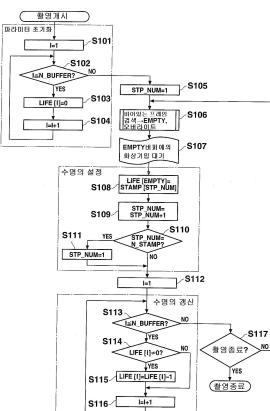


| | | | | |
|---|-------------------------------|------|--------------|--------------------------|
|  | (19) | (KR) | (45) | 2010 04 23 |
| | (12) | (B1) | (11) (24) | 10-0954268 2010 04 14 |
| (51) Int. Cl. | | | (73) | |
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| (56) | JP2002125188 A | | | |
| | JP080032847 A | | | |
| | KR1020050022401 A | | | |
| | KR1020050015742 A | | | |
| | : | 12 | | : |

(54)

(57)

| | | |
|--|--|---|
| EMPTY STAMP[STP_NUM] STP_NUM 1 N_STAMP(=4) STAMP[2] = 7 , [3] | (S108) . 4 STP_NUM [1] STAMP[3] = 11 , [4] | LIFE[EMPTY] , STP_NUM 19 7 11 7 , S108 , STAMP[1] = 19 [2] |
| | | - |
| | | 3 |



1

2

3

1

4

5

1

6

5

0

7

8

5

9

5

10

1

11

12

10

13

10

14

1

15

16

[0001]

[0002]

[0003]

[0004]

[0005]

[0006]

[0007]

[0008]

[0009]

[0010]

[0011]

[0012]

[0013]

[0014]

[0015]

[0016]

, 1

< 1 >

1
(1) ()
, CCD(2) (Bayer)
(1)(1) CCD(2) DSP/CPU(3)
. DSP/CPU(3)
(1)DSP/CPU(3) CCD(2) TG(Timing Generator) (4) TG(4)
CCD(2) (5) (5)
(CCS) , CCD(2)
(CCS) , (ACC),
A/D , CCD(2)
DSP/CPU(3)DSP/CPU(3) (6), (7) , (10)
(DRAM(11), ROM(12), (13), (14) , (11)
, DSP/CPU(3)DSP/CPU(3) (5) (pedestal clamp)
, RGB , RGB (Y) (UV) DSP/CPU(3)
YUV 1 (11) (11) 1
YUV (6) ,

[0017] , CCD(2) (5)

(11) 1 YUV DSP/CPU(3) JPEG
 , (11) , , (10)
 (13) () .

[0018] () , YUV
 , 2 (11) . (past) ()
 , YUV
 (11) .

[0019] (11) YUV DSP/CPU(3) , JPEG ()
 , (codec) , (11)
 (10) () (13) , DSP/CPU(3)
 , () (11)

[0020] (6) LCD , CCD(2)
 , (13)
 . (7) , , /
 . DSP/CPU(3)

[0021] ROM(12) , , (EV)
 (F) AE , EV
 . DSP/CPU(3)
 TG(4) CCD(2) . CCD(2)
 . CCD(2) , ROM(12)

[0022] (1) (14) , (14)
 TV

[0023] (11) 2 , 1 12 12
 4f/s

[0024] , 3

[0025] ,

[0026] N_BUFFER

[0027] , 12

[0028] LIFE[I] I

[0029] , 19 0 , 0

[0030] EMPTY

[0031] , 1 12

[0032] N_STAMP

[0033] , 4

[0034] STAMP[STP_NLM]

[0035] 4 19, 7, 11, 7 , STAMP[1]=19, STAMP[2]=7, STAMP[3]=11, STAMP[4]=7 4 , , N_STAMP 4 .

[0036] STP_NLM

[0037] 4 STAMP[] , 1 4 .

[0038] (7) , DSP/CPU(3) TG(4)
CCD(2) 4f/s , S101 S104 , , S108 S111
, S113 S116 .

[0039] , S101 S104 , I 1 (S101) .
, I N_BUFFER(=12) , (S102) . I N_BUFFER , I
I (increment) I LI FE[I] O (S103) . ,
S102 S104 12 , 2 1 12 0 .
S102 S104 .

[0040] I=13 , S102 I N_BUFFER NO , S102 S105 ,
STP_NLM 1 (S105) . ,
(S106) .

[0041] S106 4 , 12 ,
LI FE[I] 0 (S11) . (1 12)
) EMPTY (S12) . , S11
S12
EMPTY , , EMPTY
CCD(2) ,
S13 .

[0042] , 2 A , 1 0 ,
EMPTY 1 . EMPTY ,

[0043] 3 S107 4 1 ,
, DSP/CPU(3) TG(4) CCD(2) 4f/s , , 1/4
EMPTY ,
, S107 S108 .

[0044] , EMPTY , LI FE[EMPTY] ,
STP_NLM STAMP[STP_NLM] (S108) . STP_NLM
S105 1(STP_NLM41) , STAMP[STP_NLM] STAMP[1] 4
19, 7, 11, 7 1 19 , STAMP[1]=19 . S108
, 2 B , 1 LI FE[1]
19 .

