

(19)
(12)

(KR)
(B1)

(51) 。 Int. Cl.⁶
H04N 5/225

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(11)
(24)

2004 03 31
10-0414322
2003 12 23

(21) 10-1997-0000585
(22) 1997 01 11

(65)
(43)

10-1997-0060873
1997 08 12

(30) 96-003647 1996 01 12 (JP)

(73) 가 가
2 5 5
가 가 가 가 6 7 35

(72) 3-1-6
1-21-30
5-22-6-205
1-13-304-1004

가 가 6 7-35 가 가
가 가 가 6 7-35 가 가
가 가 가 6 7-35 가 가
가 가 가 6 7-35 가 가

(74)

:

(54)

CCD (imager) 가 OB(optical black) (clamp)
 OB 가 , 1993 9
 21 5-244490 [H04N 5/243, 5/16, 5/335, 9/04, 9/72]
 , CCD 가 , CCD OB (oat)
 가 (black level deviation) 가 , 가 ,
 가 , 4 가 , 1998 10 18
 63-250287 [H04N 5/225, 5/30, 5/335, 3/00], 1996 8 11 7-2
 12657 [H04N 5/335, H01L 27/12], 1994 1 28 08/188,543 [H04N 5/335,
 H01L 27/12] , CCD
 (swept-out). OB CCD
 , ,
 , 4 OB
 , , CCD 가
 1 , 2 , 2
 , 1 1 , 2 , 2 A
 /D , 1 2 2 , CCD A/D
 , A/D , 1 , A/D
 가 가 , 가 가 (zero-clipping)
 ,
 CCD , 2 (double) 가
 (AGC) , 가 , , AGC A/D
 1 4 (quadruplication) 2 (back en
 d) , 1 1 OB 1
 , 2 (front end) OB
 1 2 A/D () (recursive digital filter)
 , A/D , 가 , 가
 , A/D , 1 , 1 가 , 가
 가 , 가 가 , 가
 가 , 가 , 가
 , OB 0 , 가 가
 , OB 1 2 , 가
 2 , A/D 가 , OB 0 ,
 가

1 N 1 (10) CCD (12) CCD (12)
 CCD(16) (14) 2 CCD(16) CCD(20)
 (24) CCD(20) (18) (24) (22)
 (sweep-out) (sweeping-out) 4 (26)
 가, CCD (12) 18(a) (24) (complementary colors) 가
 CCD(16) (odd field) 18(b) (14) (even field)
 (18c) , CCD (12) '480' ,
 CCD (12) '240' 가, 18(c)
 18(d) 6-46431

4) (1) 1 , CCD (12) 3 (18) CCD(16) (1
) , CCD(16) , 가 , CCD(16)
 , CCD(20) ()
 , 4 , 1 4 (28) 2 가 ,
 4 (A) 1/4

가, 2 , CCD(20) CCD (12) , CCD
 (12) , 4 (A)
 1/4 4
 4 (A) 1/4 4
 5 1/4 CCD(16) 1/2
 CCD(16) 1/2 CCD(20) 1/4
 120 CCD(20) 1/2 CCD(20) ,
 CCD(20) 1 1/2 2 1/2 CCD(16)
 (26) , 가 , (26) (24)
) , 4 , 1 1/2 , CCD(20) , 2 1/2
 (24) 4 (A)
 1/2 8 가,

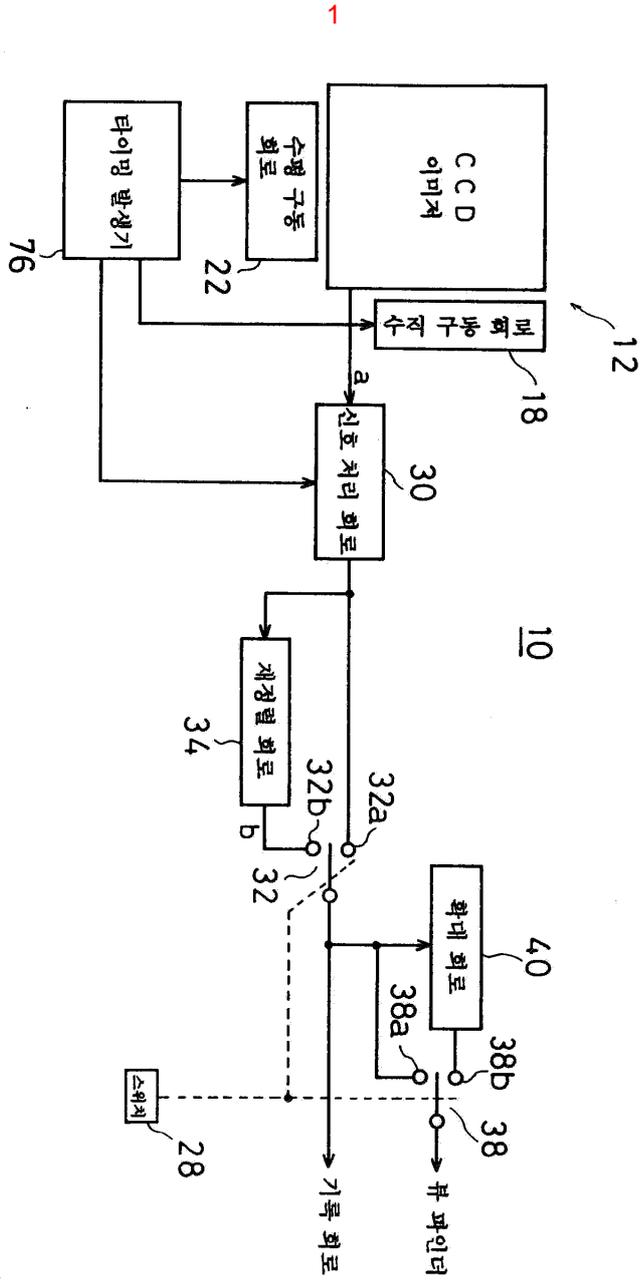
4 , CCD (12) 4 (28)가 , 4 (28)가
 4 (30) 가 , CCD (12) 가 1 가
 (30) (AGC), , A/D ,
 (30) 가 (32) 가 (34)
 (32) (32b) 가 (32) 4 (28)가 (32) 4 (28)가
 (32a) , 4 (28)가 (32b) , (30)
 4 (28)가 (32) (32) (34)
 (34) 4 (28)가 (32)

a1, a2, b1, b2, c1, c2, d1 d2 (36)
 a1, a2, b1, b2, c1, c2, d1 d2 1/8 가 , 4 (B)
 8 A1, A2, B1, B2, C1, C2, D1 D2
 2 , A1 A2 7 We-a1 We-a
 1 1/4 1/2 a1 a2 B1 B2
 b2 We-b1 We-b2 2 1/4 1/2 b1
 C1, C2, D1 D2 We-c1, We-c2, We-d1 We-

