

FIG. 1a

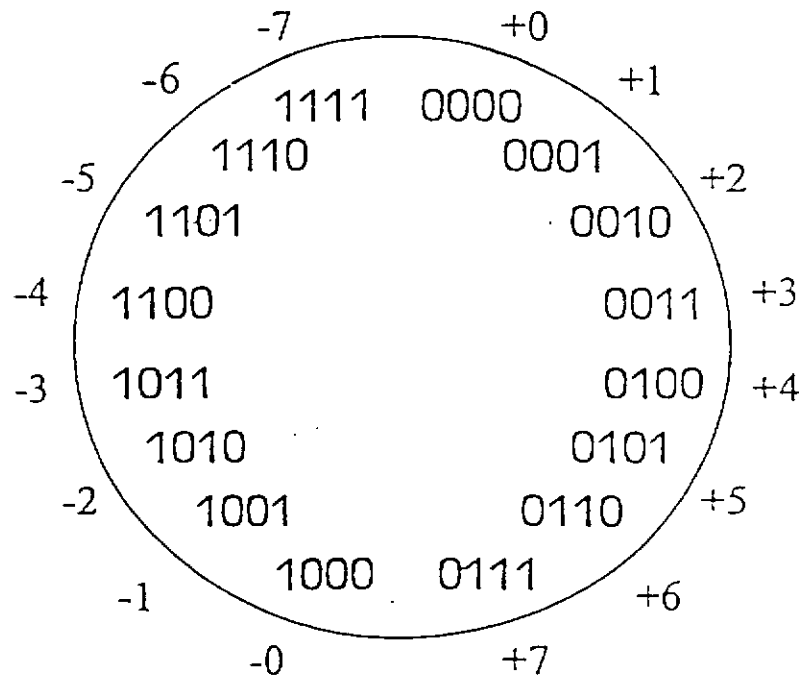
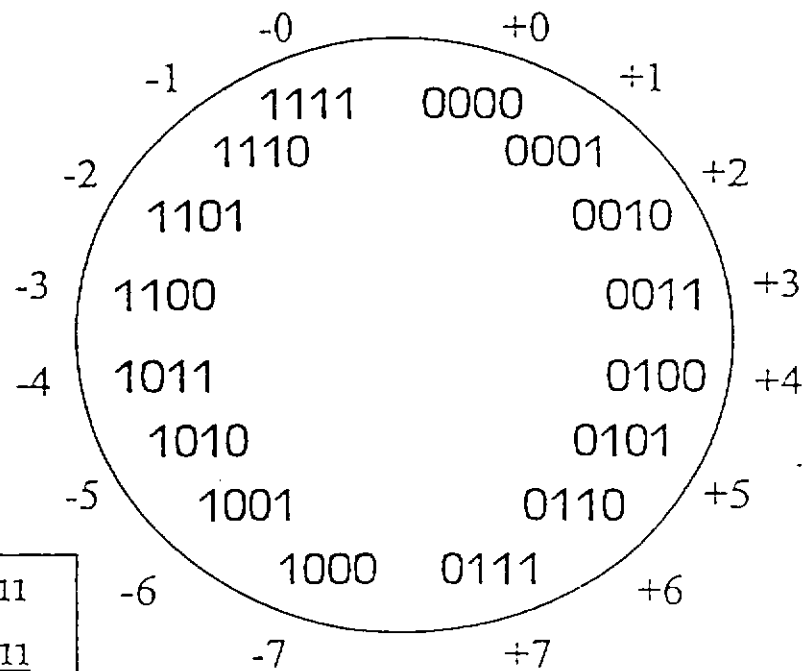


