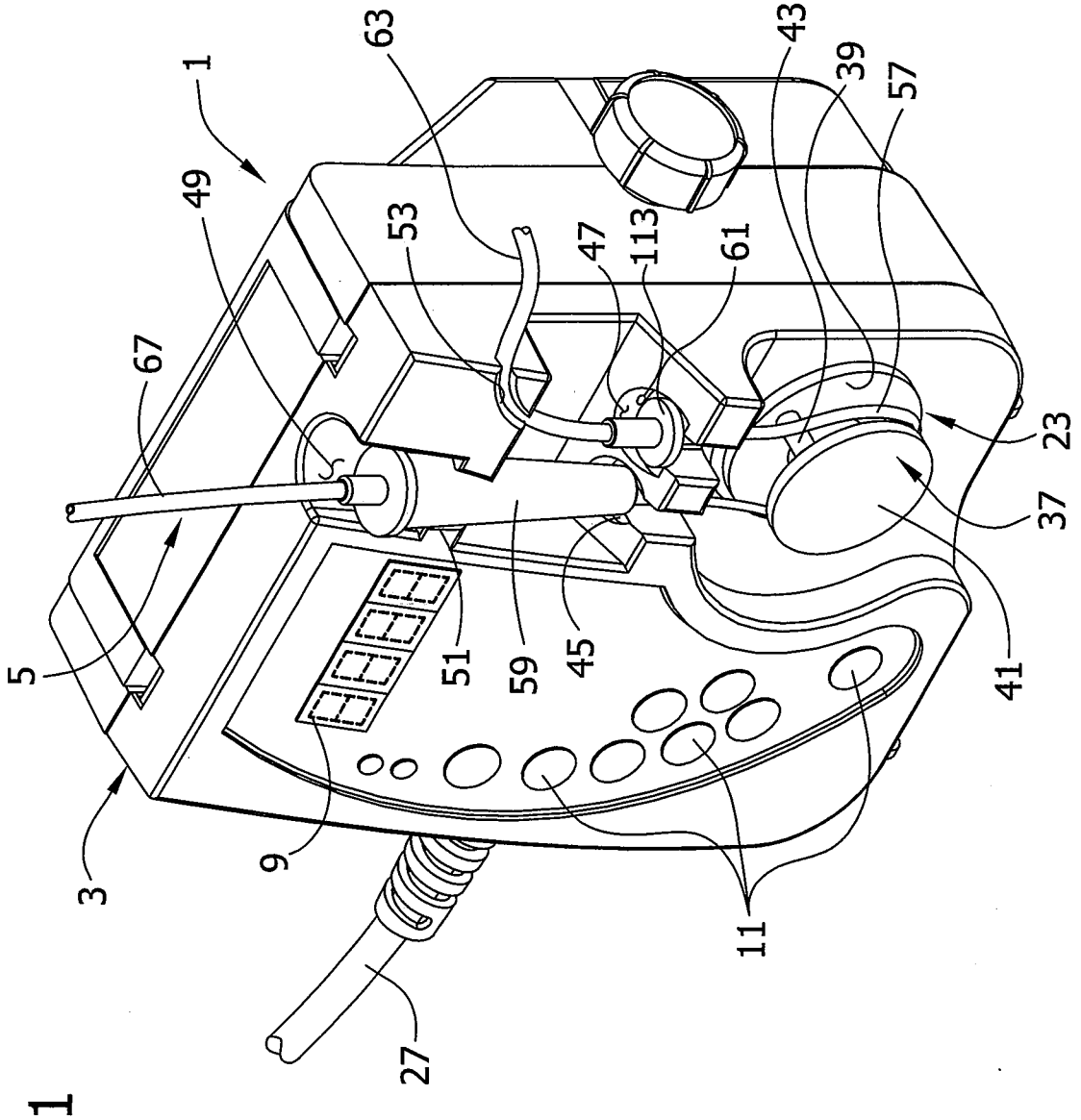


FIG. 1

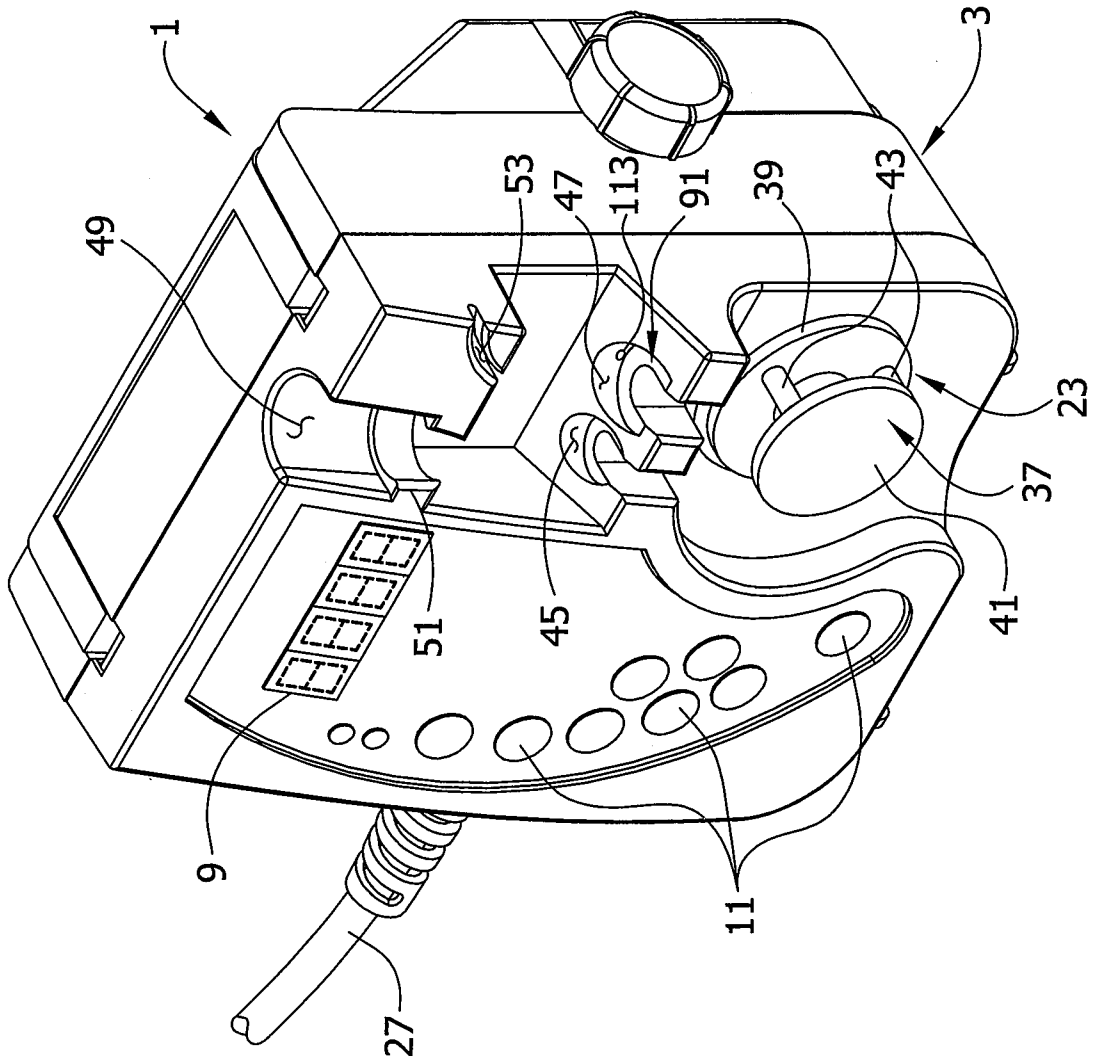


FIG. 2

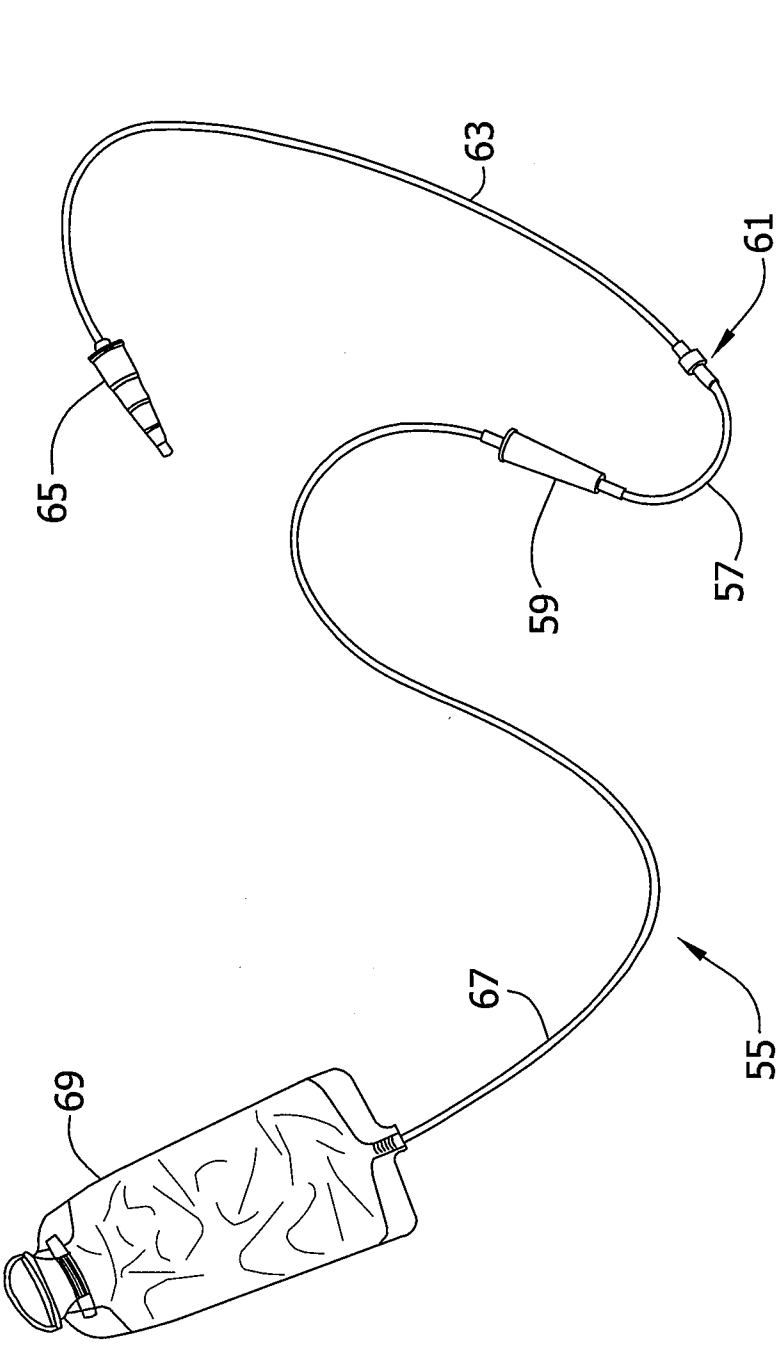
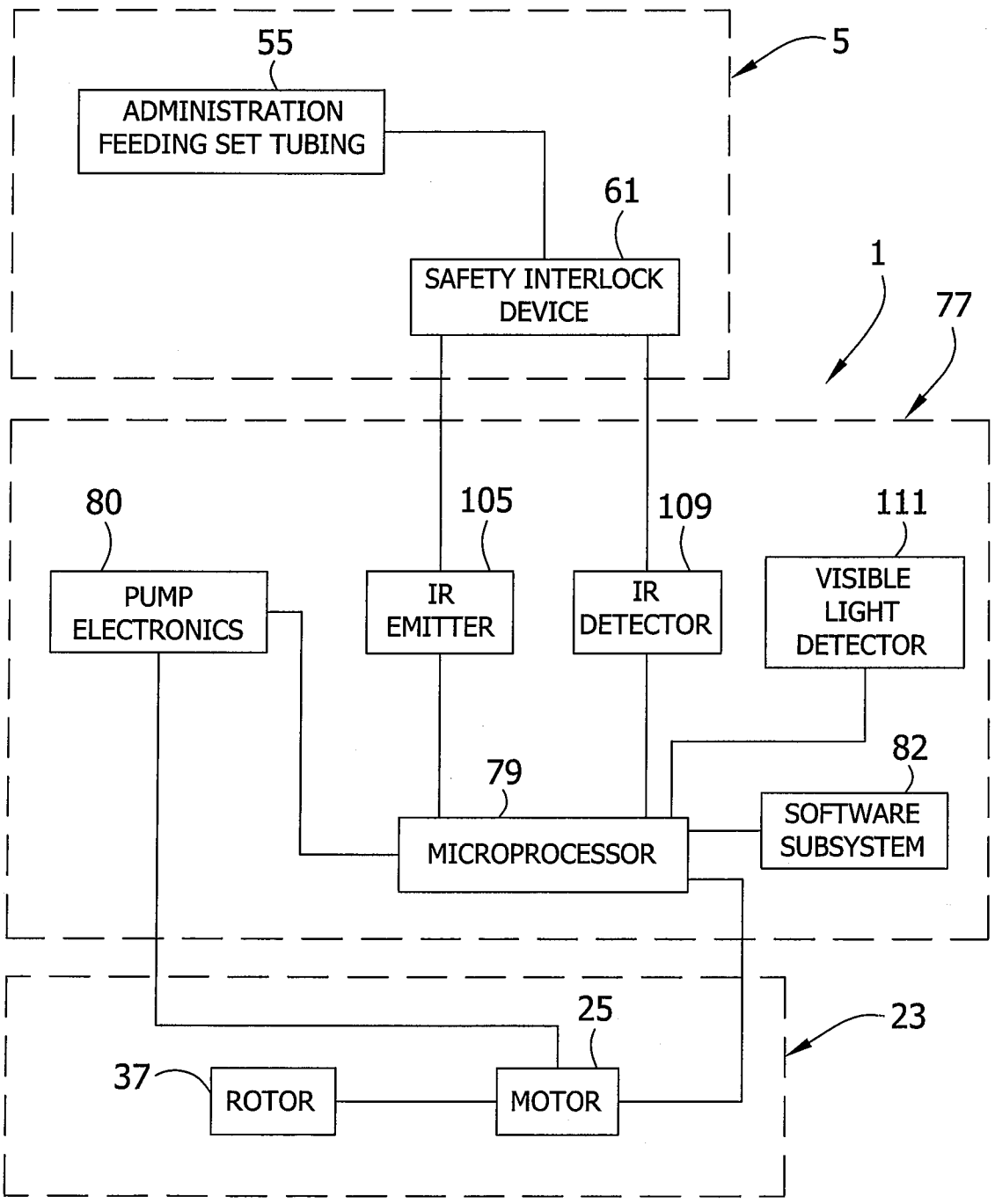


FIG. 3

FIG. 4


55
ADMINISTRATION FEEDING SET TUBING
5
61
SAFETY INTERLOCK DEVICE
1
77
80
PUMP ELECTRONICS
105
IR EMITTER
109
IR DETECTOR
111
VISIBLE LIGHT DETECTOR
82
79
SOFTWARE SUBSYSTEM
MICROPROCESSOR
25
23
37
ROTOR
MOTOR

