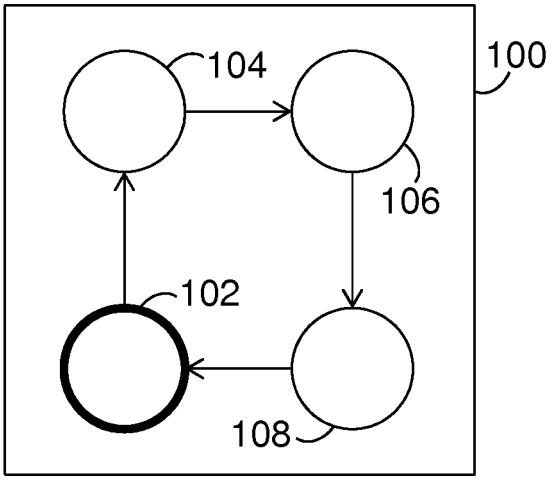

Fig. 1a

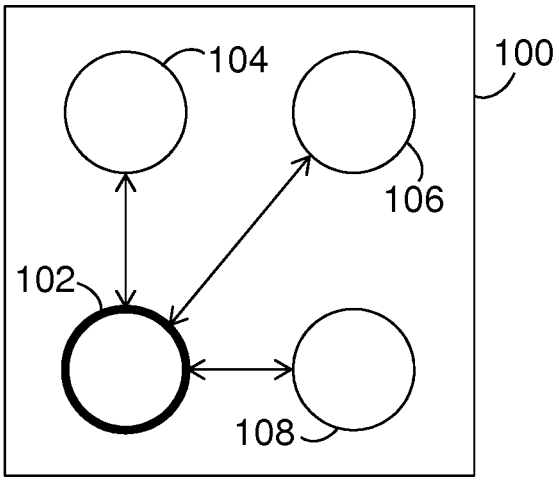

Fig. 1b

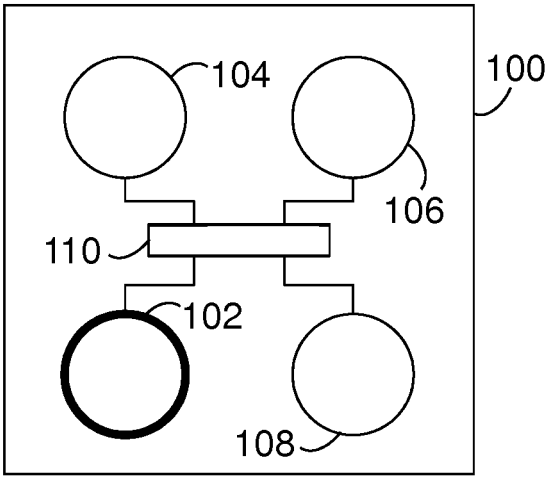

Fig. 1c

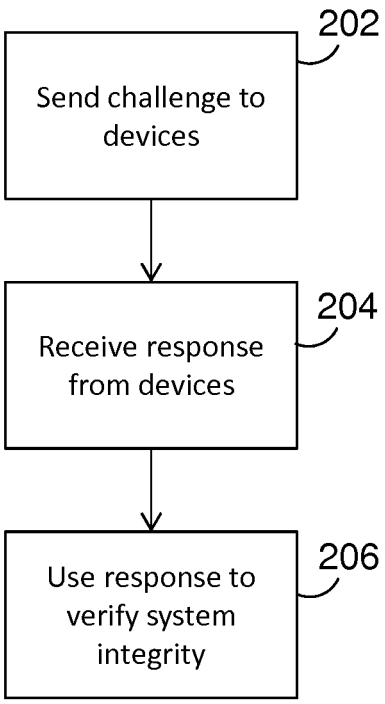
202
Send challenge to devices
204
Receive response from devices
206
Use response to verify system integrity

