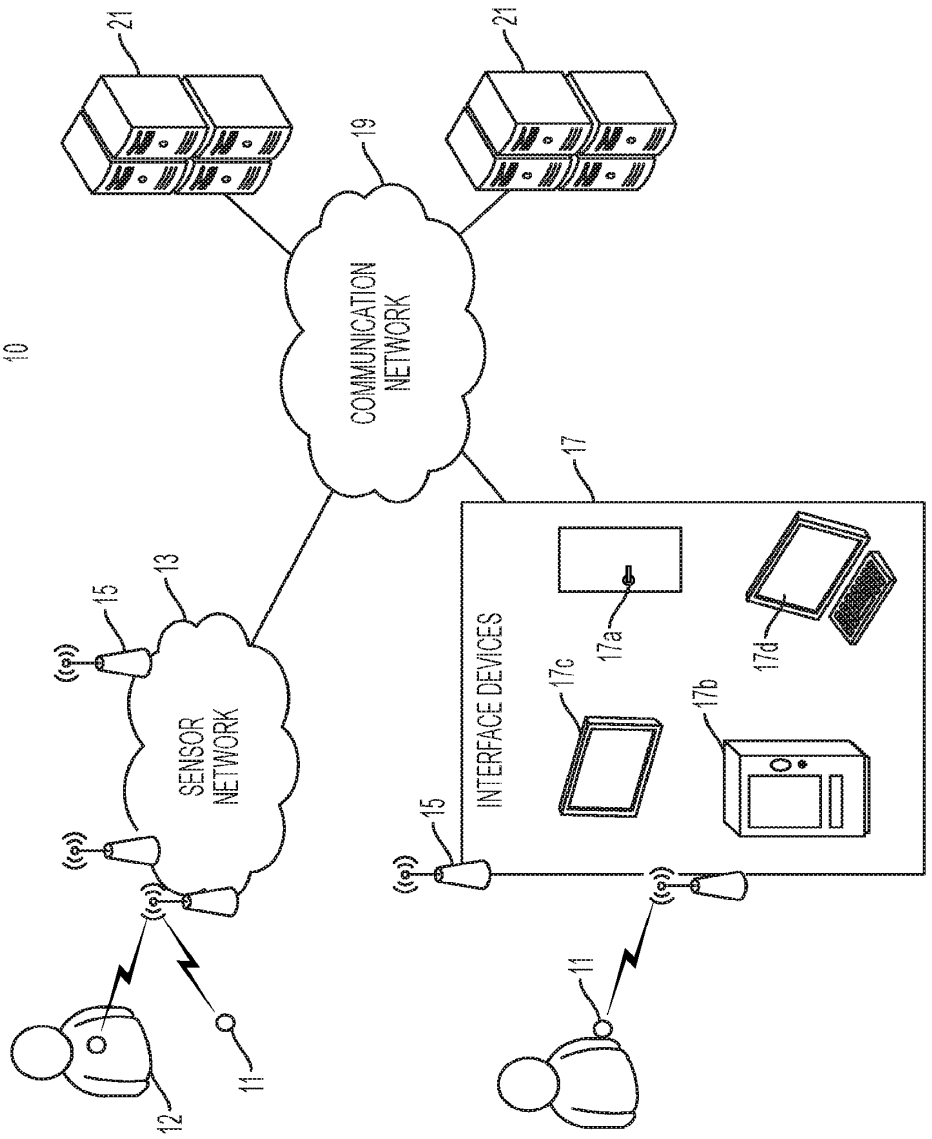

10
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19
COMMUNICATION NETWORK
17
INTERFACE DEVICES
17a
17b
17c
17d
13
SENSOR NETWORK
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11
12

FIG. 1A

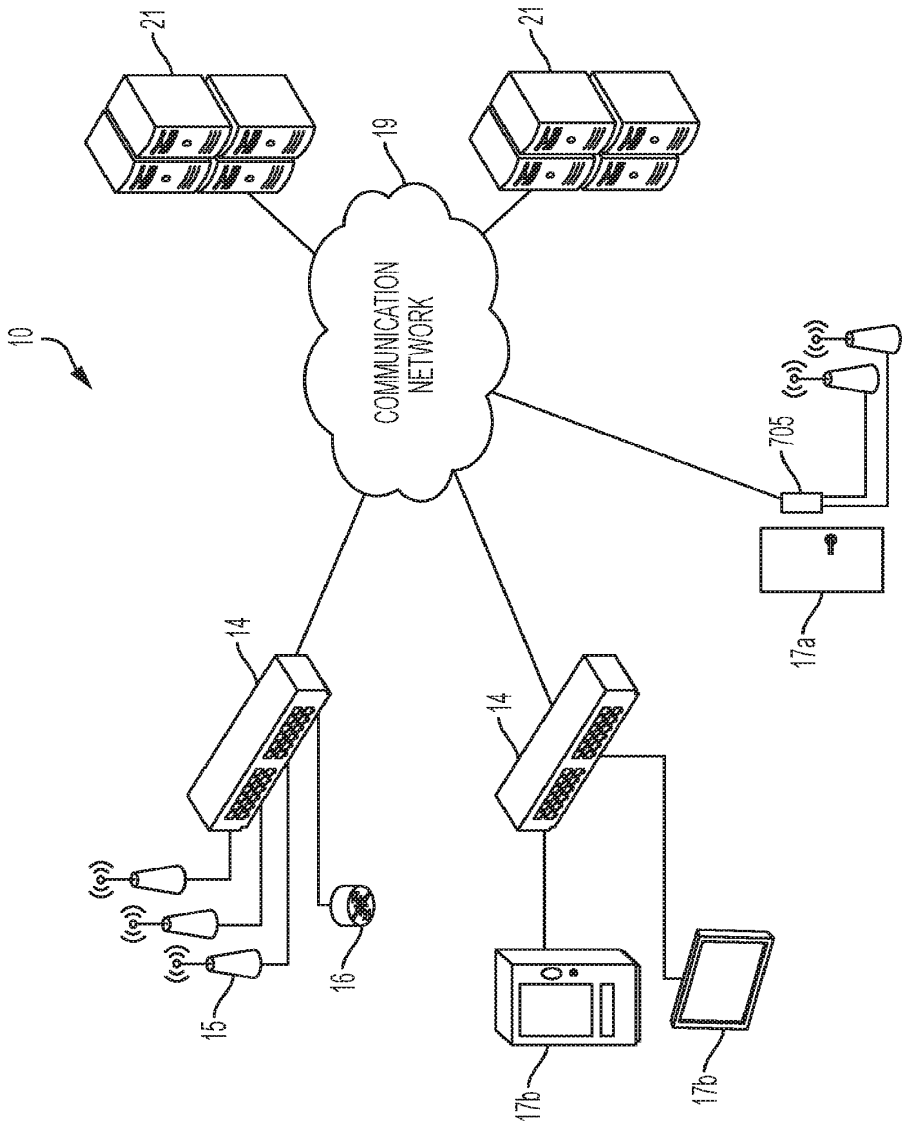


FIG. 1B

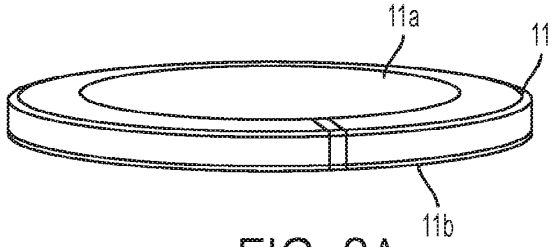


FIG. 2A

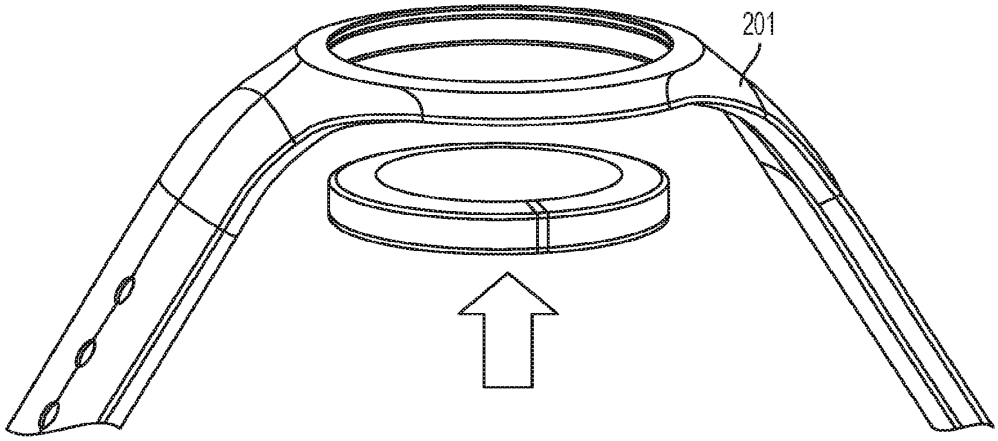


FIG. 2B

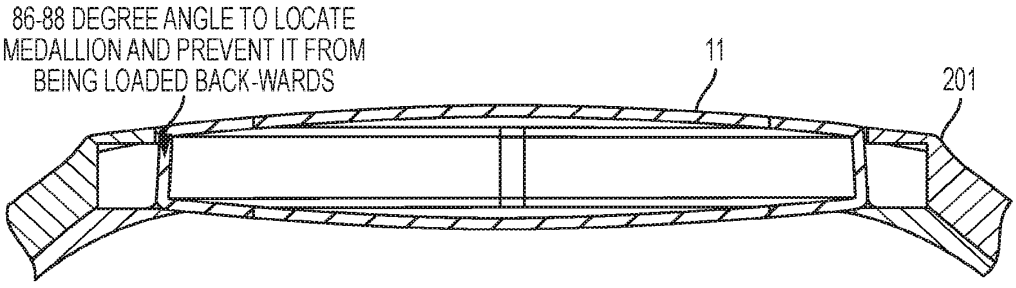


FIG. 2C

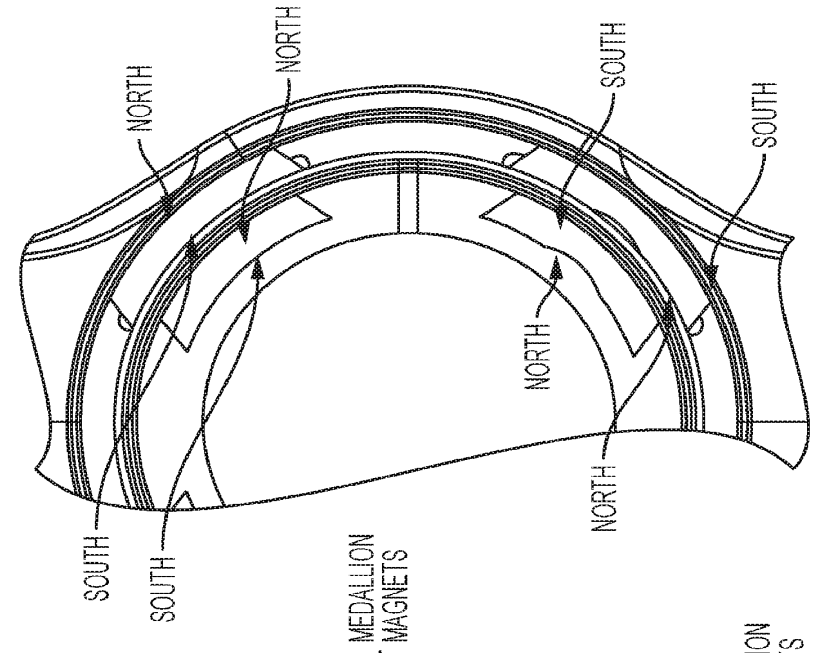

NORTH
NORTH
SOUTH
SOUTH
SOUTH
SOUTH
NORTH
NORTH

FIG. 2E

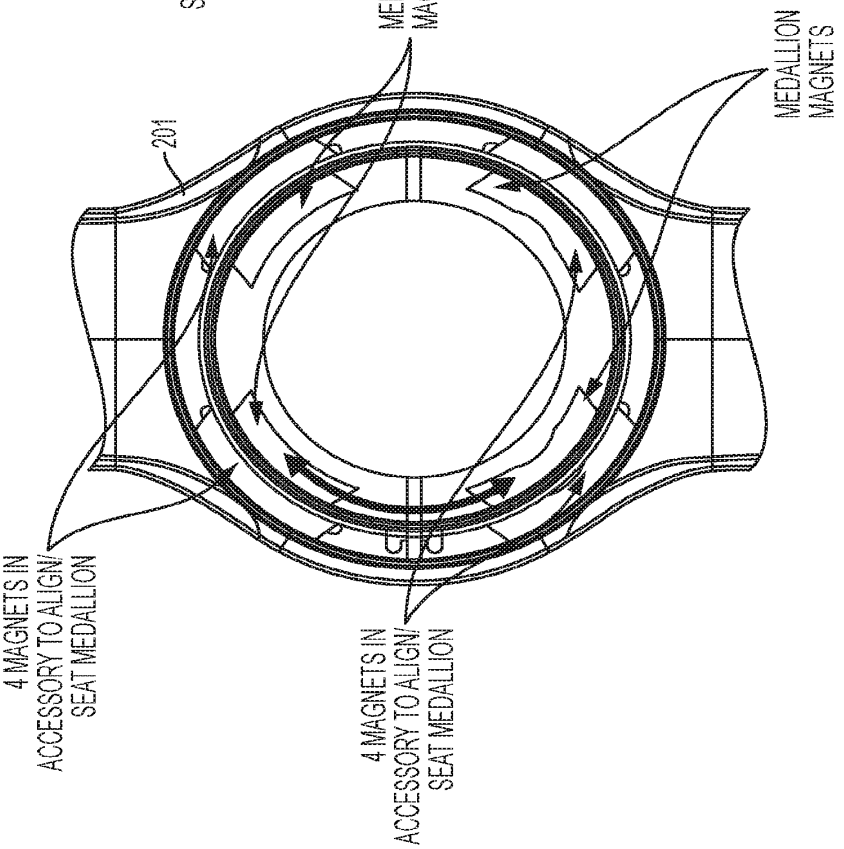

201
MEDALLION MAGNETS
MEDALLION MAGNETS
4 MAGNETS IN ACCESSORY TO ALIGN/ SEAT MEDALLION
4 MAGNETS IN ACCESSORY TO ALIGN/ SEAT MEDALLION

FIG. 2D

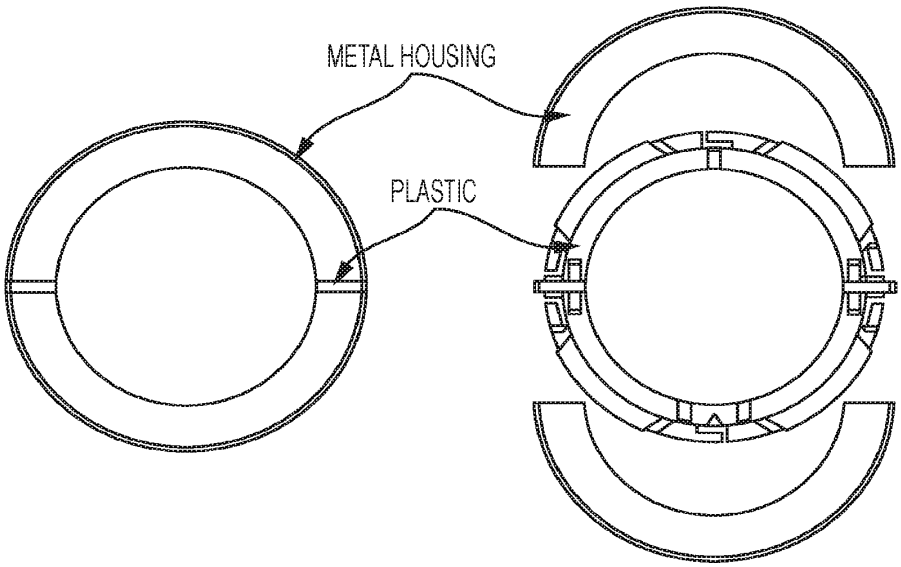

METAL HOUSING
PLASTIC

FIG. 3A

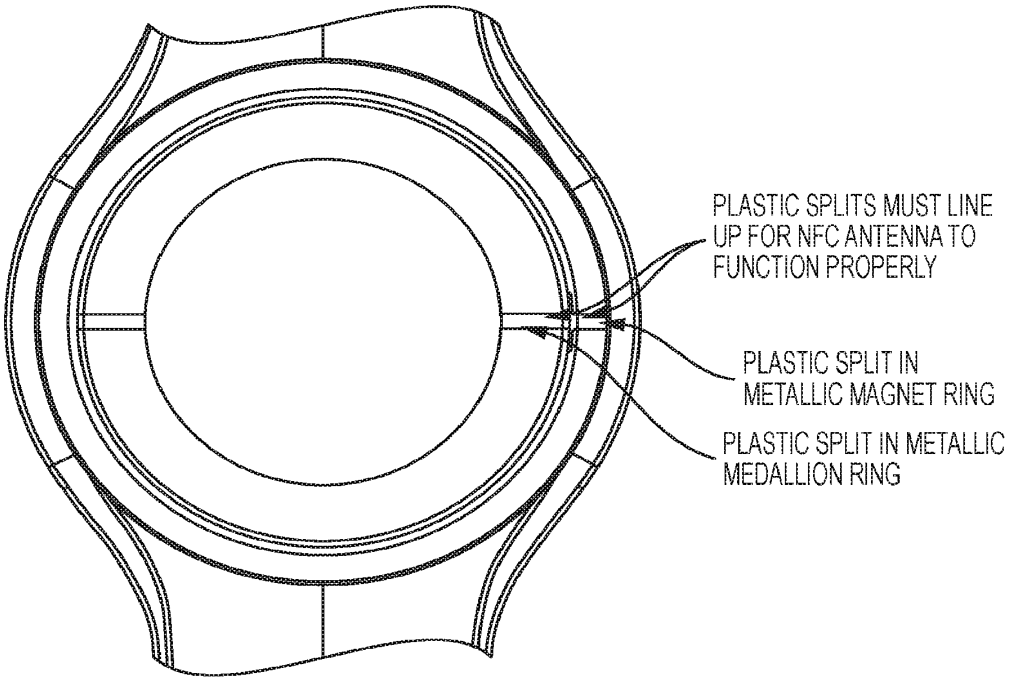

PLASTIC SPLITS MUST LINE UP FOR NFC ANTENNA TO FUNCTION PROPERLY
PLASTIC SPLIT IN METALLIC MAGNET RING
PLASTIC SPLIT IN METALLIC MEDALLION RING

