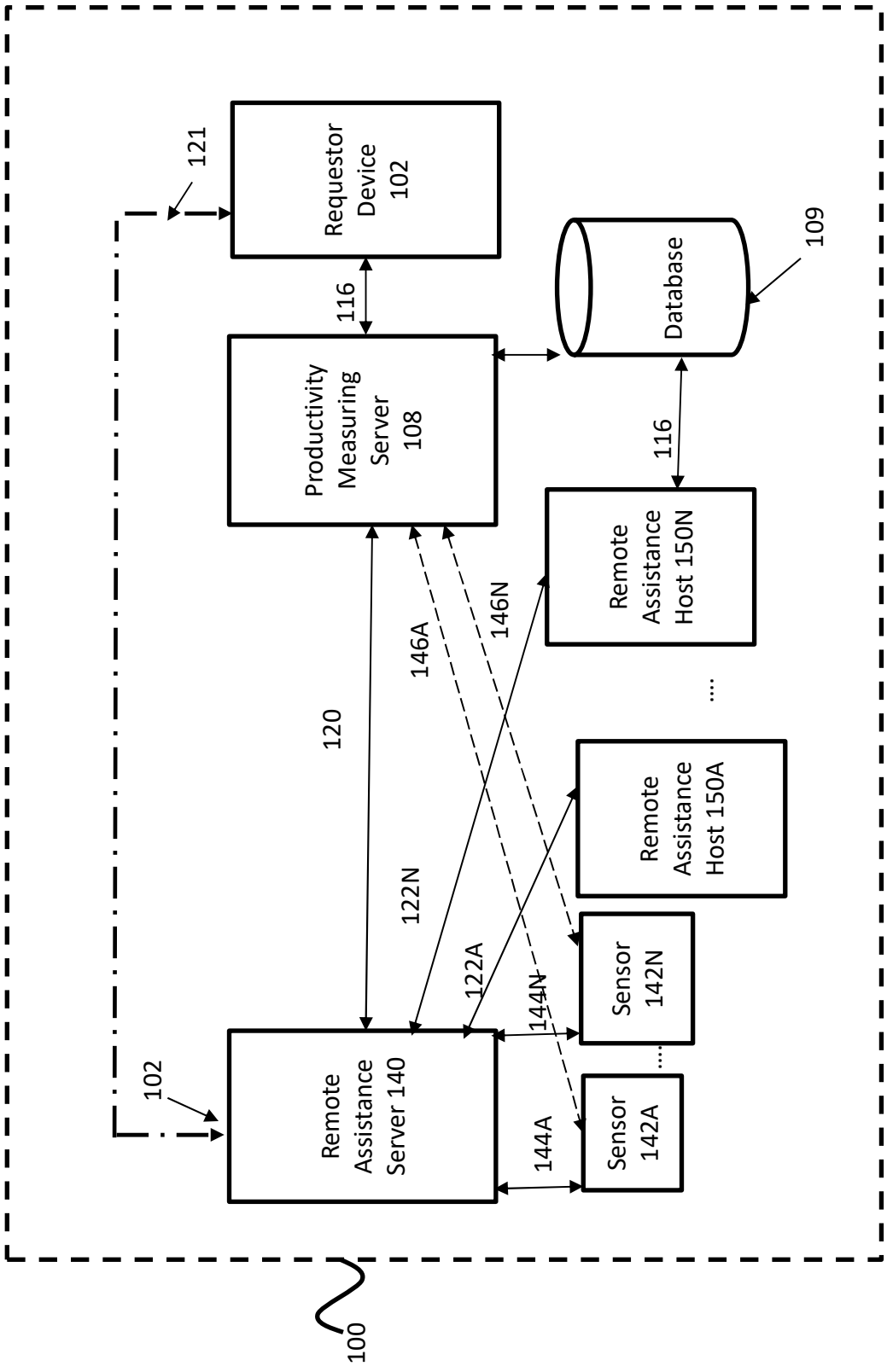

100
102
121
Requestor Device 102
116
Productivity Measuring Server 108
Database
109
116
Remote Assistance Host 150N
146N
146A
120
122N
122A
Remote Assistance Host 150A
Sensor 142N
144N
Remote Assistance Server 140
144A
Sensor 142A

