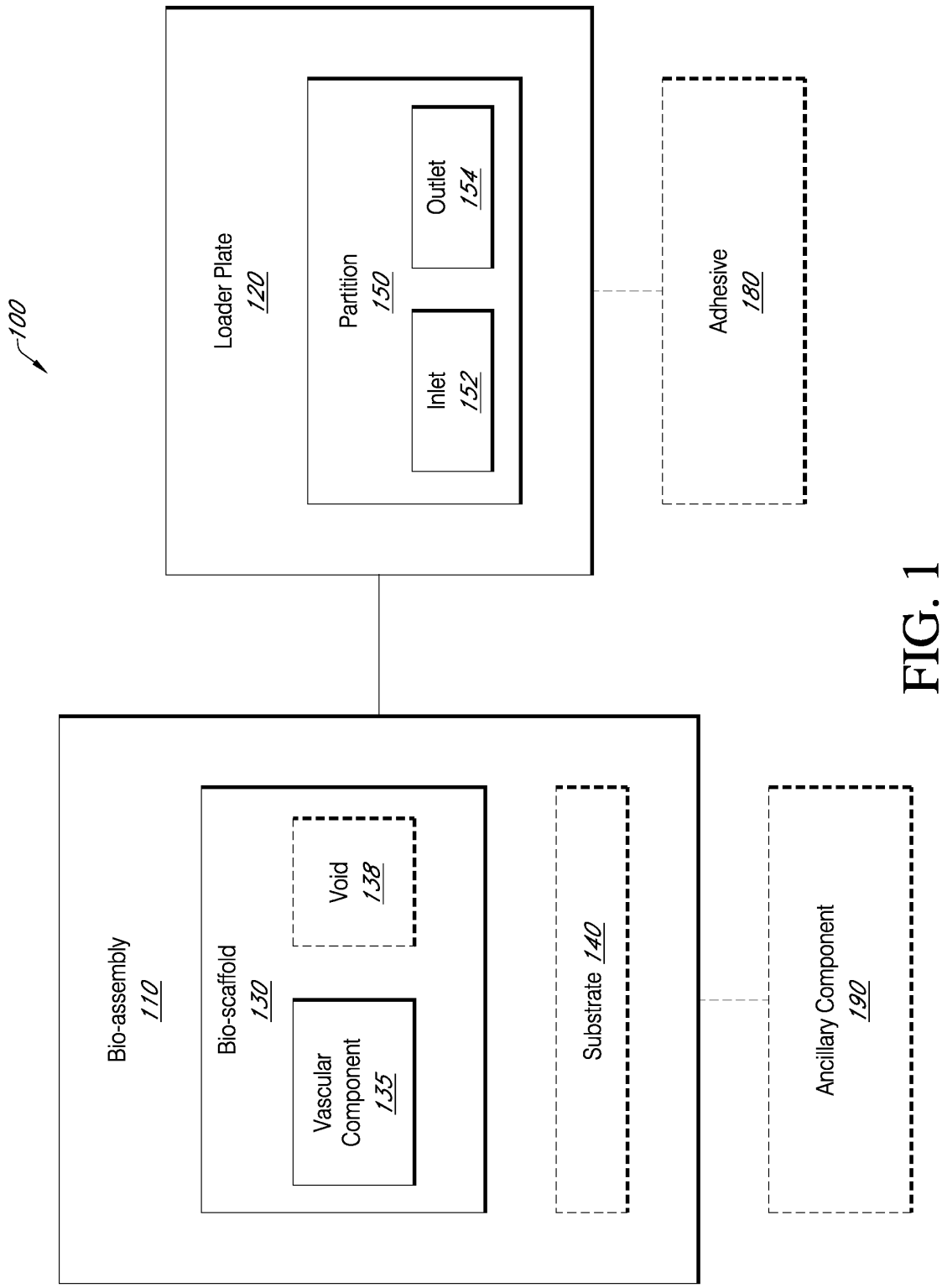

100
Loader Plate
120
Partition
150
Outlet
154
Inlet
152
Adhesive
180
Bio-assembly
110
Bio-scaffold
130
Void
138
Vascular
Component
135
Substrate 140
Ancillary Component
190