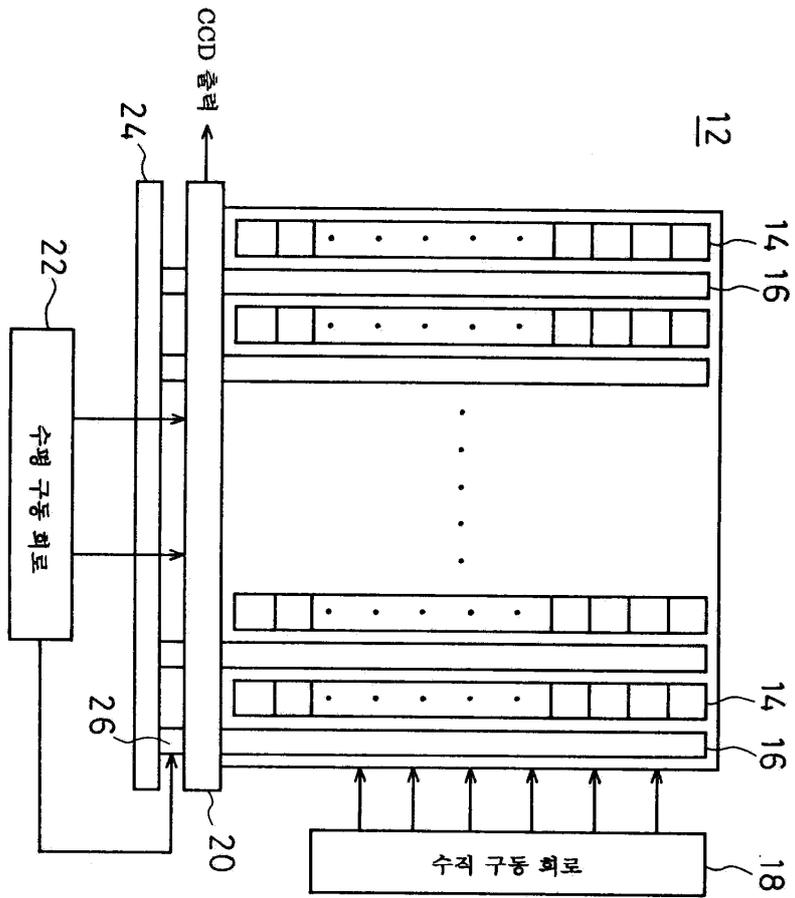
d2 , c1, c2, d1 d2 , 1 1/2
 , a1, b1, a2 b2 Re-a1, Re-a2, Re-b1 Re-b2 8 , a1, b1, a2 b2
 d2 , Re-c1, Re-c2, Re-d1 Re-d2가 2 1/2 가 , c1, d1, c2
 , c1, d1, c2 d2 가 , 4 (C)
 1 (32) (34) 가 () (38)
 (38a) (zooming-up) (40) (38) (38b) (40)
 4 (32) (32) 2 (38)
 (28)가 (32) 4 (28) (32) 4 (38)
 4 (28)가 (view finder;) (40)
 , 1 4 2
 9 (30) 2 ()
 AGC CCD (42) AGC (42) AGC ()
 4) A/D (46) AGC 가 (48) A/D CPU(4
 46) CPU(44) 가 , AGC (42)
 50) 가 (48) CPU(44) 가 , AGC (42)
 , OB , (50) 10 OB
 11 , (50) 11 ()
) 가 (52) (50) A/D (46) 8 ()
 D (56) 가 (54) (52) (62) (52) (58) (56) 12 13 (60) AN
 , VSET OB AND OB OB 1 (58 60) 12
 13 HSET , 2 OB OB 2
 HSET 12 13 OB OB
 DD/EVEN , ODD/EVEN가 (58) ODD/EVEN (62) O
 가 (60) ODD/EVEN 12 13 ODD/EVEN
 , 가 (54) 가 (262) 가 (262) (6)
 4) (66) 가 (54) 가 (64) 가 (64) (64)
 (58 60) , (66) (64) (66) (70)
 (72) 가 (262) 가 (54) 가 , (64)
 (68) 가 1/16 , (70) (72)
 (64) CLKODD (66) CLKEVEN
 12 13 , CLKODD (70) (7)
 CLKEVEN 2) CLKHD (70) (74) (74)
 , (70) (72) (74) ODD/EVEN가 (74)
 (62) (70) , ODD/EVEN가 (72)
 12 13 1 (76) (7)
 6) 14 (78) (78) (80) CLK (80) HD ,
 10 15 , OB (2) OB (1)
)

(78) ROM
 CLK HD 13 (80) OB ROM 8 12 OB
 8) (78) (76) (80) 4 (28) (50) (7
 (78) 8 (80) 1 (50)
 (shifted-up), VSET가 12 가 2 (52) 1 2 가 'x2' 가 1 (56)
 가 2 (64) (66) (54) 1 2 (64)
 2 (58) 12 (64) (58) (62) ODD/EVEN (60) HSET
 (48) (62) 2 ODD/EVEN AND (56) AND (56) 1
 2 가 VSET가 2 (54) 가 (54) 1 2 (52) 가 AND
 (56) 가 2 (54) 가 가 (64) 2 가 AND 2
 16 가 (64) 1/16 16 (64) 1 8
 (70) (74) OB (10) 1 8 (70)
 2 'x1' (52) 'x1' 가 (62) (58 60) 1 'x1/2' ,
 가 가 (74) (262), (58, 60 62) AND (56) 가 1/16 (54)
 가 가 'k' 가 (weighting) 'K'가 '1/2' , '0 < k < 1'
 'k' 가 OB 2 '1/k'
 (74)가 ODD/EVEN 가 (62)가 (60)
 (72) 12
 2 (50) 2 2
 1 (50) 9 1 (82)
 가 (50) , A/D (46) (82) 가 가 (48)
 1 (82) OR (84)
 1 (82) (86) 2 (88) (subtrahend) 2 (88) UPU(44) 가 (48)
 16 17 (88) (A) 17 (A) 가 2 (88)
) A/D (46) 16 (A) 17 (A) CCD 가 CCD
 , 16 (A) 17 (A) 가

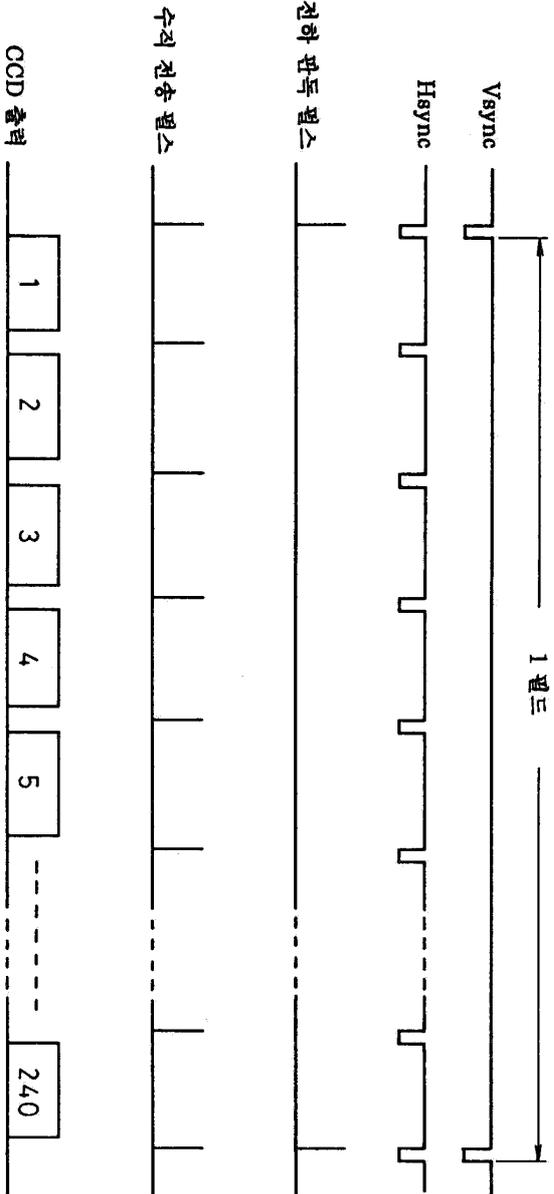
가 , (84) 16 (A) (82) 가 . 가 0
(80) , 16 (C) 가 가 , 0
, 가 (48) 가 , (84) 17 (B)
17 (C) 가 , 2 (80) (80) (80) 가
, 18 (D) 0 , 가
, AGC (42) , ,
CCD (12) 가 , ,
2 480 가 1
21 CCD 가 2 CCD 20 CCD (11
2)가 가 2 CCD (112) 22 CCD(20a 20b) , CCD (11
, (14) , CCD (112) 22 CCD(16) , 2
, CCD(20a 20b) 가 CCD(16) , 2
, 1, 3, 5,... CCD(20a 20b)
20d) CCD(20a) , 2, 4, 6 , 2 1 CCD(
1 2 23 (30a 30b) 9 (30) 가 , 1
2 (30a 30b) 24 (100) (132 232) (100)
(100) 24 (118) , 1H (116) (132) 1 (118)
D3 (232) 2 D0 D2 D1 (118) (118)
, 1H (117) 2 D0 (118) , 1H (116 177) 1H(
) 1 2 가, 1H (116 117) 1H
CCD(20a 20b) 가 D3 4 D0
D3 (118) 3 L0 D2 D1 L2 D3 L0
L2 (118) , L0 L2 (132) (130) (130) 가 , ()
(131) (130 131) (132) 가 , 3 3
130 131) 9 (132) 2 3 3
, R , G B (132) 가 25 , D1 D
3 25(c) , D0 25(b) D2 , , D1 D
25(d) , 25(e) 가, 25(a)
25 가 , 25(b) 25(e) , 가 가 , G
25(b) , G , 2 R , 2 R R
. 2 B , 25(c) , R G , 2 B B
g) , R , G B 가 2 . R , G B (interpolating lackin
(