FIG. 3B

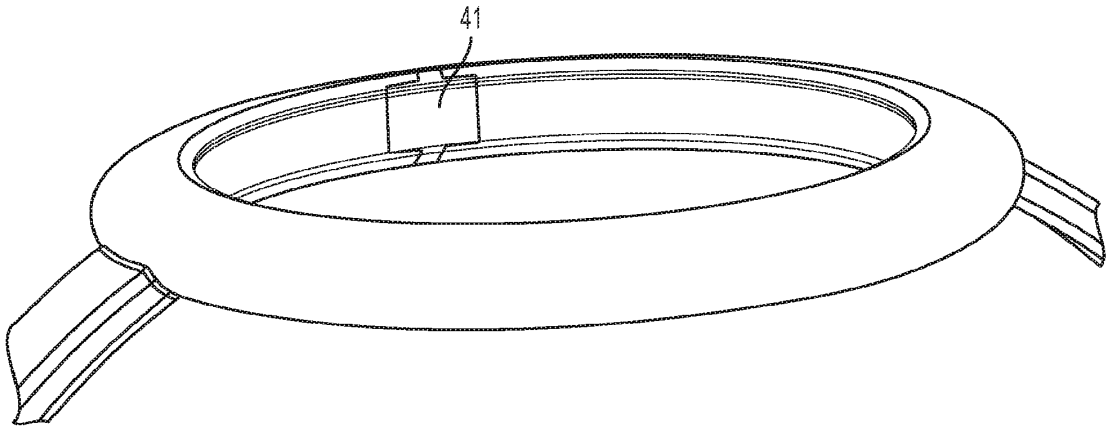


FIG. 3C

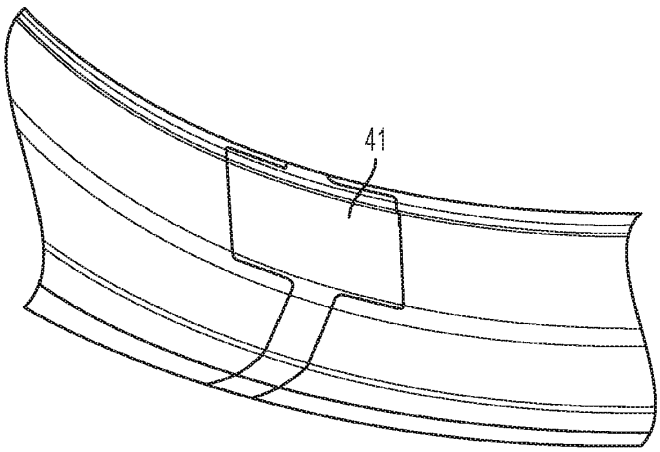


FIG. 3D

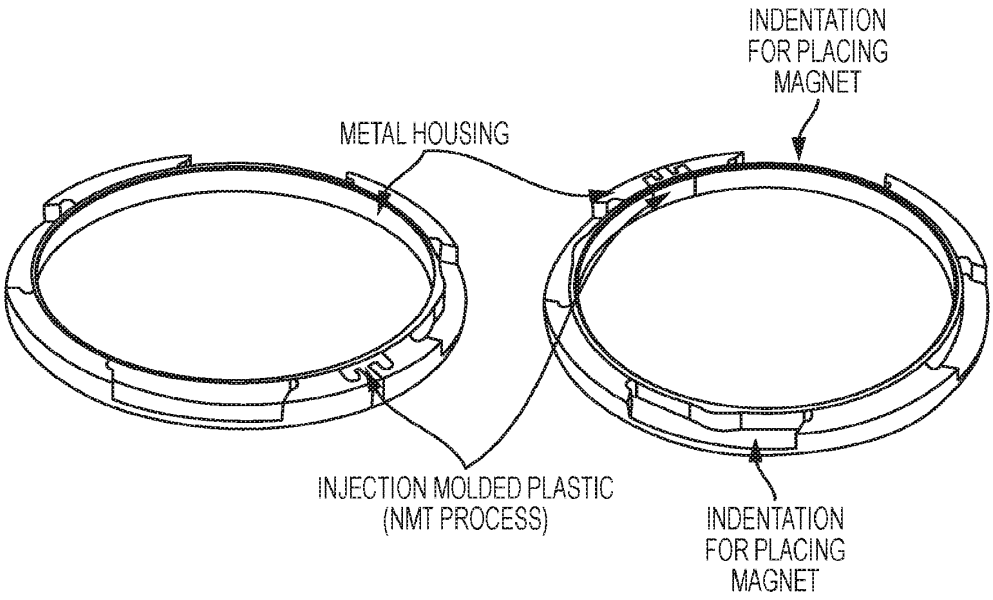

INDENTATION FOR PLACING MAGNET
METAL HOUSING
INJECTION MOLDED PLASTIC (NMT PROCESS)
INDENTATION FOR PLACING MAGNET

FIG. 3E

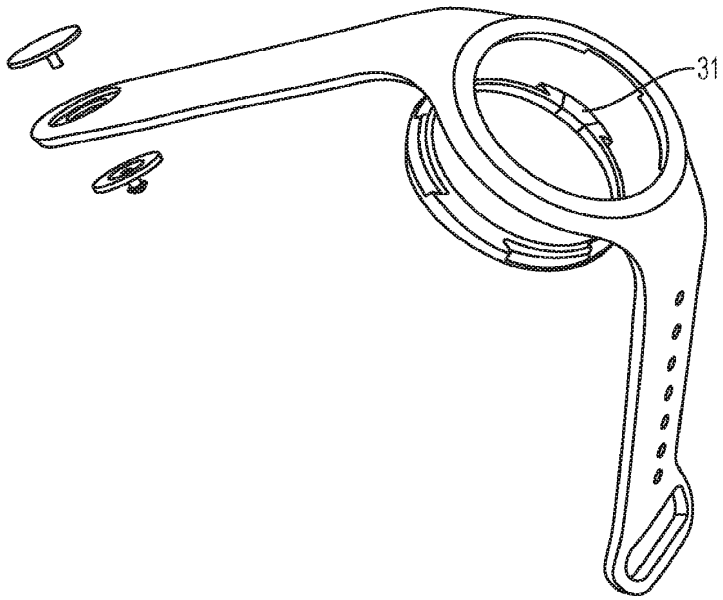


FIG. 4A

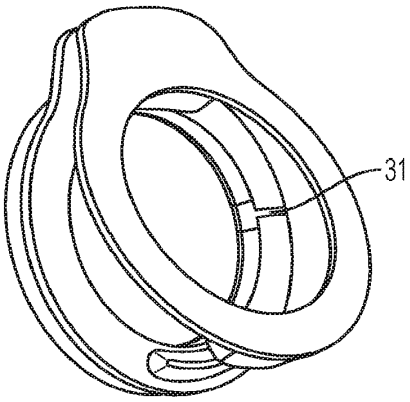


FIG. 4B

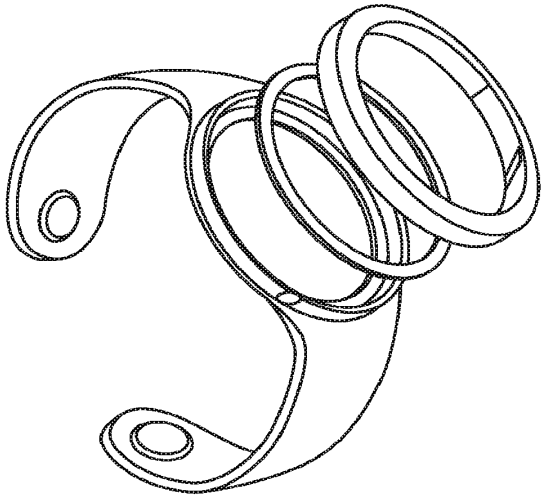


FIG. 4C

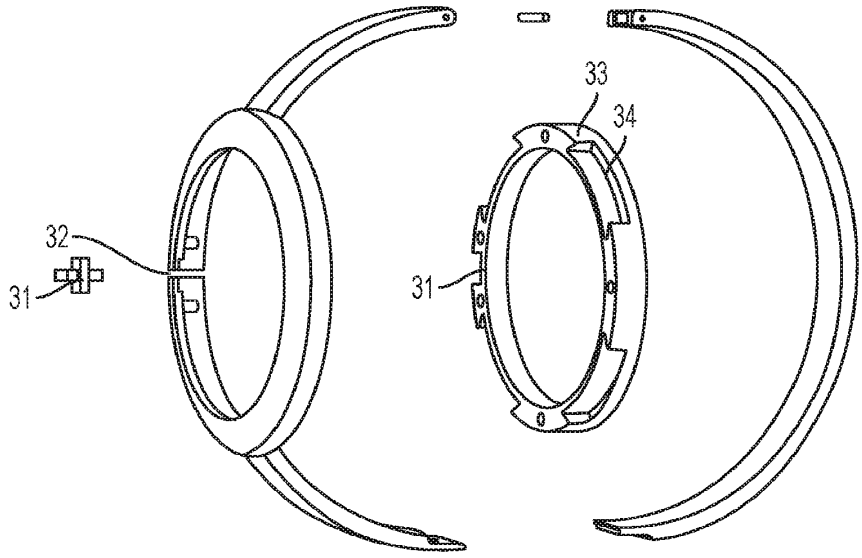


FIG. 4D

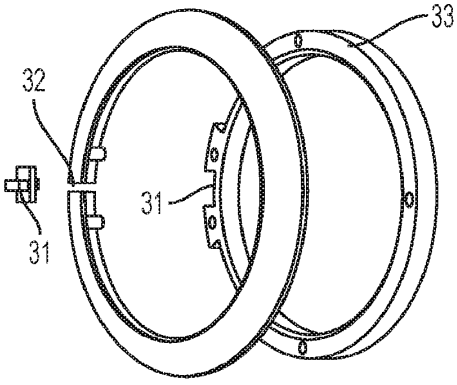


FIG. 4E

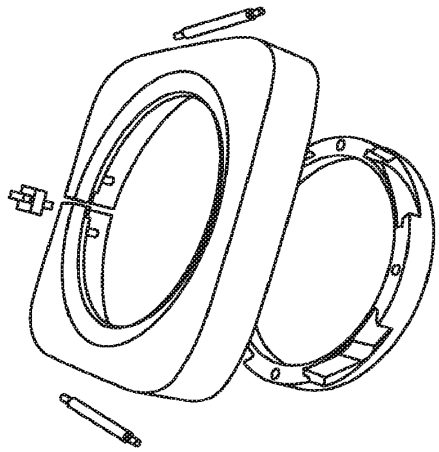


FIG. 4F

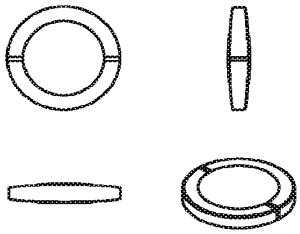


FIG. 5A

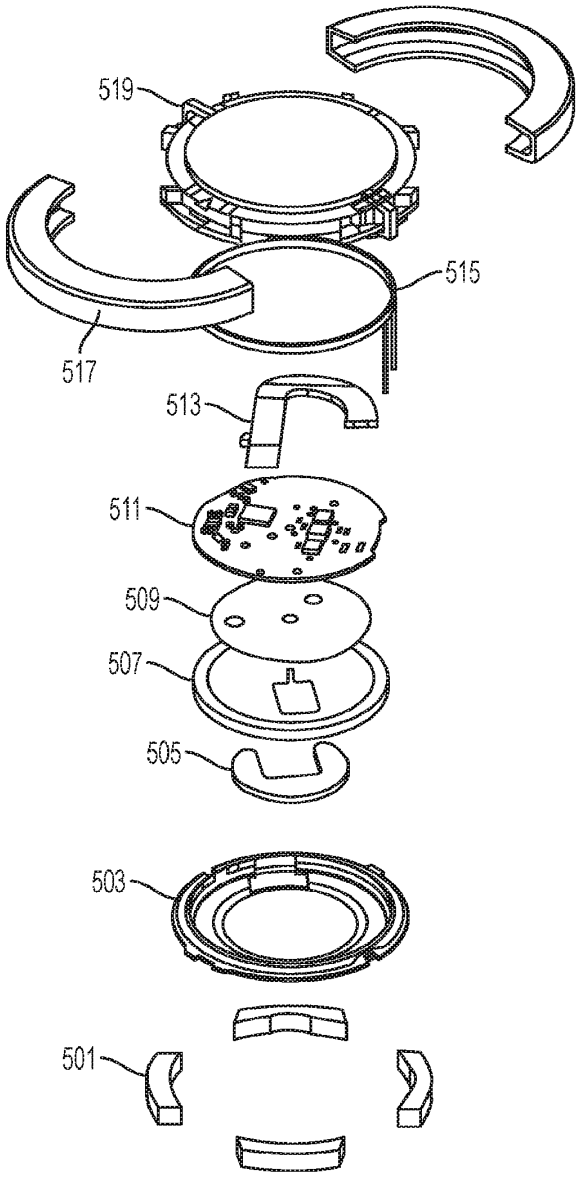


FIG. 5B

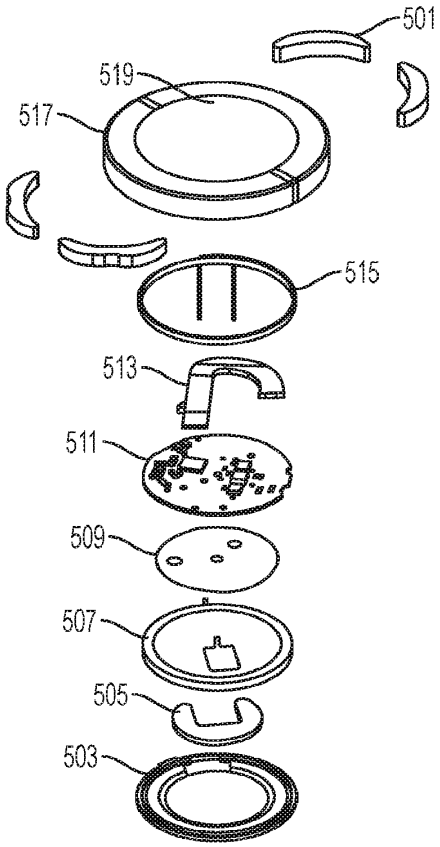

501
519
517
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503

FIG. 5C

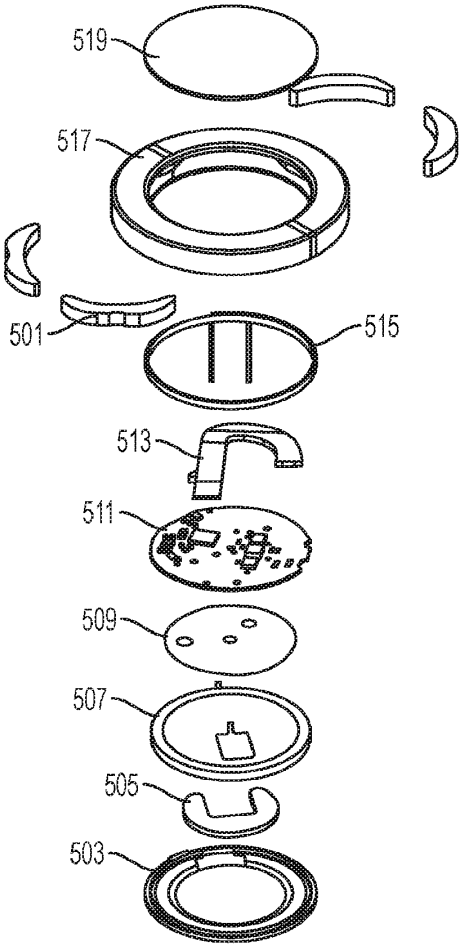

519
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503

FIG. 5D

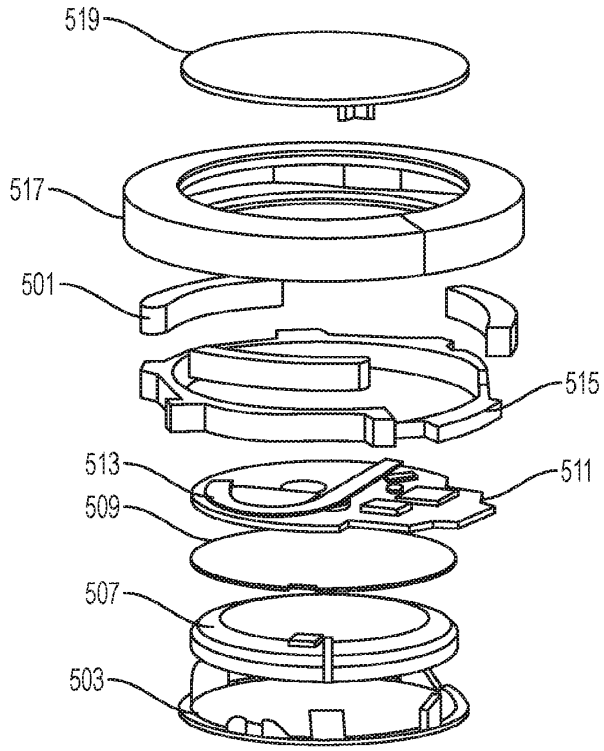


FIG. 5E

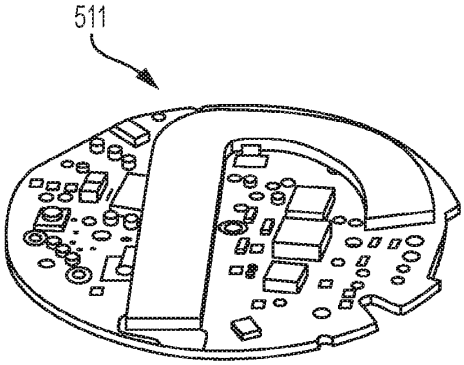


FIG. 5F

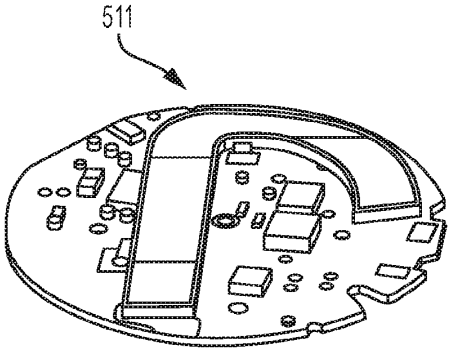


FIG. 5G

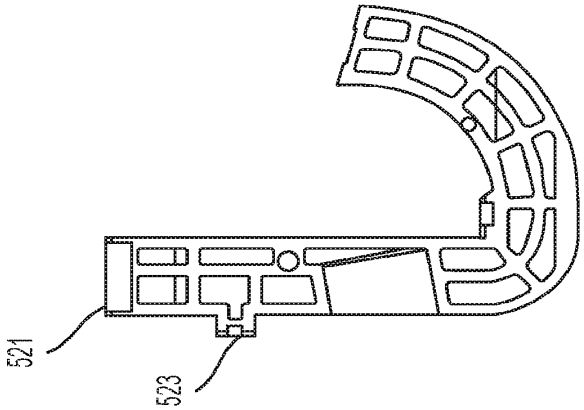


FIG. 5J

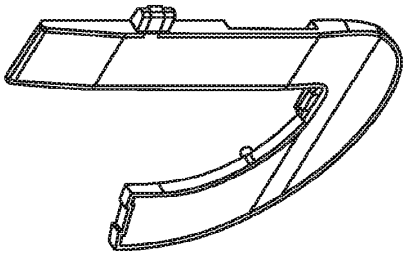


FIG. 5L

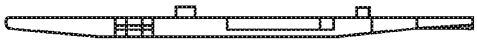


FIG. 5I



FIG. 5K

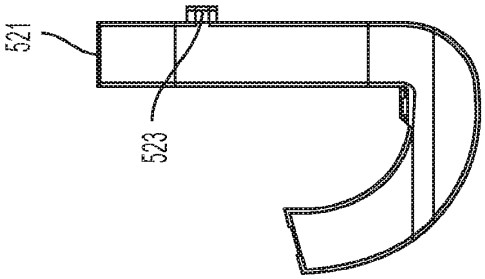


FIG. 5H

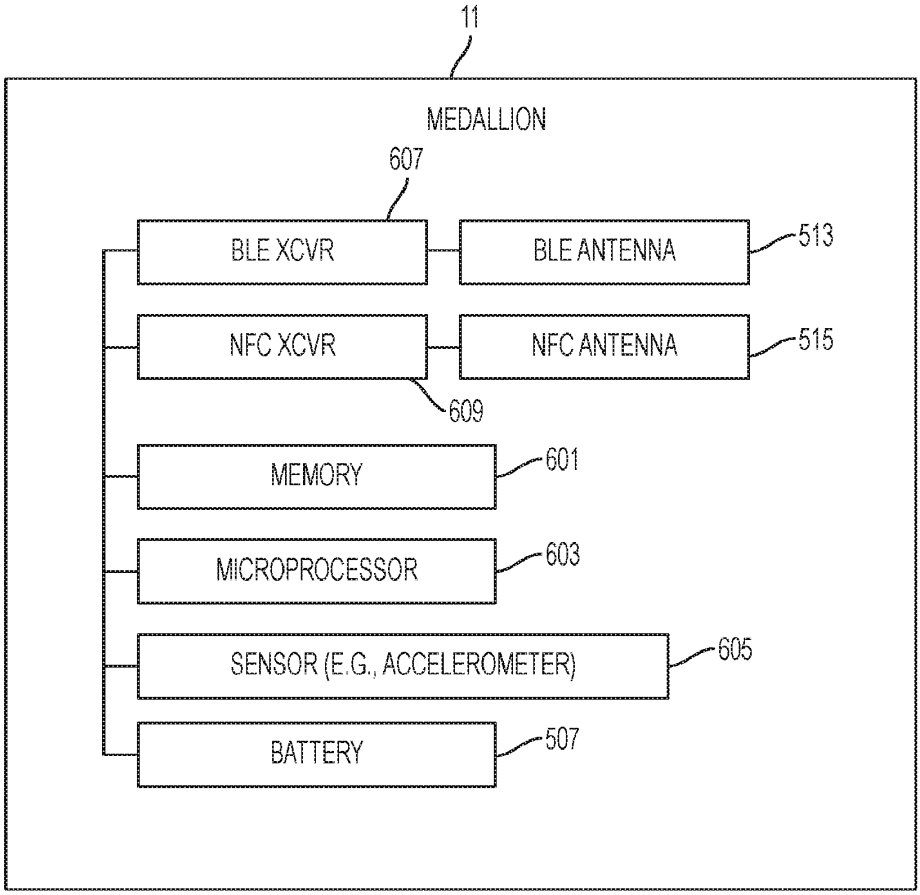

11
MEDALLION
607
BLE XCVR
BLE ANTENNA
513
NFC XCVR
NFC ANTENNA
515
609
MEMORY
601
MICROPROCESSOR
603
SENSOR (E.G., ACCELEROMETER)
605
BATTERY
507

FIG. 6

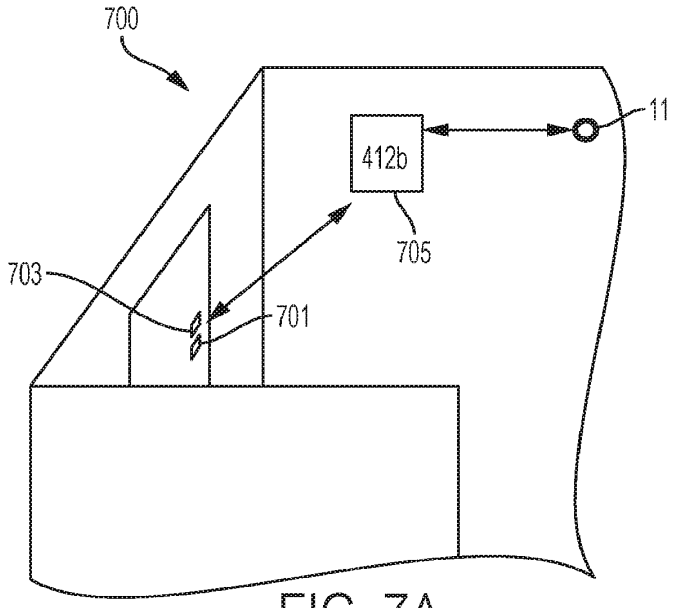


FIG. 7A

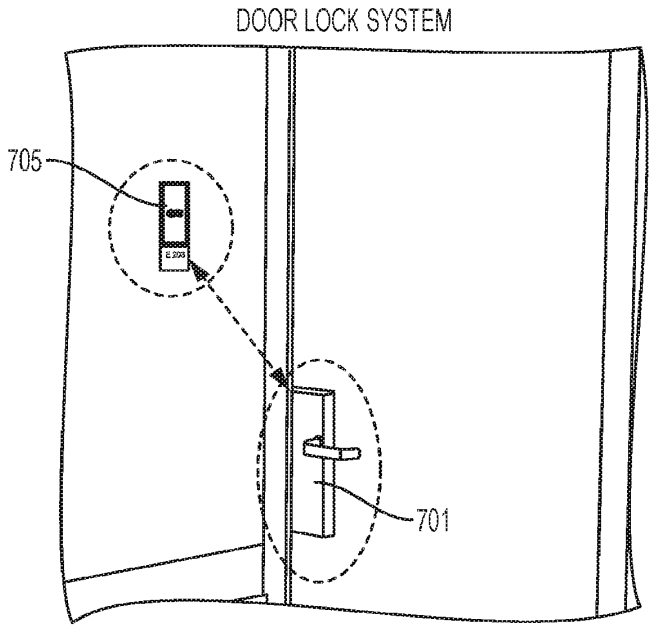


FIG. 7B

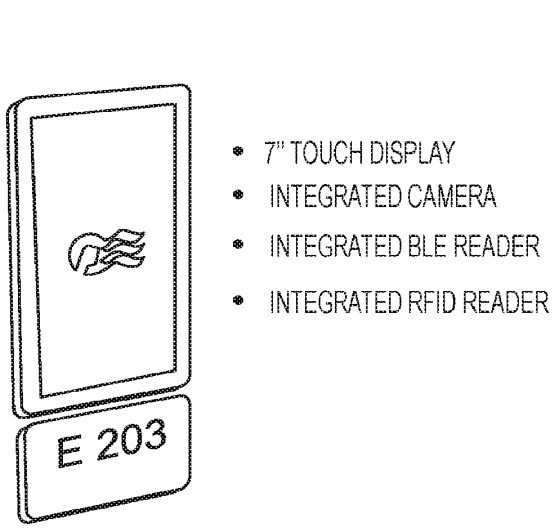

705
E 203
• 7" TOUCH DISPLAY
• INTEGRATED CAMERA
• INTEGRATED BLE READER
• INTEGRATED RFID READER

FIG. 7C

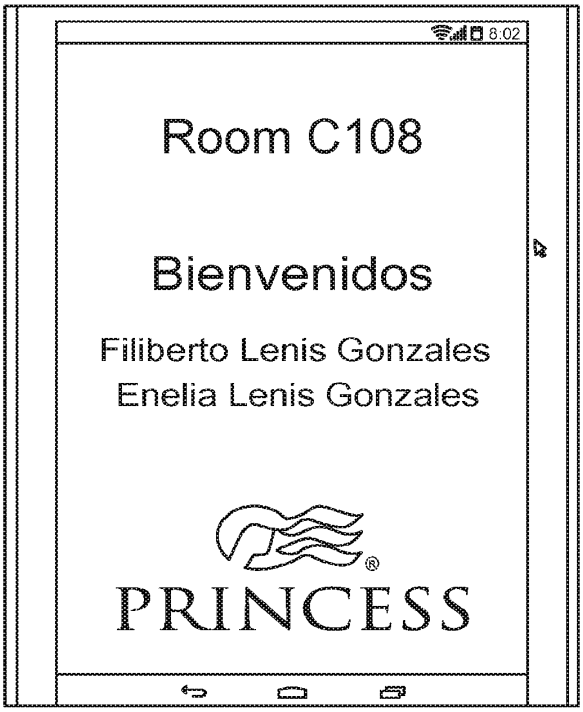

8:02
Room C108
Bienvenidos
Filiberto Lenis Gonzales
Enelia Lenis Gonzales
PRINCESS

FIG. 7D

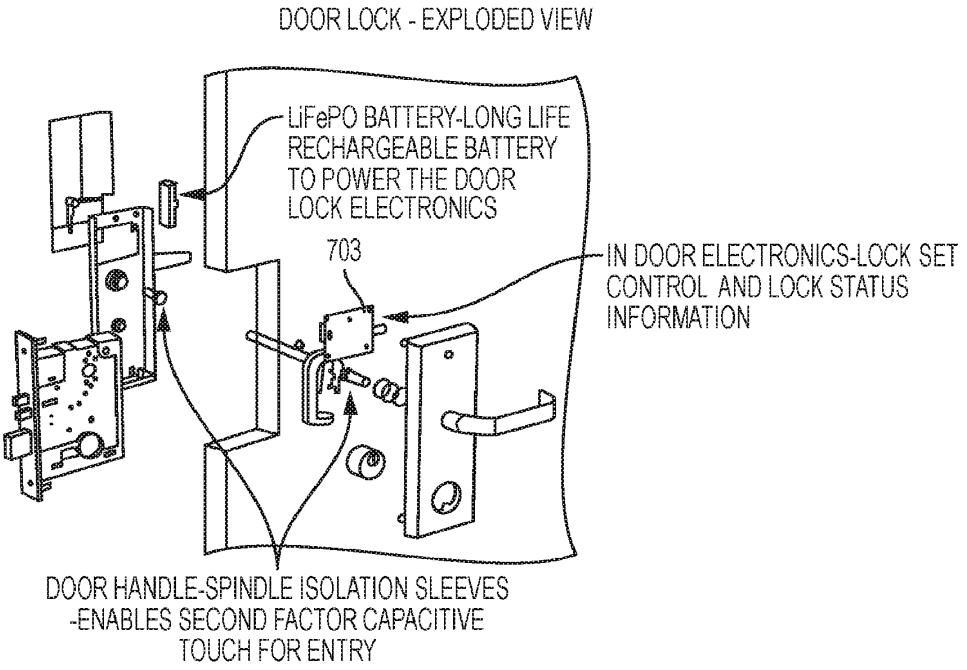

DOOR LOCK - EXPLODED VIEW
LiFePO BATTERY-LONG LIFE RECHARGEABLE BATTERY TO POWER THE DOOR LOCK ELECTRONICS
703
IN DOOR ELECTRONICS-LOCK SET CONTROL AND LOCK STATUS INFORMATION
DOOR HANDLE-SPINDLE ISOLATION SLEEVES -ENABLES SECOND FACTOR CAPACITIVE TOUCH FOR ENTRY

FIG. 7E

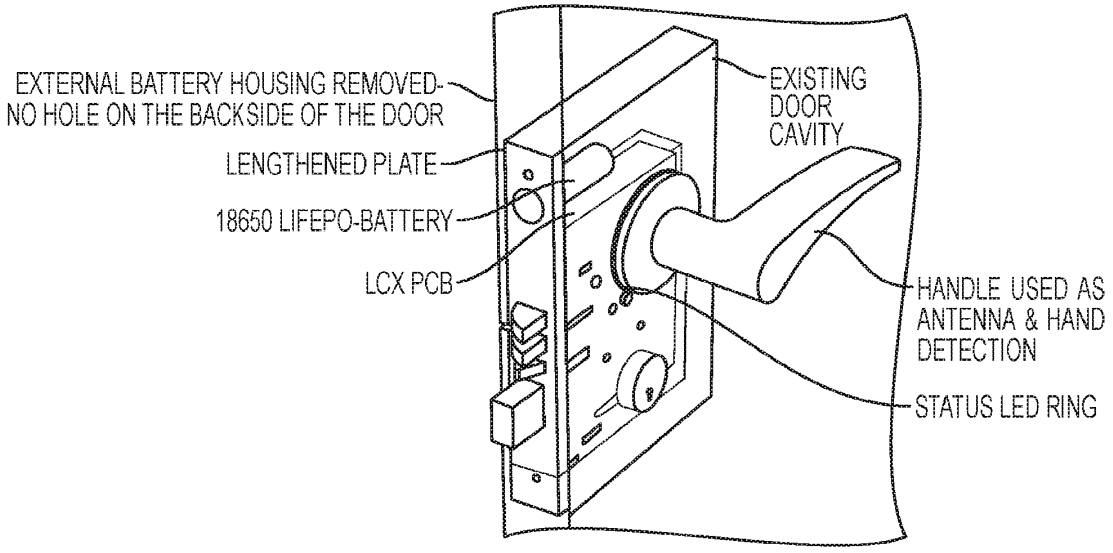

EXTERNAL BATTERY HOUSING REMOVED-NO HOLE ON THE BACKSIDE OF THE DOOR
LENGTHENED PLATE
18650 LIFEPO-BATTERY
LCX PCB
EXISTING DOOR CAVITY
HANDLE USED AS ANTENNA & HAND DETECTION
STATUS LED RING

FIG. 7F

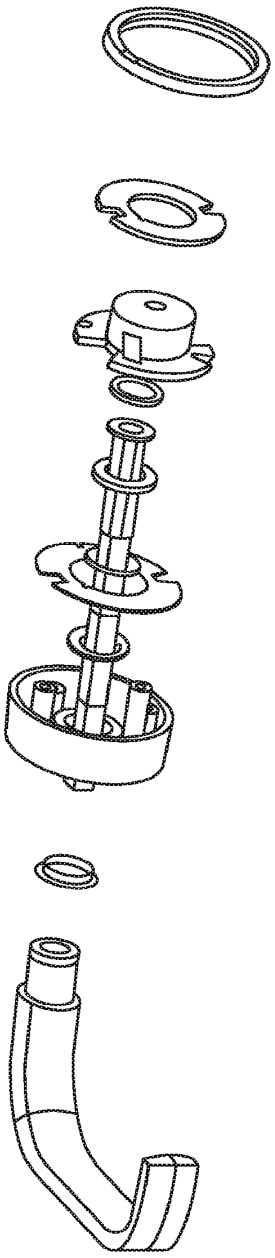


FIG. 7G

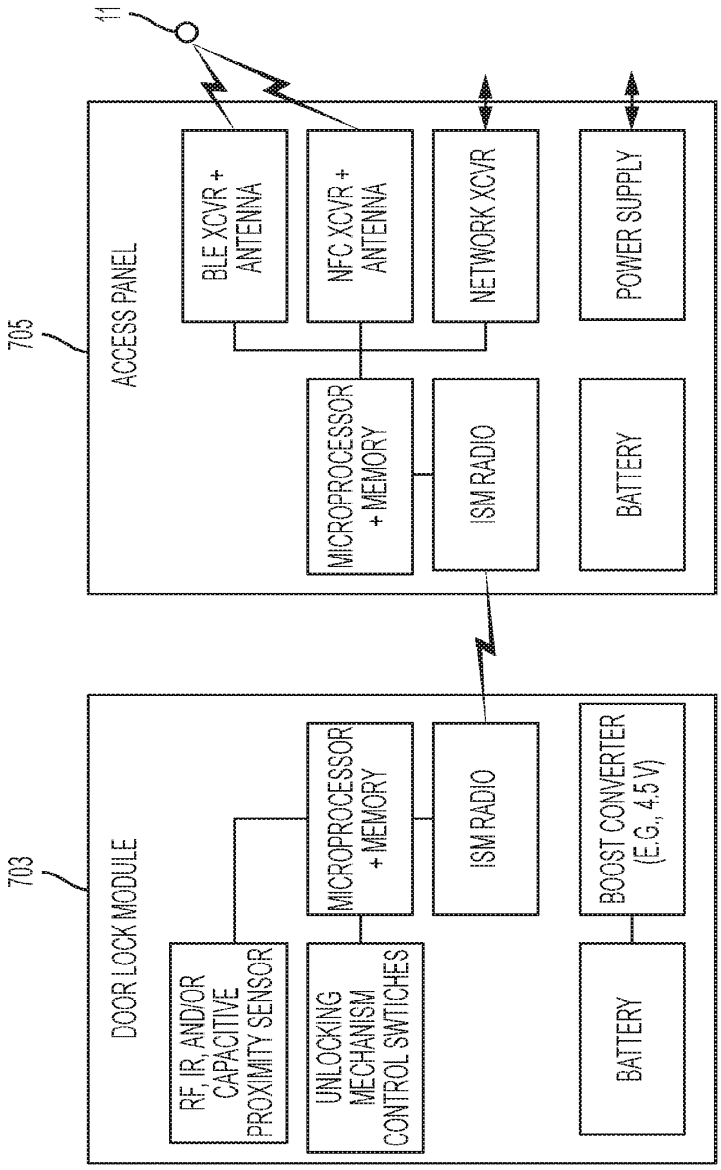

11
705
ACCESS PANEL
BLE XCVR + ANTENNA
NFC XCVR + ANTENNA
NETWORK XCVR
POWER SUPPLY
MICROPROCESSOR + MEMORY
ISM RADIO
BATTERY
703
DOOR LOCK MODULE
RF, IR, AND/OR CAPACITIVE PROXIMITY SENSOR
UNLOCKING MECHANISM CONTROL SWTICHES
MICROPROCESSOR + MEMORY
ISM RADIO
BOOST CONVERTER (E.G., 4.5 V)
BATTERY

