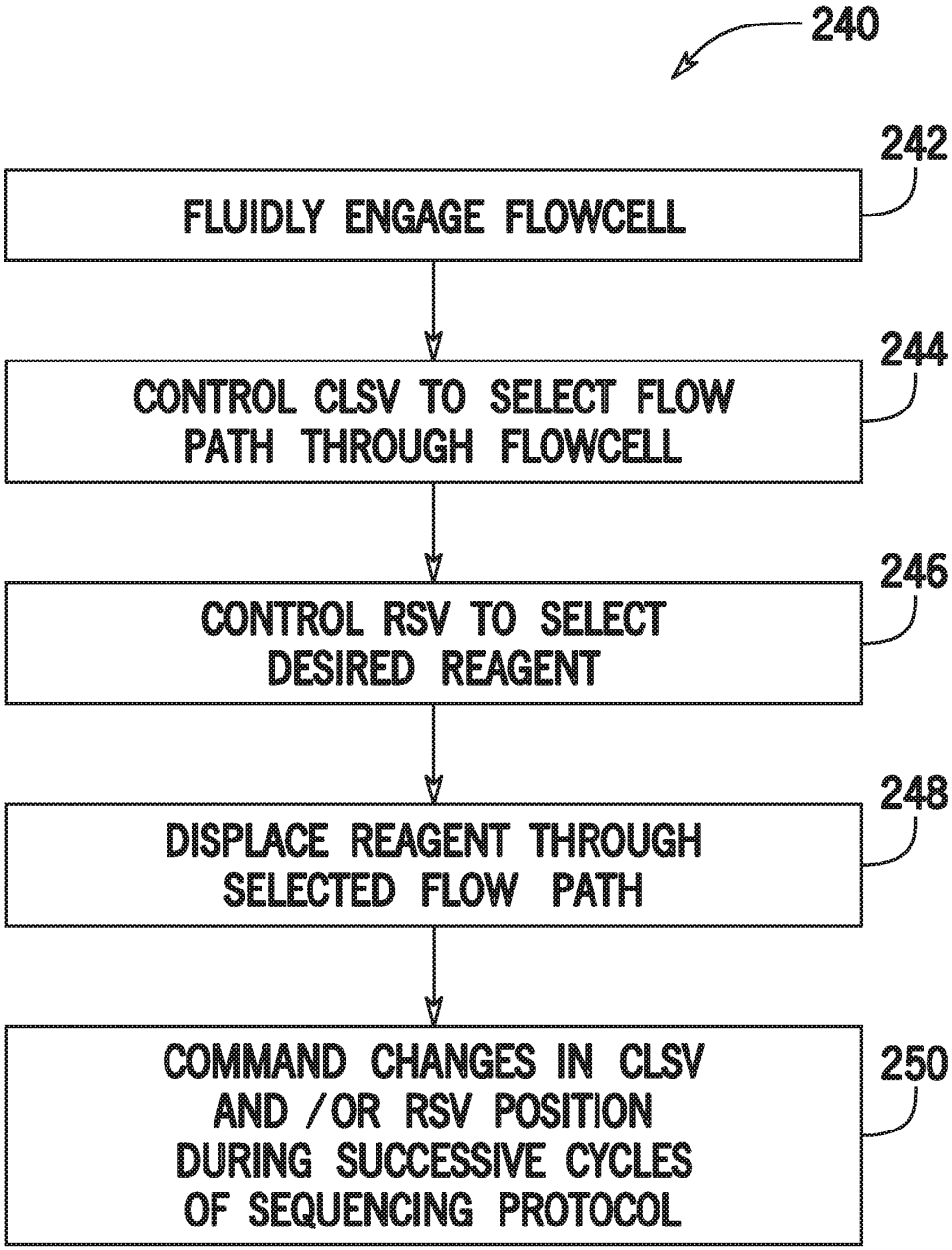

240
242
FLUIDLY ENGAGE FLOWCELL
244
CONTROL CLSV TO SELECT FLOW PATH THROUGH FLOWCELL
246
CONTROL RSV TO SELECT DESIRED REAGENT
248
DISPLACE REAGENT THROUGH SELECTED FLOW PATH
250
COMMAND CHANGES IN CLSV AND /OR RSV POSITION DURING SUCCESSIVE CYCLES OF SEQUENCING PROTOCOL