FIG. 1b



$2^4 - 1 =$	15	1111
subtract	7	<u>-0111</u>
to get	-7	1000

120

FIG. 1c

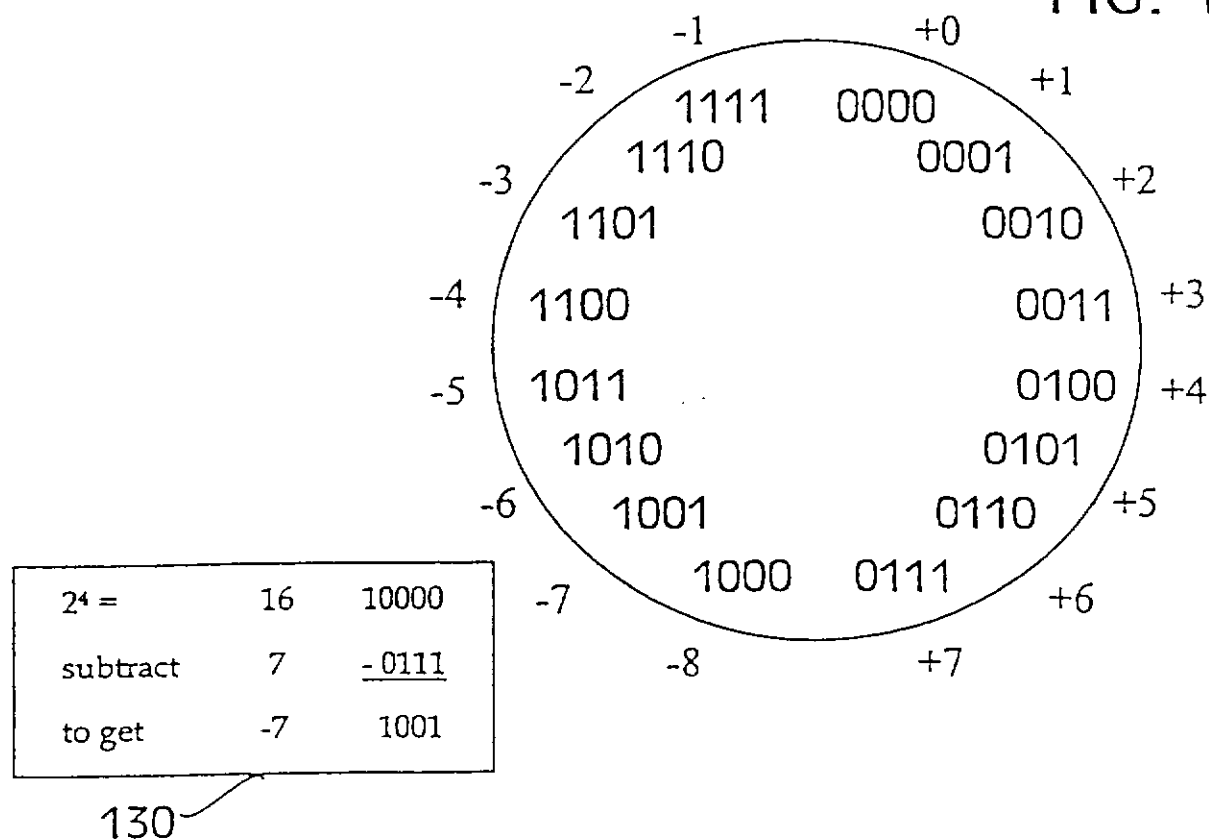


FIG. 2

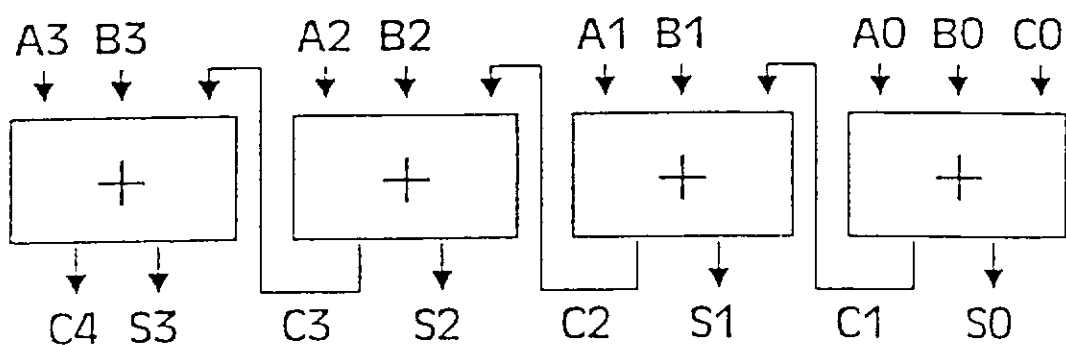


FIG. 3a

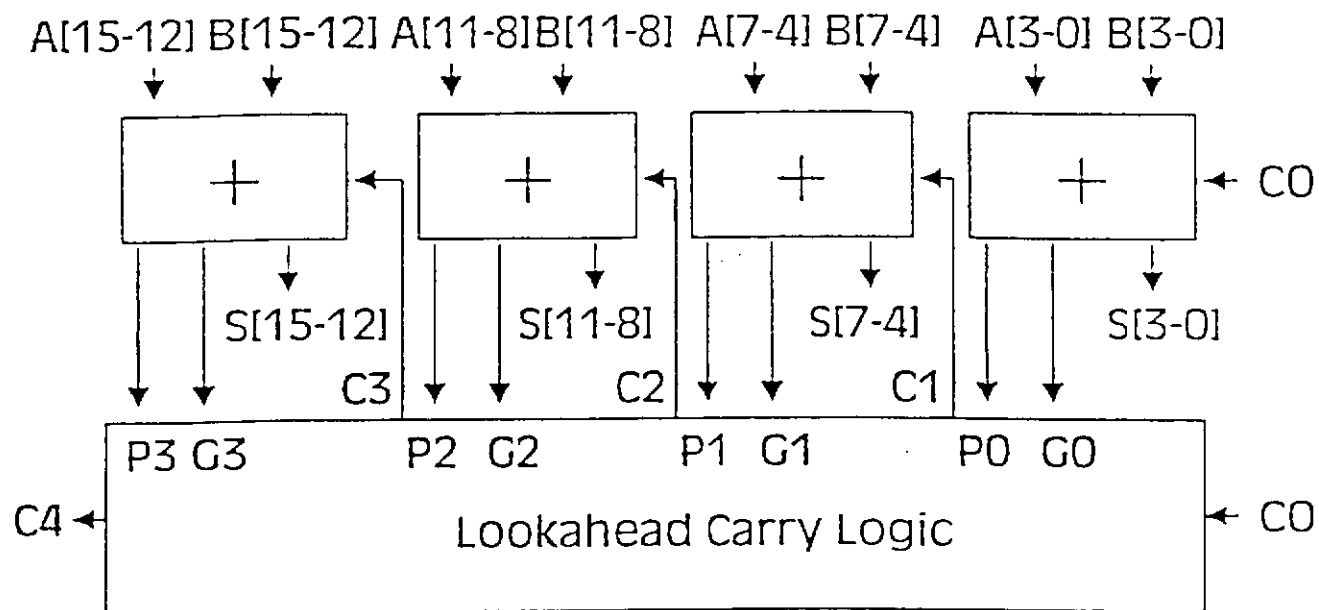
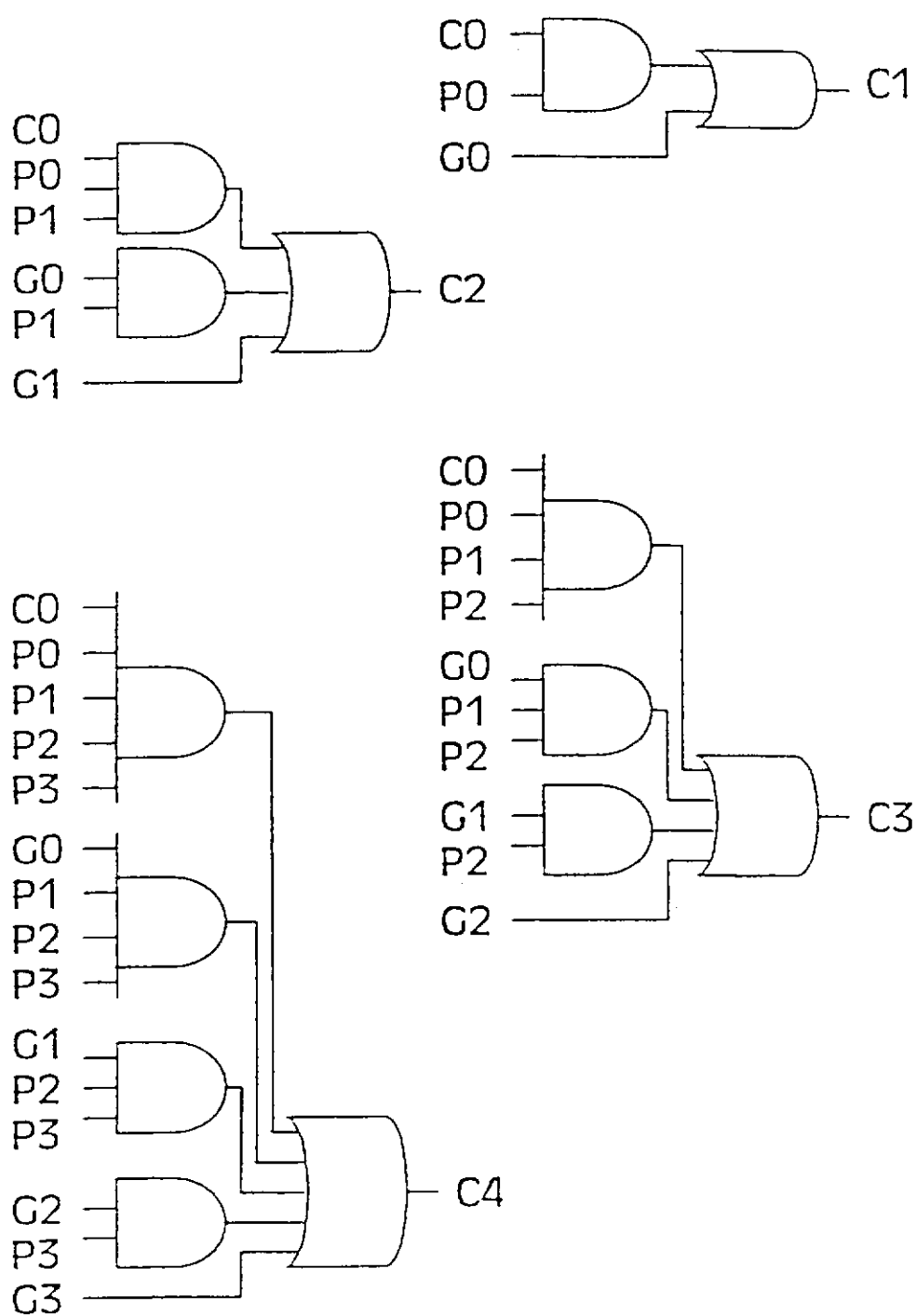
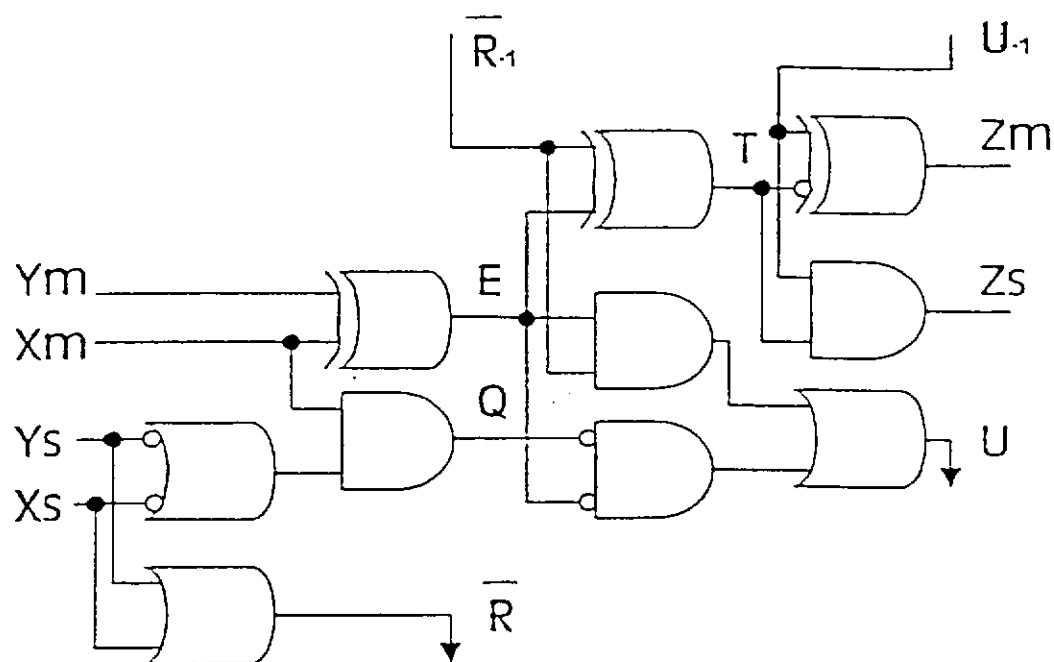


