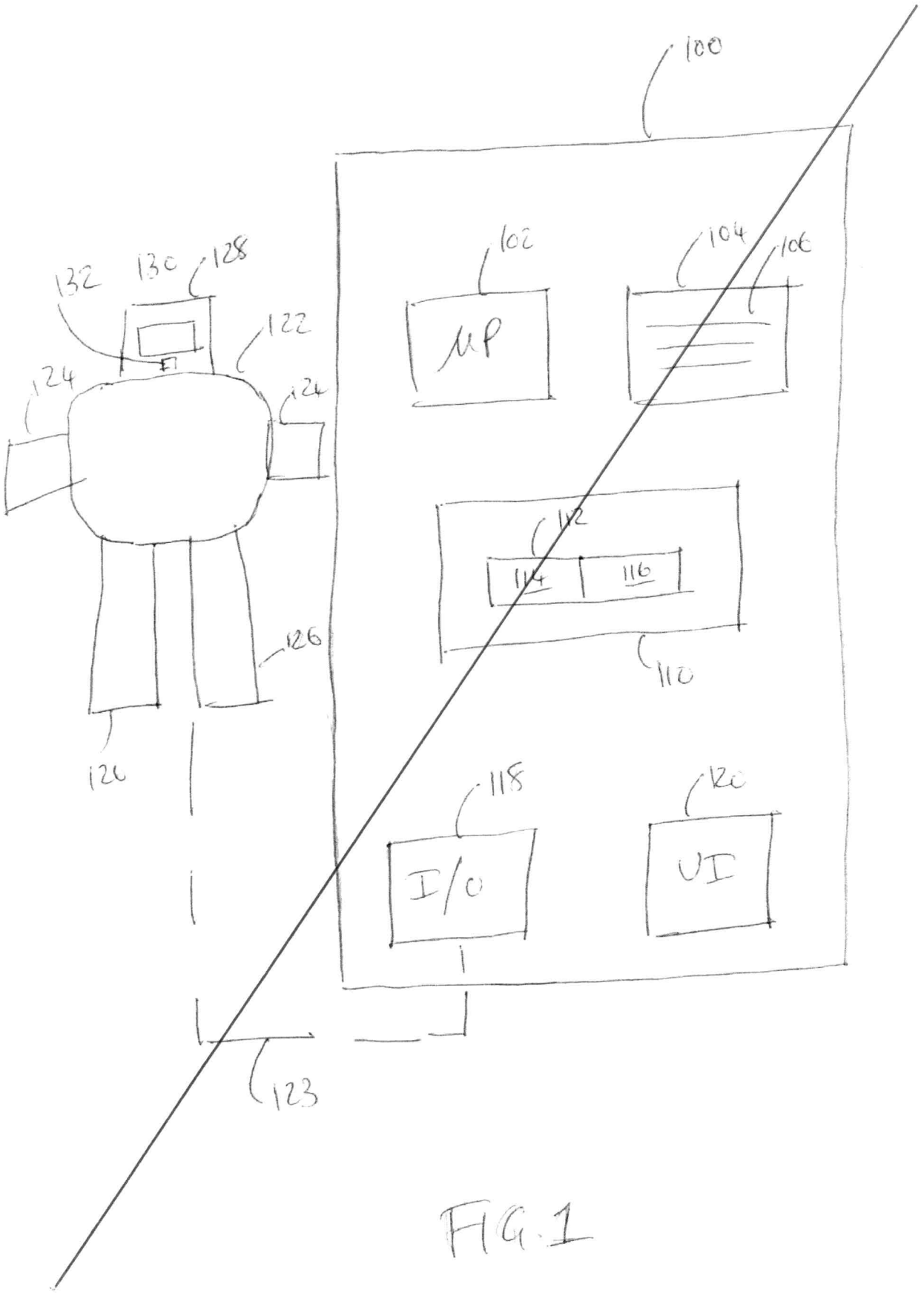

100
102
MP
104
106
112
114
116
110
118
I/O
120
UI
132
130
128
122
124
124
126
120
123

FIG. 1

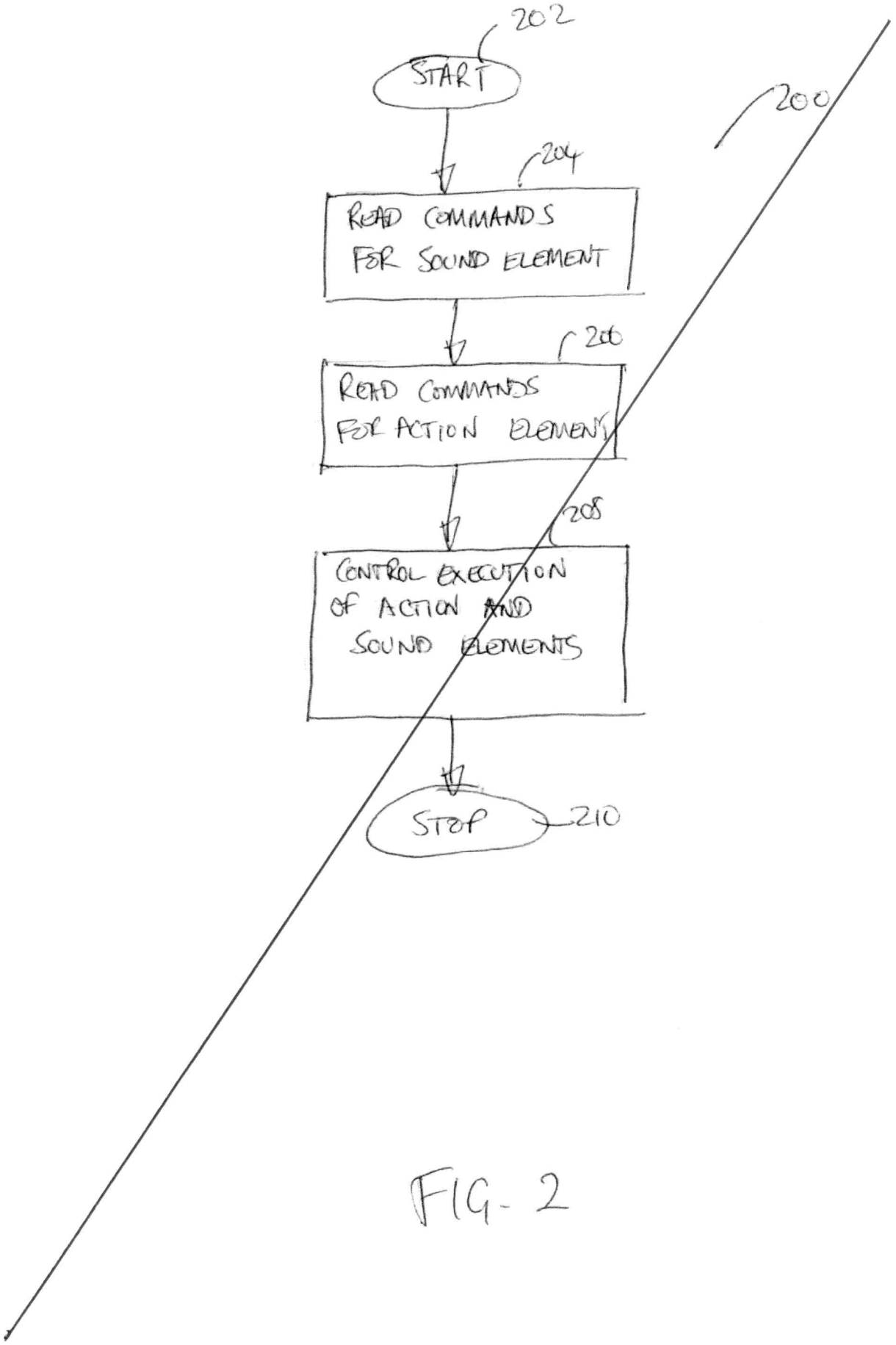

200
202
START
204
READ COMMANDS FOR SOUND ELEMENT
206
READ COMMANDS FOR ACTION ELEMENT
208
CONTROL EXECUTION OF ACTION AND SOUND ELEMENTS
STOP
210