Fig. 2

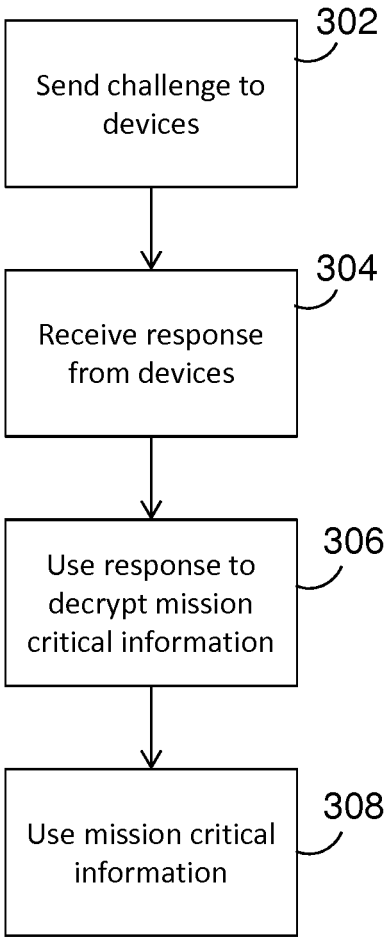
302
Send challenge to devices
304
Receive response from devices
306
Use response to decrypt mission critical information
308
Use mission critical information

Fig. 3

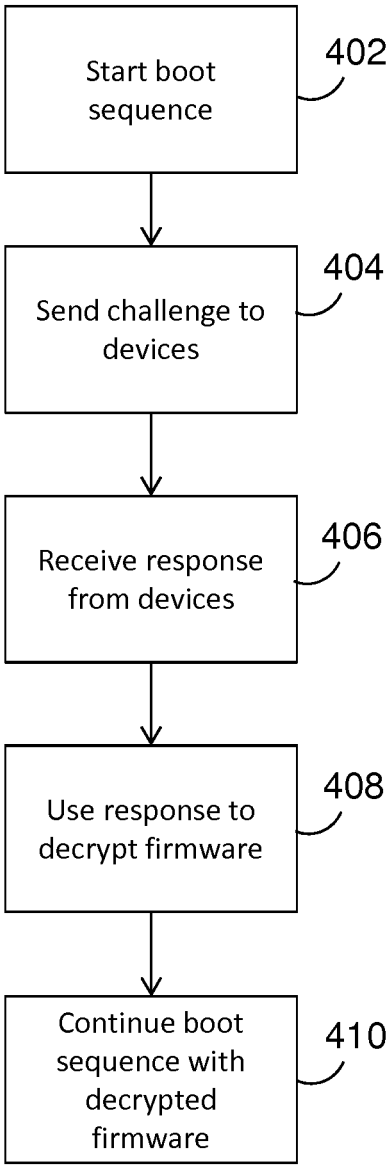
Start boot sequence
402
Send challenge to devices
404
Receive response from devices
406
Use response to decrypt firmware
408
Continue boot sequence with decrypted firmware
410

Fig. 4a

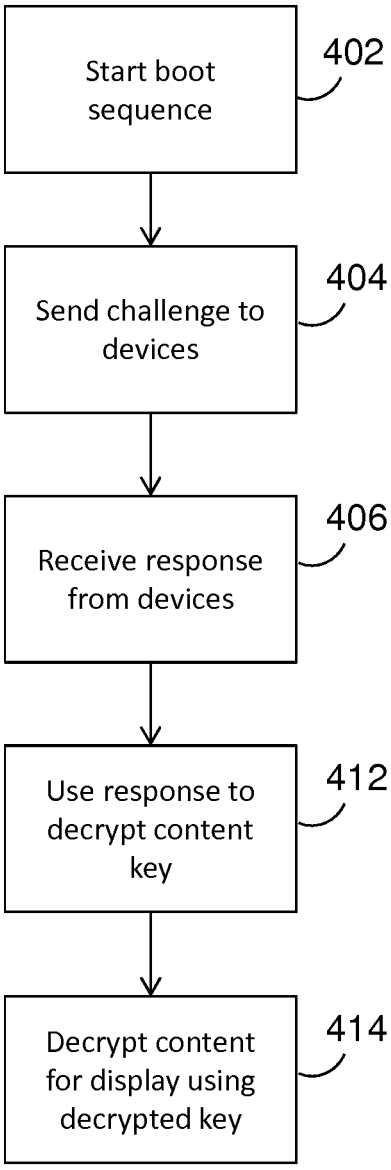
Start boot sequence
402
Send challenge to devices
404
Receive response from devices
406
Use response to decrypt content key
412
Decrypt content for display using decrypted key
414

