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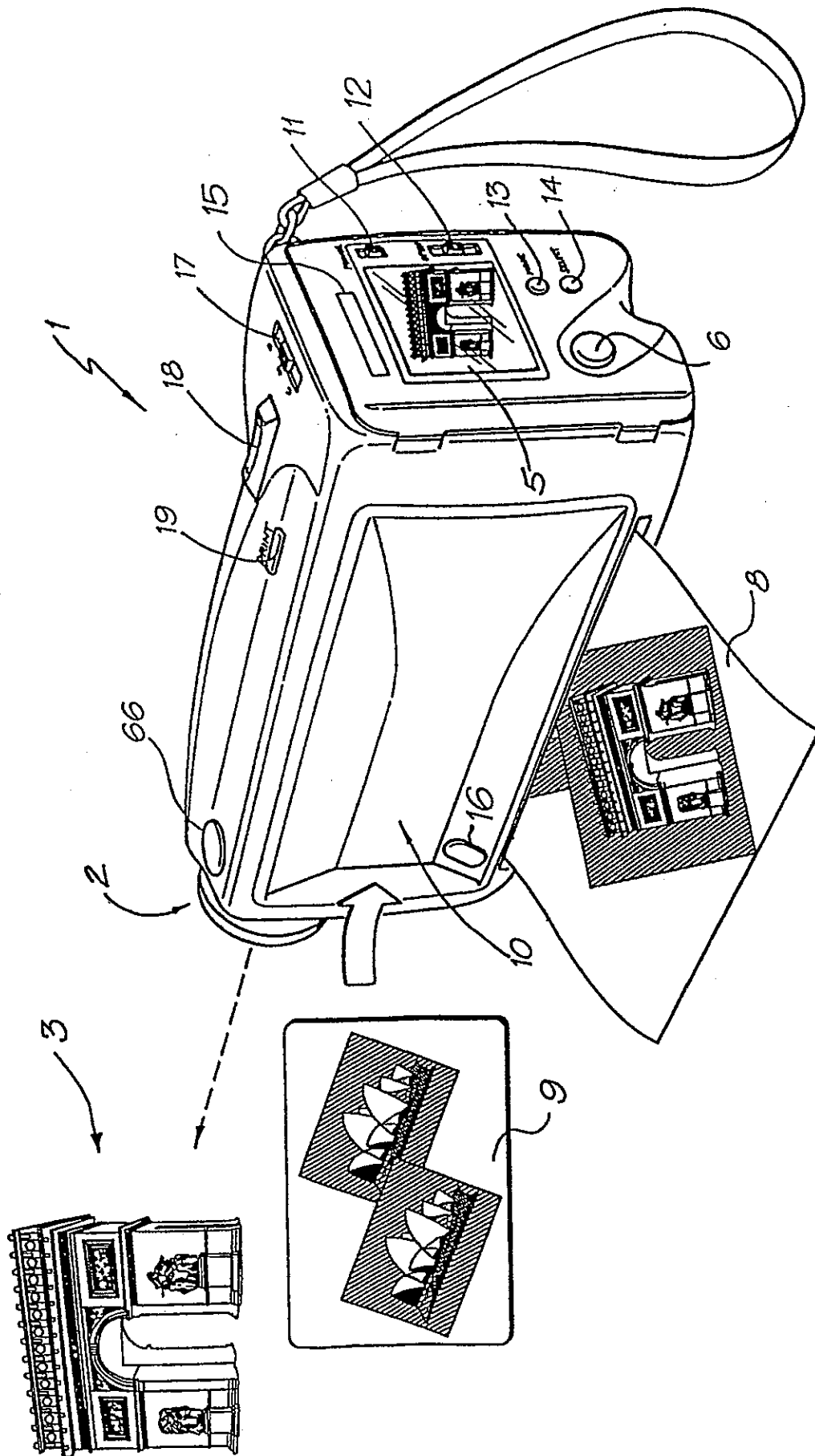