FIG. 2

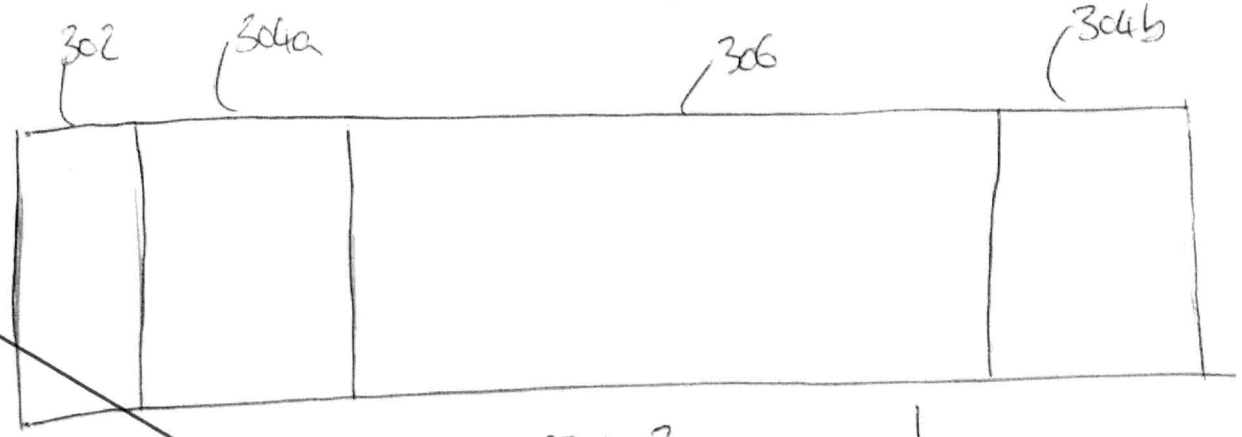


FIG 3a

300

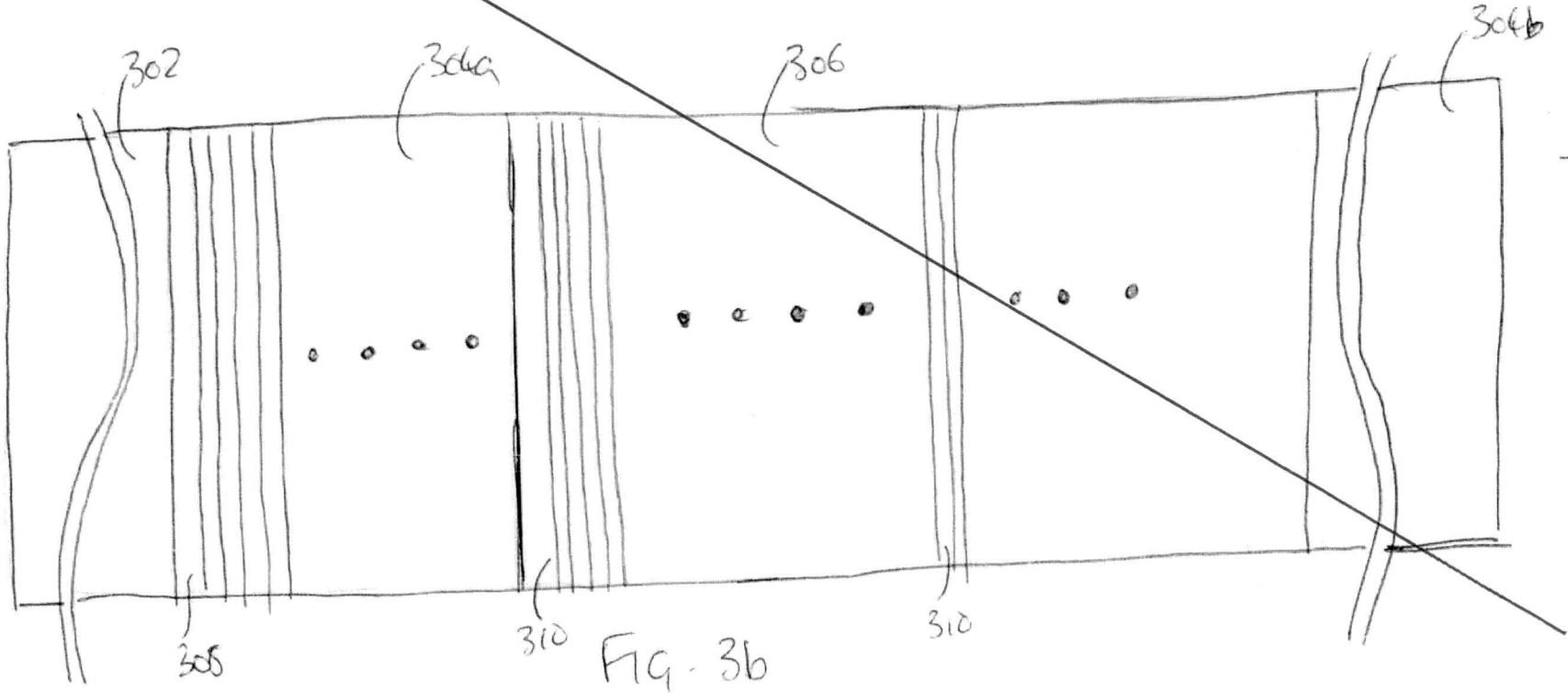


FIG. 3b

3/9

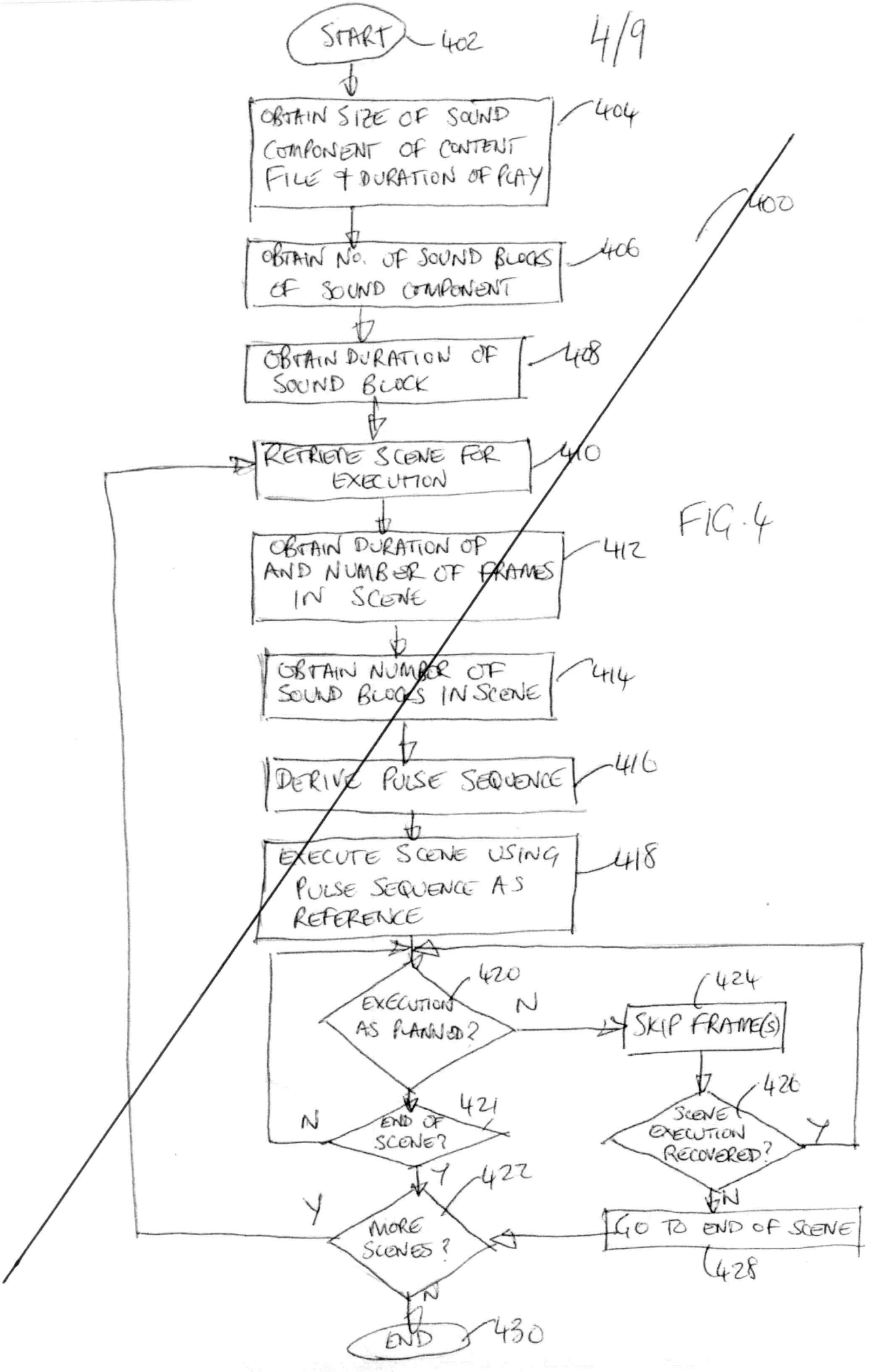

START
402
OBTAIN SIZE OF SOUND COMPONENT OF CONTENT FILE & DURATION OF PLAY
404
OBTAIN NO. OF SOUND BLOCKS OF SOUND COMPONENT
406
OBTAIN DURATION OF SOUND BLOCK
408
RETRIEVE SCENE FOR EXECUTION
410
OBTAIN DURATION OF AND NUMBER OF FRAMES IN SCENE
412
OBTAIN NUMBER OF SOUND BLOCKS IN SCENE
414
DERIVE PULSE SEQUENCE
416
EXECUTE SCENE USING PULSE SEQUENCE AS REFERENCE
418
EXECUTION AS PLANNED?
420
N
SKIP FRAME(S)
424
END OF SCENE?
421
N
Y
SCENE EXECUTION RECOVERED?
426
Y
N
MORE SCENES?
422
Y
GO TO END OF SCENE
428
N
END
430
400