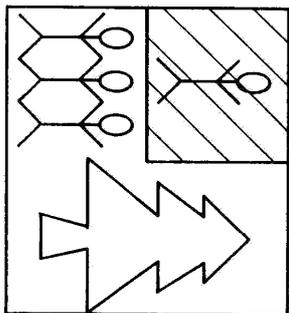
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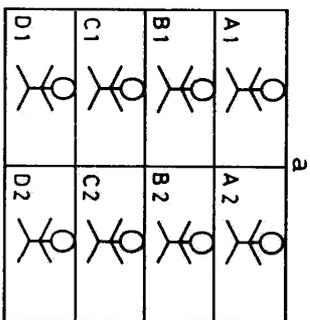
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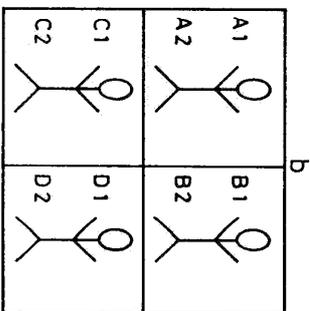
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(A)

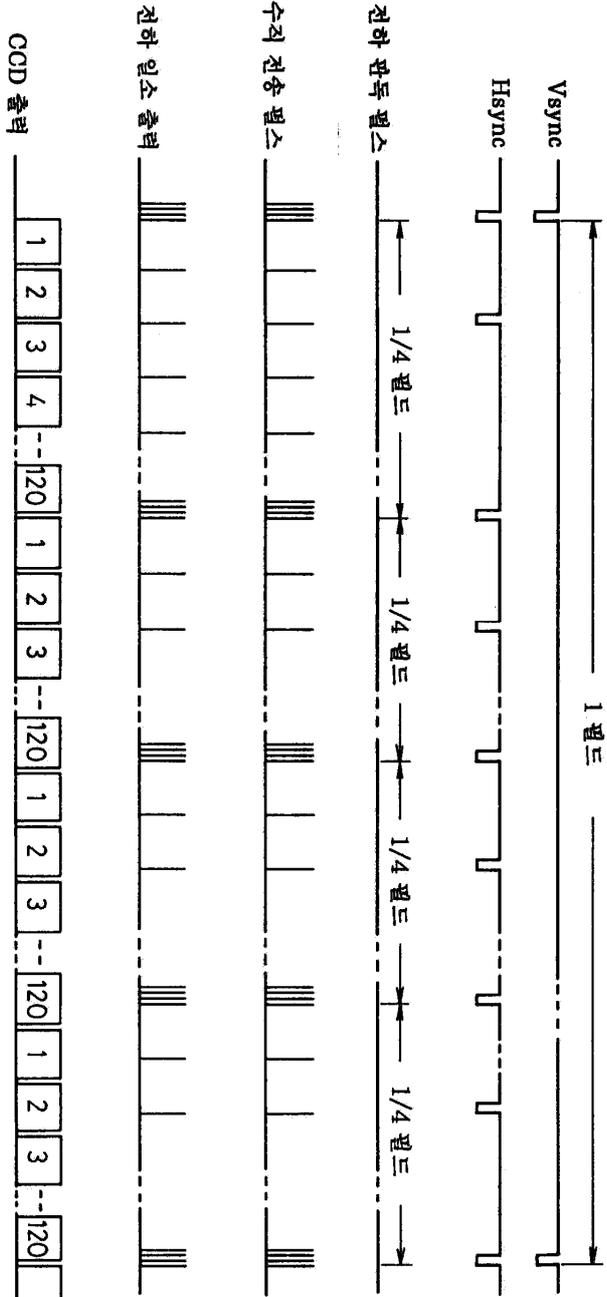


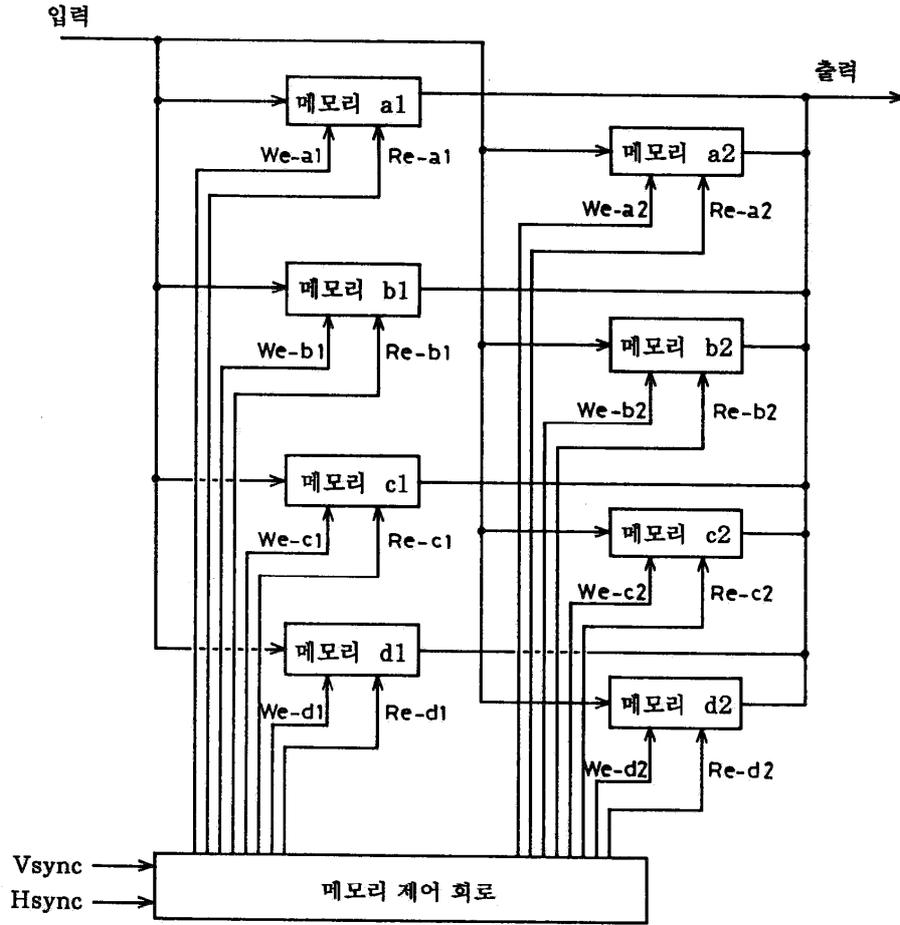
(B)