Fig. 4b

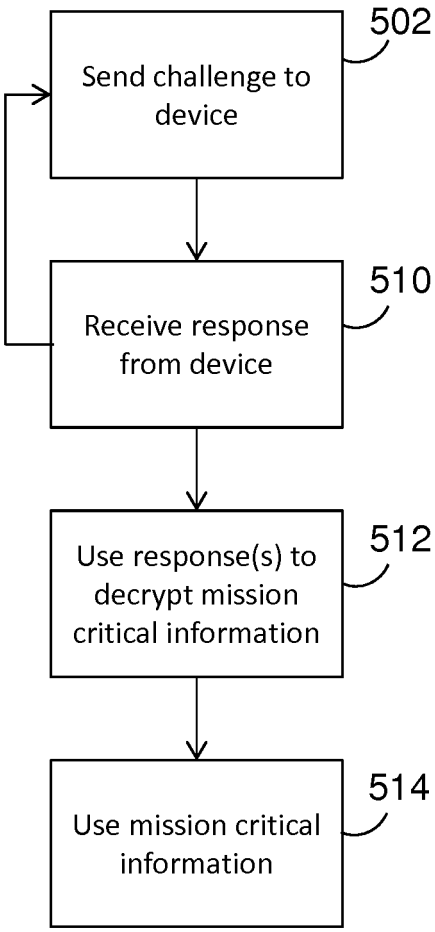
Send challenge to device
502
Receive response from device
510
Use response(s) to decrypt mission critical information
512
Use mission critical information
514

Fig. 5a

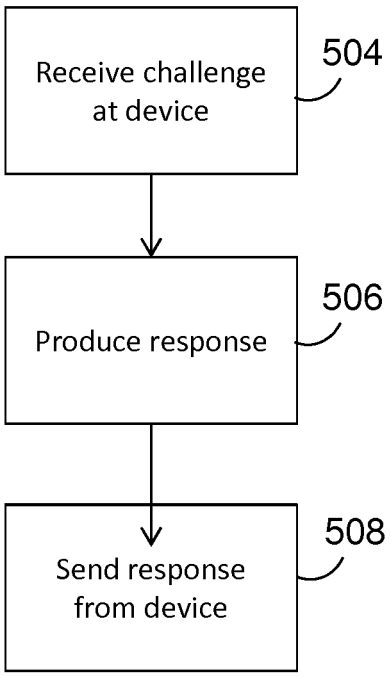
Receive challenge at device
504
Produce response
506
Send response from device
508