FIG. 4

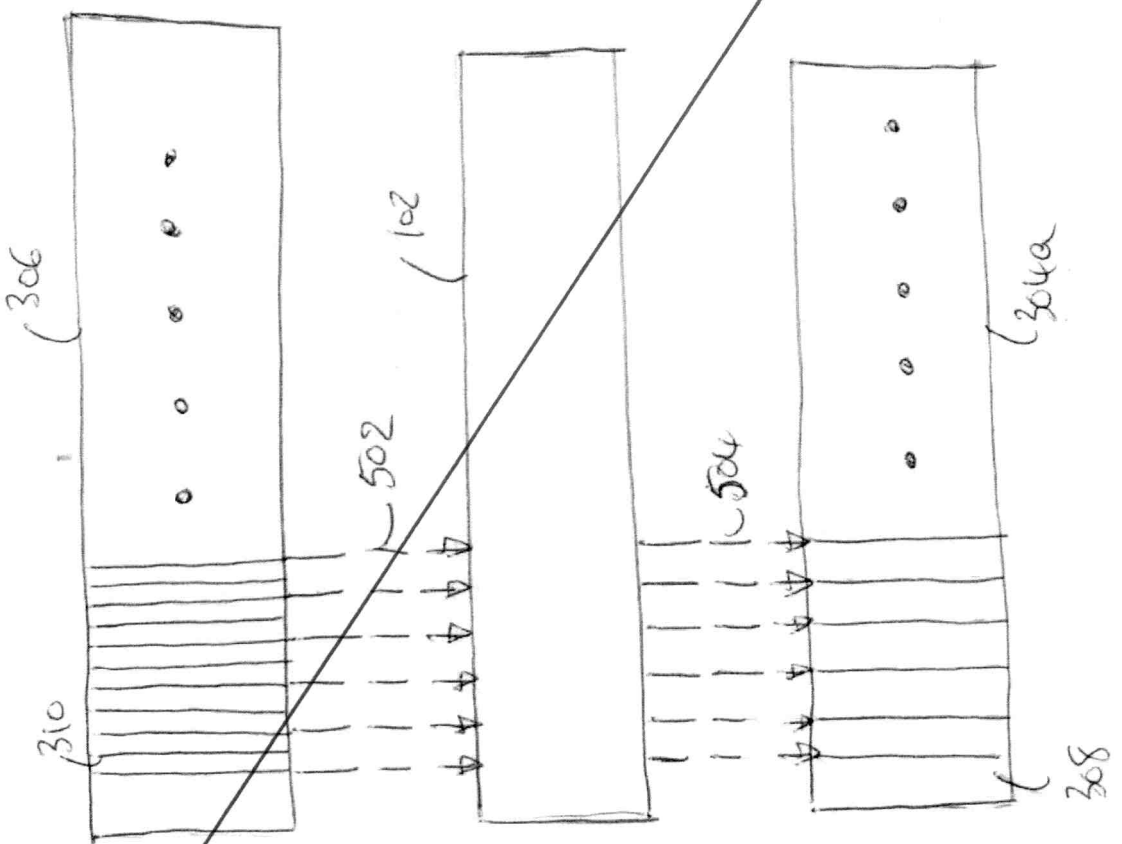


FIG. 5

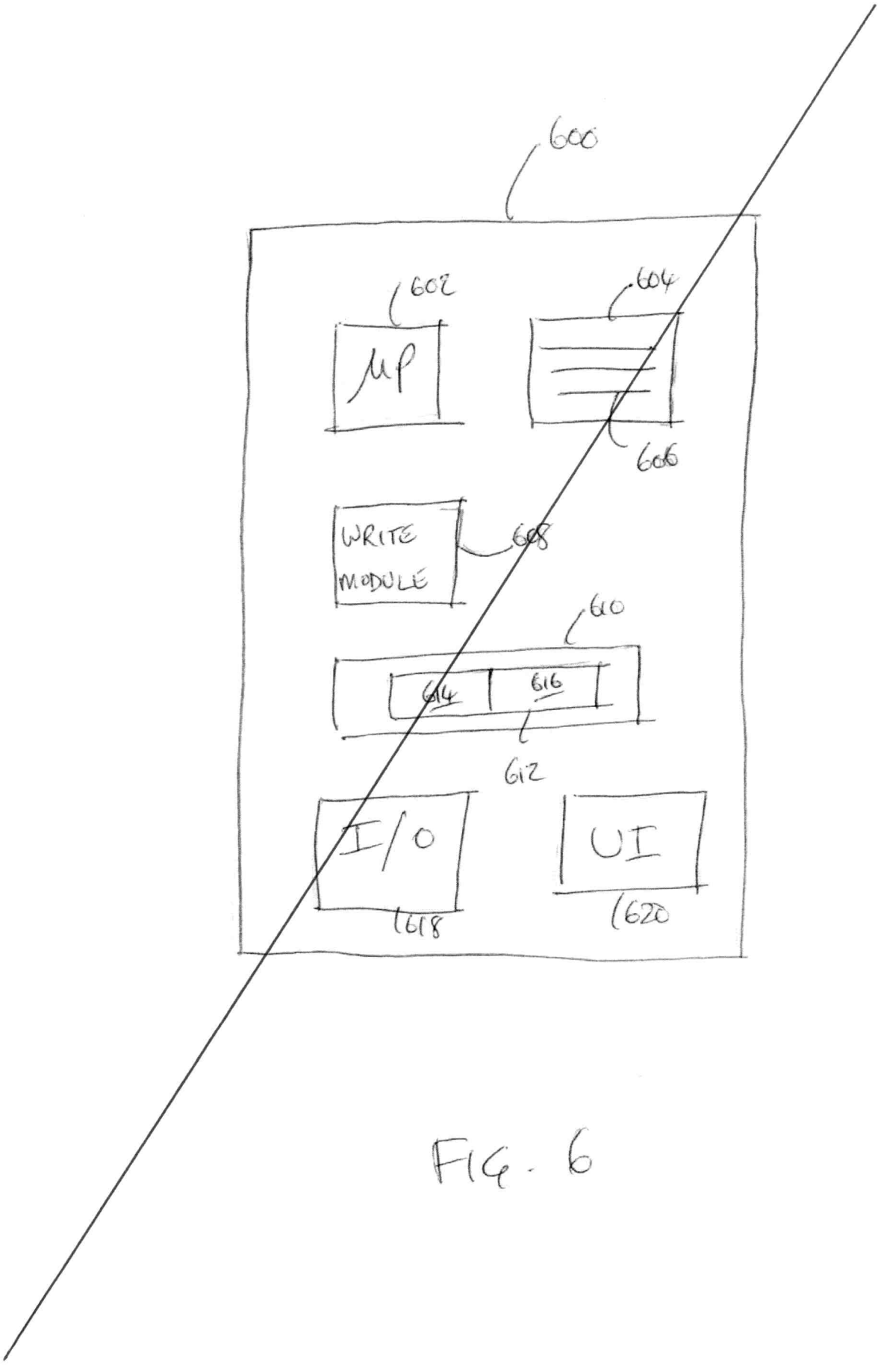

600
602
MP
604
606
WRITE MODULE
608
610
614
616
612
I/O
618
UI
620

FIG. 6

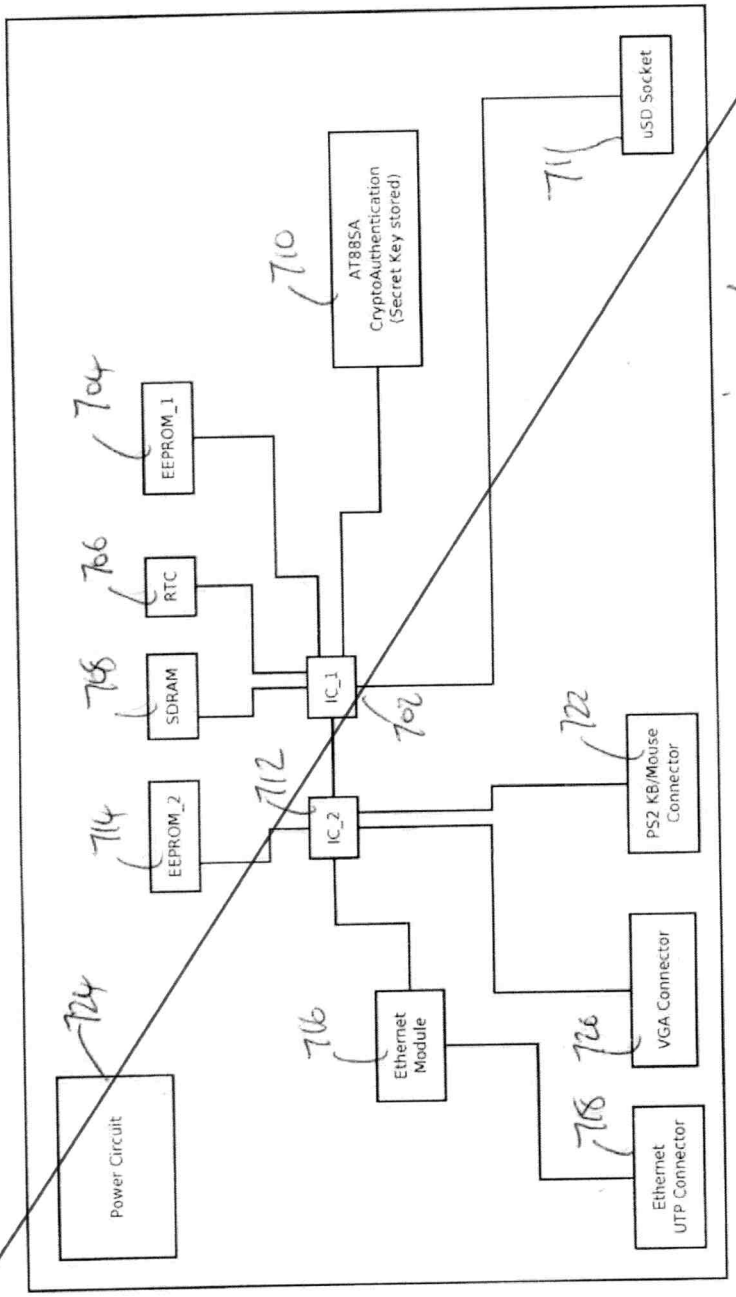

700
AT88SA
CryptoAuthentication
(Secret Key stored)
710
uSD Socket
711
EEPROM_1
704
RTC
706
SDRAM
708
IC_1
702
IC_2
712
EEPROM_2
714
PS2 KB/Mouse
Connector
722
Ethernet
Module
716
VGA Connector
726
Ethernet
UTP Connector
718
Power Circuit
724