FIG 1

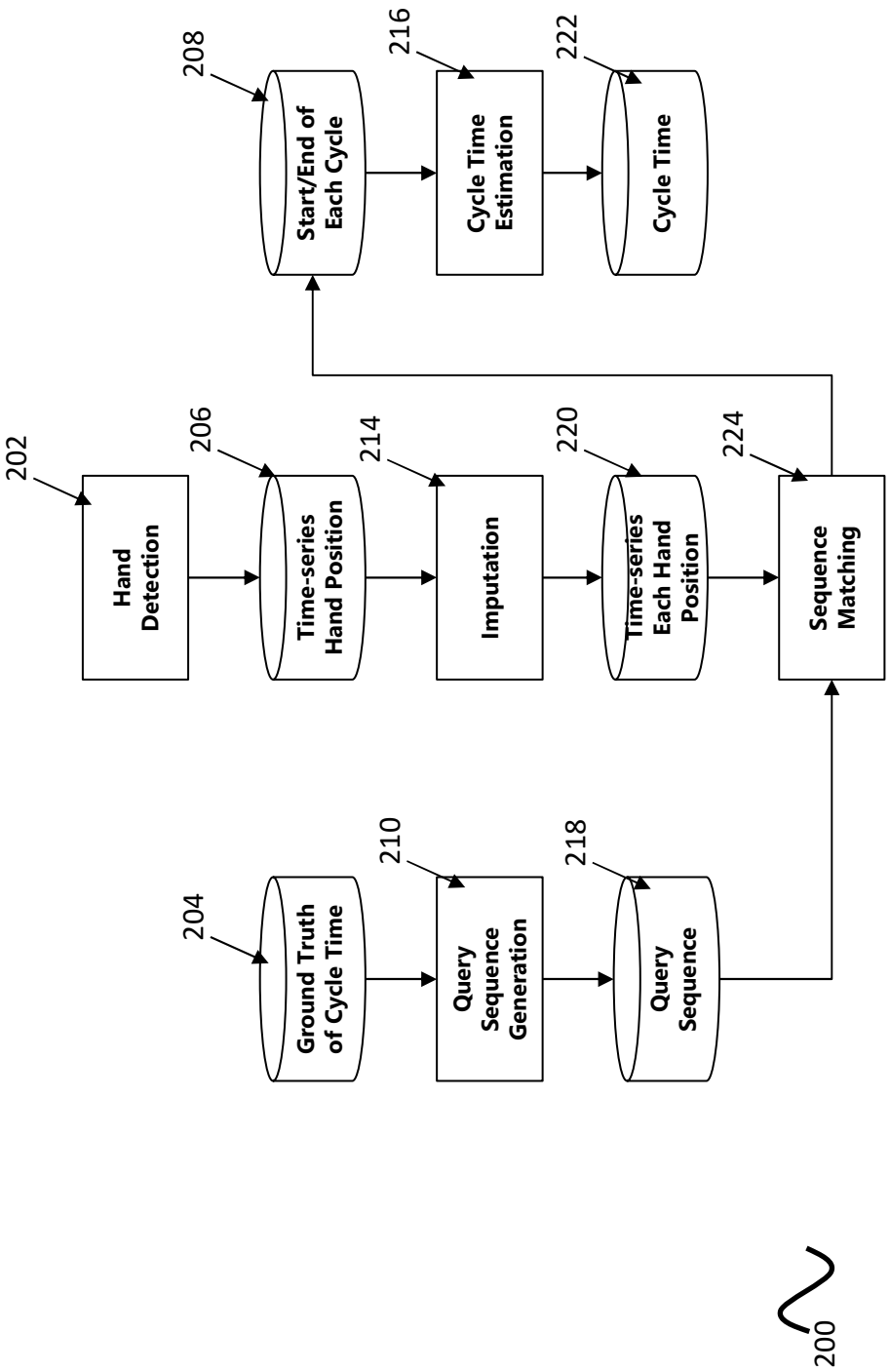
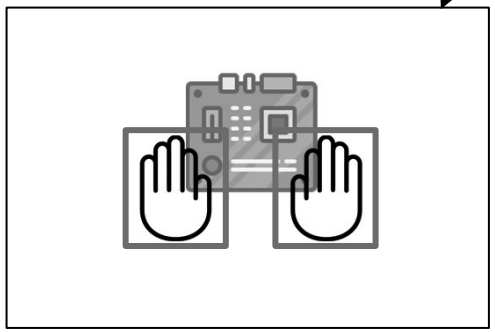
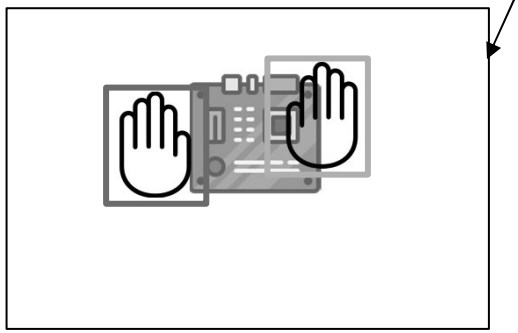