Fig. 5b

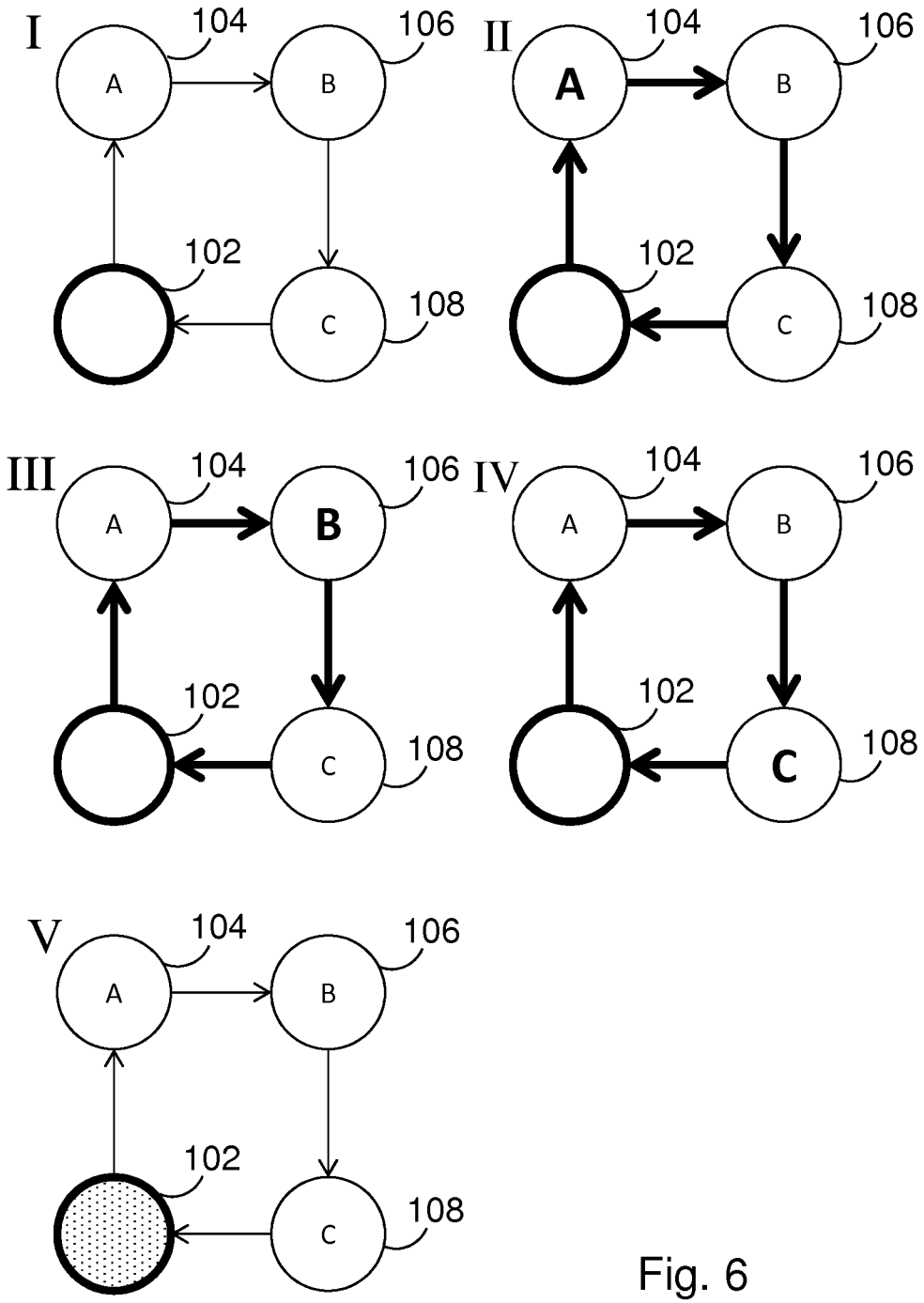
I
104
106
A
B
102
C
108
II
104
106
A
B
102
C
108
III
104
106
A
B
102
C
108
IV
104
106
A
B
102
C
108
V
104
106
A
B
102
C
108

