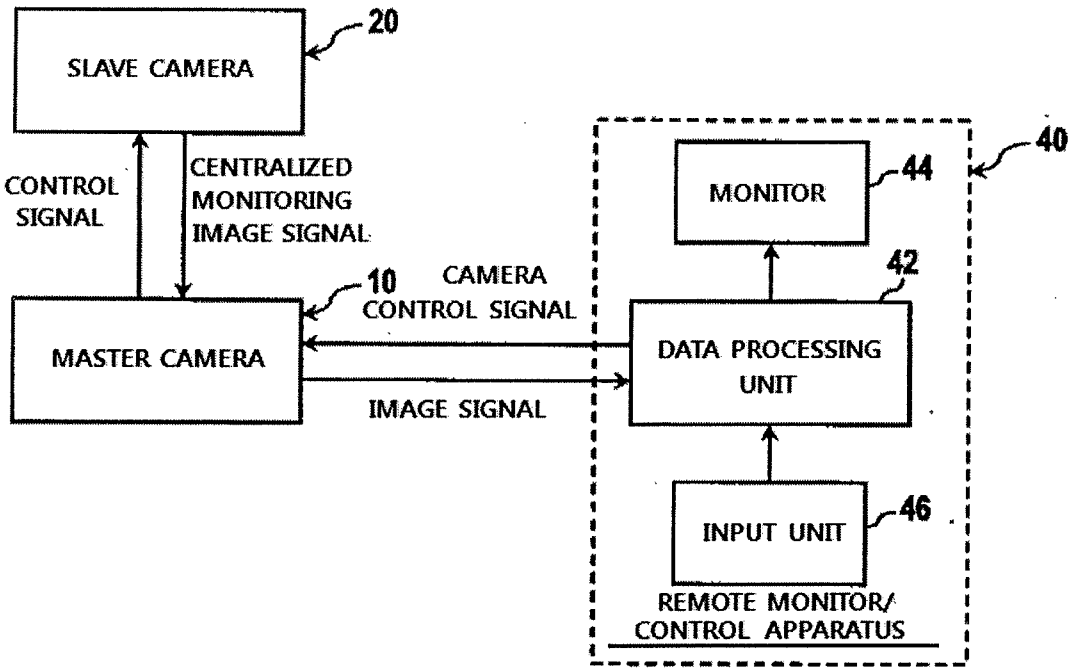
FIG. 1


SLAVE CAMERA
20
CONTROL SIGNAL
CENTRALIZED MONITORING IMAGE SIGNAL
10
CAMERA CONTROL SIGNAL
MASTER CAMERA
IMAGE SIGNAL
MONITOR
44
40
42
DATA PROCESSING UNIT
INPUT UNIT
46
REMOTE MONITOR/ CONTROL APPARATUS

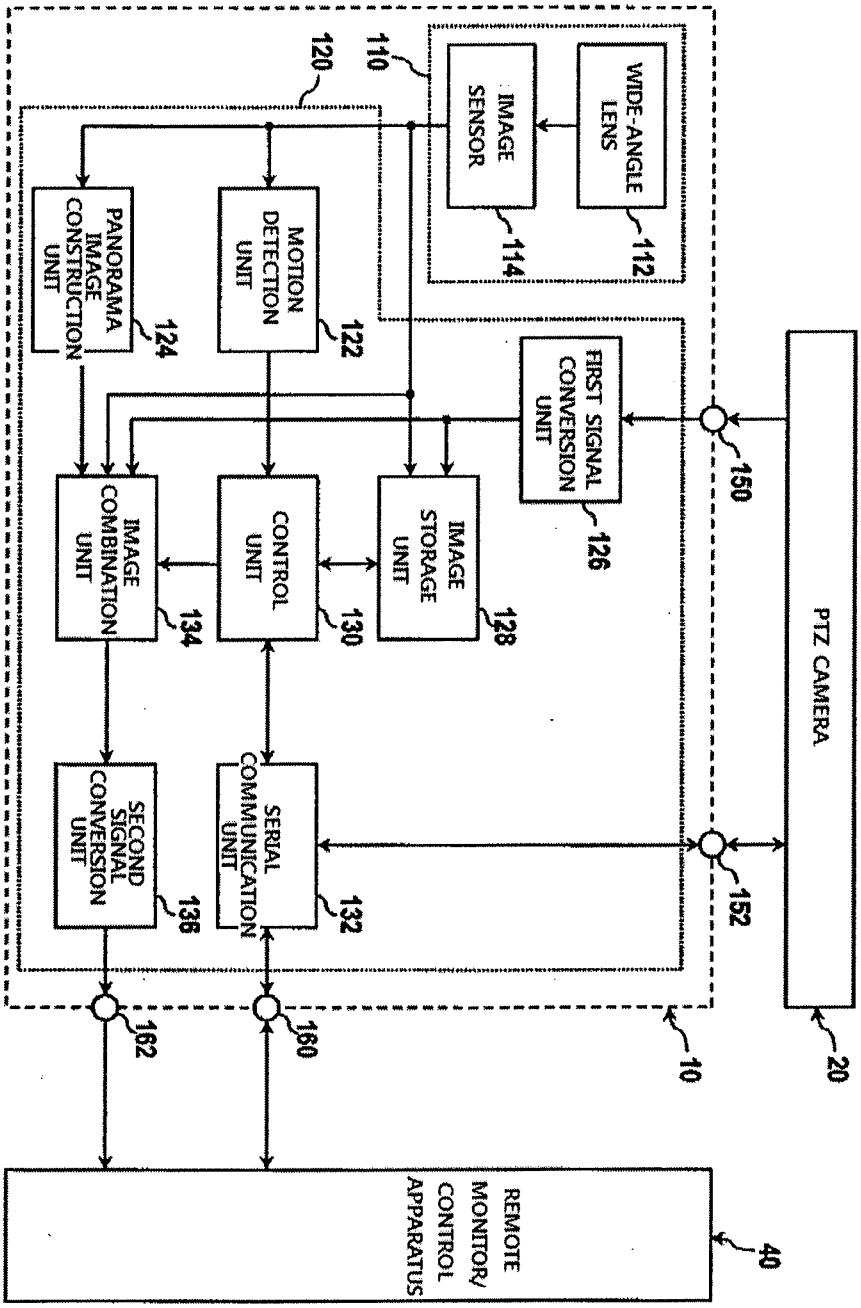

WIDE-ANGLE LENS
112
IMAGE SENSOR
114
110
120
PANORAMA IMAGE CONSTRUCTION UNIT
124
MOTION DETECTION UNIT
122
FIRST SIGNAL CONVERSION UNIT
126
150
PTZ CAMERA
20
IMAGE COMBINATION UNIT
134
CONTROL UNIT
130
IMAGE STORAGE UNIT
128
SECOND SIGNAL CONVERSION UNIT
136
SERIAL COMMUNICATION UNIT
132
152
162
160
10
REMOTE MONITOR/ CONTROL APPARATUS
40

Fig. 2

FIG. 3

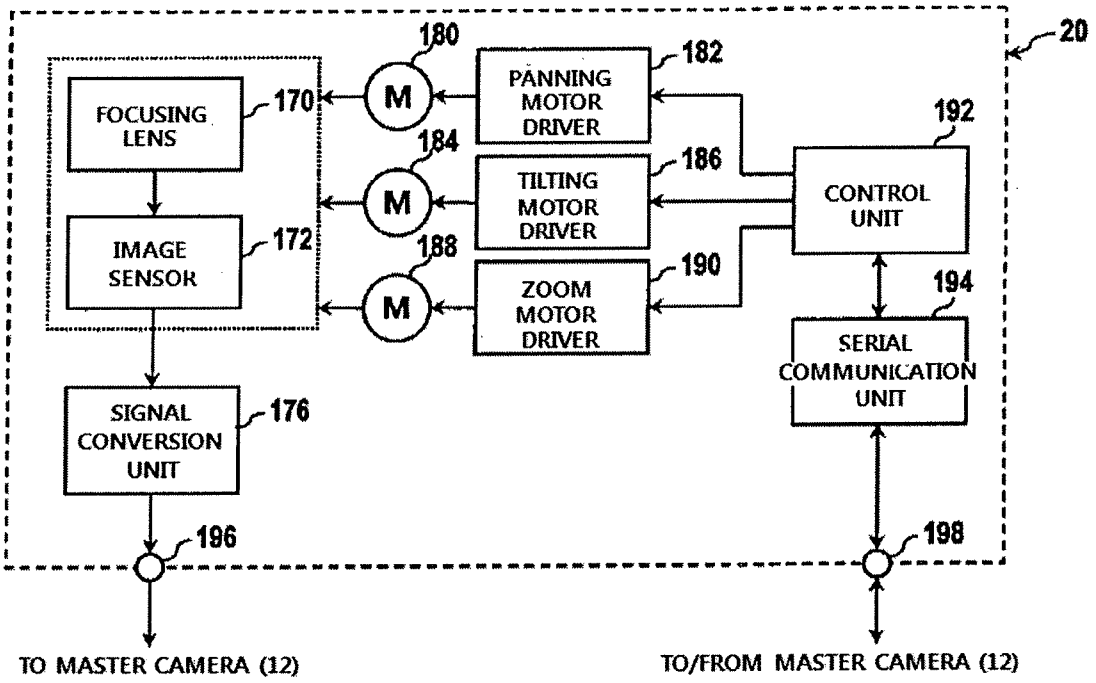

20
180
182
FOCUSING LENS
170
M
PANNING MOTOR DRIVER
192
184
186
TILTING MOTOR DRIVER
CONTROL UNIT
IMAGE SENSOR
172
M
188
190
194
ZOOM MOTOR DRIVER
SERIAL COMMUNICATION UNIT
SIGNAL CONVERSION UNIT
176
196
198
TO MASTER CAMERA (12)
TO/FROM MASTER CAMERA (12)

FIG. 4

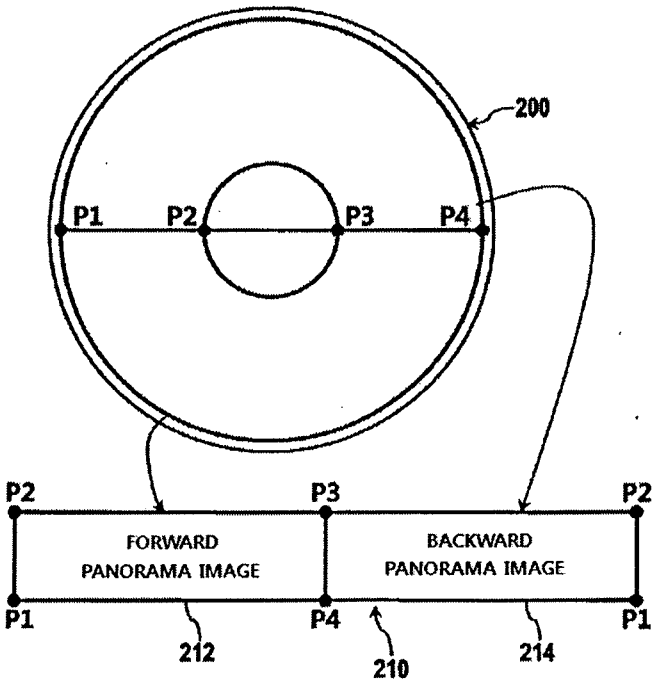

200
P1
P2
P3
P4
P2
P3
P2
FORWARD PANORAMA IMAGE
BACKWARD PANORAMA IMAGE
P1
P4
P1
212
210
214

FIG. 5

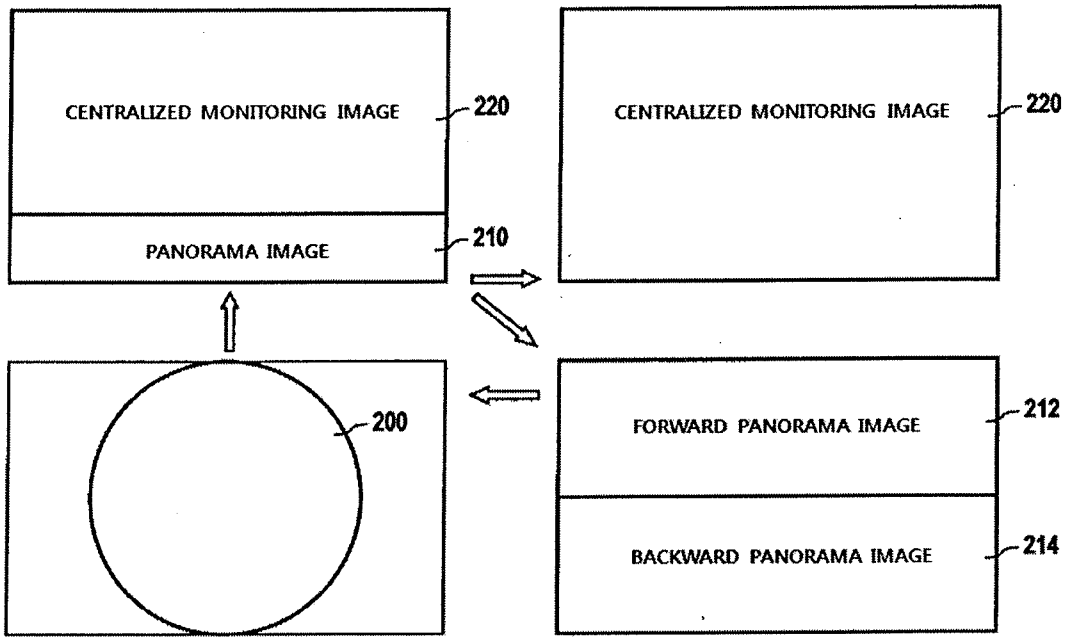

CENTRALIZED MONITORING IMAGE
220
PANORAMA IMAGE
210
CENTRALIZED MONITORING IMAGE
220
200
FORWARD PANORAMA IMAGE
212
BACKWARD PANORAMA IMAGE
214

