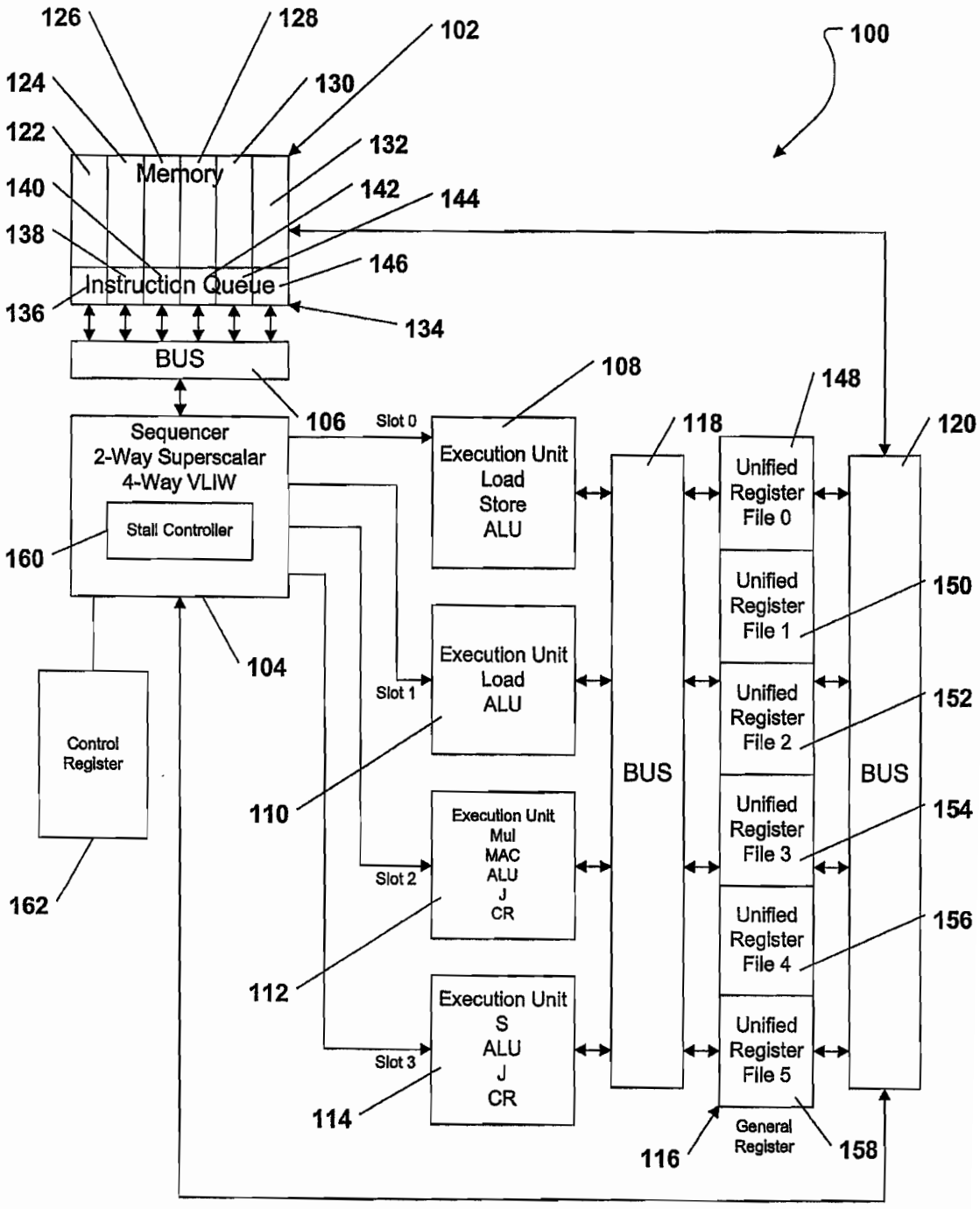

126
128
102
100
124
130
122
132
Memory
140
142
144
138
146
Instruction Queue
136
134
BUS
108
148
106
Slot 0
Sequencer
2-Way Superscalar
4-Way VLIW
Stall Controller
160
Execution Unit
Load
Store
ALU
118
Unified
Register
File 0
120
Unified
Register
File 1
150
Unified
Register
File 2
152
Unified
Register
File 3
154
Unified
Register
File 4
156
Unified
Register
File 5
104
Slot 1
Execution Unit
Load
ALU
Control
Register
110
Execution Unit
Mul
MAC
ALU
J
CR
Slot 2
BUS
BUS
162
112
Execution Unit
S
ALU
J
CR
Slot 3
114
116
General
Register
158

