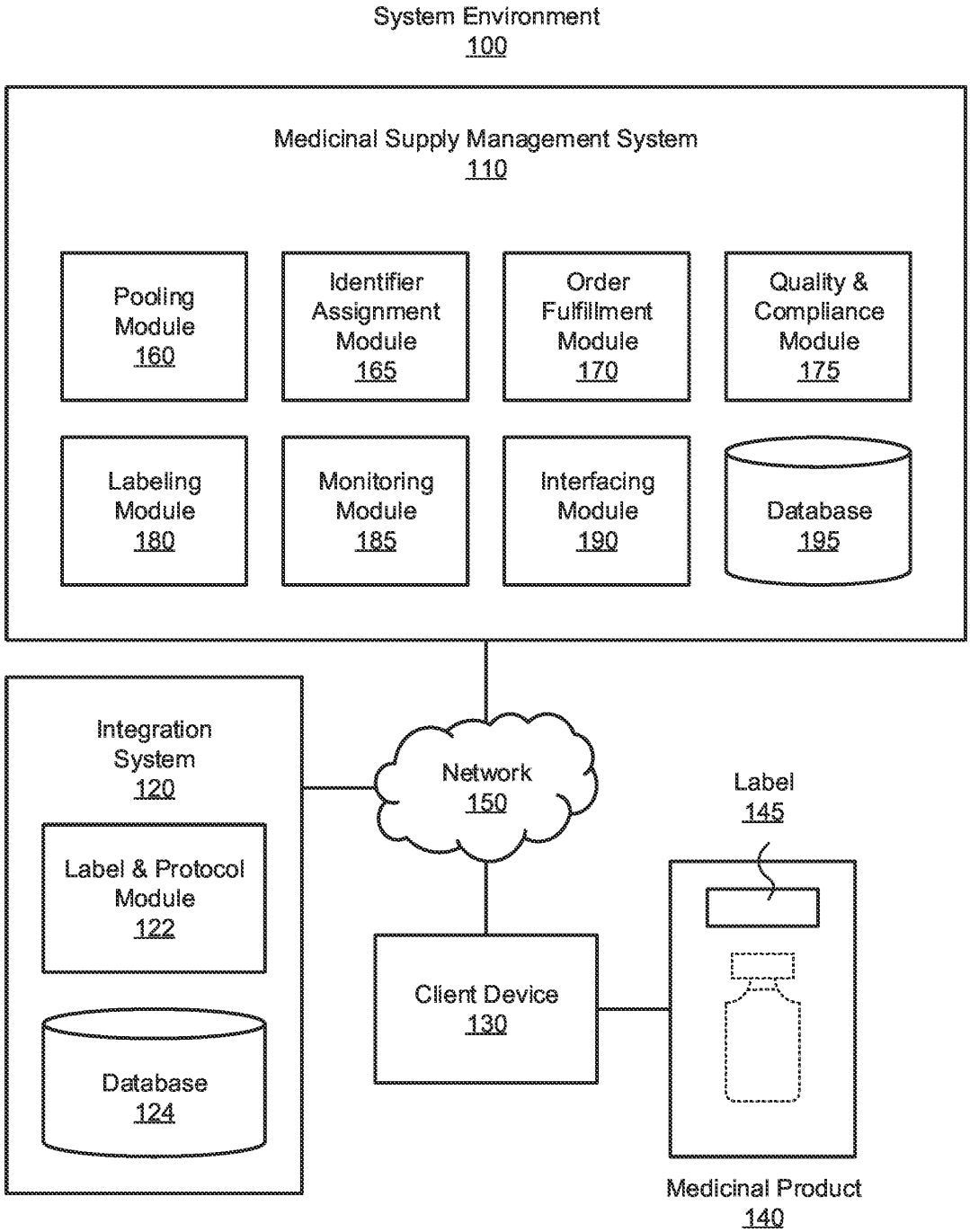

System Environment
100
Medicinal Supply Management System
110
Pooling Module
160
Identifier Assignment Module
165
Order Fulfillment Module
170
Quality & Compliance Module
175
Labeling Module
180
Monitoring Module
185
Interfacing Module
190
Database
195
Integration System
120
Label & Protocol Module
122
Database
124
Network
150
Client Device
130
Label
145
Medicinal Product
140

FIG. 1

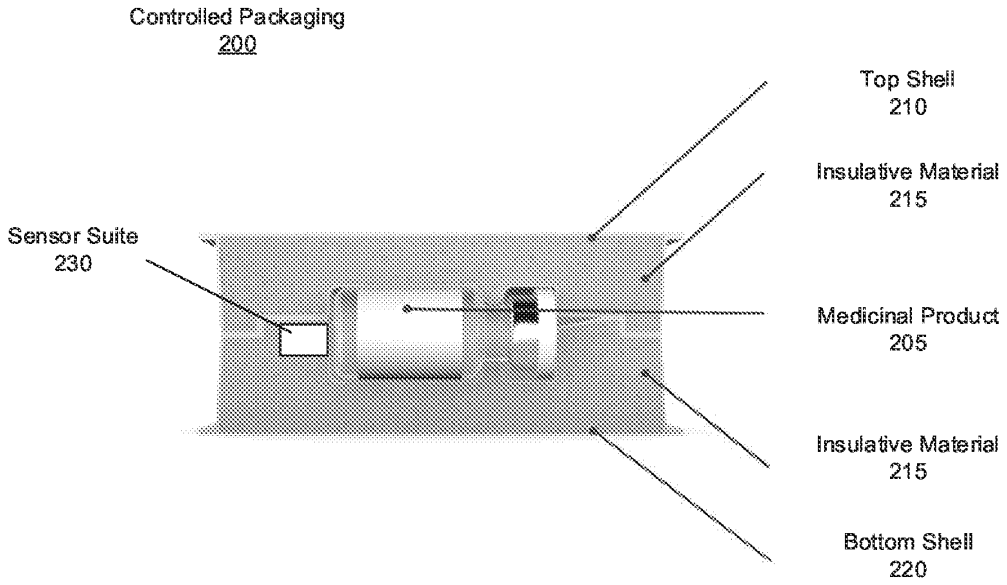

Controlled Packaging
200
Top Shell
210
Insulative Material
215
Sensor Suite
230
Medicinal Product
205
Insulative Material
215
Bottom Shell
220

FIG. 2A

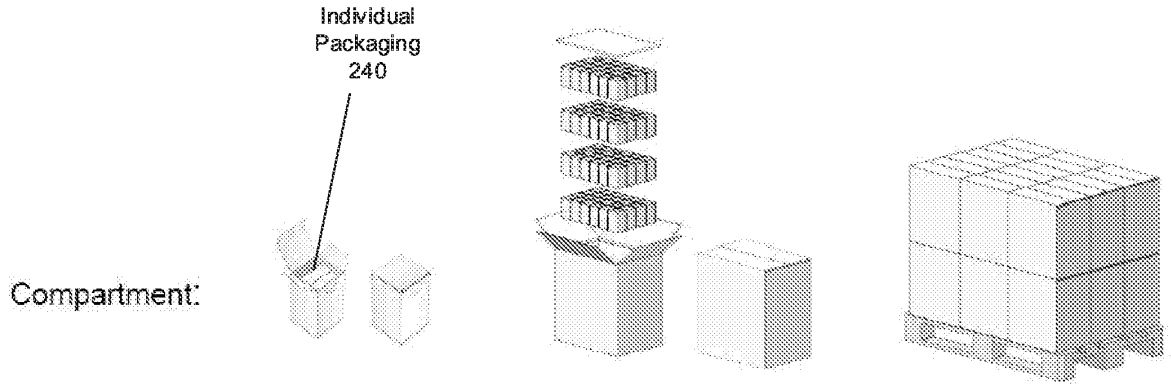

Individual
Packaging
240
Compartment:

FIG. 2B

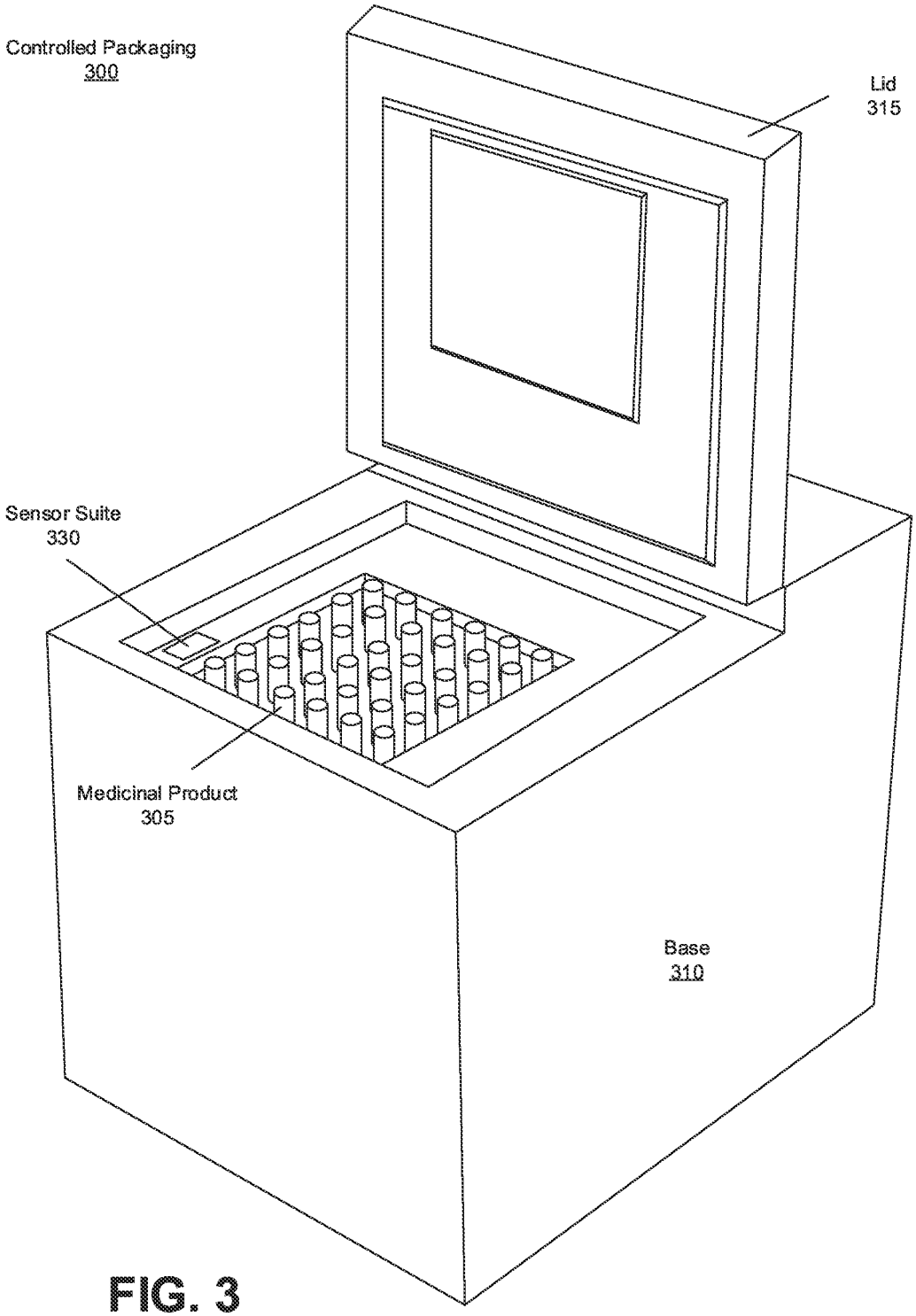

Controlled Packaging
300
Lid
315
Sensor Suite
330
Medicinal Product
305
Base
310

FIG. 3

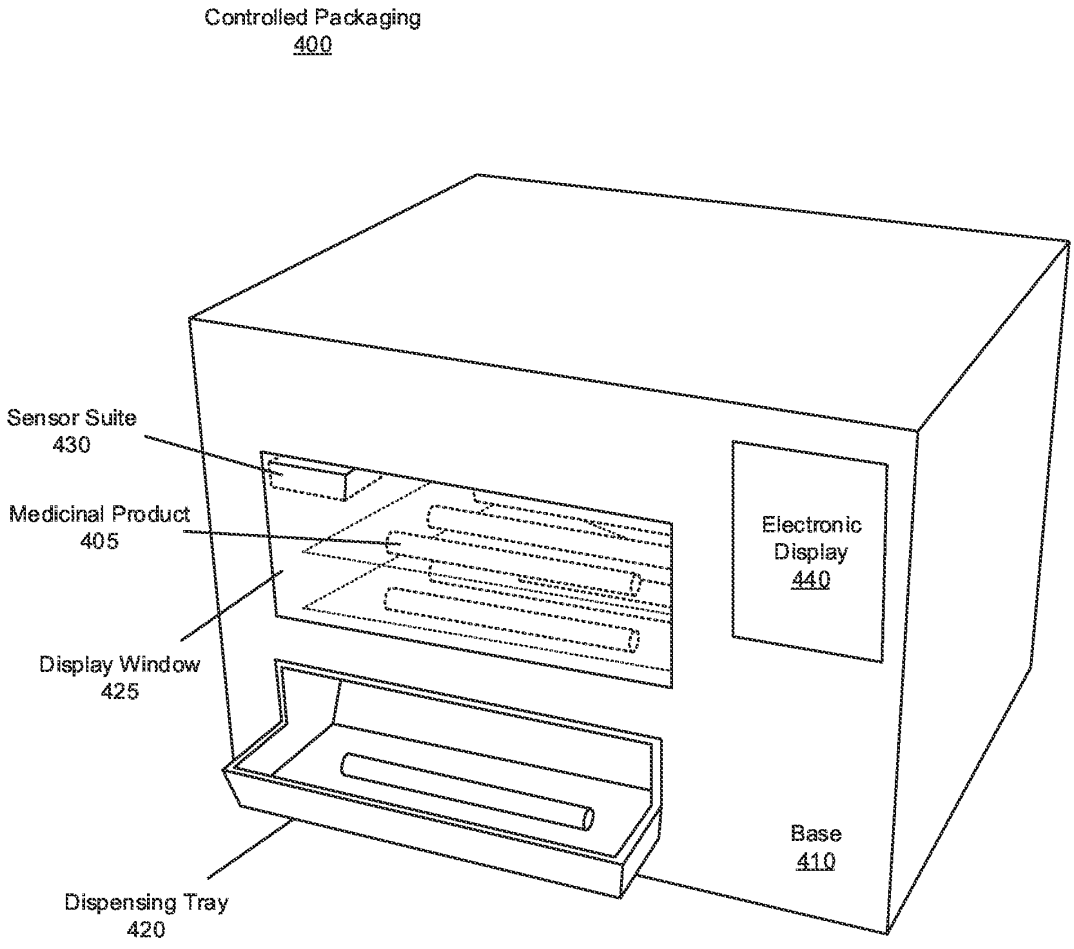

Controlled Packaging
400
Sensor Suite
430
Medicinal Product
405
Display Window
425
Dispensing Tray
420
Electronic
Display
440
Base
410