FIG. 7H

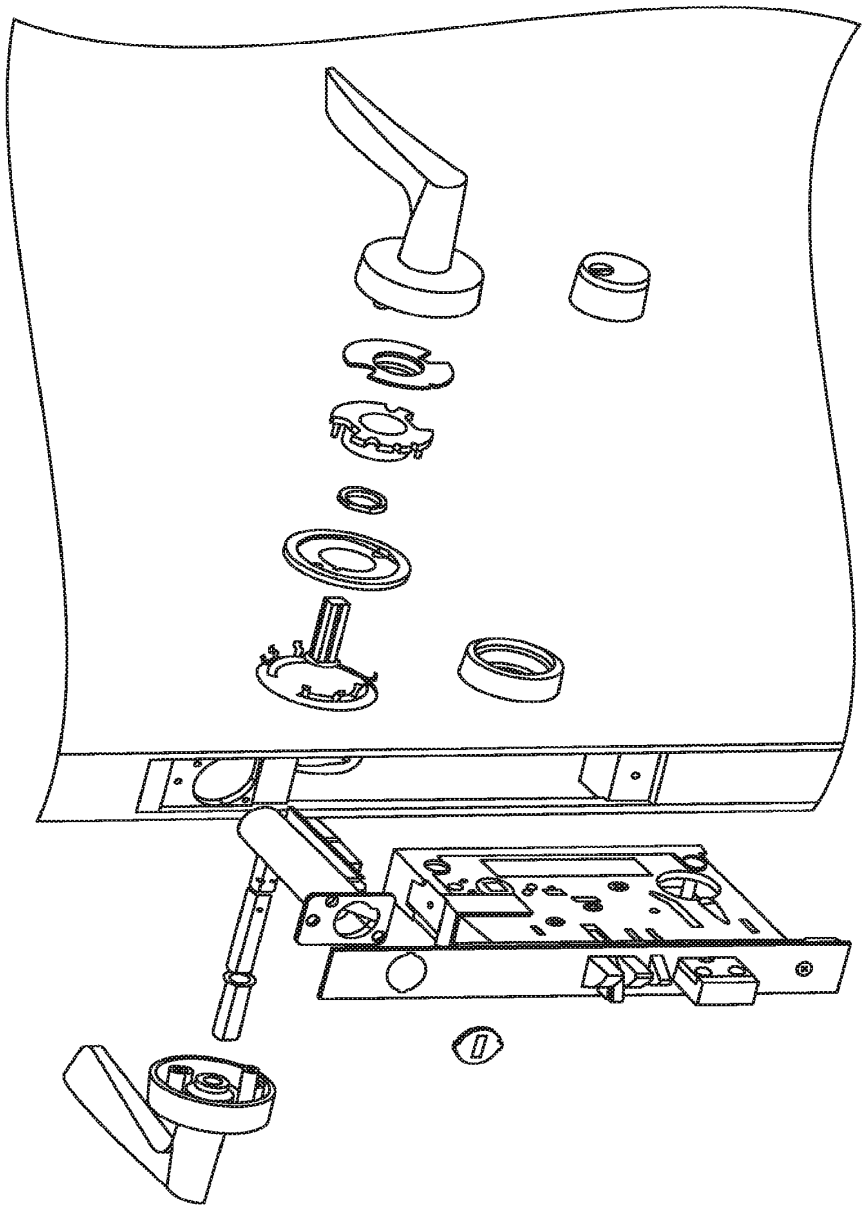


FIG. 7I

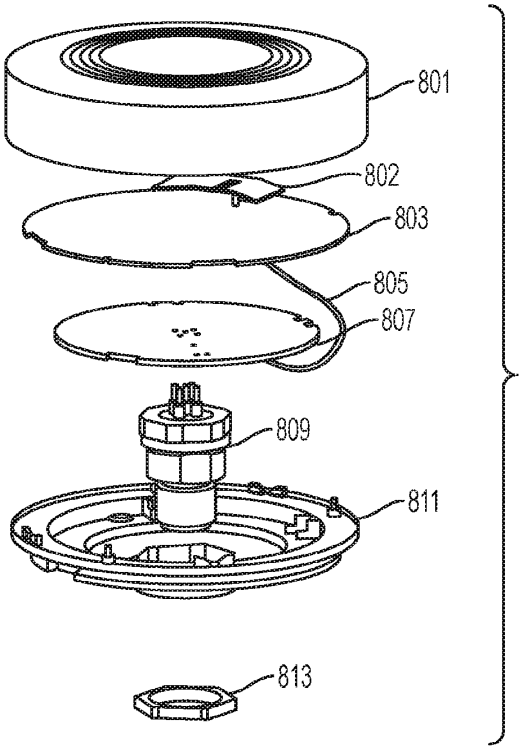


FIG. 8A

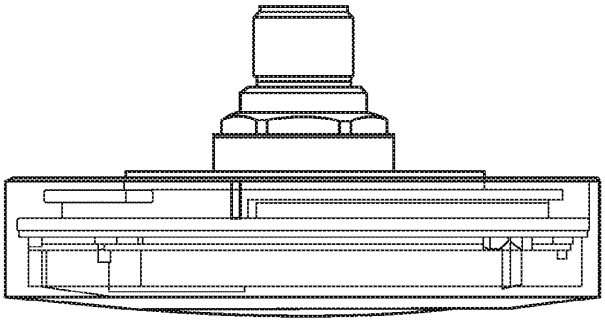


FIG. 8B

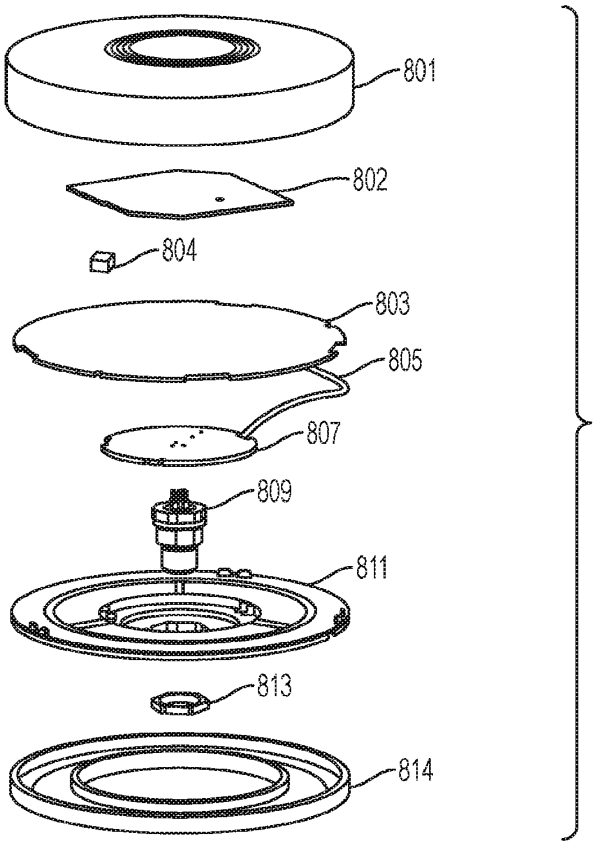


FIG. 8C

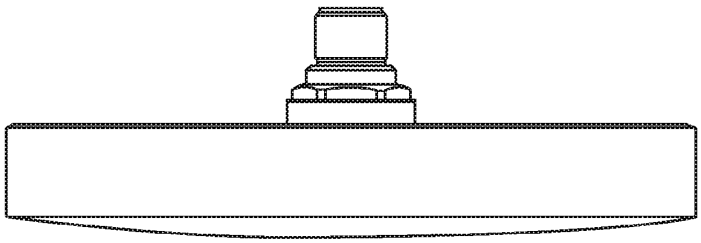


FIG. 8D



FIG. 8F

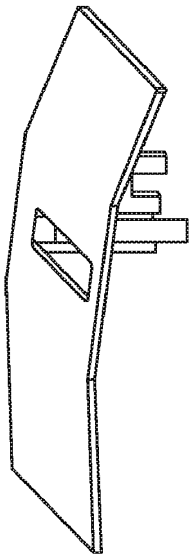


FIG. 8H

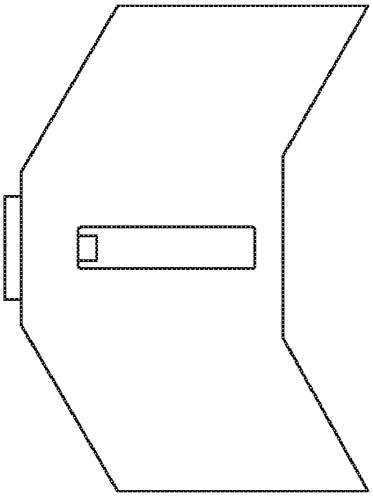


FIG. 8E

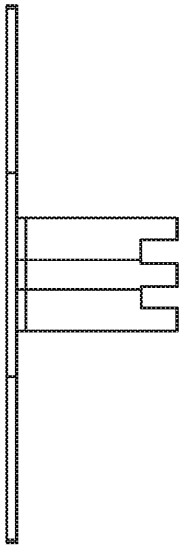


FIG. 8G

FIG. 8J

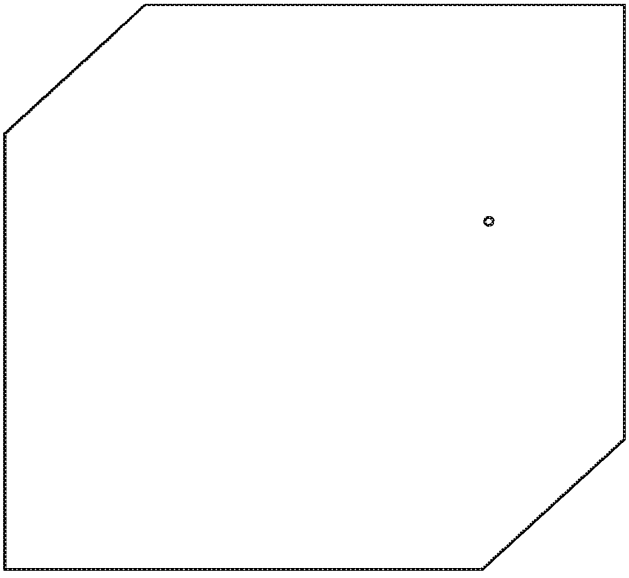


FIG. 8I



FIG. 8L

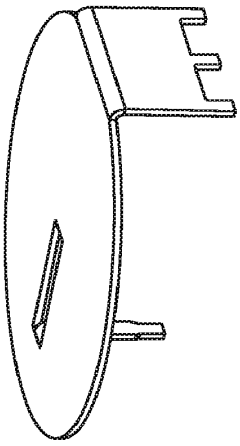


FIG. 8N

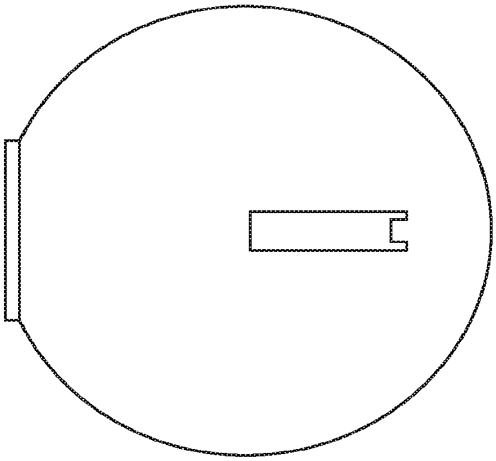


FIG. 8K

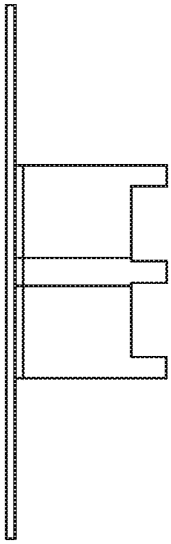


FIG. 8M

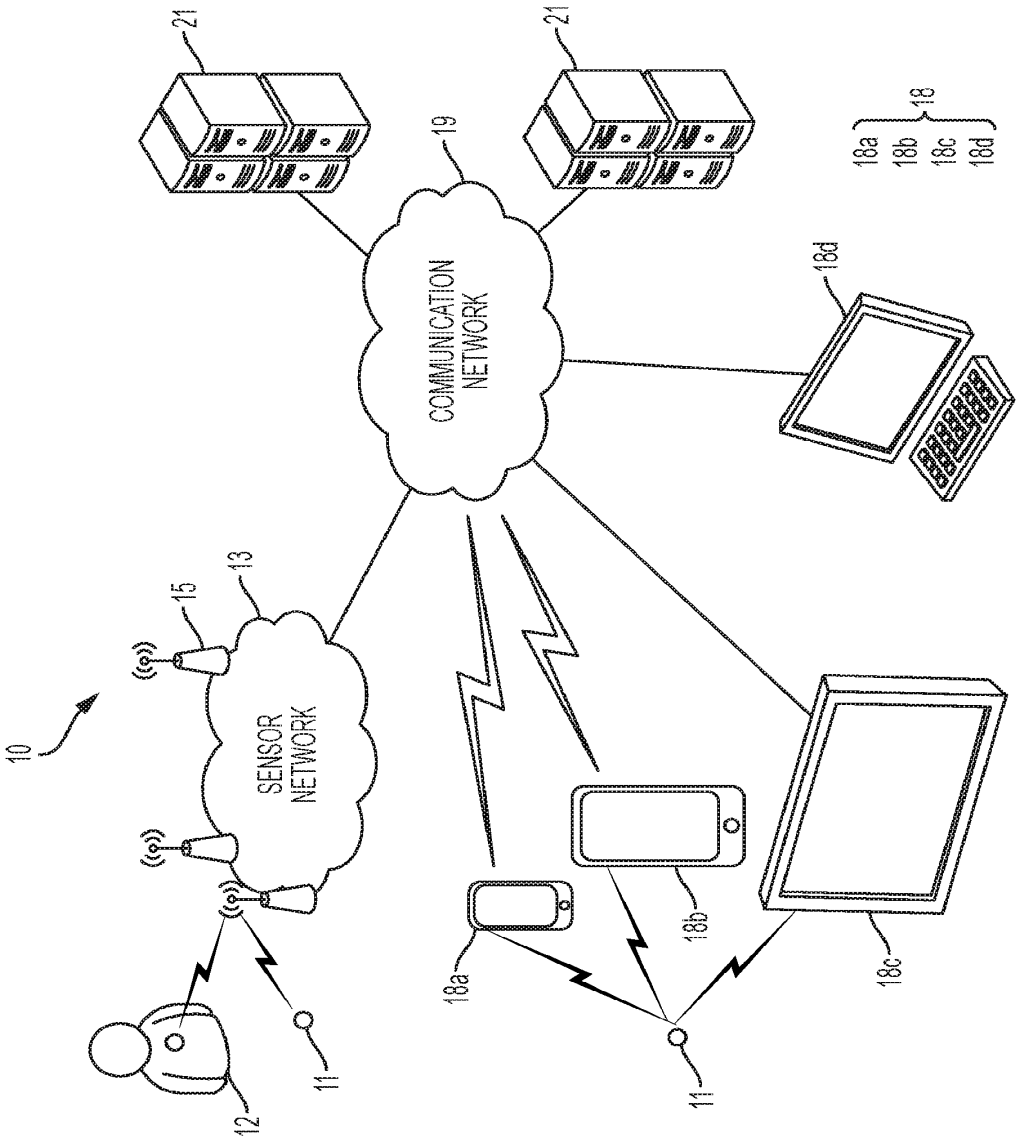

21
21
19
COMMUNICATION NETWORK
18
18a
18b
18c
18d
18d
13
15
SENSOR NETWORK
10
18a
18b
18c
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11
12