FIG. 1

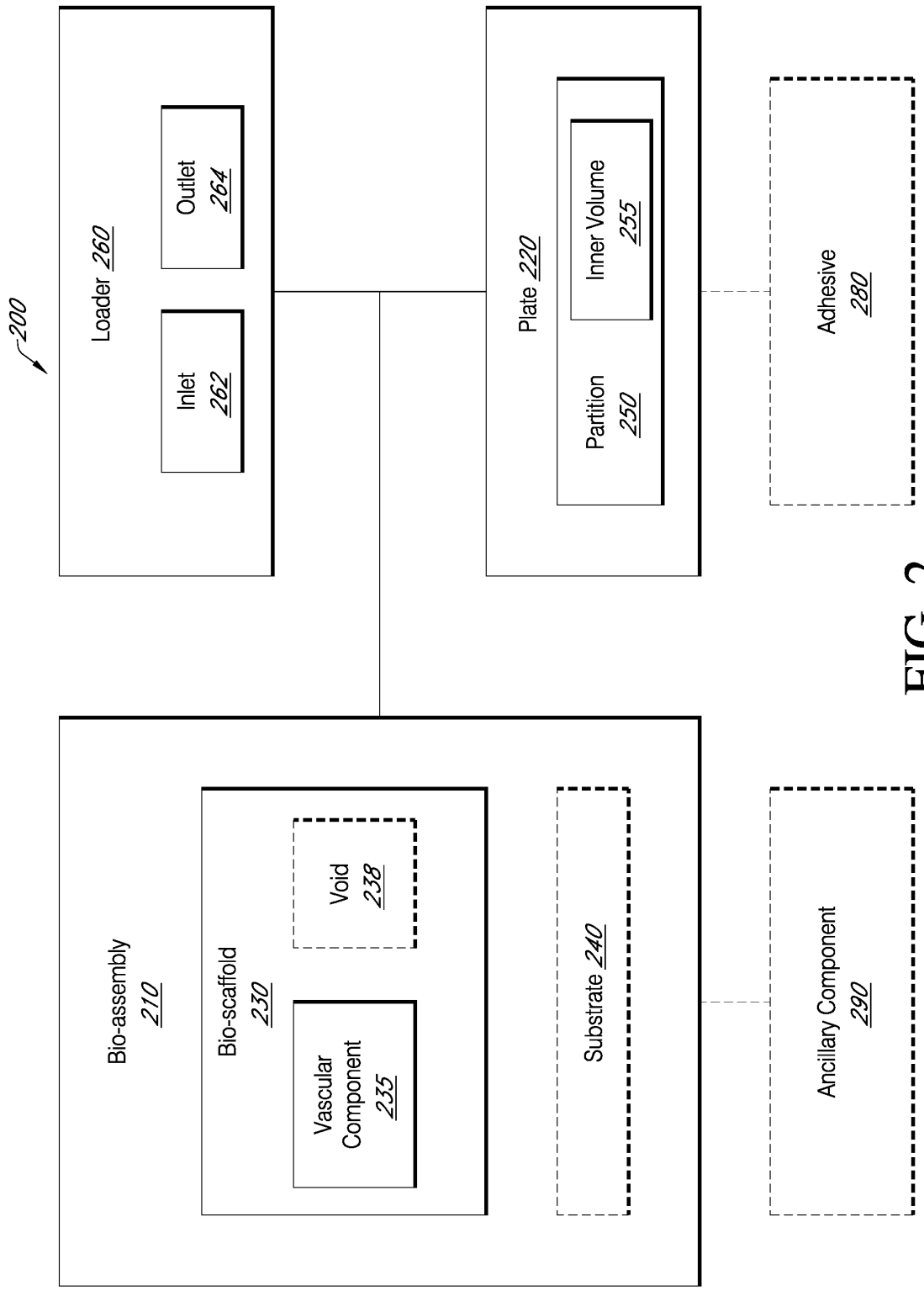

200
Loader 260
Outlet 264
Inlet 262
Plate 220
Inner Volume 255
Partition 250
Adhesive 280
Bio-assembly 210
Bio-scaffold 230
Void 238
Vascular Component 235
Substrate 240
Ancillary Component 290