FIG. 4

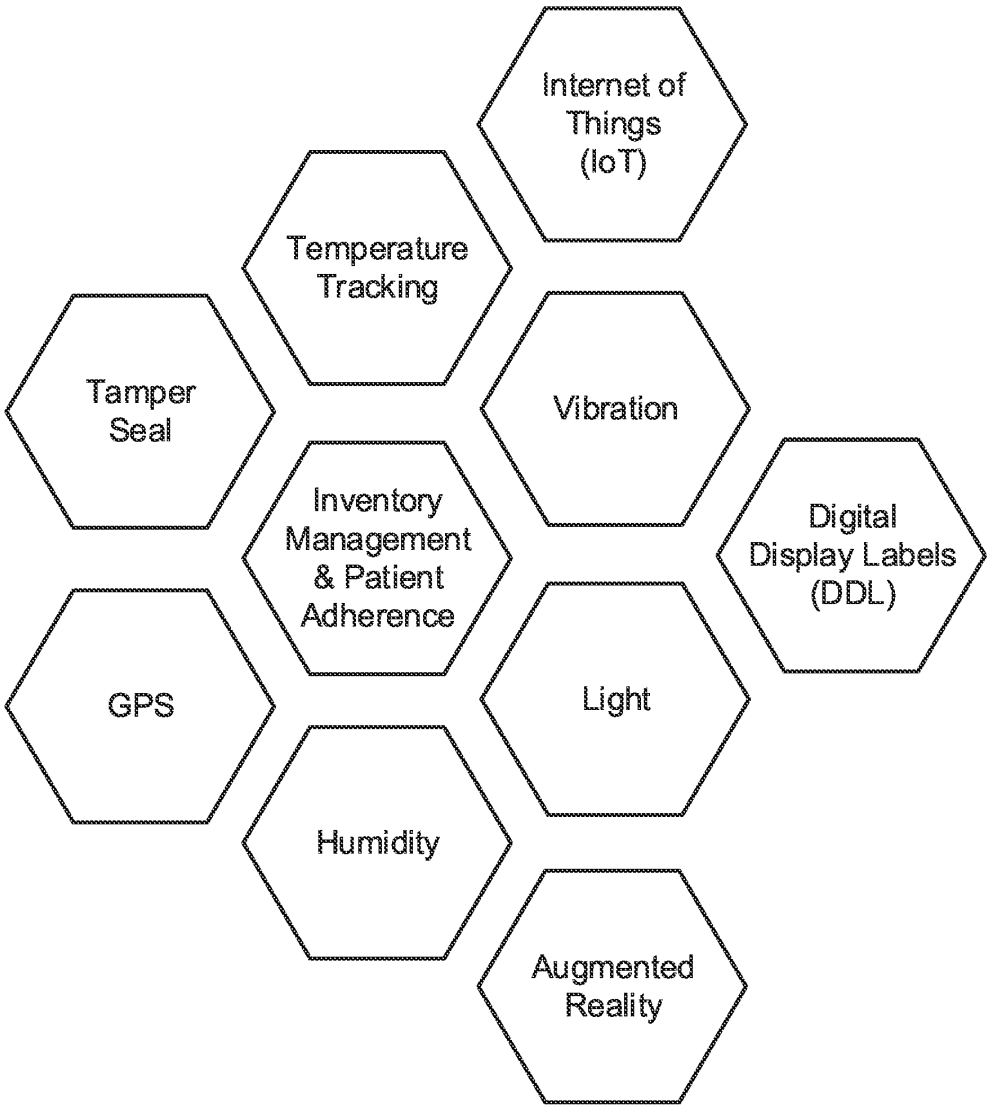

Internet of Things (IoT)
Temperature Tracking
Tamper Seal
Vibration
Inventory Management & Patient Adherence
Digital Display Labels (DDL)
GPS
Light
Humidity
Augmented Reality