FIG. 9

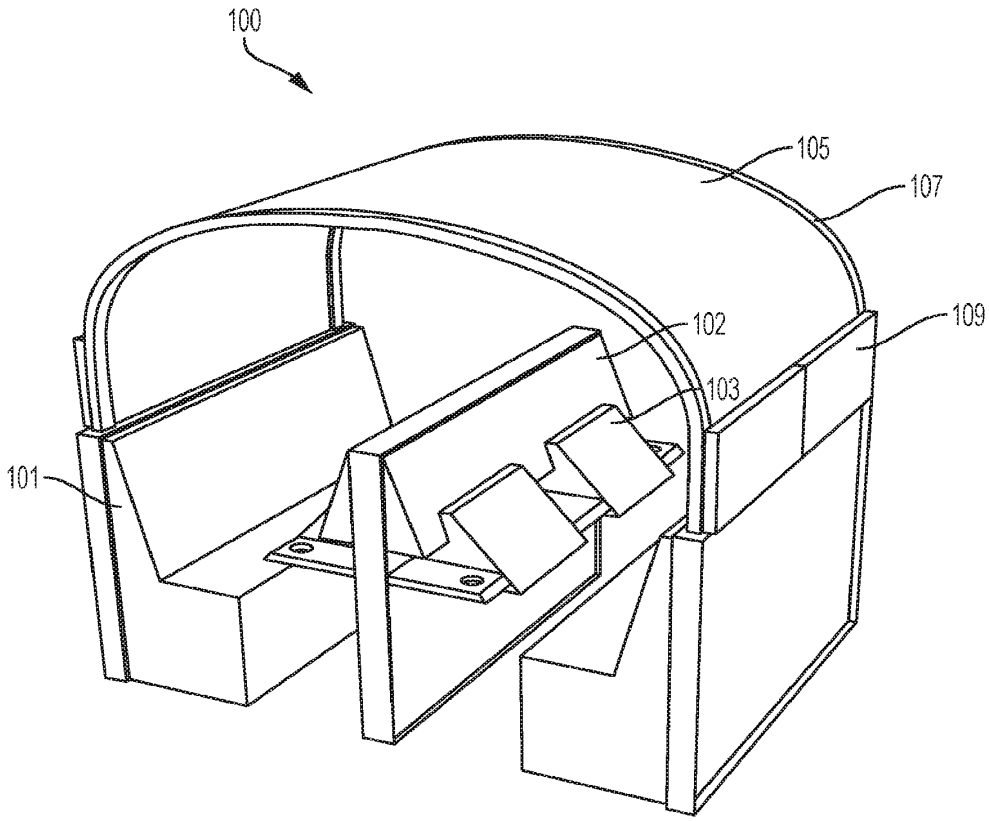


FIG. 10

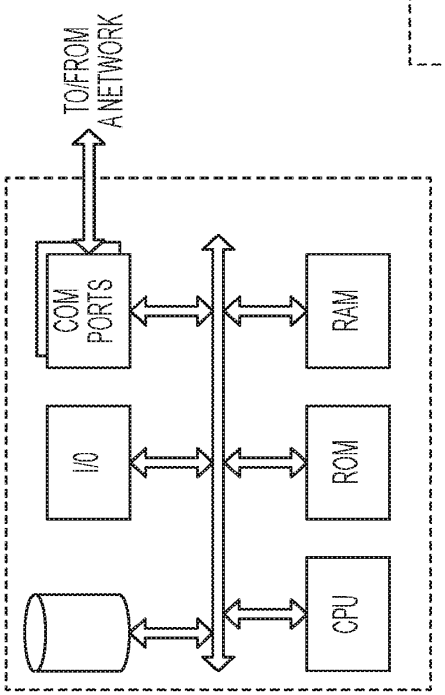

TO/FROM A NETWORK
COM PORTS
I/O
CPU
RAM
ROM

FIG. 11

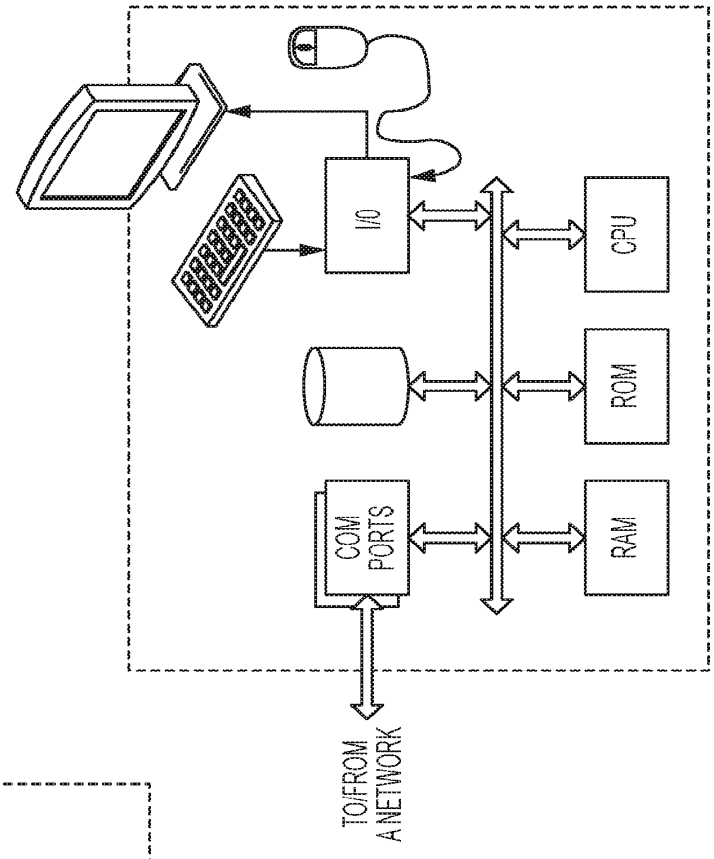

I/O
CPU
ROM
COM PORTS
RAM
TO/FROM A NETWORK

FIG. 12

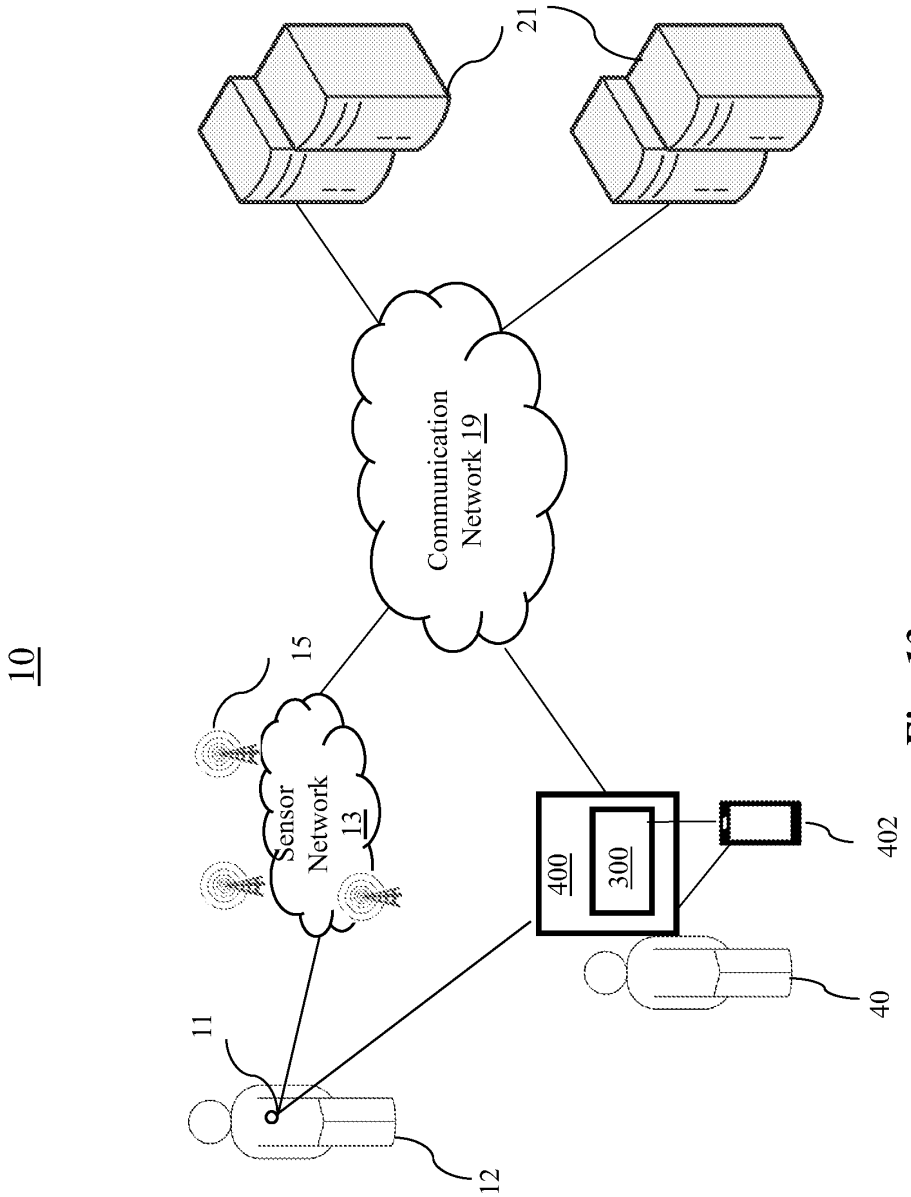

10
21
Communication Network 19
15
Sensor Network 13
400
300
402
40
11
12

Fig. 13

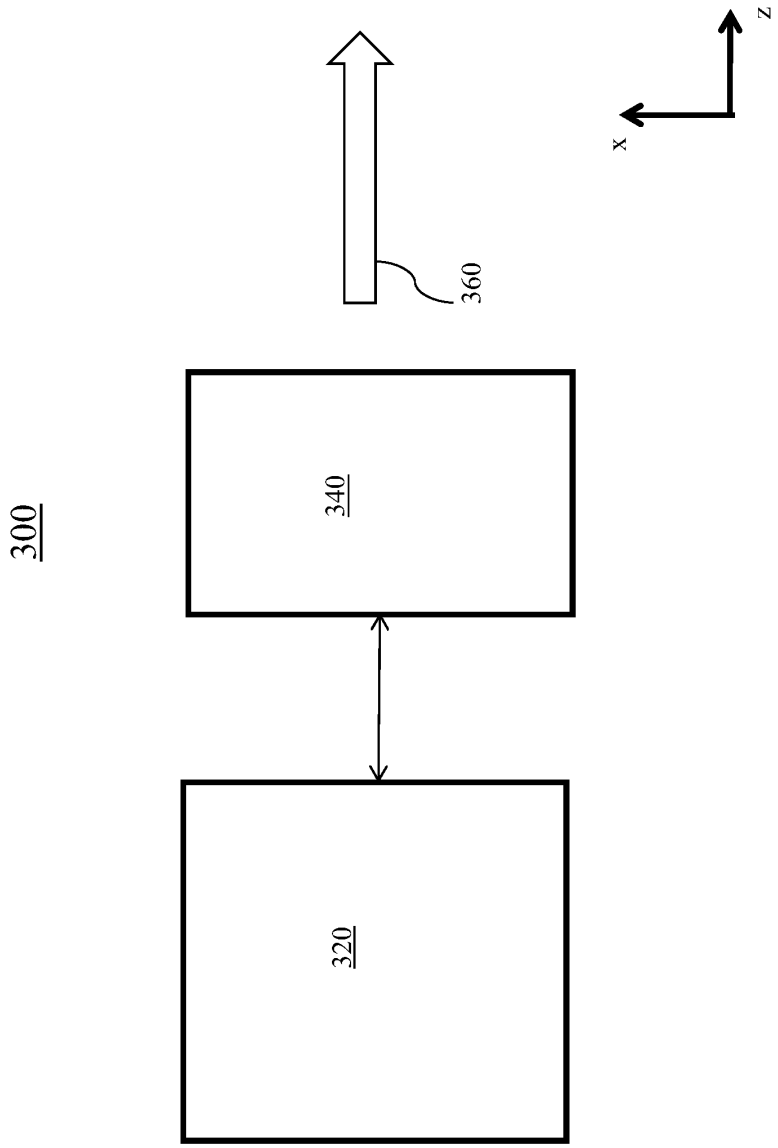


Fig. 14

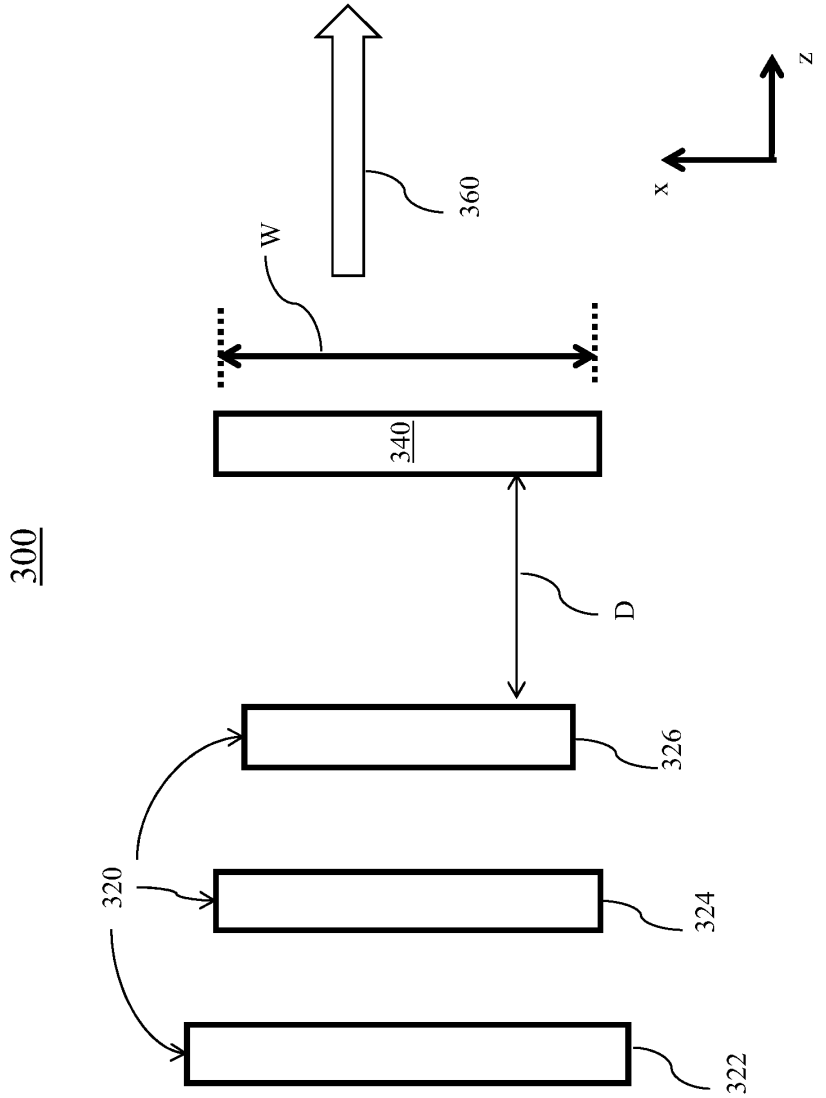


Fig. 15

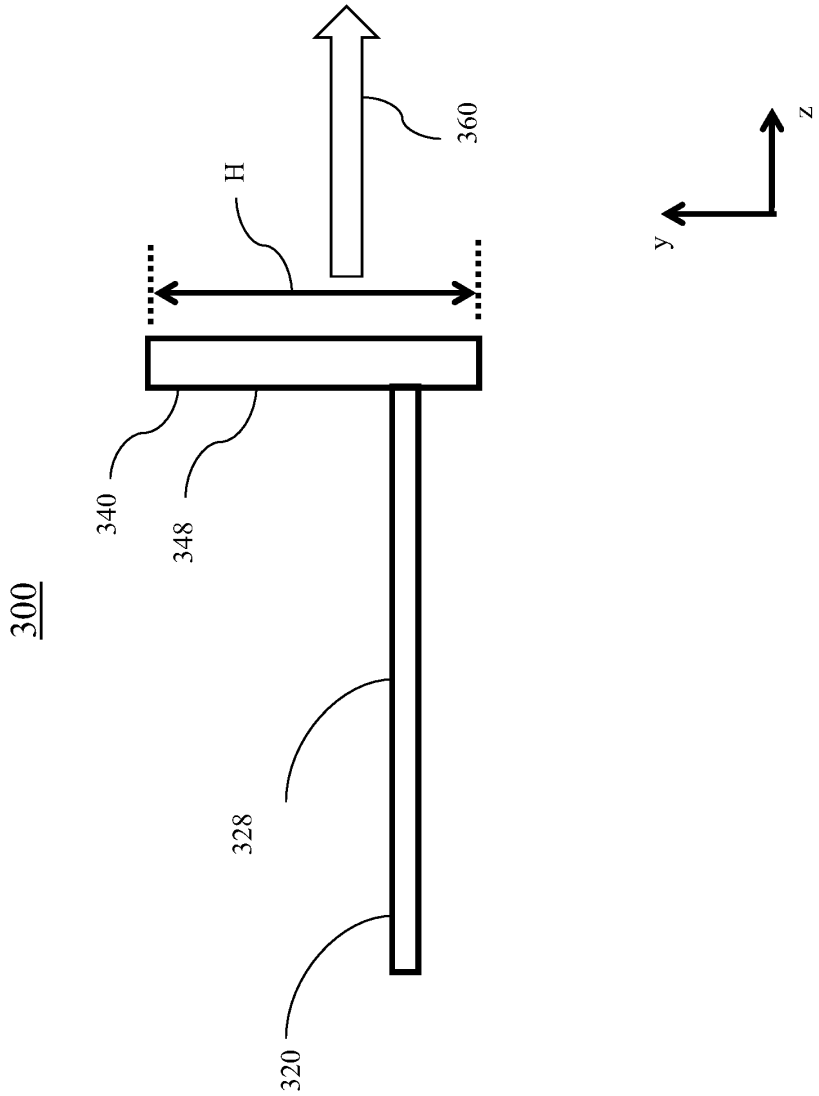


Fig. 16

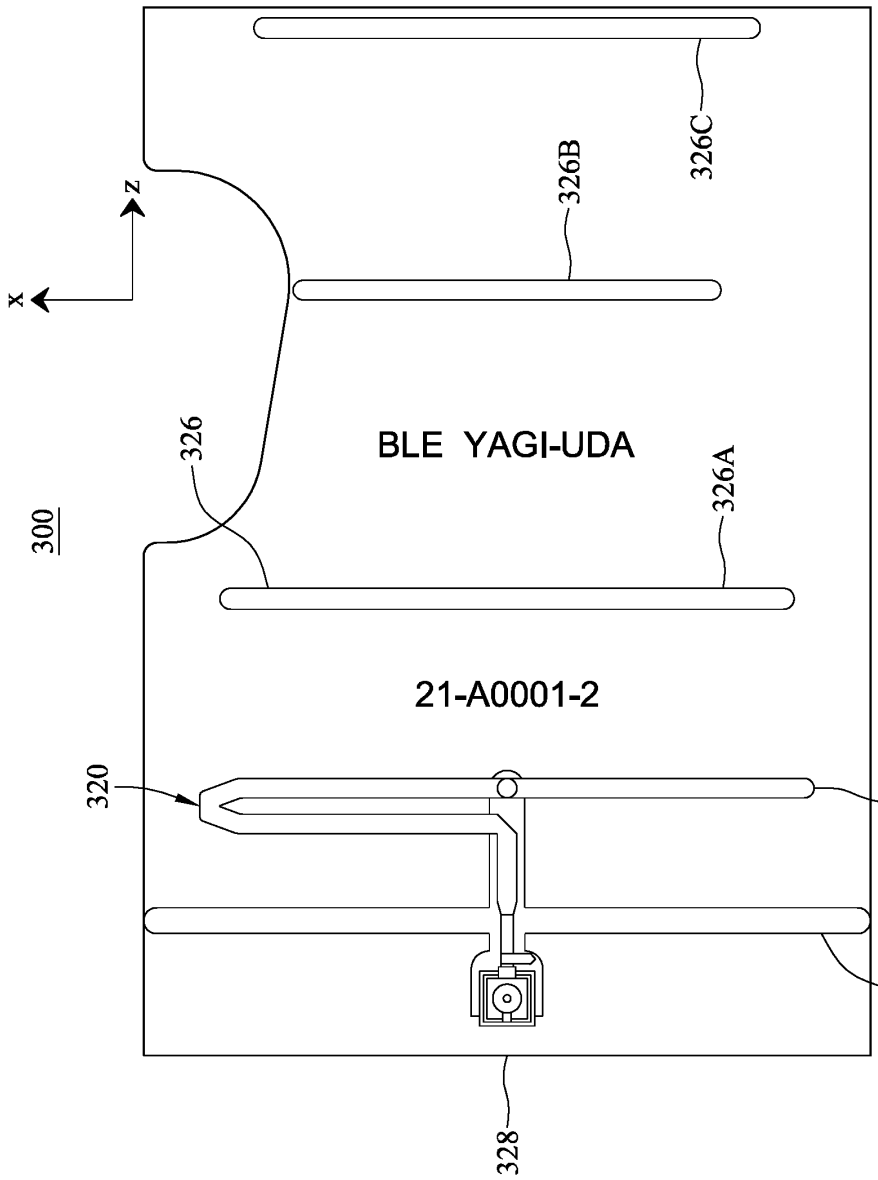

326C
326B
z
x
326
BLE YAGI-UDA
326A
300
21-A0001-2
320
324
322
328

Fig. 17

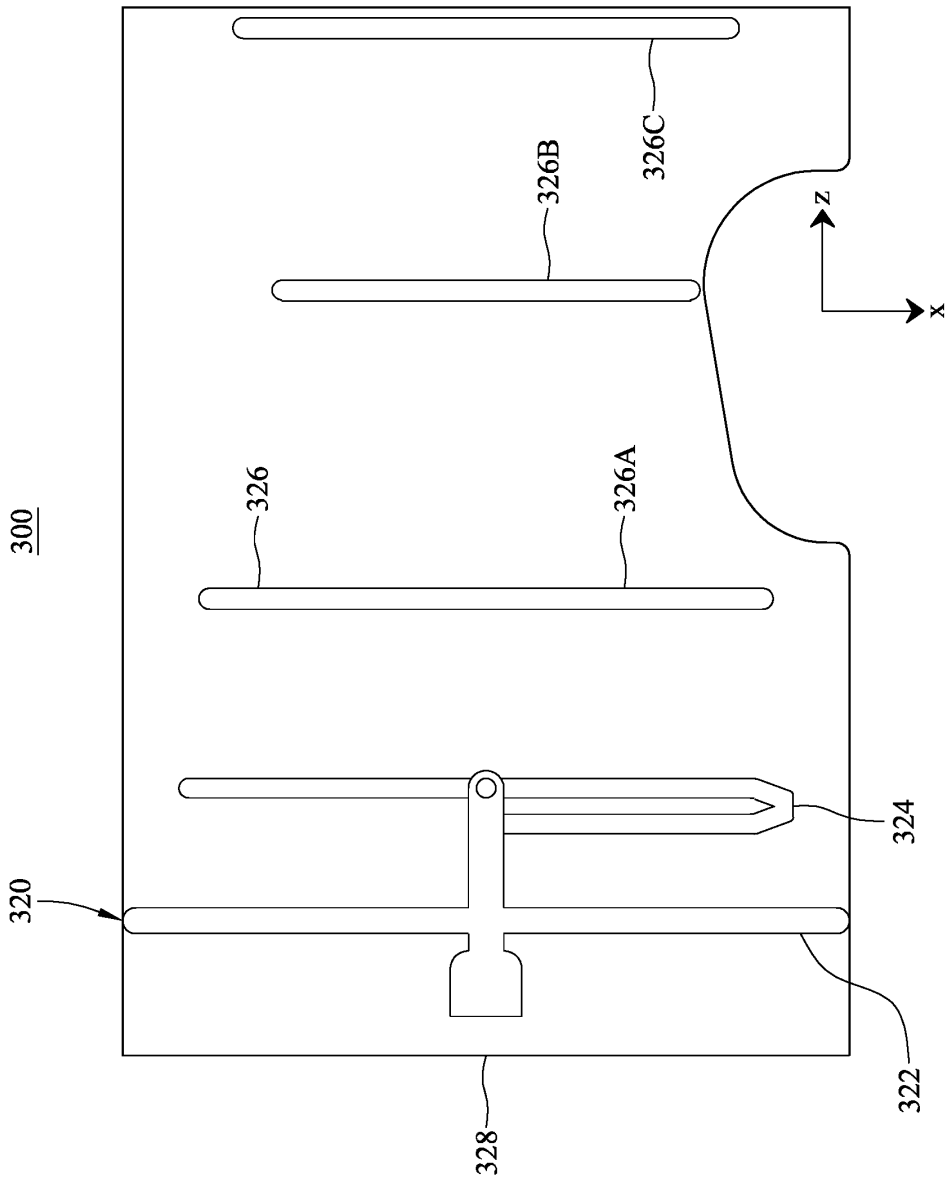


Fig. 18

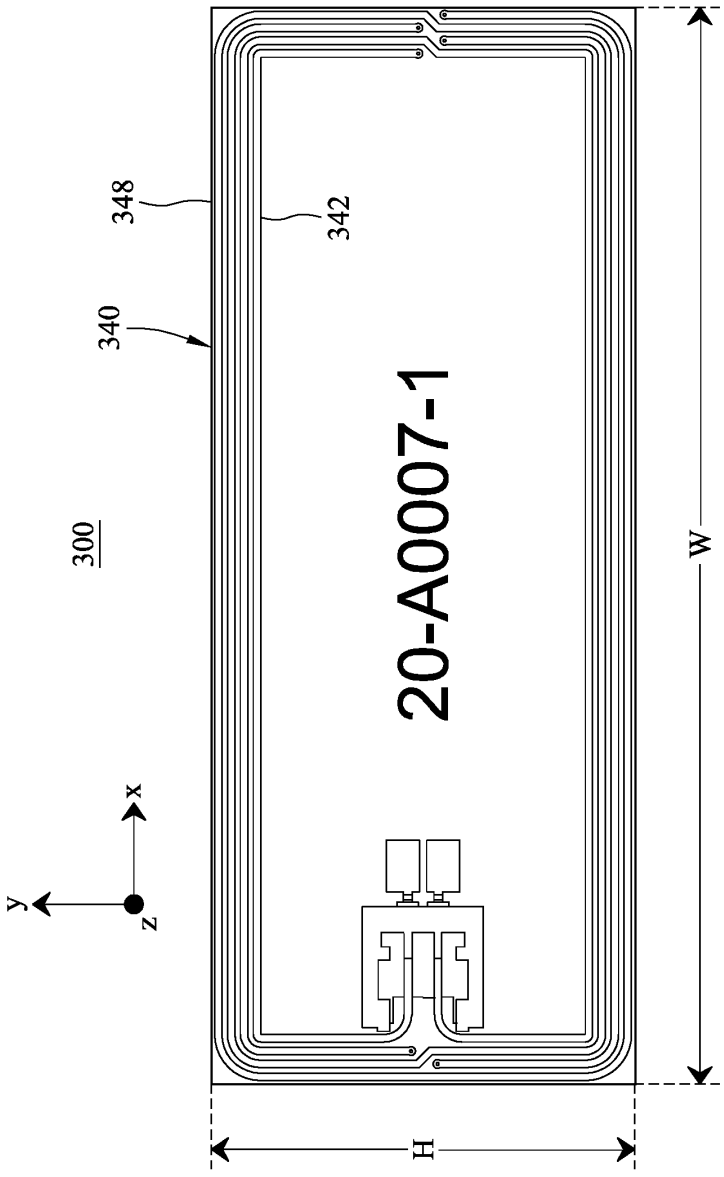


Fig. 19

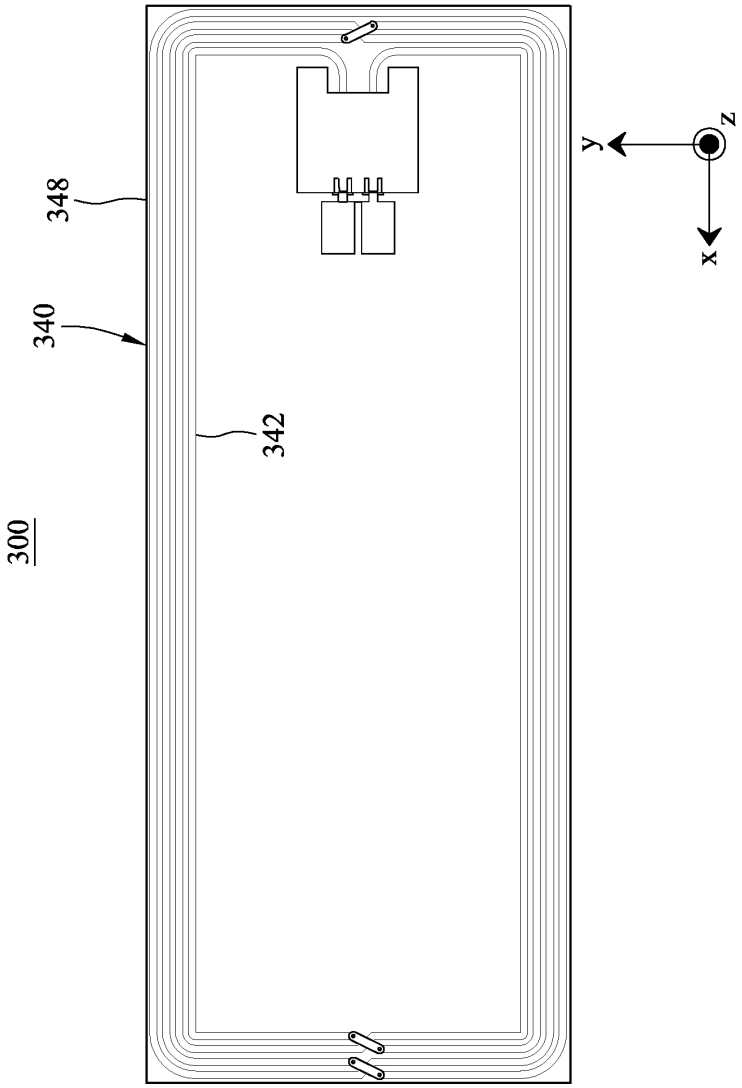


Fig. 20

300

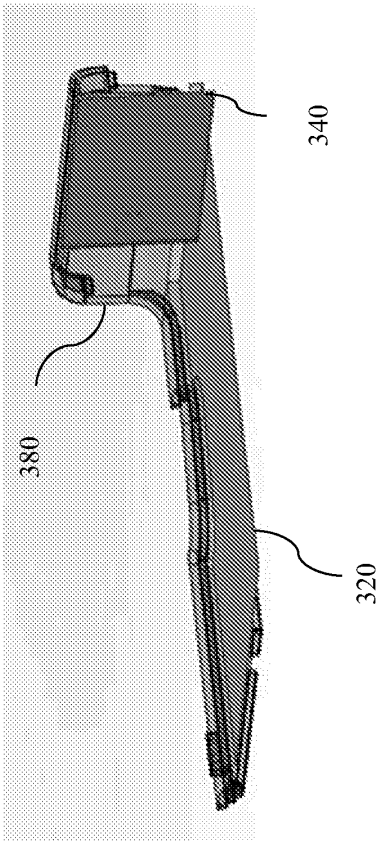


Fig. 21

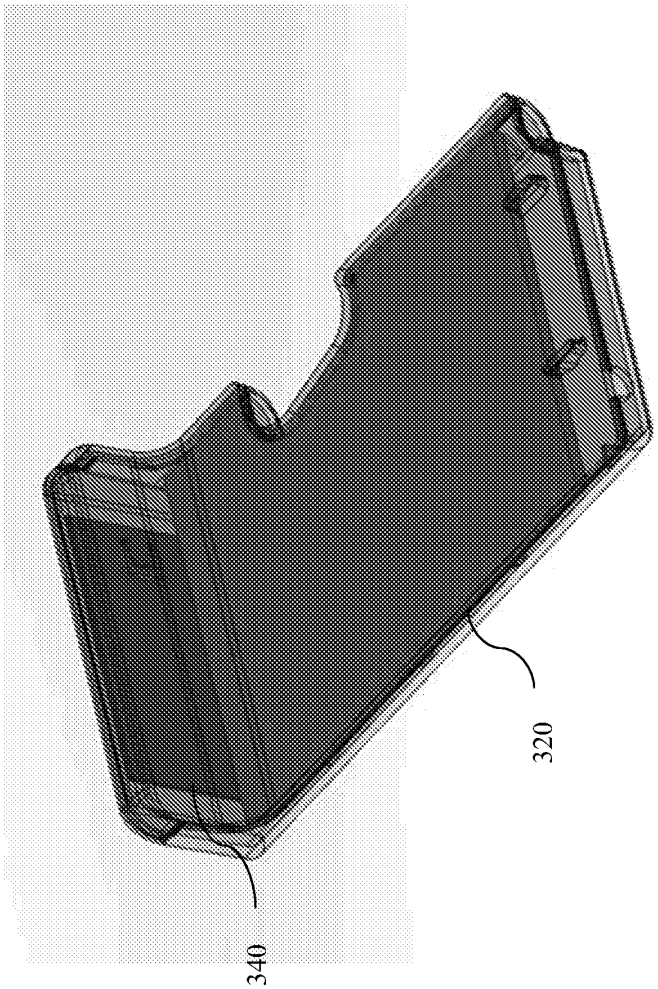


Fig. 22

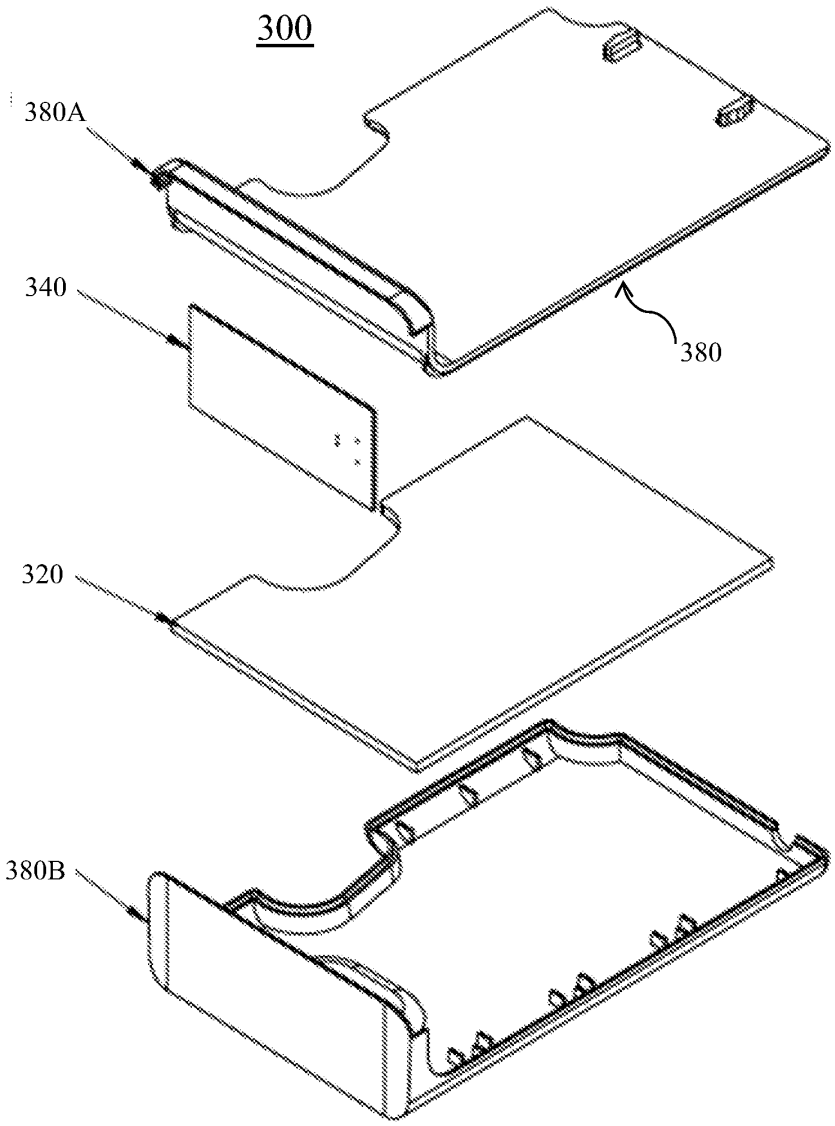


Fig. 23

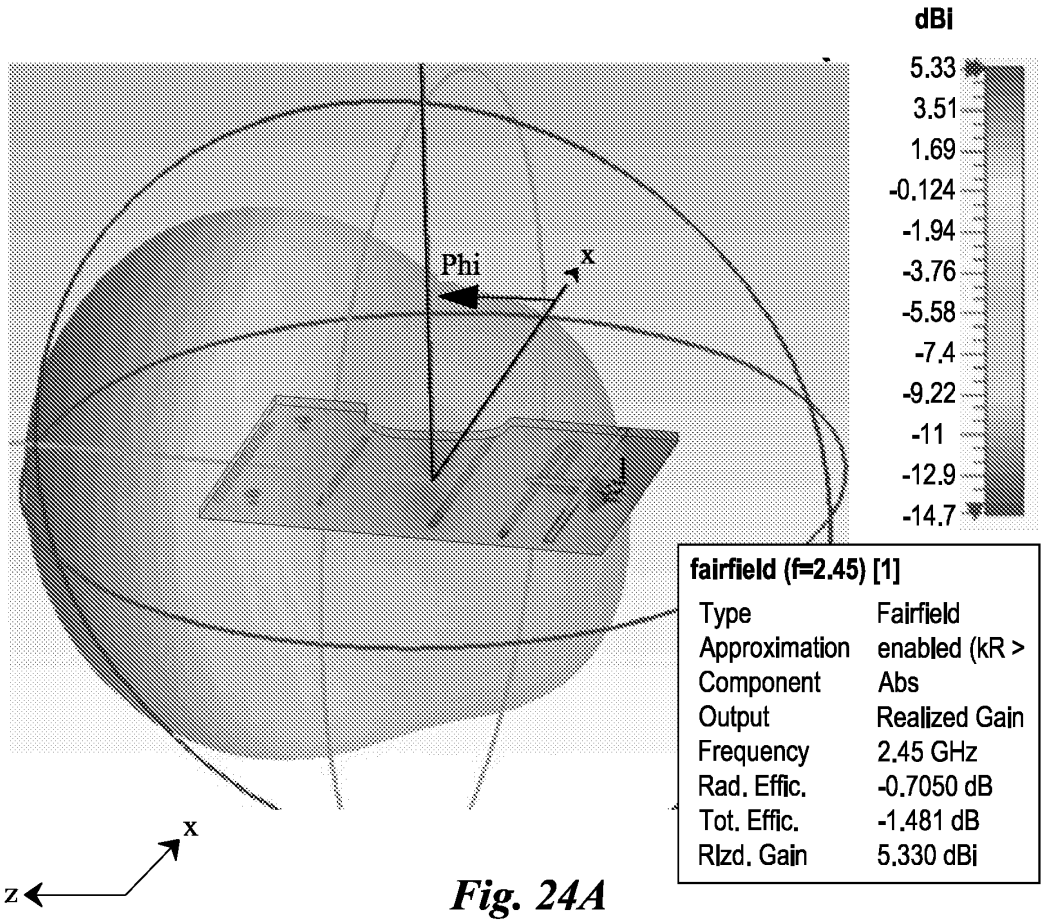


Fig. 24A

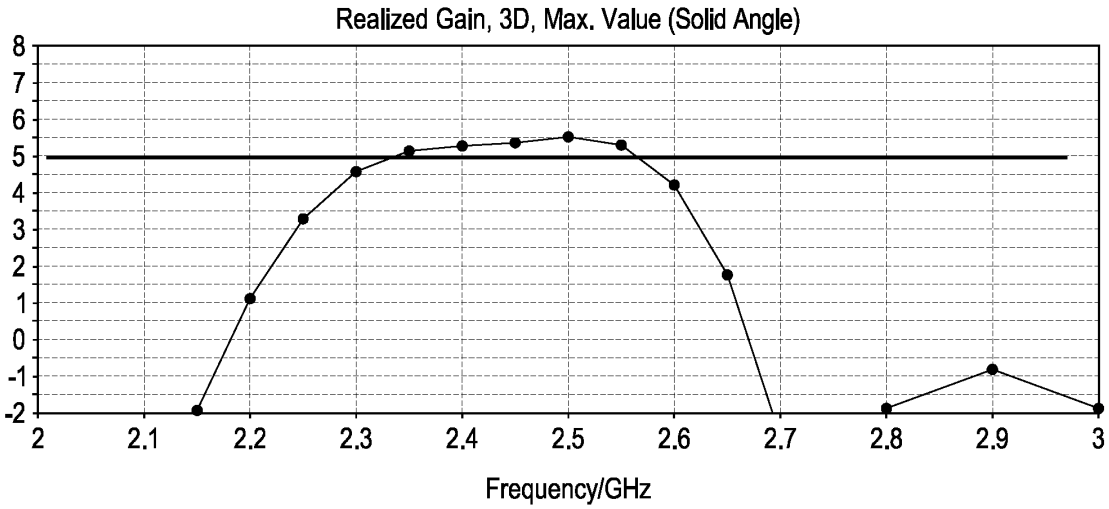


Fig. 24B

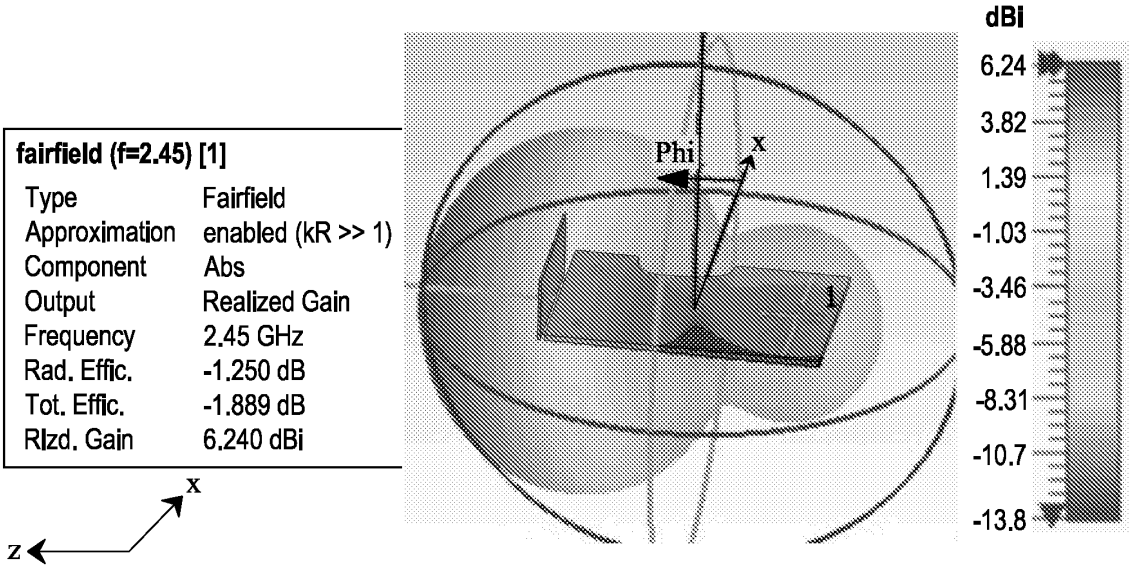