FIG. 1

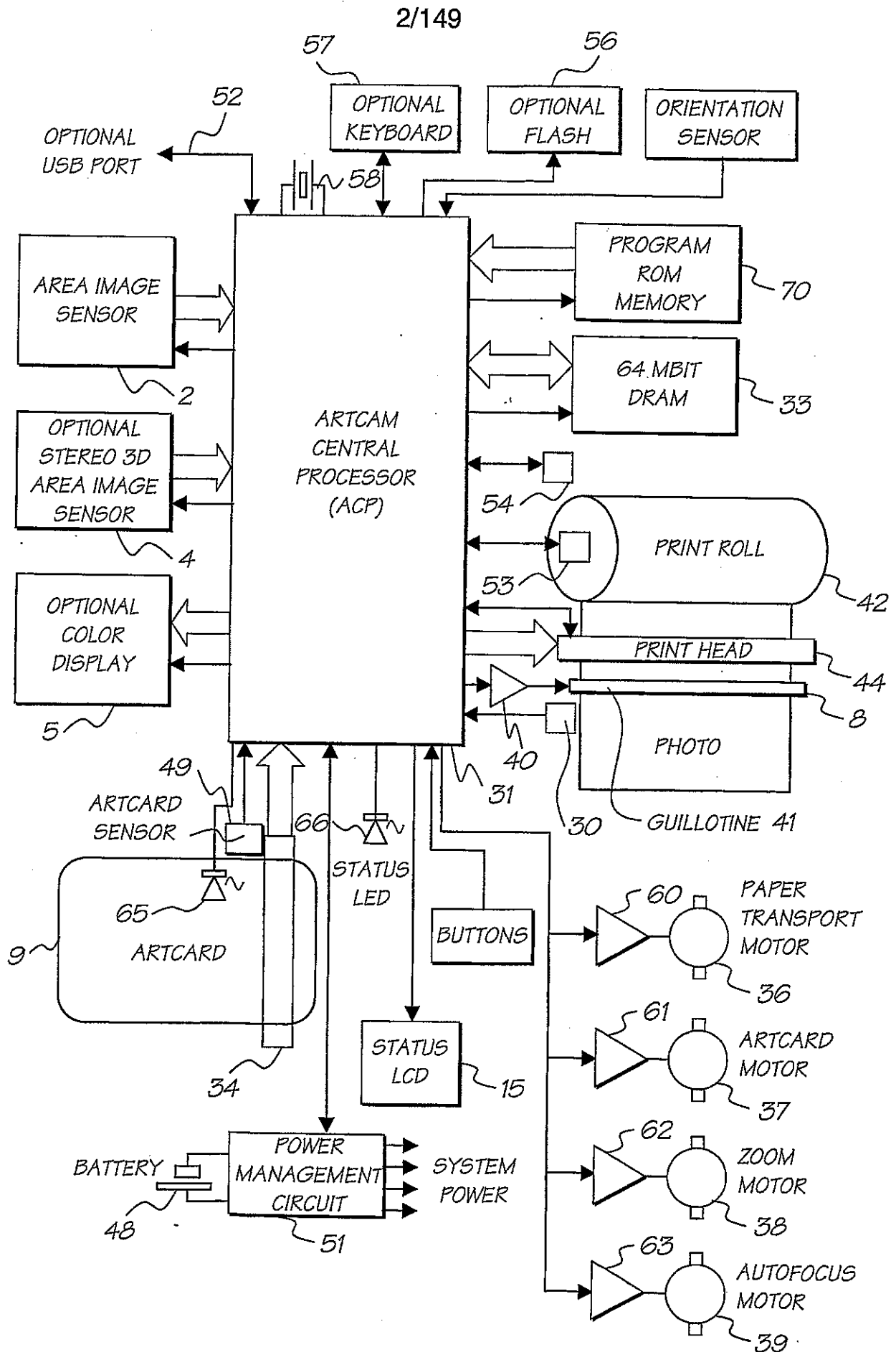


FIG. 2

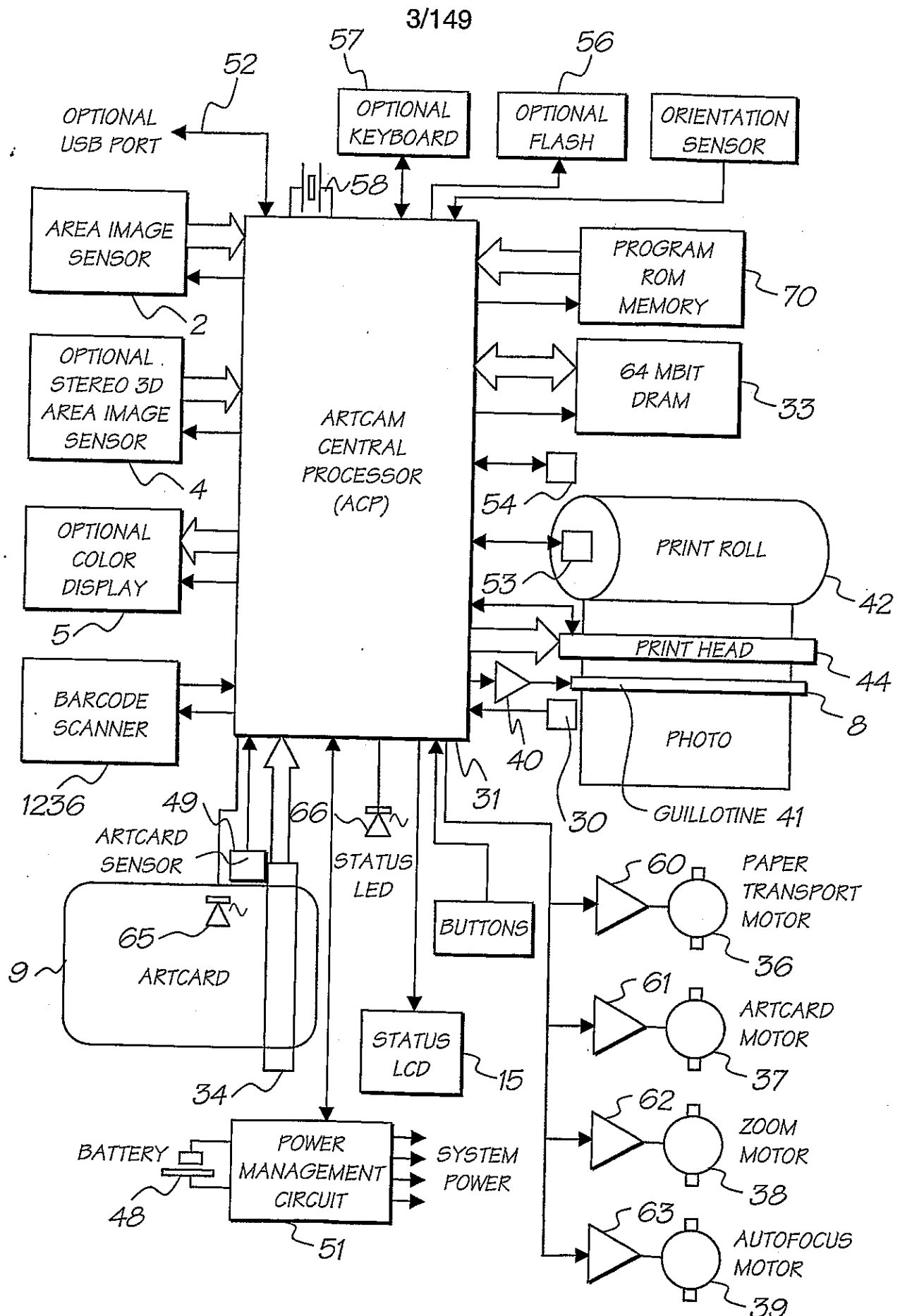


FIG. 2A