FIG. 5

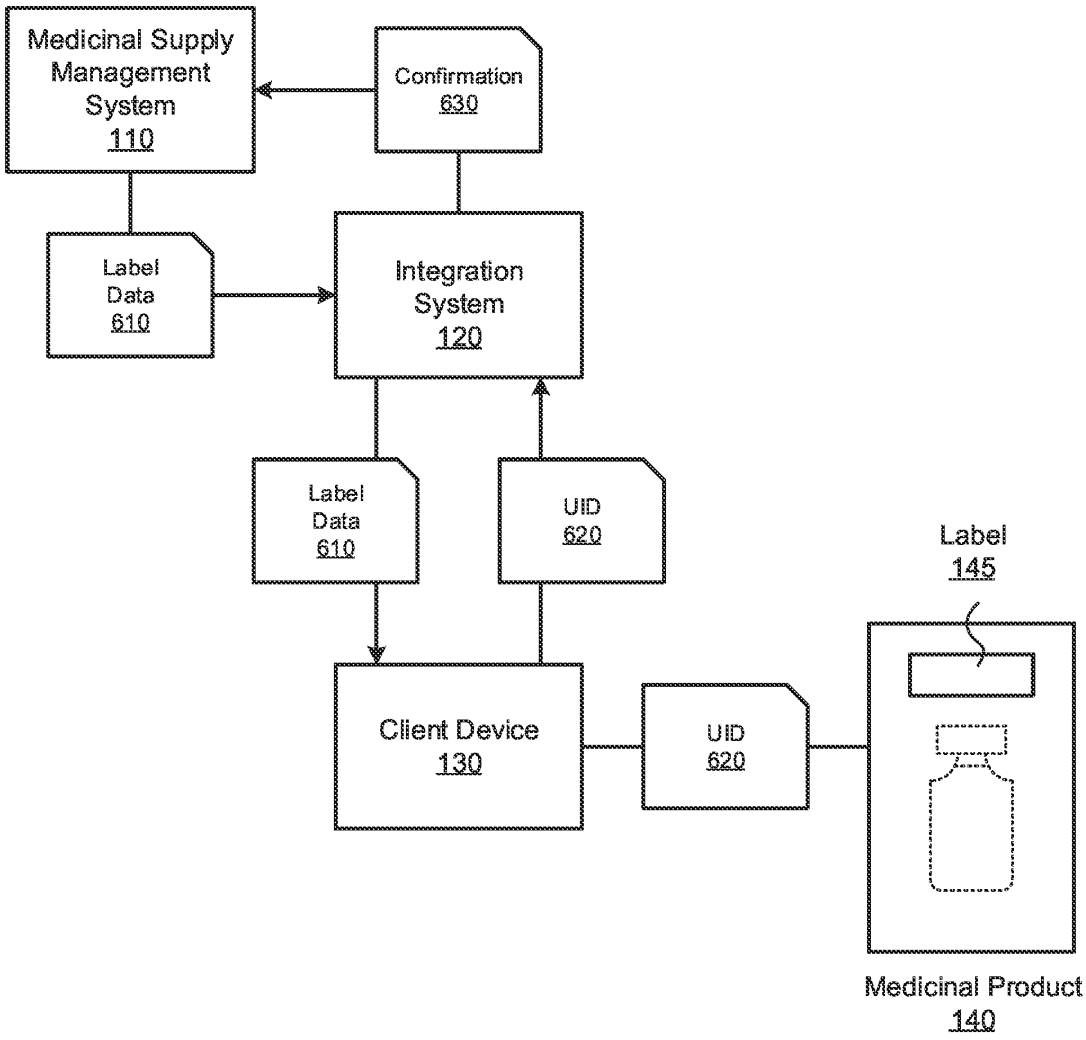

Medicinal Supply Management System 110
Confirmation 630
Label Data 610
Integration System 120
Label Data 610
UID 620
Label 145
Client Device 130
UID 620
Medicinal Product 140

FIG. 6

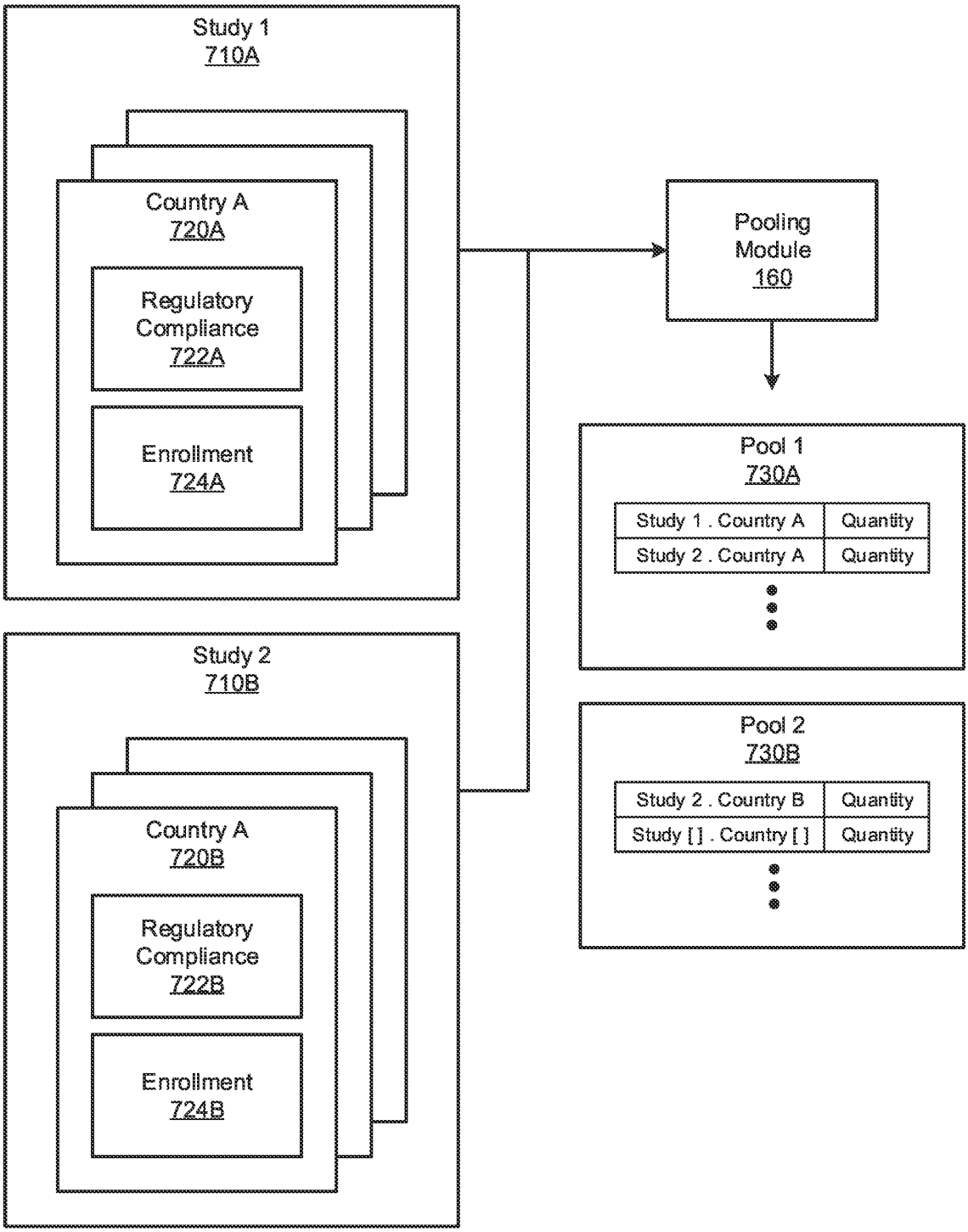

Study 1
710A
Country A
720A
Regulatory Compliance
722A
Enrollment
724A
Study 2
710B
Country A
720B
Regulatory Compliance
722B
Enrollment
724B
Pooling Module
160
Pool 1
730A
Study 1 . Country A
Quantity
Study 2 . Country A
Quantity
Pool 2
730B
Study 2 . Country B
Quantity
Study [ ] . Country [ ]
Quantity