FIG. 3b



PRIOR ART

FIG. 4



PRIOR ART

FIG. 5

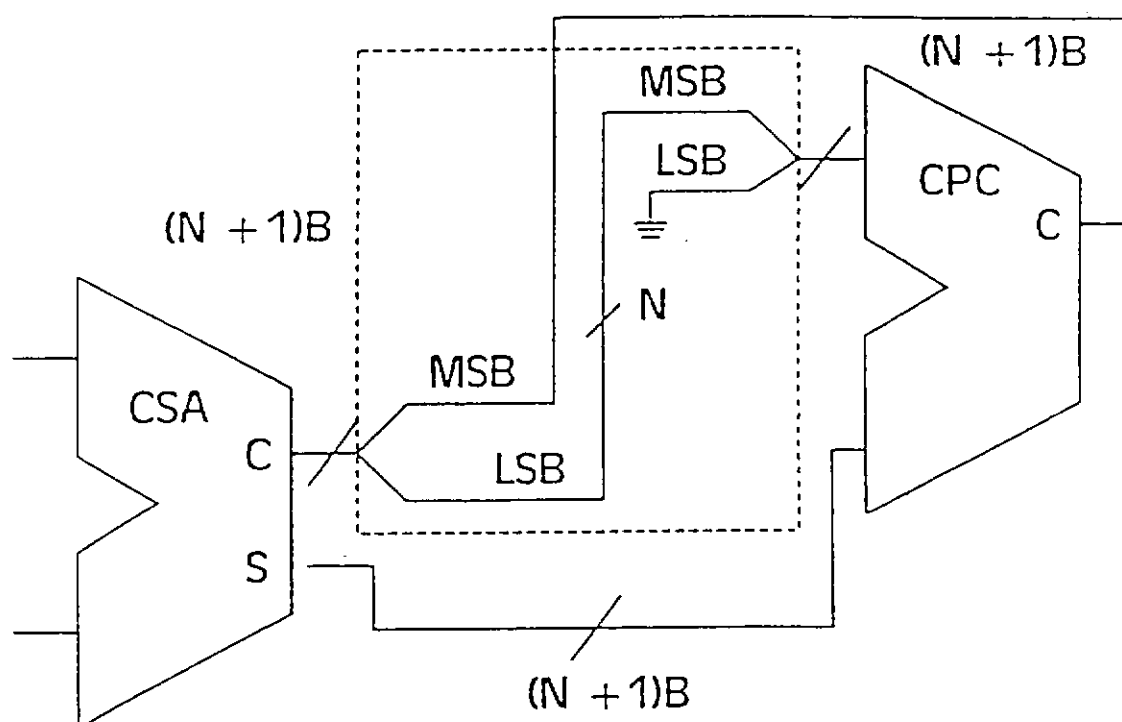
Pair i	0 + 0	1 + 1	-1 + -1	
Pair i - 1	any	any	any	
Output	$C_i = 0$ $U_i = 0$	$C_i = 1$ $U_i = 0$	$C_i = -1$ $U_i = 0$	

Pair i	0 + 1	-1 + 0	-1 + 0	0 + 1
Pair i - 1	no -1	no -1	has -1	has -1
Output	$C_i = 1$ $U_i = -1$	$C_i = 0$ $U_i = -1$	$C_i = -1$ $U_i = 1$	$C_i = 0$ $U_i = 1$

Rules for adding sign-digit numbers:

$$\text{Sum}_i = C_{i-1} + U_i$$

PRIOR ART
FIG. 6



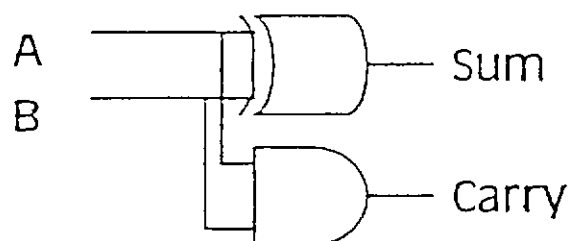


FIG. 7a

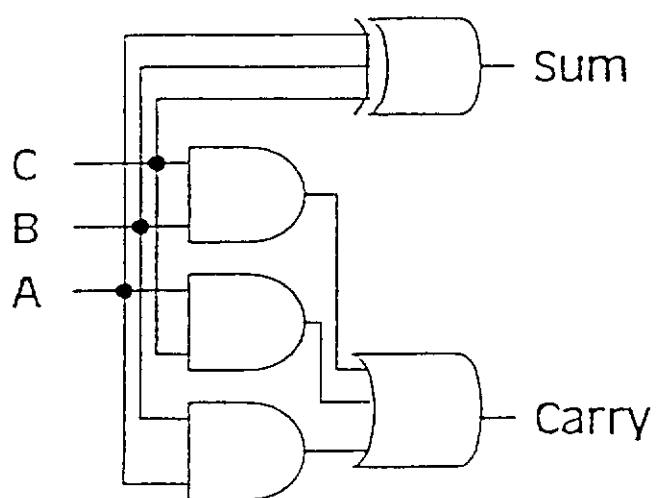
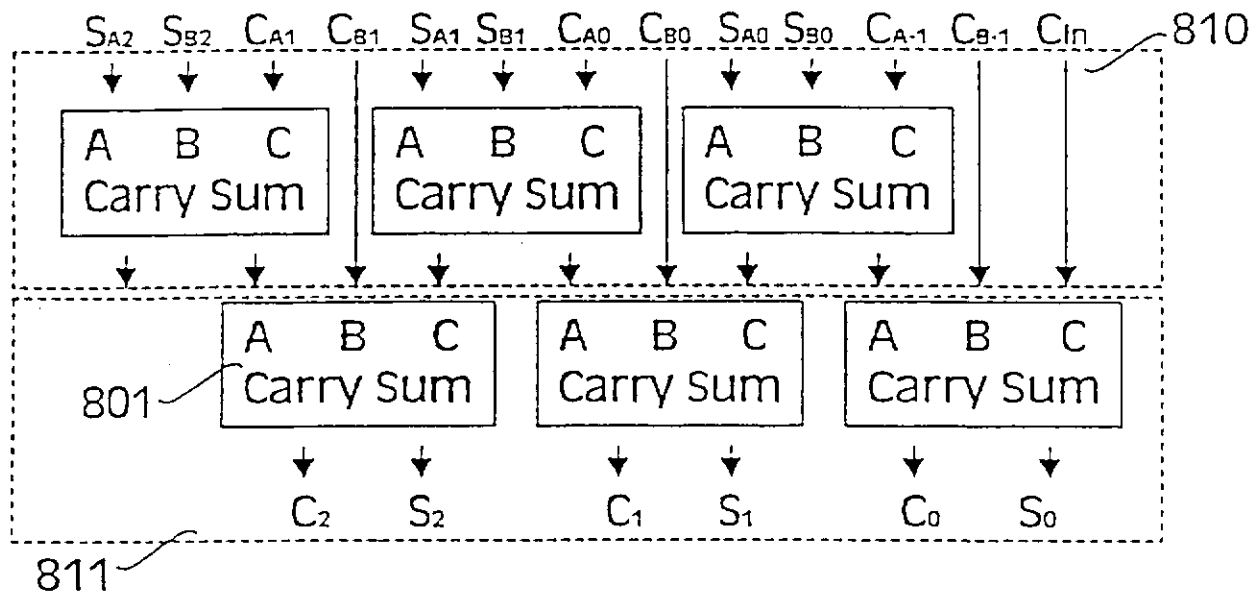


FIG. 7b

FIG. 7c

3:2 Compressor					
ROM			ROM		
Address			Data		
0	0	0	0	0	
0	0	1	0	1	
0	1	0	0	1	
0	1	1	1	0	
1	0	0	0	1	
1	0	1	1	0	
1	1	0	1	0	
1	1	1	1	1	
A B C			Carry Sum		

FIG. 8



	C_2S_2	C_1S_1	C_0S_0
910	00	00	00
911	01	01	10
912	01	10	00
913	00	11	10
914	10	00	00
915	11	01	10
916	11	10	00
917	10	11	10