FIG. 2

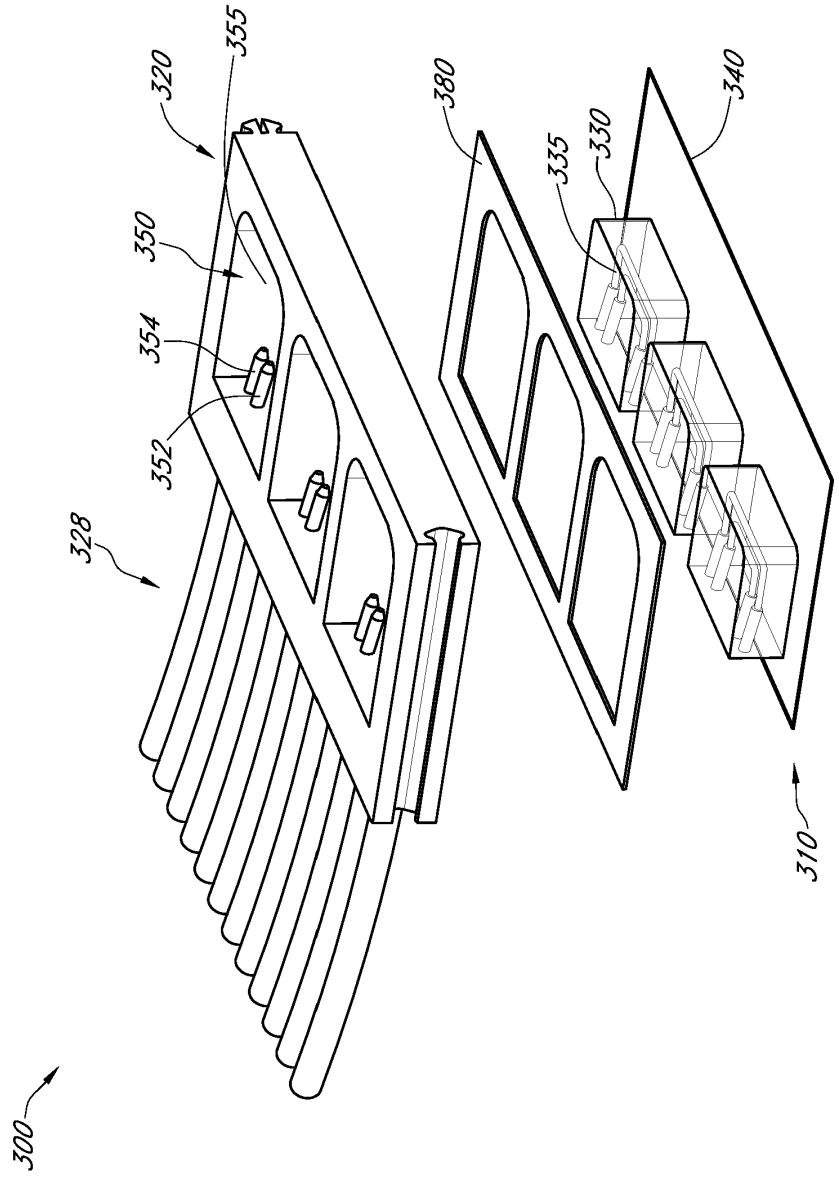


FIG. 3A

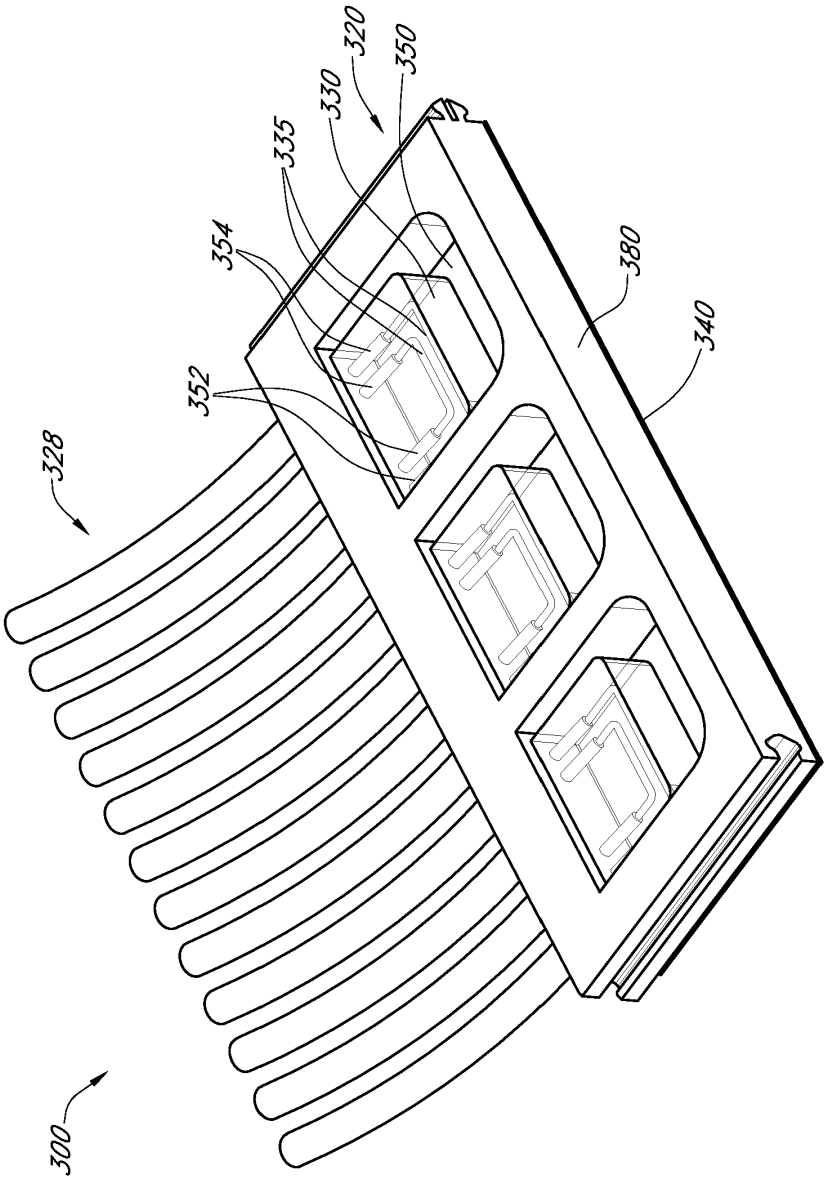


FIG. 3B

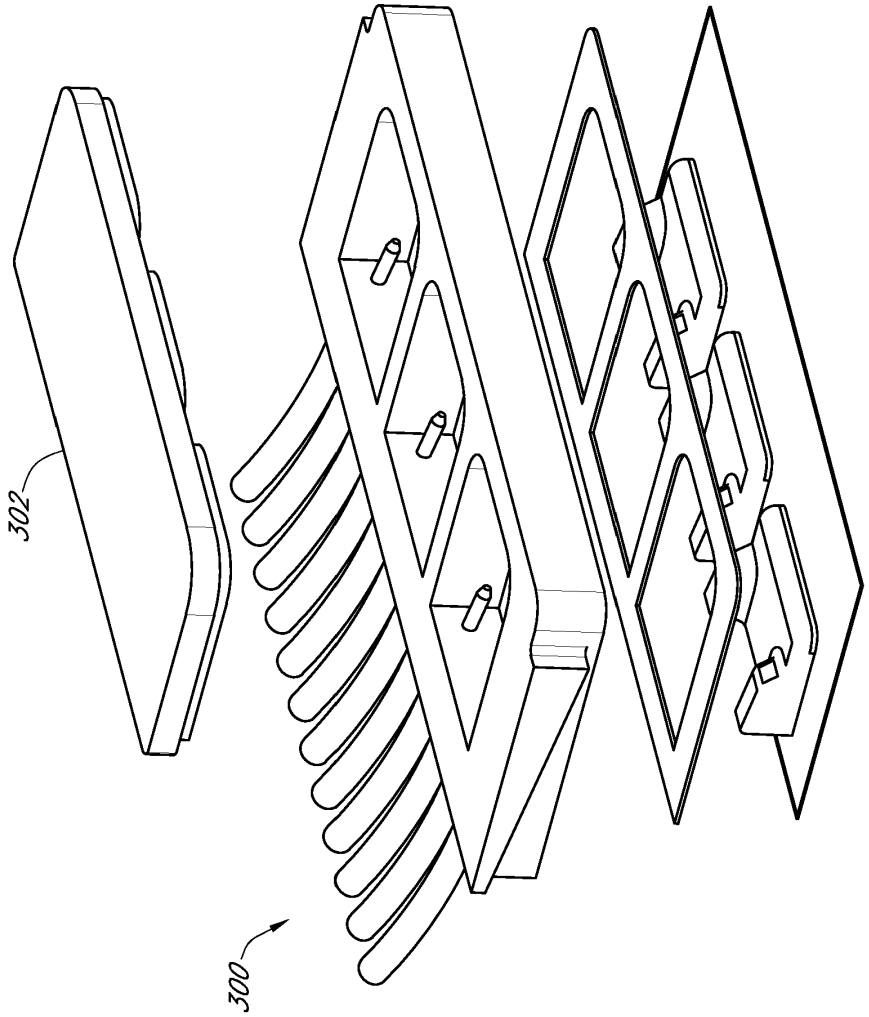


FIG. 3C