FIG. 7

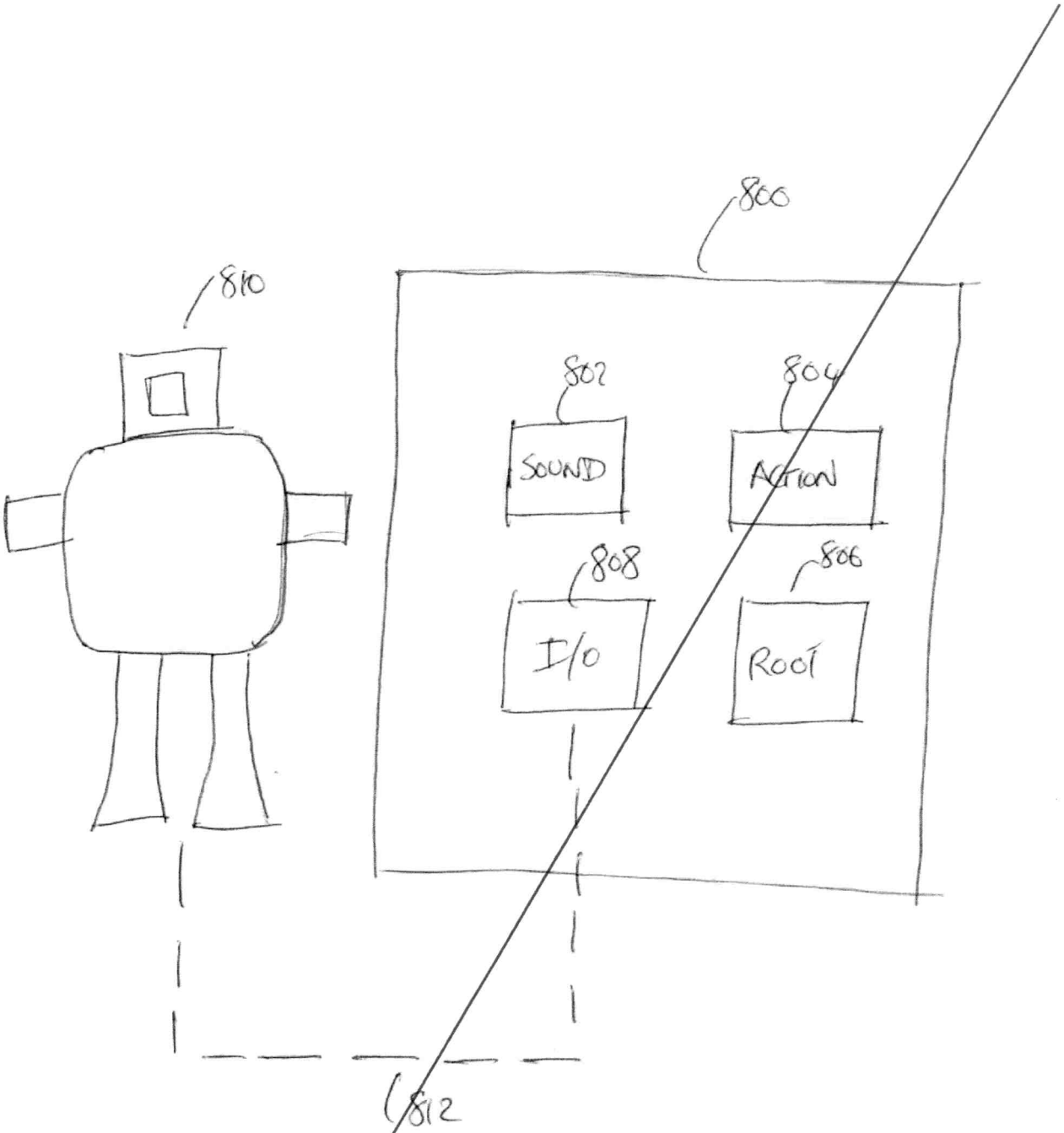


FIG. 8

900
Speaker (L) Connector
Speaker (L) Connector
940b
940a
Op-Amp
938
OGG Decoder
924
Crypto Chip
942
Crypto-Memory
944
Bluetooth Connector
926
EEPROM_5
918
908
SDRAM
914
EEPROM_3
904
IC_2
IC_4
EEPROM_4
916
EEPROM_2
912
IC_1
902
IC_3
906
EEPROM_1
910
RTC
928
NAND Flash
920
uSD Socket
922
Power Circuit
930
Battery Charging
Accelerometer Module
932
Touch-sensing Module
Power Connector
Battery Connector
Display Connector
934
Touch Connector
946
Servo Connector 1
Servo Connector 2
Servo Connector 3
Servo Connector 4
936a
936b
936c
936d

FIG 9

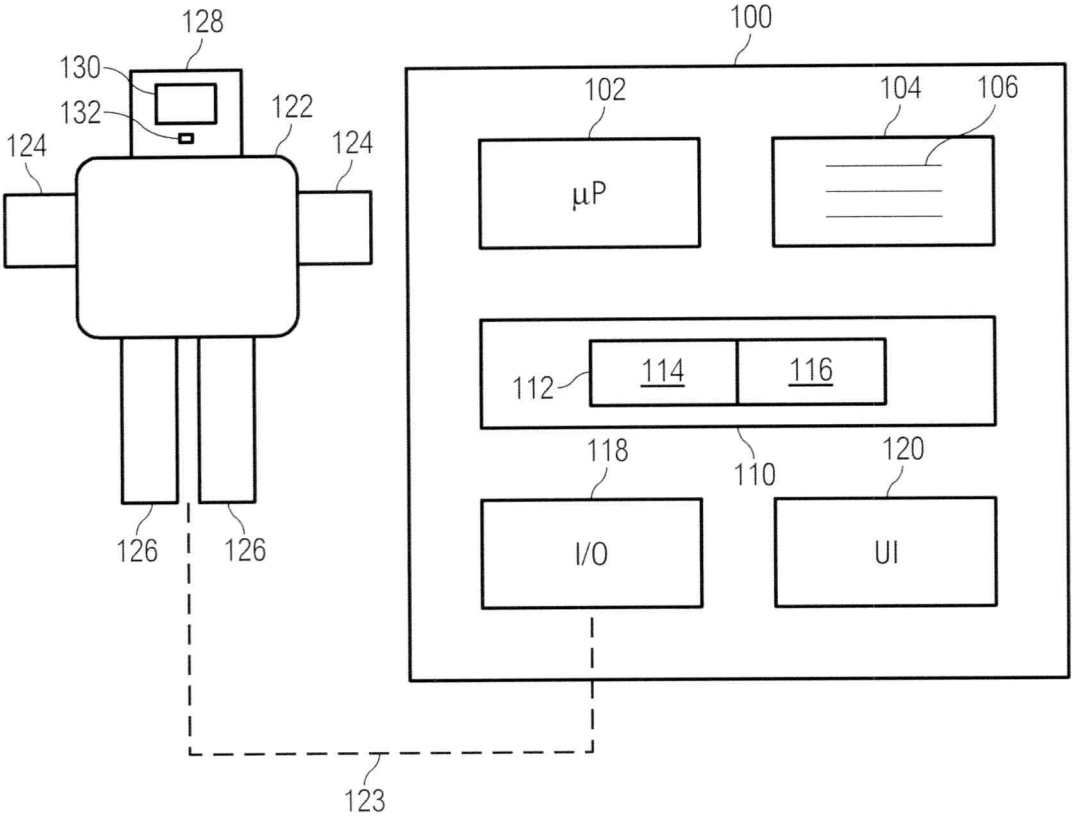

128
130
132
122
124
124
126
126
100
102
104
106
µP
112
114
116
118
110
120
I/O
UI
123

FIG. 1

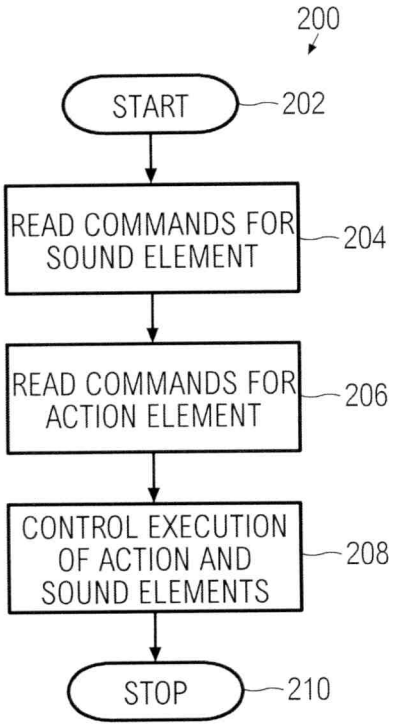

200
START
202
READ COMMANDS FOR SOUND ELEMENT
204
READ COMMANDS FOR ACTION ELEMENT
206
CONTROL EXECUTION OF ACTION AND SOUND ELEMENTS
208
STOP
210