Fig. 6

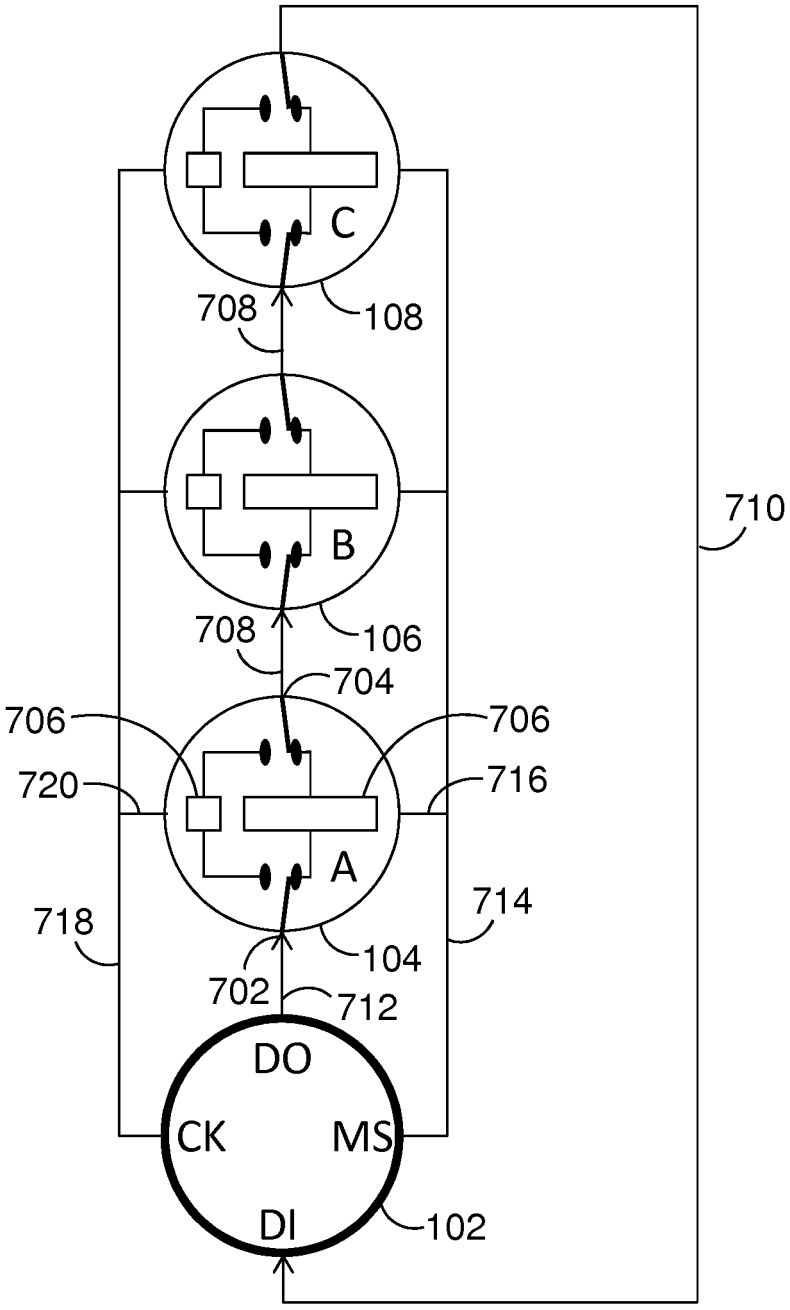
C
708
108
B
710
708
106
704
706
706
720
716
A
714
718
104
702
712
DO
CK
MS
DI
102

Fig. 7

state	Device a ir	Device a dr	Device b ir	Device b dr	Device c ir	Device c dr	output
1	process challenge	NULL→ challenge	bypass	0	bypass	0	discarded
2	process challenge	a response→ NULL	bypass	0	bypass	0	a response
3	bypass	0	process challenge	NULL→ a response	bypass	0	discarded
4	bypass	0	process challenge	b response→ NULL	bypass	0	b response
5	bypass	0	bypass	0	process challenge	NULL→ b response	discarded
6	bypass	0	bypass	0	process challenge	C response→ NULL	c response

Fig. 8

state	Device a ir	Device a dr	Device b ir	Device b dr	Device c ir	Device c dr	output
1	process challenge	NULL→ challenge	process challenge	NULL→ NULL	process challenge	NULL→ NULL	discarded
2	process challenge	a response→ NULL	process challenge	unused b response→ a response	process challenge	NULL→ unused b response	discarded
3	process challenge	unused a response→ NULL	process challenge	b response→ unused a response	process challenge	unused c response→ b response	discarded
4	process challenge	unused a response→ NULL	process challenge	unused b response→ unused a response	process challenge	c response→ unused b response	c response