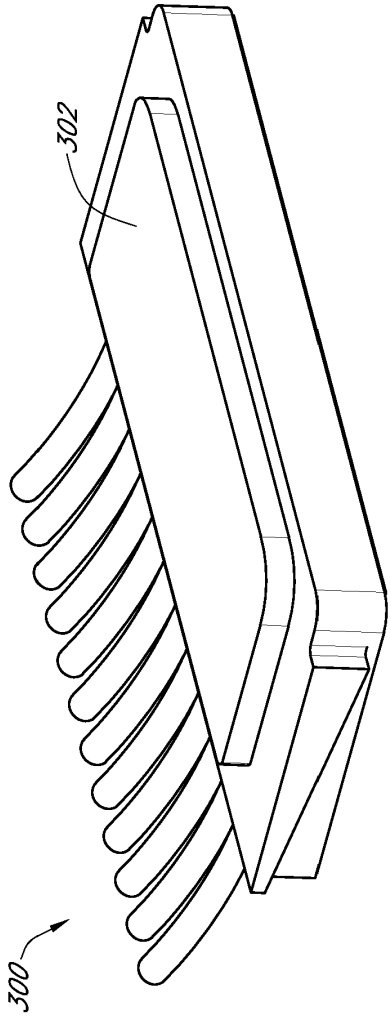


FIG. 3D

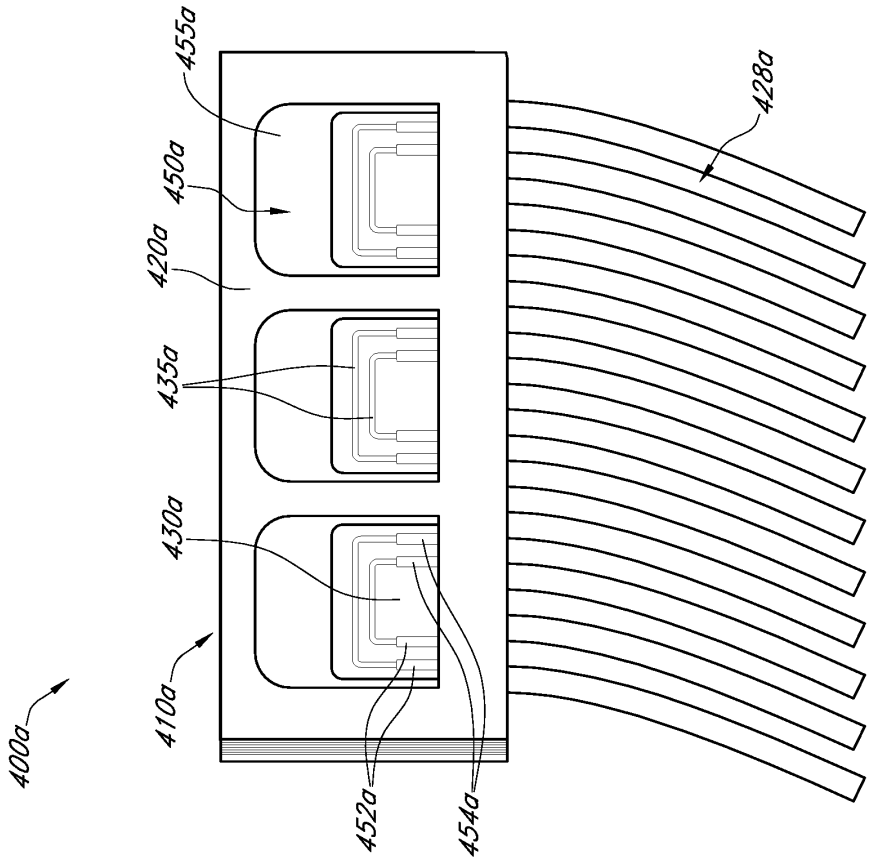


FIG. 4A

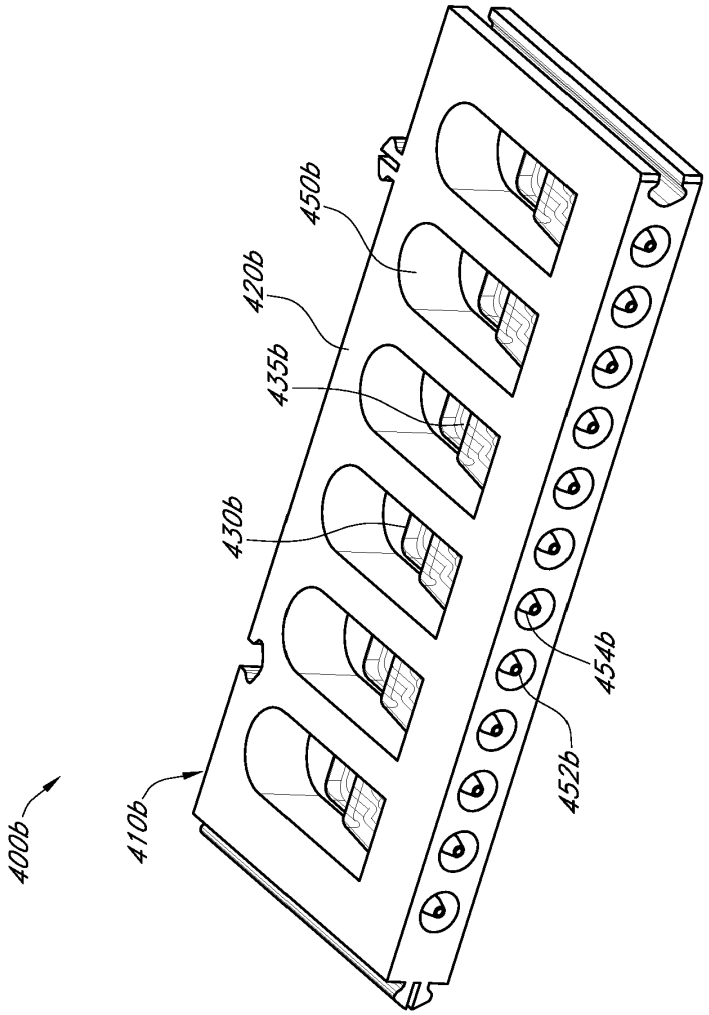


FIG. 4B