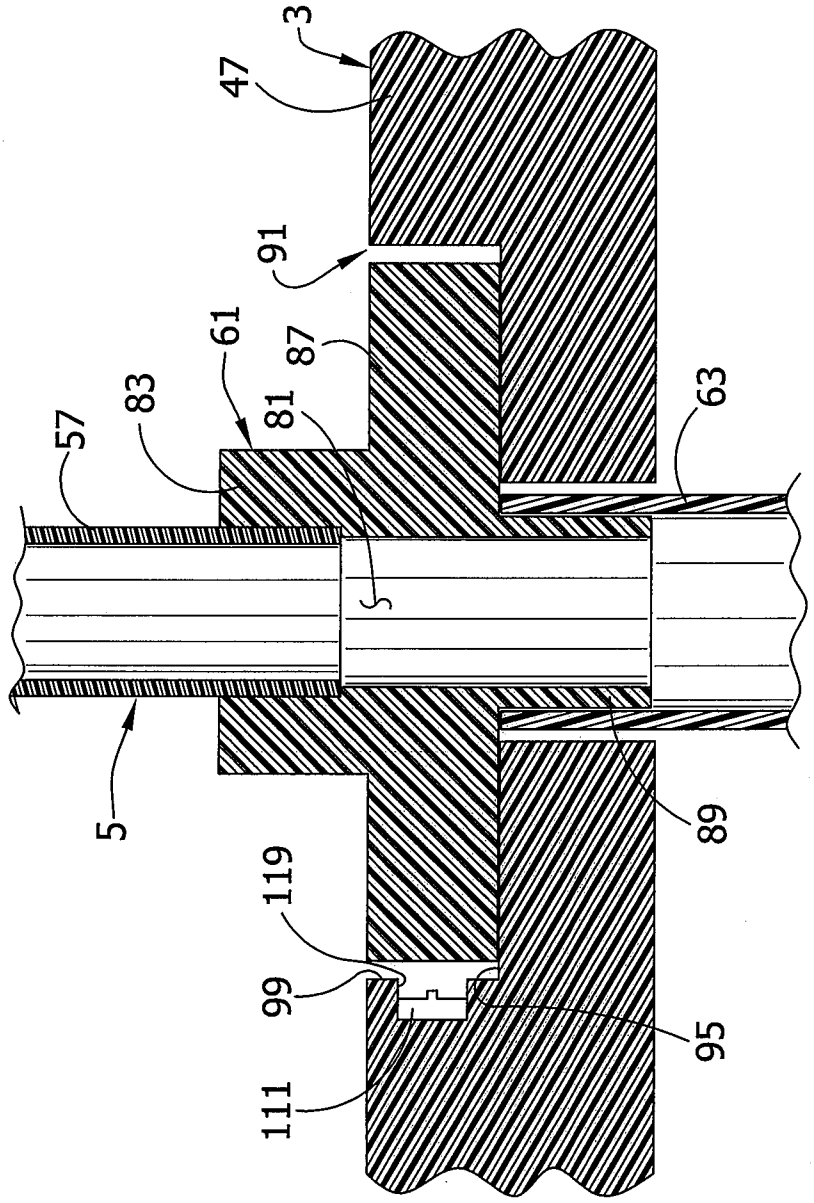


FIG. 5

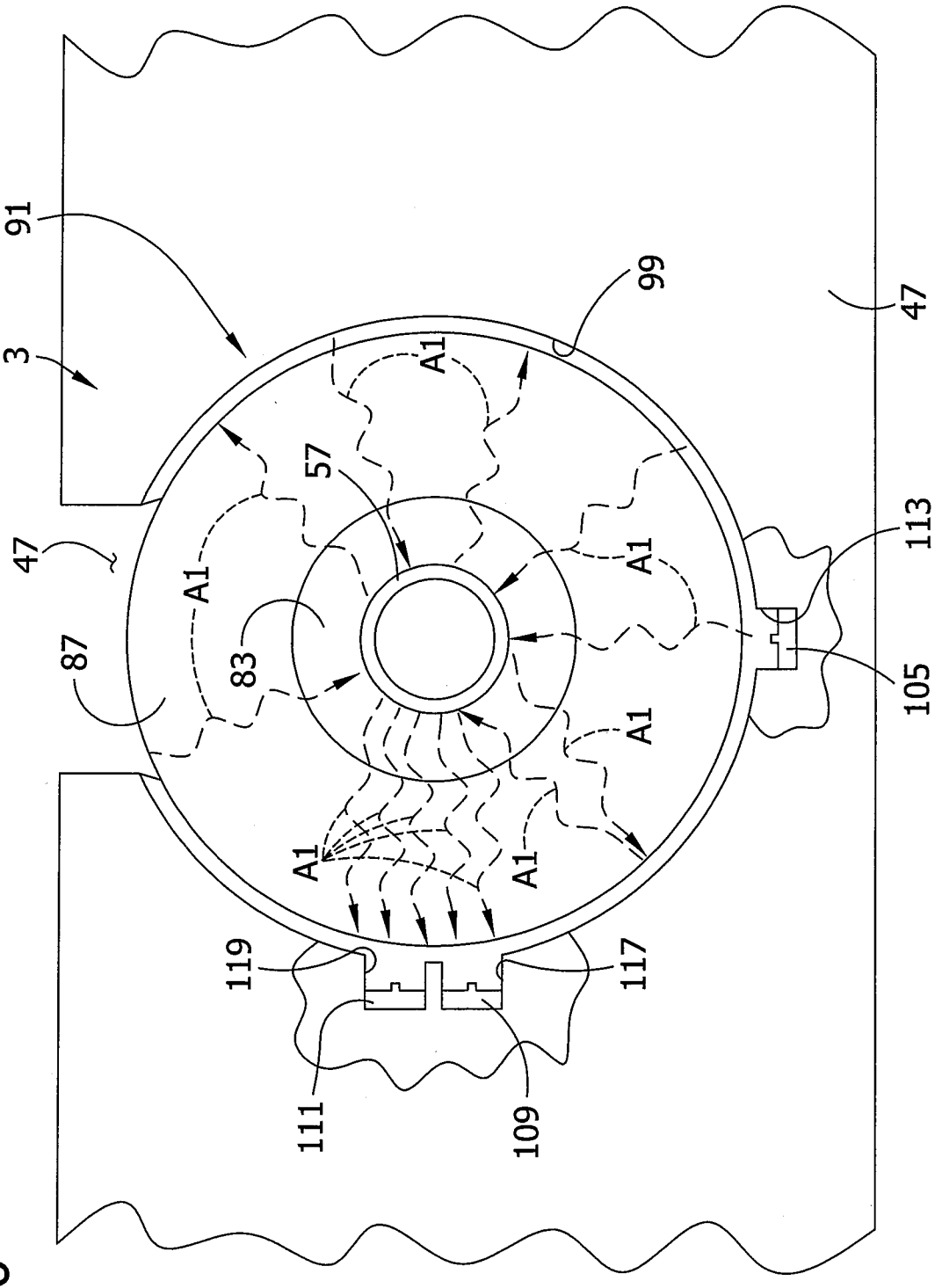


FIG. 6

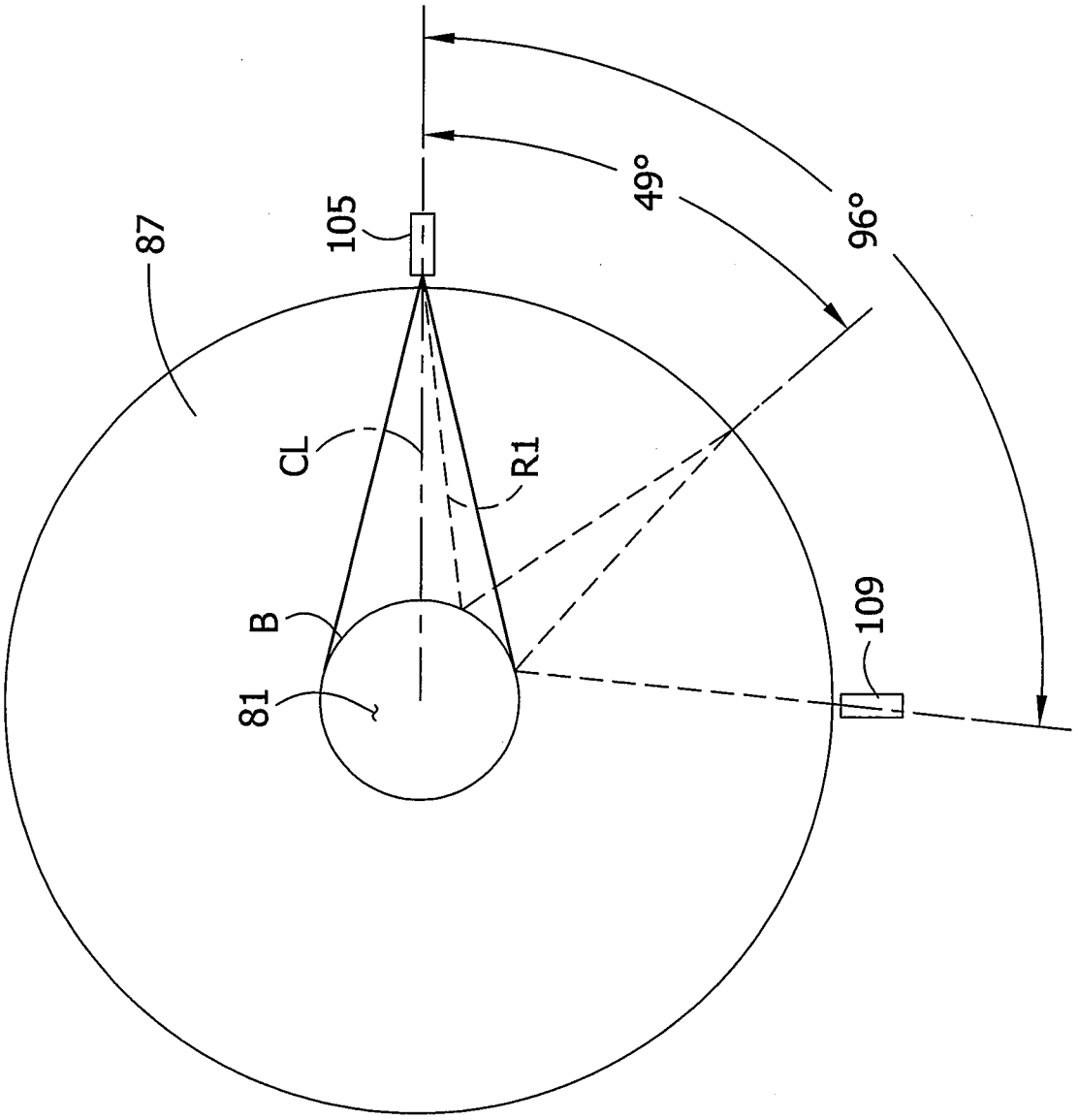


FIG. 6A

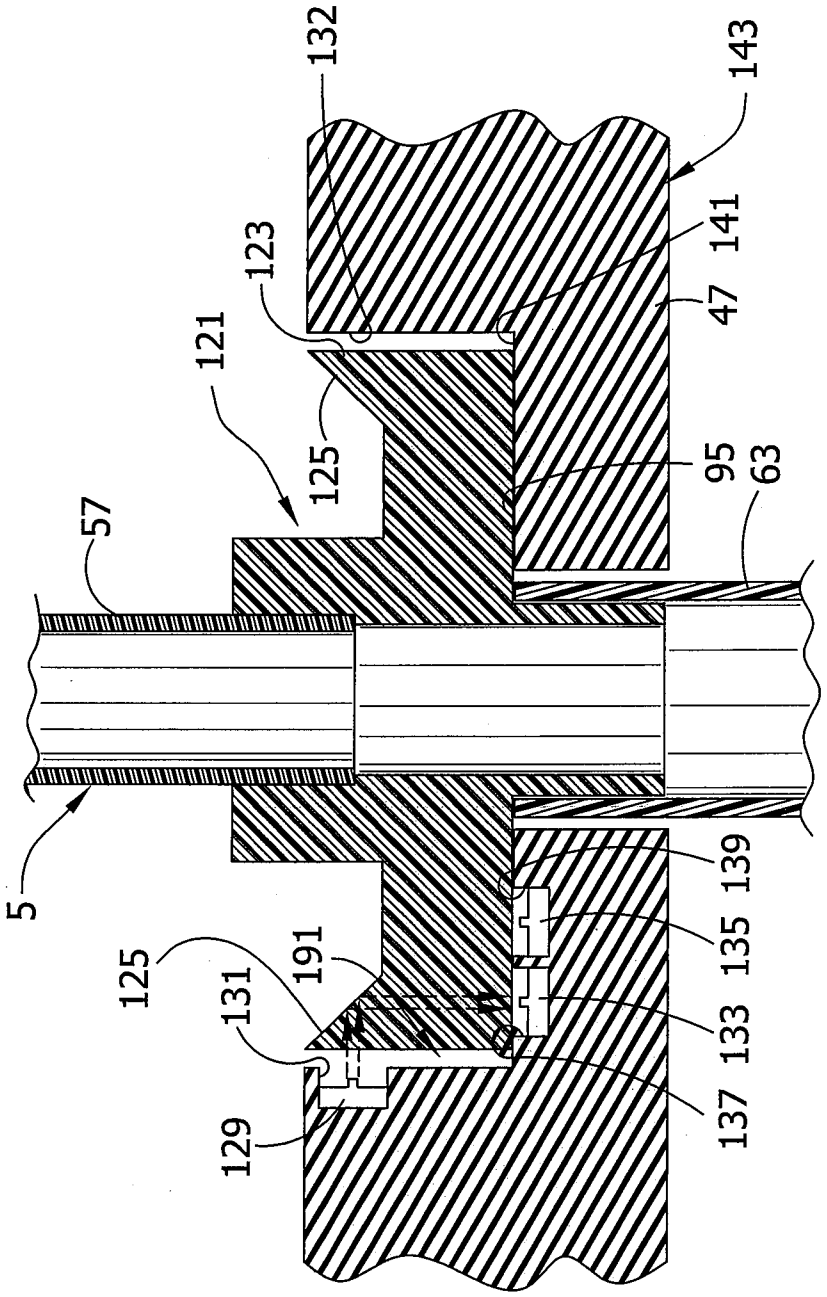

132
143
123
141
121
47
125
95
63
57
5
125
191
131
139
135
133
137
129

FIG. 7

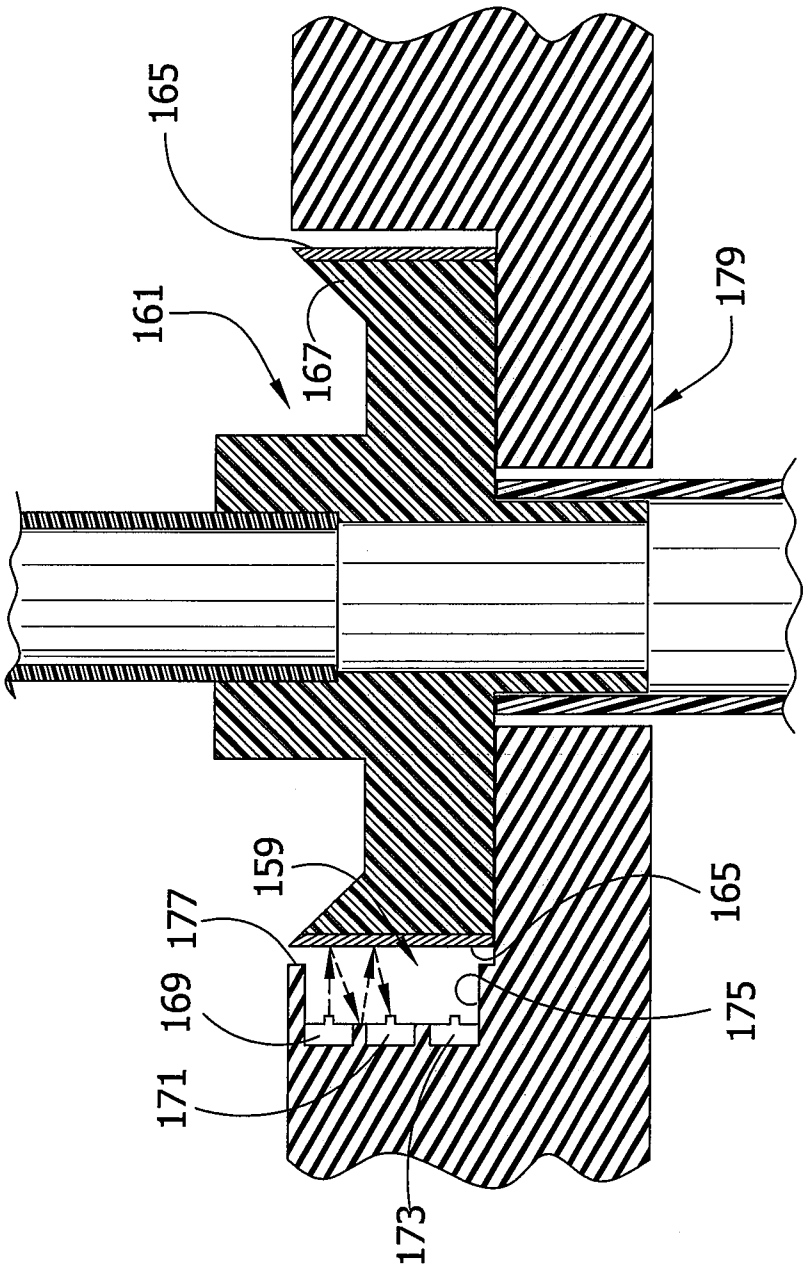


FIG. 7A

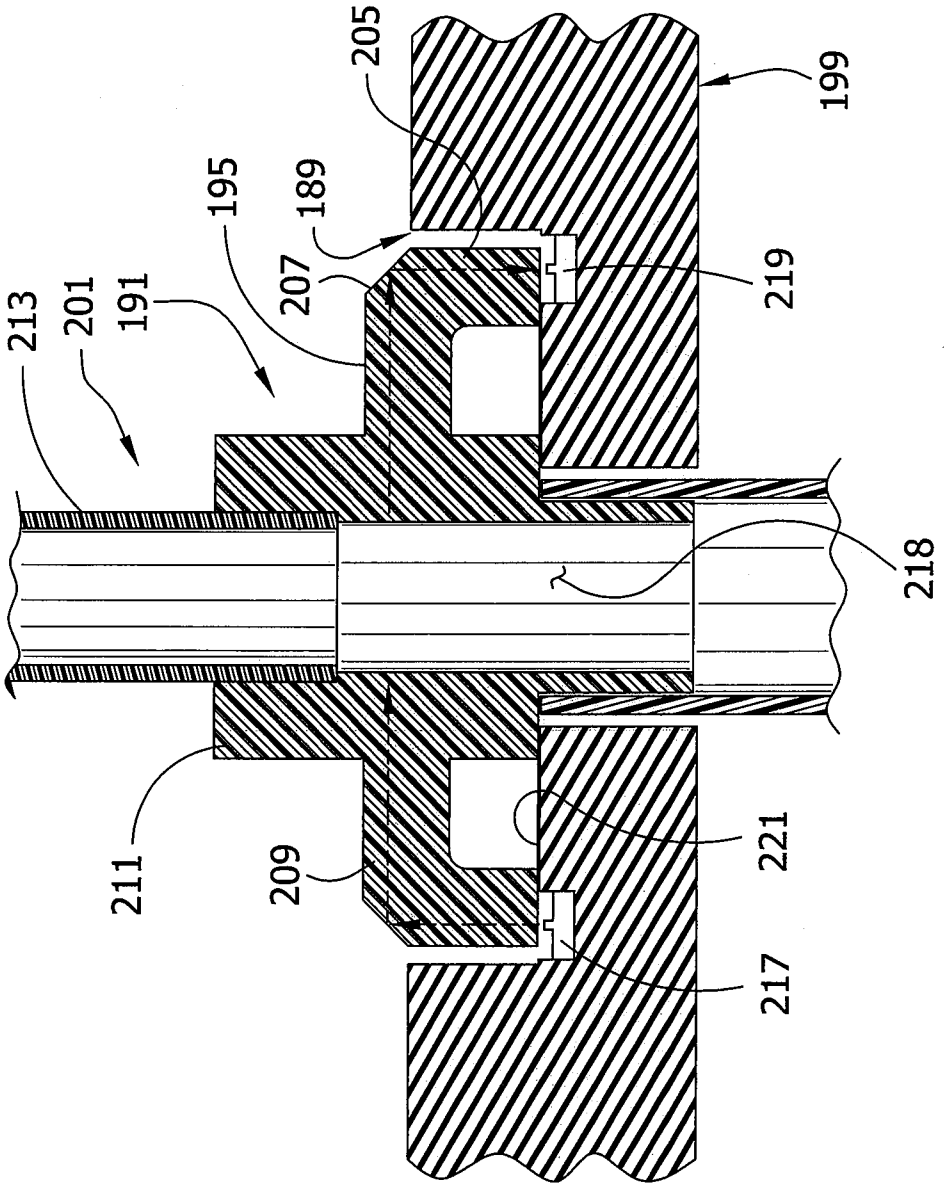


FIG. 8