FIG. 1

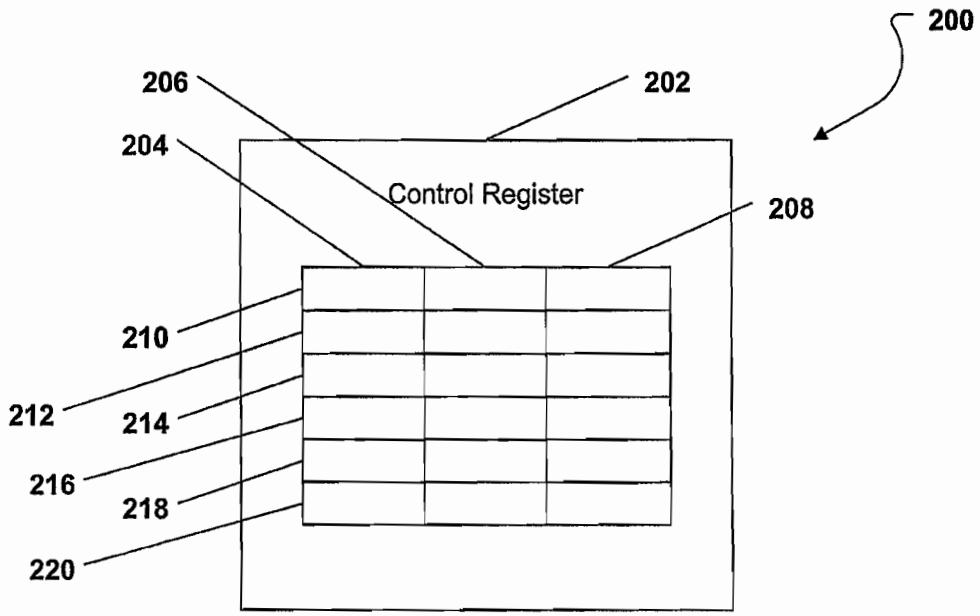


FIG. 2

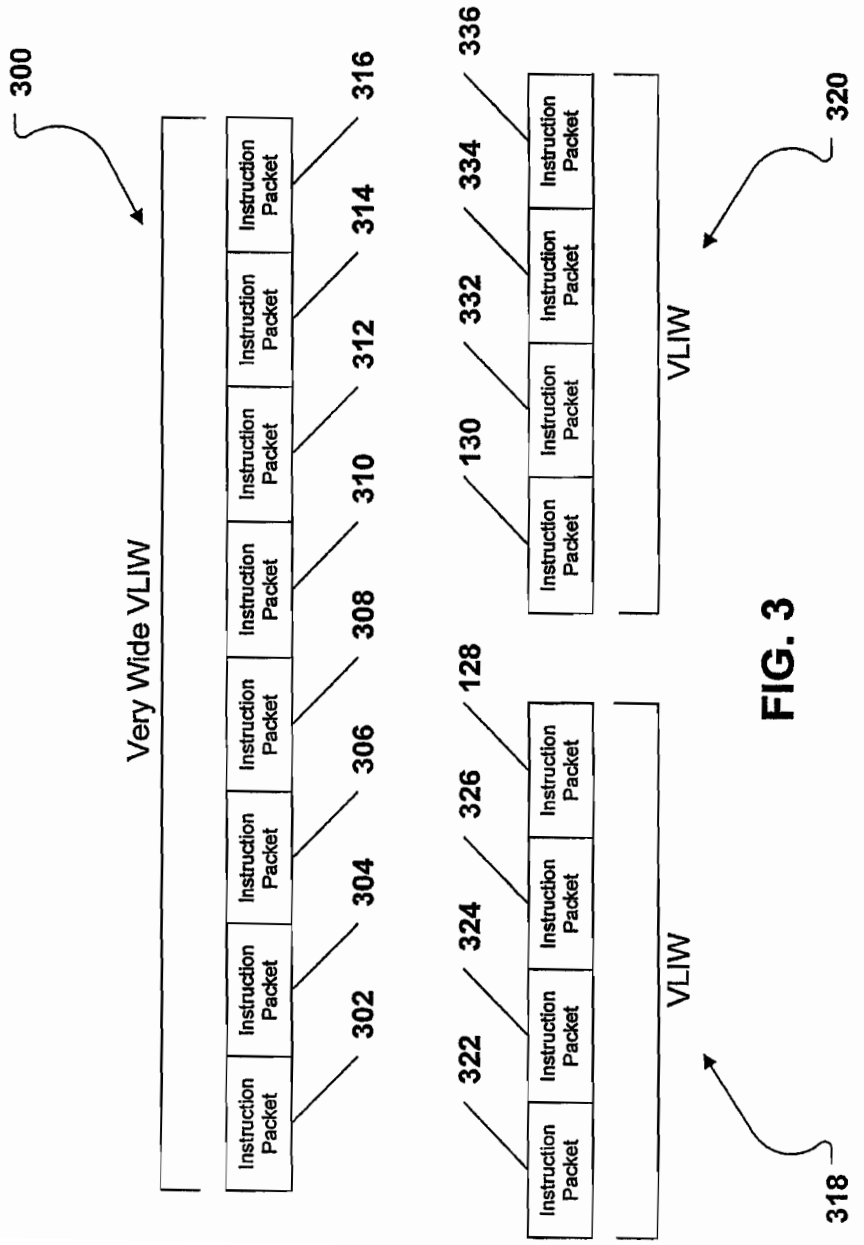

300
Very Wide VLIW
Instruction Packet
302
304
306
308
310
312
314
316
VLIW
318
322
324
326
128
VLIW
320
130
332
334
336

FIG. 3

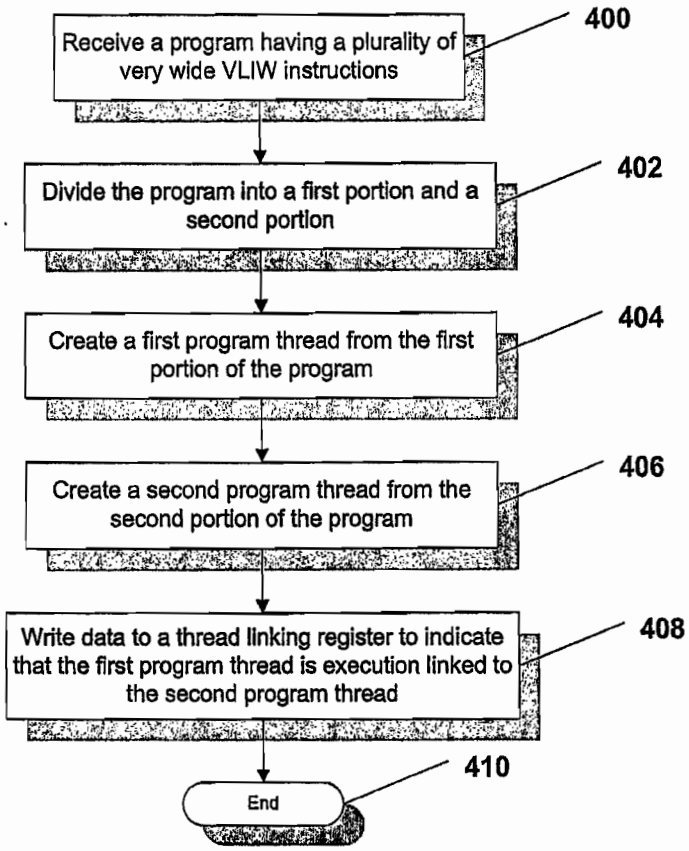

Receive a program having a plurality of very wide VLIW instructions
400
Divide the program into a first portion and a second portion
402
Create a first program thread from the first portion of the program
404