[0045] , STP_NLM (S109) . STP_NLM
N_STAMP(=4) (S110) . STP_NLM&N_STAMP
S111 S112 . STP_NLM&N_STAMP STP_NLM 1
(S111), S112 .

[0046] , STP_NLM 1 N_STAMP , 1 4 , S108
() STP_NLM 1

STAMP[1]=19 , STP_NUM 2 STAMP[2]=7
 STP_NUM 3 STAMP[3]=11 STP_NUM 4 STAMP[4]=7
 .
 , 2 A , 1 O
 EMPTY=1 , STP_NUM [1] S108 LIFE[1]=STAMP[STP_NUM]=STAMP[1]=19
 . , 2 B , 1 STAMP[1]
 19 .
 2 B , 6 O
 EMPTY=6 , STP_NUM 2 S108 LIFE[6]=STAMP[STP_NUM]=STAMP[2]=7
 , 2 C , 6 STAMP[2] 7
 .
 2 C , 4 O
 EMPTY=4 , STP_NUM 3 S108 LIFE[4]=STAMP[STP_NUM]=STAMP[3]=11
 , 2 D , 4 STAMP[3] 11
 .
 2 D , 8 O
 EMPTY=8 , STP_NUM 4 S108 LIFE[8]=STAMP[STP_NUM]=STAMP[4]=7
 , 2 E , 8 STAMP[4] 7
 .
 S110 S111 S112 I 1 ,
 S113 S116 (S113. I N_BUFFER , I I N_BUFFER(=12)
 LIFE[I] 0 (S114 NO , S115 S116 .
 (S114 YES , (S116 , S113 12
 (decrem ent) (S115 . I S113 S116
 , 0 .
 I=13 , S113 " I N_BUFFER" NO , S113 S117
 , S108 S111 S113 S116 S106
 .
 S108 S111 ,
 S113 S116 , 2
 2 4 3 2 1 0 ,
 .
 2 E , 12 ,
 . , 4 S13 , 2 , 0 , 12
 2 ,
 .
 , 4fps , 3 , 12
 , 19 0 1/4 ,
 4 75

[0058]

[0059]

[0060]

(13) Ω

[0061]

[0062]

(7) , (SS117 YES)
S101 S101

[0063]

≤ 2%

[0064]

[0065]

I=13 , S202 " I N_BUFFER" NO , S202 S206

[0066]

, STP_NLM 1 (S206),
(S207)

[m67]

1068

| | | | | | | |
|---|---|-------|-------|-----|---|-----|
| | (| S21 | YES), | 0 | , | |
| 3 | | (| S22). | , 6 | A | S22 |
| | , | () | | , 2 | 4 | 1 |
| 6 | 3 | 8 | . | , | | 0 |
| | (| S23). | S23 | , 6 | B | , |
| 8 | | 0 | | | | 4 6 |

[0069]

```

S21           S23           S24           LIFE[I]   0
.             .             (             1, 4, 6, 8           )
(     S25) . , EMPTY           )             OOD(2)           EMPTY
                                         (     S26)

```

[0070]

, 6 B , 1, 4, 6, 8
EMPTY 1 . , EMPTY

(S27).

| | | | | | | | | |
|--------|---|----------------|--------------------------|------------------|---|--------------|---------------|--------------|
| [0071] | 5 | S208 | 8 | 1 | | | | |
| | , | DSP/CPU(3) | TG(4) | CCD(2) | 4f/s | , | , | 1/4 |
| | EMPTY | | | | | | | |
| | , | S208 | S209 | | | | | |
| [0072] | | 3 | | S108 S111 | | | | EMPTY |
| | | | LIFE[EMPTY] | , STP_NM | | | | |
| | STAMP[STP_NM] | (S209) | , | STP_NM | | | | S206 |
| | 1(STP_NM=1) | , | STAMP[STP_NM] | STAMP[1] | 4 | | | 19, 7, 11, 7 |
| | 1 | 19 | , STAMP[1]=19 | , | S209 | | | 6 |
| | C | , | 1 | | LIFE[1] | 19 | | |
| [0073] | , | STP_NM | (S210), | | STP_NM | | | |
| | N_STAMP(=4) | | (S211), STP_NM=N_STAMP | | | | | |
| | S212 | S213 | | , STP_NM=N_STAMP | | | | STP_NM |
| | 1 | (S212), S213 | | | | | | |
| [0074] | , | STP_NM | 1 N_STAMP | , | 1 4 | | | S209 |
| | | | , | | | STP_NM 1 | | |
| | STAMP[1]=19 | , | STP_NM 2 | | | STAMP[2]=7 | | , |
| | STP_NM 3 | | STAMP[3]=11 | , | STP_NM 4 | | | |
| | STAMP[4]=7 | . | | | | | | |
| [0075] | , | 6 | B | , | 1 | | 0 | |
| | EMPTY=1 | , | | STP_NM | 1 | | S209 | |
| | LIFE[1]=STAMP[STP_NM]=STAMP[1]=19 | | | , | 6 | C | , | 1 |
| | STAMP[1] | | 19 | | | | | |
| [0076] | 6 | C | , | 6 | 0 | | EMPTY=6 | |
| | , | STP_NM [2] | , | S209 | LIFE[6]=STAMP[STP_NM]=STAMP[2]=7 | | | . |
| | , 6 | D | , | , | 6 | STAMP[2] | | 7 |
| | | | | | | | | |
| [0077] | 6 | D | , | 4 | 0 | | EMPTY=4 | |
| | , | STP_NM 3 | , | S209 | LIFE[4]=STAMP[STP_NM]=STAMP[3]=11 | | | . |
| | , 6 | E | , | , | 4 | STAMP[3] | | |
| | 11 | . | | | | | | |
| [0078] | 6 | E | , | 8 | 0 | | EMPTY=8 | |
| | , | STP_NM 4 | , | S209 | LIFE[8]=STAMP[STP_NM]=STAMP[4]=7 | | | . |
| | , 7 | F | , | , | 8 | STAMP[4] | | 7 |
| | | | | | | | | |
| [0079] | S211 | S212 | | S213 | I | 1 | | , |
| | S214 S217 | | (S214). I N_BUFFER | , | I | I | N_BUFFER(=12) | |
| | LIFE[I] 0 | | | (S215). | I | LIFE[I] | I | |
| | (S215 NO , S216 | | | | S217 | | | |
| [0080] | I | LIFE[I] 0 | | (S215 YES), | | LI FE[I] | | |
| | (S216). | , | I | (S217), | | S214 | | |
| | , | | S214 S217 | | 12 | , | | 0 |