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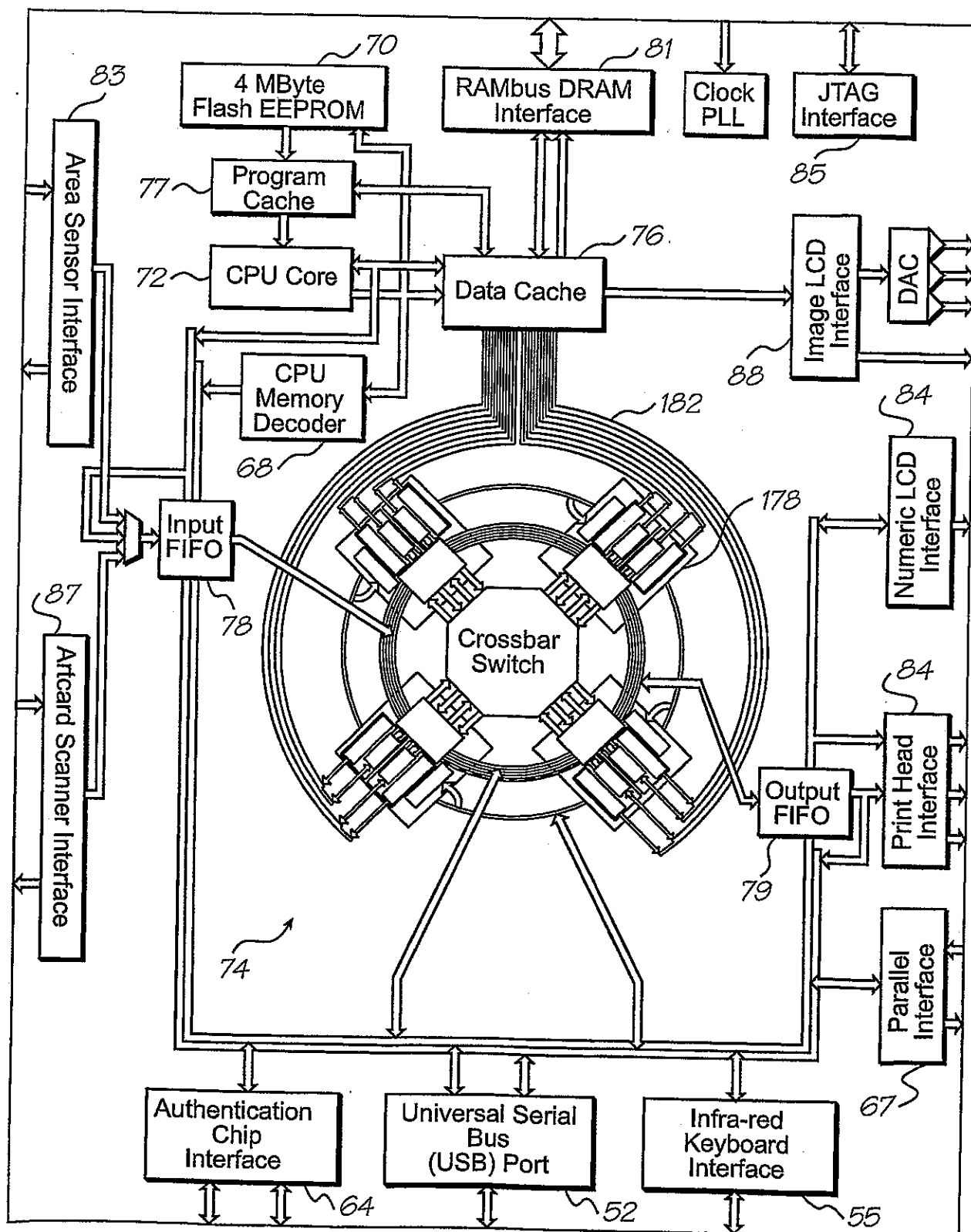
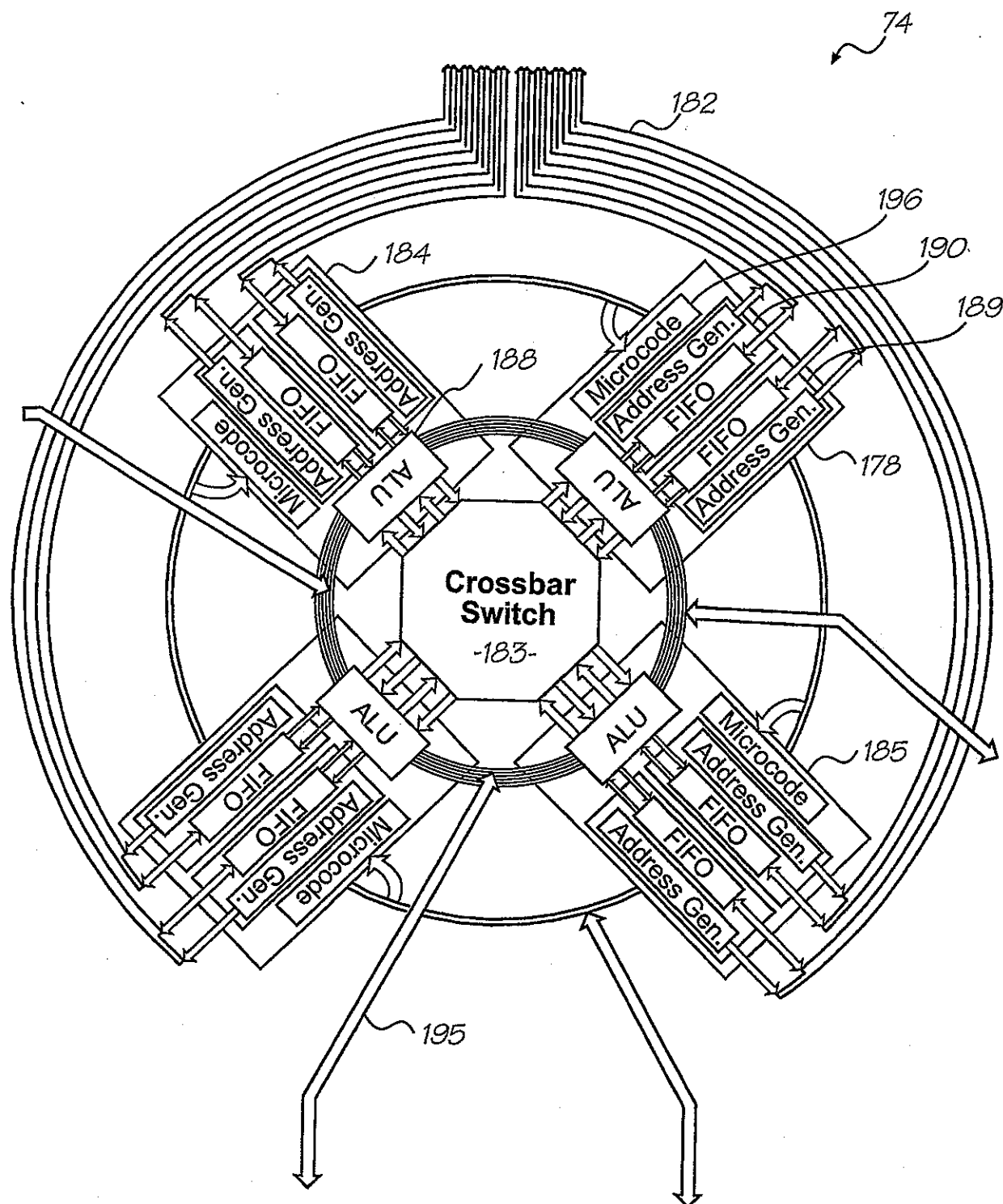