200
202
Hand Detection
204
Ground Truth of Cycle Time
206
Time-series Hand Position
208
Start/End of Each Cycle
210
Query Sequence Generation
214
Imputation
216
Cycle Time Estimation
218
Query Sequence
220
Time-series Each Hand Position
222
Cycle Time
224
Sequence Matching

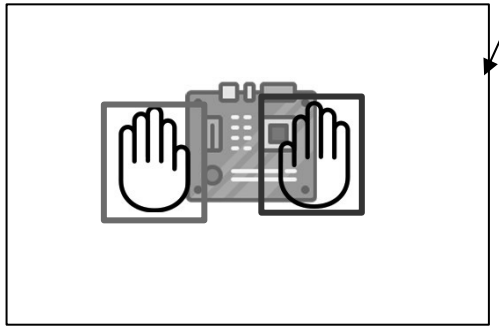
FIG 2



T_0 : [{x:300, y:300},{x:500, y:300}]
T_1 : [{x:256, y:315},{x:522, y:298}]
T_2 : [{x:312, y:414},{x:526, y:301}]
T_3 : [{x:315, y:481},{x:528, y:304}]
...



...
T_{31} : [{x:215, y:345},{x:491, y:211}]
T_{32} : [{x:256, y:315}]
T_{33} : [{x:312, y:414}]
T_{34} : [{x:315, y:481}]
...



...
F_{31} : [{idx:0, x:300, y:300},{idx:1, x:491, y:211}]
F_{32} : [{idx:0, x:256, y:315},{idx:1, x:488, y:323}]
F_{33} : [{idx:0, x:312, y:414},{idx:1, x:489, y:324}]
F_{34} : [{idx:0, x:315, y:481},{idx:1, x:491, y:322}]
...