[0081] I=13 , S214 " I N_BUFFER" NO , S214 S218
 , , S209 S212 S214 S217
 , , S209 S212 ,
 , , S214 S217
 6 2 4 3 2 1, 0
[0083] 0 3 , S21 YES (S22
 , 7 F S22 , ()
 , 2 7, 1 10 3 12
 , , 0 (S23 , S23 , 7
 G , 7, 10, 12 0 , S24
 S27 , S208 S218 ,
[0084] 7 G , 12 , , , 0
 , 8 S26 , , ,
 2, 7, 10, 12 , 2, 7, 10, 12
 12 ,
[0085] , 4fps , , 12 ,
 , , 3 , 19 0 1/4
 , , 4.75 ,
[0086] , , ,
[0087] , , ,
[0088] < 3 >
[0089] 9 3 , 1 , 3
 , , , 1
[0090] LIFE[I]
[0091] I , 0 19 , 19
 , , 11, 7
[0092] N_STAMP
[0093] , , 4
[0094] STP_NUM
[0095] 4 STAMP[] , 1 4
[0096] STAMP[STP_NUM]
[0097] 4 19, 7, 11, 7 , , , STAMP[1]=19, STAMP[2]=7,
 STAMP[3]=11, STAMP[4]=7 , , , N_STAMP
 4 ,

[0098]

, ON , OFF

[0099]

S301 S305 , , I N_BUFFER(=12) , I LIFE[I] O
 (S301) . , I I (S302) . I
 N_BUFFER , I I (S303) , I ON (S304) . , I
 (S305) , S302
 S302 S305 12 , 10 1 12 0
 , , , , ,
 ON .

[0100]

I=13 , S302 “ I N_BUFFER” NO , S302 S306
 , STP_NUM 1 (S306) , ,
 (S307) .

[0101]

S307 11 , 12 , ,
 12) EMPTY (S32) . , S31
 , , , , ,
 S32 EMPTY , , ,
 , , ,
 (S33) .

[0102]

, 10 A , 1 7 7 , , EMPTY
 ON EMPTY , , , , ,

[0103]

9 S308 11 1 ,
 , DSP/CPU(3) TG(4) CCD(2) 4f/s , , 1/4
 EMPTY , S308 S309 , , , , ,

[0104]

EMPTY (S309) , EMPTY (S310) . , , ,
 , , , , ,
 LIFE[EMPTY] O OFF

[0105]

, STP_NUM (S311) , STP_NUM
 N_STAMP(=4) (S312) . STP_NUM N_STAMP
 S313 S314 . STP_NUM N_STAMP STP_NUM 1
 (S313) , S314 , STP_NUM 1 N_STAMP , 1 4

[0106]

S312 S313 S314 , I 1 , ,
 S315 S321 (S315) . I N_BUFFER , I , ,
 LIFE[I] 19 (S316) . I , I , ,
 (S316 NO , I ON (S318) . , ,
 , , , , ,

[0107]

I LIFE[I] 19 (S316 YES) , I
 LIFE[I] STP_NUM STAMP[STP_NUM]
 (S317) . , , , ,

[0108]

S311 1 4 STP_NUM , STP_NUM [1]
 STAMP[1]=19 , STP_NUM [2] STAMP[2]=7 ,

STP_NM [3] STAMP[3]=11 , STP_NM [4]
 STAMP[4]=7 .

[0109] , S317 S311 1 4 STP_NM , I
 LIFE[I] 19 7, 11, 7 , , I
 LIFE[I] STP_NM 19, 7, 11, 7 (S317 NO,
 ON (S318) .