FIG. 2

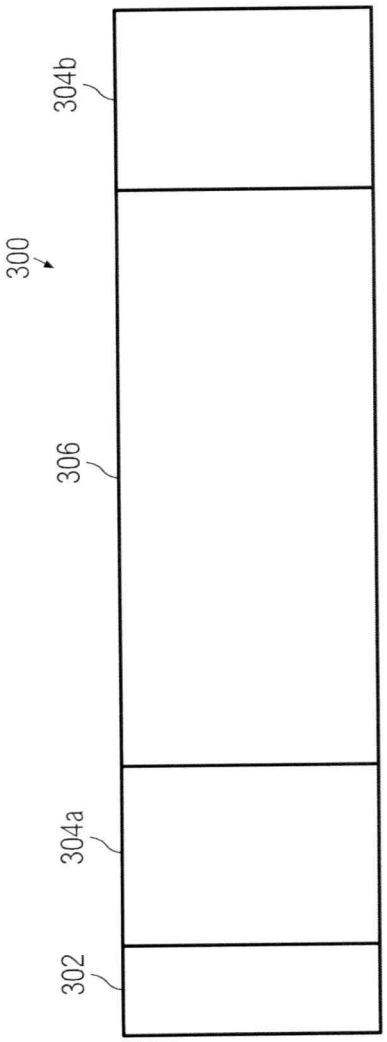


FIG. 3A

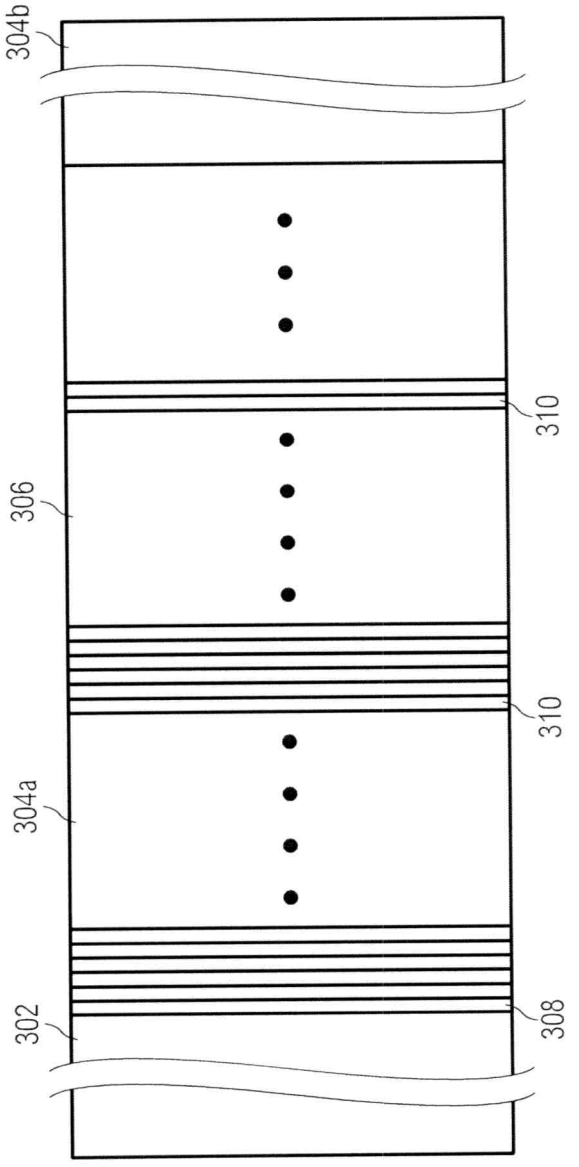


FIG. 3B

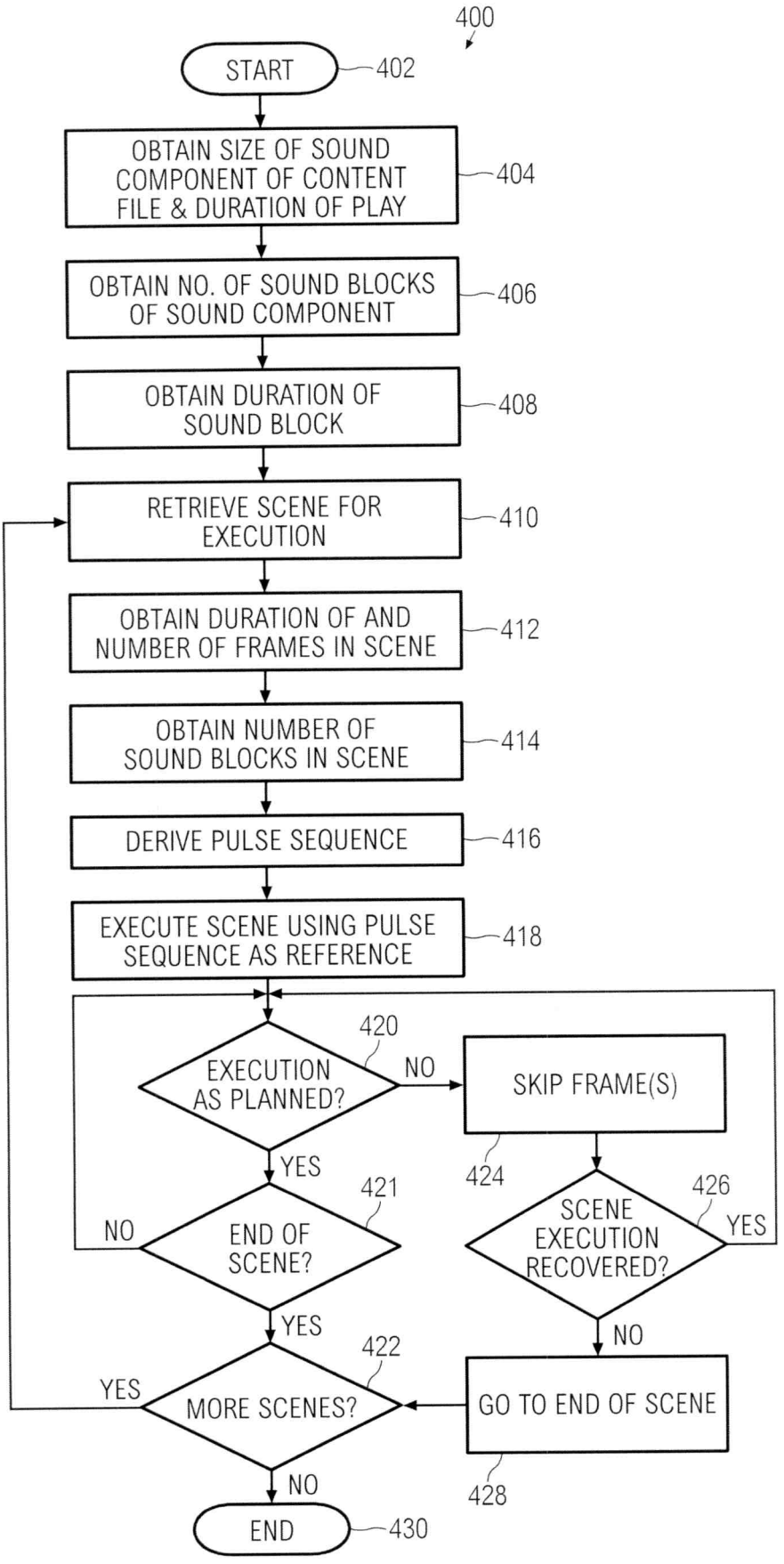

400
START
402
OBTAIN SIZE OF SOUND COMPONENT OF CONTENT FILE & DURATION OF PLAY
404
OBTAIN NO. OF SOUND BLOCKS OF SOUND COMPONENT
406
OBTAIN DURATION OF SOUND BLOCK
408
RETRIEVE SCENE FOR EXECUTION
410
OBTAIN DURATION OF AND NUMBER OF FRAMES IN SCENE
412
OBTAIN NUMBER OF SOUND BLOCKS IN SCENE
414
DERIVE PULSE SEQUENCE
416
EXECUTE SCENE USING PULSE SEQUENCE AS REFERENCE
418
420
EXECUTION AS PLANNED?
NO
SKIP FRAME(S)
424
YES
421
END OF SCENE?
NO
YES
426
SCENE EXECUTION RECOVERED?
YES
NO
422
MORE SCENES?
YES
GO TO END OF SCENE
428
NO
END
430