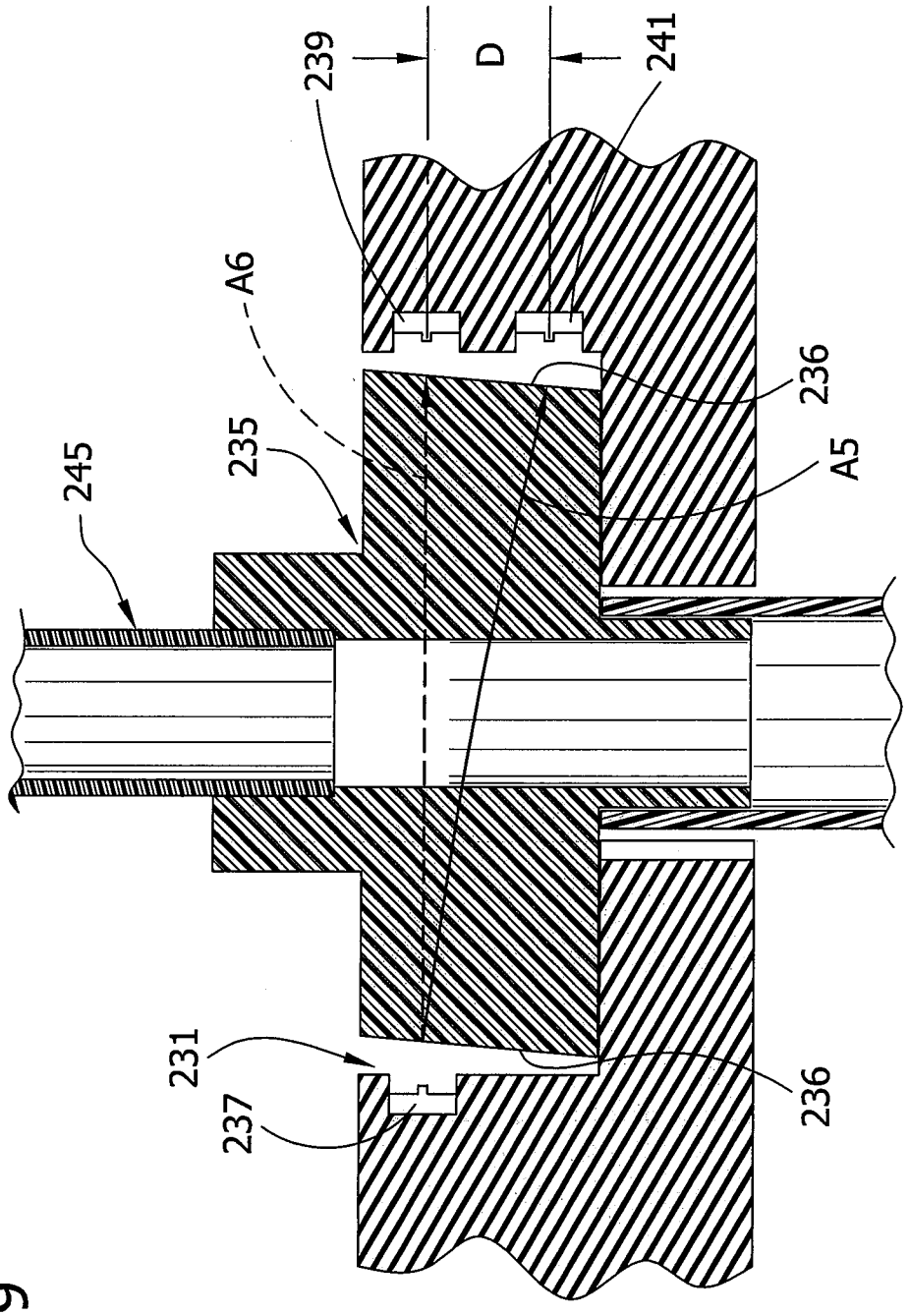


FIG. 9

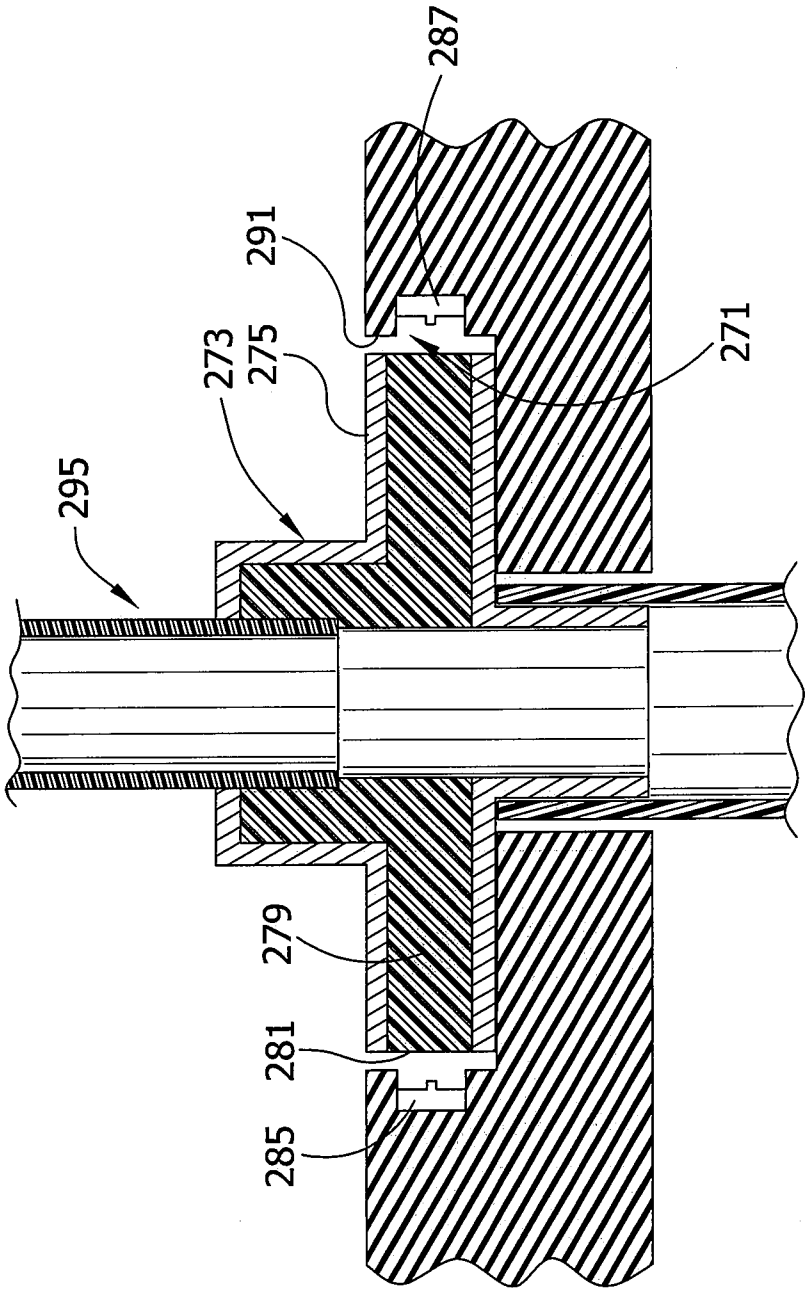


FIG. 10

FIG. 11

CONDITION #	STATE	IR EMITTER	IR DETECTOR	VISIBLE DETECTOR	STATUS
1	HIGH AMBIENT LIGHT SET NOT LOADED	OFF	ON (ACTIVATED)	ON (ACTIVATED)	FAULT
2	HIGH AMBIENT LIGHT SET LOADED	ON	ON	OFF	SET LOADED
3	DARK AMBIENT CONDITION SET NOT LOADED	ON	OFF	OFF	FAULT