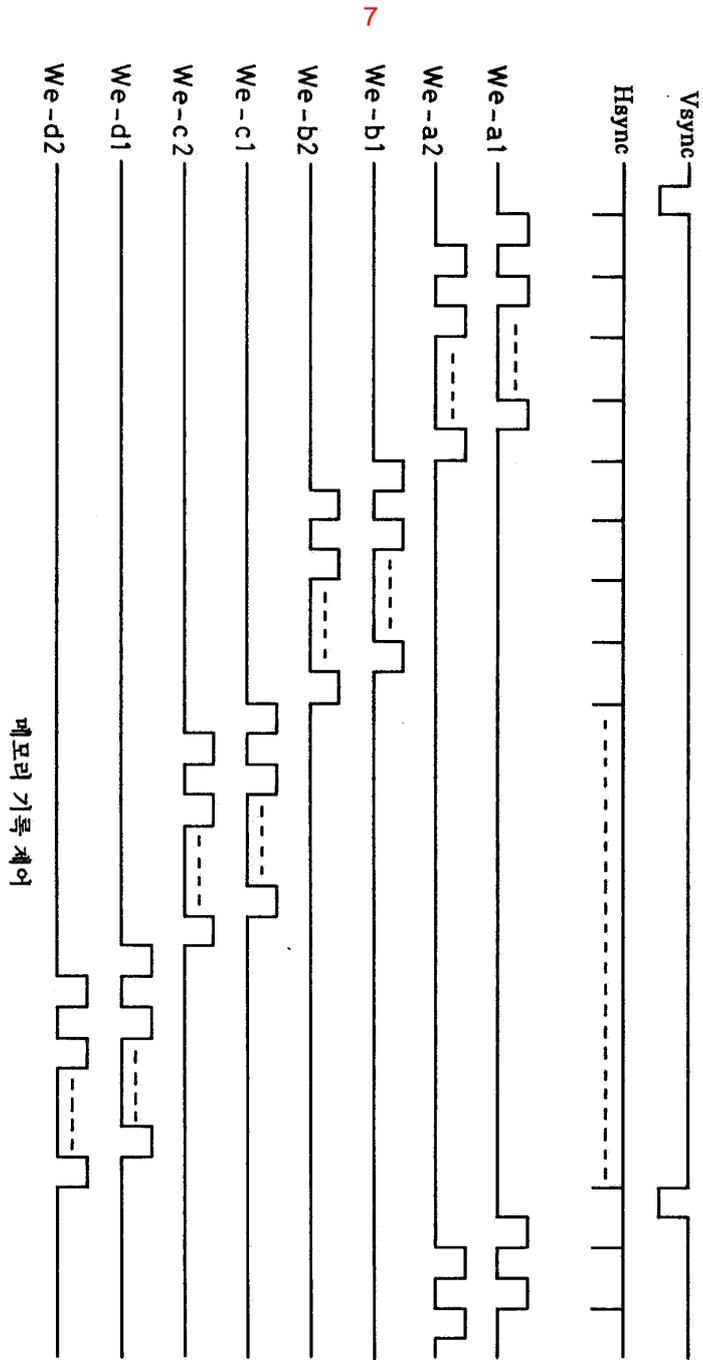


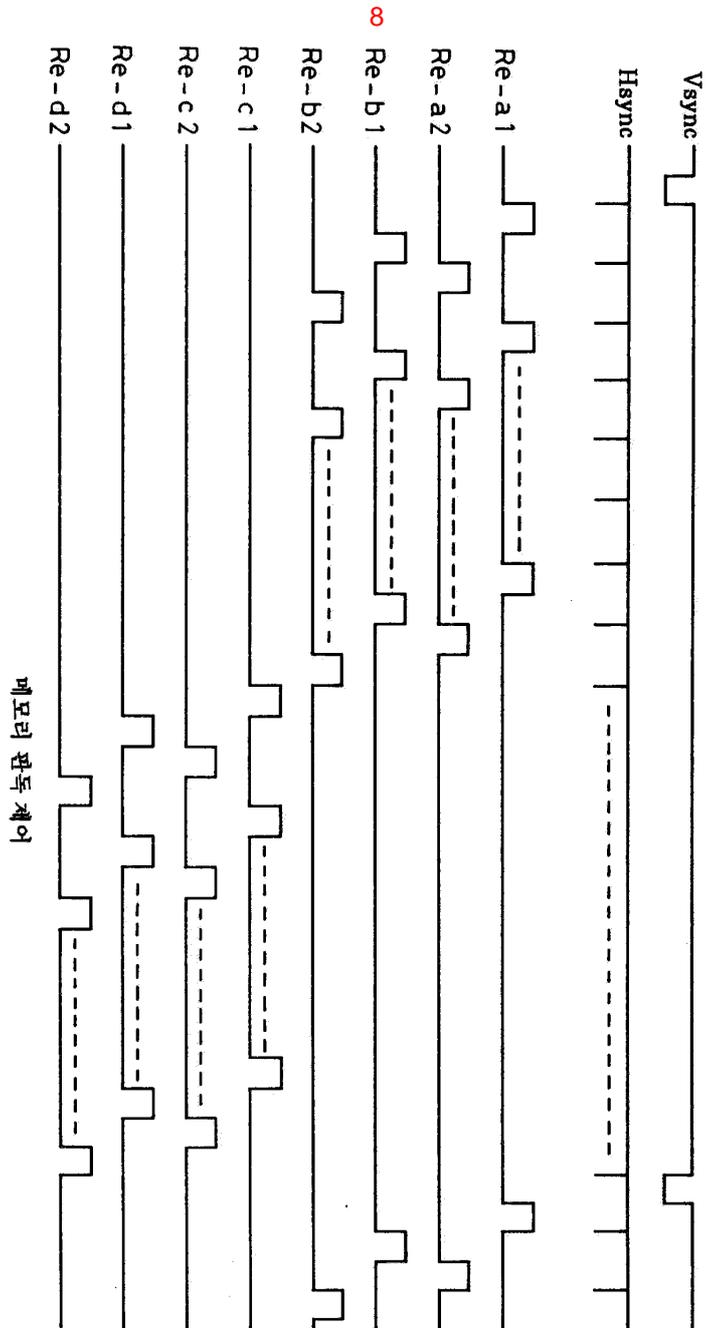
(C)

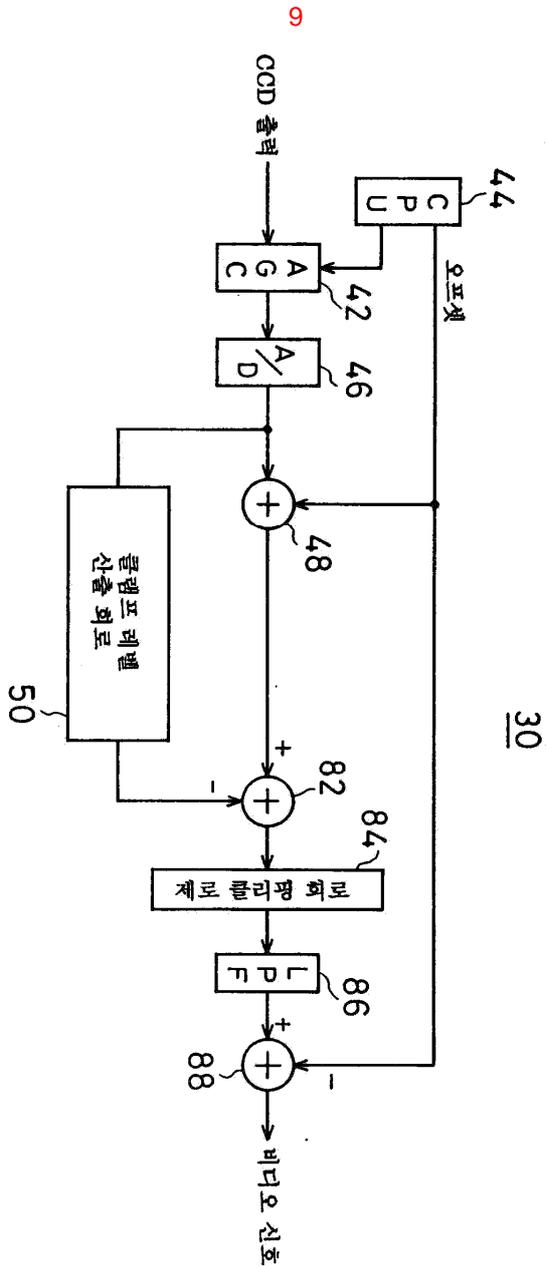
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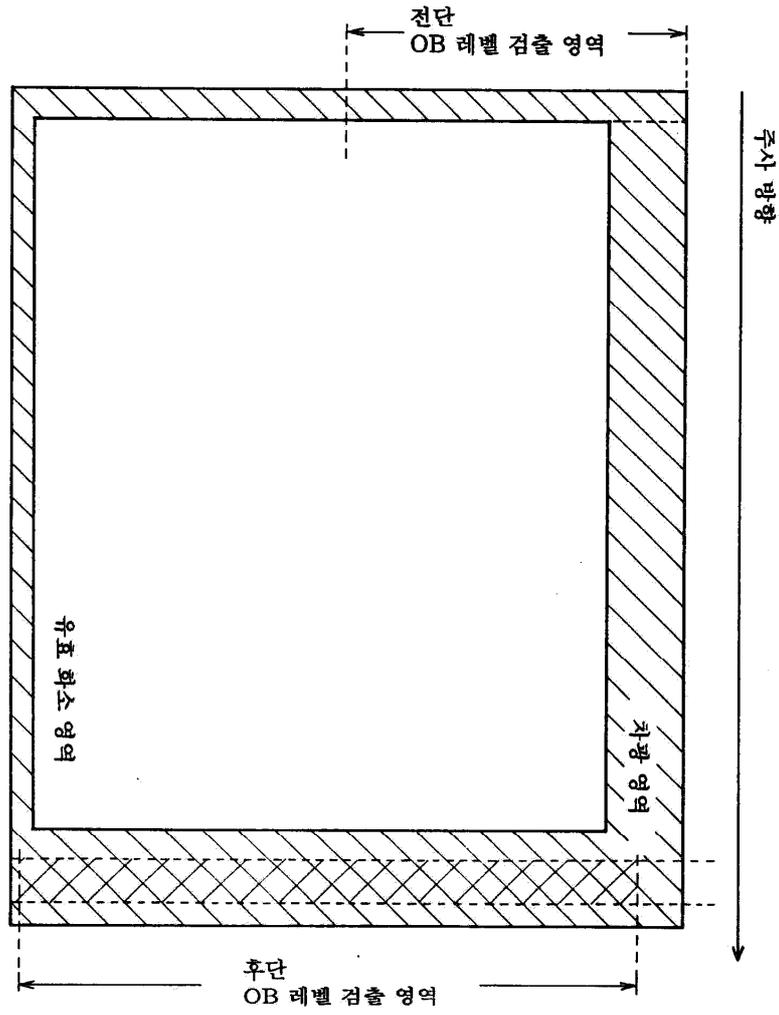