FIG. 6

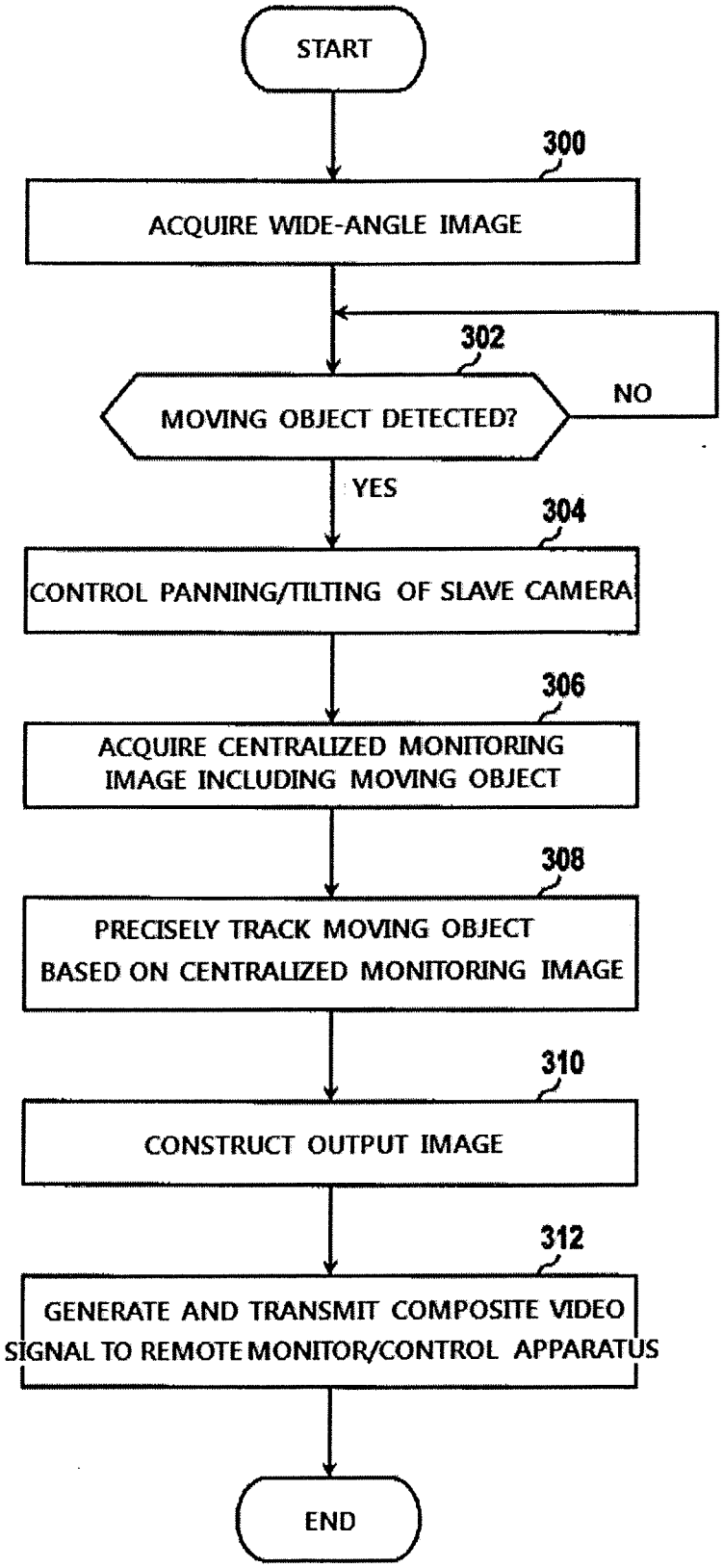

START
300
ACQUIRE WIDE-ANGLE IMAGE
302
MOVING OBJECT DETECTED?
NO
YES
304
CONTROL PANNING/TILTING OF SLAVE CAMERA
306
ACQUIRE CENTRALIZED MONITORING IMAGE INCLUDING MOVING OBJECT
308
PRECISELY TRACK MOVING OBJECT BASED ON CENTRALIZED MONITORING IMAGE
310
CONSTRUCT OUTPUT IMAGE
312
GENERATE AND TRANSMIT COMPOSITE VIDEO SIGNAL TO REMOTE MONITOR/CONTROL APPARATUS
END

FIG. 7

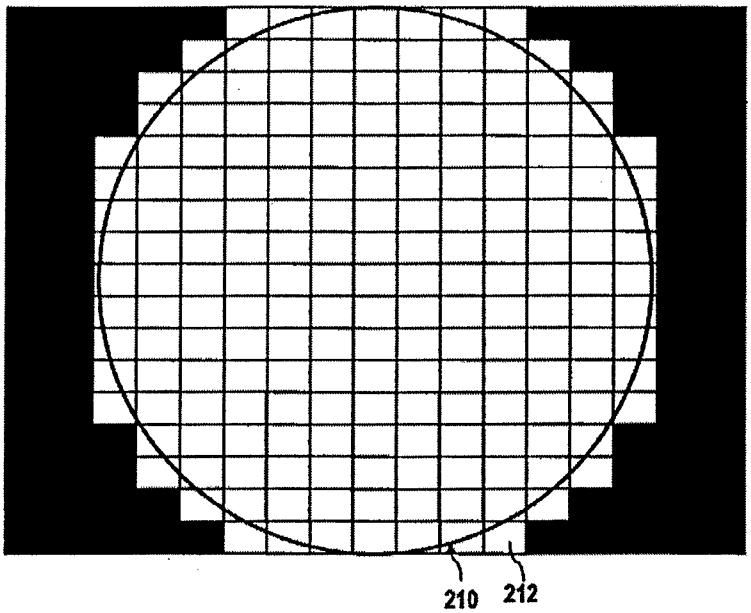

210
212

FIG. 8

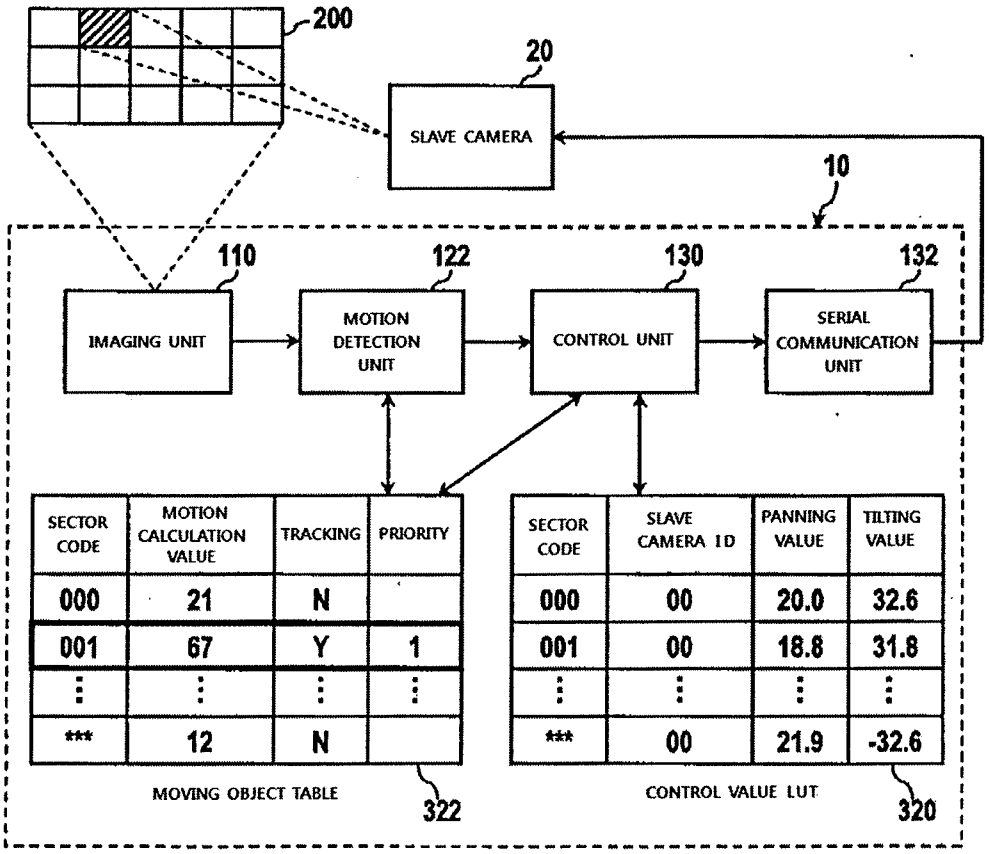

200
20
SLAVE CAMERA
10
110
IMAGING UNIT
122
MOTION DETECTION UNIT
130
CONTROL UNIT
132
SERIAL COMMUNICATION UNIT
SECTOR CODE
MOTION CALCULATION VALUE
TRACKING
PRIORITY
000
21
N
001
67
Y
1
***
12
N
MOVING OBJECT TABLE
322
SECTOR CODE
SLAVE CAMERA ID
PANNING VALUE
TILTING VALUE
000
00
20.0
32.6
001
00
18.8
31.8
***
00
21.9
-32.6
CONTROL VALUE LUT
320