FIG. 7

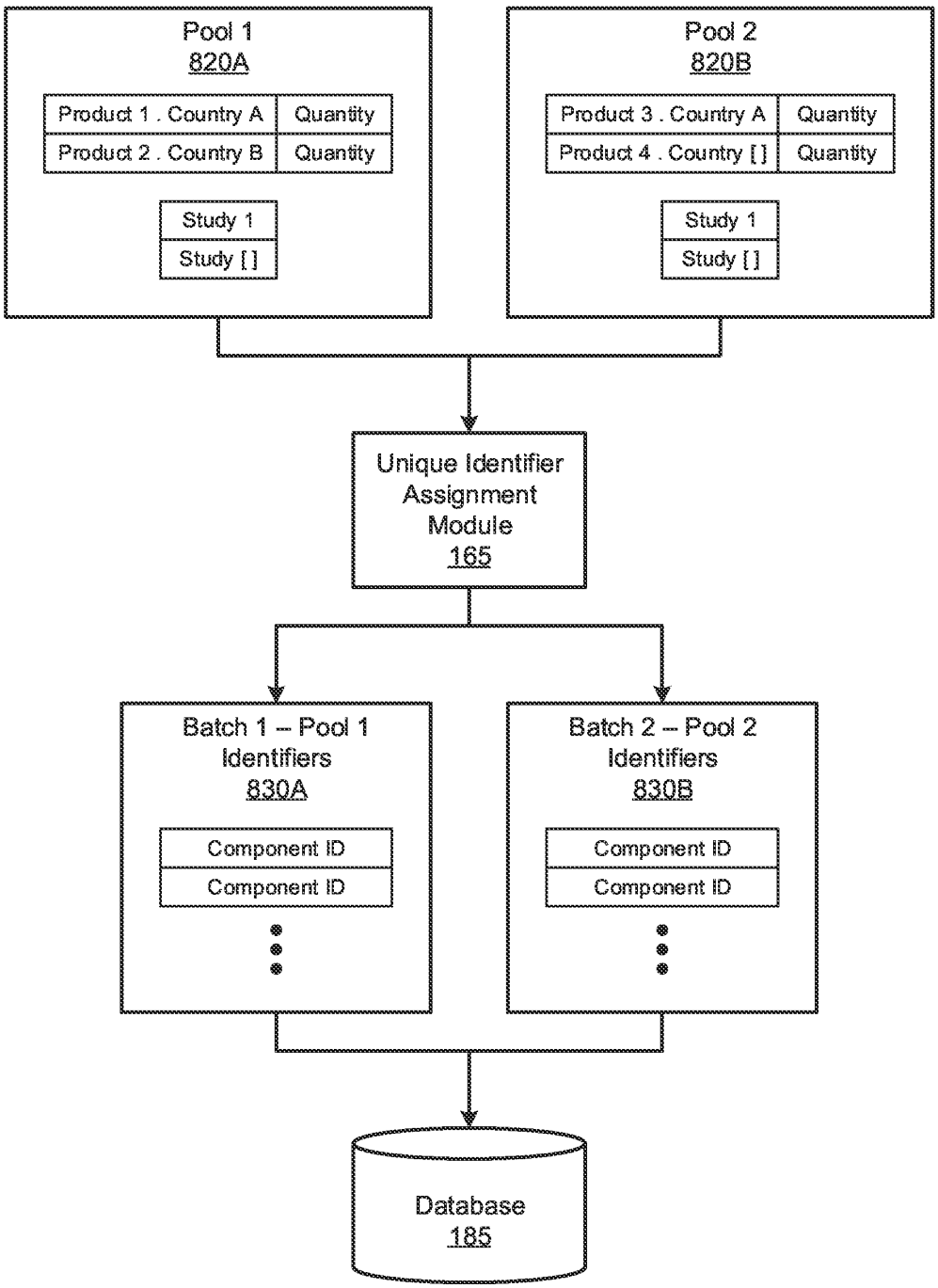

Pool 1
820A
Product 1 . Country A
Quantity
Product 2 . Country B
Quantity
Study 1
Study [ ]
Pool 2
820B
Product 3 . Country A
Quantity
Product 4 . Country [ ]
Quantity
Study 1
Study [ ]
Unique Identifier Assignment Module
165
Batch 1 – Pool 1 Identifiers
830A
Component ID
Component ID
Batch 2 – Pool 2 Identifiers
830B
Component ID
Component ID
Database
185

FIG. 8

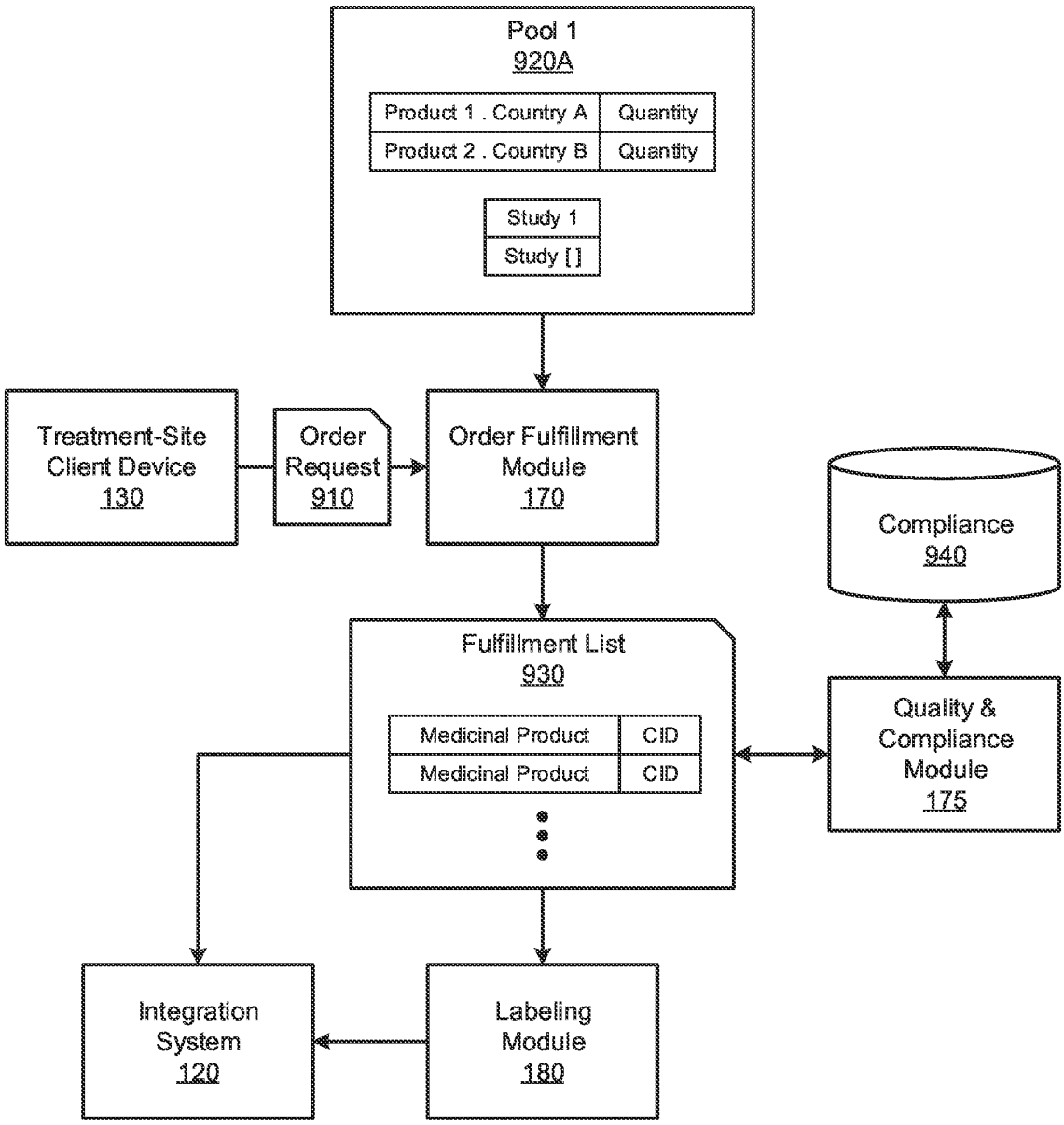

Pool 1
920A
Product 1 . Country A
Quantity
Product 2 . Country B
Quantity
Study 1
Study [ ]
Treatment-Site Client Device 130
Order Request 910
Order Fulfillment Module 170
Compliance 940
Fulfillment List 930
Medicinal Product
CID
Medicinal Product
CID
Quality & Compliance Module 175
Integration System 120
Labeling Module 180