FIG. 3

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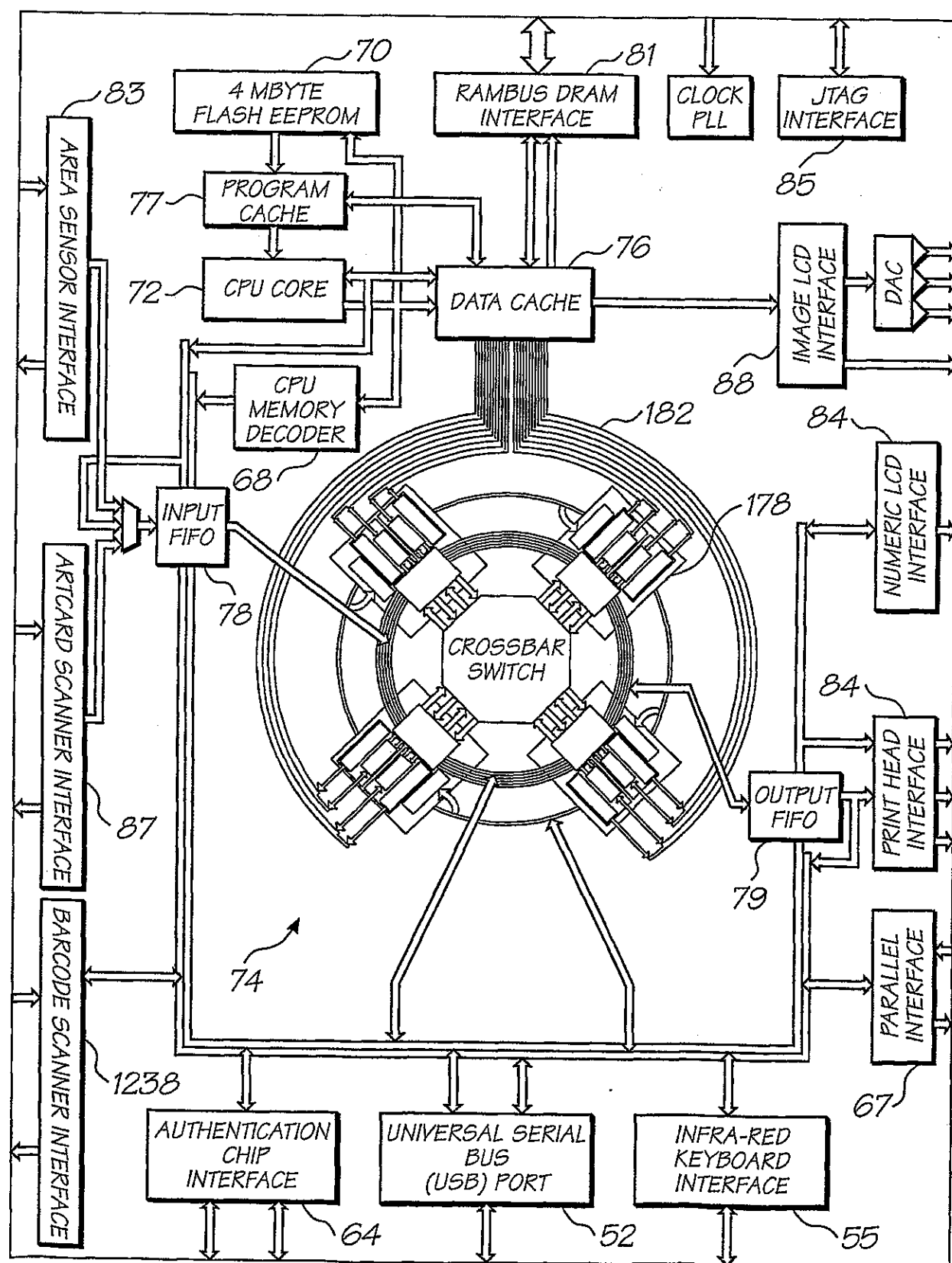