4	DARK AMBIENT CONDITION SET LOADED	ON	ON	OFF	SET LOADED
5	HIGH AMBIENT LIGHT SET NOT LOADED	ON	ON	ON	FAULT
6	HIGH AMBIENT LIGHT SET LOADED	OFF	ON	ON	FAULT
7	DARK AMBIENT CONDITION SET NOT LOADED	OFF	OFF	OFF	FAULT
8	DARK AMBIENT CONDITION SET LOADED	OFF	OFF	OFF	FAULT

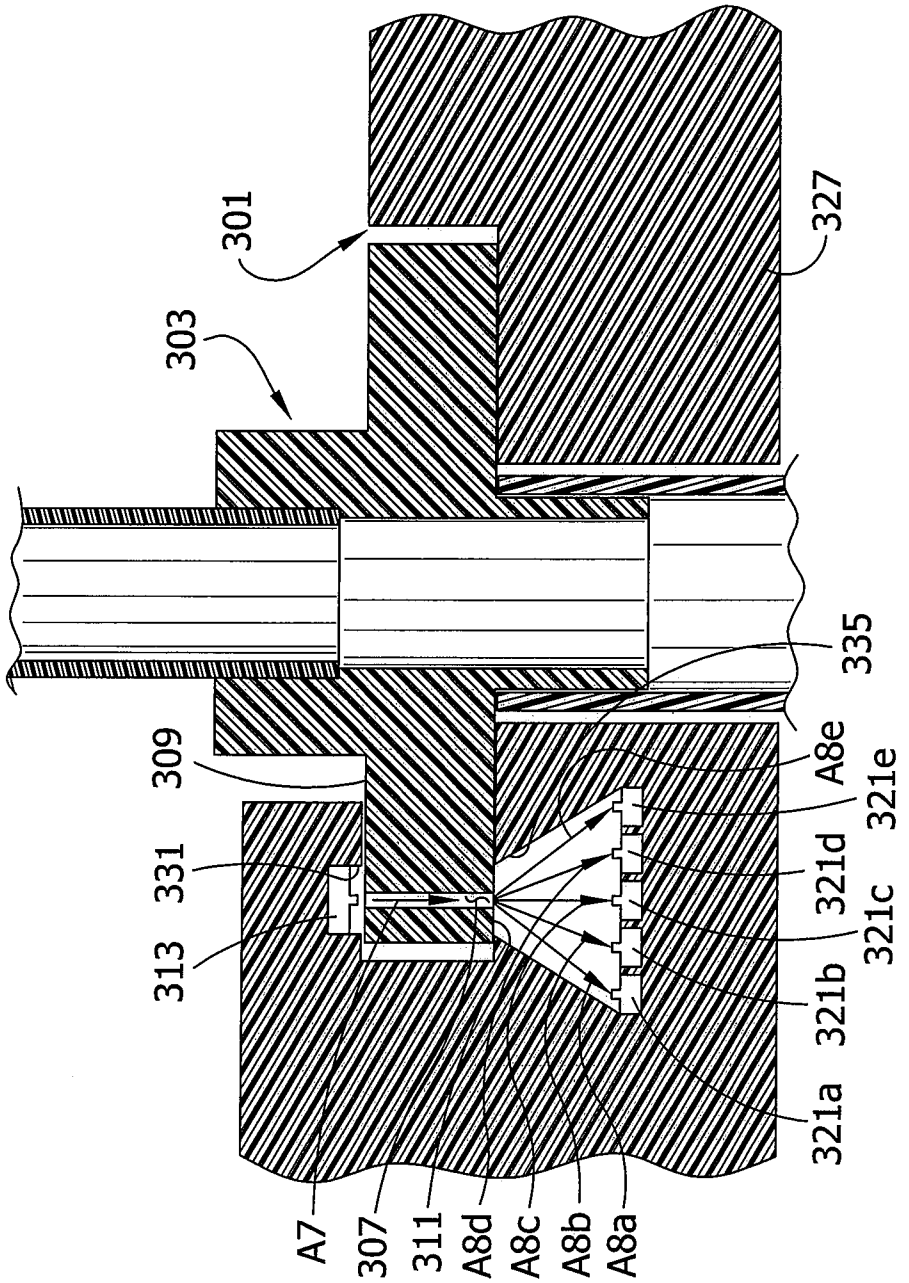

301
303
327
335
309
331
313
A8e
321e
321d
321c
321b
321a
A7
307
311
A8d
A8c
A8b
A8a