FIG. 9a

	C_2S_2	C_1S_1	C_0S_0
920	11	11	11
921	10	10	01
922	10	01	11
923	11	00	01
924	01	11	11
925	00	10	01
926	00	01	11
927	01	00	01

FIG. 9b

	C_2S_2	C_1S_1	C_0S_0		$\overline{C_2S_2}$	$\overline{C_1S_1}$	$\overline{C_0S_0}$	
3 =	00	01	01	→	11	10	10	= 2
2 =	00	01	00	→	11	10	11	= 3
1 =	00	00	01	→	11	11	10	= -4
0 =	00	00	00	→	11	11	11	= -3
-1 =	01	01	01	→	10	10	10	= -2
-2 =	01	01	00	→	10	10	11	= -1
-3 =	01	00	01	→	10	11	10	= 0
-4 =	01	00	00	→	10	11	11	= 1

$$N \rightarrow \overline{N} = -N-3(\text{mod } 8)$$

FIG. 10

FIG. 11

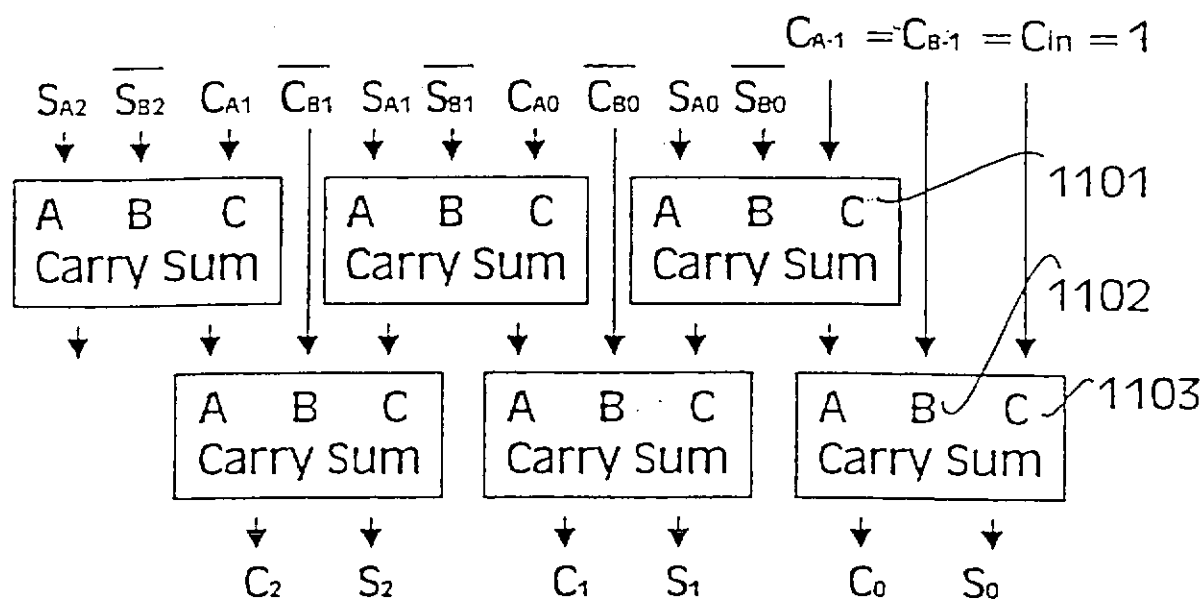


FIG. 12

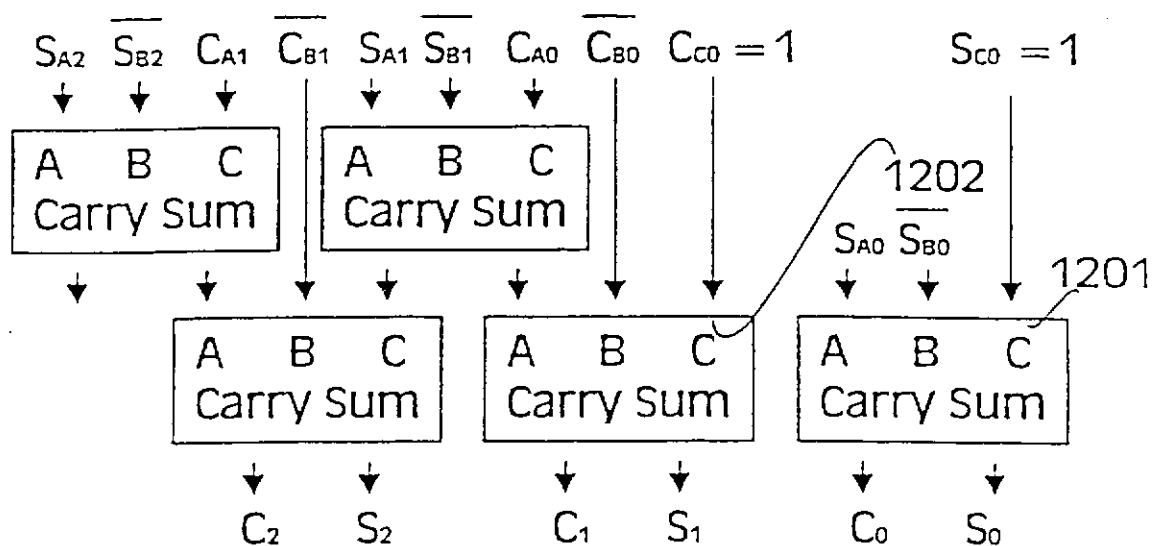