FIG. 9

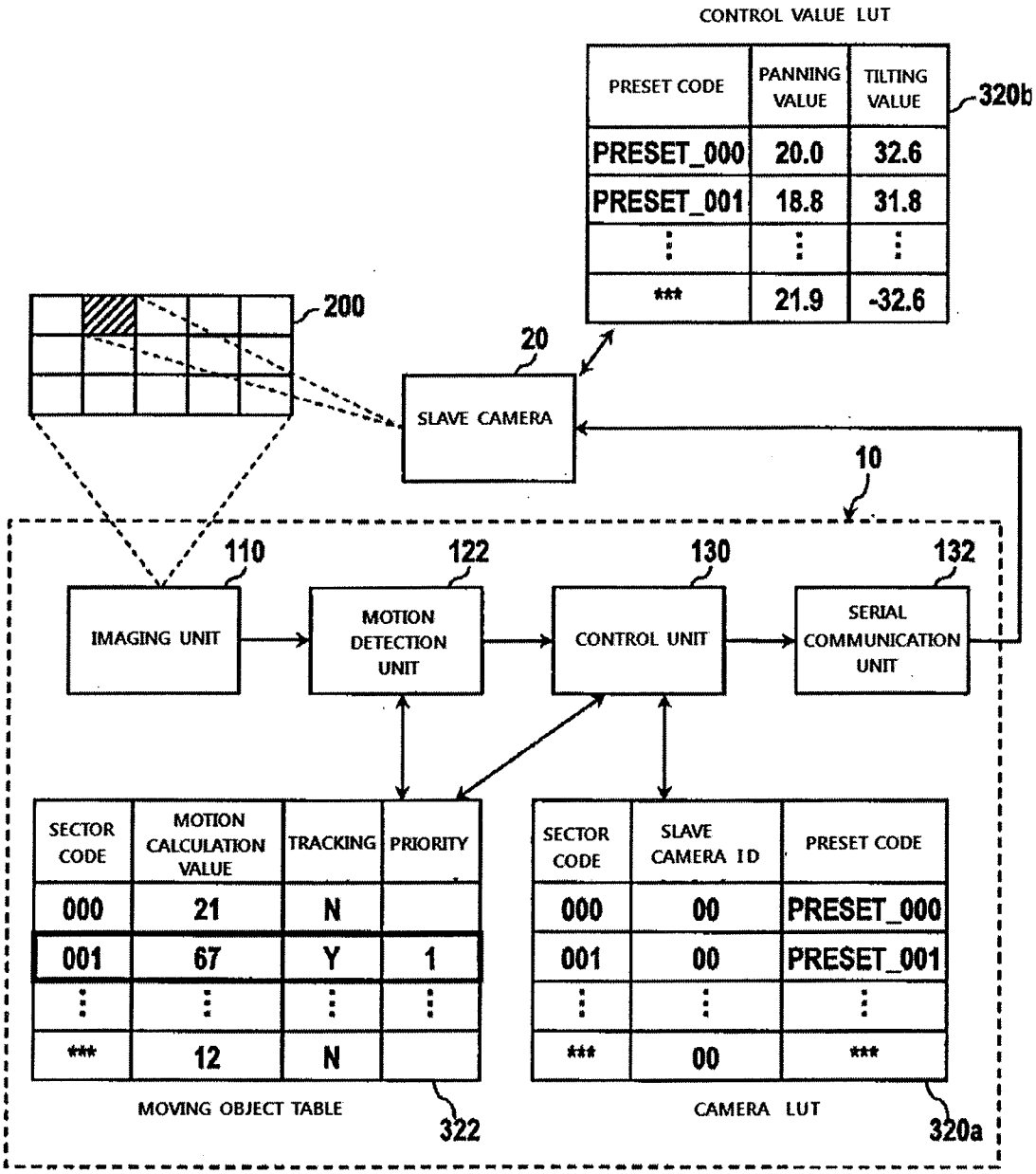

CONTROL VALUE LUT
PRESET CODE
PANNING VALUE
TILTING VALUE
320b
PRESET_000
20.0
32.6
PRESET_001
18.8
31.8
***
21.9
-32.6
200
20
SLAVE CAMERA
10
110
IMAGING UNIT
122
MOTION DETECTION UNIT
130
CONTROL UNIT
132
SERIAL COMMUNICATION UNIT
SECTOR CODE
MOTION CALCULATION VALUE
TRACKING
PRIORITY
000
21
N
001
67
Y
1
***
12
N
MOVING OBJECT TABLE
322
SECTOR CODE
SLAVE CAMERA ID
PRESET CODE
000
00
PRESET_000
001
00
PRESET_001
***
00
***
CAMERA LUT
320a

FIG. 10

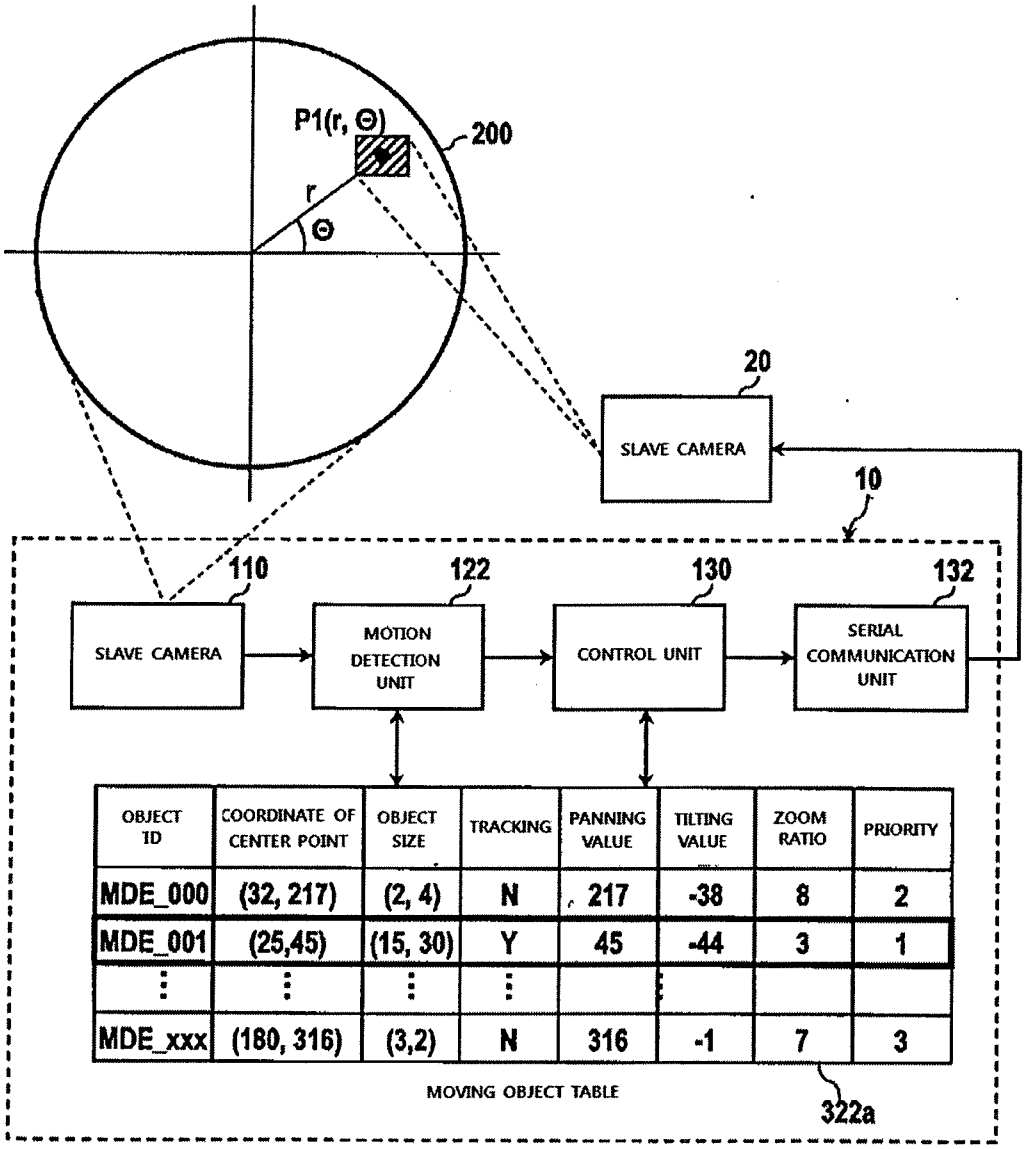

P1(r, Θ)
200
r
Θ
20
SLAVE CAMERA
10
110
122
130
132
SLAVE CAMERA
MOTION DETECTION UNIT
CONTROL UNIT
SERIAL COMMUNICATION UNIT
OBJECT ID
COORDINATE OF CENTER POINT
OBJECT SIZE
TRACKING
PANNING VALUE
TILTING VALUE
ZOOM RATIO
PRIORITY
MDE_000
(32, 217)
(2, 4)
N
217
-38
8
2
MDE_001
(25,45)
(15, 30)
Y
45
-44
3
1
MDE_xxx
(180, 316)
(3,2)
N
316
-1
7
3
MOVING OBJECT TABLE
322a

FIG. 11

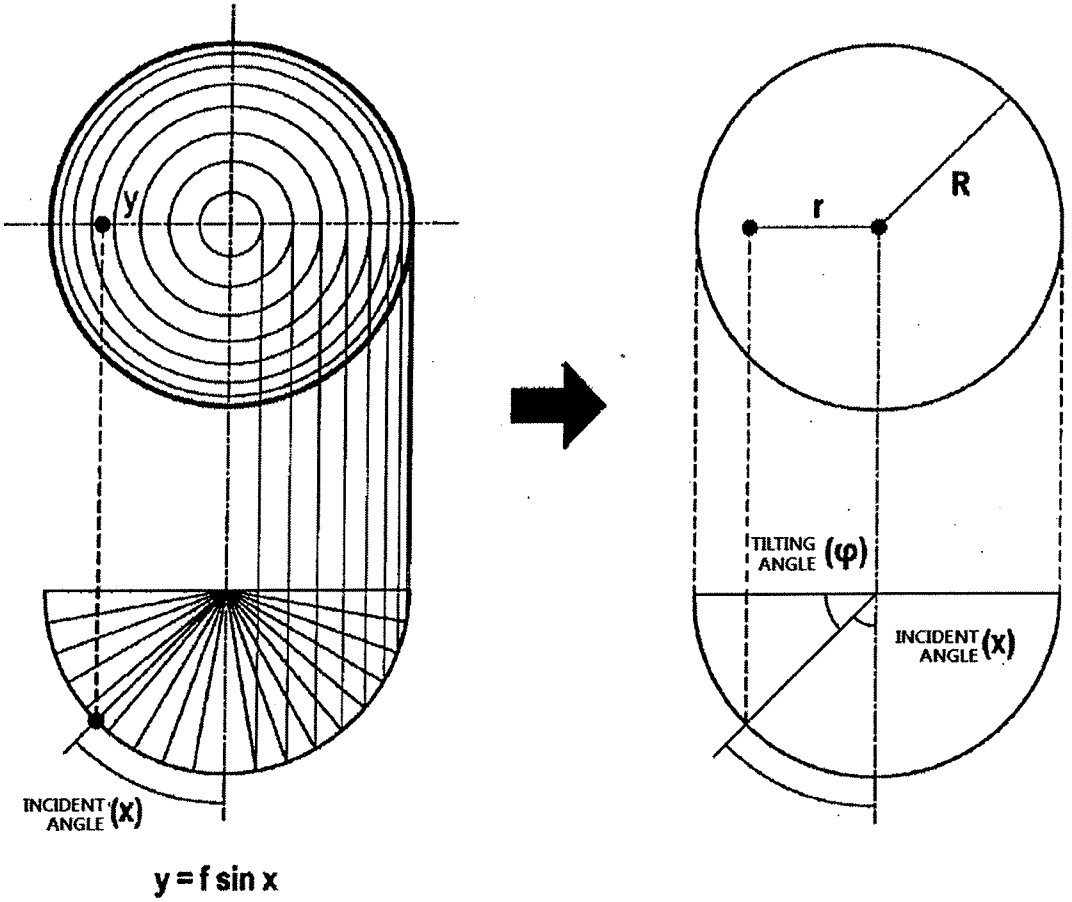

y
INCIDENT ANGLE (x)
y = f sin x
r
R
TILTING ANGLE (φ)
INCIDENT ANGLE (x)