[0110] , I LIFE[I] STP_NM 19, 7, 11, 7
 (S317 YES), I ON (S319 . I ON S320
 S321 I ON
 LIFE[I] (S320) , I (S321),
 S315 , S313 S321 12

[0111] S315 S321 , 10 A
 STP_NM [1] , STAMP[1]=19 10 A 1
 19 S316 NO , S318
 ON 7
 ON , 1
 7 .
 ON

[0112] 10 B STP_NM 2 , STAMP[2]=7
 , 10 B 7 , 19 6
 , S316 NO , S318
 ON 6
 1 .
 ON

[0113] 10 C STP_NM 3 , STAMP[3]=11
 10 C 11 11 , 19 4
 , S316 NO , S318
 ON , S317 NO , S318
 11 ON , ON 4, 11
 6 .
 .

[0114] 10 D STP_NM 4 , STAMP[4]=7
 , 10 D 7 , 19 8
 , S316 NO , S318
 ON 8
 4, 11 .
 ON

[0115] 10 E STP_NM 1 , STAMP[1]=19
 , 10 E 2 19
 NO , S318 2 S316
 2 ON , 8, 11
 .

[0116] , I=13 , S315 “ I N_BUFFER” NO , S315 S322
 , , S309 S313 S315 S321
 . S307

[0117] , , , , 12
 10 E , 11 S33 , .

ON 2 8 11 , 12

[0118] , 4fps , 12
 , 3 ,
 , 19 1/4
 , 4 75

[0119] , , ,

[0120] , , ,

[0121] , ,
 (13)