Create a second program thread from the second portion of the program
406
Write data to a thread linking register to indicate that the first program thread is execution linked to the second program thread
408
End
410

FIG. 4

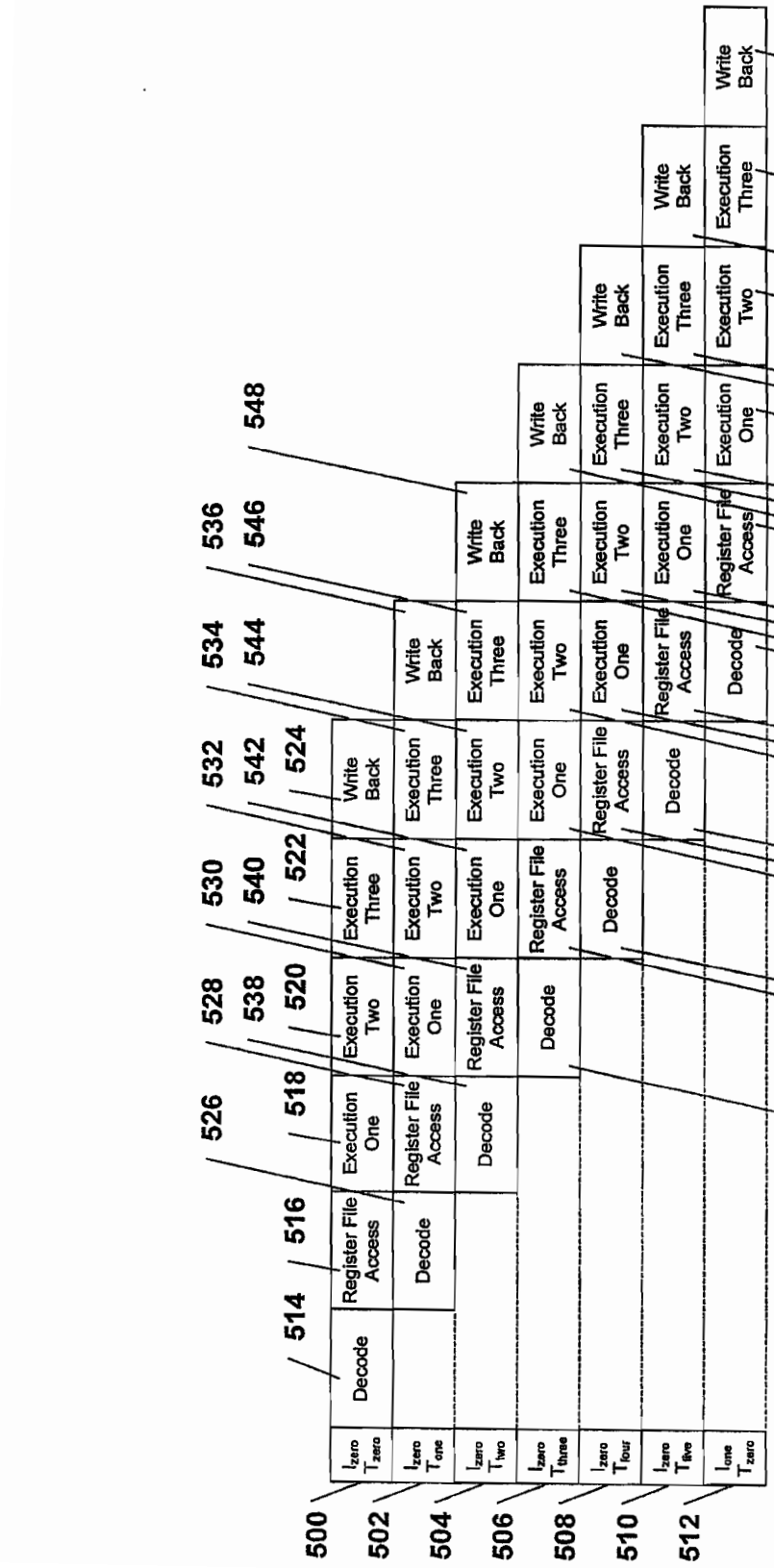

500
502
504
506
508
510
512
514
516
518
520
522
524
526
528
530
532
534
536
538
540
542
544
546
548
550
552
554
556
558
560
562
564
566
568
570
572
574
576
578
580
582
584
586
588
590
592
594
596
Decode
Register File Access
Execution One
Execution Two
Execution Three
Write Back