FIG. 3A

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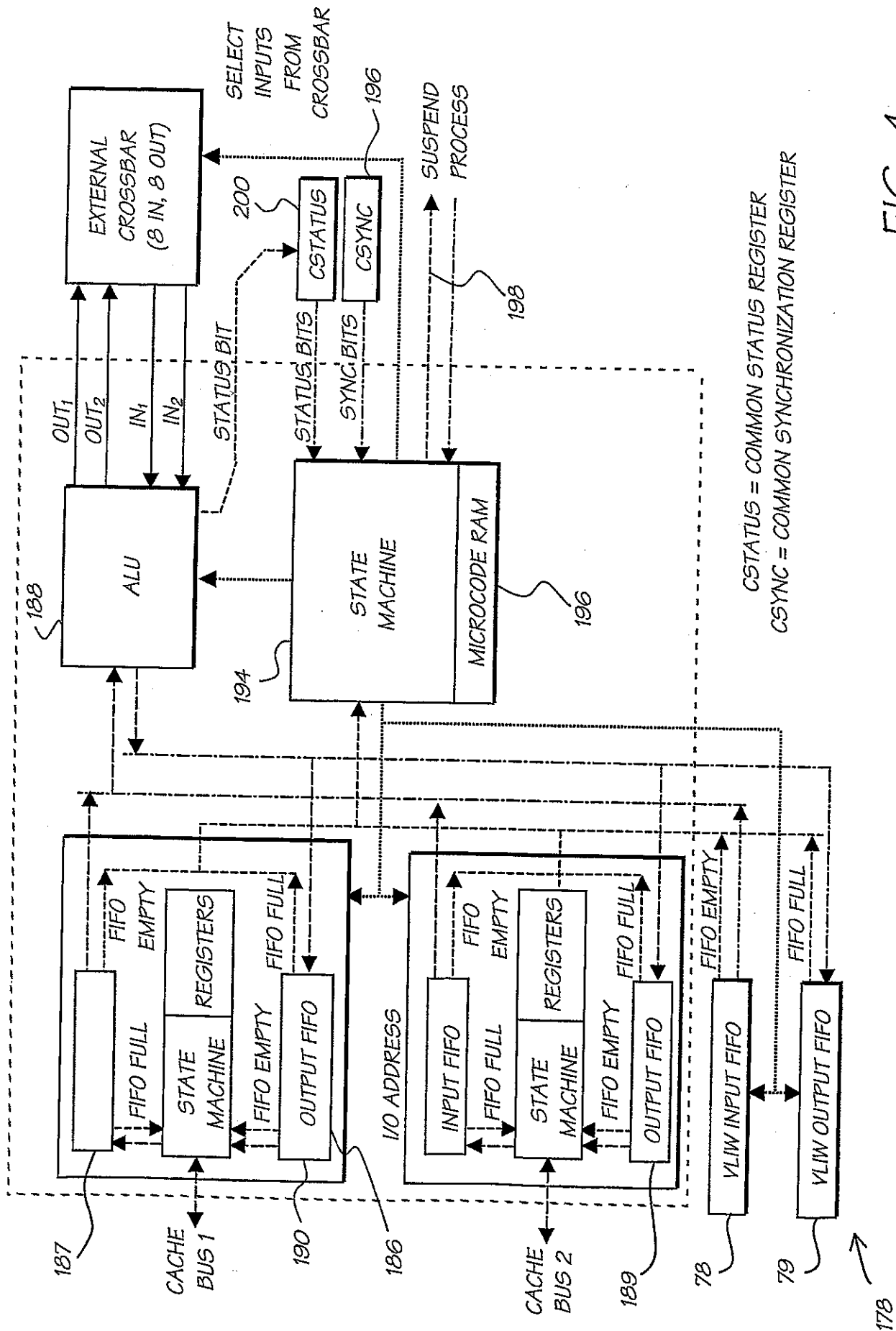


FIG. 4

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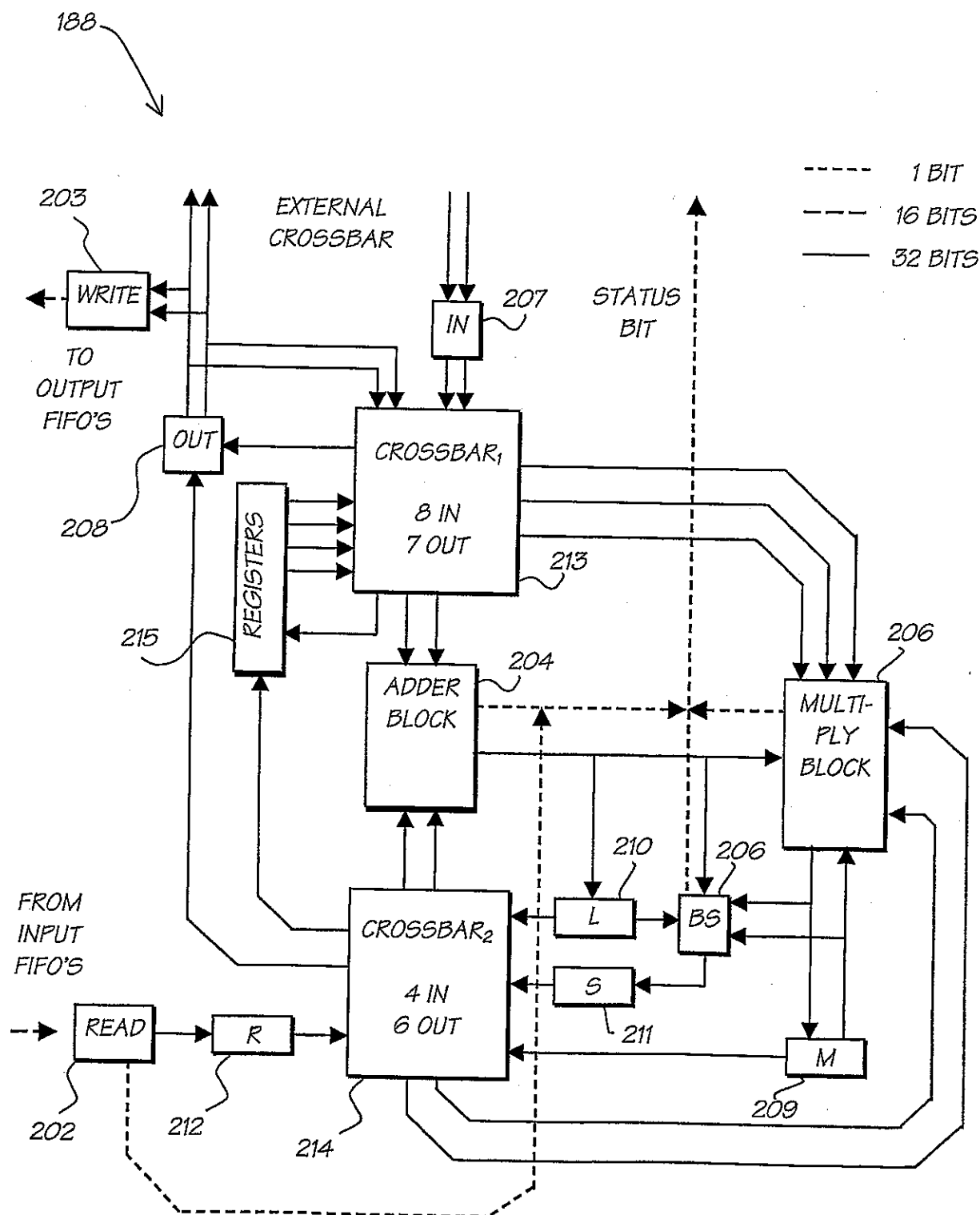