FIG. 12

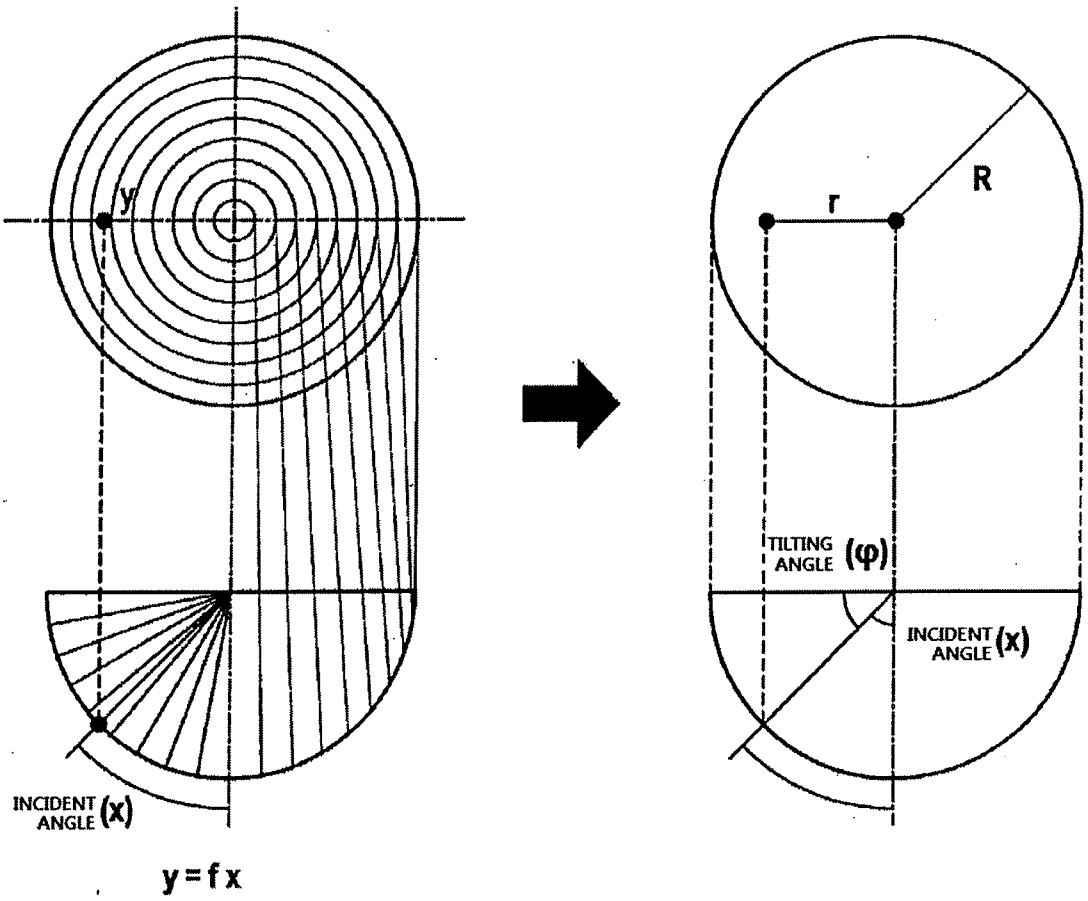

y
INCIDENT ANGLE (x)
y = f x
r
R
TILTING ANGLE (φ)
INCIDENT ANGLE (x)

FIG. 13

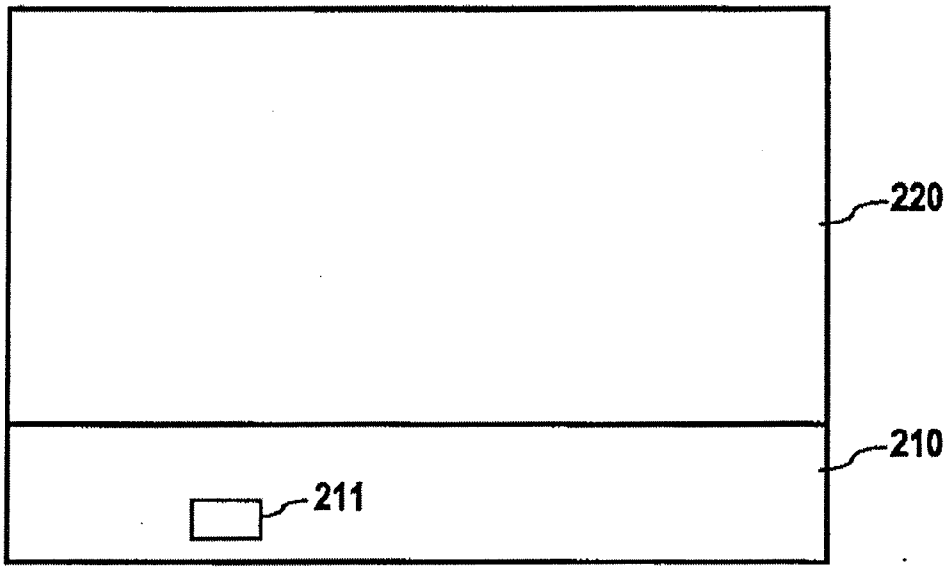

220
210
211

FIG. 14

TRACKING TABLE

OBJECT ID	MOVEMENT HISTORY
MDE_003	SECTOR_001 – SECTOR_005 –SECTOR_010 – SECTOR_015
MDE_008	SECTOR_012 – SECTOR_013
⋮	⋮
MDE_xxx	SECTOR_217

330

FIG. 15

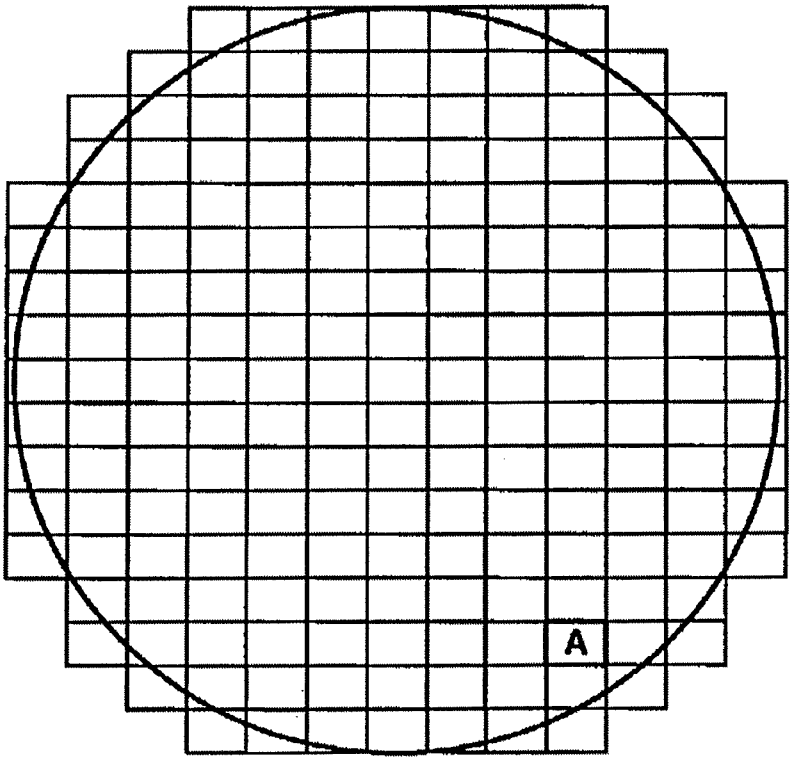


FIG. 16

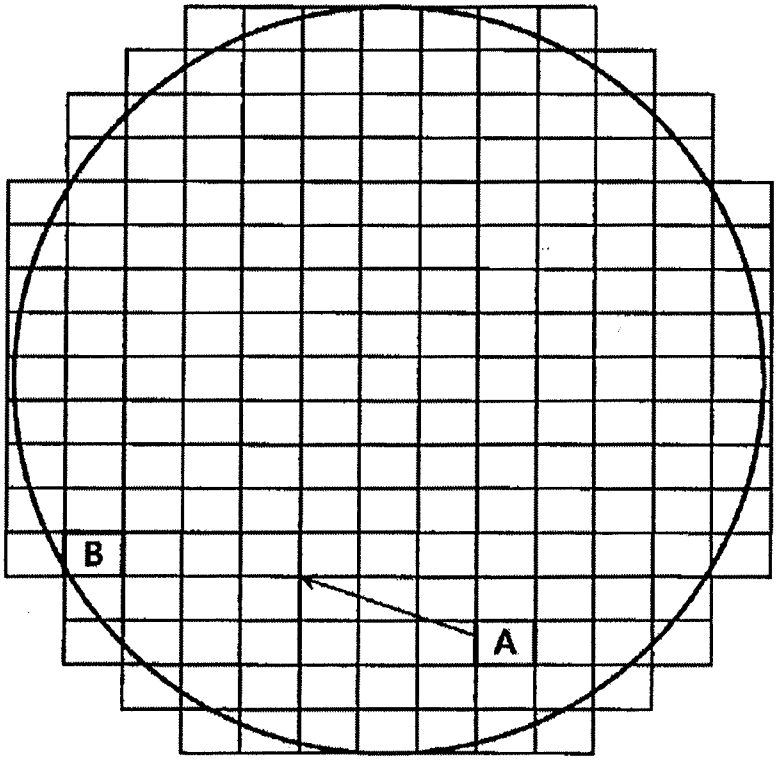


FIG. 17

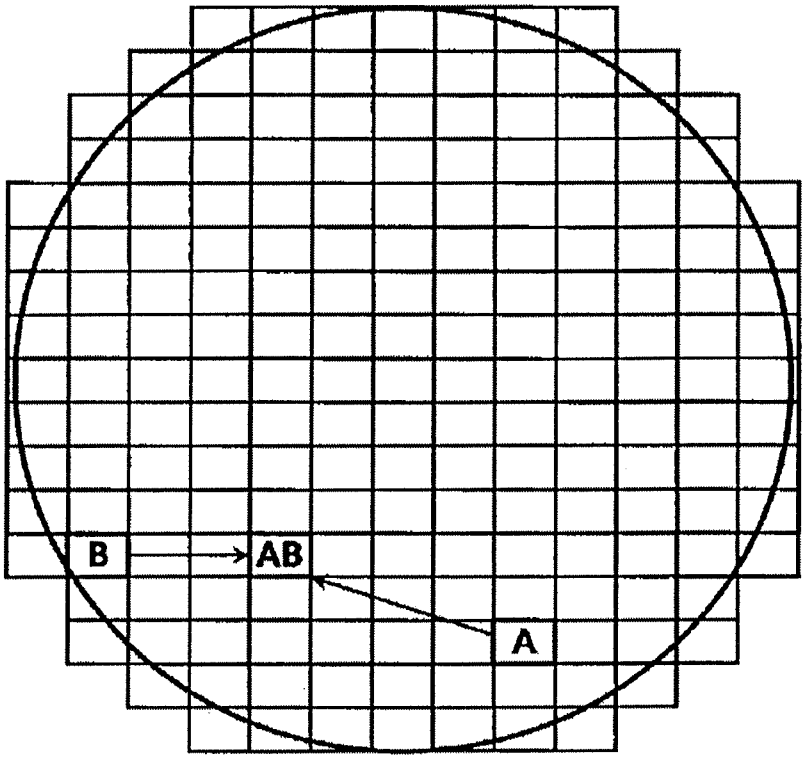


FIG. 18

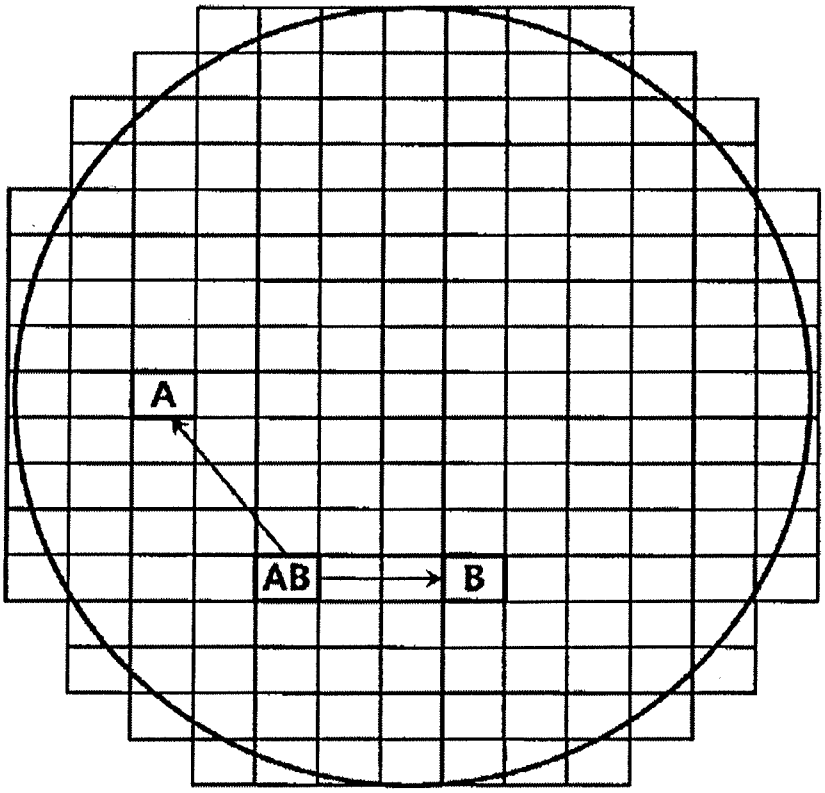
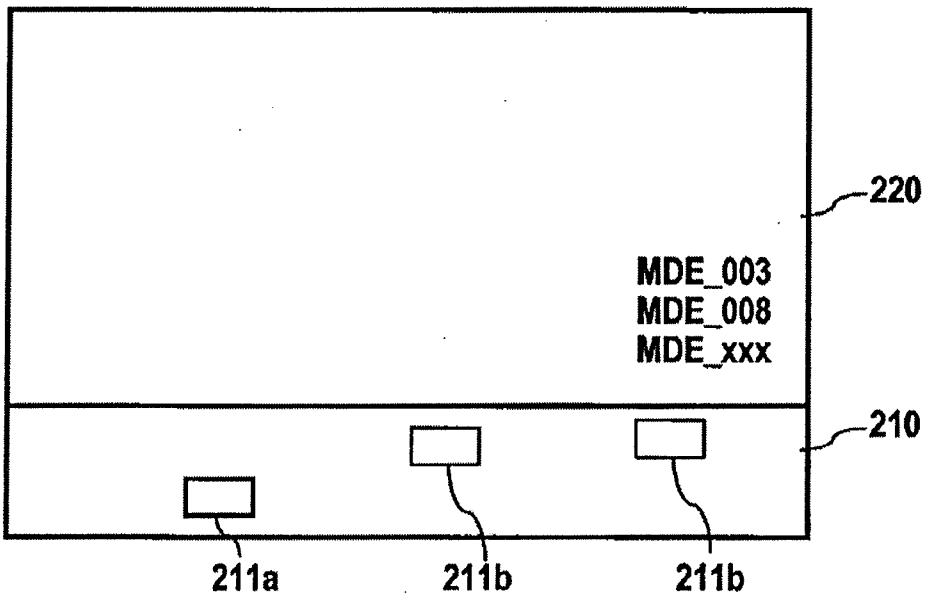