Fig. 11

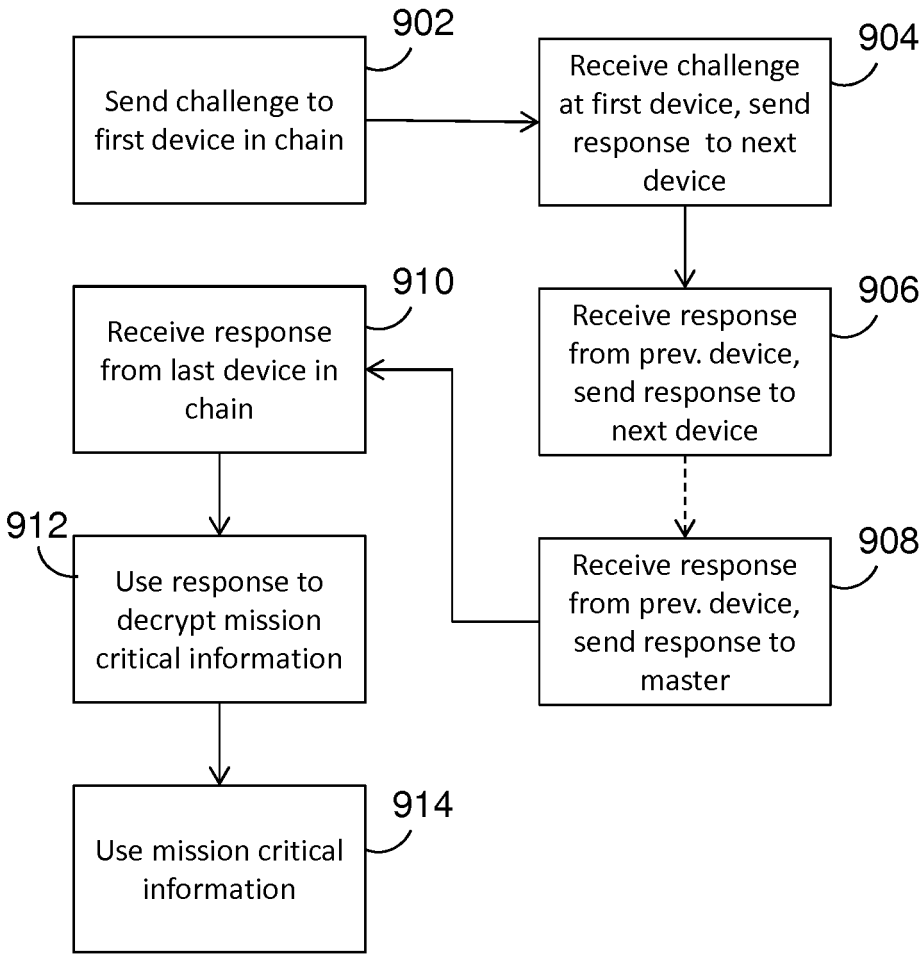
902
Send challenge to first device in chain
904
Receive challenge at first device, send response to next device
906
Receive response from prev. device, send response to next device
908
Receive response from prev. device, send response to master
910
Receive response from last device in chain
912
Use response to decrypt mission critical information
914
Use mission critical information