FIG. 5

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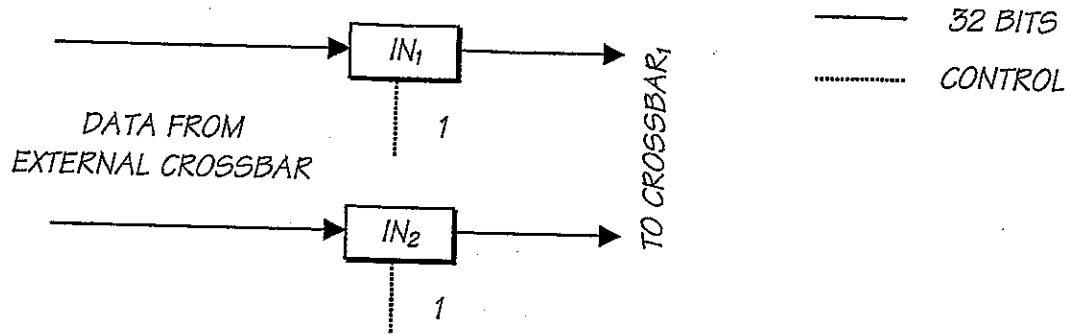


FIG. 6

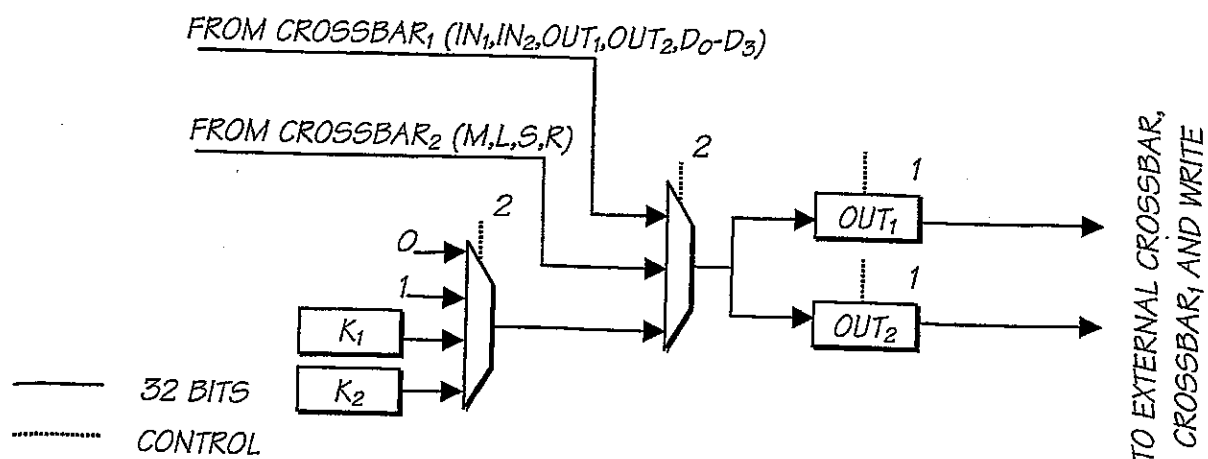


FIG. 7

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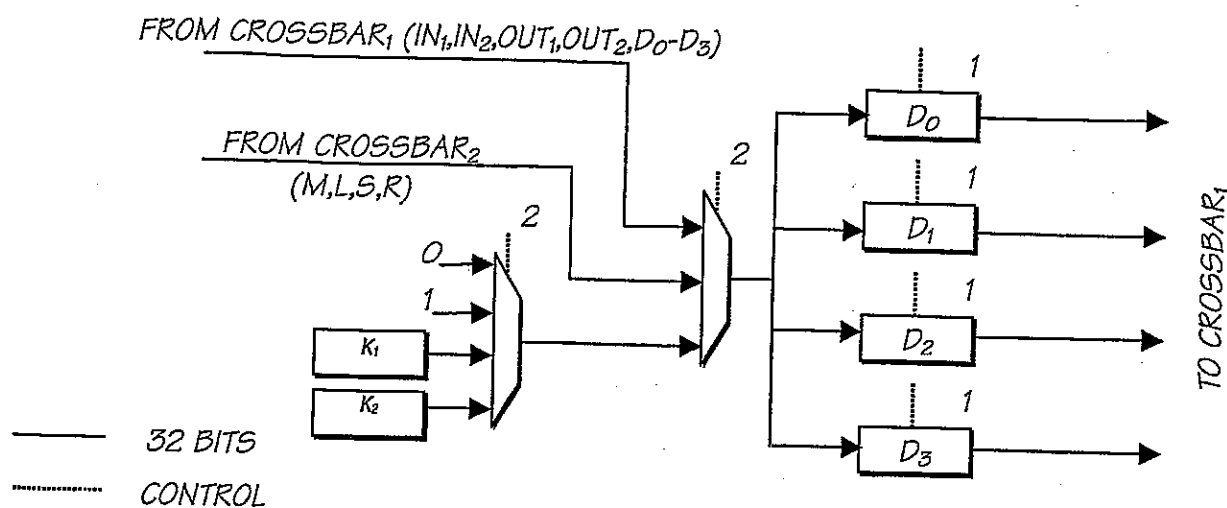