, (13) ,
 , (13)
[0122] , S309 S312 , 0
 , 0 , 1
 , S315 S321 , 0
 ON

[0123] , 2 ,
 , ON , 16
 , ON

[0124] , =12 , =4fps, N_BUFFER=12, LI FE[I]=19 0
 N_STAMP=4, STAMP[STP_NUM]=19, 7, 11, 7

[0125] , , (future) +
 , ,

[0126] 1 1

[0127] 2 1

[0128] 3 1

[0129] 4 1

[0130] 5 2

[0131] 6 2

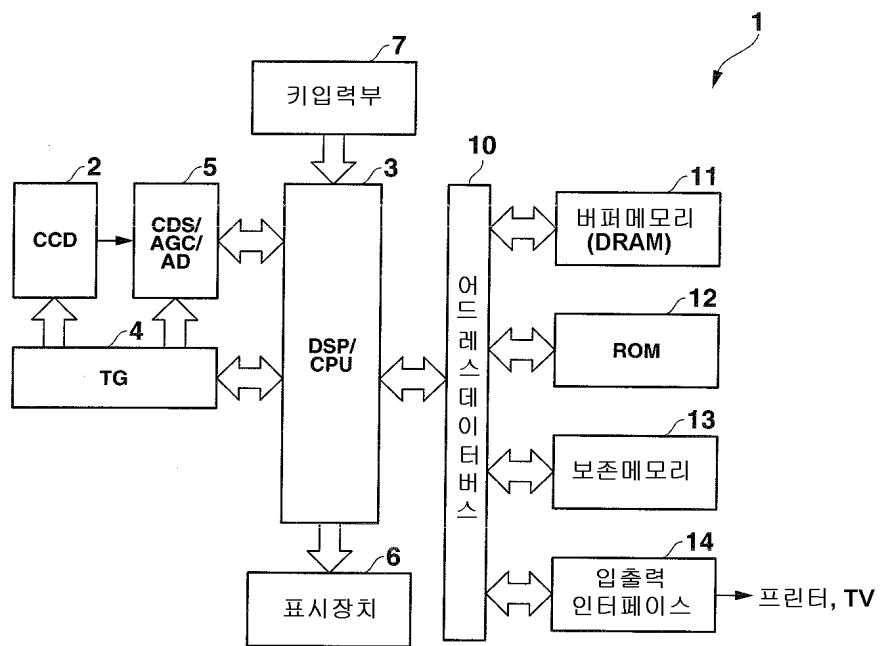
[0132] 7 6

[0133] 8 2

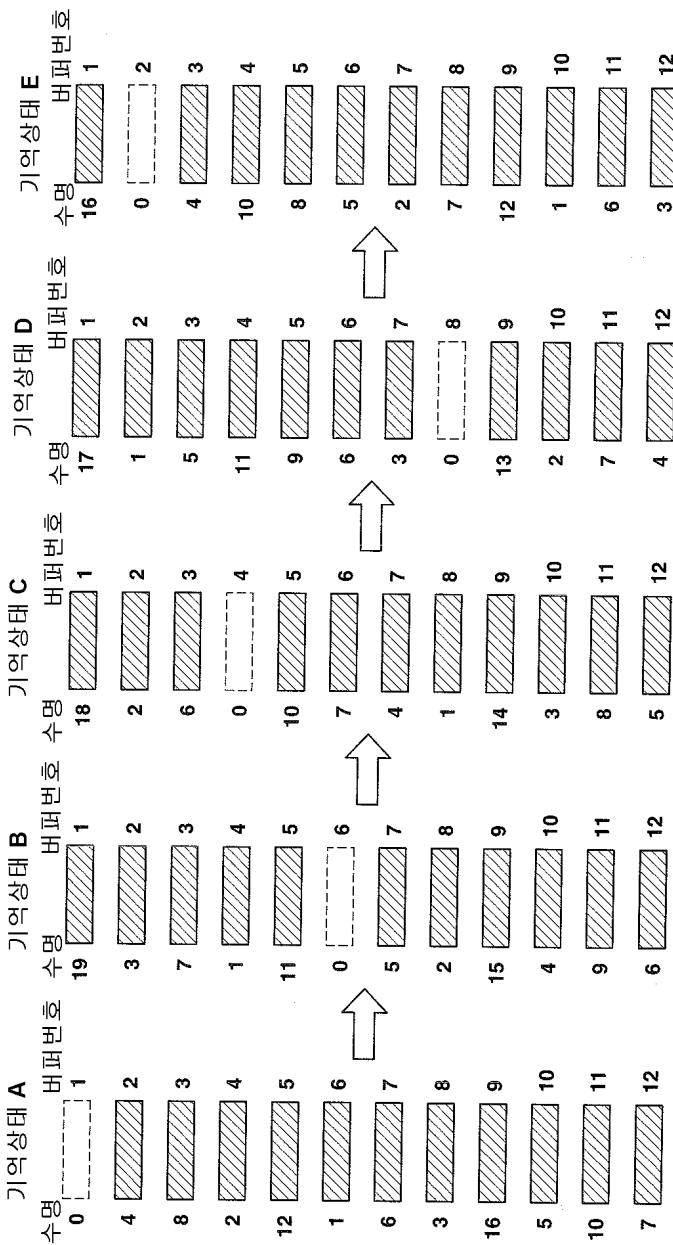
[0134] 9 3

[0135] 10 3

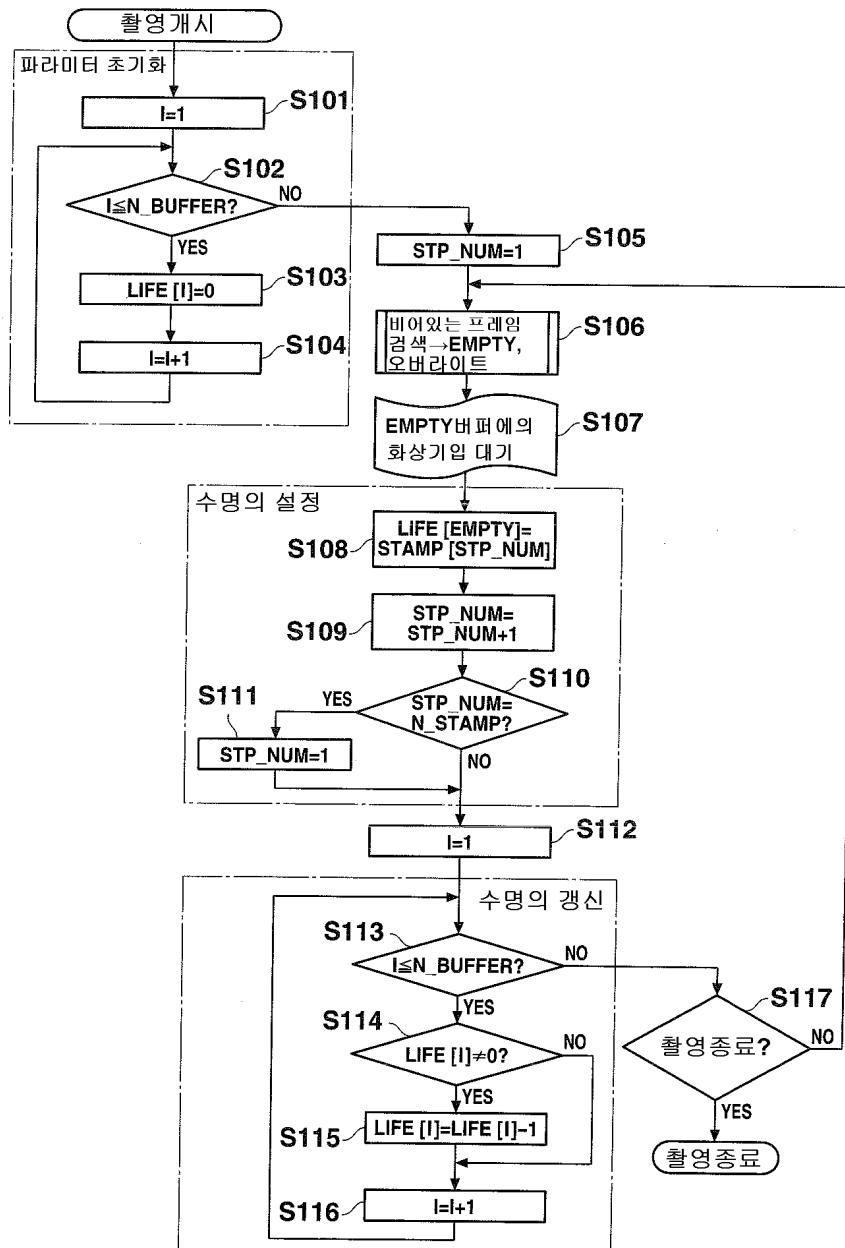
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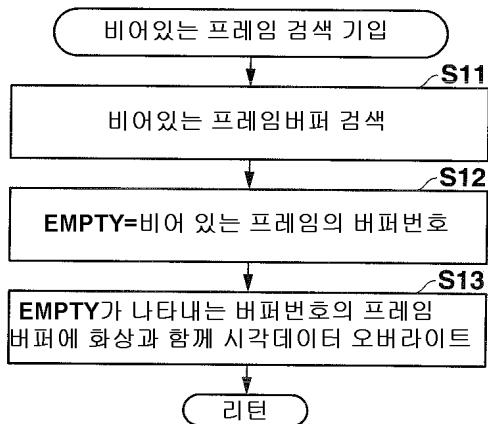