Fig. 9

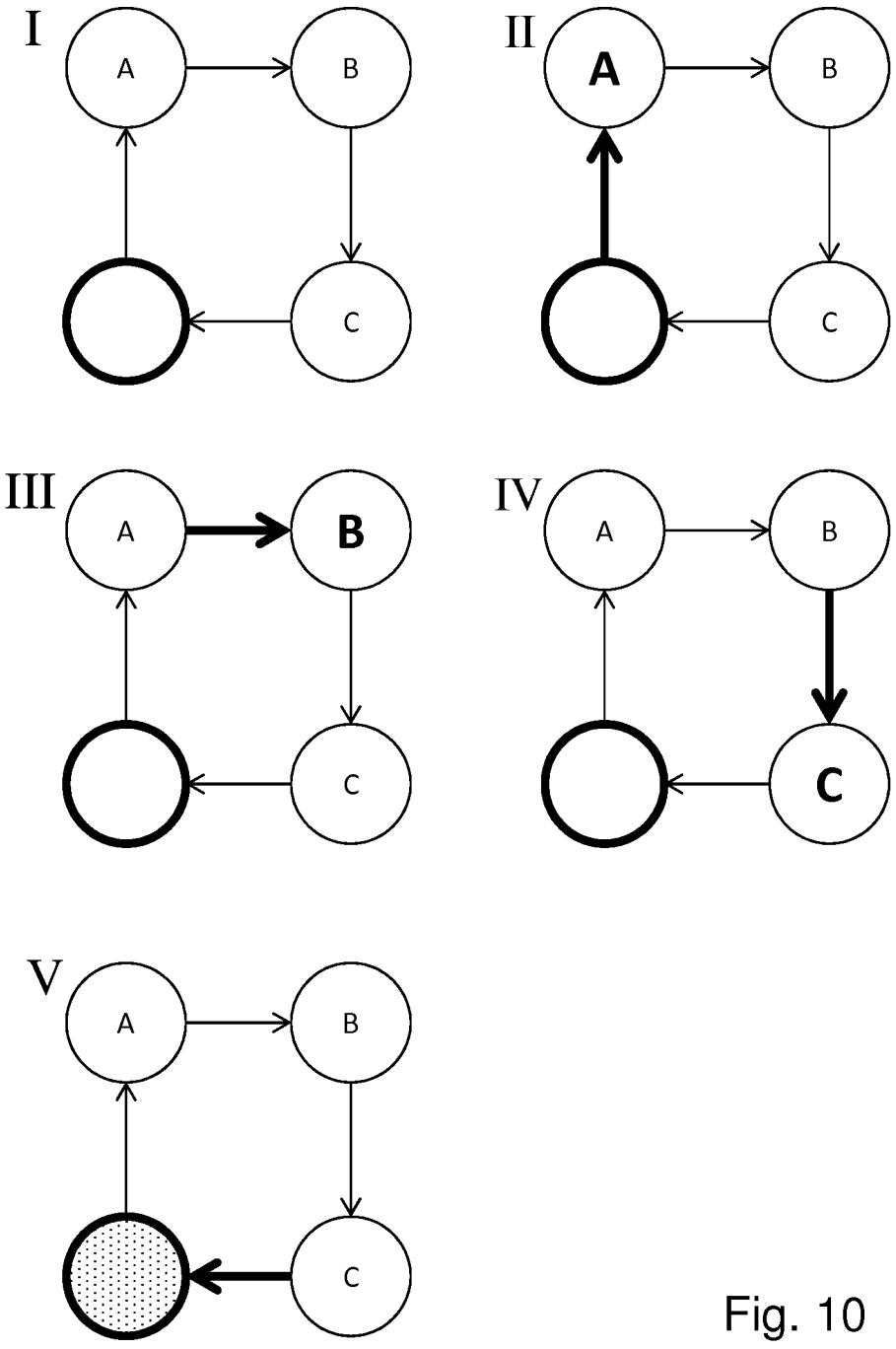

Fig. 10

state	Device a ir	Device a dr	Device b ir	Device b dr	Device c ir	Device c dr	output
1	process challenge	NULL→ challenge	bypass	0	bypass	0	discarded
2	process challenge	a response→ NULL	process challenge	NULL→ a response	bypass	0	discarded
3	process challenge	unused a response→ NULL	process challenge	b response→ unused b response	process challenge	NULL→ b response	discarded
4	process challenge	unused a response→ NULL	process challenge	unused a response→ unused b response	process challenge	c response→ unused b response	c response

Fig. 12

state	Device a ir	Device a dr	Device b ir	Device b dr	Device c ir	Device c dr	output
1	process challenge	NULL→ challenge	bypass	0	bypass	0	discarded
2	process challenge hold	a response→ NULL	process challenge	NULL→ a response	bypass	0	discarded
3	bypass	0	process challenge hold	b response→ NULL	process challenge	NULL→ b response	discarded
4	bypass	0	bypass	0	process challenge hold	c response→ NULL	c response

Fig. 13