FIG. 5

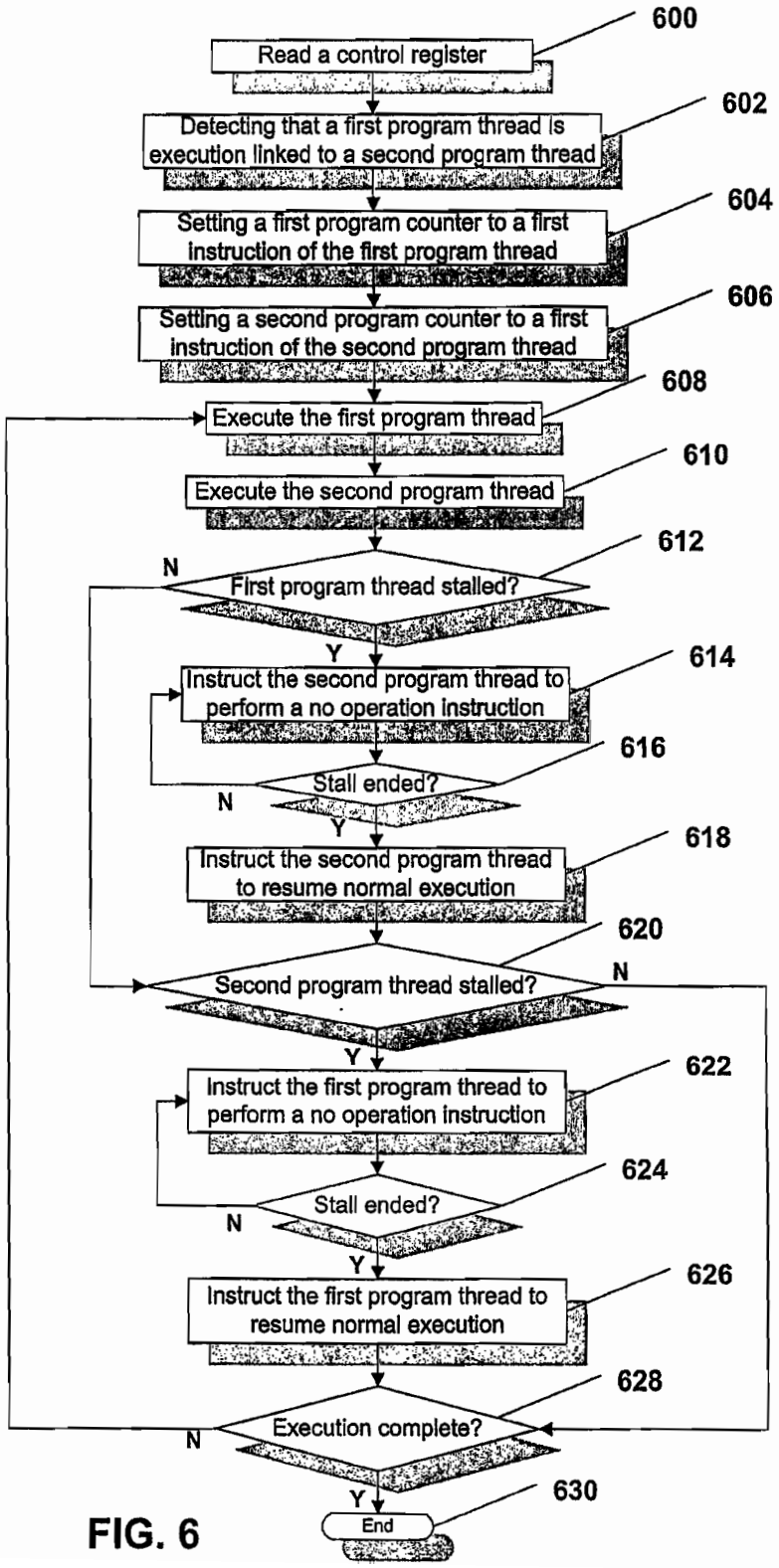

600
Read a control register
602
Detecting that a first program thread is execution linked to a second program thread
604
Setting a first program counter to a first instruction of the first program thread
606
Setting a second program counter to a first instruction of the second program thread
608
Execute the first program thread
610
Execute the second program thread
612
First program thread stalled?
N
Y
614
Instruct the second program thread to perform a no operation instruction
616
Stall ended?
N
Y
618
Instruct the second program thread to resume normal execution
620
Second program thread stalled?
N
Y
622
Instruct the first program thread to perform a no operation instruction
624
Stall ended?
N
Y
626
Instruct the first program thread to resume normal execution
628
Execution complete?
N
Y
630
End