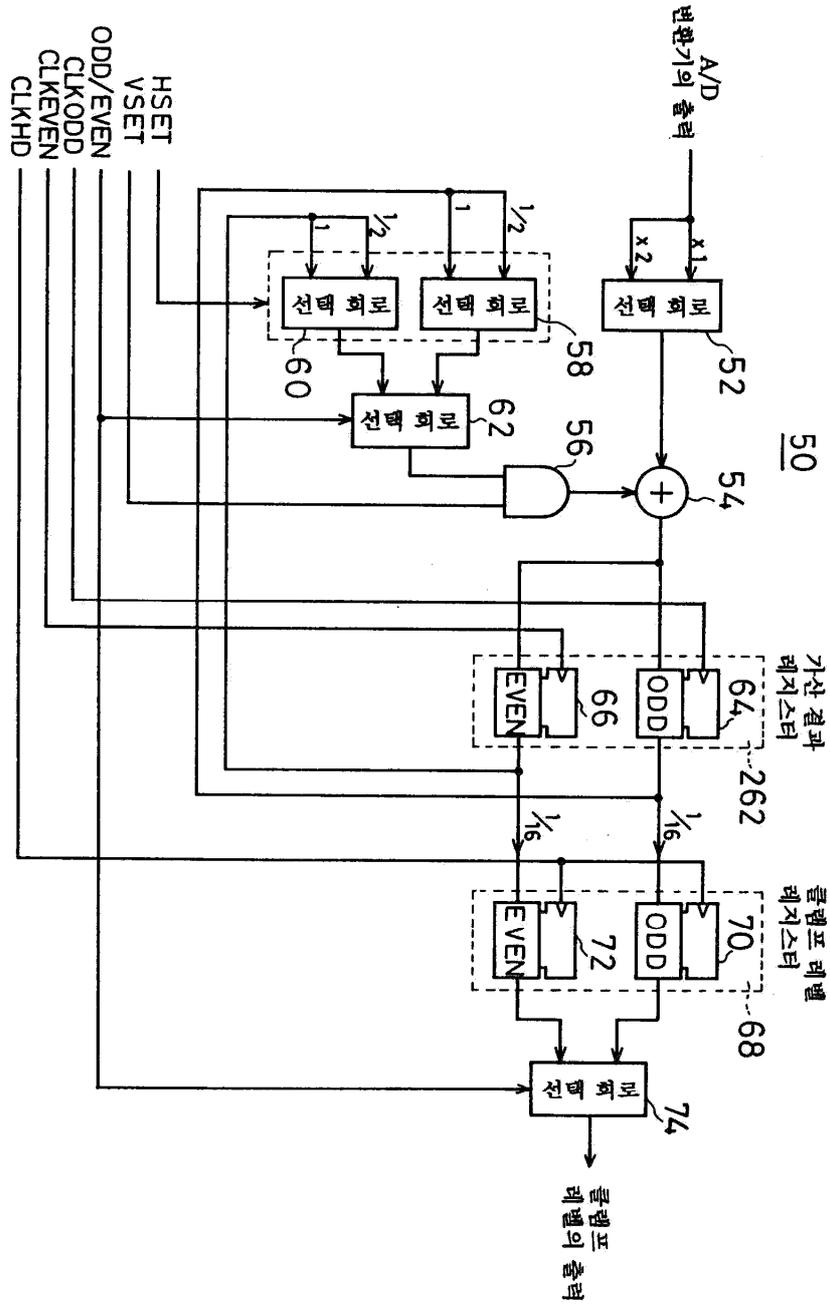




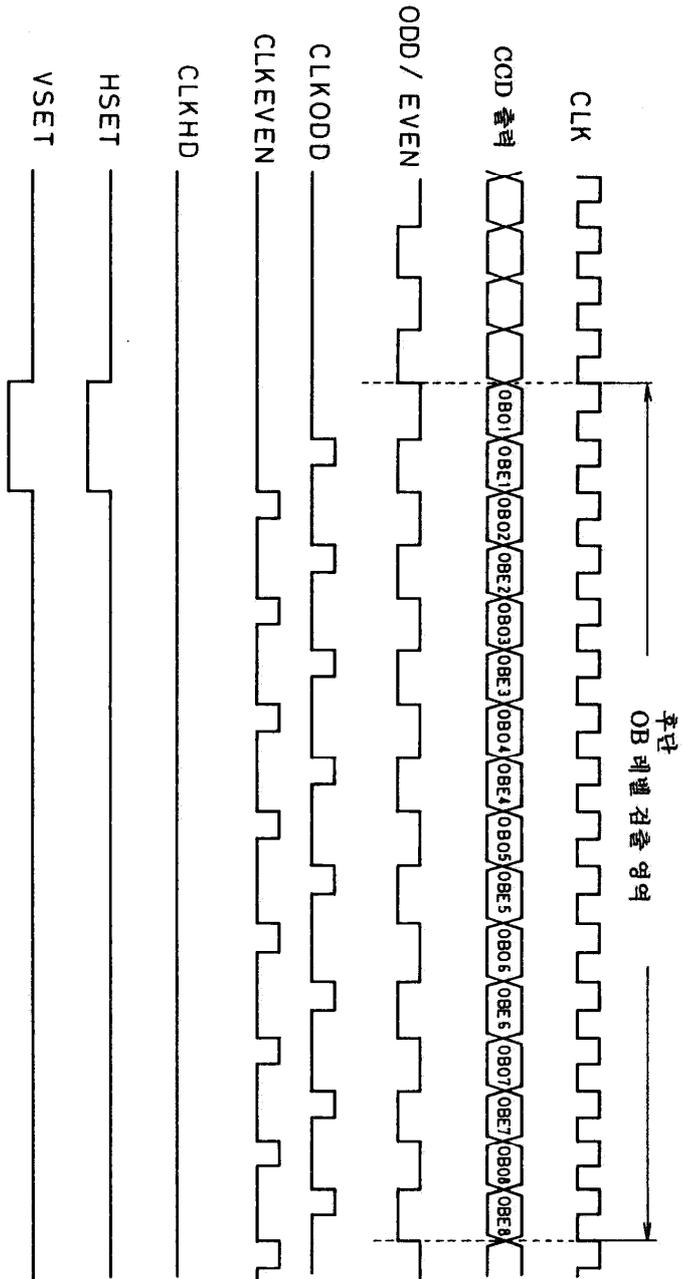


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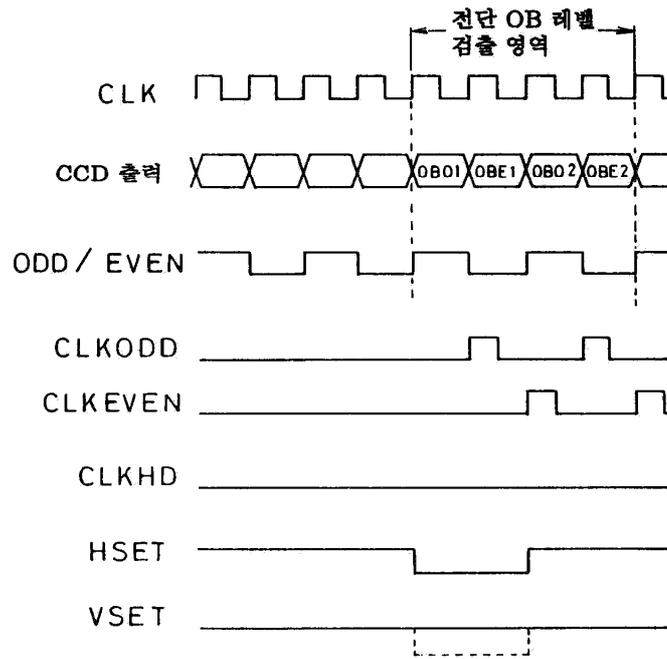