FIG. 4

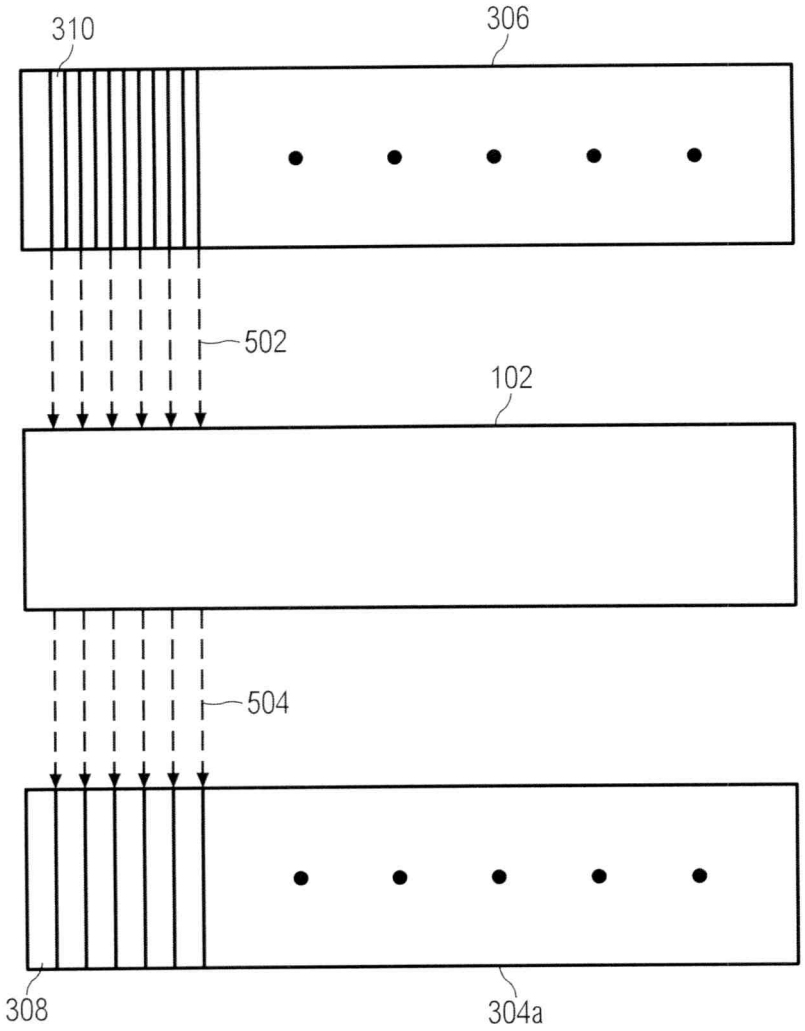


FIG. 5

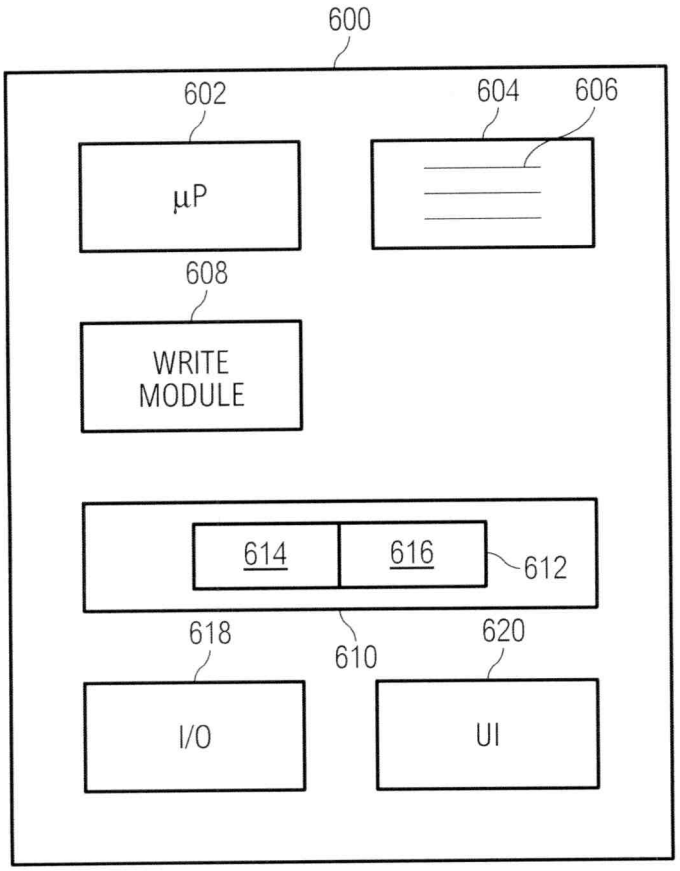

600
602
604
606
μP
608
WRITE MODULE
614
616
612
618
610
620
I/O
UI

FIG. 6

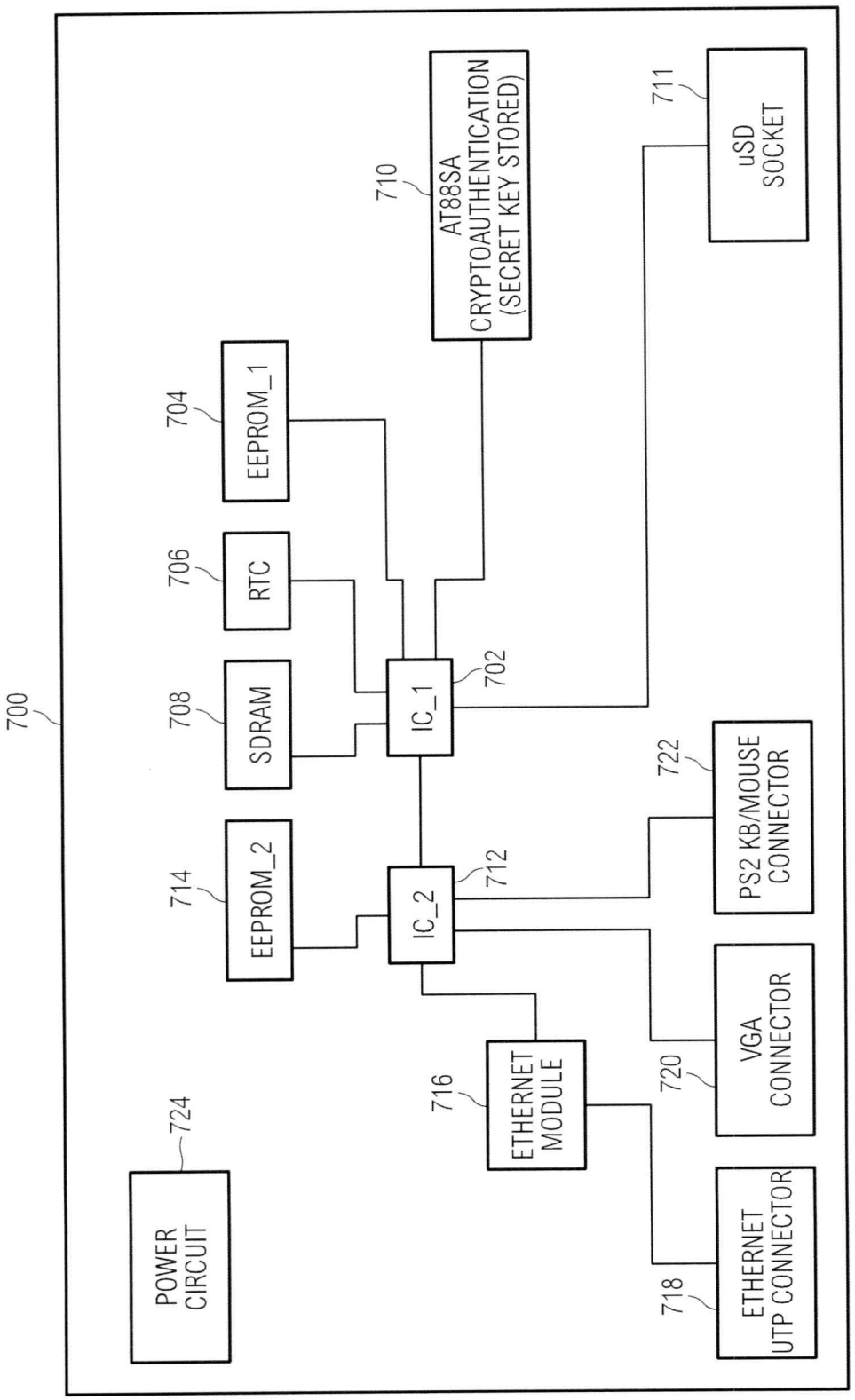

700
POWER CIRCUIT
724
ETHERNET UTP CONNECTOR
718
ETHERNET MODULE
716
VGA CONNECTOR
720
PS2 KB/MOUSE CONNECTOR
722
EEPROM_2
714
IC_2
712
SDRAM
708
RTC
706
EEPROM_1
704
IC_1
702
AT88SA CRYPTOAUTHENTICATION (SECRET KEY STORED)
710
uSD SOCKET
711