FIG. 13

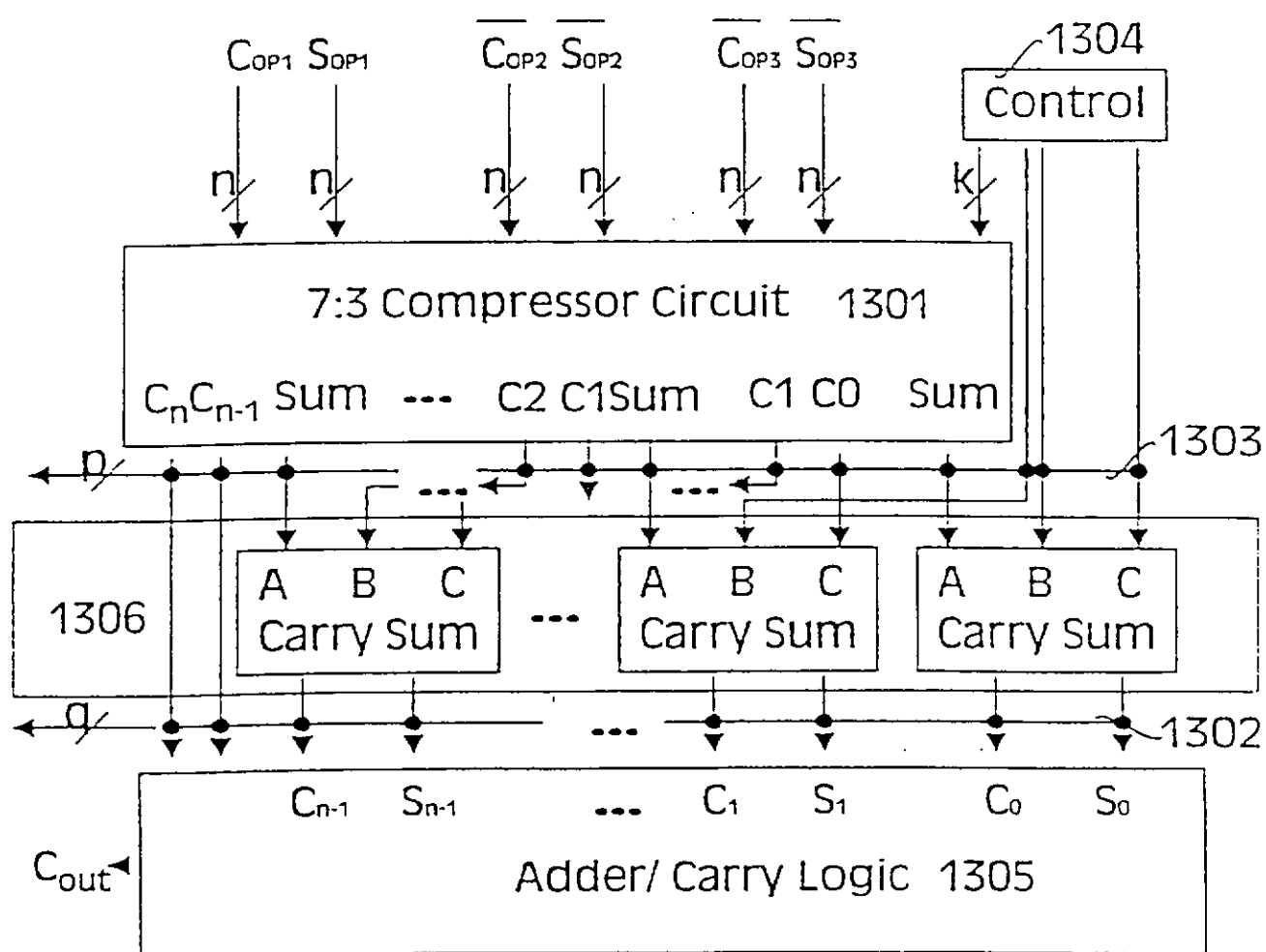


FIG. 14

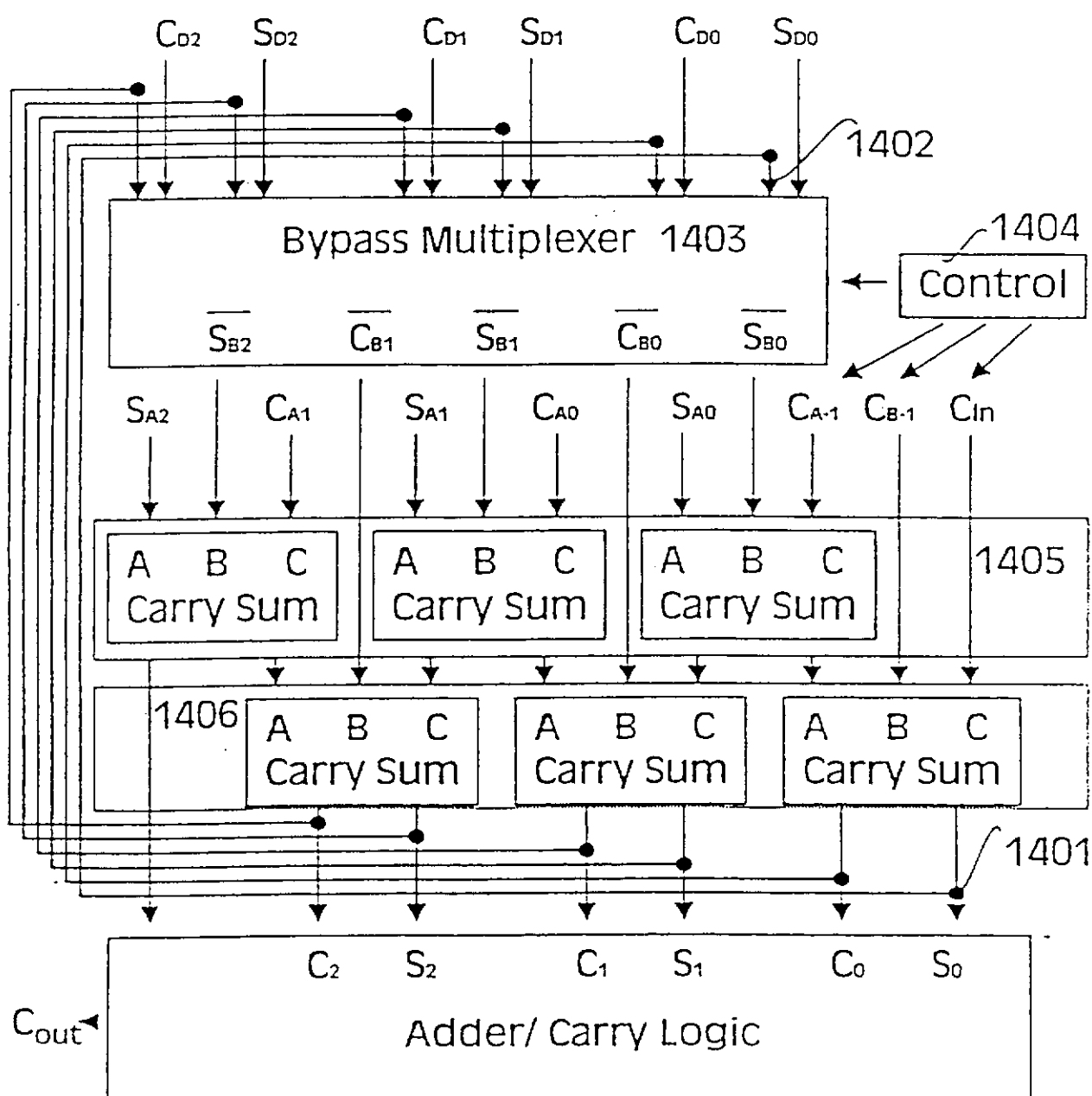


FIG. 15

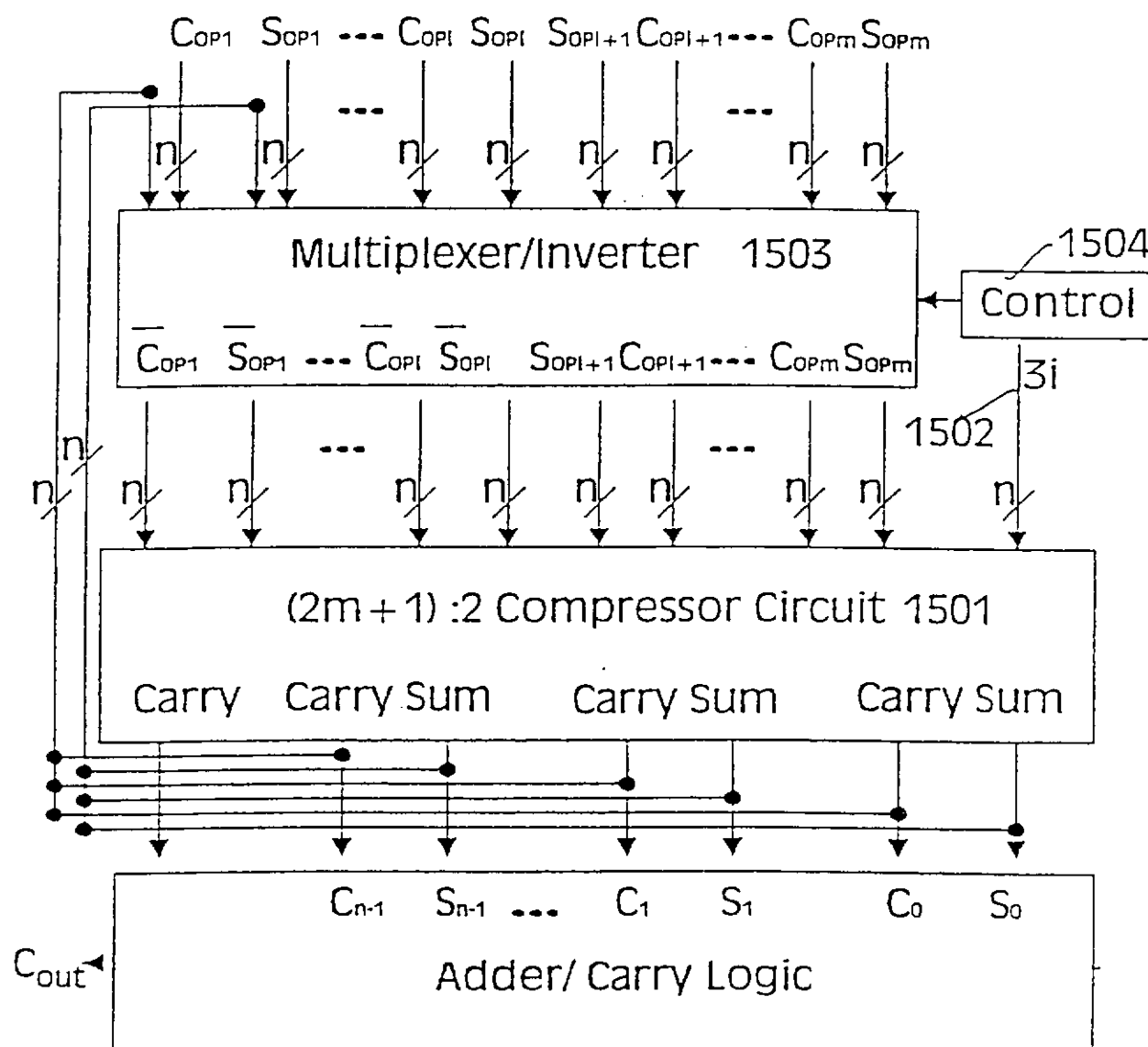


FIG. 16a

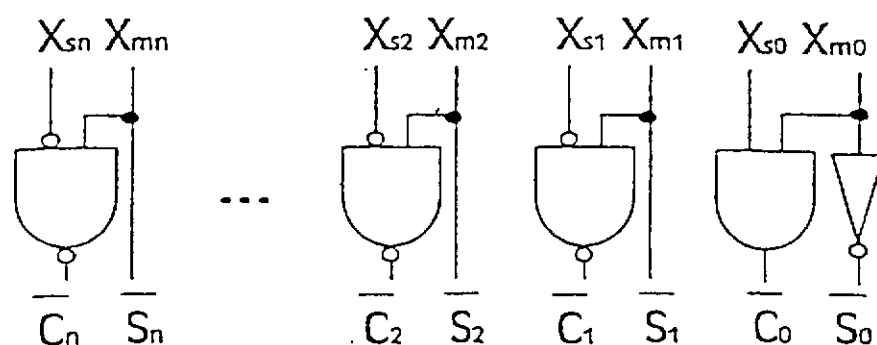


FIG. 16b

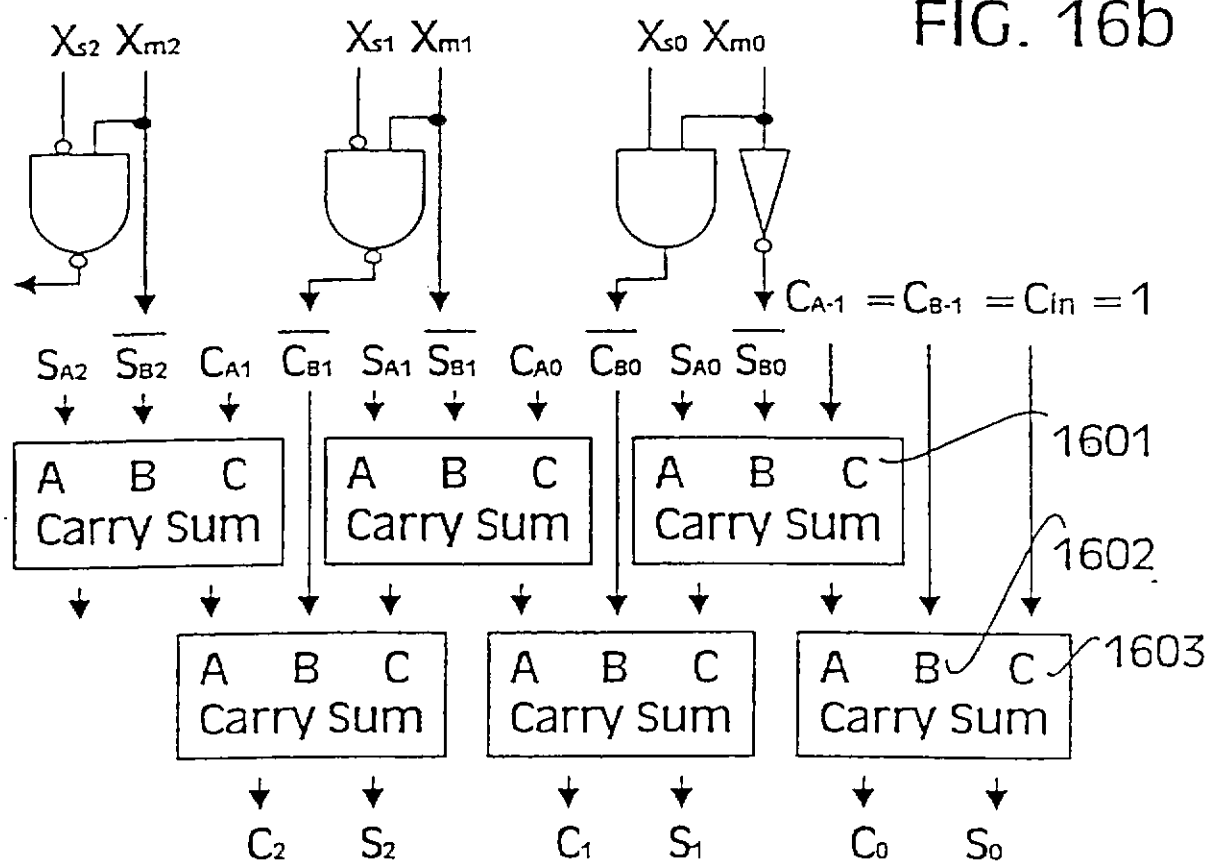
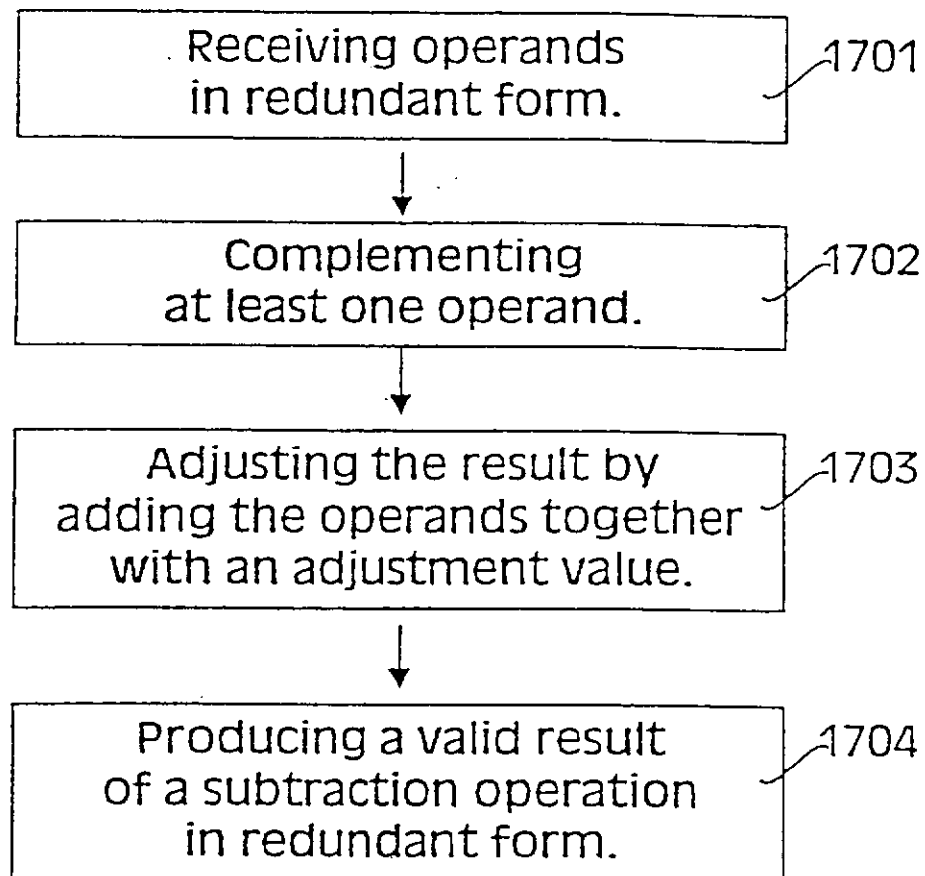