FIG. 19



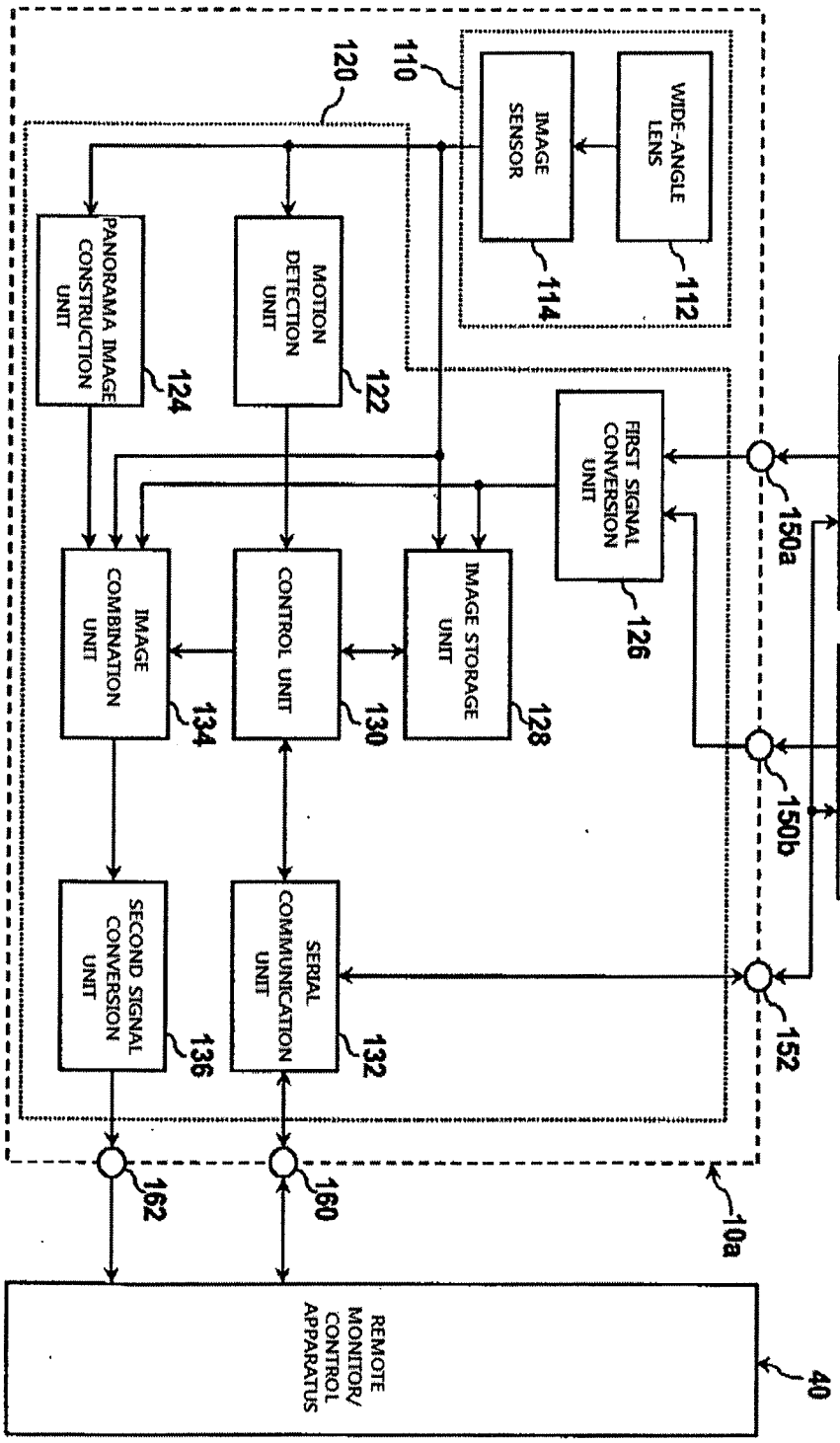

PTZ CAMERA
20a
PTZ CAMERA
20b
150a
150b
152
10a
120
110
WIDE-ANGLE LENS
112
IMAGE SENSOR
114
FIRST SIGNAL CONVERSION UNIT
126
PANORAMA IMAGE CONSTRUCTION UNIT
124
MOTION DETECTION UNIT
122
IMAGE COMBINATION UNIT
134
CONTROL UNIT
130
IMAGE STORAGE UNIT
128
SECOND SIGNAL CONVERSION UNIT
136
SERIAL COMMUNICATION UNIT
132
162
160
REMOTE MONITOR/ CONTROL APPARATUS
40

FIG. 20

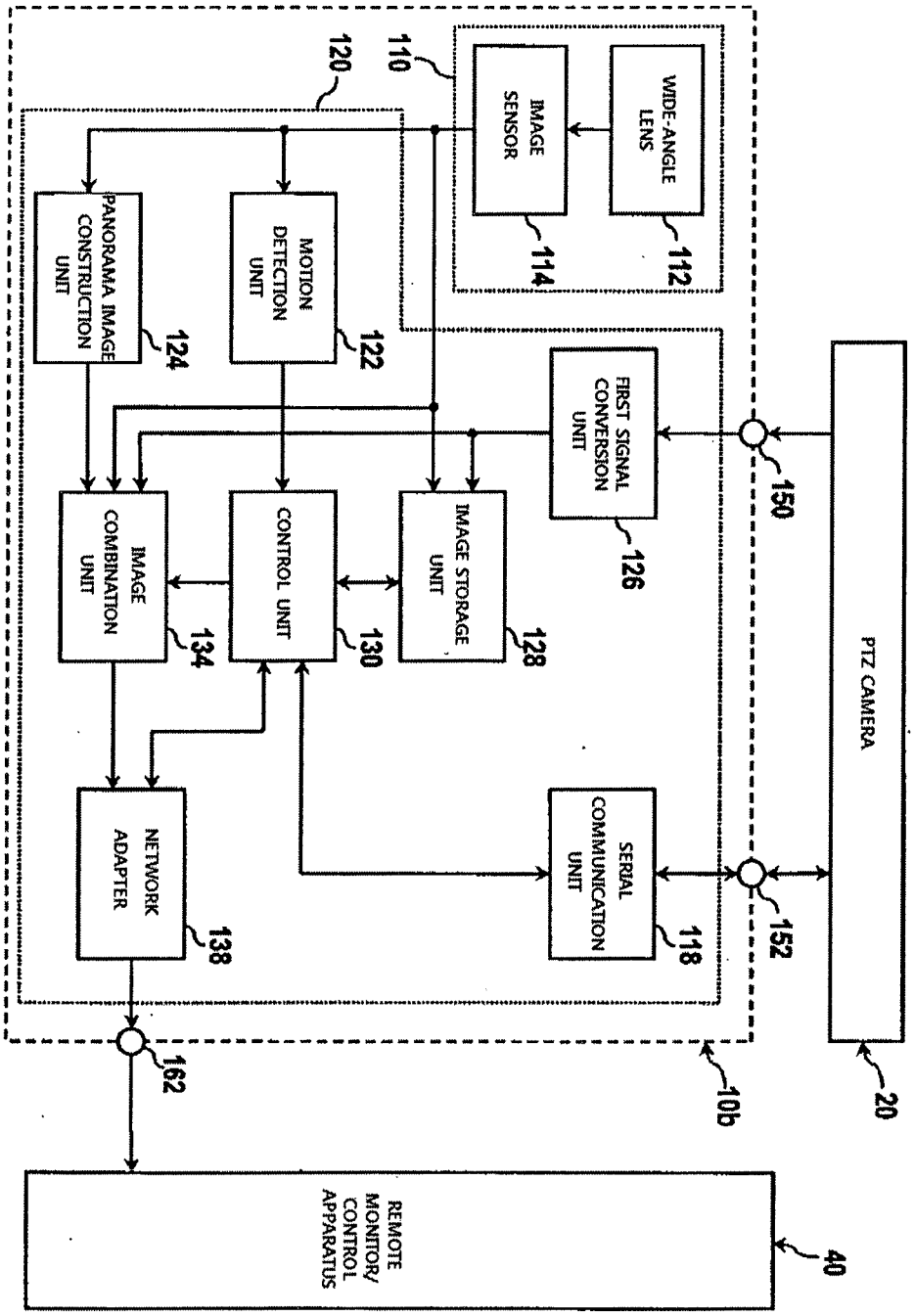

PTZ CAMERA
20
10b
110
120
WIDE-ANGLE LENS
112
IMAGE SENSOR
114
PANORAMA IMAGE CONSTRUCTION UNIT
124
MOTION DETECTION UNIT
122
FIRST SIGNAL CONVERSION UNIT
126
150
IMAGE COMBINATION UNIT
134
CONTROL UNIT
130
IMAGE STORAGE UNIT
128
NETWORK ADAPTER
138
SERIAL COMMUNICATION UNIT
118
152
162
REMOTE MONITOR/ CONTROL APPARATUS
40