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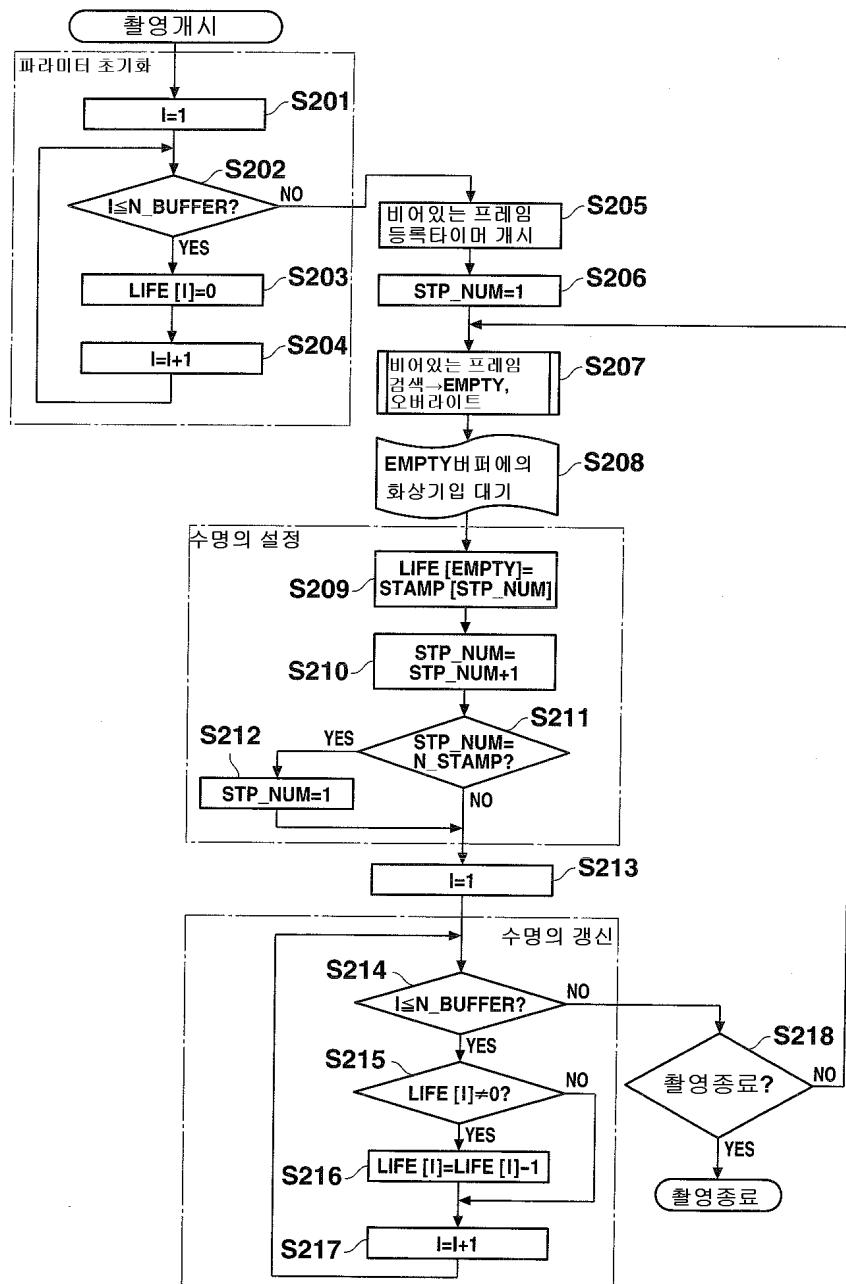