Fig. 25A

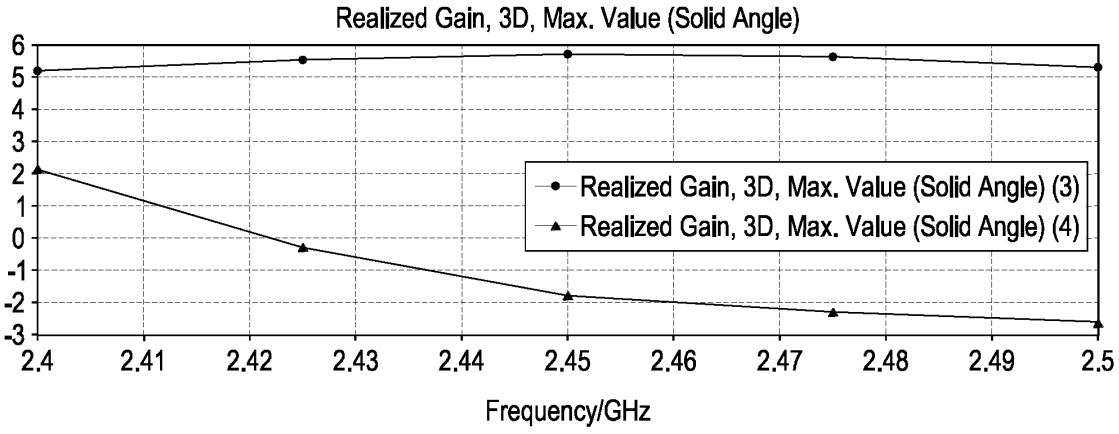


Fig. 25B

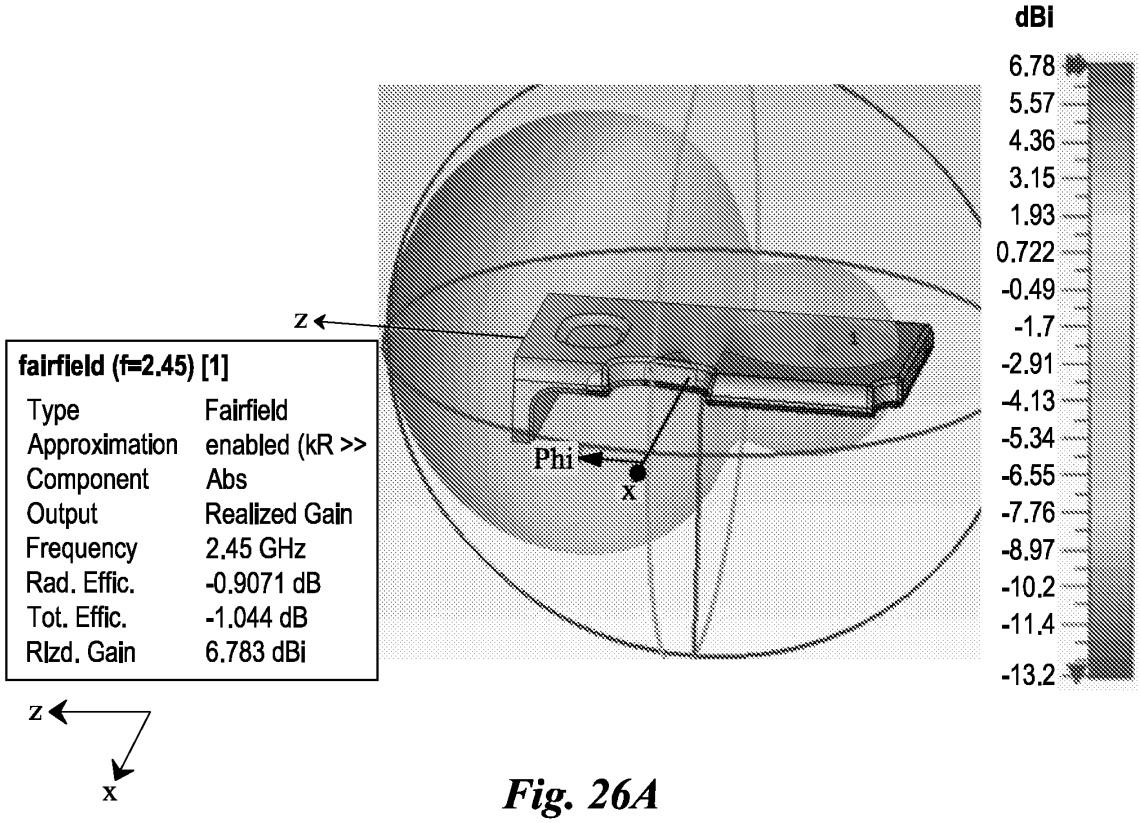


Fig. 26A

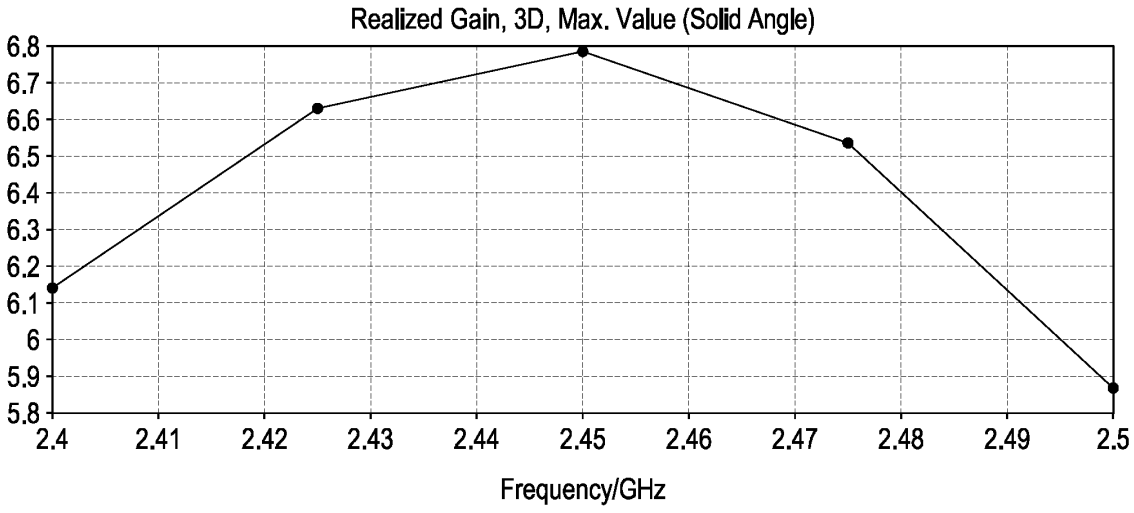


Fig. 26B

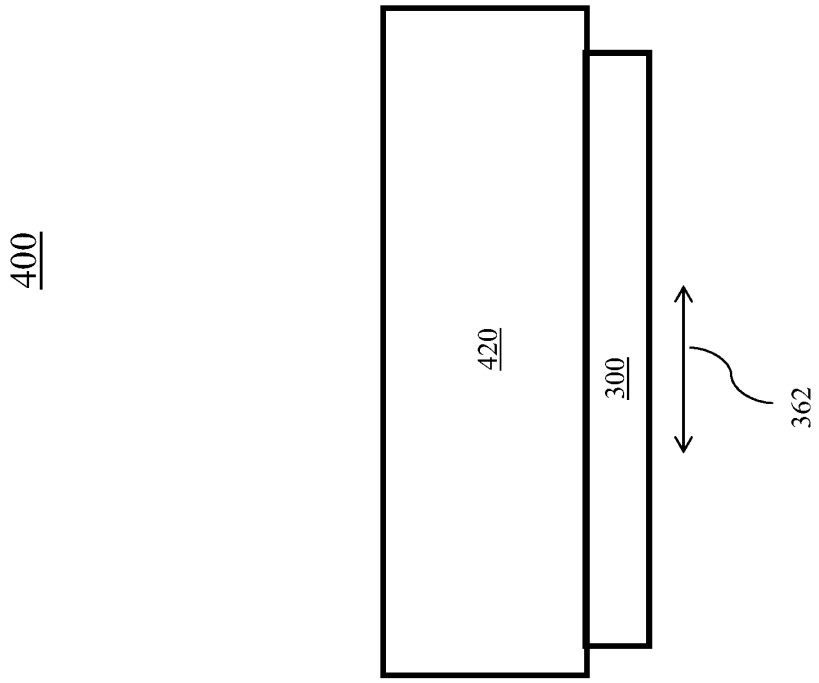


Fig. 27

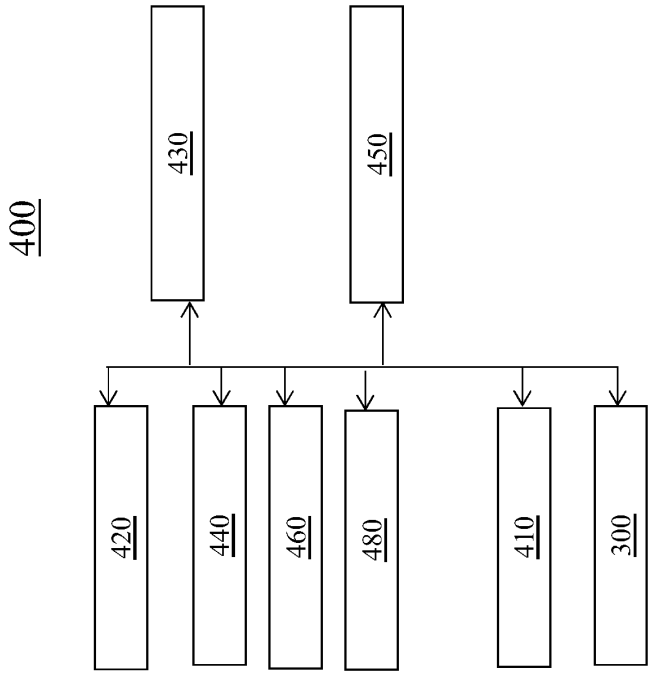


Fig. 28

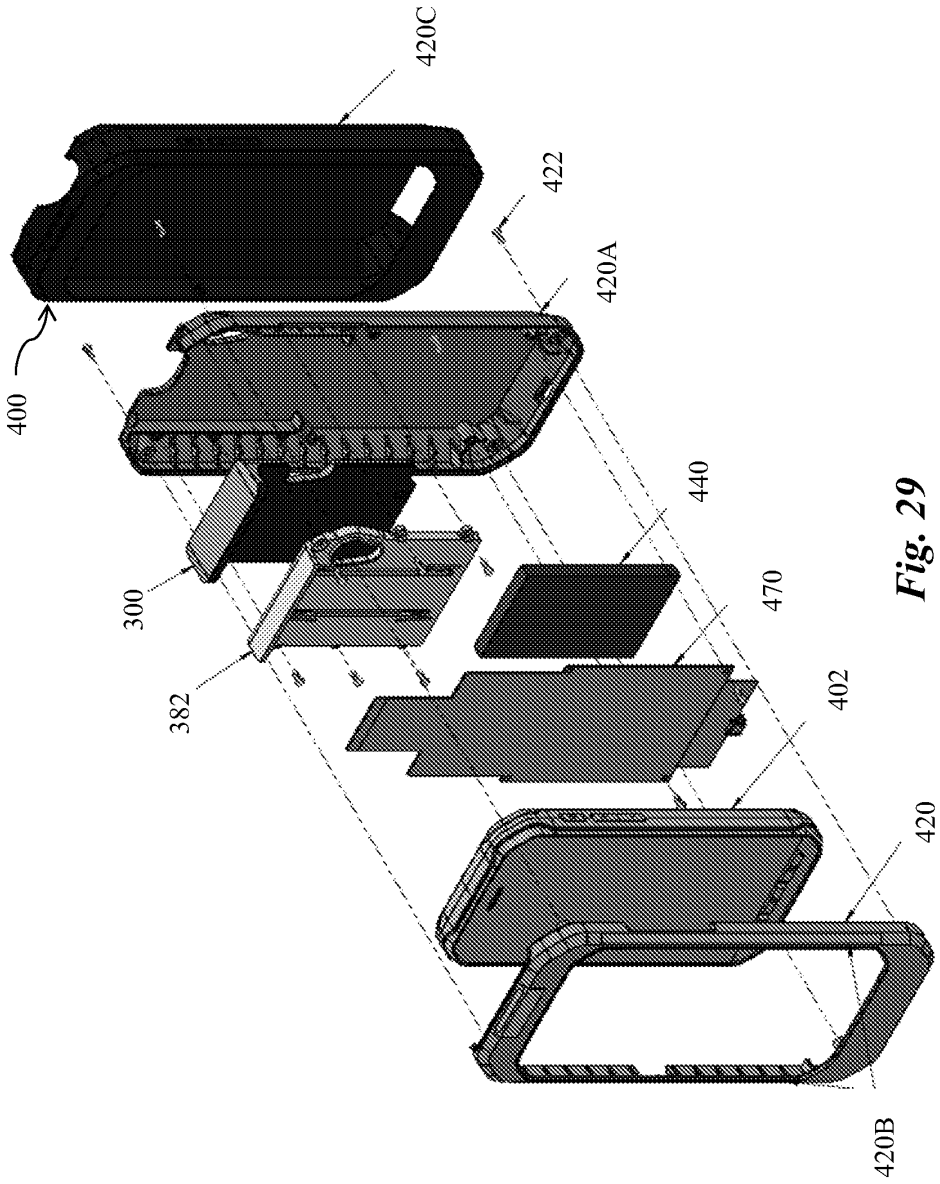


Fig. 29

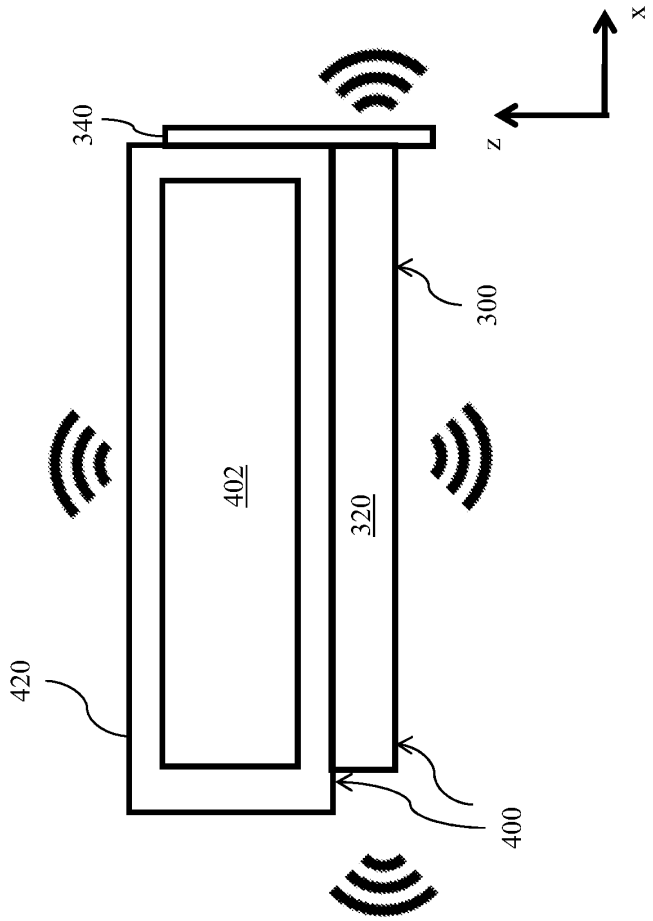


Fig. 30

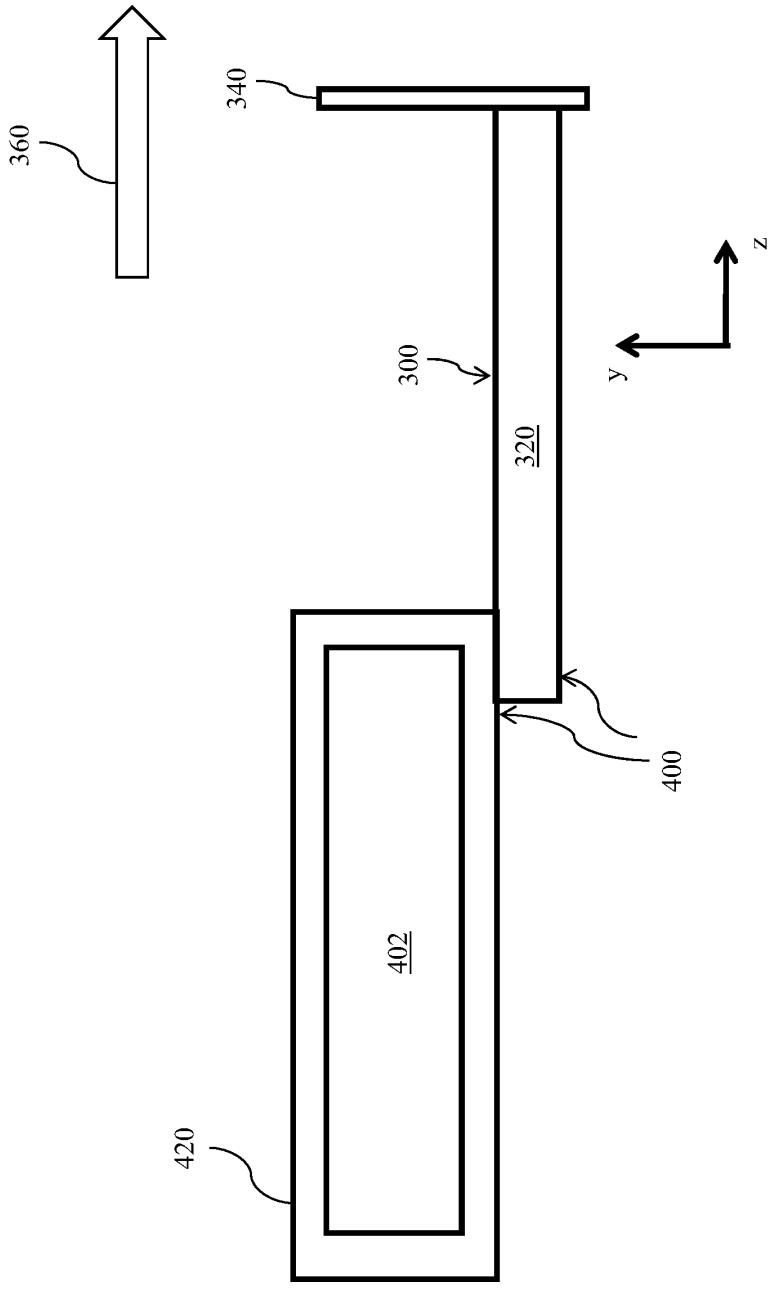
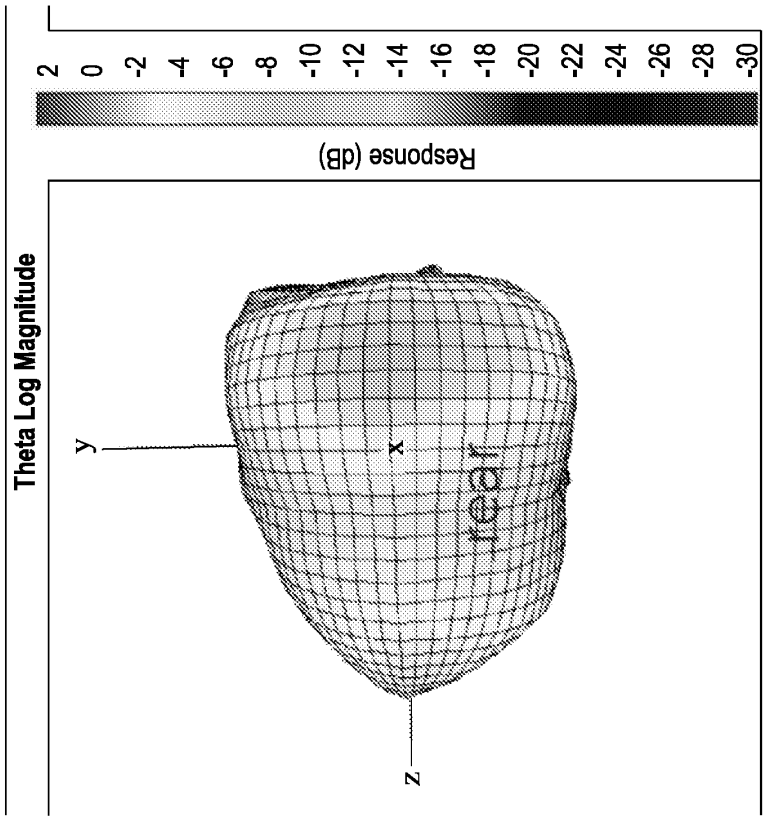
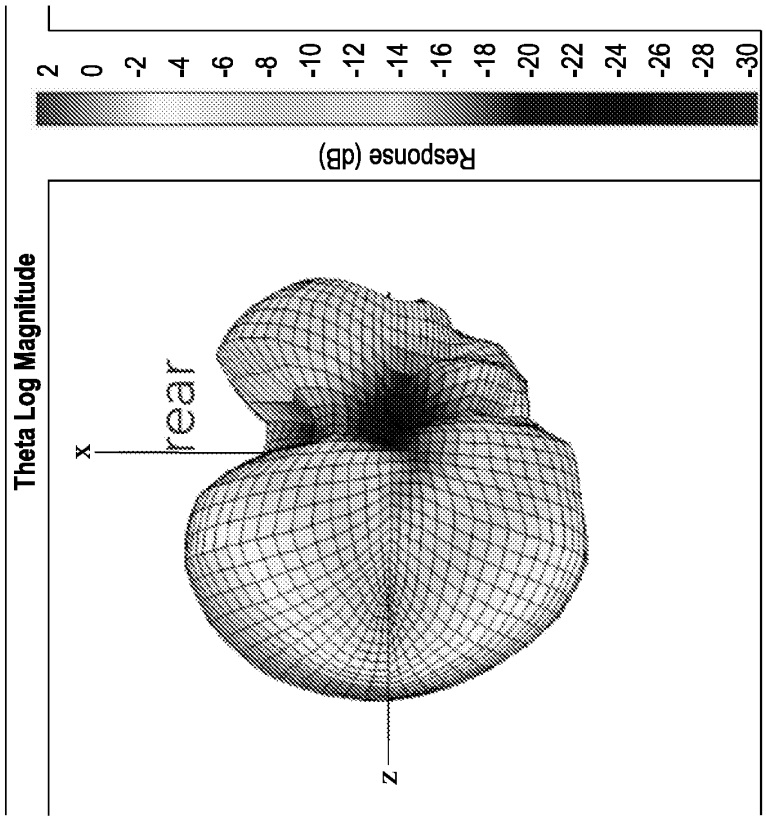


Fig. 31


Theta Log Magnitude
Response (dB)
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
-28
-30
y
x
z
rear

EF

Fig. 32


Theta Log Magnitude
Response (dB)
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
-28
-30
rear
x
z

EF

Fig. 33

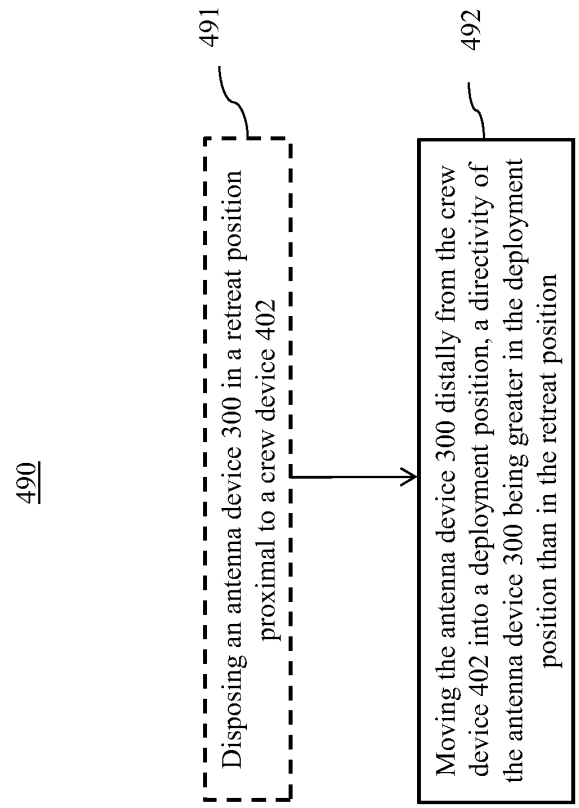

490
491
Disposing an antenna device 300 in a retreat position proximal to a crew device 402
492
Moving the antenna device 300 distally from the crew device 402 into a deployment position, a directivity of the antenna device 300 being greater in the deployment position than in the retreat position