FIG. 9

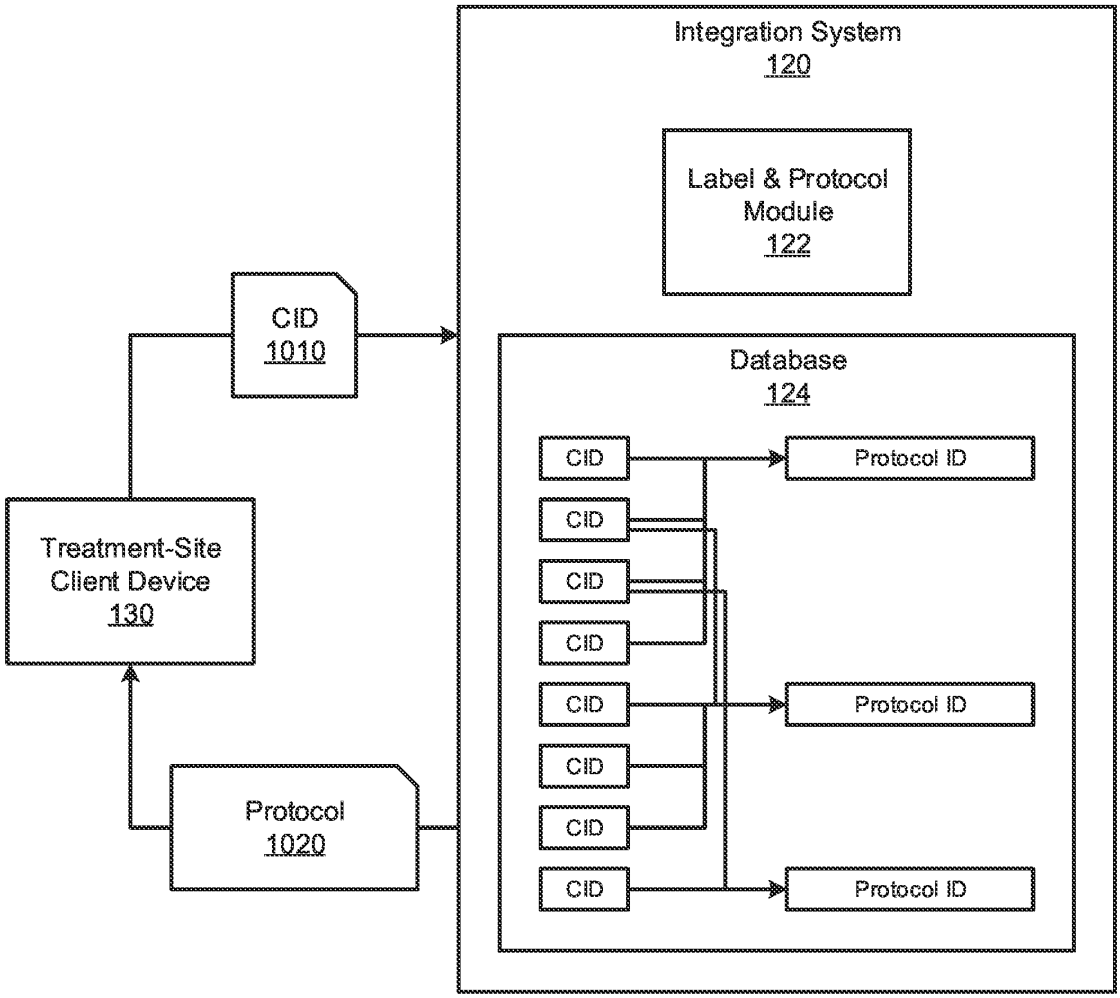

Integration System
120
Label & Protocol Module
122
CID
1010
Database
124
CID
Protocol ID
Treatment-Site Client Device
130
Protocol
1020