3

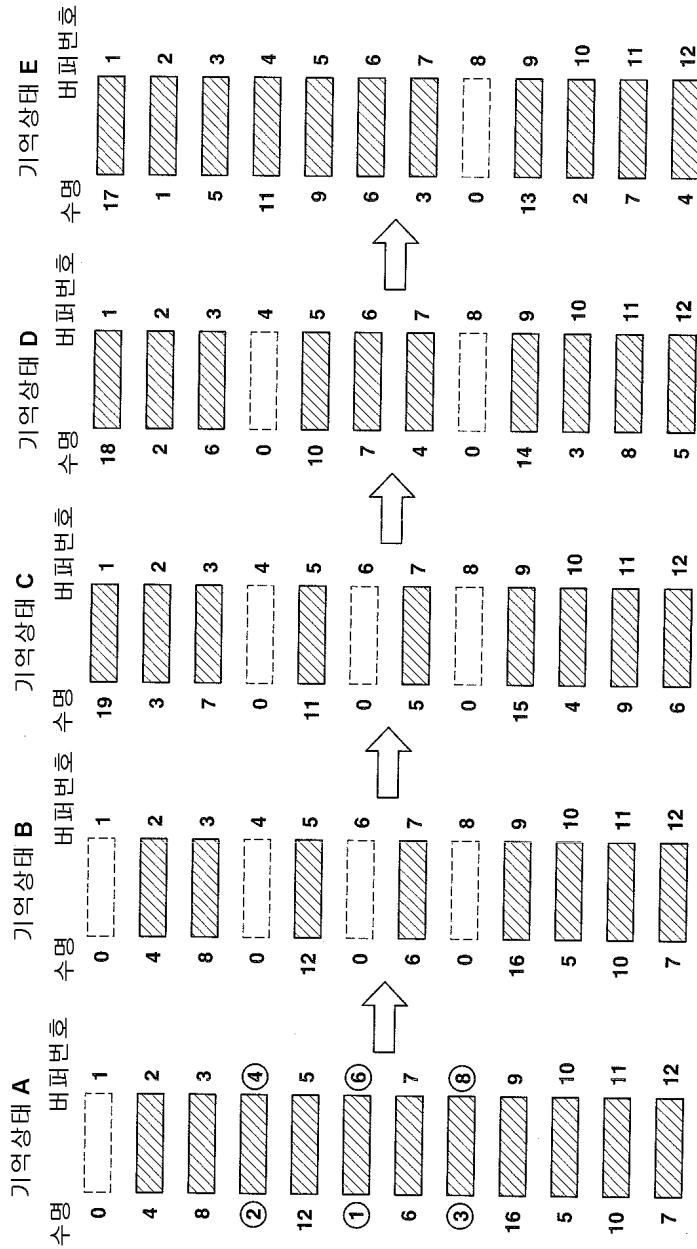


4

5



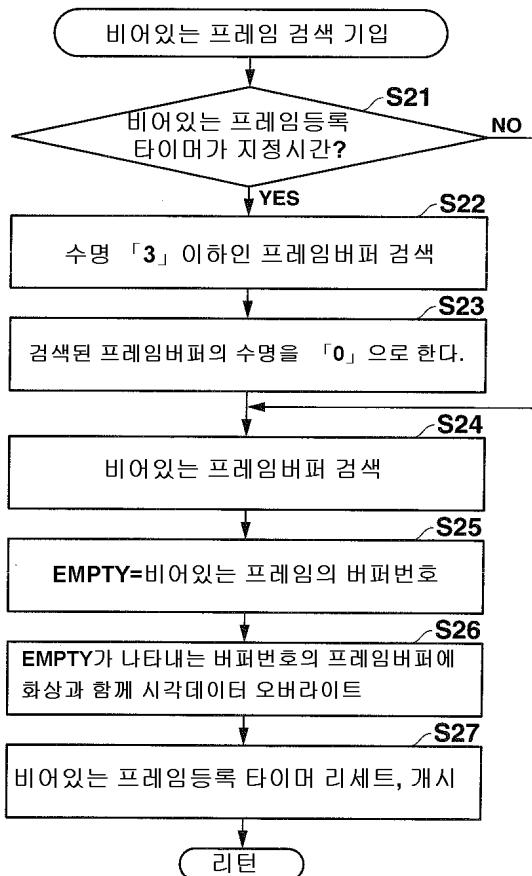
6



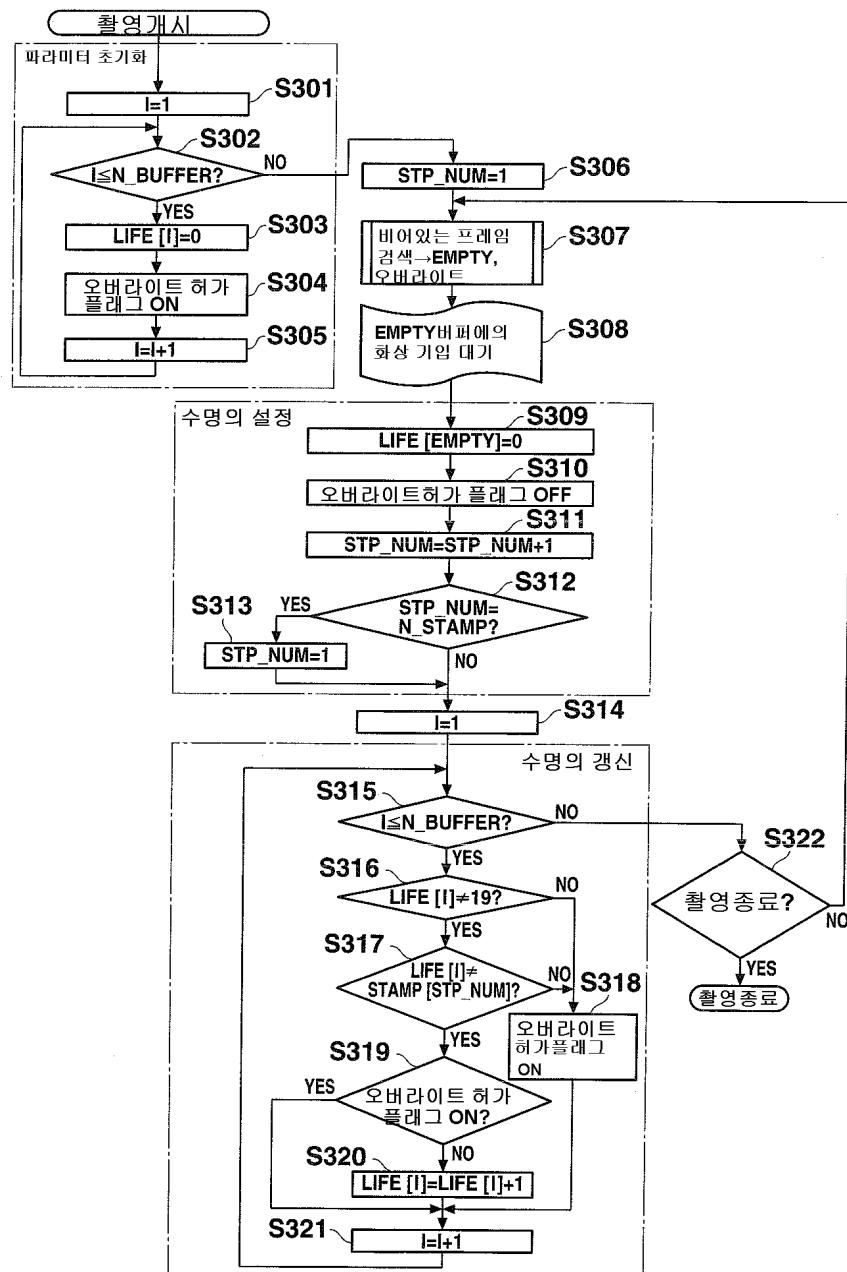
7

| 기억상태 F | | 기억상태 G | |
|--------|------|--------|------|
| 수명 | 버퍼번호 | 수명 | 버퍼번호 |
| 16 | 1 | 16 | 1 |
| 0 | 2 | 0 | 2 |
| 4 | 3 | 4 | 3 |
| 10 | 4 | 10 | 4 |
| 8 | 5 | 8 | 5 |
| 5 | 6 | 5 | 6 |
| ② | ⑦ | 2 | 7 |
| 7 | 8 | 7 | 8 |
| 12 | 9 | 12 | 9 |
| ① | ⑩ | 0 | 10 |
| 6 | 11 | 6 | 11 |
| ③ | ⑫ | 0 | 12 |

8



9



10

| 기억상태 A | | 기억상태 B | | 기억상태 C | | 기억상태 D | | 기억상태 E | |
|--------|-------|--------|-------|--------|--------|--------|--------|--------|--------|
| 수명 | 버퍼번호 | 수명 | 버퍼번호 | 수명 | 버퍼번호 | 수명 | 버퍼번호 | 수명 | 버퍼번호 |