Fig. 34

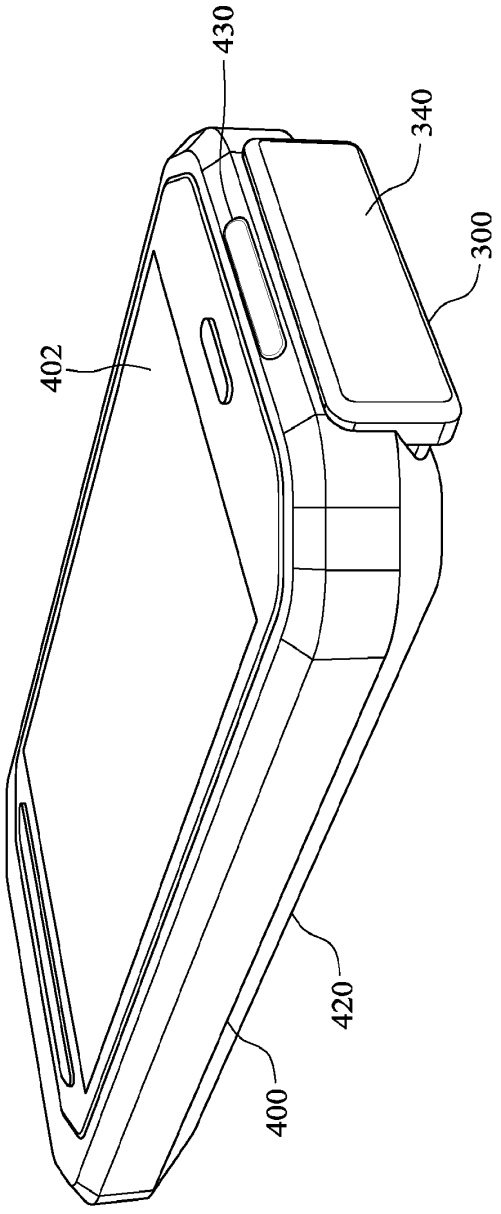


Fig. 35

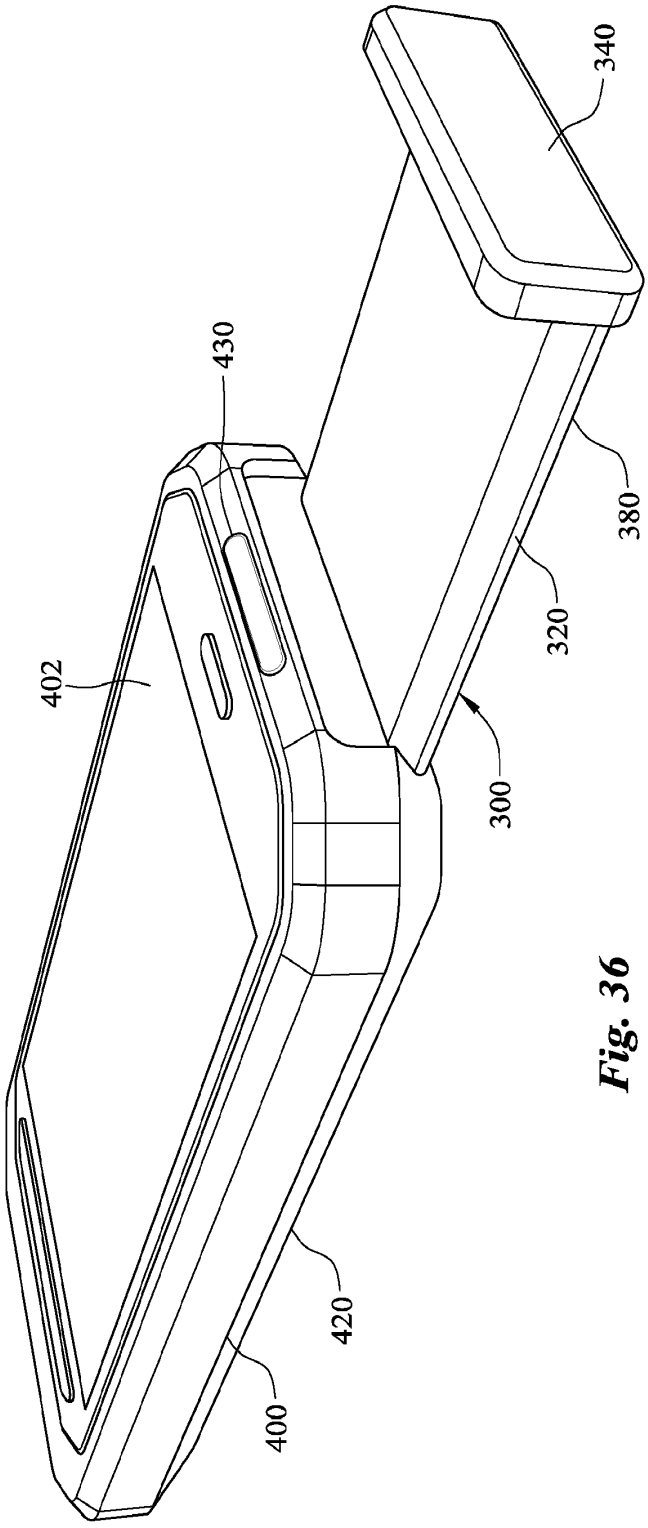


Fig. 36

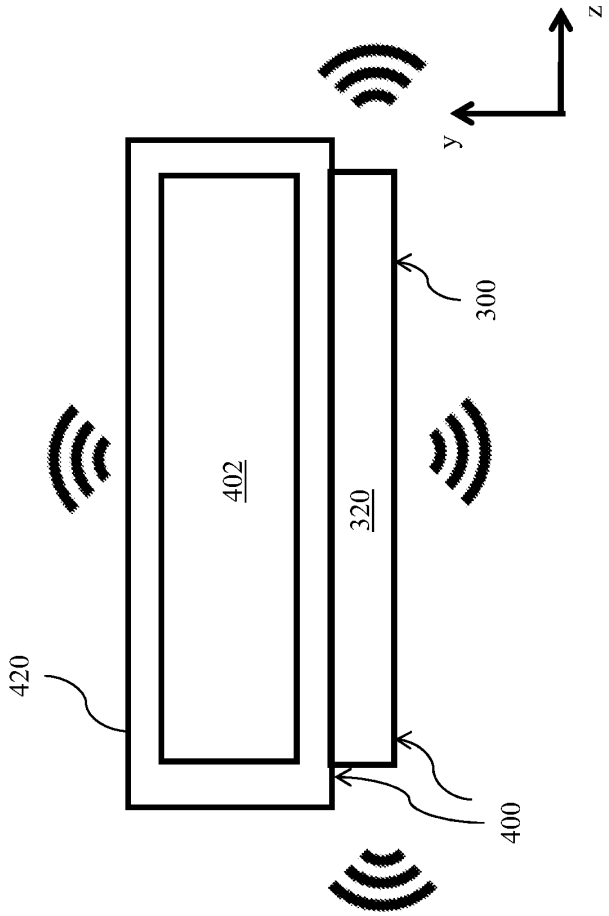


Fig. 37

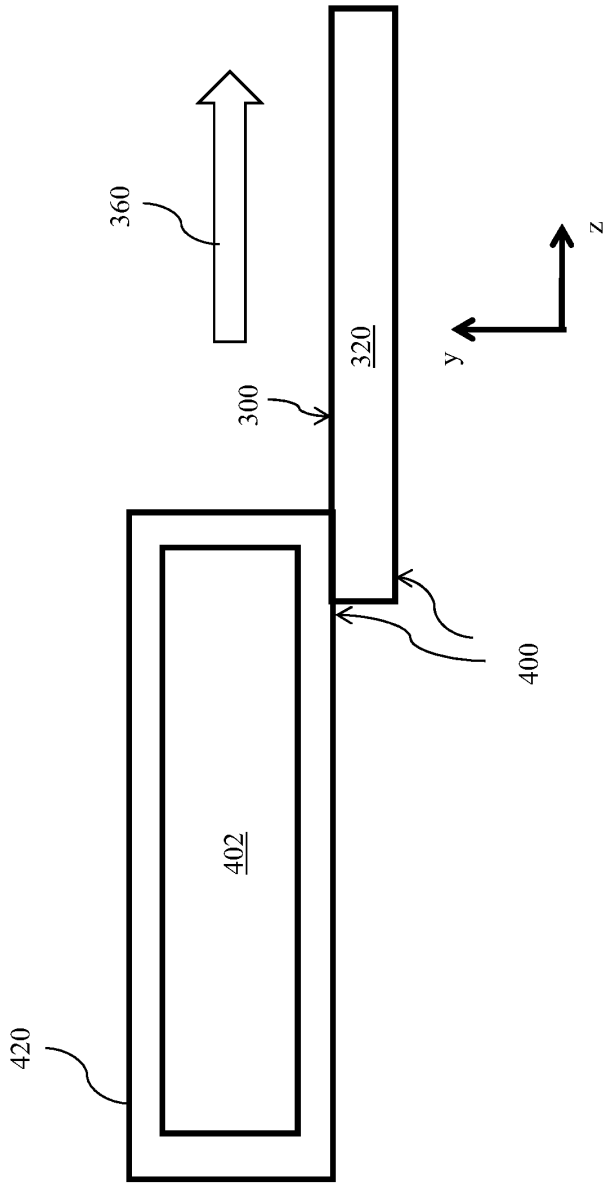


Fig. 38

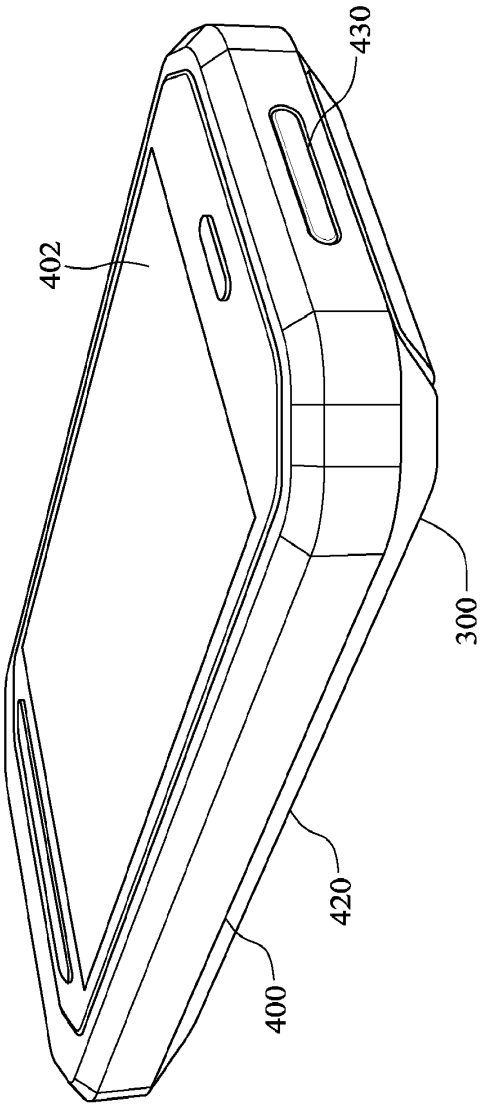


Fig. 39

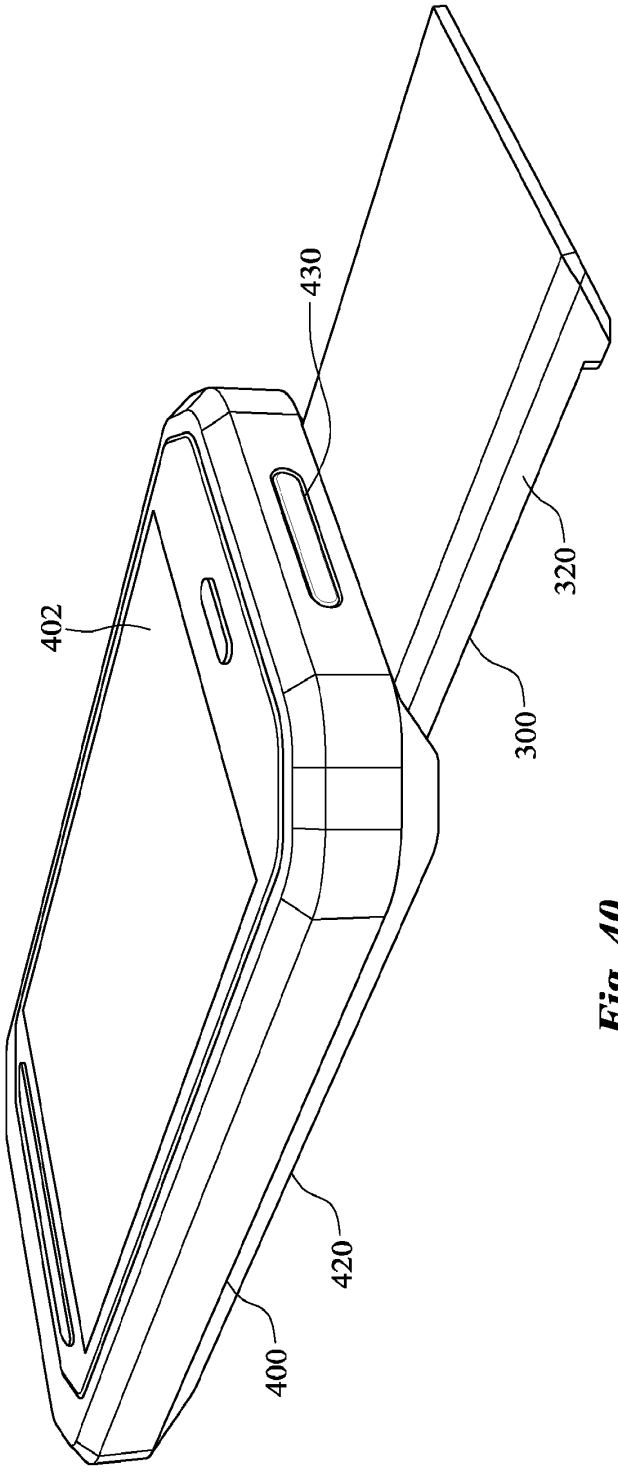


Fig. 40

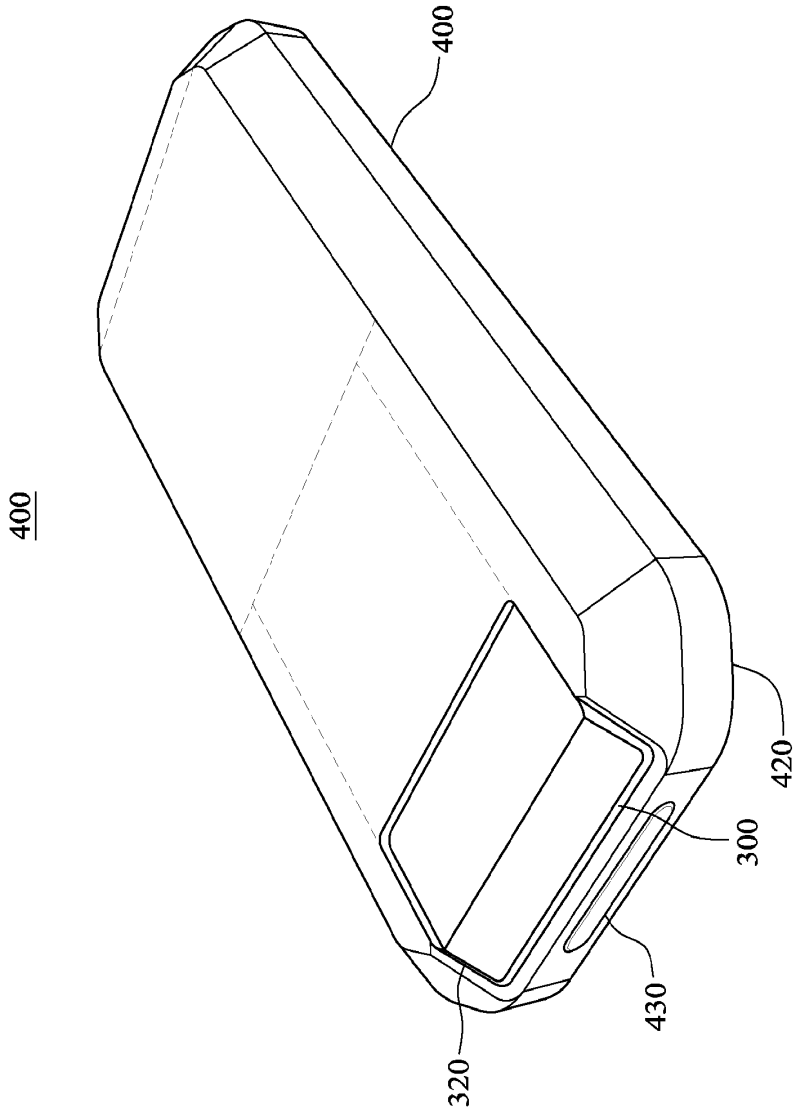


Fig. 41

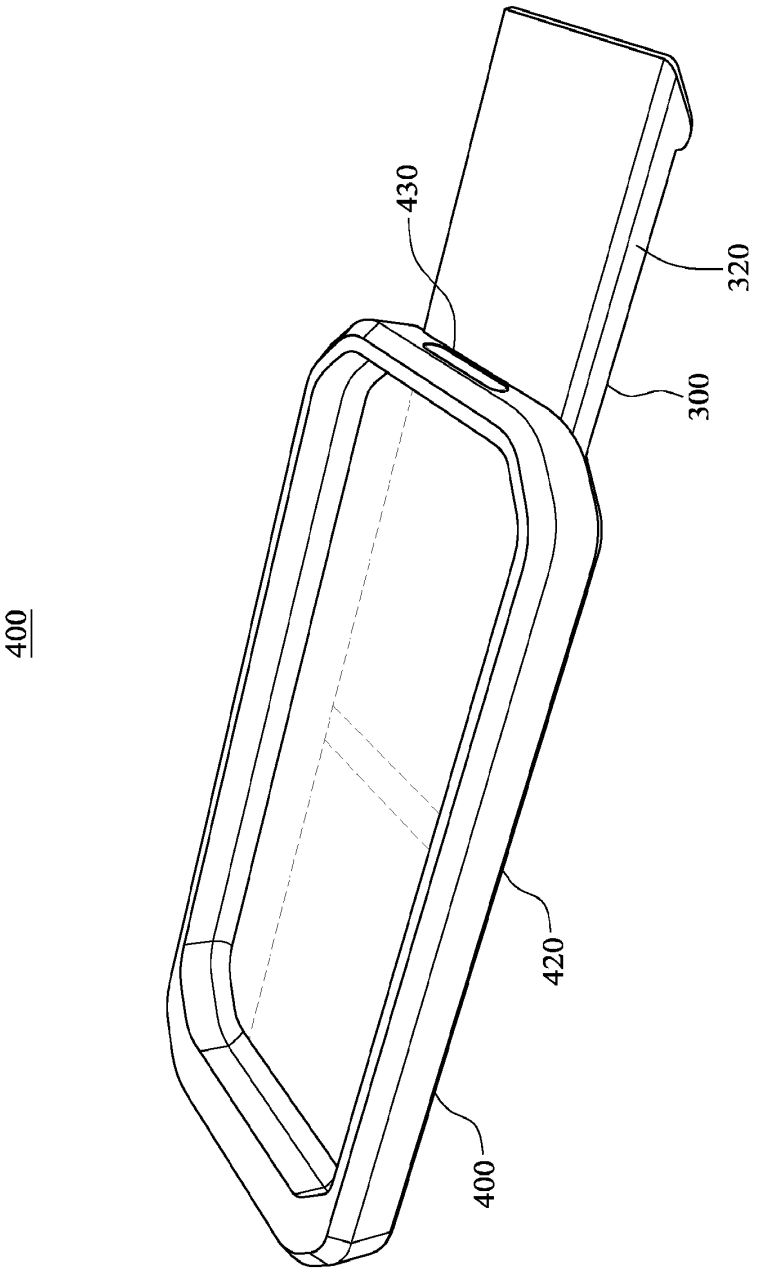


Fig. 42

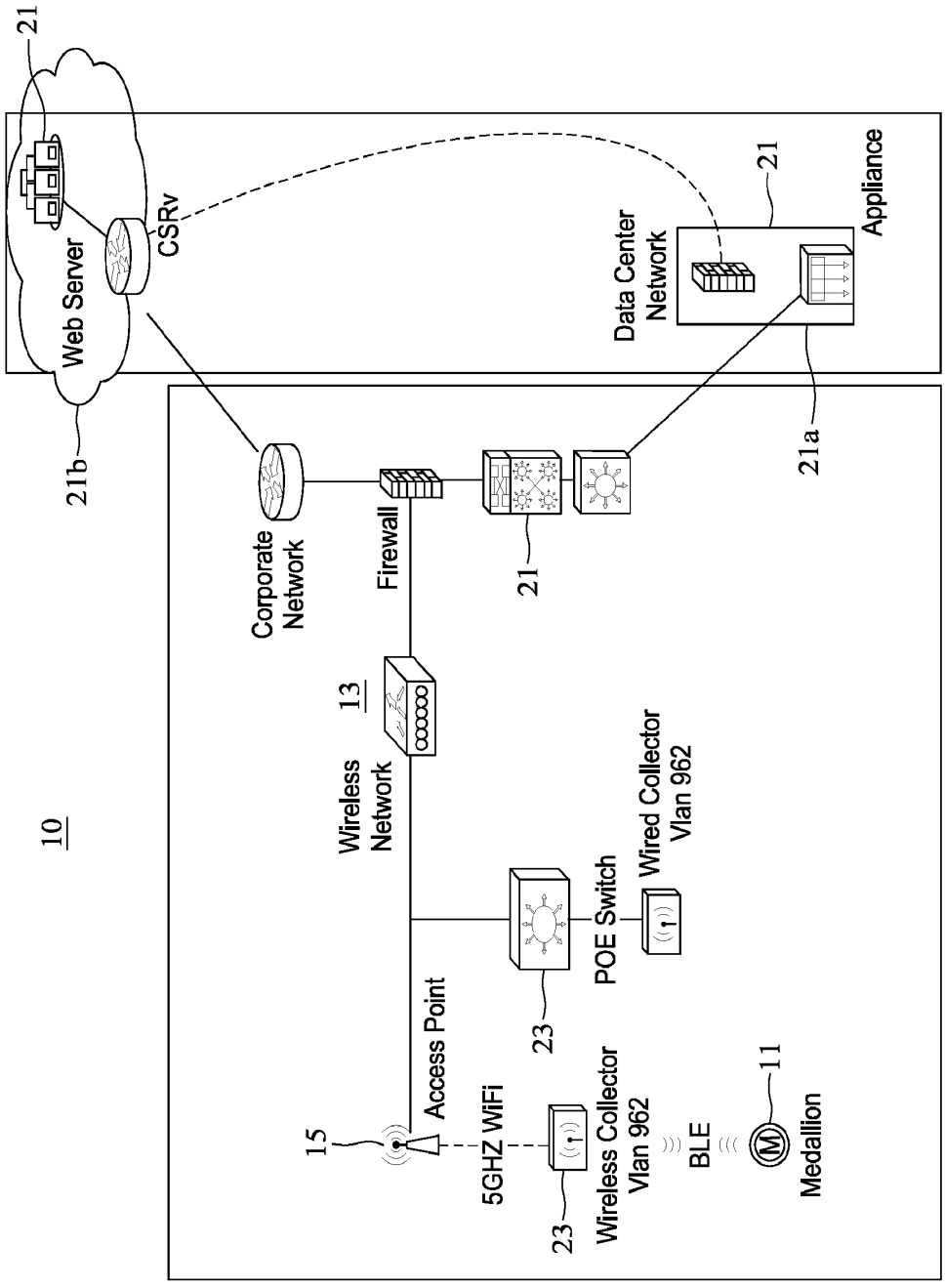

21
Web Server
CSRv
21b
Data Center Network
21
Appliance
21a
Corporate Network
Firewall
21
10
13
Wireless Network
Wired Collector Vlan 962
POE Switch
23
15
Access Point
5GHZ WiFi
23
Wireless Collector Vlan 962
BLE
11
Medallion

Fig. 43

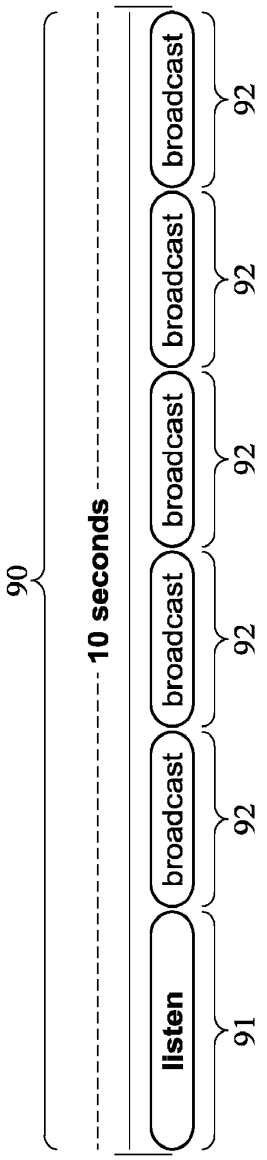

90
10 seconds
listen
broadcast
broadcast
broadcast
broadcast
broadcast
91
92
92
92
92
92

Fig. 44a

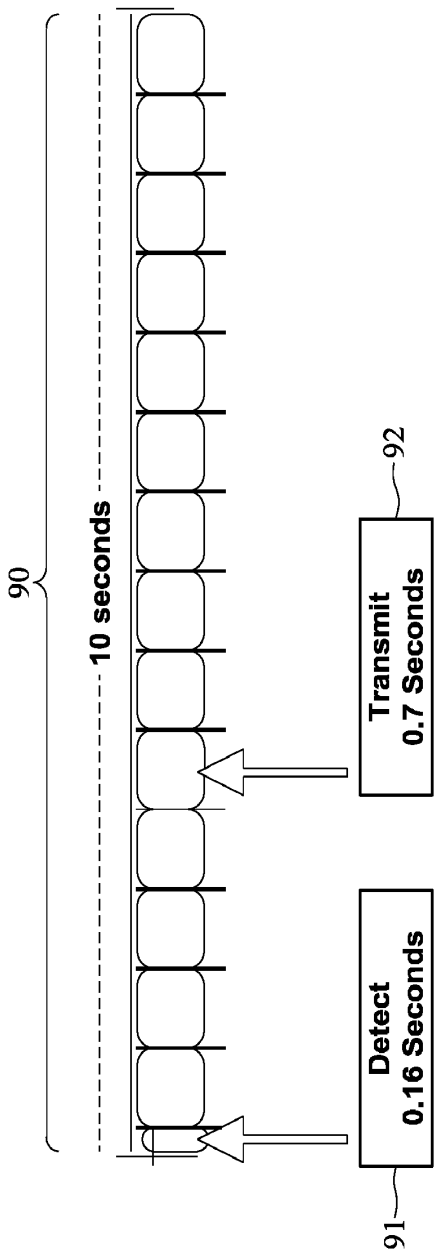


Fig. 44b

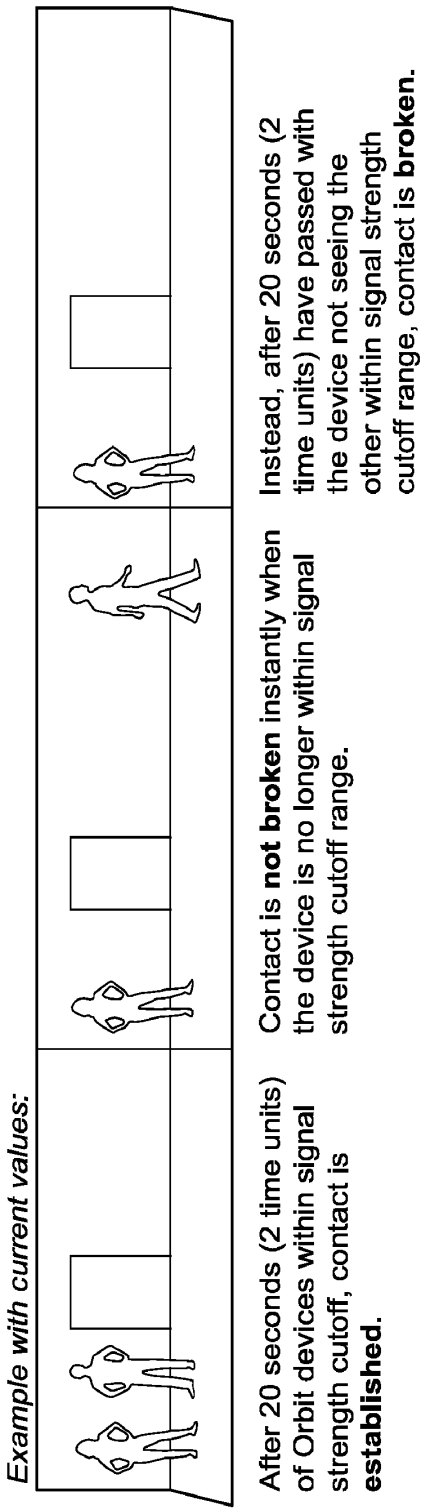

Example with current values:
After 20 seconds (2 time units) of Orbit devices within signal strength cutoff, contact is **established**.
Contact is **not broken** instantly when the device is no longer within signal strength cutoff range.
Instead, after 20 seconds (2 time units) have passed with the device not seeing the other within signal strength cutoff range, contact is **broken**.

Fig. 44c

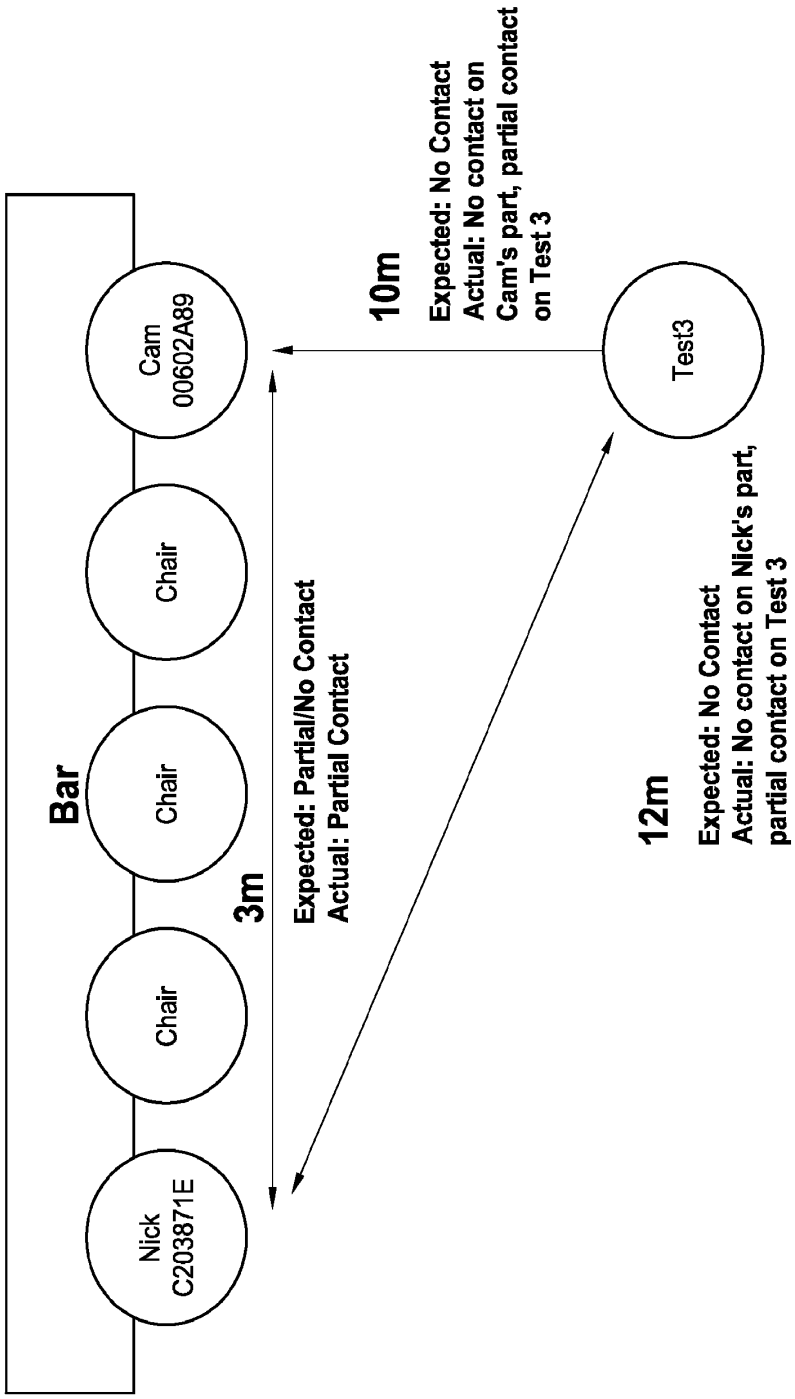

Bar
Nick
C203871E
Chair
Chair
Chair
Cam
00602A89
3m
Expected: Partial/No Contact
Actual: Partial Contact
10m
Expected: No Contact
Actual: No contact on
Cam's part, partial contact
on Test 3
Test3
12m
Expected: No Contact
Actual: No contact on Nick's part,
partial contact on Test 3

Fig. 44d

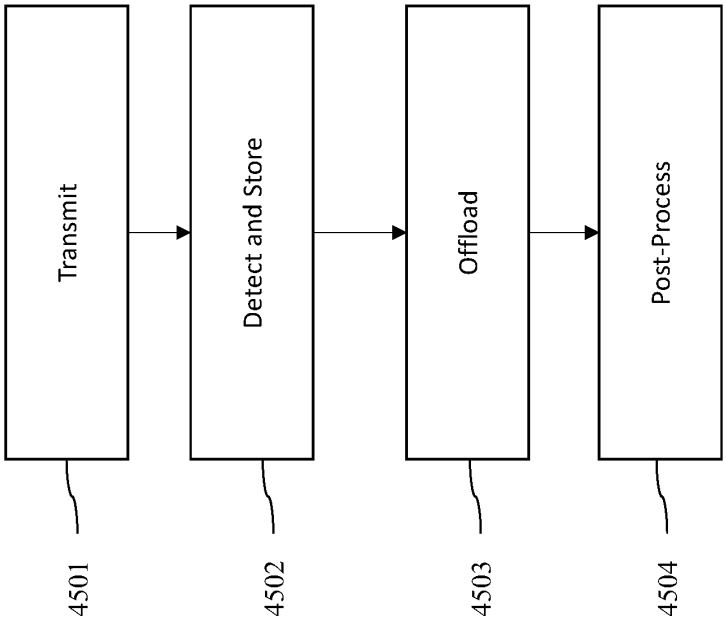

Transmit
Detect and Store
Offload
Post-Process
4501
4502
4503
4504

Fig. 45

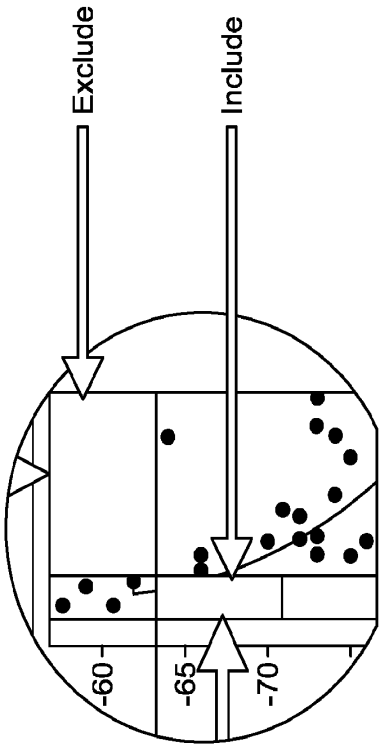


Fig. 46a

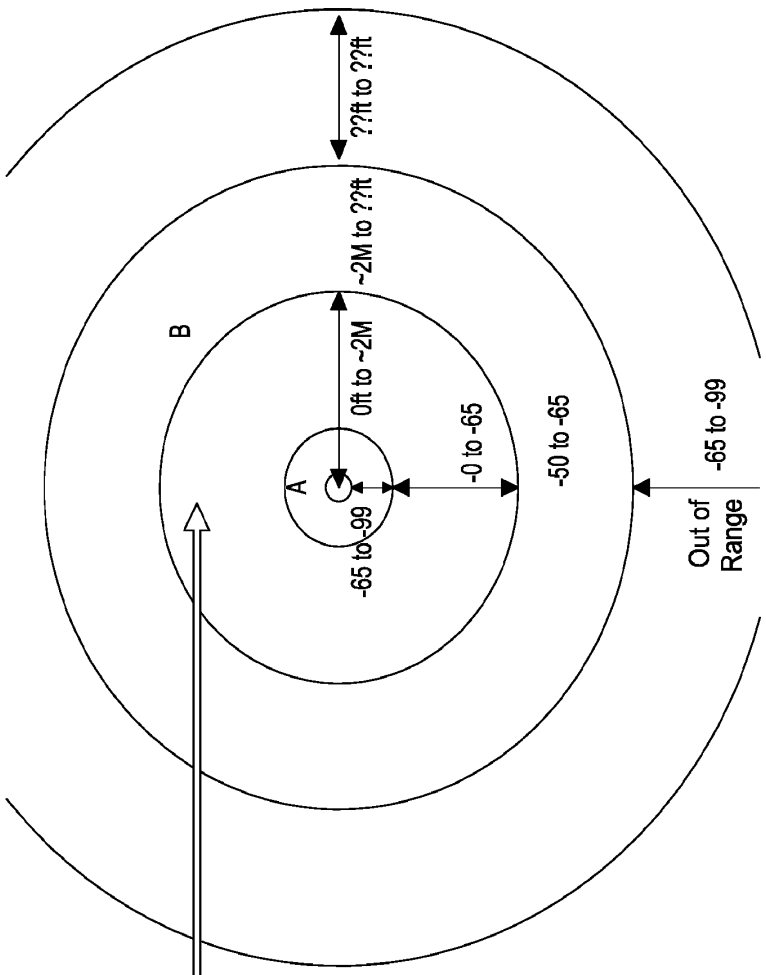

??ft to ??ft
~2M to ??ft
0ft to ~2M
-0 to -65
-50 to -65
-65 to -99
Out of Range
A
B
2 Consecutive reads during 20 Seconds at -0 to -65 = Statistical approximation of 2M + keep alive for 150 Seconds to sustain contact
Statistical Grey Areas
A - Within 0 to 2M but not seen. Statistically small. Typically due RFID blocking
B - Outside 2M but seen within thresholds as if inside 2M possible with strong line of sight, or variable/sustained durations, or RFID amplification. Important to not exclude else could lead to more inside of grey Area C