FIG. 21

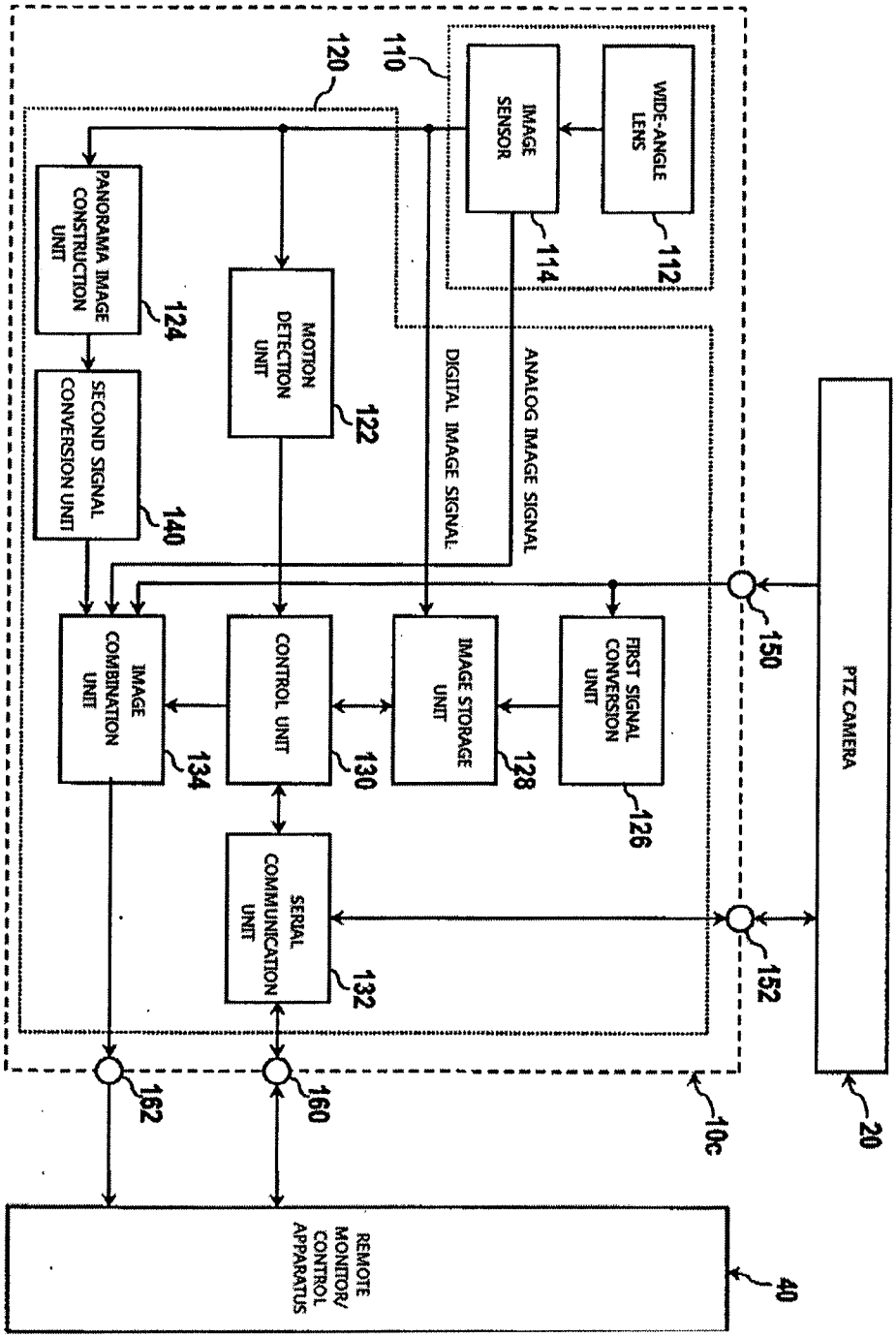

PTZ CAMERA
20
10c
150
152
WIDE-ANGLE LENS
112
IMAGE SENSOR
114
110
120
ANALOG IMAGE SIGNAL
DIGITAL IMAGE SIGNAL
PANORAMA IMAGE CONSTRUCTION UNIT
124
MOTION DETECTION UNIT
122
SECOND SIGNAL CONVERSION UNIT
140
FIRST SIGNAL CONVERSION UNIT
126
IMAGE STORAGE UNIT
128
CONTROL UNIT
130
IMAGE COMBINATION UNIT
134
SERIAL COMMUNICATION UNIT
132
162
160
REMOTE MONITOR/ CONTROL APPARATUS
40