FIG. 8

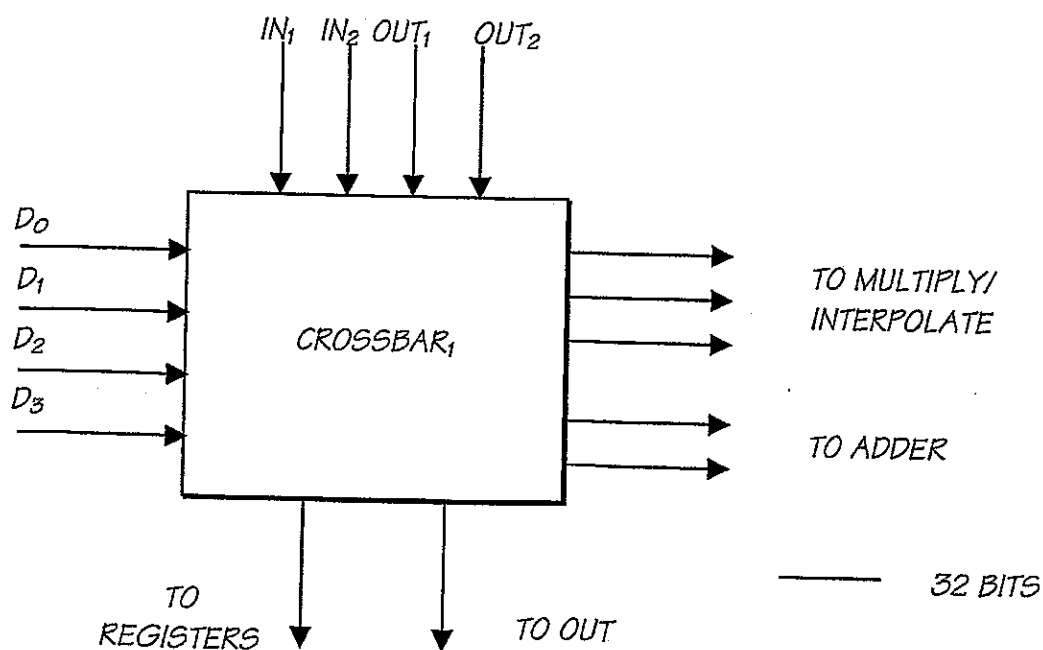


FIG. 9

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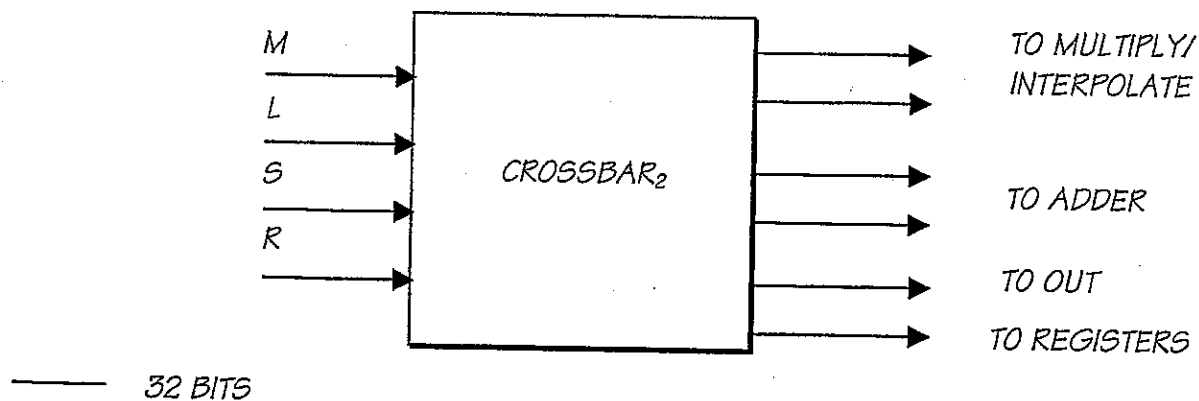