| 19 | 1(ON) | 19 | 1(ON) | 0 | 1 | 1 | 1 | 2 | 1 |
| 15 | 2 | 16 | 2 | 17 | 2 | 18 | 2 | 19 | 2(ON) |
| 11 | 3 | 12 | 3 | 13 | 3 | 14 | 3 | 15 | 3 |
| 17 | 4 | 18 | 4 | 19 | 4(ON) | 19 | 4(ON) | 0 | 4 |
| 7 | 5 | 8 | 5 | 9 | 5 | 10 | 5 | 11 | 5 |
| 18 | 6 | 19 | 6(ON) | 19 | 6(ON) | 0 | 6 | 1 | 6 |
| 11 | 7(ON) | 0 | 7 | 1 | 7 | 2 | 7 | 3 | 7 |
| 16 | 8 | 17 | 8 | 18 | 8 | 19 | 8(ON) | 19 | 8(ON) |
| 3 | 9 | 4 | 9 | 5 | 9 | 6 | 9 | 7 | 9 |
| 14 | 10 | 15 | 10 | 16 | 10 | 17 | 10 | 18 | 10 |
| 9 | 11 | 10 | 11 | 11 | 11(ON) | 11 | 11(ON) | 11 | 11(ON) |
| 12 | 12 | 13 | 12 | 14 | 12 | 15 | 12 | 16 | 12 |
| (19) | (7) | (11) | (11) | (7) | (7) | (19) | (7) | (19) | (7) |

11