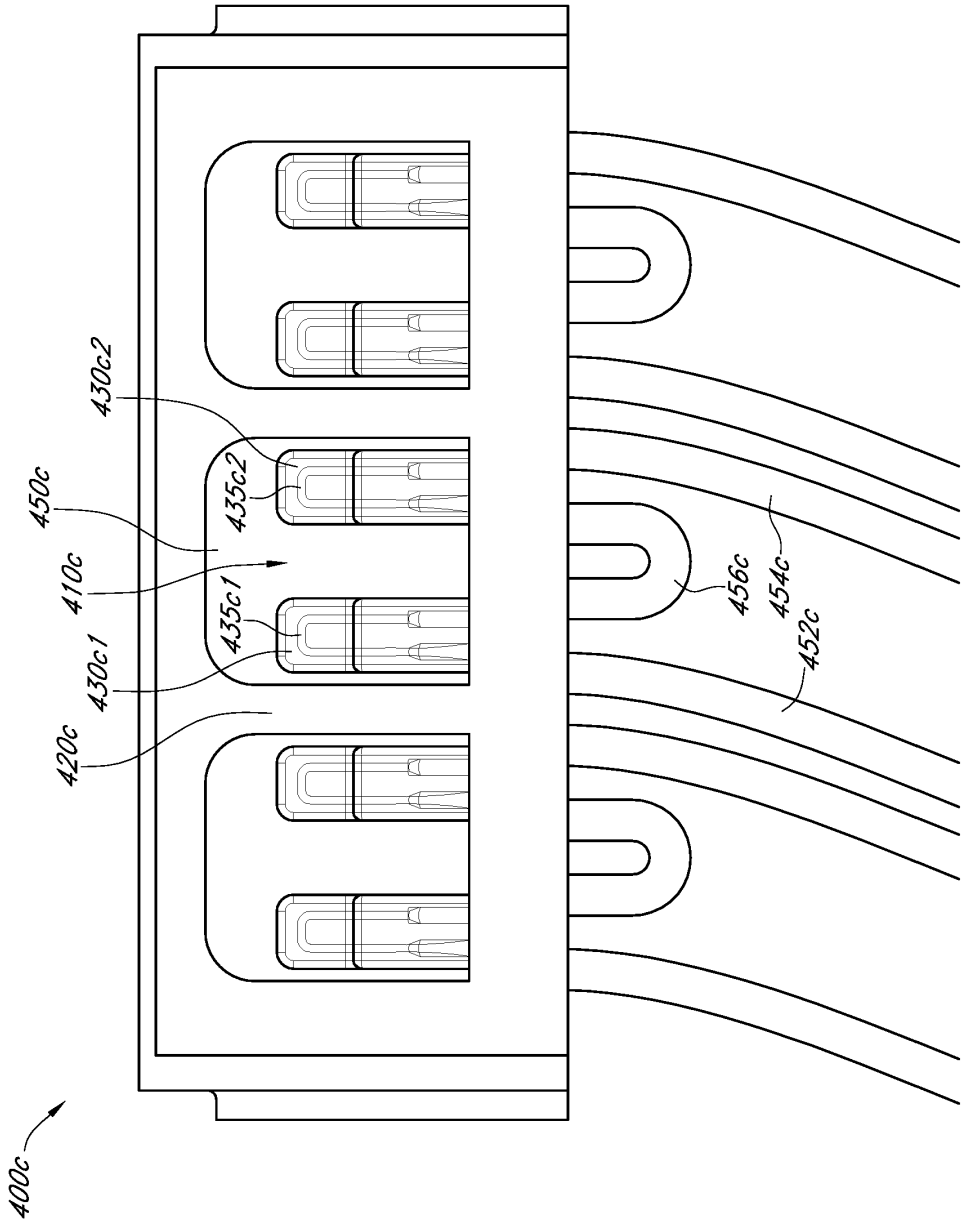


FIG. 4C

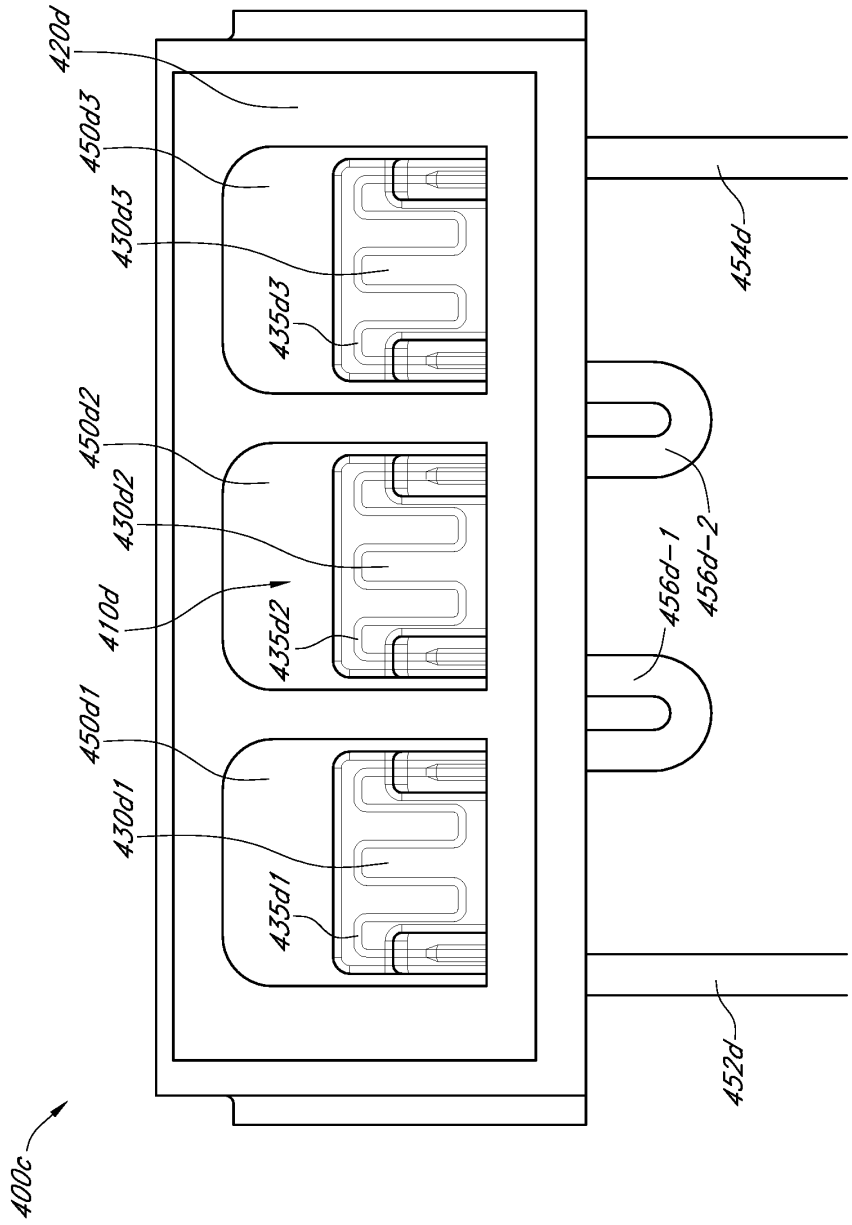

420d
450d3
430d3
435d3
450d2
430d2
410d
435d2
450d1
430d1
435d1
454d
456d-1
456d-2
452d
400c