FIG. 22

FIG. 23

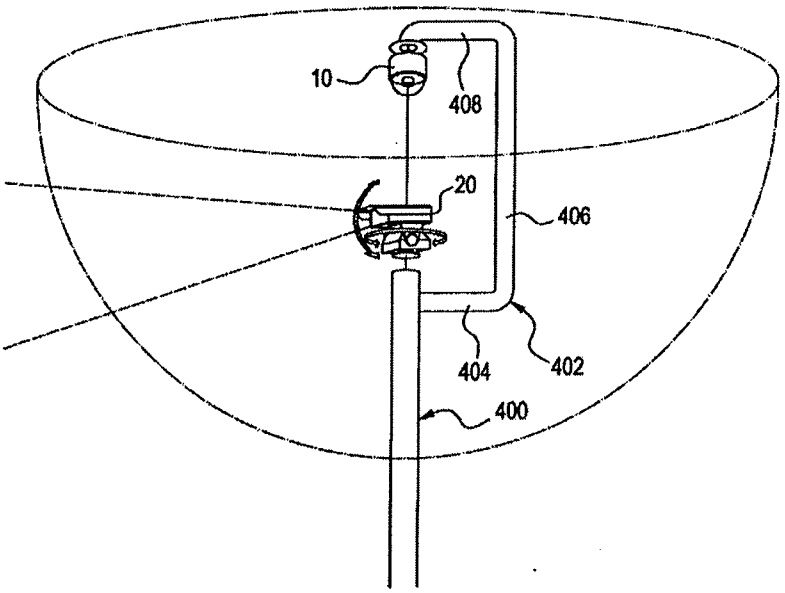


FIG24

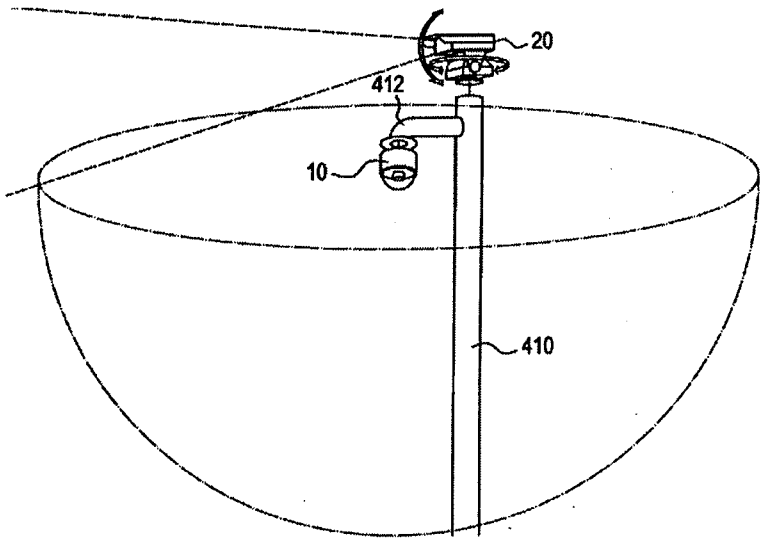


FIG. 25

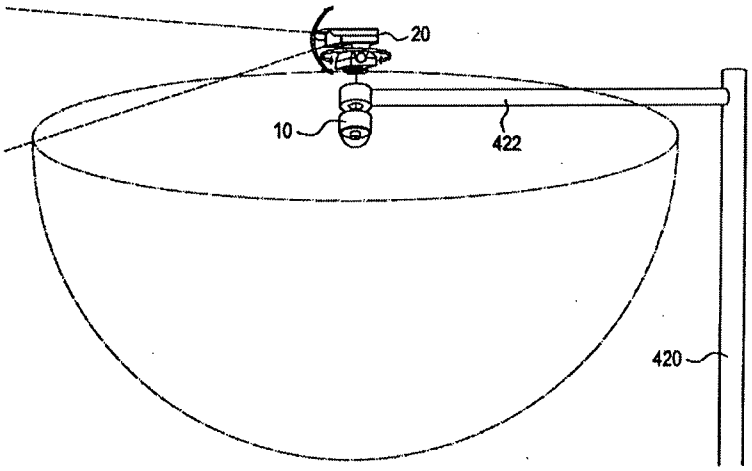


FIG. 26

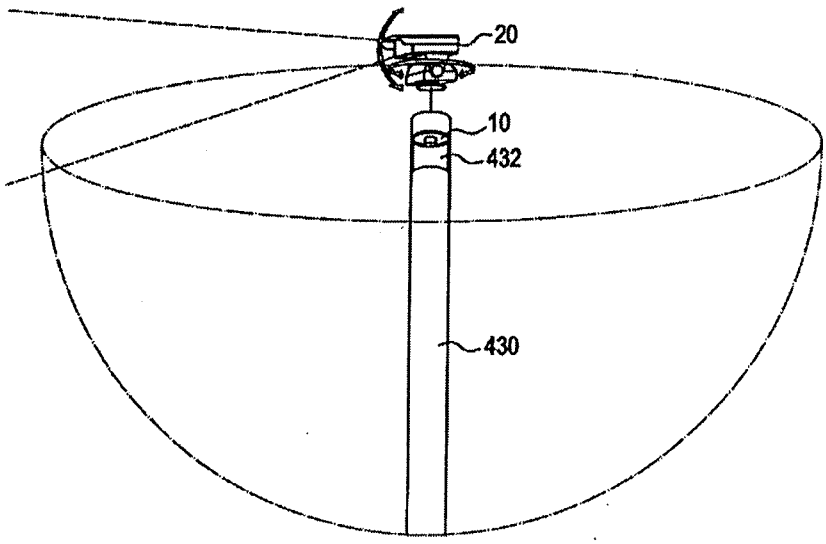


FIG. 27

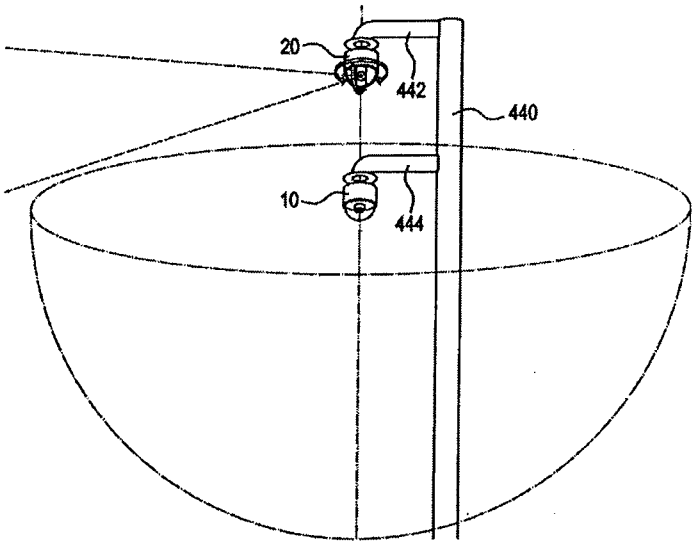


FIG. 28

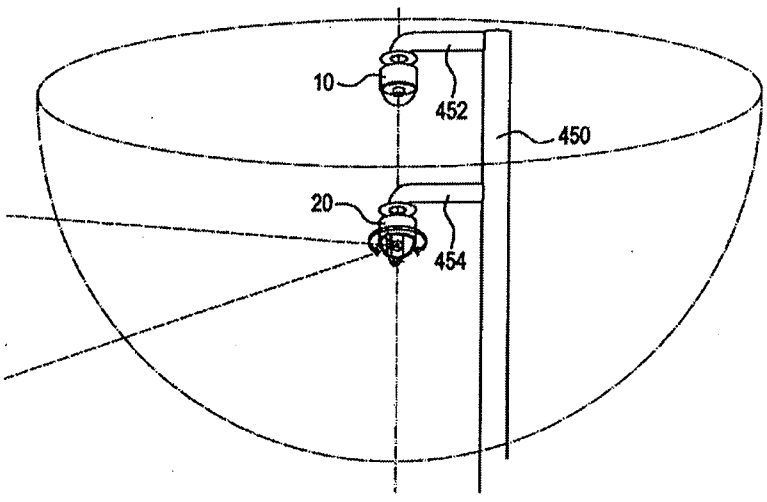


FIG. 29

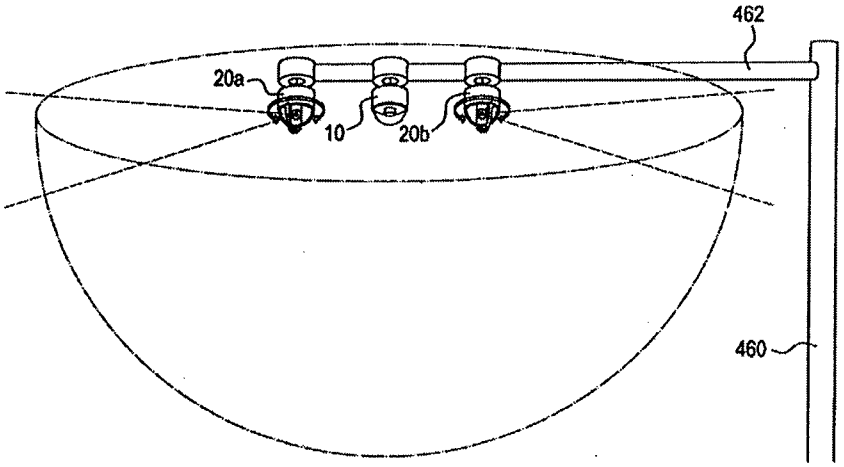


FIG. 30

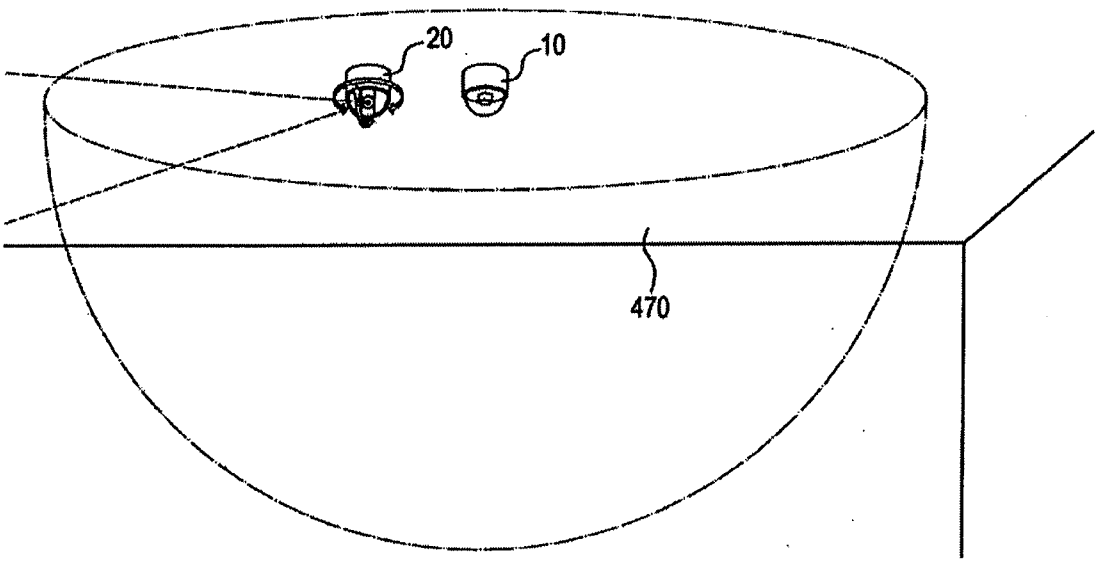
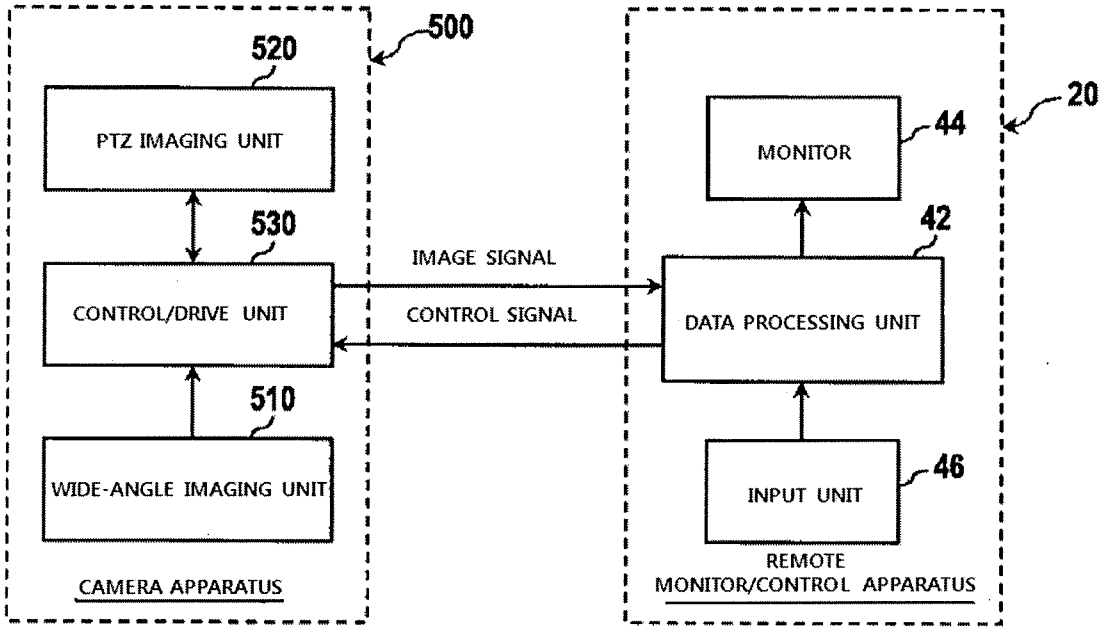


FIG. 31


500
520
PTZ IMAGING UNIT
530
CONTROL/DRIVE UNIT
510
WIDE-ANGLE IMAGING UNIT
CAMERA APPARATUS
IMAGE SIGNAL
CONTROL SIGNAL
20
MONITOR
44
42
DATA PROCESSING UNIT
INPUT UNIT
46
REMOTE
MONITOR/CONTROL APPARATUS

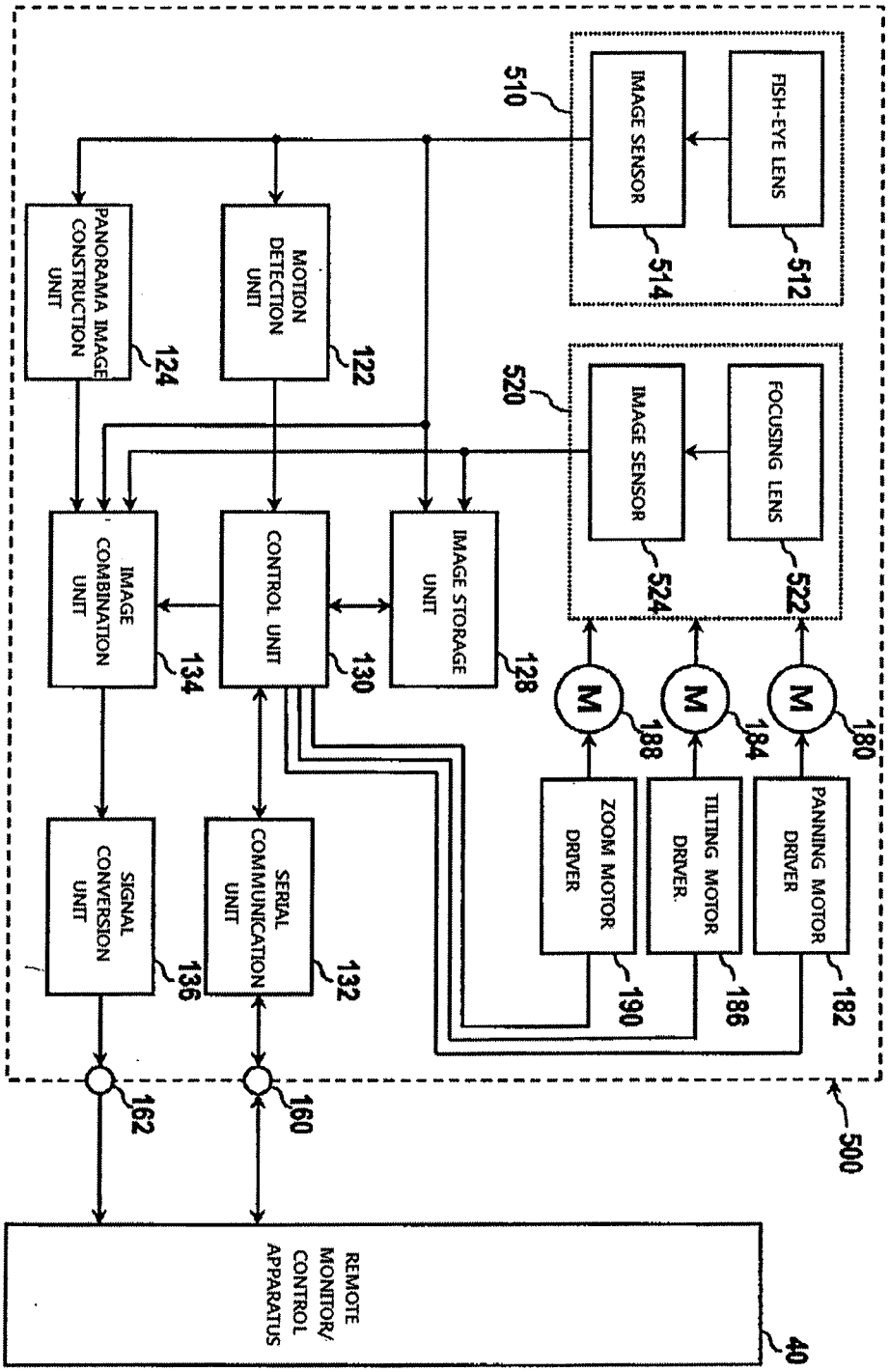

510
IMAGE SENSOR
514
FISH-EYE LENS
512
520
IMAGE SENSOR
524
FOCUSING LENS
522
MOTION DETECTION UNIT
122
PANORAMA IMAGE CONSTRUCTION UNIT
124
IMAGE COMBINATION UNIT
134
CONTROL UNIT
130
IMAGE STORAGE UNIT
128
M
188
M
184
M
180
ZOOM MOTOR DRIVER
190
TILTING MOTOR DRIVER
186
PANNING MOTOR DRIVER
182
SIGNAL CONVERSION UNIT
136
SERIAL COMMUNICATION UNIT
132
162
160
500
REMOTE MONITOR/ CONTROL APPARATUS
40

FIG. 32

FIG33

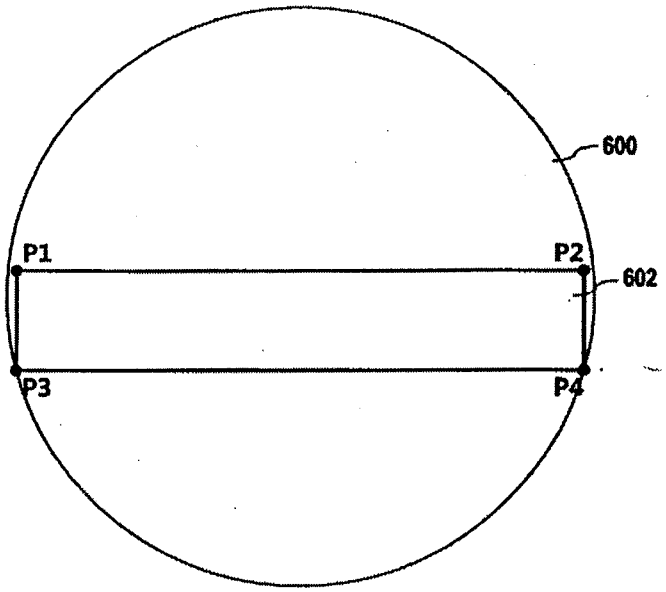
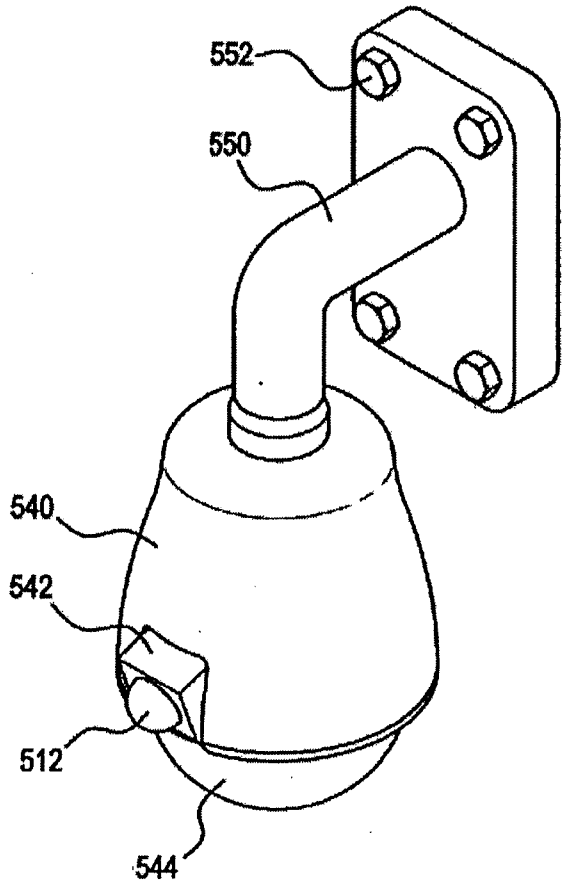