FIG. 6

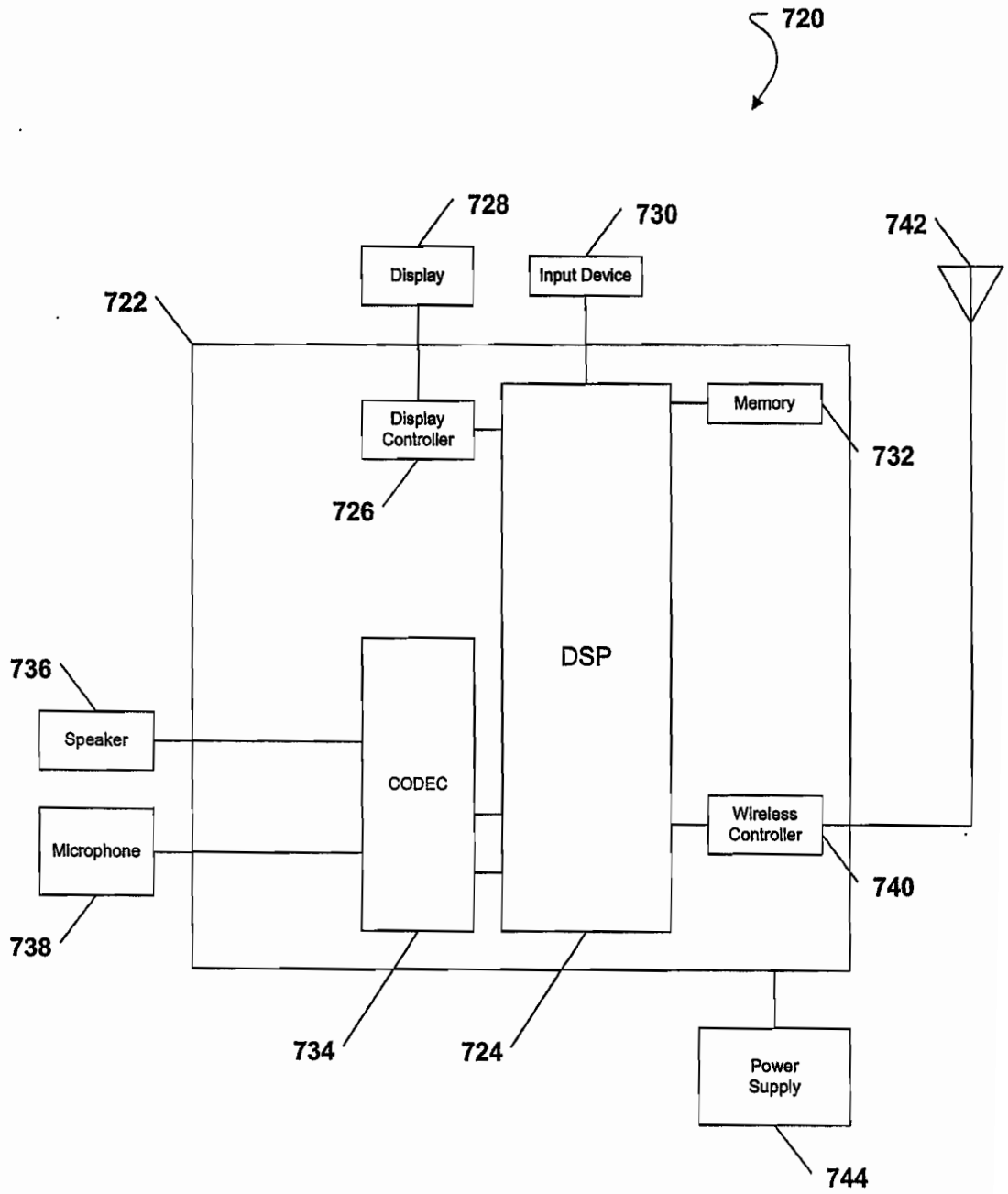

720
728
730
742
Display
Input Device
722
Display Controller
Memory
732
726
DSP
736
Speaker
CODEC
Wireless Controller
Microphone
740
738
734
724
Power Supply
744