FIG. 7

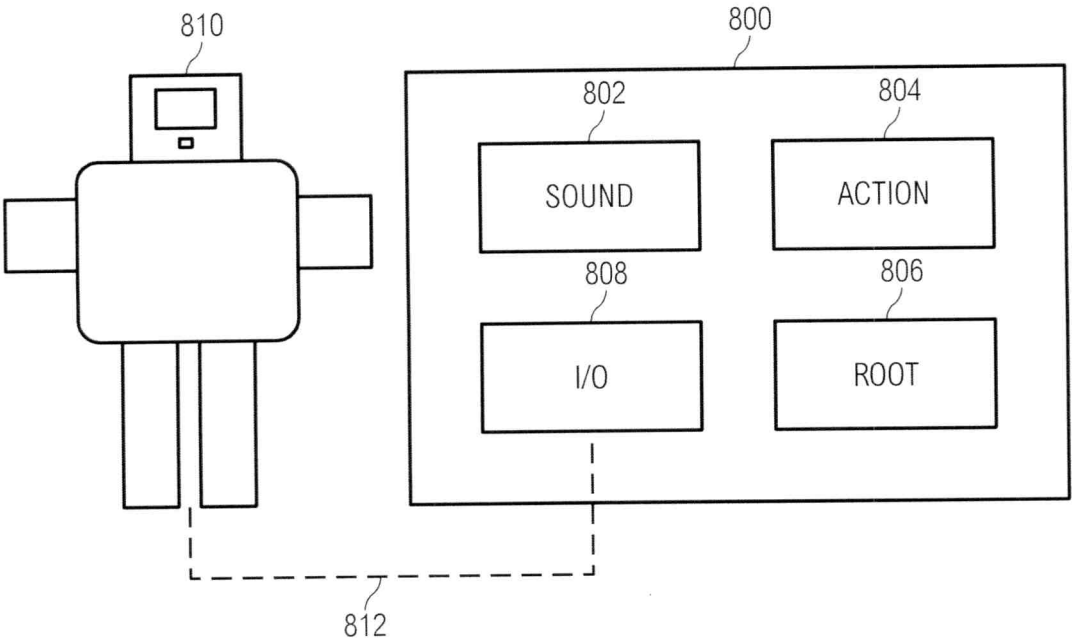


FIG. 8

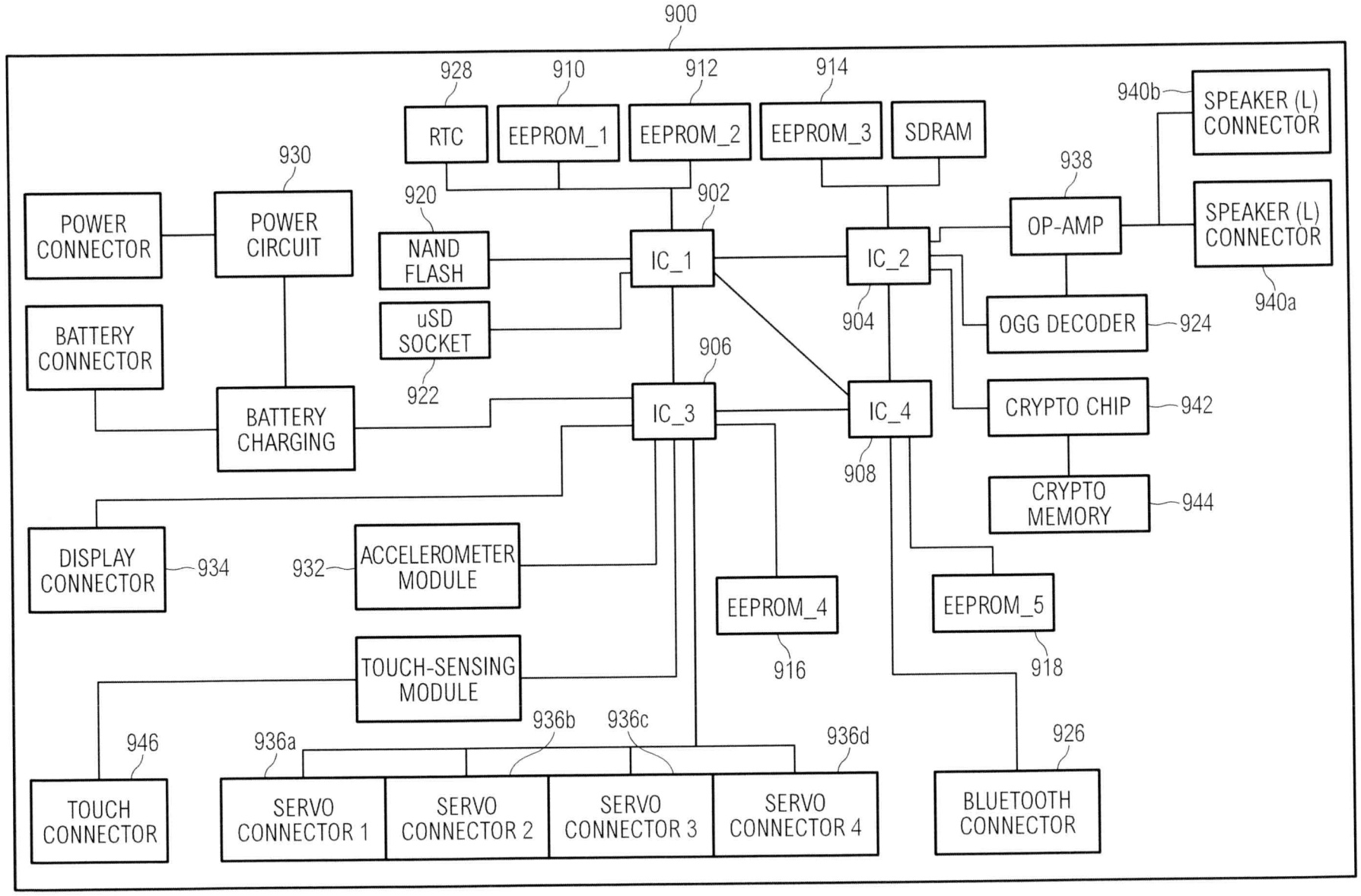

900
928
910
912
914
RTC
EEPROM_1
EEPROM_2
EEPROM_3
SDRAM
940b
SPEAKER (L) CONNECTOR
930
938
920
902
POWER CONNECTOR
POWER CIRCUIT
NAND FLASH
IC_1
IC_2
OP-AMP
SPEAKER (L) CONNECTOR
940a
904
OGG DECODER
924
BATTERY CONNECTOR
uSD SOCKET
922
906
IC_3
IC_4
CRYPTO CHIP
942
BATTERY CHARGING
908
CRYPTO MEMORY
944
DISPLAY CONNECTOR
934
932
ACCELEROMETER MODULE
EEPROM_4
EEPROM_5
916
918
TOUCH-SENSING MODULE
946
936a
936b
936c
936d
926
TOUCH CONNECTOR
SERVO CONNECTOR 1
SERVO CONNECTOR 2
SERVO CONNECTOR 3
SERVO CONNECTOR 4
BLUETOOTH CONNECTOR

FIG. 9