FIG. 12

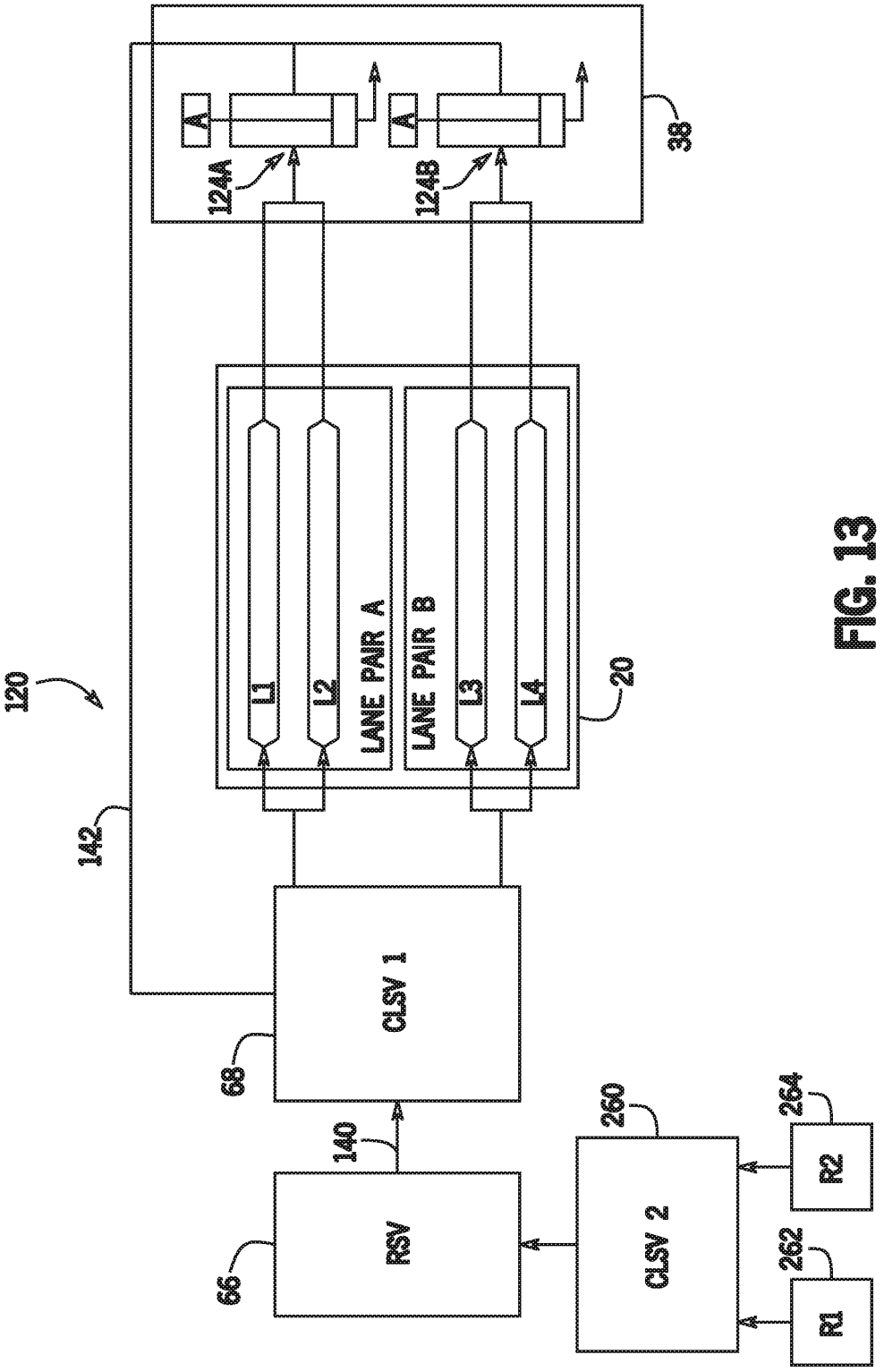

A
A
124A
124B
38
L1
L2
LANE PAIR A
LANE PAIR B
L3
L4
20
120
142
CLSV 1
68
140
260
264
R2
RSV
CLSV 2
66
262
R1

FIG. 13