FIG. 7

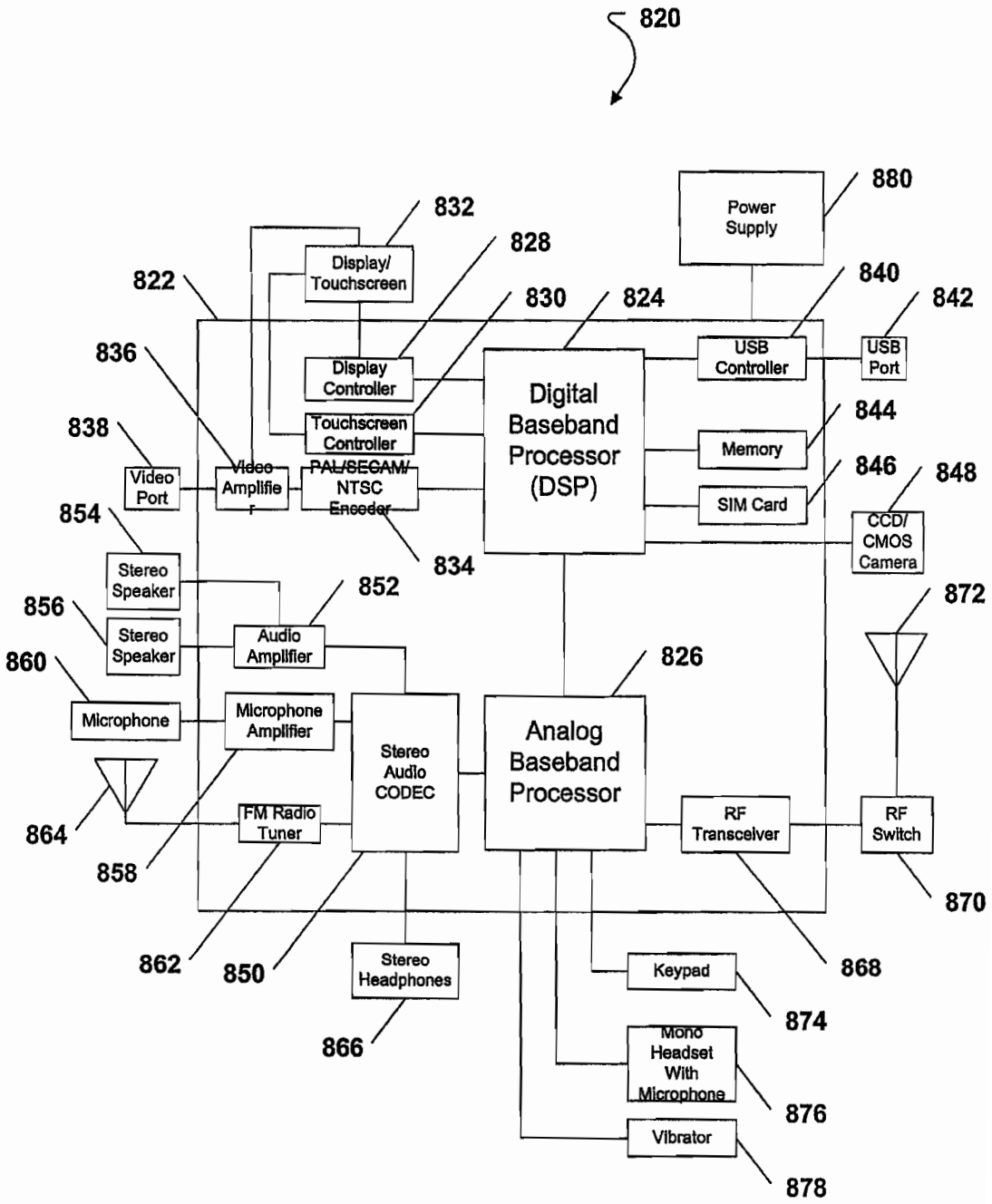

820
Power Supply
880
832
Display/ Touchscreen
828
822
830
824
840
842
836
Display Controller
Digital Baseband Processor (DSP)
USB Controller
USB Port
Touchscreen Controller
844
838
Video Port
Video Amplifier
PAL/SECAM/ NTSC Encoder
Memory
846
848
854
SIM Card
CCD/ CMOS Camera
834
Stereo Speaker
852
872
856
Stereo Speaker
Audio Amplifier
826
860
Microphone
Microphone Amplifier
Stereo Audio CODEC
Analog Baseband Processor
RF Transceiver
RF Switch
864
FM Radio Tuner
858
870
862
850
Stereo Headphones
868
Keypad
874
866
Mono Headset With Microphone
876
Vibrator
878