FIG. 4D

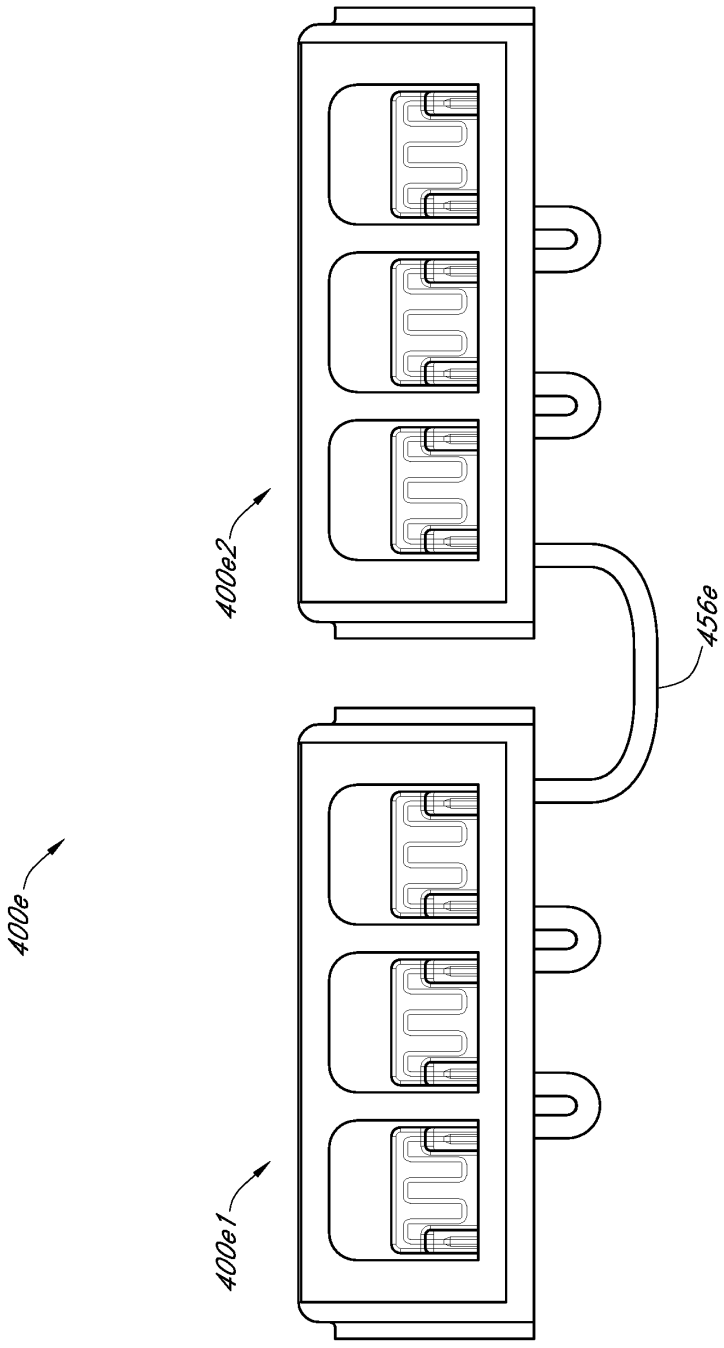


FIG. 4E

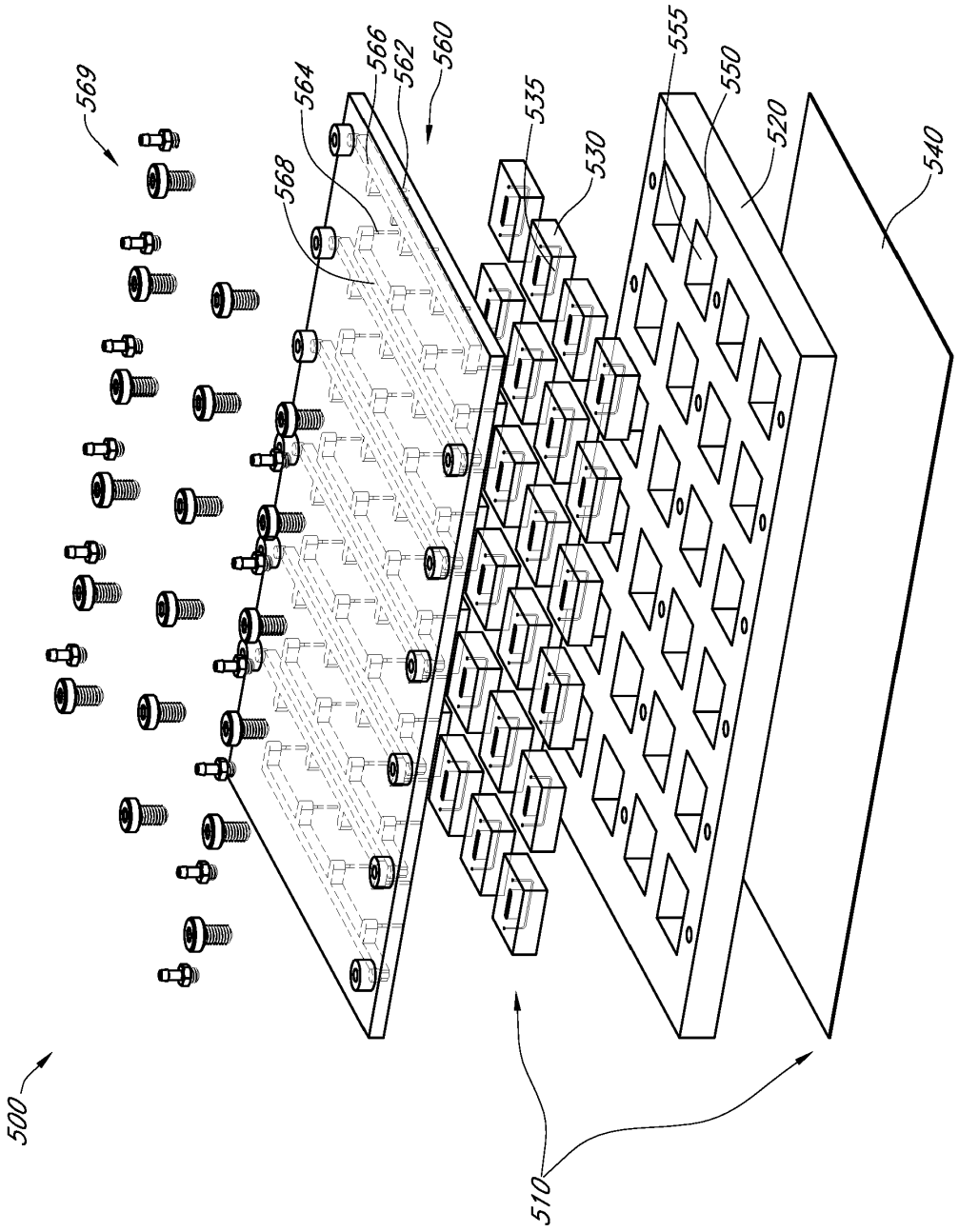


FIG. 5A

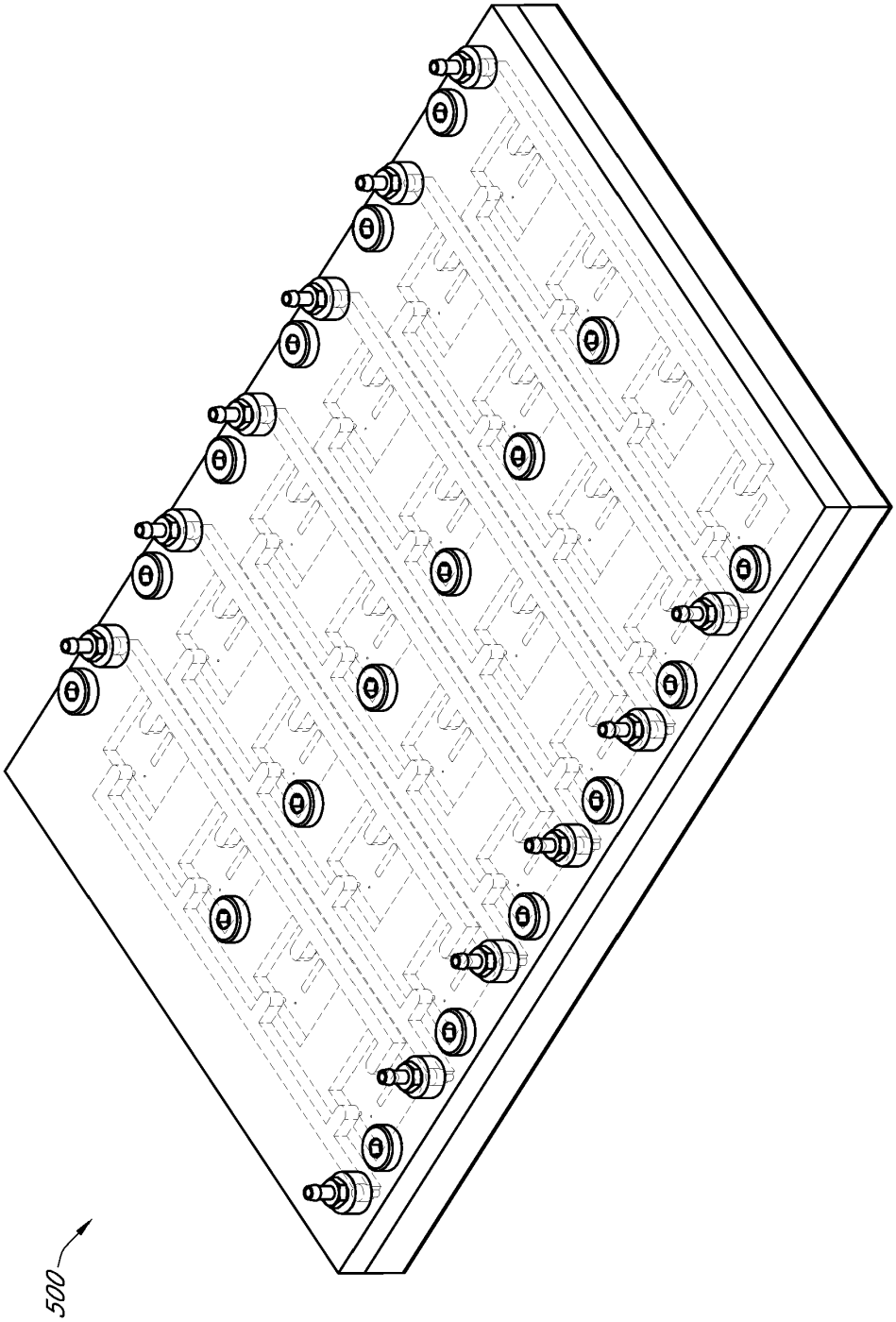


FIG. 5B

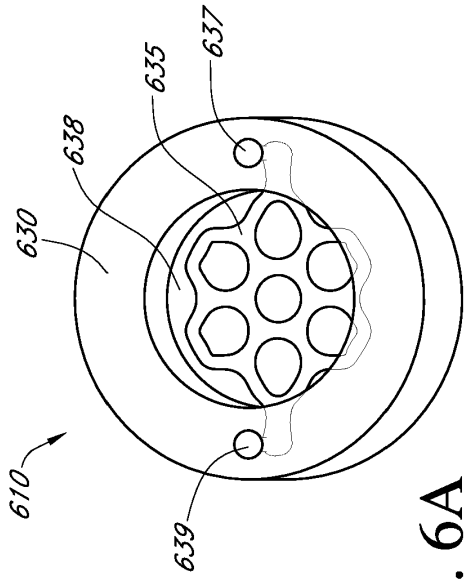


FIG. 6A

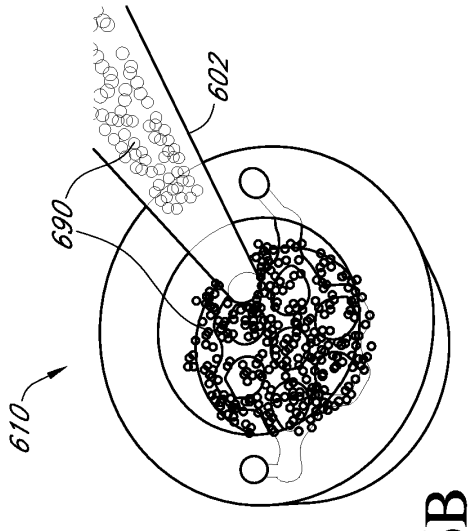


FIG. 6B

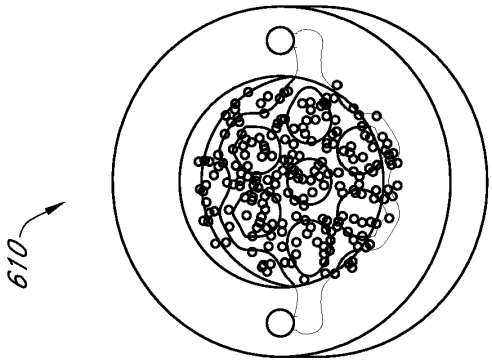


FIG. 6C

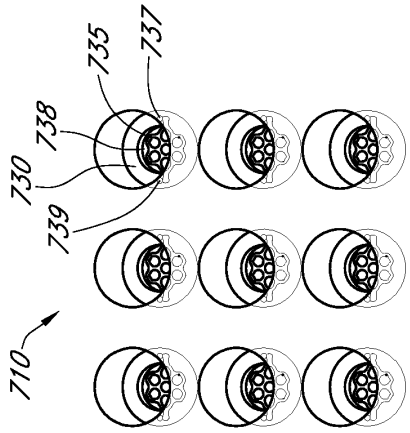


FIG. 7A

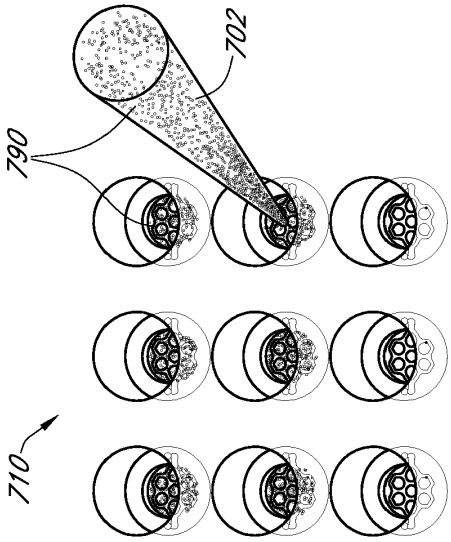


FIG. 7B

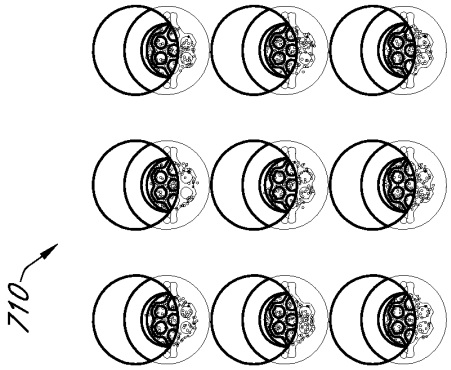


FIG. 7C

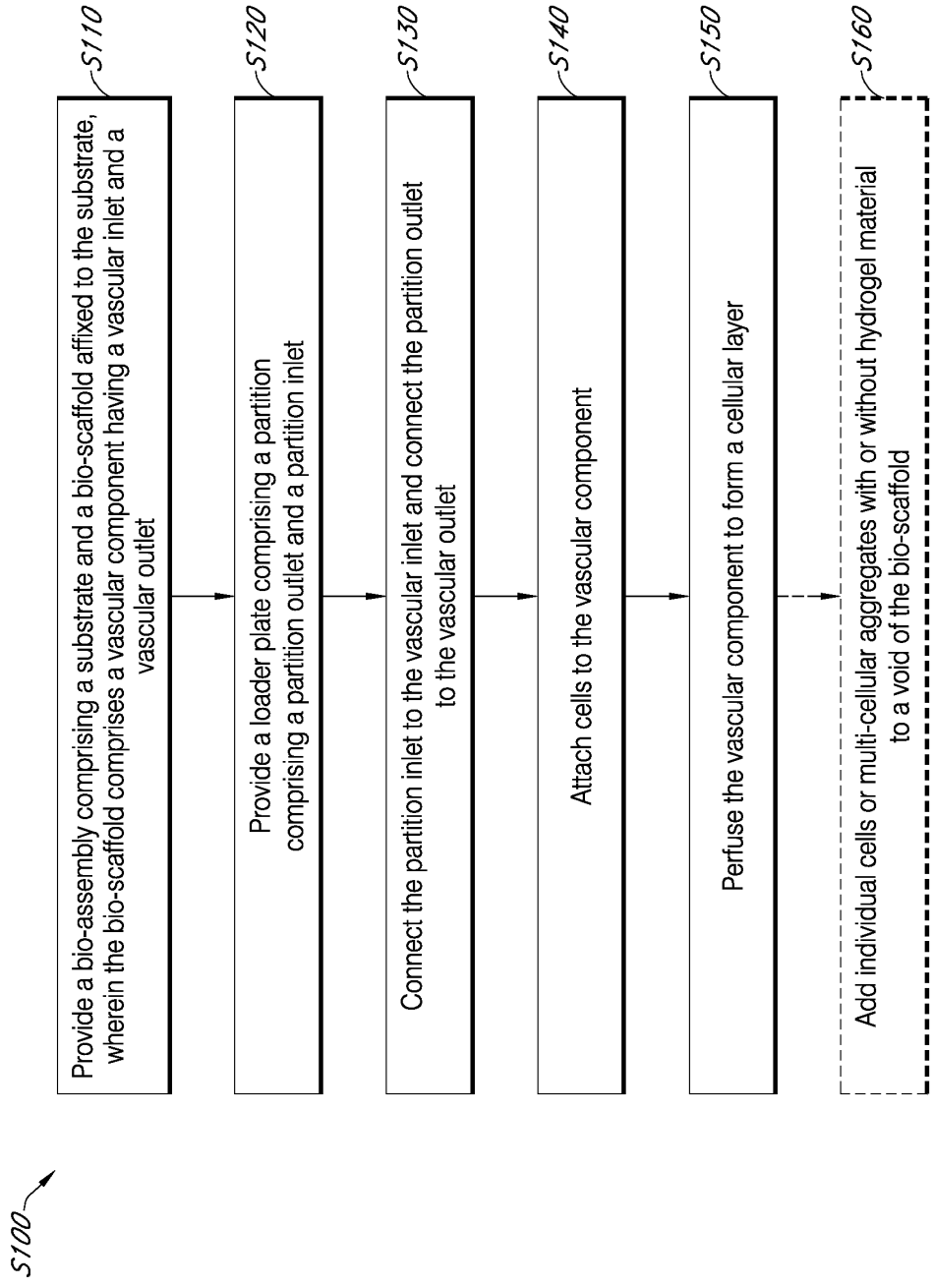

S100
S110
Provide a bio-assembly comprising a substrate and a bio-scaffold affixed to the substrate, wherein the bio-scaffold comprises a vascular component having a vascular inlet and a vascular outlet