FIG. 34



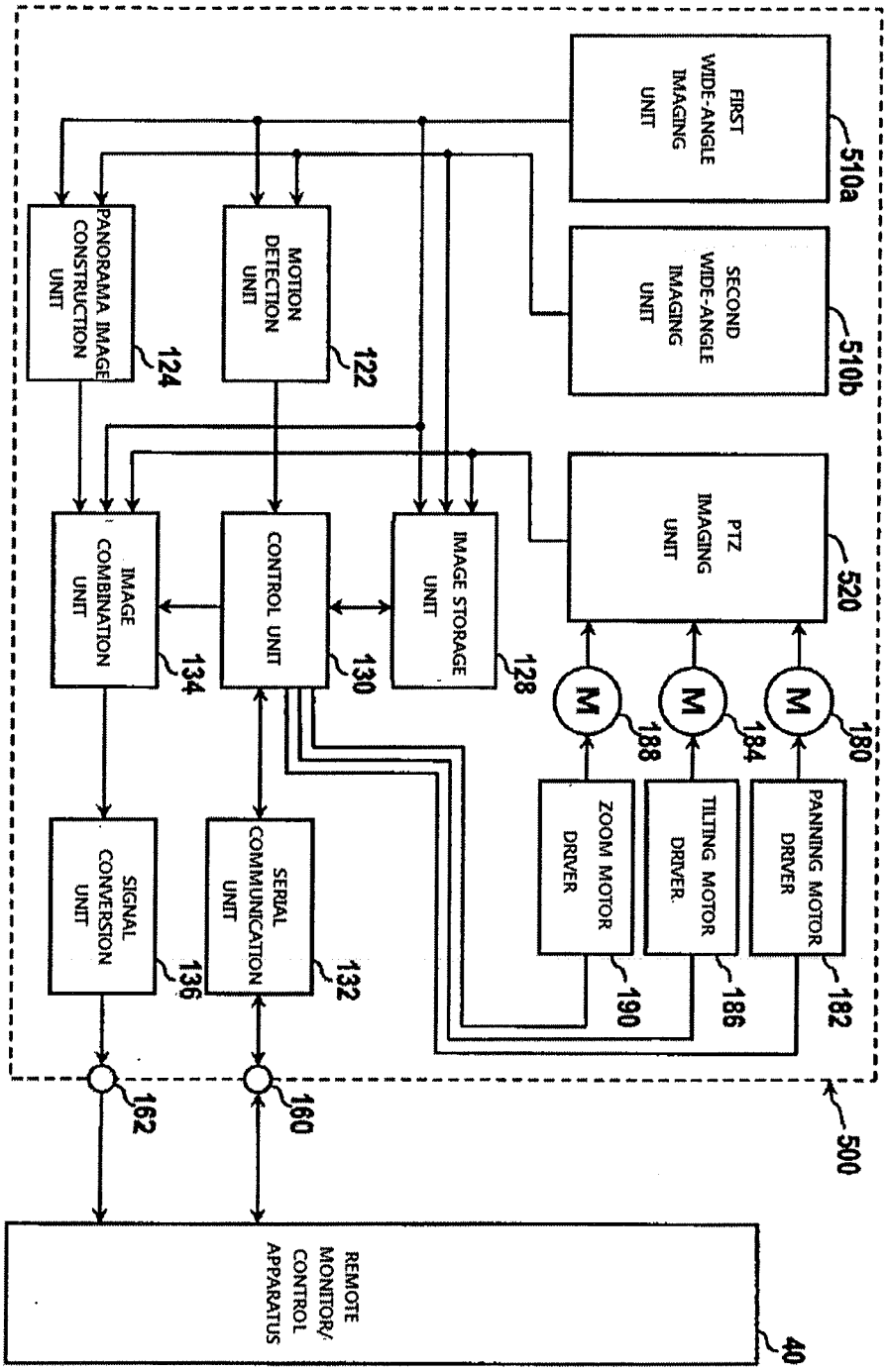

FIRST WIDE-ANGLE IMAGING UNIT
510a
SECOND WIDE-ANGLE IMAGING UNIT
510b
PANORAMA IMAGE CONSTRUCTION UNIT
124
MOTION DETECTION UNIT
122
PTZ IMAGING UNIT
520
IMAGE COMBINATION UNIT
134
CONTROL UNIT
130
IMAGE STORAGE UNIT
128
M
188
M
184
M
180
ZOOM MOTOR DRIVER
190
TILTING MOTOR DRIVER
186
PANNING MOTOR DRIVER
182
SIGNAL CONVERSION UNIT
136
SERIAL COMMUNICATION UNIT
132
162
160
500
REMOTE MONITOR/ CONTROL APPARATUS
40

FIG. 35

FIG. 36

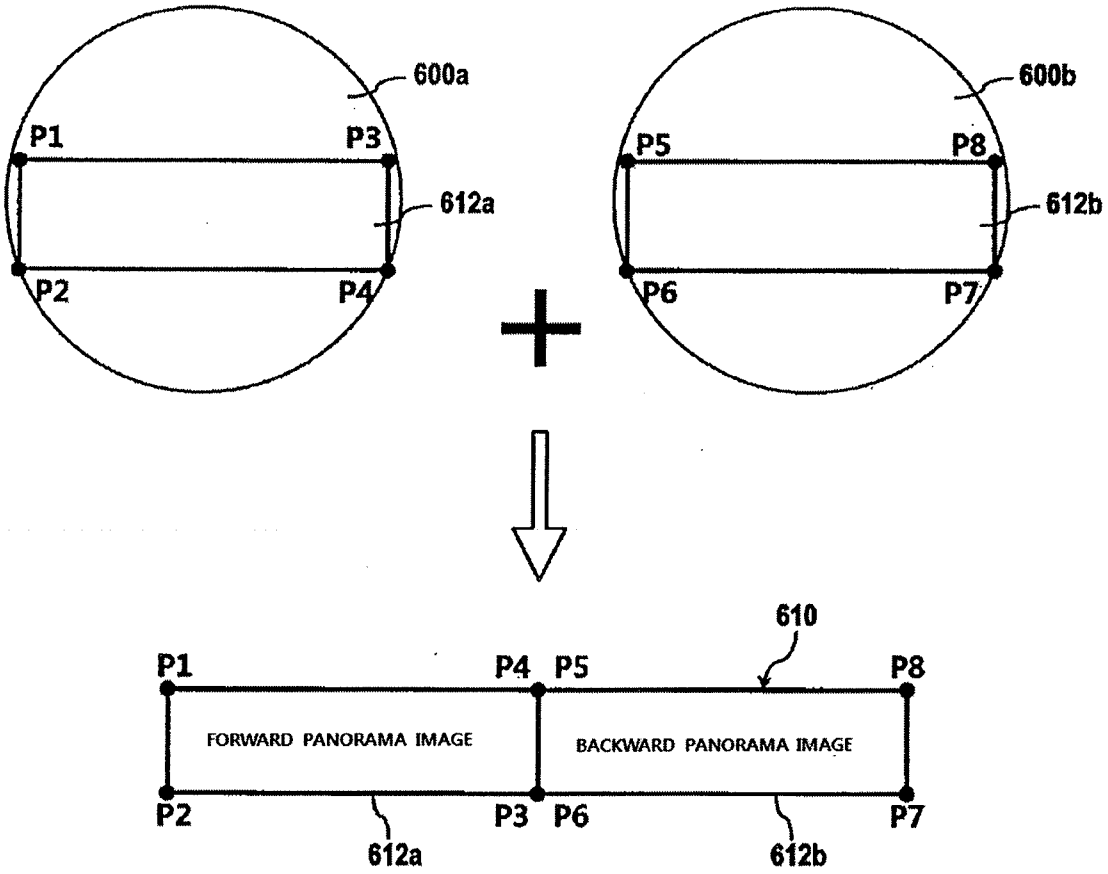

600a
P1
P3
612a
P2
P4
600b
P5
P8
612b
P6
P7
610
P1
P4
P5
P8
FORWARD PANORAMA IMAGE
BACKWARD PANORAMA IMAGE
P2
P3
P6
P7
612a
612b

FIG. 37

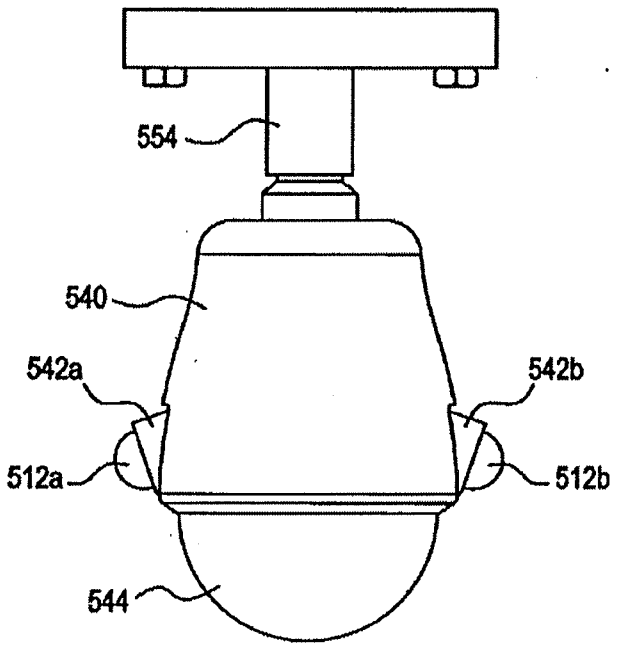

554
540
542a
542b
512a
512b
544

FIG. 38

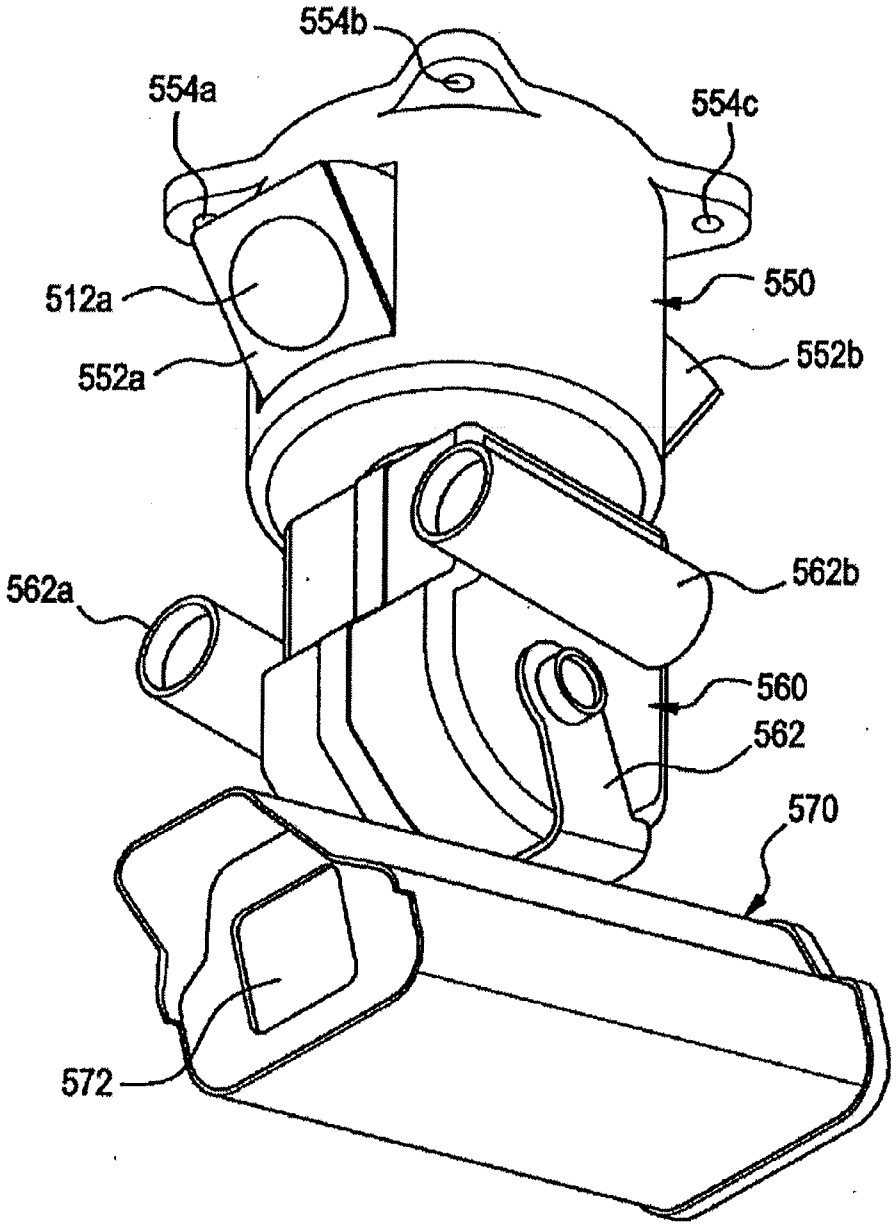


FIG. 39