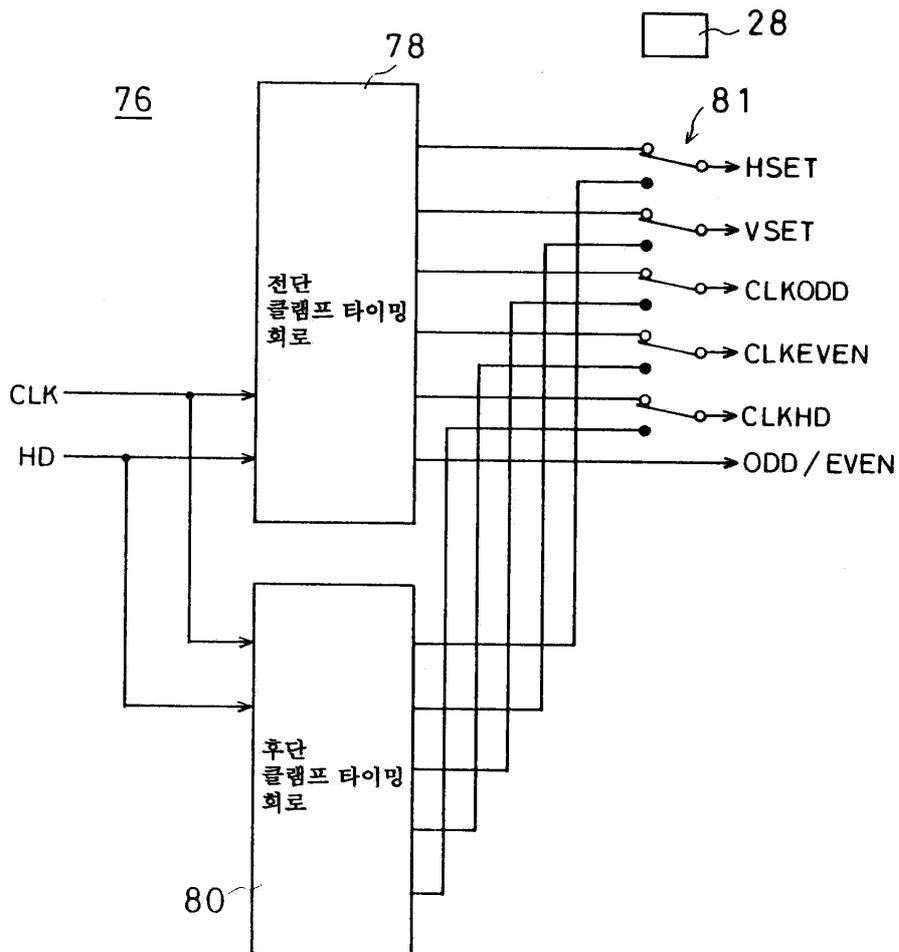
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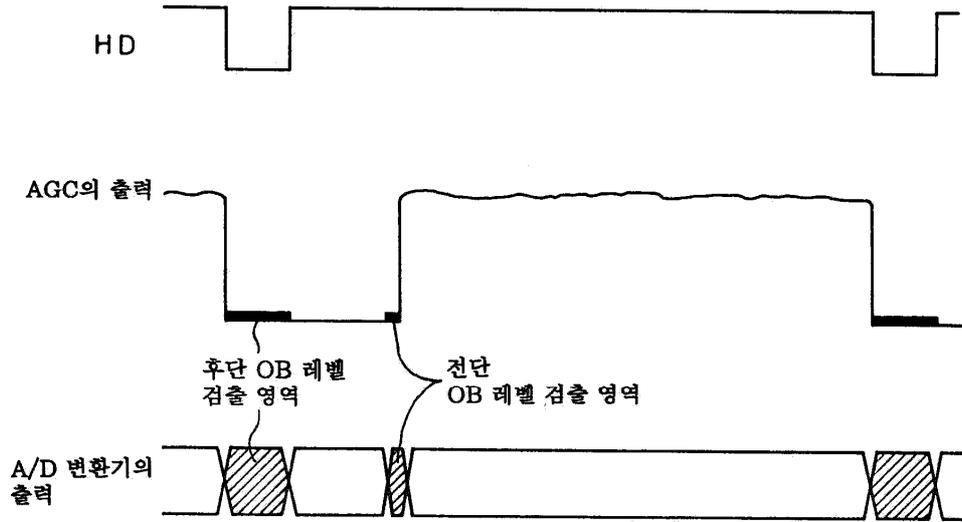
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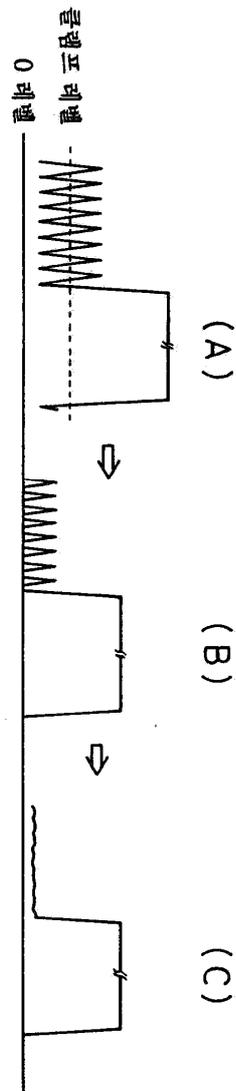
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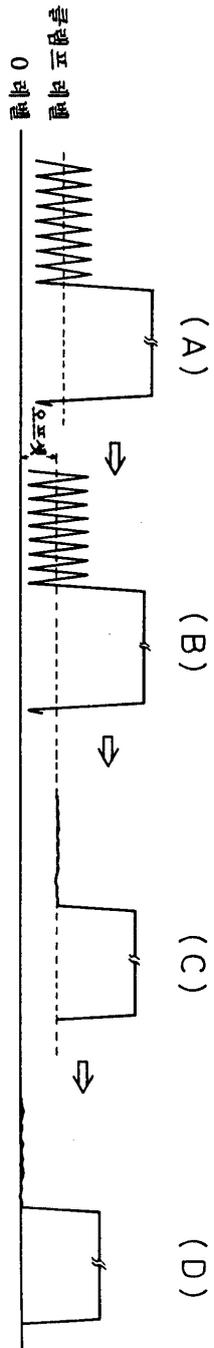
15