FIG. 8

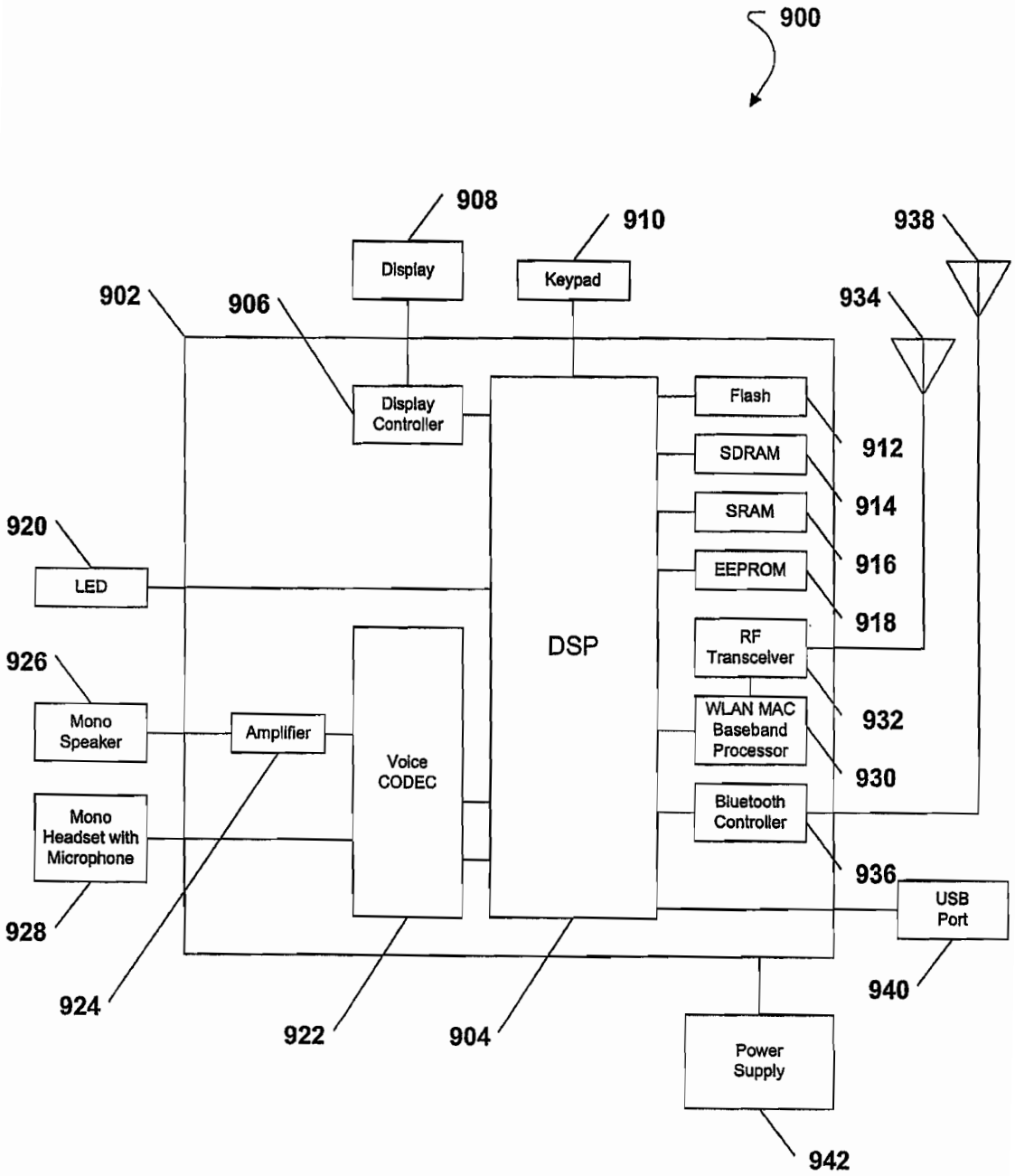

900
908
910
938
Display
Keypad
902
906
934
Display Controller
Flash
912
SDRAM
914
SRAM
916
EEPROM
918
920
LED
DSP
RF Transceiver
926
Mono Speaker
Amplifier
Voice CODEC
WLAN MAC Baseband Processor
932
930
Mono Headset with Microphone
Bluetooth Controller
936
USB Port
928
924
922
904
940
Power Supply
942