FIG. 17



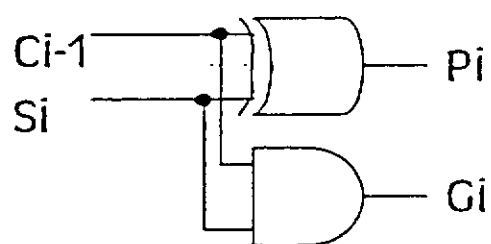
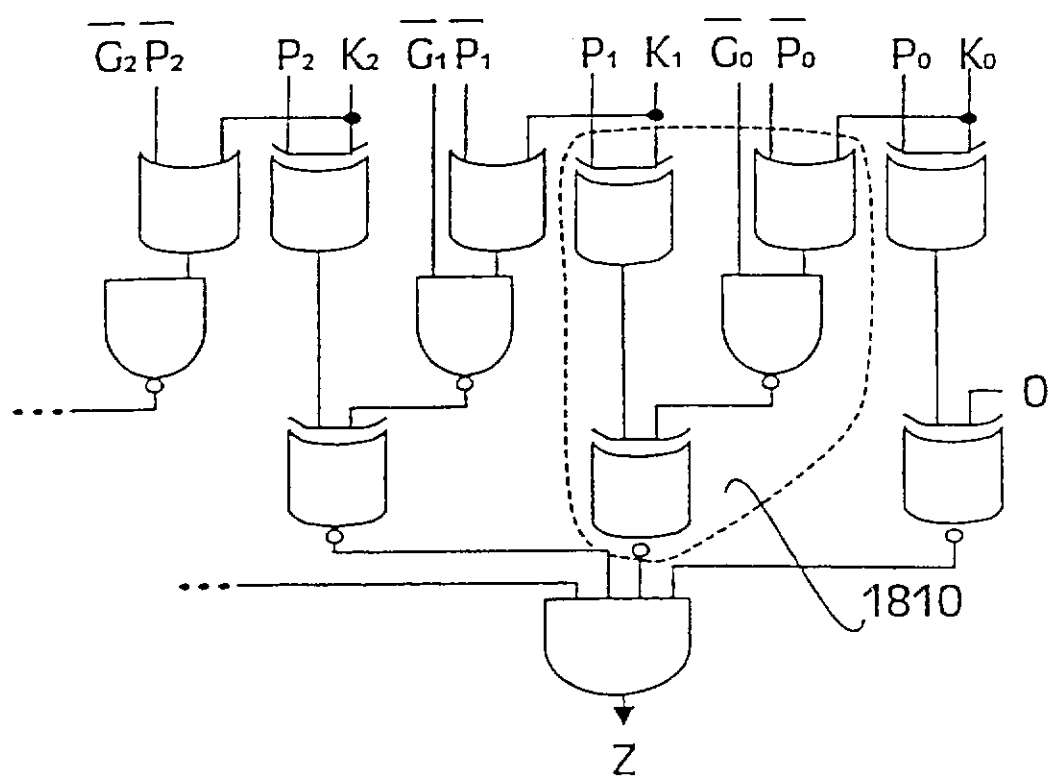