303

FIG 3

300

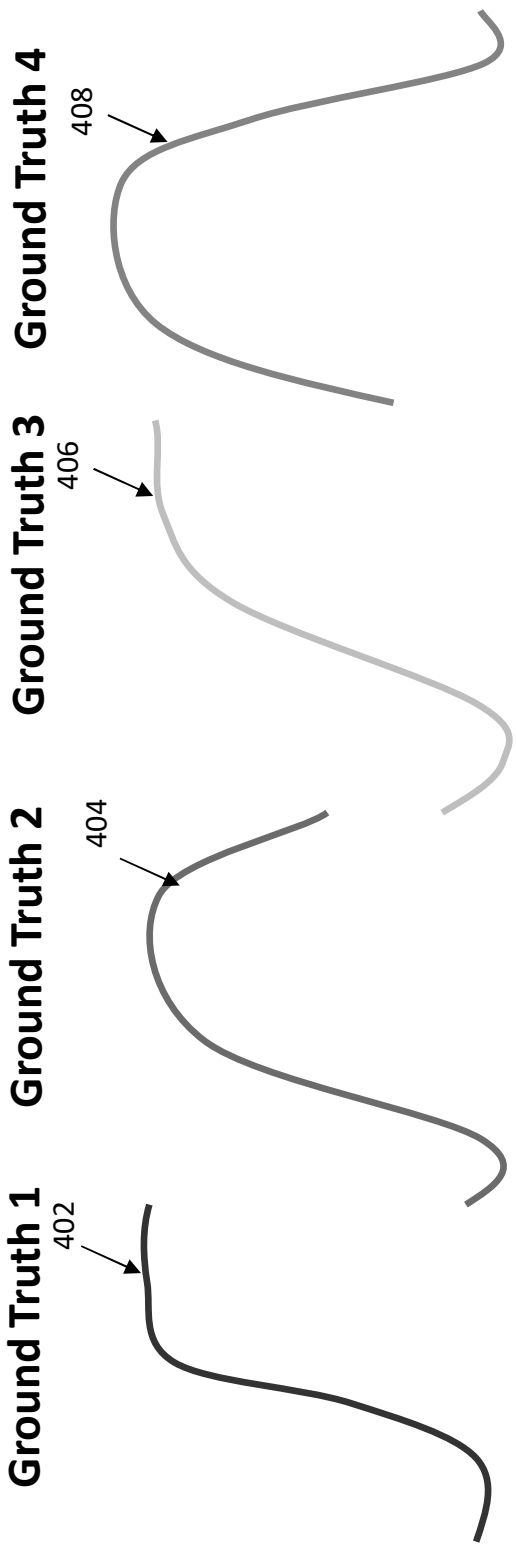

Ground Truth 1
402
Ground Truth 2
404
Ground Truth 3
406
Ground Truth 4
408
400
Y-axis position time-series