FIG. 9

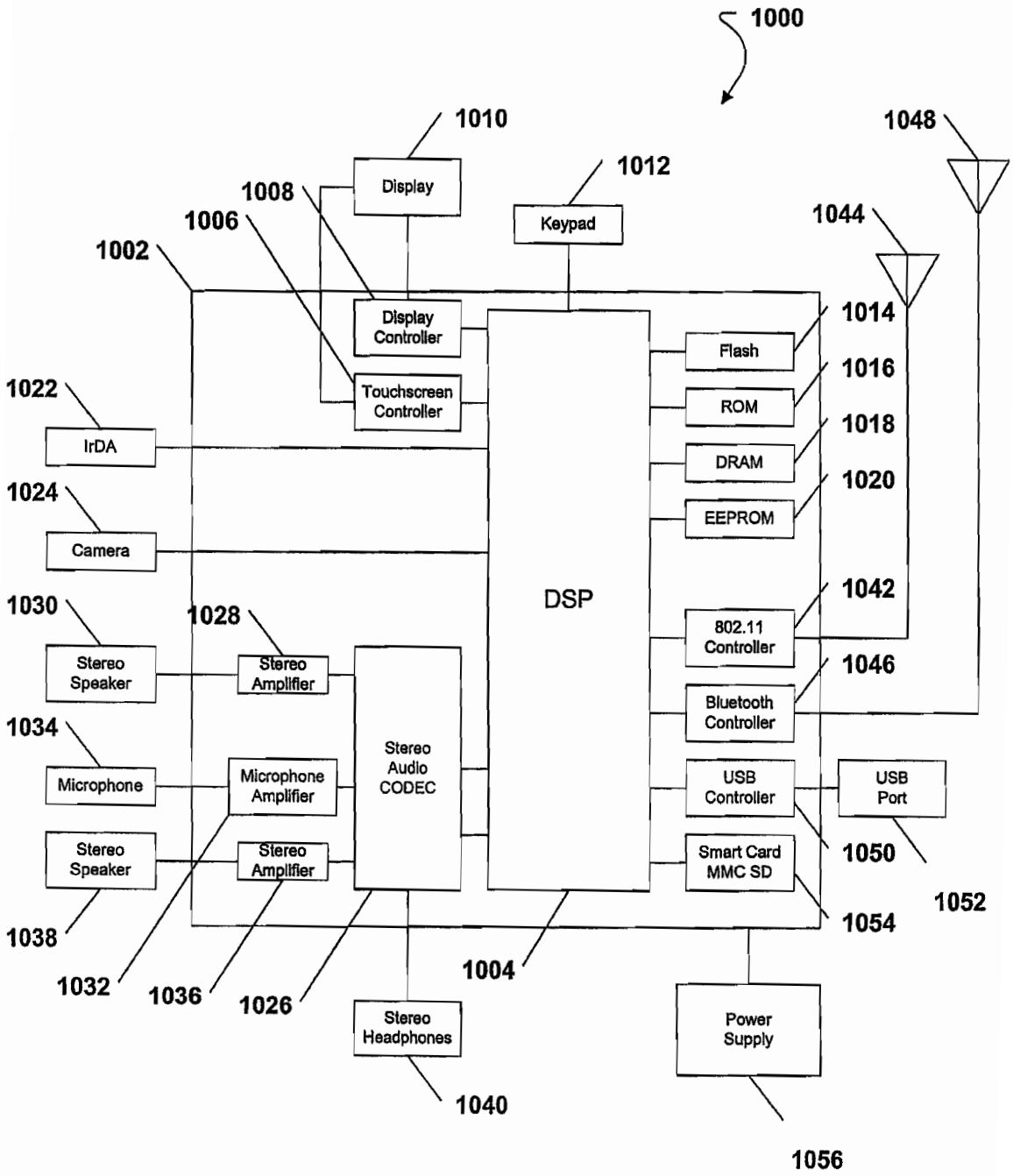

1000
1010
1048
Display
1012
1008
Keypad
1006
1044
1002
Display Controller
1014
Flash
1016
Touchscreen Controller
ROM
1022
1018
IrDA
DRAM
1024
1020
Camera
EEPROM
DSP
1030
1042
1028
802.11 Controller
Stereo Speaker
Stereo Amplifier
1046
Bluetooth Controller
1034
Stereo Audio CODEC
USB Controller
USB Port
Microphone
Microphone Amplifier
1050
Stereo Speaker
Stereo Amplifier
Smart Card MMC SD
1052
1038
1054
1032
1004
1036
1026
Power Supply
Stereo Headphones
1040
1056

FIG. 10

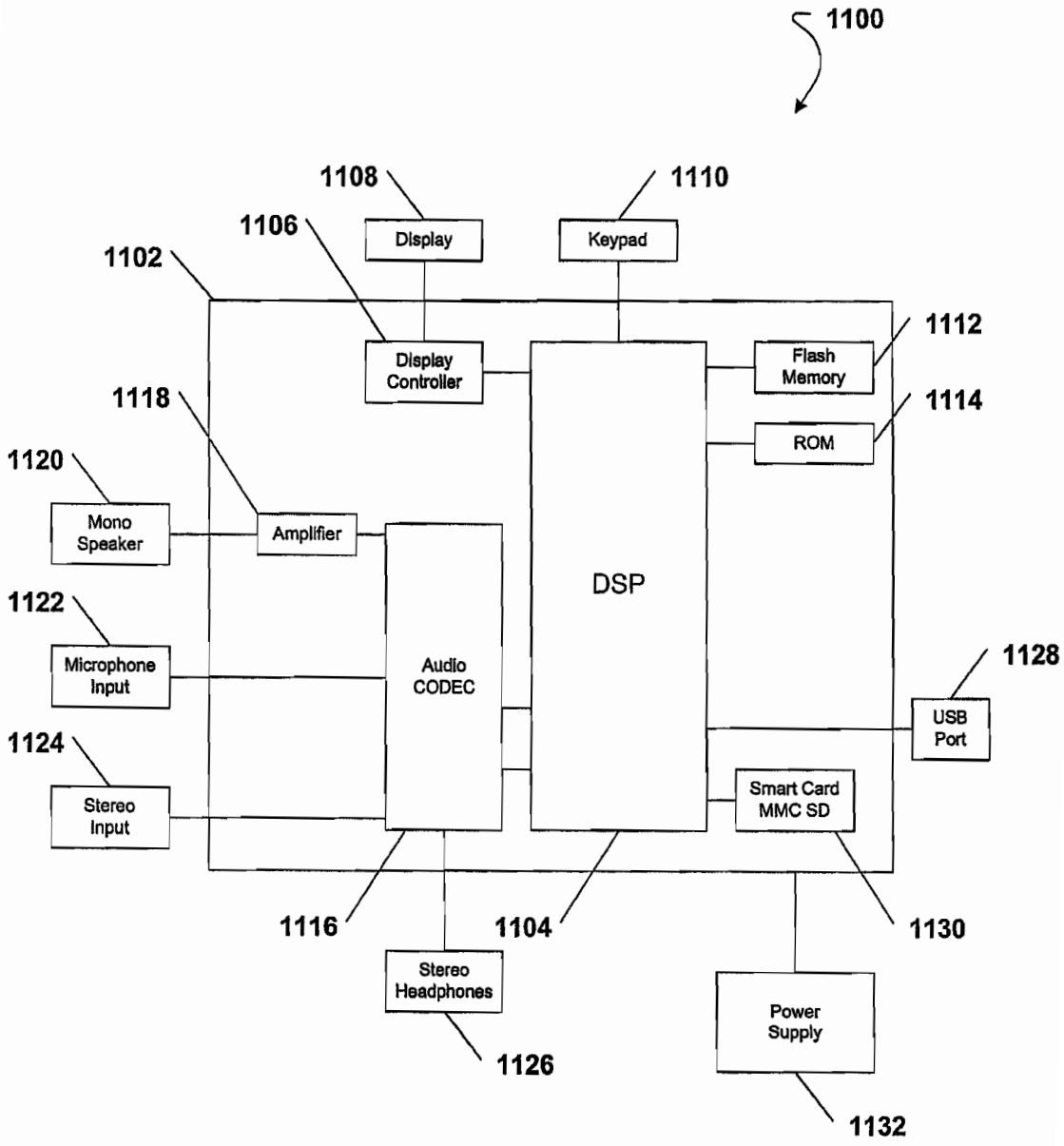

1100
1108
1110
1106
Display
Keypad
1102
1112
Display Controller
Flash Memory
1118
1114
ROM
1120
Mono Speaker
Amplifier
DSP
1122
Microphone Input
Audio CODEC
1128
USB Port
1124
Stereo Input
Smart Card MMC SD
1116
1104
1130
Stereo Headphones
Power Supply
1126
1132

FIG. 11