Fig. 46b

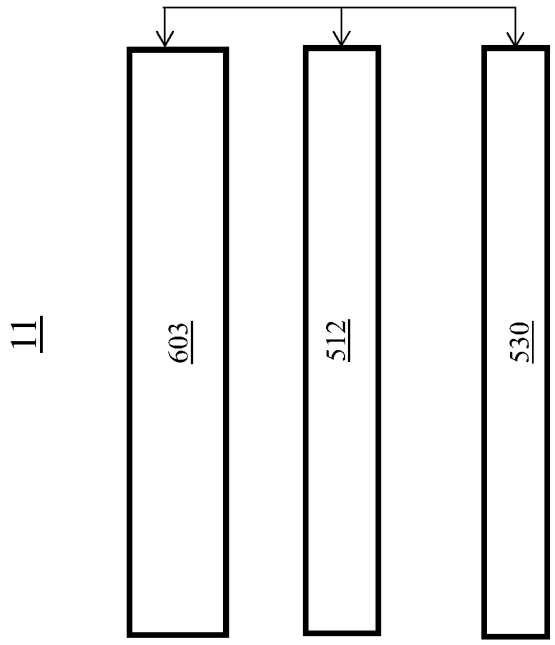


Fig. 47

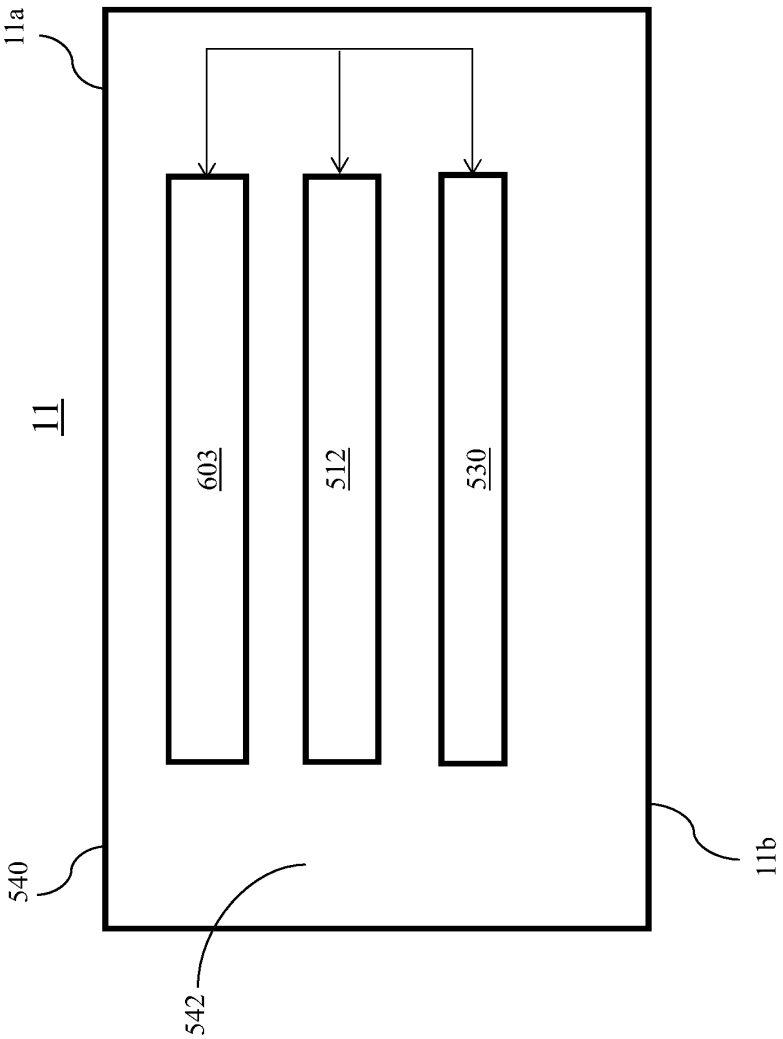


Fig. 48

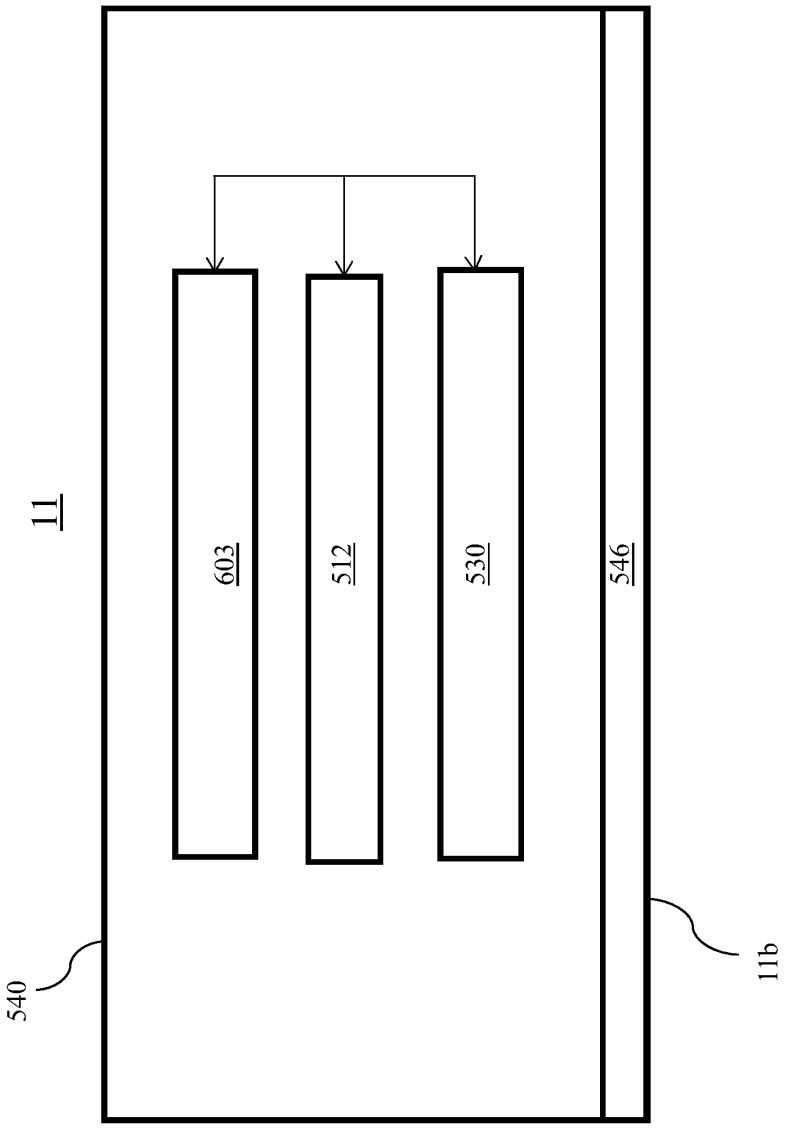


Fig. 49

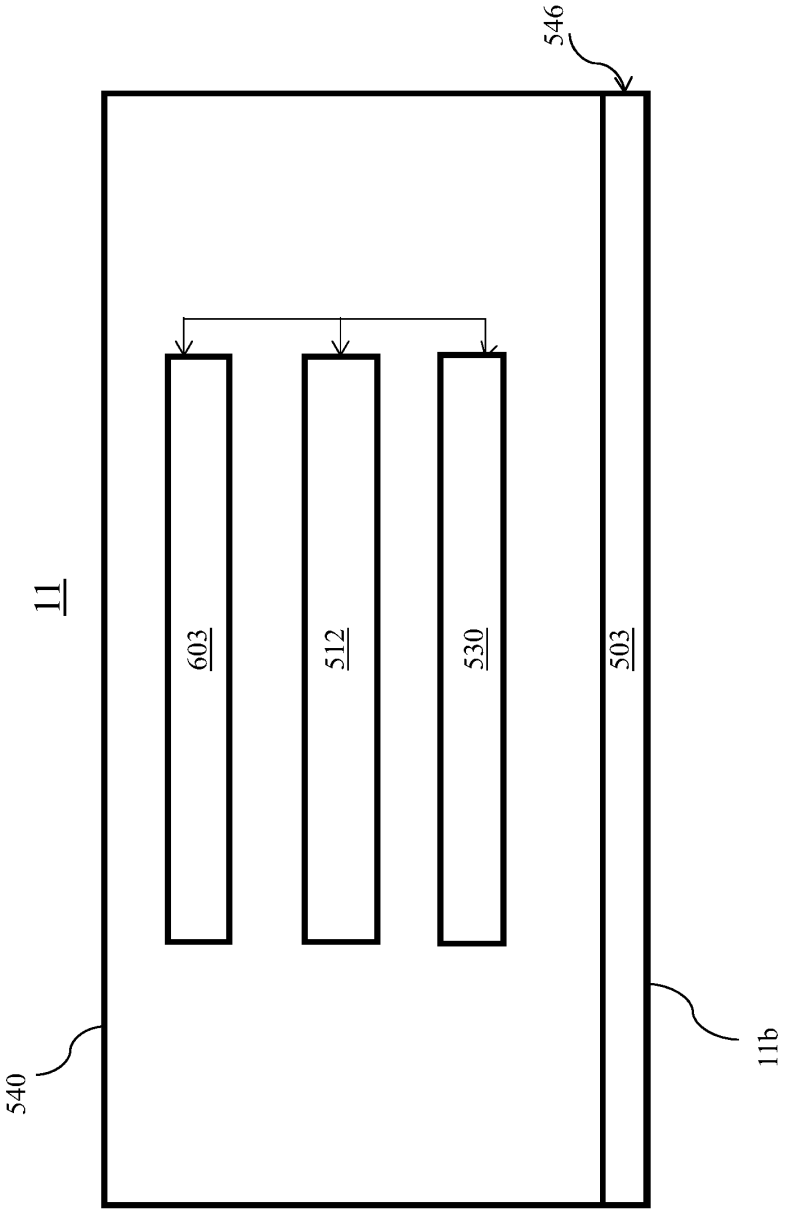


Fig. 50

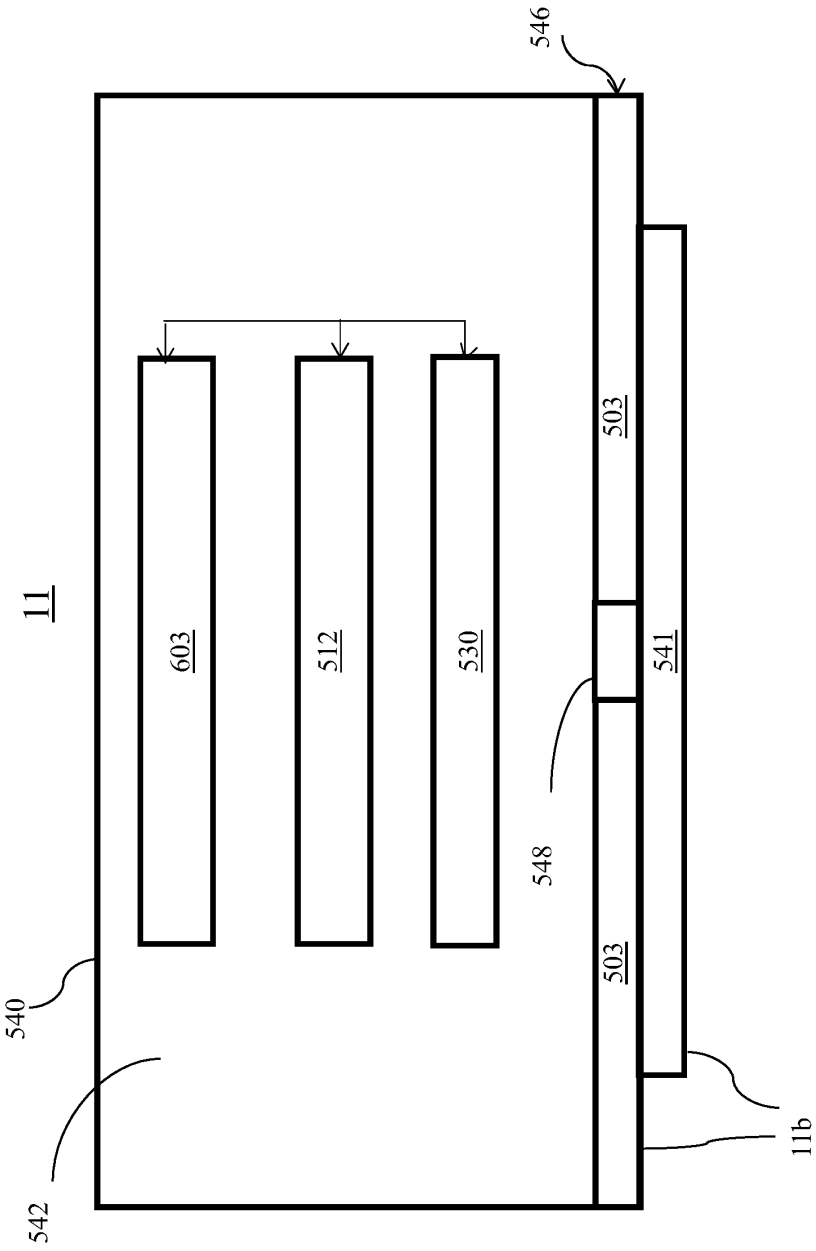


Fig. 51

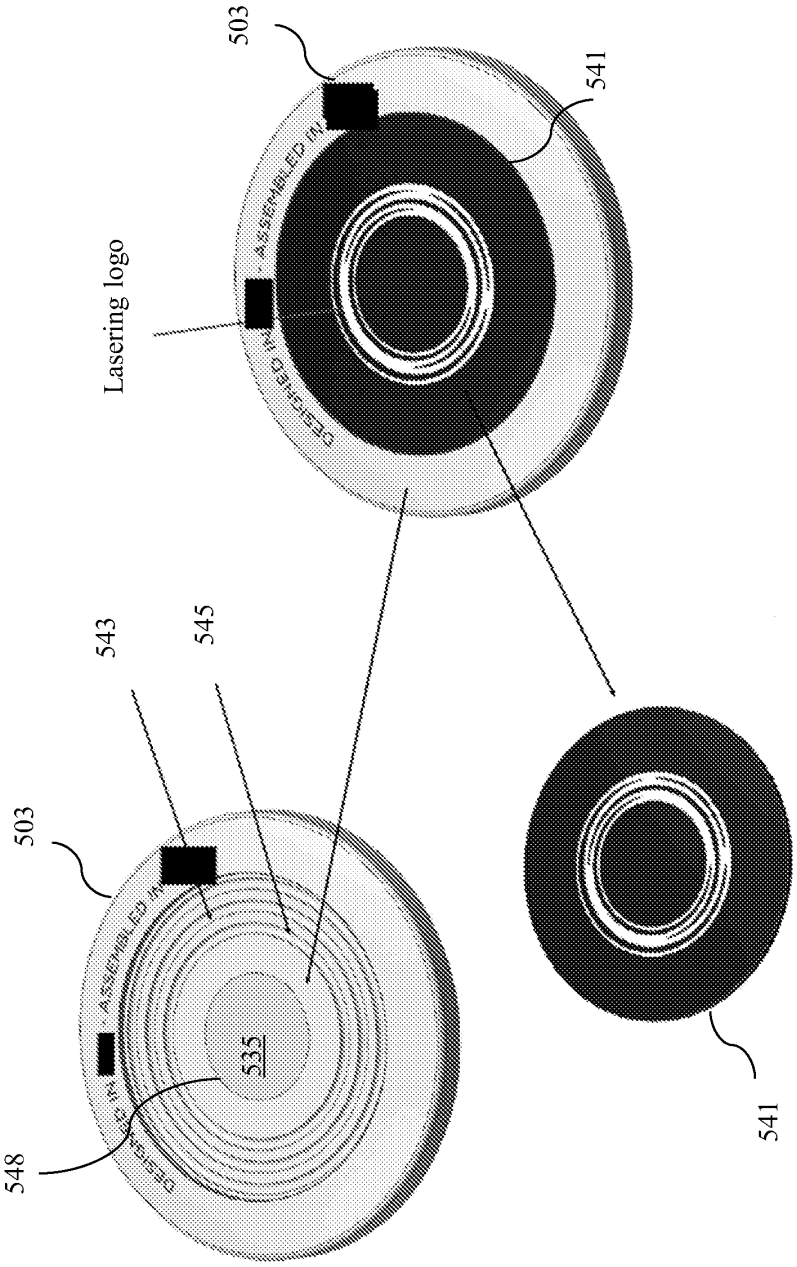


Fig. 52

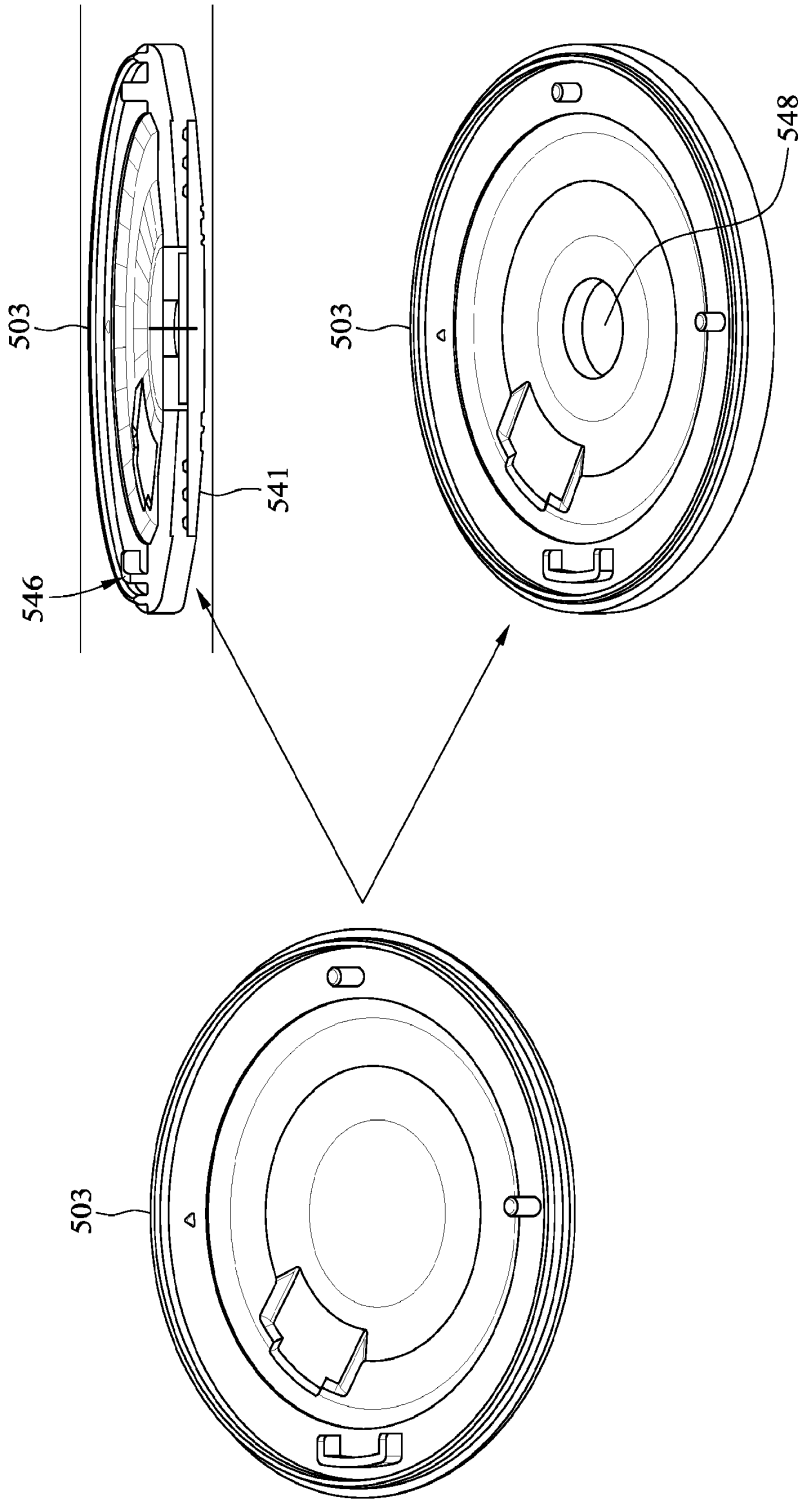


Fig. 53

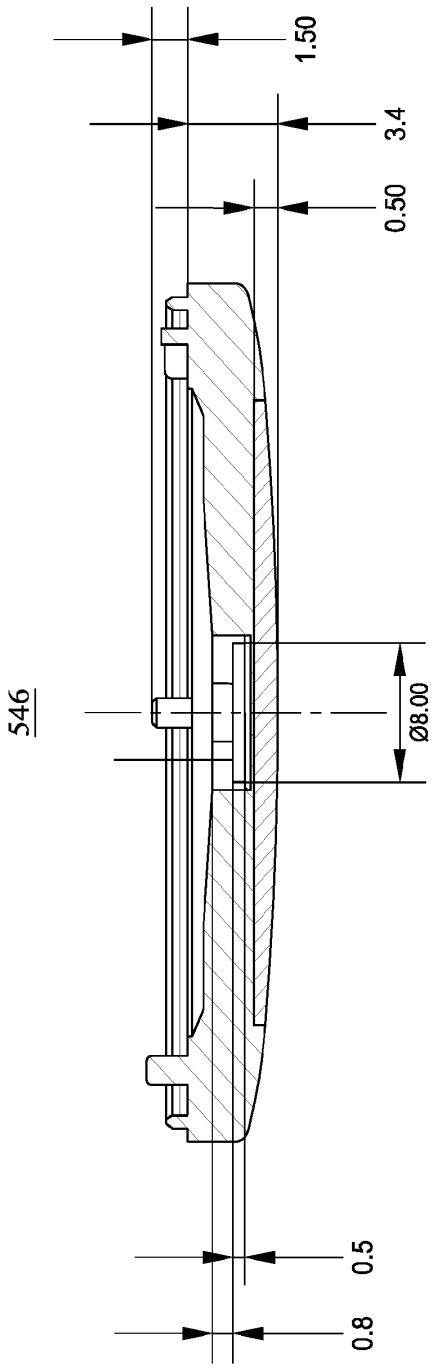


Fig. 54

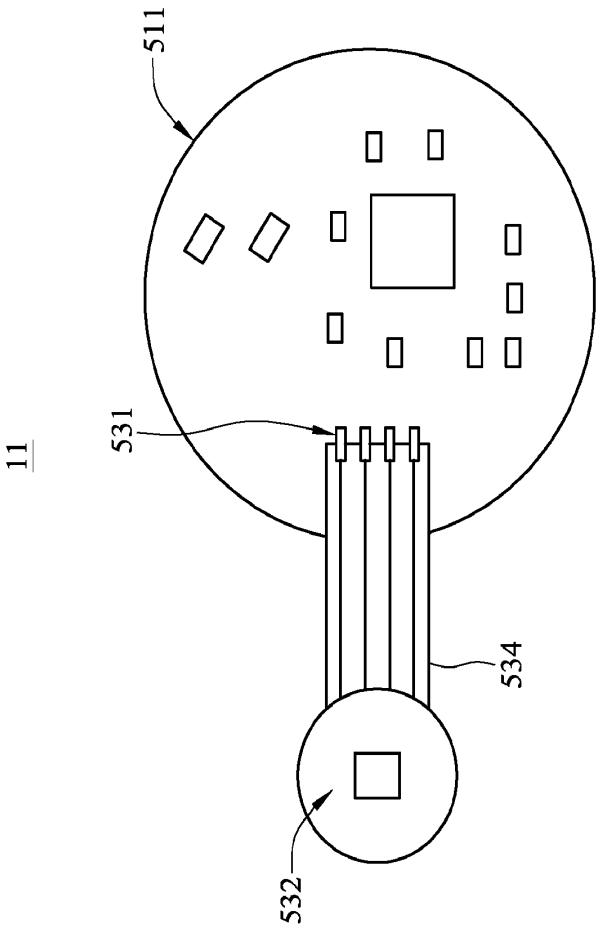


Fig. 56

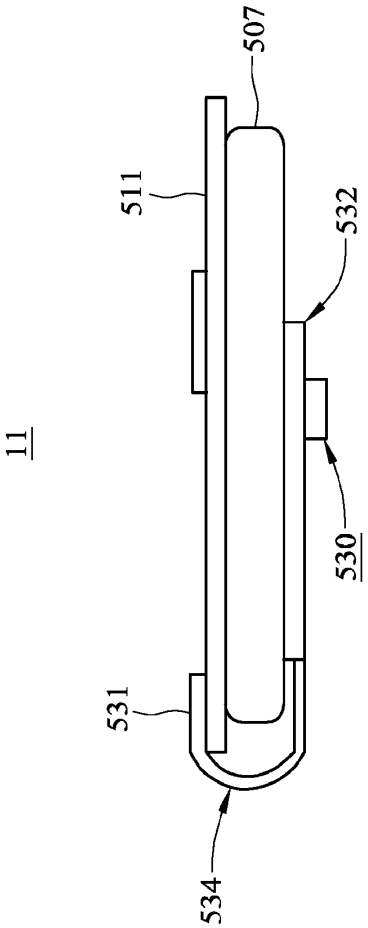


Fig. 57

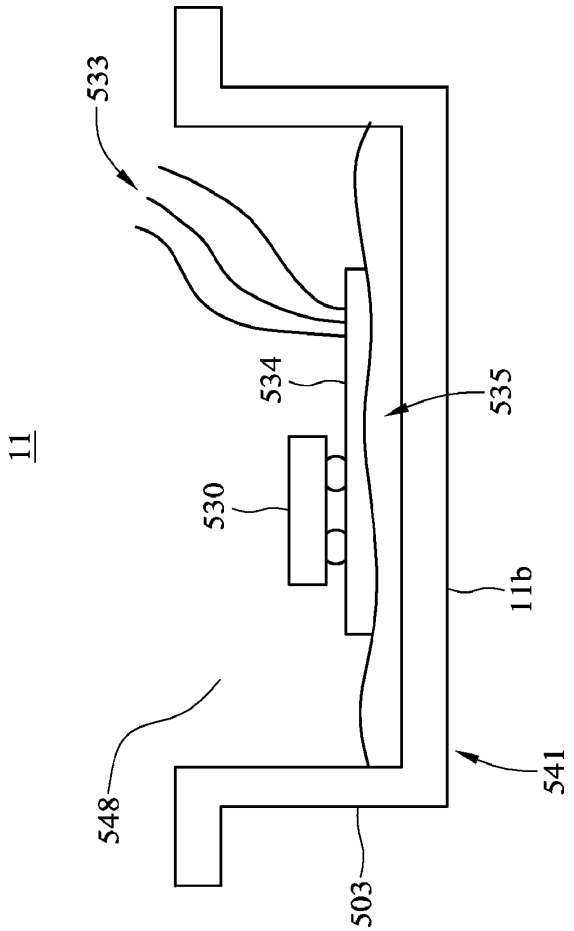


Fig. 58

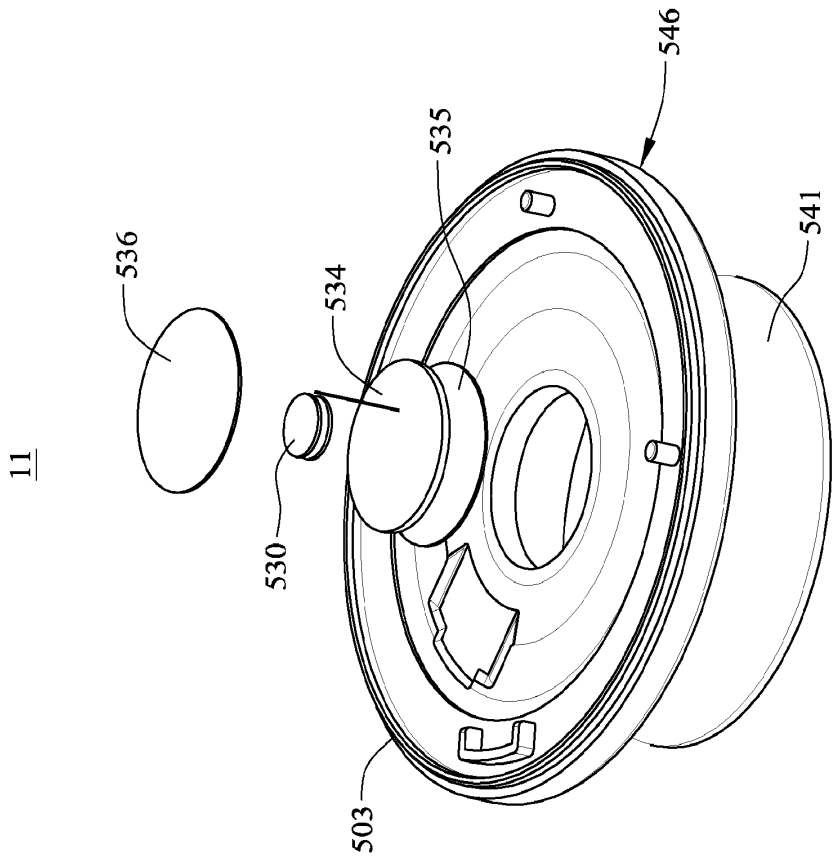


Fig. 59

550

			RSSI byte (high to low bits)								
			Payload select					Payload Params			
Function Name	Priority	Interval	7	6	5	4	3	2	1	0	
Events	1	Event Dependent	x	0	1	1	x	Low Battery	Free Fall	Not Used	
Battery	2	3 secs	x	0	0	1		4-bit Battery Status (look up table)			
RSSI Cal	3	3 Hz	x	0	0	0		4-bit RSSI Cal (look up table)			
Temp. Data (Lower Nibble)	4	10 secs	x	0	1	0		4-bit lower nibble			
Temp. Data (Higher Nibble)	4	10 secs	x	1	1	0		4-bit higher nibble			
Do not use	X	X	1	1	0	1	1	0	0	0	

Fig. 60

552

Integrated Circuit Name	Option 1	Option 2	Option 3	Option 4
Temperature Range	0 to +50°C range	-40 to +125°C range	-50 to +150°C range	-55 to +150°C range
Accuracy	0.1°C	0.1°C to 1°C	-	±0 36°C
Power Consumption	600µA	0.2 µA @ 1 Hz	-	12 µA
Interface	I2C	I2C	Thermocouple (Analog)	Analog
Package	3 x 3 mm	3 x 3 mm	2 x 2 mm	0.912 x 0.912 mm
Supply Range	2.7V to 3.3V	1.9 to 3.6V	-	2.0 to 5.5V

Fig. 61

552

Integrated Circuit Name	Option 2	Option 5	Option 1	Option 4
Temperature Accuracy	±0.1°C (36-41°C)	±1.0°C	±0.1°C (37-39°C)	±0.1°C (20-42°C)
VDD (V)	1.9 -3.6	1.8	2.7 -3.3	2 -5.5
Interface	I^2C	I^2C	I^2C	Analog
Power Consumption Standby	60 nano Amp	50 nano Amp	1650 nano Amp	
Power Consumption Operating	0.2 µA @ 1Hz	0.2 µA @ 1Hz	600 µA (Typical)	12 µA (Typical)
Package	3mm x 3mm DFN	2mm x 2mm QFN	3mm x 3mm TDFN	1mm x 1mm WLCSP
Price and Lead Time				
Advantages	1. Low Power Consumption 2. High Accuracy - used to measure human body Temperature 3. Digital I^2C 4. Exceeds [(1)]ASTME1112	1. Very Low Power Consumption 2. Digital I^2C 3. Exceeds [(1)]ASTME1112	1. Accurate body temperature measurement 2. Digital I^2C	1. Accurate body temperature measurement 2. Smallest form factor
Disadvantages	1. Higher Cost due to its high accuracy	1. Lower temperature accuracy	1. Higher power consumption	1. Analog 2. Needs external Microcontroller

[(1)]ASTME1112 Standard - Standard Specification for Electronics Patient Thermometers

Fig. 62

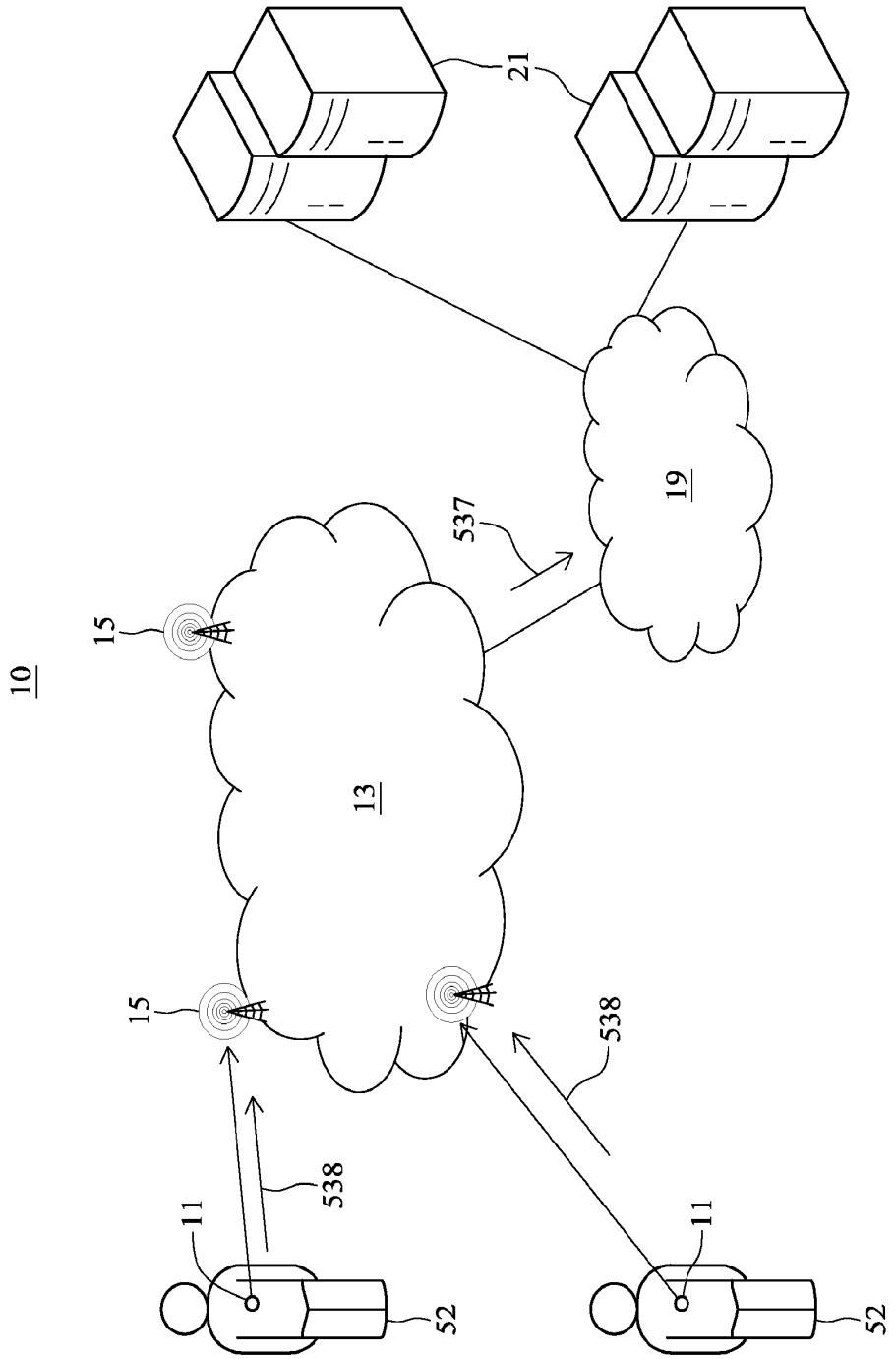


Fig. 63

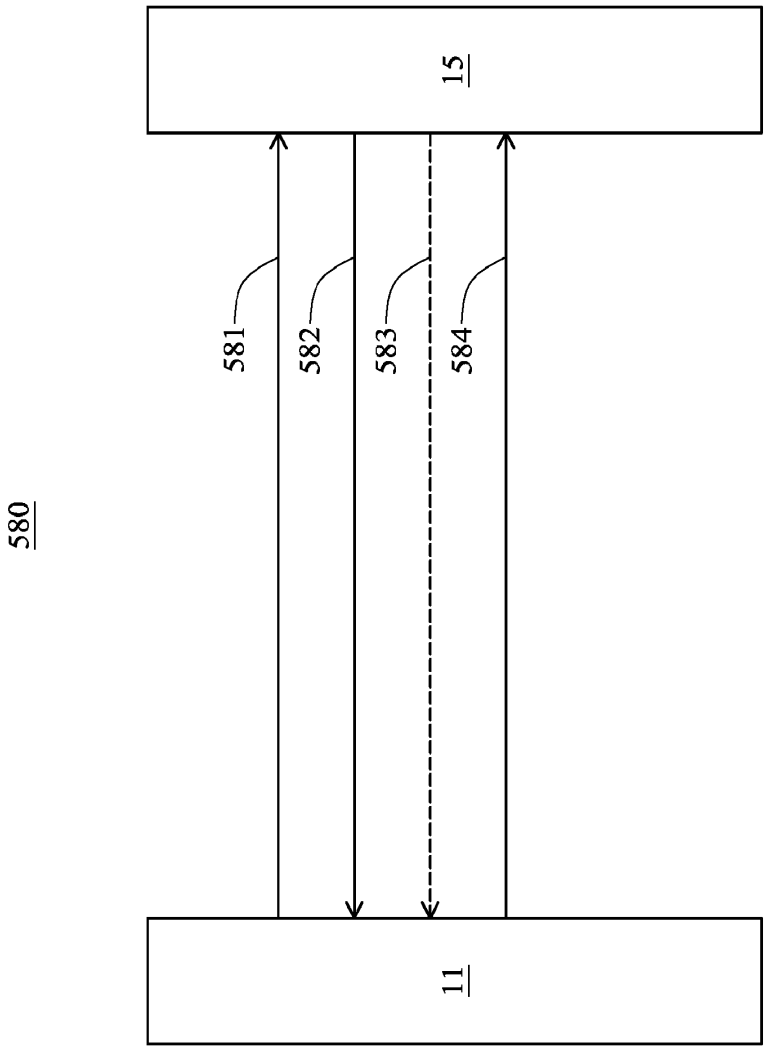


Fig. 64

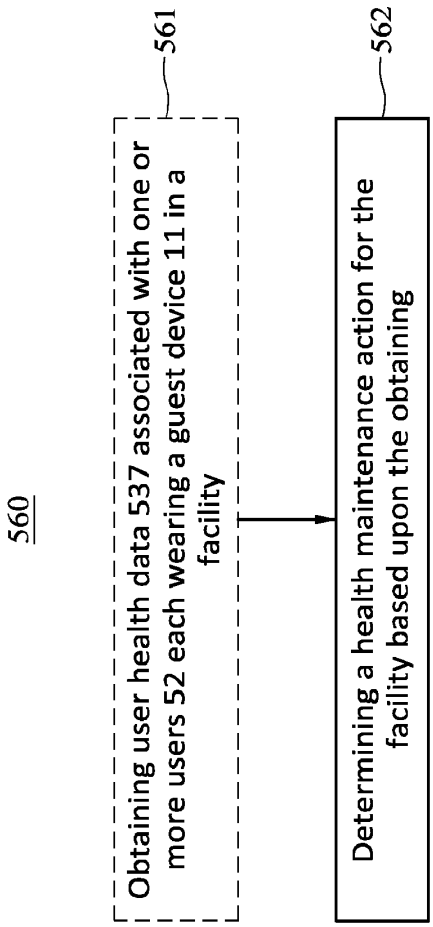

560
Obtaining user health data 537 associated with one or more users 52 each wearing a guest device 11 in a facility
561
Determining a health maintenance action for the facility based upon the obtaining
562