16



17



18

R + B	G	R + B	G
G + B	R + G	G + B	R + G
G	R + B	G	R + B
G + B	R + G	G + B	R + G
R + B	G	R + B	G

(a) 보색 필터의 배열

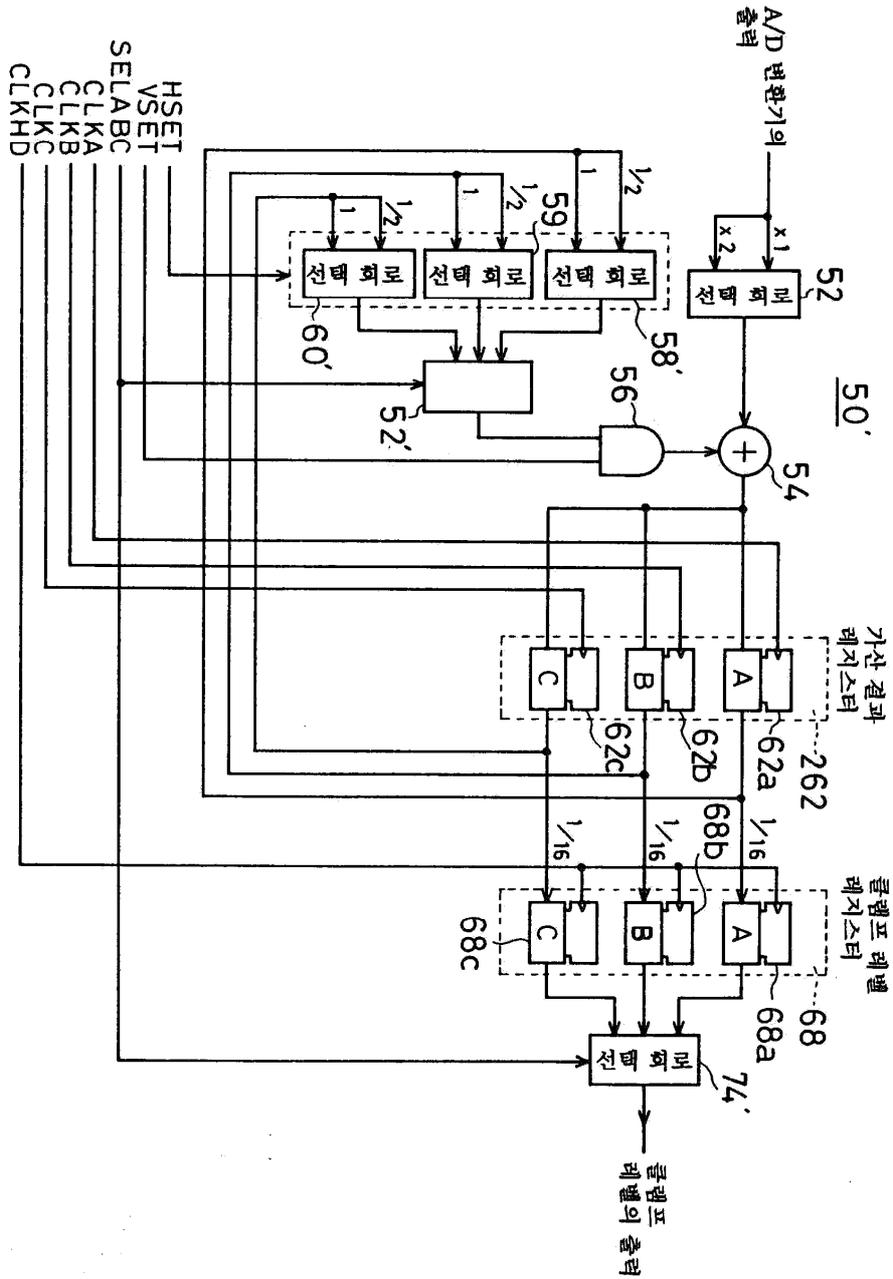
R + G + 2B	R + 2G	R + G + 2B	R + 2G
2G + B	2R + G + B	2G + B	2R + G + B