S120
Provide a loader plate comprising a partition comprising a partition outlet and a partition inlet
S130
Connect the partition inlet to the vascular inlet and connect the partition outlet to the vascular outlet
S140
Attach cells to the vascular component
S150
Perfuse the vascular component to form a cellular layer
S160
Add individual cells or multi-cellular aggregates with or without hydrogel material to a void of the bio-scaffold

FIG. 8

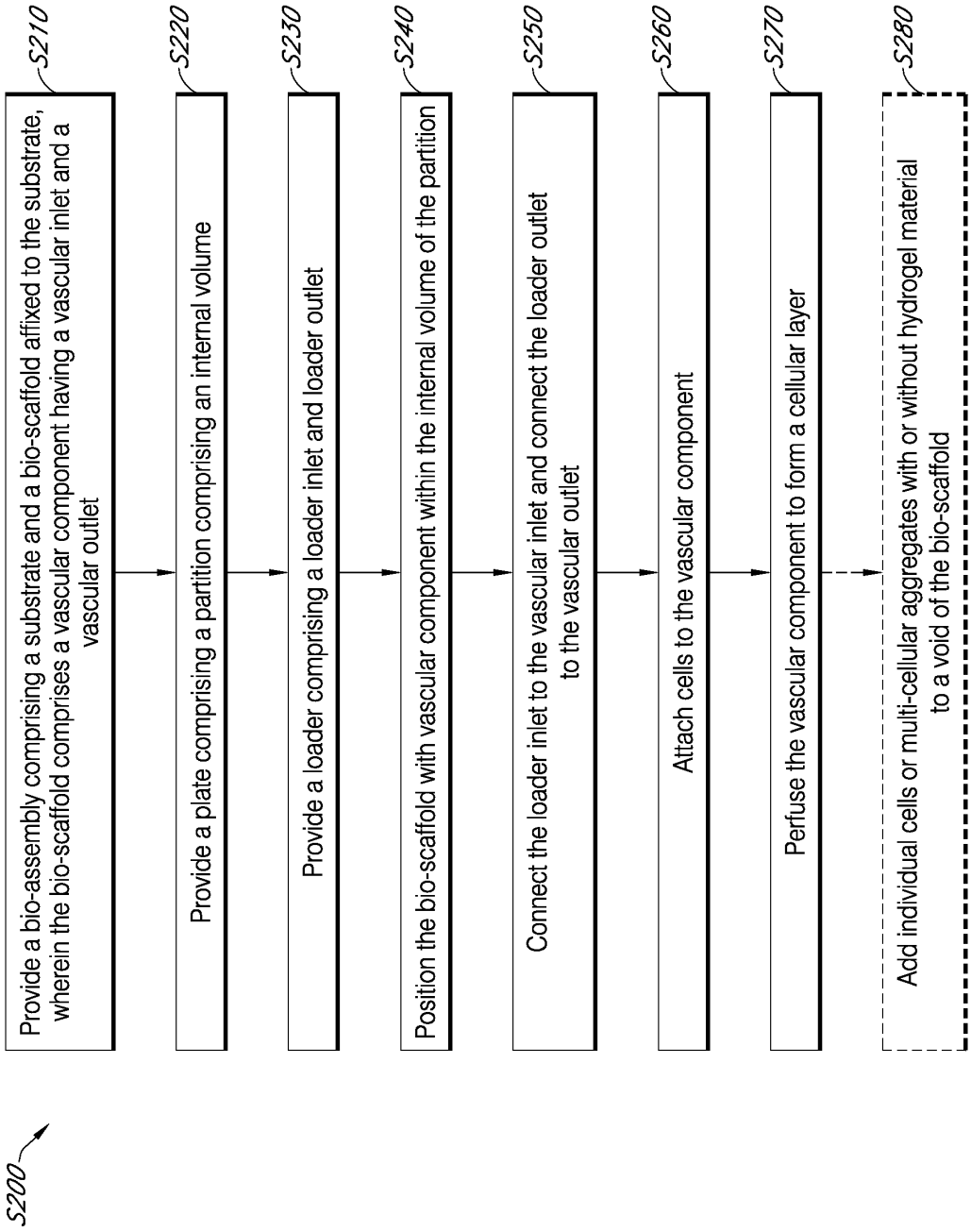

S200
S210
Provide a bio-assembly comprising a substrate and a bio-scaffold affixed to the substrate, wherein the bio-scaffold comprises a vascular component having a vascular inlet and a vascular outlet
S220
Provide a plate comprising a partition comprising an internal volume
S230
Provide a loader comprising a loader inlet and loader outlet
S240
Position the bio-scaffold with vascular component within the internal volume of the partition
S250
Connect the loader inlet to the vascular inlet and connect the loader outlet to the vascular outlet
S260
Attach cells to the vascular component
S270
Perfuse the vascular component to form a cellular layer
S280
Add individual cells or multi-cellular aggregates with or without hydrogel material to a void of the bio-scaffold

FIG. 9