Fig. 65

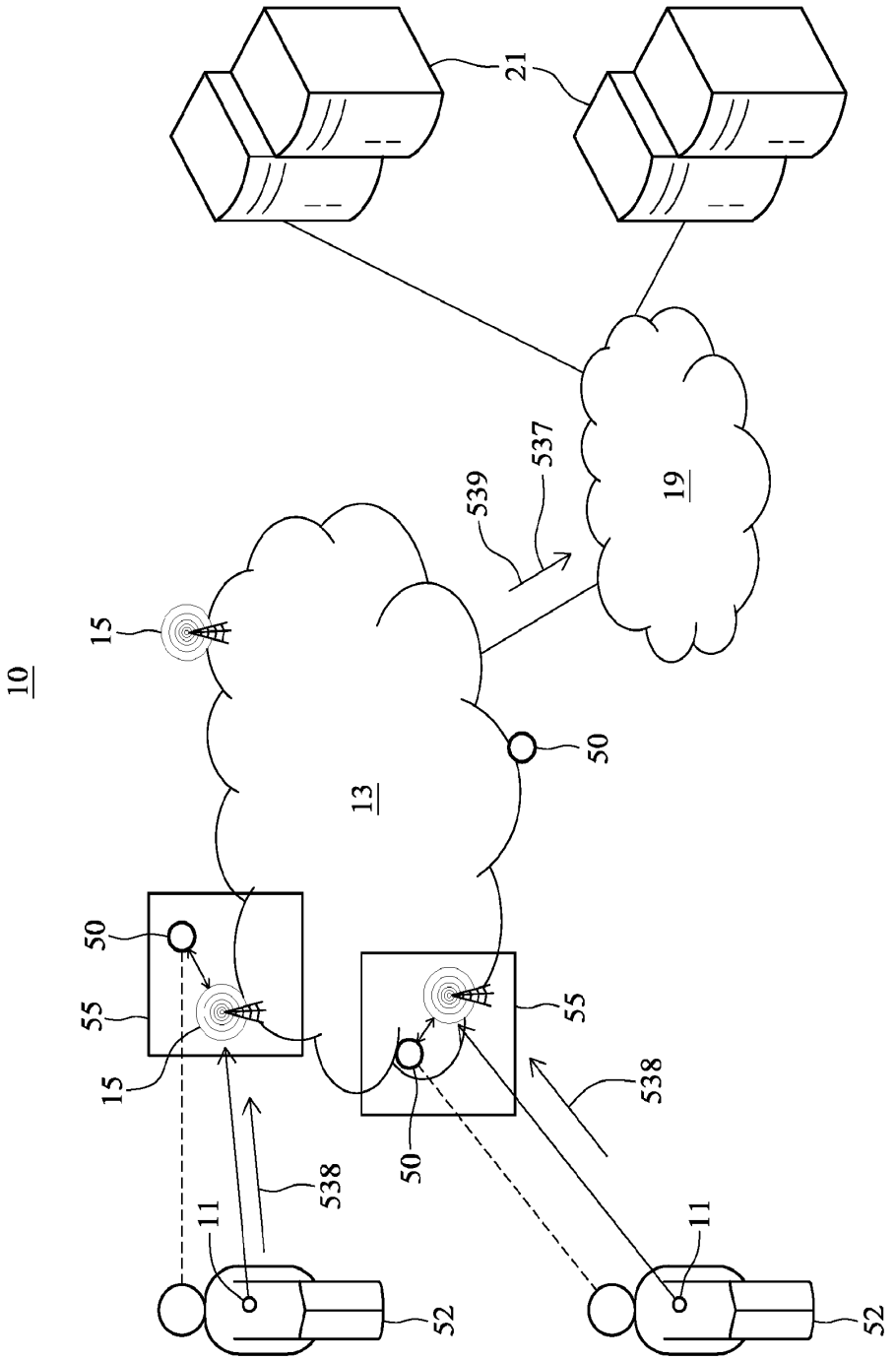


Fig. 66

554

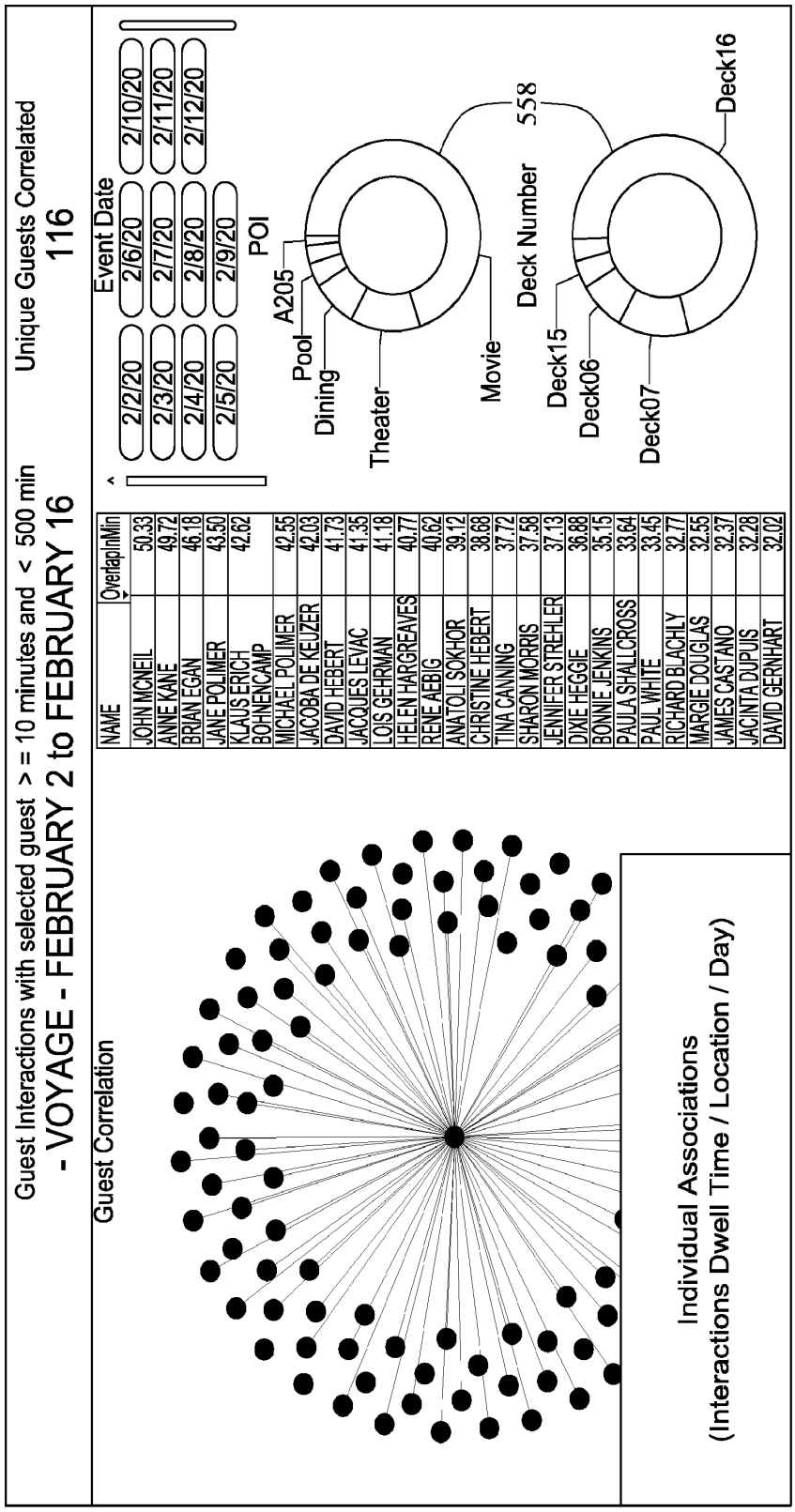

Guest Interactions with selected guest > = 10 minutes and < 500 min
- VOYAGE - FEBRUARY 2 to FEBRUARY 16
Unique Guests Correlated
116
Guest Correlation
NAME
OverlapInMin
JOHN MCNEIL 50.33
ANNE KANE 49.72
BRIAN EGAN 46.18
JANE POLIMER 43.50
KLAUS ERICH BOHNENCAMP 42.62
MICHAEL POLIMER 42.55
JACOBA DE KEIJZER 42.03
DAVID HEBERT 41.73
JACQUES LEVAC 41.35
LOIS GEHRMAN 41.18
HELEN HARGREAVES 40.77
RENE AEBIG 40.62
ANATOLI SOKHOR 39.12
CHRISTINE HEBERT 38.68
TINA CANNING 37.72
SHARON MORRIS 37.58
JENNIFER STREHLER 37.13
DIXIE HEGGIE 36.88
BONNIE JENKINS 35.15
PAULA SHALLCROSS 33.64
PAUL WHITE 33.45
RICHARD BLACHLY 32.77
MARGIE DOUGLAS 32.55
JAMES CASTANO 32.37
JACINTA DUPUIS 32.28
DAVID GERNHART 32.02
Event Date
2/2/20
2/3/20
2/4/20
2/5/20
2/6/20
2/7/20
2/8/20
2/9/20
2/10/20
2/11/20
2/12/20
POI
A205
Pool
Dining
Theater
Movie
Deck Number
558
Deck15
Deck06
Deck07
Deck16
Individual Associations
(Interactions Dwell Time / Location / Day)

Fig. 67

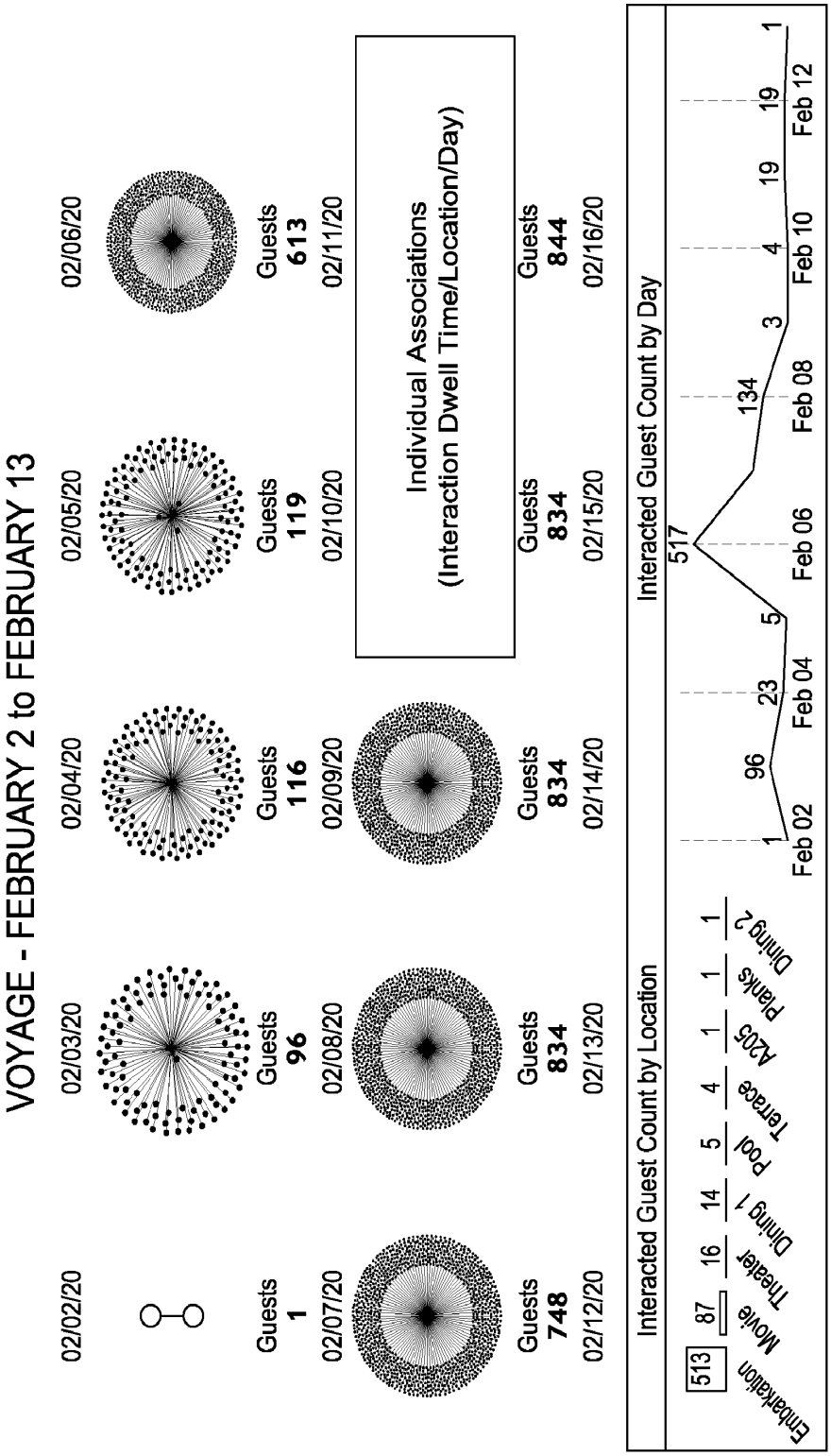

556
VOYAGE - FEBRUARY 2 to FEBRUARY 13
02/02/20
Guests
1
02/07/20
02/03/20
Guests
96
02/08/20
02/04/20
Guests
116
02/09/20
02/05/20
Guests
119
02/10/20
02/06/20
Guests
613
02/11/20
Guests
748
02/12/20
Guests
834
02/13/20
Guests
834
02/14/20
Guests
834
02/15/20
Guests
844
02/16/20
Individual Associations
(Interaction Dwell Time/Location/Day)
Interacted Guest Count by Location
513
87
16
14
5
4
1
1
1
Embarkation
Movie
Theater
Dining 1
Pool
Terrace
A205
Planks
Dining 2
Interacted Guest Count by Day
517
134
96
23
5
4
3
19
19
1
1
Feb 02
Feb 04
Feb 06
Feb 08
Feb 10
Feb 12

Fig. 68

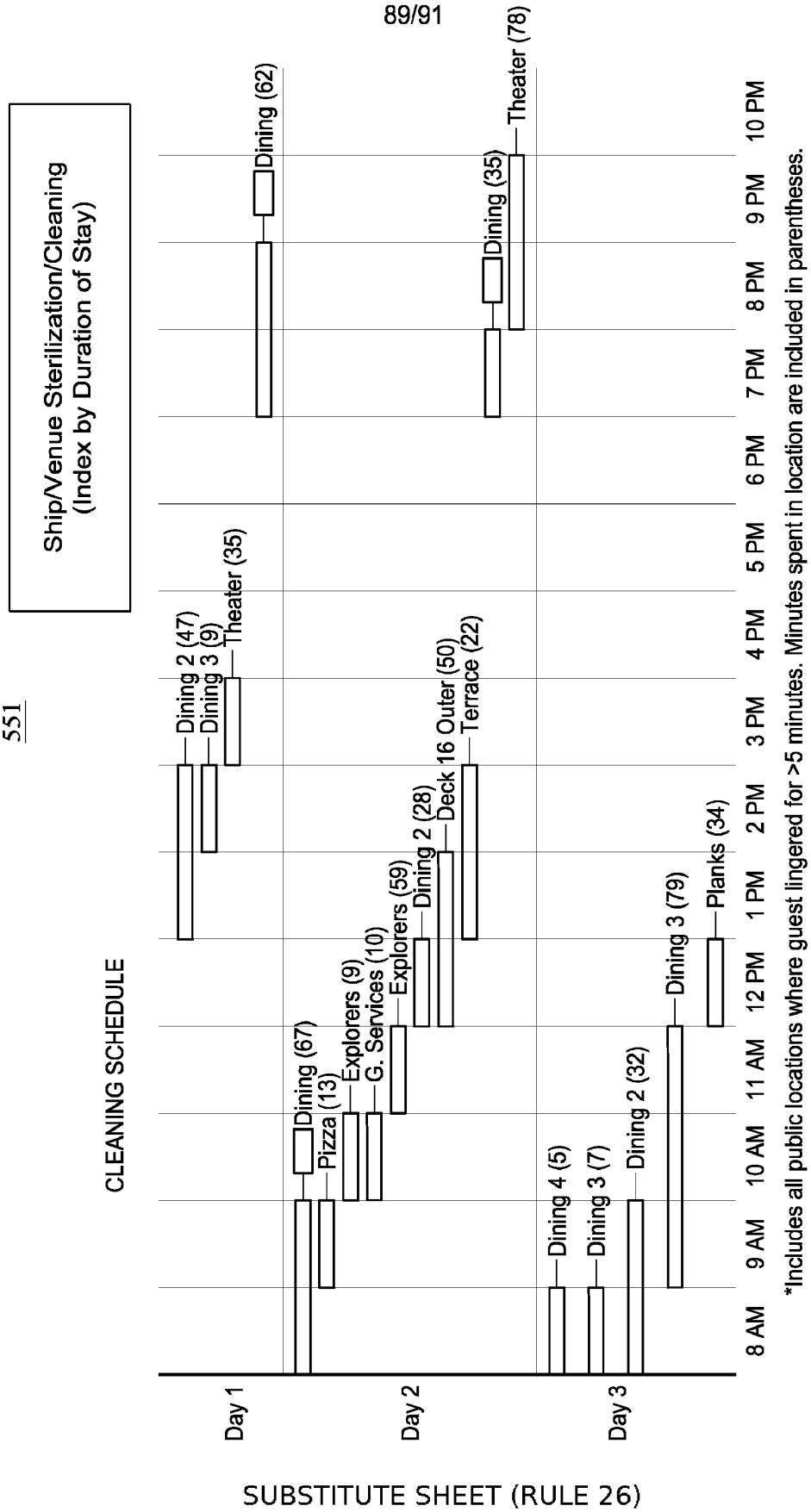

551
Ship/Venue Sterilization/Cleaning
(Index by Duration of Stay)
CLEANING SCHEDULE
Day 1
Day 2
Day 3
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
Dining 2 (47)
Dining 3 (9)
Theater (35)
Dining (62)
Dining (67)
Pizza (13)
Explorers (9)
G. Services (10)
Explorers (59)
Dining 2 (28)
Deck 16 Outer (50)
Terrace (22)
Dining (35)
Theater (78)
Dining 4 (5)
Dining 3 (7)
Dining 2 (32)
Dining 3 (79)
Planks (34)
*Includes all public locations where guest lingered for >5 minutes. Minutes spent in location are included in parentheses.

Fig. 69

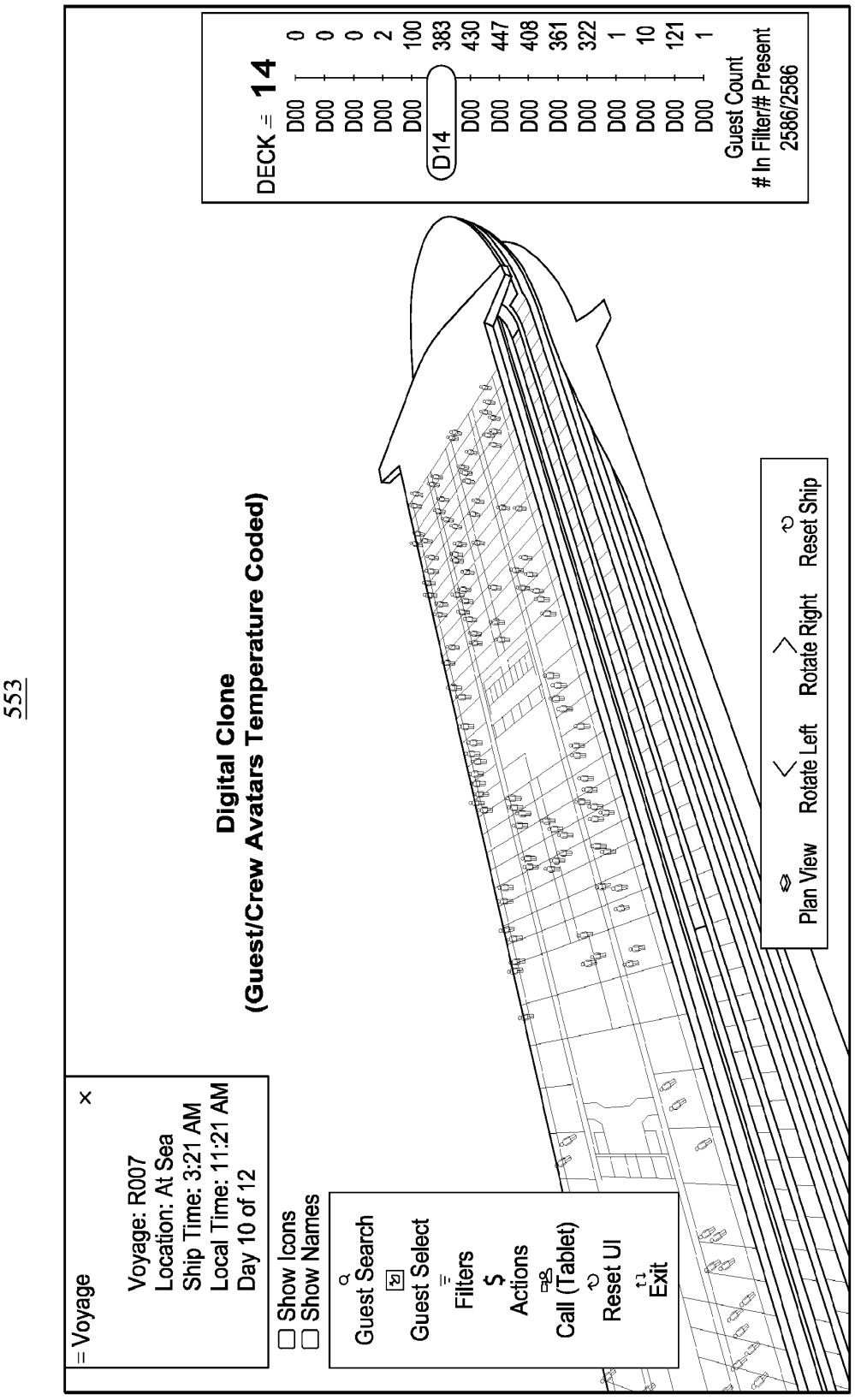

553
Digital Clone
(Guest/Crew Avatars Temperature Coded)
≡ Voyage
Voyage: R007
Location: At Sea
Ship Time: 3:21 AM
Local Time: 11:21 AM
Day 10 of 12
Show Icons
Show Names
Guest Search
Guest Select
Filters
Actions
Call (Tablet)
Reset UI
Exit
DECK = 14
D00 0
D00 0
D00 0
D00 2
D00 100
D14 383
D00 430
D00 447
D00 408
D00 361
D00 322
D00 1
D00 10
D00 121
D00 1
Guest Count
In Filter/# Present
2586/2586
Plan View
Rotate Left
Rotate Right
Reset Ship

Fig. 70

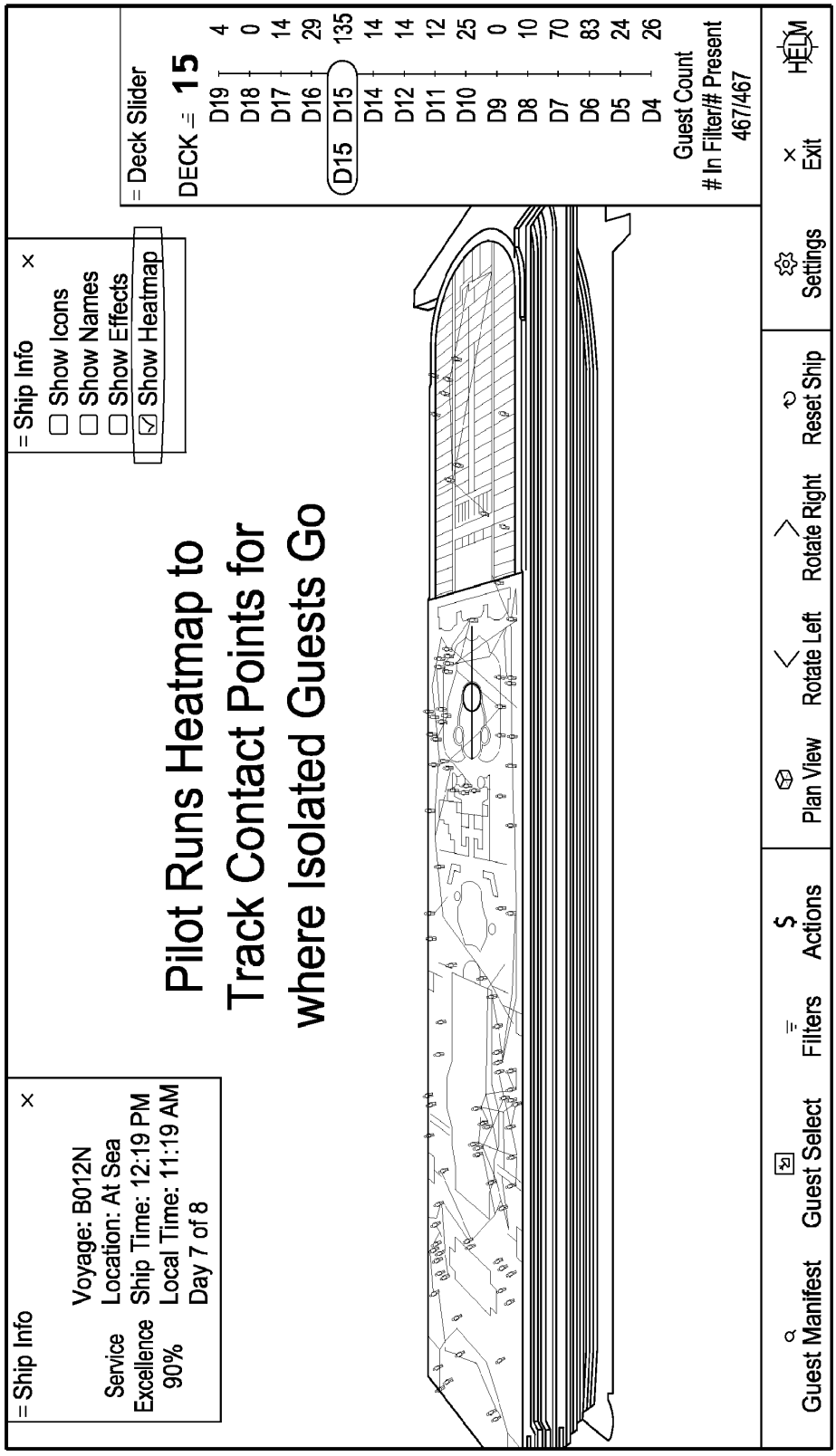

555
= Ship Info
Voyage: B012N
Location: At Sea
Ship Time: 12:19 PM
Local Time: 11:19 AM
Day 7 of 8
Service Excellence 90%
Pilot Runs Heatmap to Track Contact Points for where Isolated Guests Go
= Ship Info
Show Icons
Show Names
Show Effects
Show Heatmap
= Deck Slider
DECK = 15
D19 4
D18 0
D17 14
D16 29
D15 D15 135
D14 14
D12 14
D11 12
D10 25
D9 0
D8 10
D7 70
D6 83
D5 24
D4 26
Guest Count
In Filter/# Present
467/467
Guest Manifest
Guest Select
Filters
Actions
Plan View
Rotate Left
Rotate Right
Reset Ship
Settings
Exit
HELM

Fig. 71