(b) 기수 필드의 카메라 신호

2G + B	2R + G + B	2G + B	2R + G + B
R + G + 2B	R + 2G	R + G + 2B	R + 2G

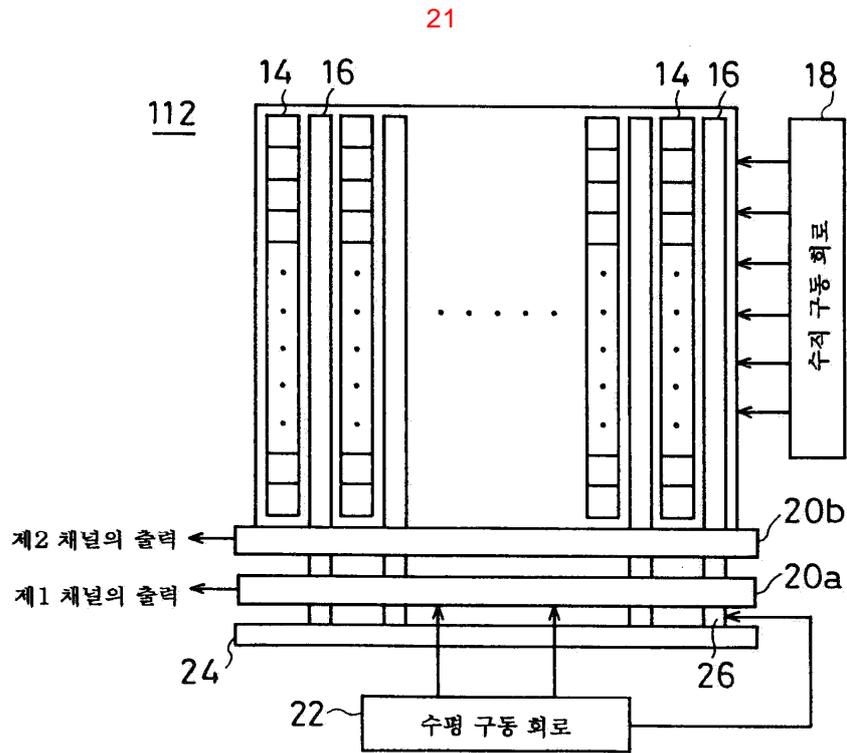
(c) 우수 필드의 카메라 신호

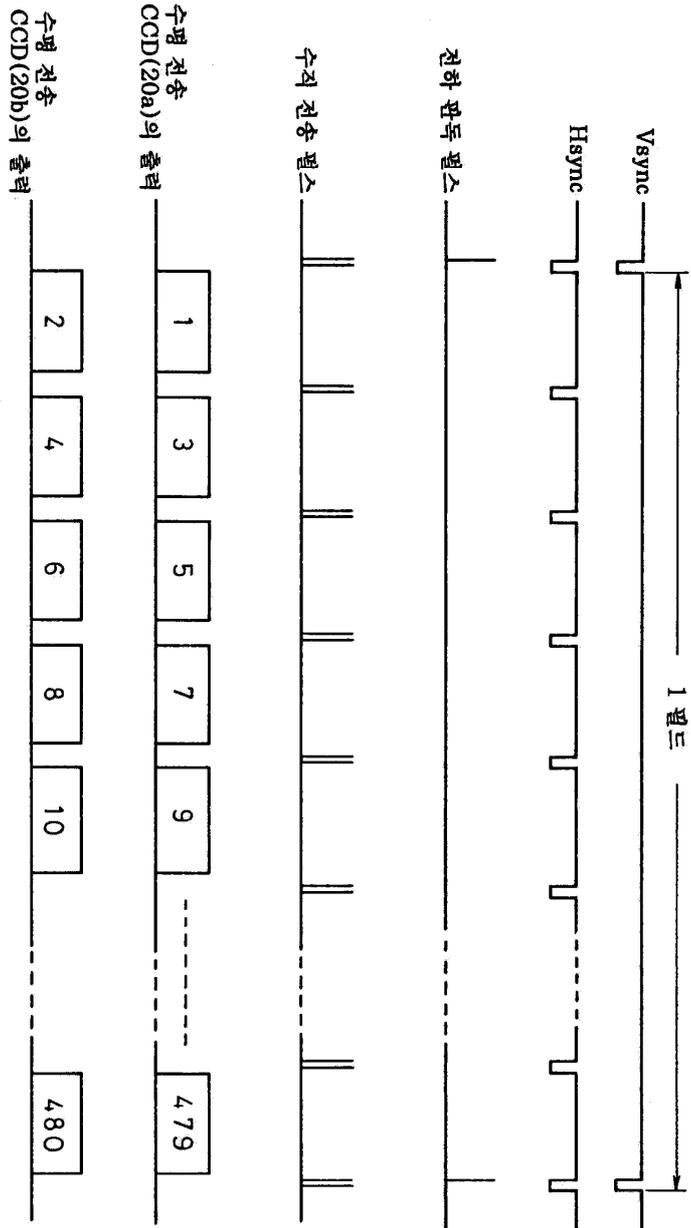
19

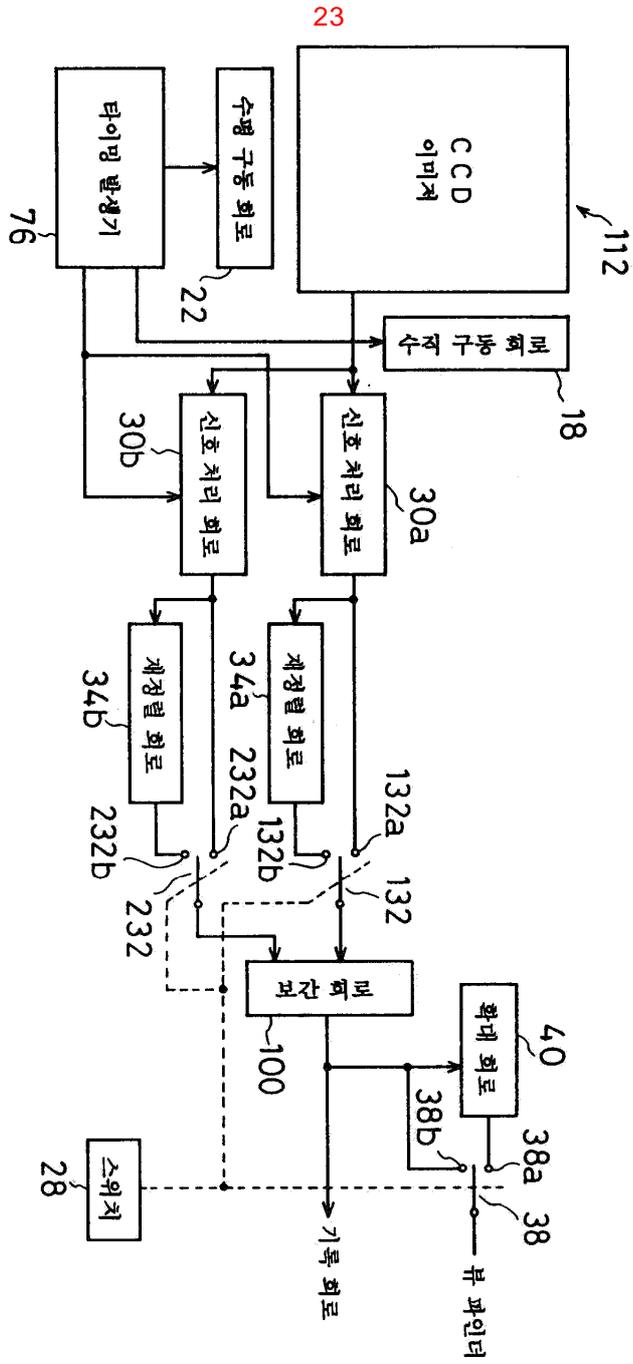


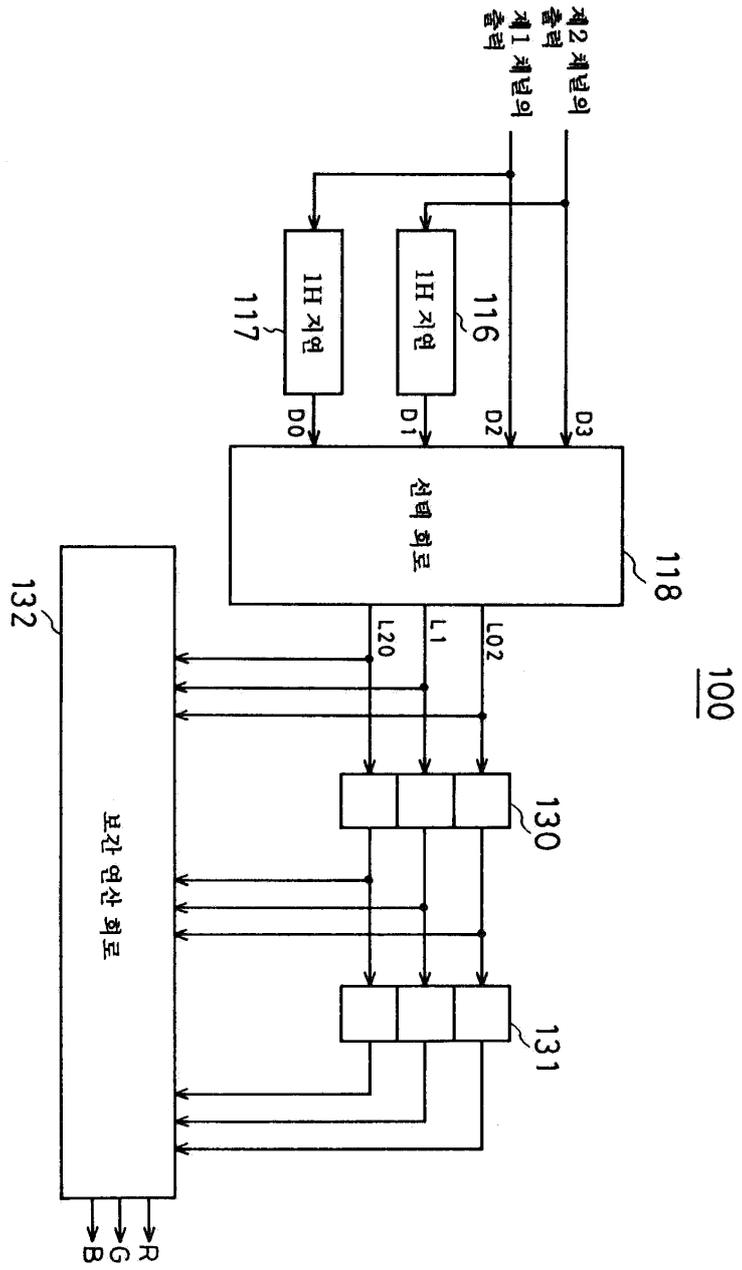
20

G	R	G	R	G	R	G	R
B	G	B	G	B	G	B	G
G	R	G	R	G	R	G	R
B	G	B	G	B	G	B	G
G	R	G	R	G	R	G	R
B	G	B	G	B	G	B	G
G	R	G	R	G	R	G	R
B	G	B	G	B	G	B	G

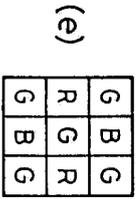
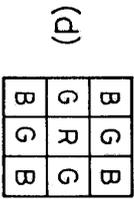
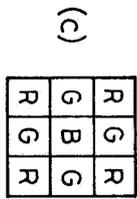
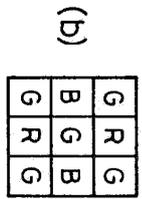
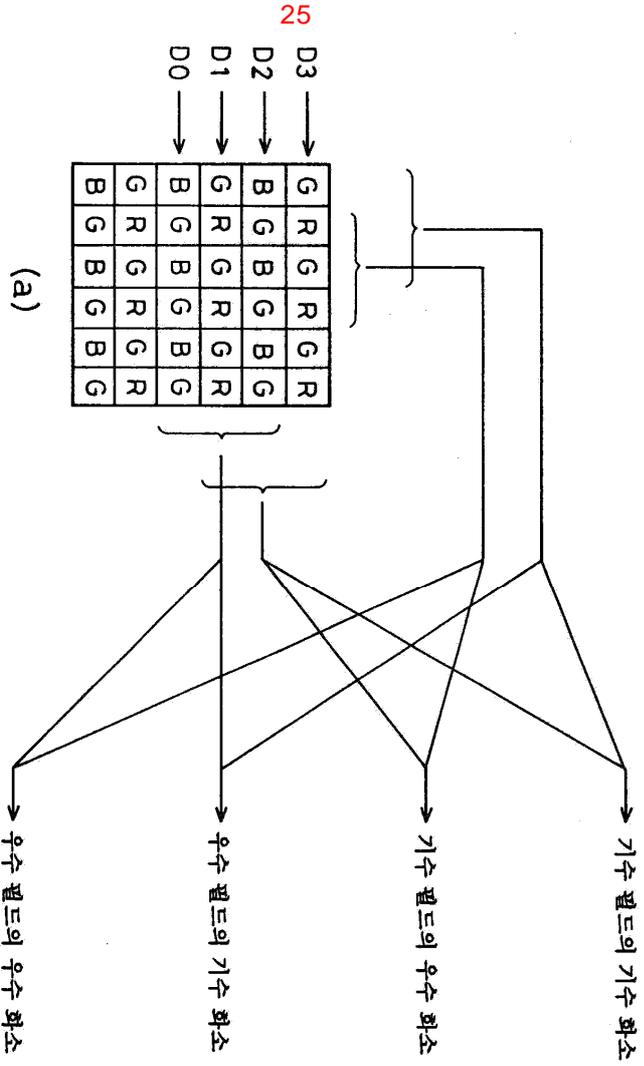








25



26