FIG. 12

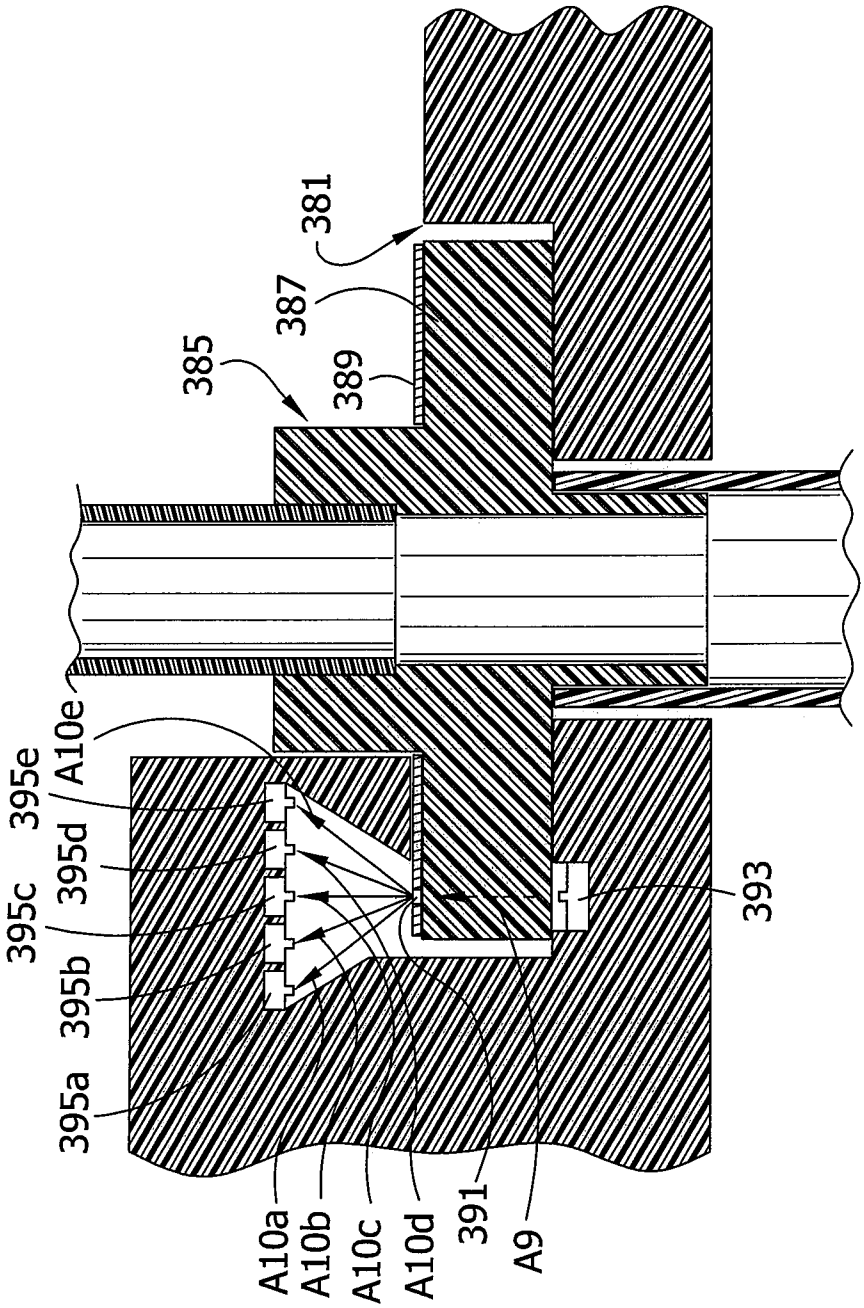

381
387
385
389
A10e
395e
395d
395c
395b
395a
393
A10a
A10b
A10c
A10d
391
A9

FIG. 13

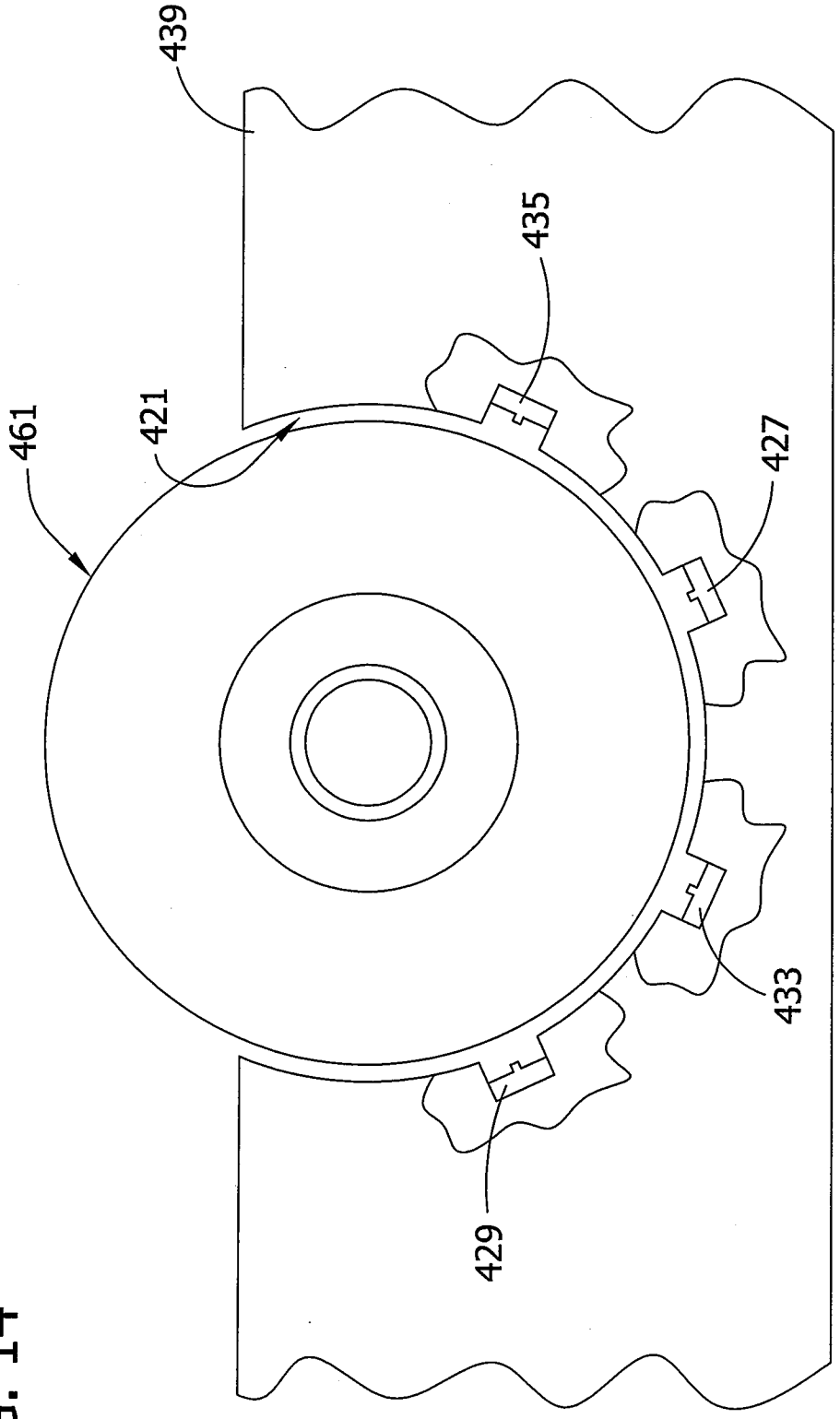


FIG. 14

FIG. 15

CONDITION	IR EMITTER	IR DETECTOR	VISIBLE EMITTER	AMBIENT LIGHT	VISIBLE DETECTOR	STATUS
1	OFF	OFF	OFF	XX	OFF	FAULT
2	OFF	OFF	ON	XX	OFF	SET LOADED
3	OFF	OFF	ON	XX	ON	FAULT
4	OFF	ON	XX	BRIGHT	XX	FAULT
5	ON	OFF	XX	XX	XX	FAULT
6	ON	ON	OFF	XX	OFF	FAULT
7	ON	ON	OFF	BRIGHT	ON	FAULT
8	ON	ON	ON	XX	OFF	SET LOADED
9	ON	ON	ON	XX	ON	FAULT

FIG. 16

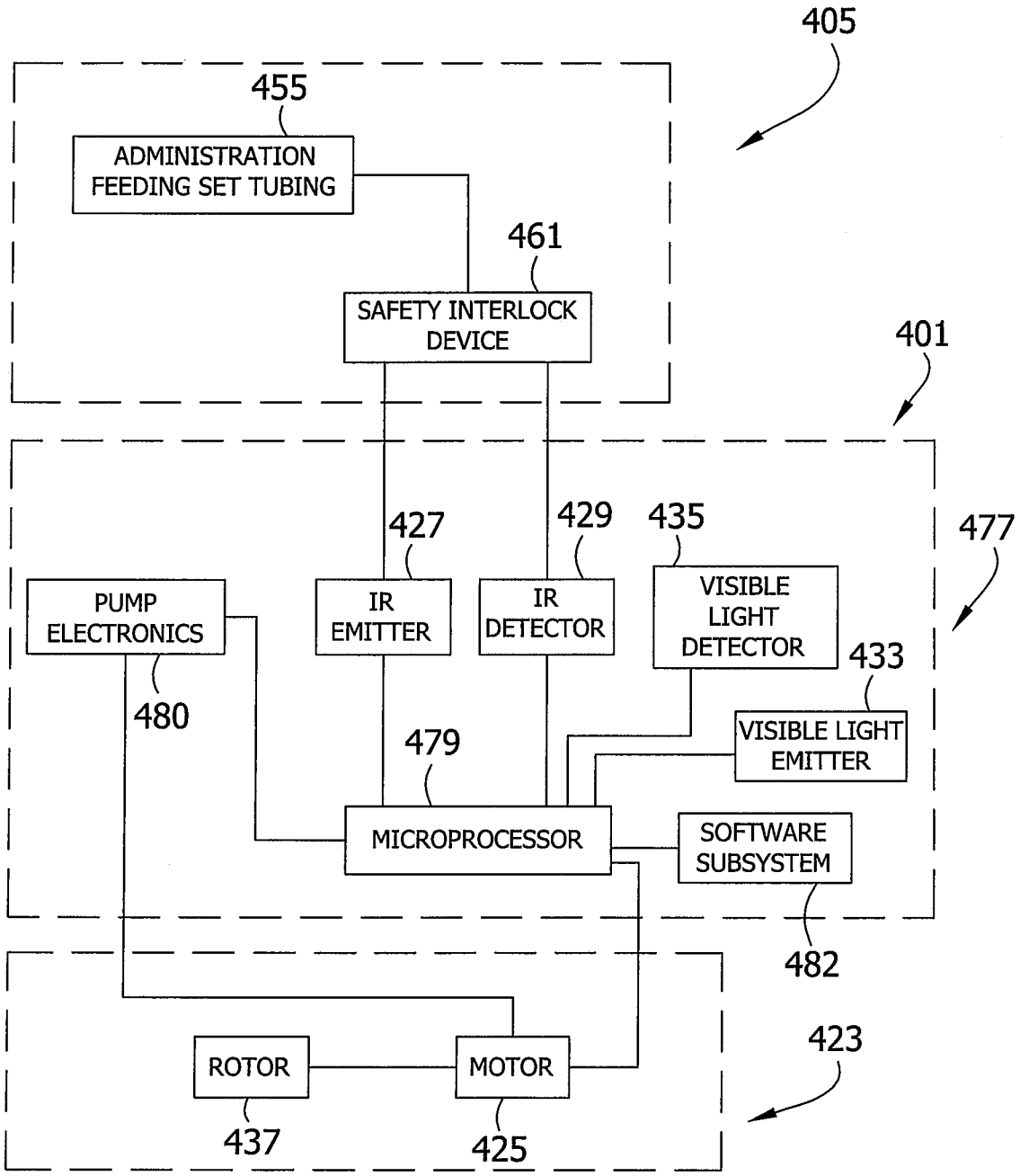

405
455
ADMINISTRATION FEEDING SET TUBING
461
SAFETY INTERLOCK DEVICE
401
427
429
435
477
PUMP ELECTRONICS
IR EMITTER
IR DETECTOR
VISIBLE LIGHT DETECTOR
433
480
VISIBLE LIGHT EMITTER
479
MICROPROCESSOR
SOFTWARE SUBSYSTEM
482
423
ROTOR
MOTOR
437
425