FIG. 10

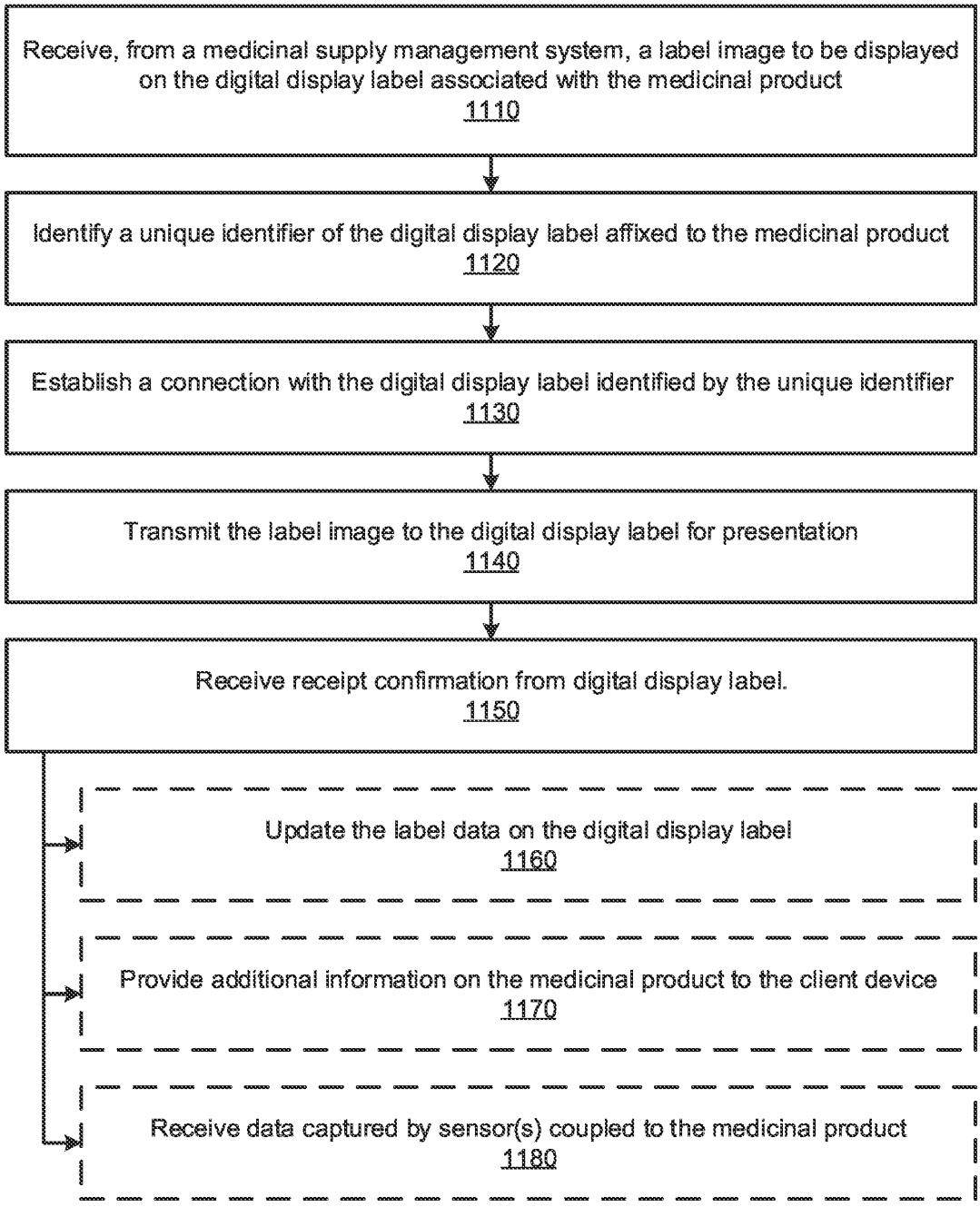

Receive, from a medicinal supply management system, a label image to be displayed on the digital display label associated with the medicinal product
1110
Identify a unique identifier of the digital display label affixed to the medicinal product
1120
Establish a connection with the digital display label identified by the unique identifier
1130
Transmit the label image to the digital display label for presentation
1140
Receive receipt confirmation from digital display label.
1150
Update the label data on the digital display label
1160
Provide additional information on the medicinal product to the client device
1170
Receive data captured by sensor(s) coupled to the medicinal product
1180

FIG. 11

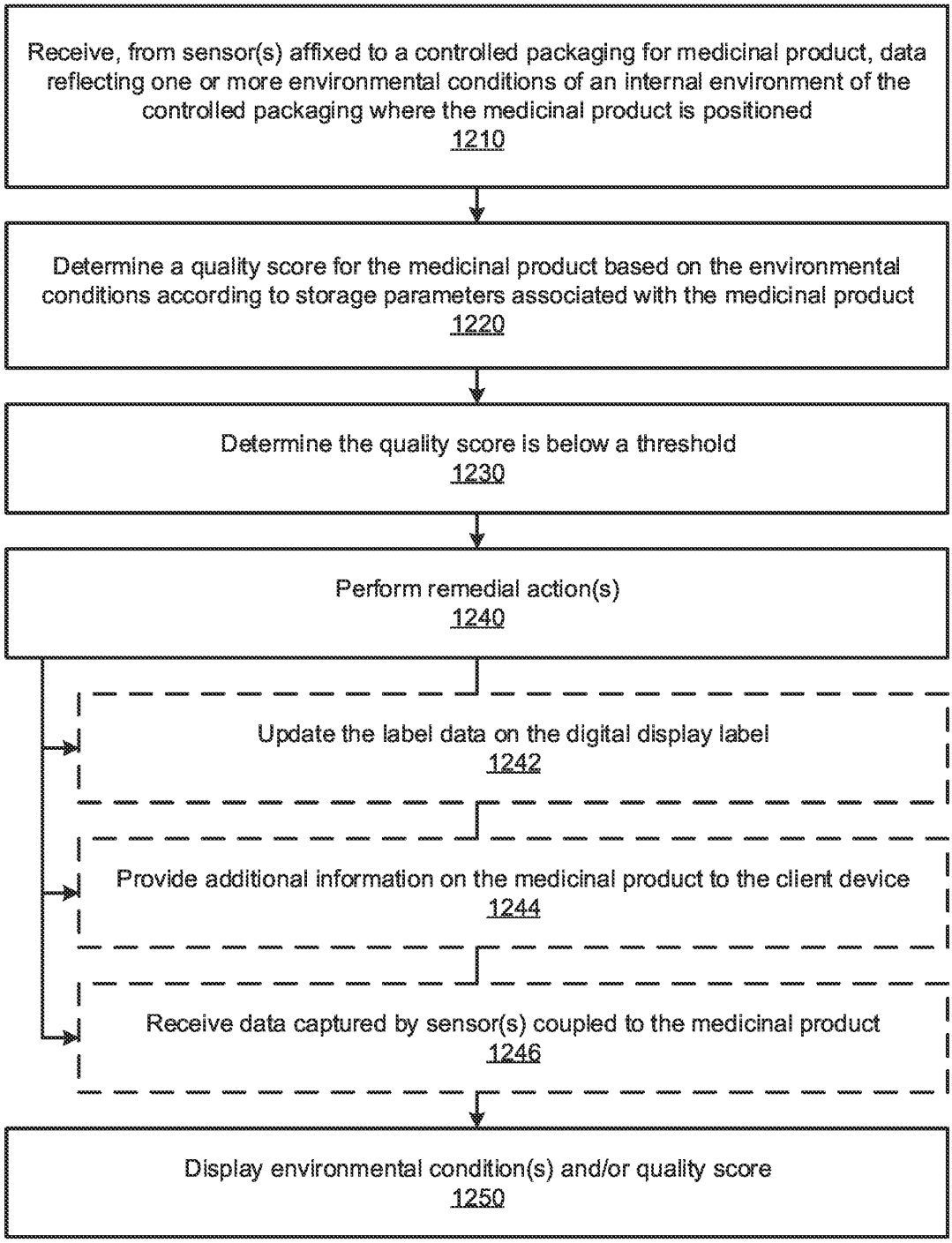

Receive, from sensor(s) affixed to a controlled packaging for medicinal product, data reflecting one or more environmental conditions of an internal environment of the controlled packaging where the medicinal product is positioned
1210
Determine a quality score for the medicinal product based on the environmental conditions according to storage parameters associated with the medicinal product
1220
Determine the quality score is below a threshold
1230
Perform remedial action(s)
1240
Update the label data on the digital display label
1242
Provide additional information on the medicinal product to the client device
1244
Receive data captured by sensor(s) coupled to the medicinal product
1246
Display environmental condition(s) and/or quality score
1250