FIG 4

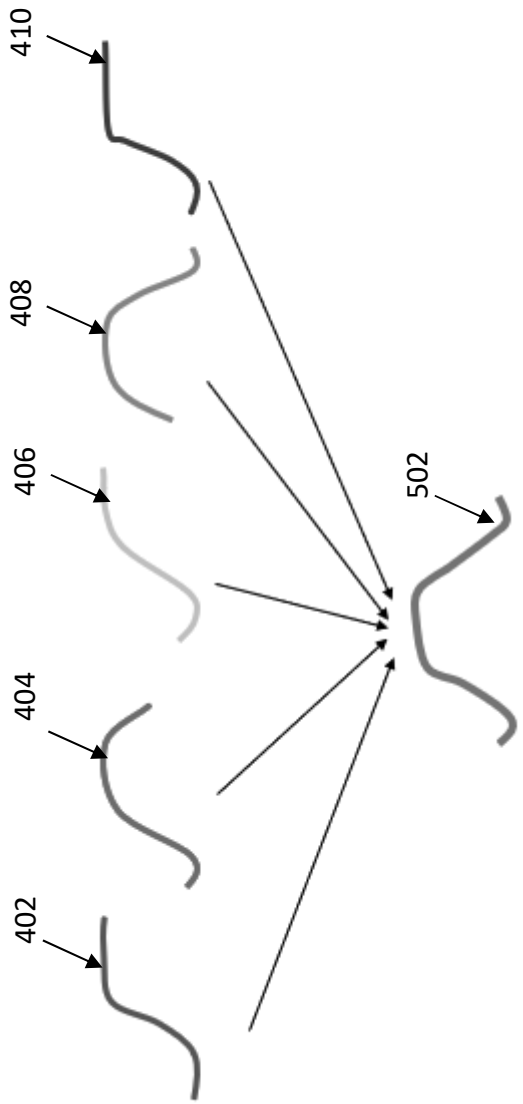


FIG 5

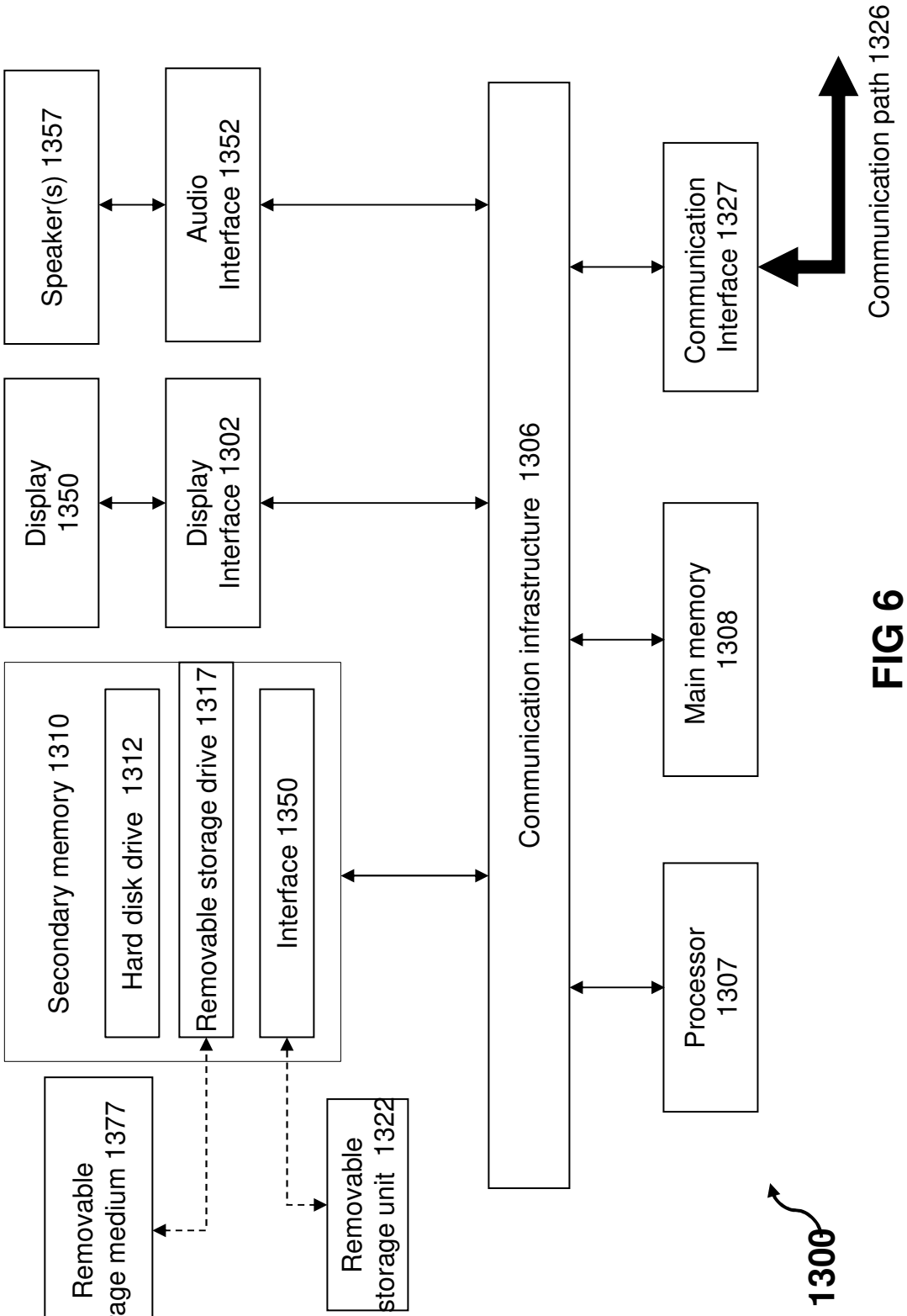

Speaker(s) 1357
Audio Interface 1352
Display 1350
Display Interface 1302
Secondary memory 1310
Hard disk drive 1312
Removable storage drive 1317
Interface 1350
Communication infrastructure 1306
Communication Interface 1327
Communication path 1326
Main memory 1308
Processor 1307
Removable storage medium 1377
Removable storage unit 1322
1300

FIG 6