FIG. 17

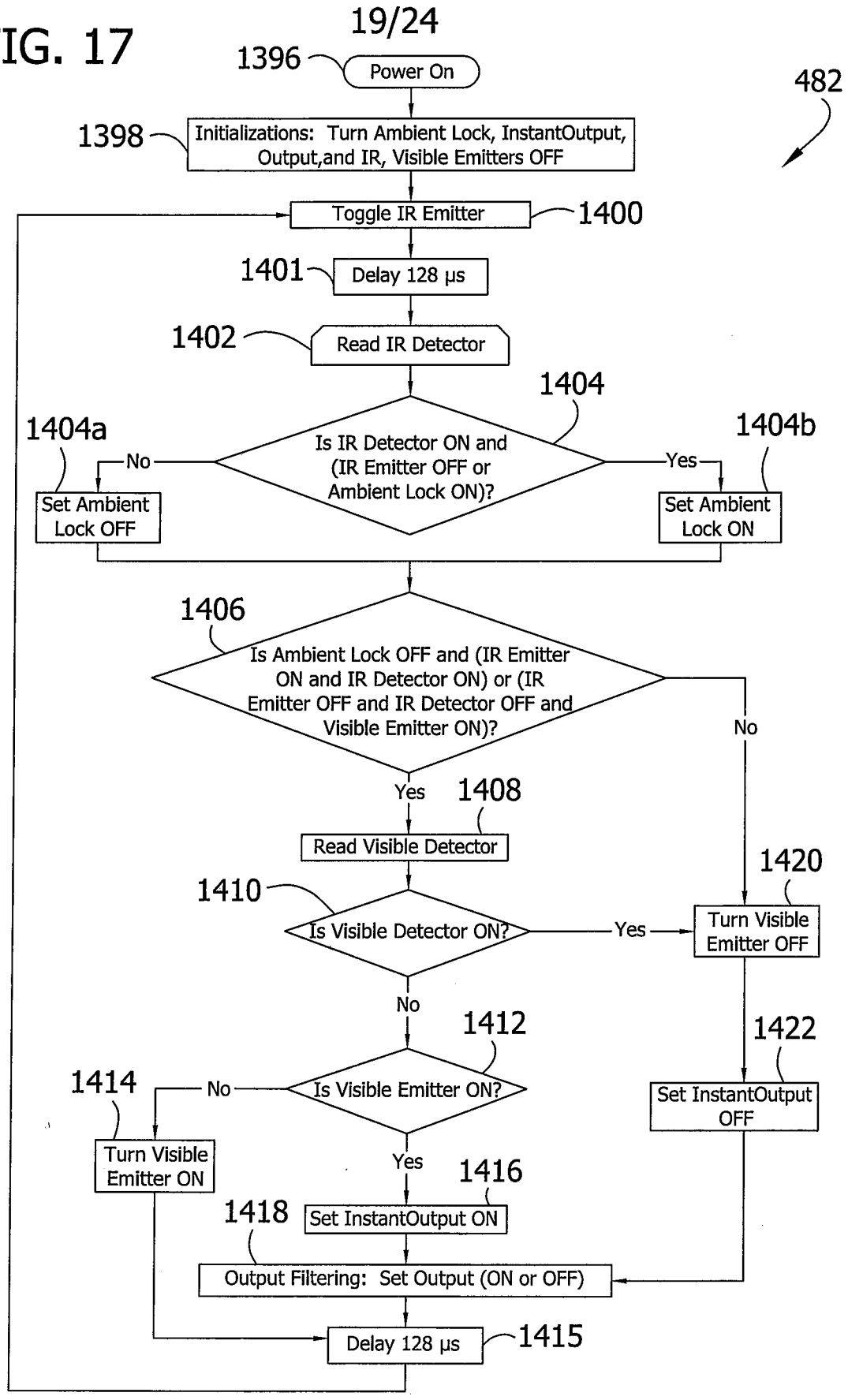

1396
Power On
482
1398
Initializations: Turn Ambient Lock, InstantOutput, Output,and IR, Visible Emitters OFF
Toggle IR Emitter
1400
1401
Delay 128 µs
1402
Read IR Detector
1404
1404a
Is IR Detector ON and (IR Emitter OFF or Ambient Lock ON)?
No
Yes
1404b
Set Ambient Lock OFF
Set Ambient Lock ON
1406
Is Ambient Lock OFF and (IR Emitter ON and IR Detector ON) or (IR Emitter OFF and IR Detector OFF and Visible Emitter ON)?
No
Yes
1408
Read Visible Detector
1420
1410
Is Visible Detector ON?
Yes
Turn Visible Emitter OFF
No
1412
1422
1414
Is Visible Emitter ON?
No
Set InstantOutput OFF
Turn Visible Emitter ON
Yes
1416
1418
Set InstantOutput ON
Output Filtering: Set Output (ON or OFF)
Delay 128 µs
1415

FIG. 18

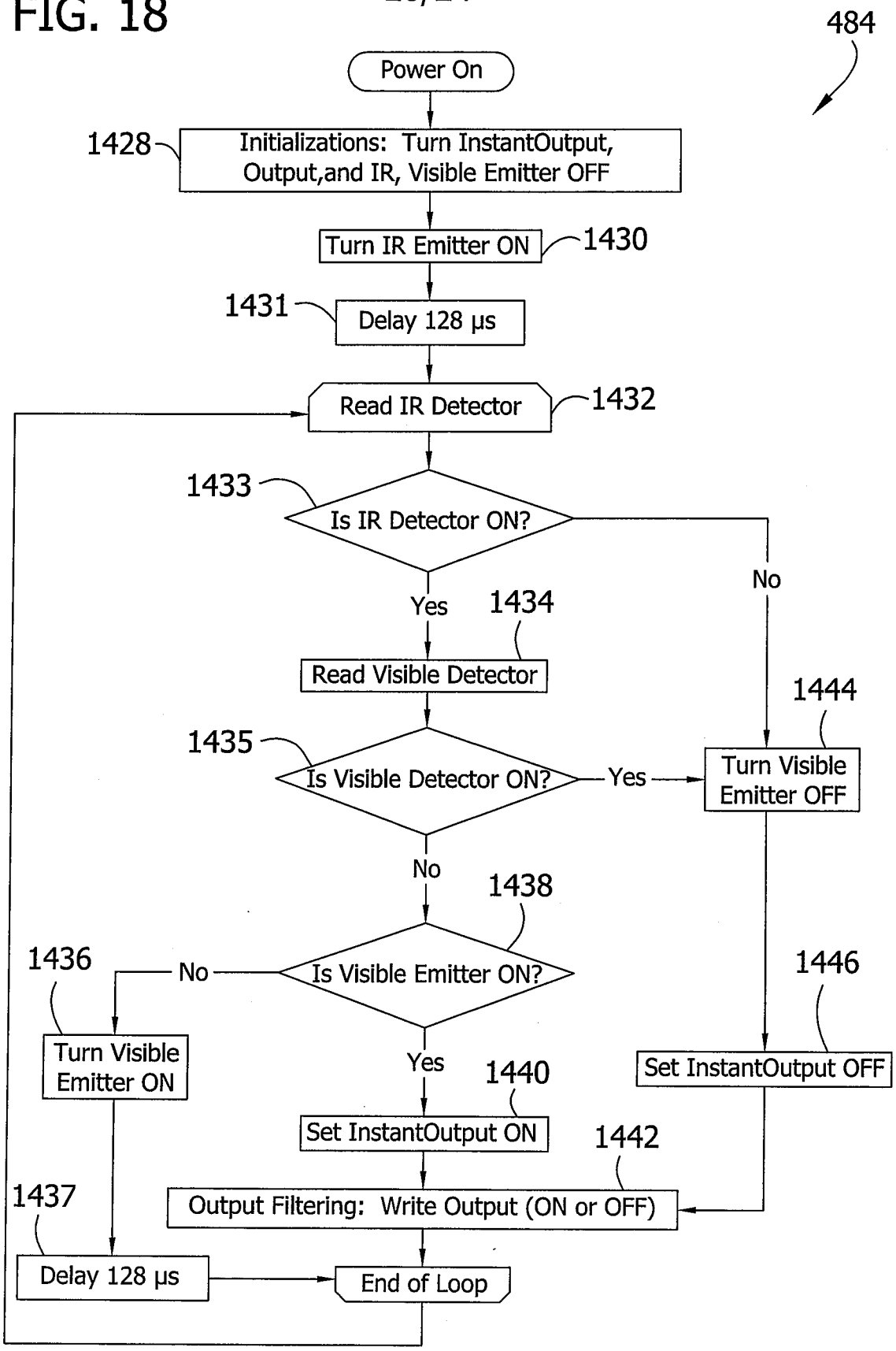

484
Power On
1428
Initializations: Turn InstantOutput, Output,and IR, Visible Emitter OFF
Turn IR Emitter ON
1430
1431
Delay 128 µs
Read IR Detector
1432
1433
Is IR Detector ON?
No
Yes
1434
Read Visible Detector
1444
1435
Is Visible Detector ON?
Yes
Turn Visible Emitter OFF
No
1438
1436
No
Is Visible Emitter ON?
1446
Turn Visible Emitter ON
Yes
1440
Set InstantOutput OFF
Set InstantOutput ON
1442
1437
Output Filtering: Write Output (ON or OFF)
Delay 128 µs
End of Loop

FIG. 19

CONDITION	IR EMITTER	IR DETECTOR	VISIBLE EMITTER	AMBIENT LIGHT	VISIBLE DETECTOR	STATUS
1	OFF	OFF	XX	XX	XX	FAULT
2	ON	OFF	XX	XX	XX	FAULT
3	ON	ON	OFF	BRIGHT	ON	FAULT
4	ON	ON	ON	DARK	OFF	SET LOADED
5	ON	ON	ON	DARK	ON	FAULT
6	ON	ON	ON	BRIGHT	OFF	SET LOADED
7	ON	ON	ON	BRIGHT	ON	FAULT