FIG. 18b



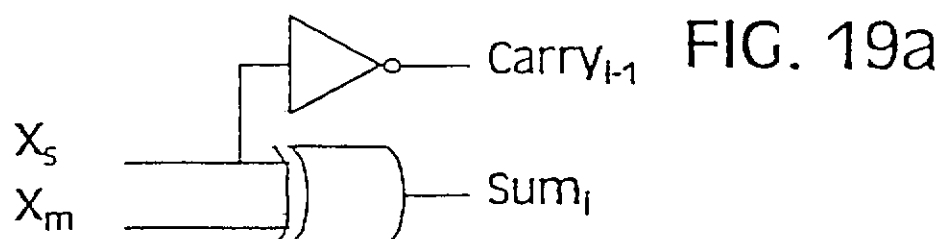


FIG. 19b

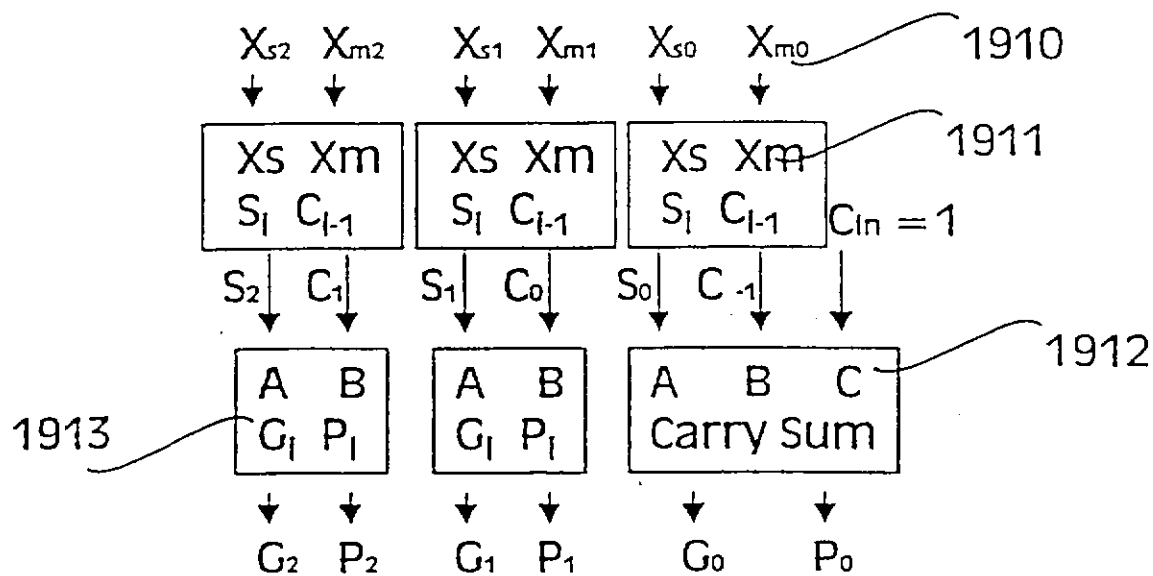


FIG. 20

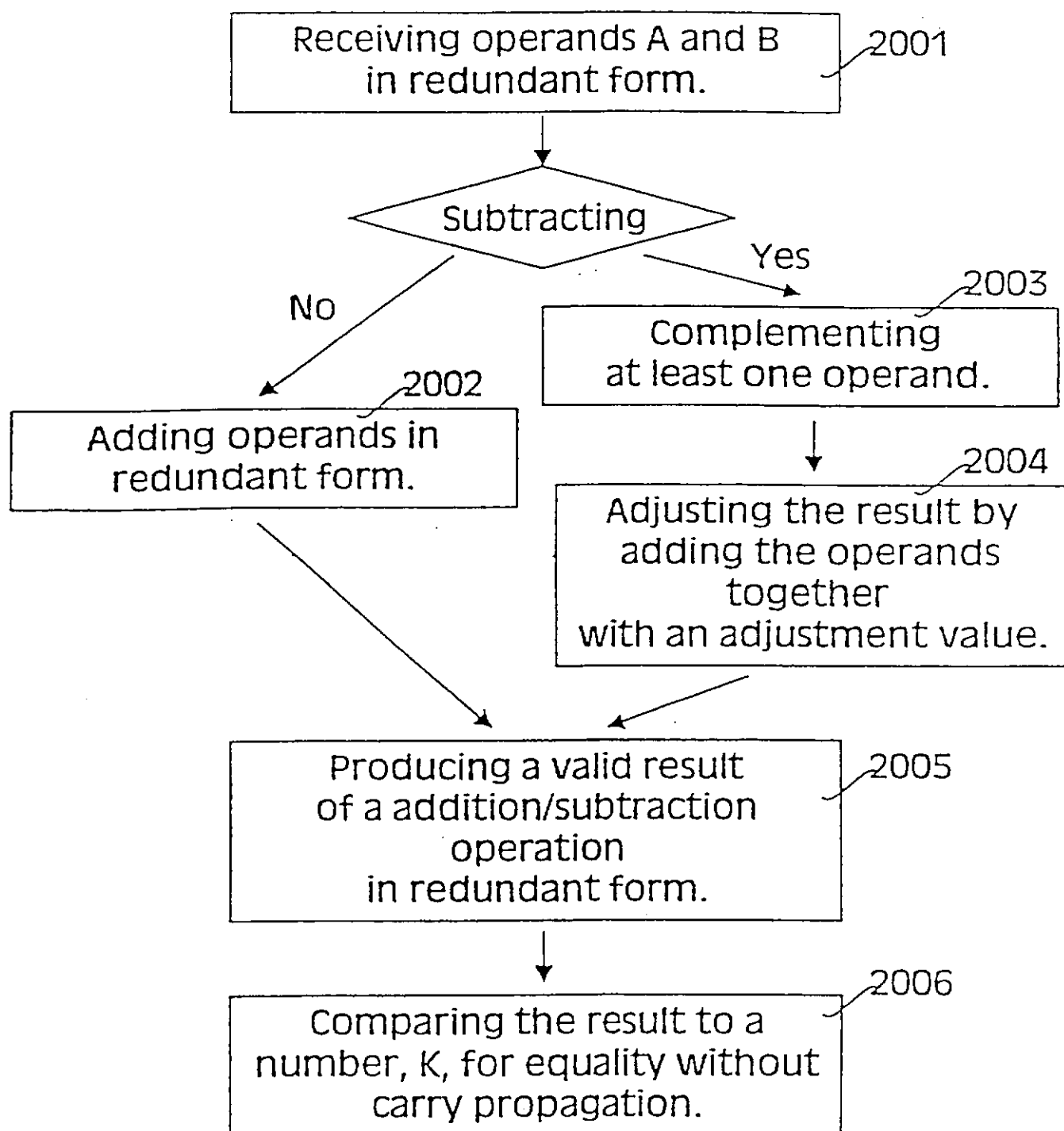


FIG. 21a

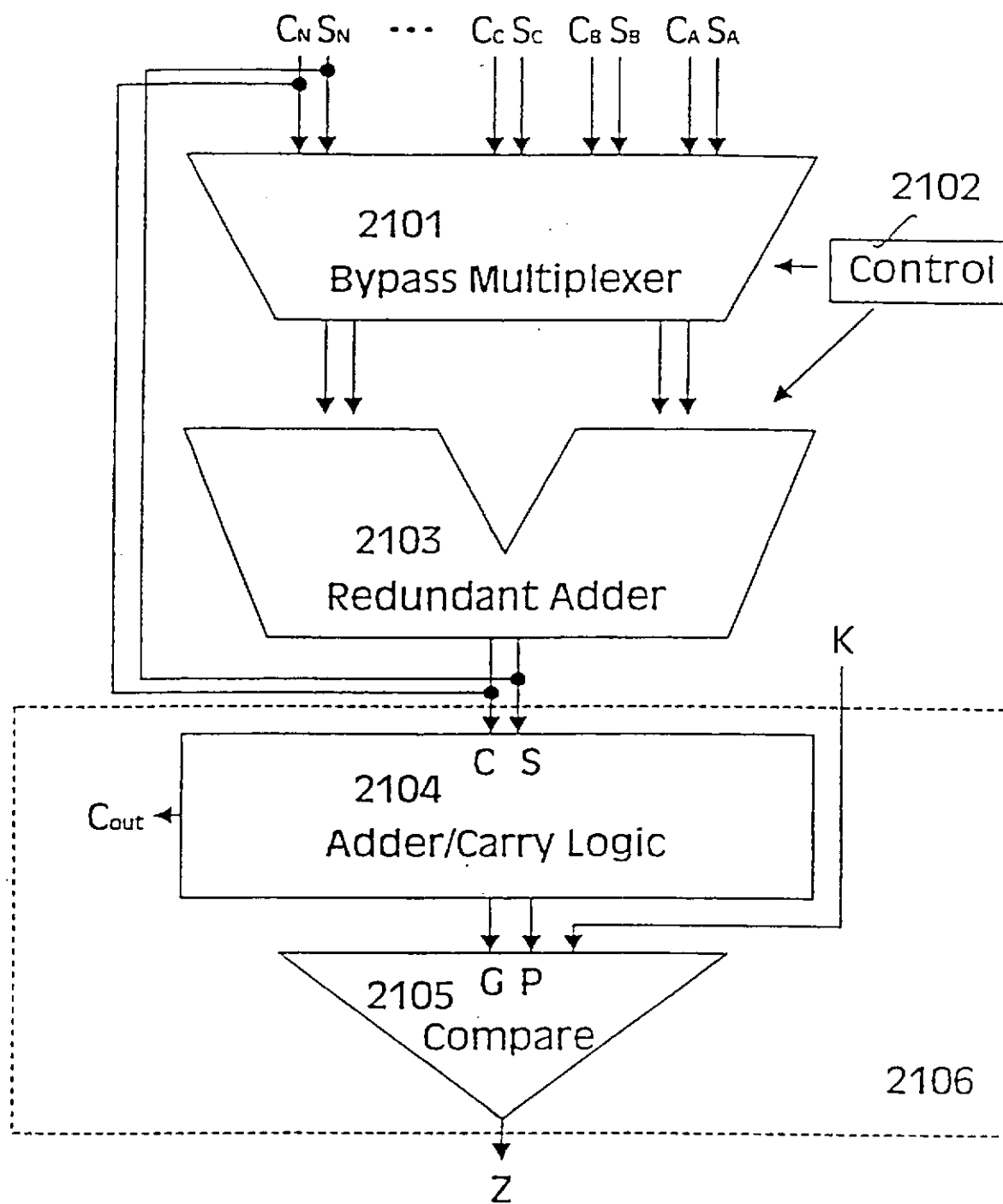


FIG. 21b

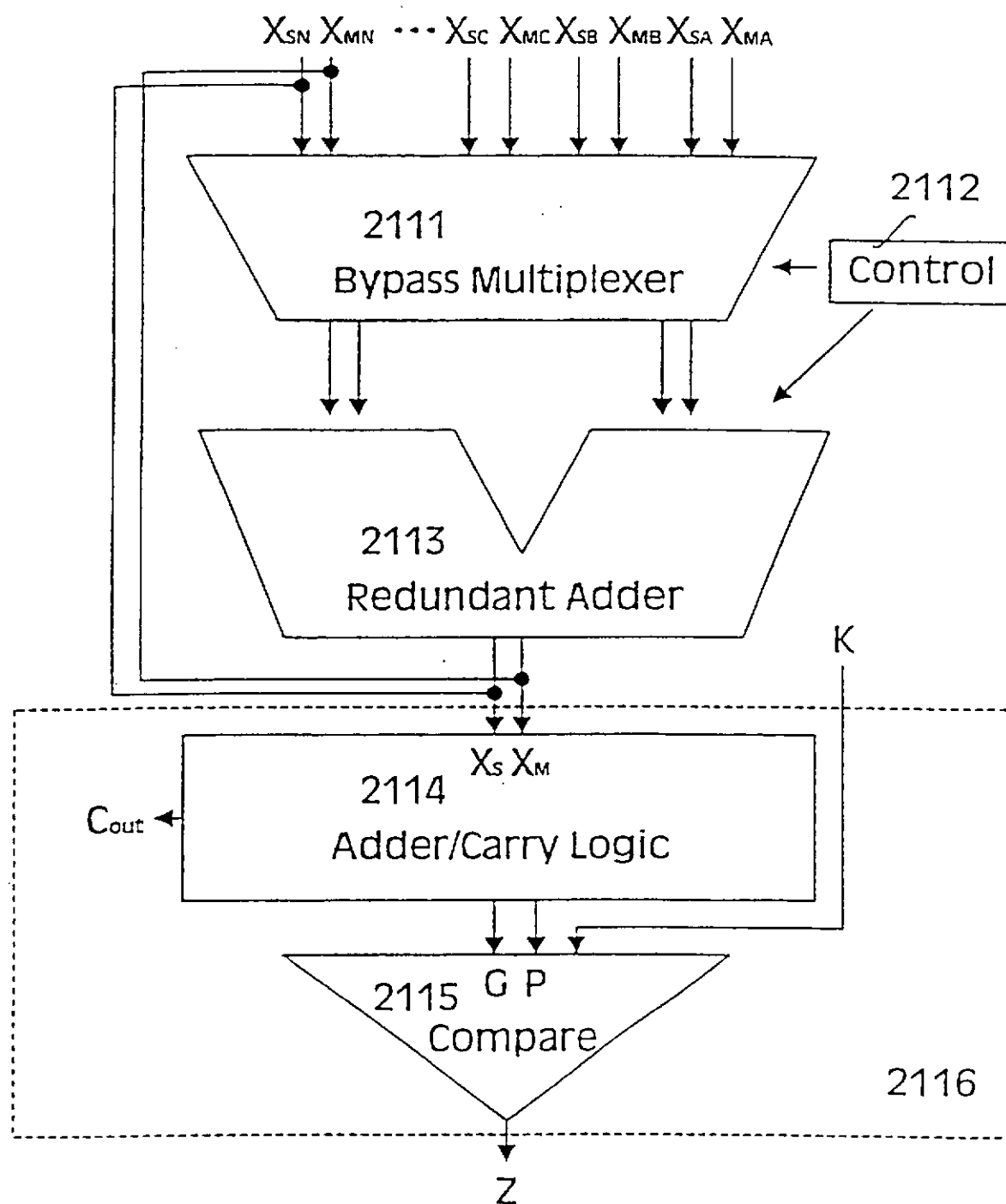


FIG. 22