FIG. 12

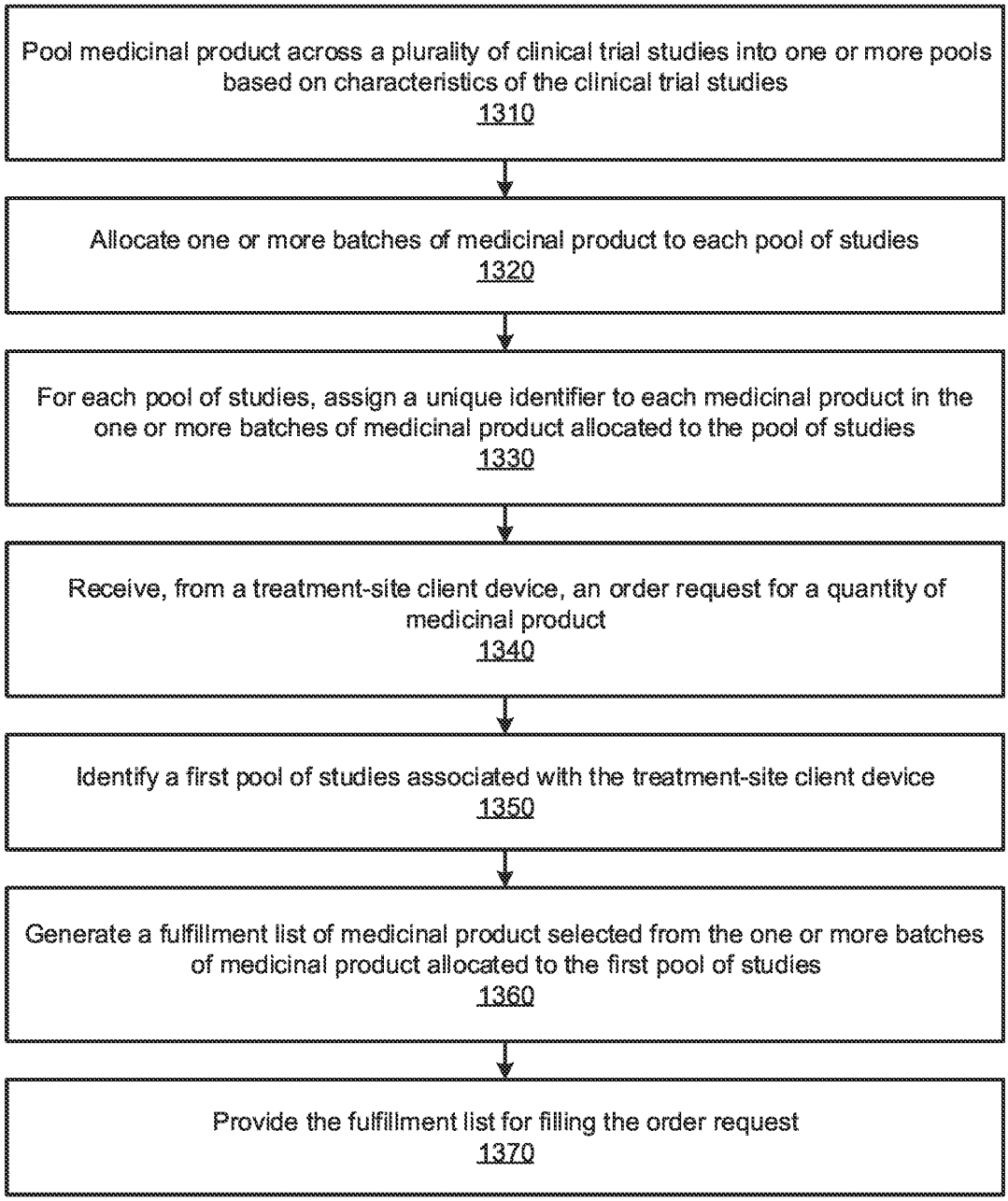

Pool medicinal product across a plurality of clinical trial studies into one or more pools based on characteristics of the clinical trial studies
1310
Allocate one or more batches of medicinal product to each pool of studies
1320
For each pool of studies, assign a unique identifier to each medicinal product in the one or more batches of medicinal product allocated to the pool of studies
1330
Receive, from a treatment-site client device, an order request for a quantity of medicinal product
1340
Identify a first pool of studies associated with the treatment-site client device
1350
Generate a fulfillment list of medicinal product selected from the one or more batches of medicinal product allocated to the first pool of studies
1360
Provide the fulfillment list for filling the order request
1370

FIG. 13

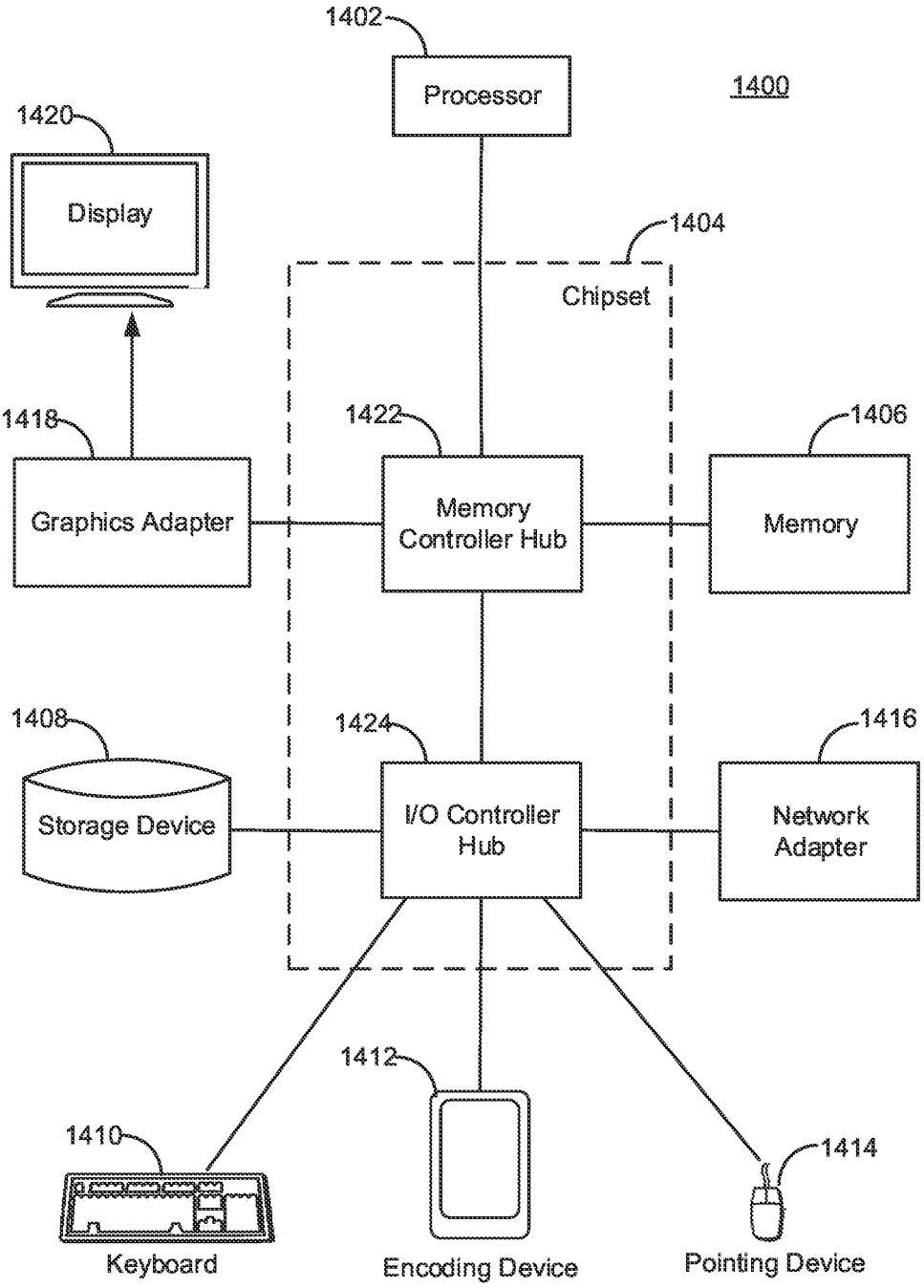

1402
Processor
1400
1420
Display
1404
Chipset
1418
1422
1406
Graphics Adapter
Memory Controller Hub
Memory
1408
1424
1416
Storage Device
I/O Controller Hub
Network Adapter
1412
1410
1414
Keyboard
Encoding Device
Pointing Device

FIG. 14