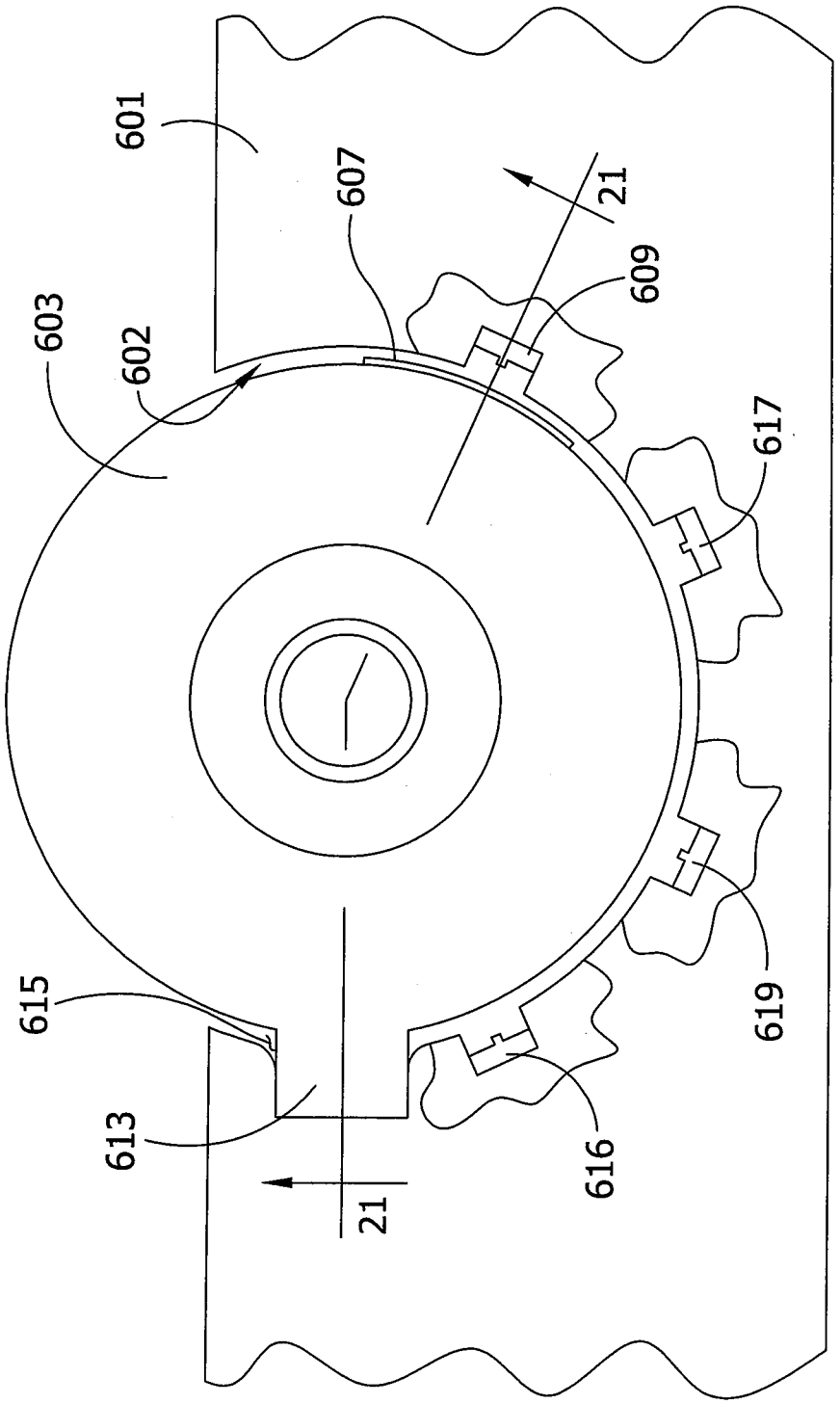


FIG. 20

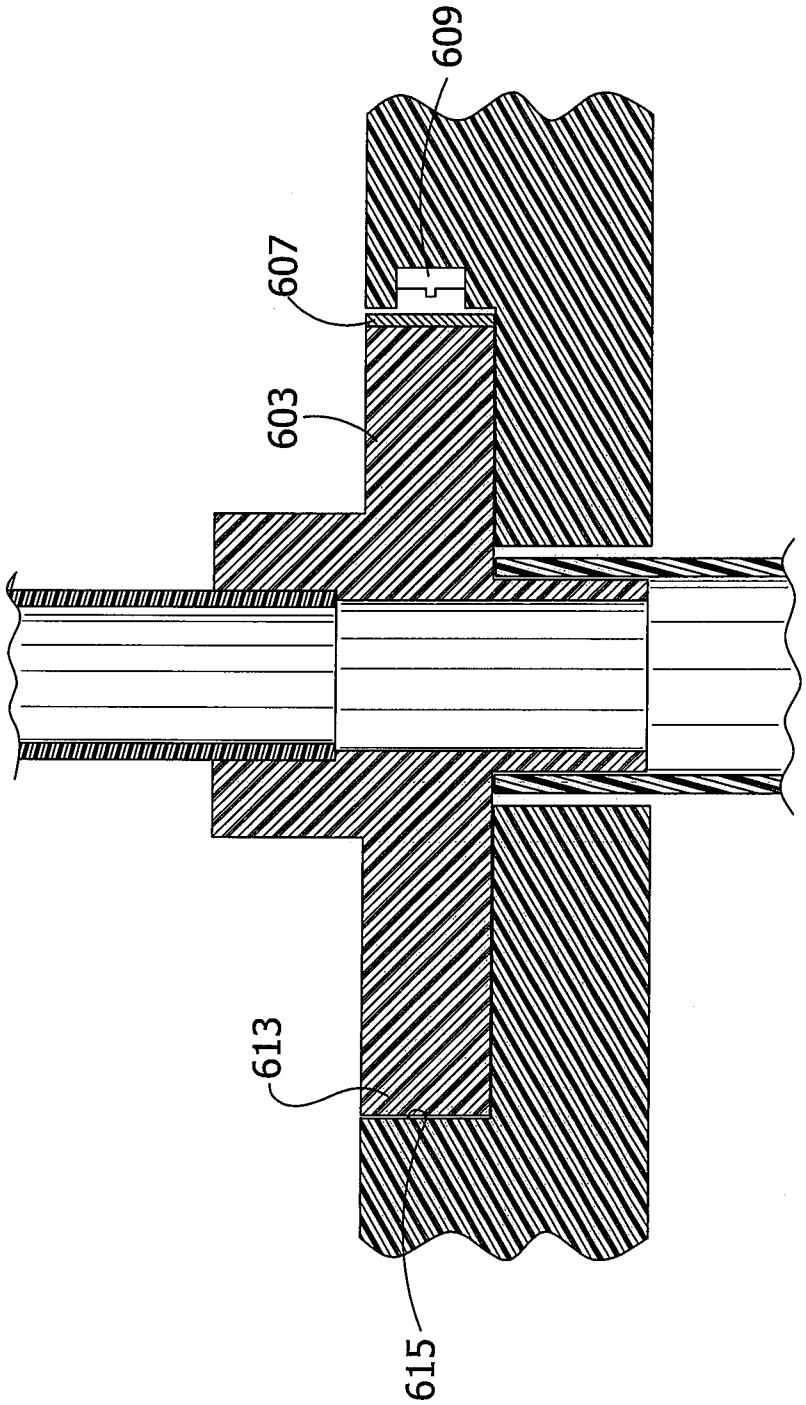


FIG. 21

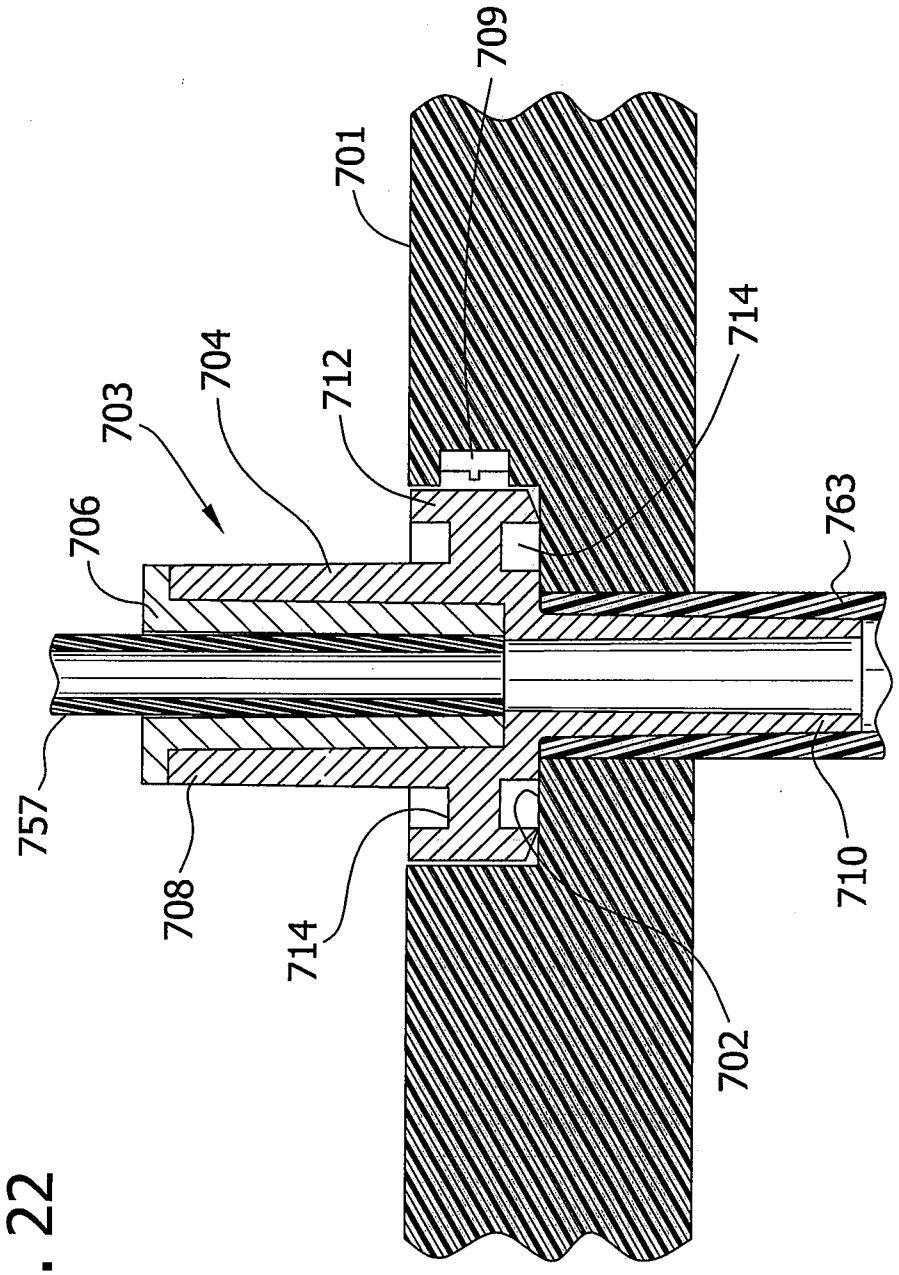


FIG. 22