FIG. 10

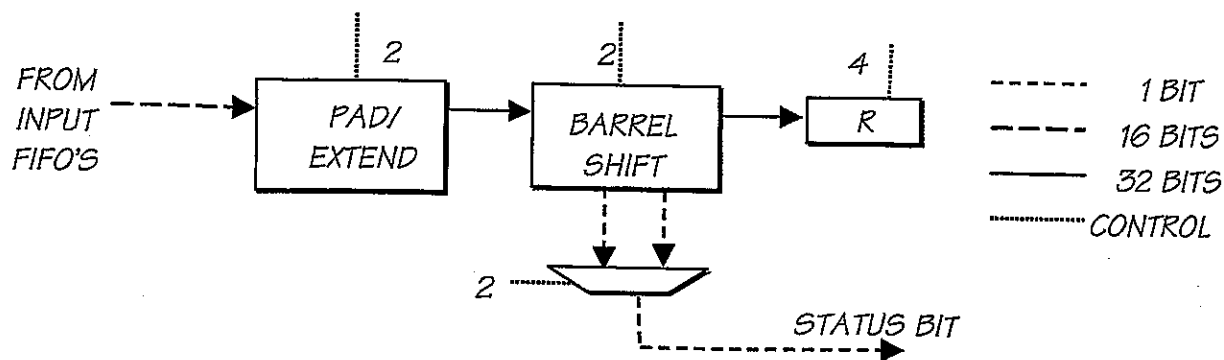


FIG. 11

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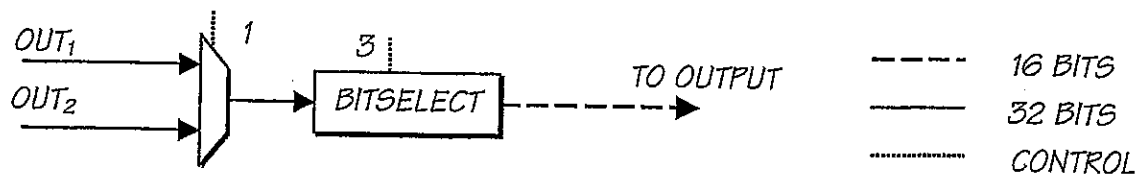


FIG. 12

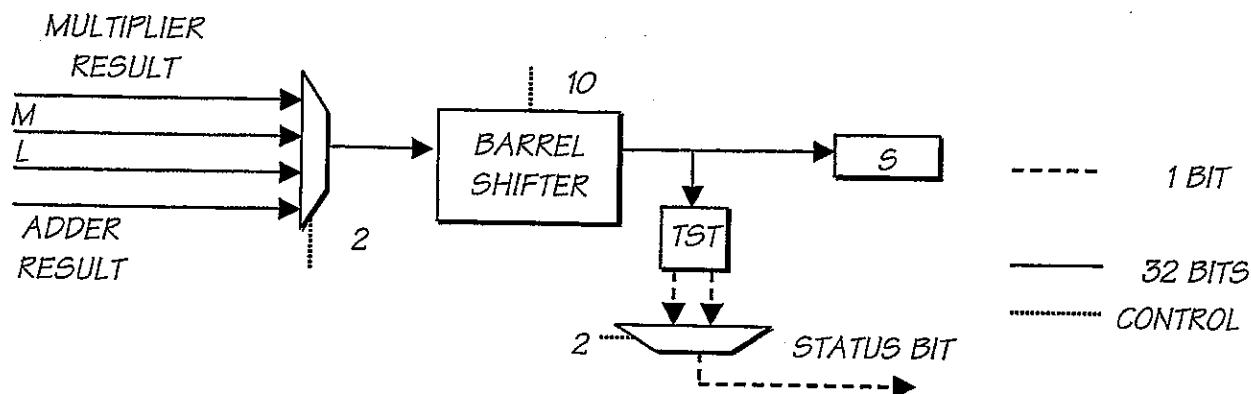


FIG. 13

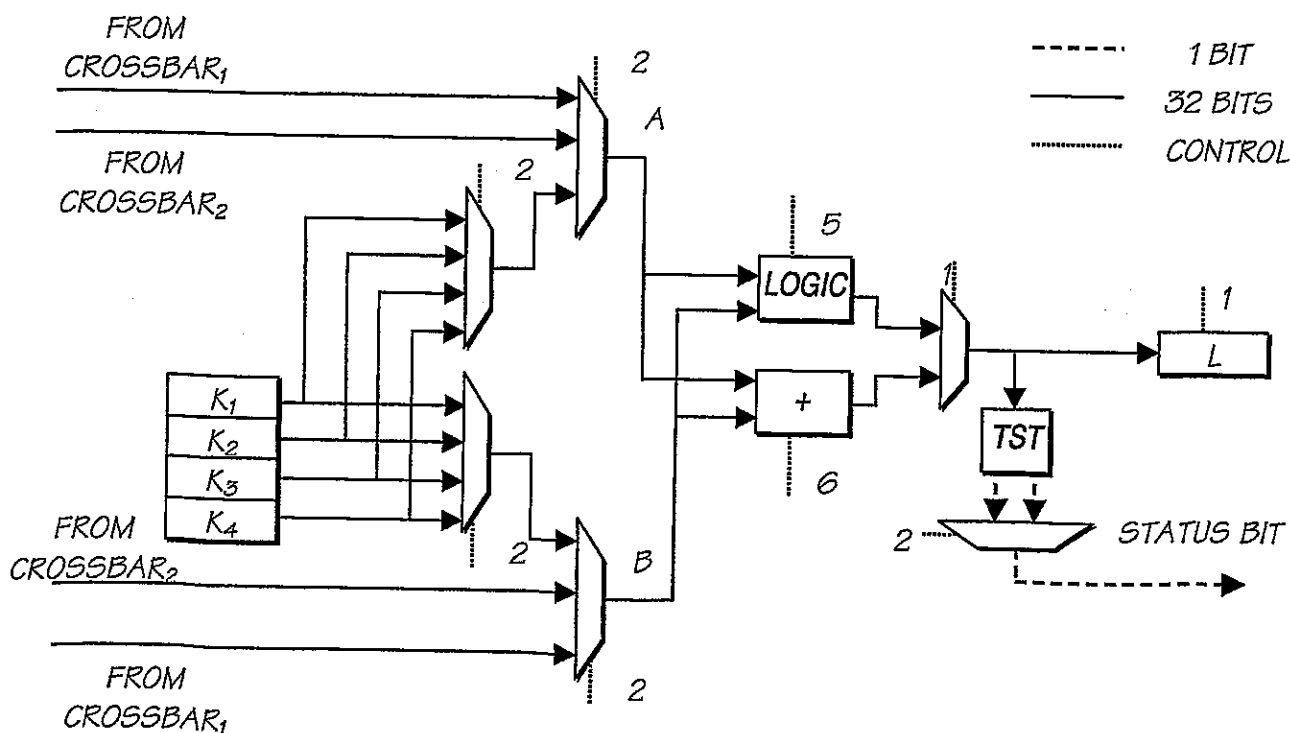


FIG. 14

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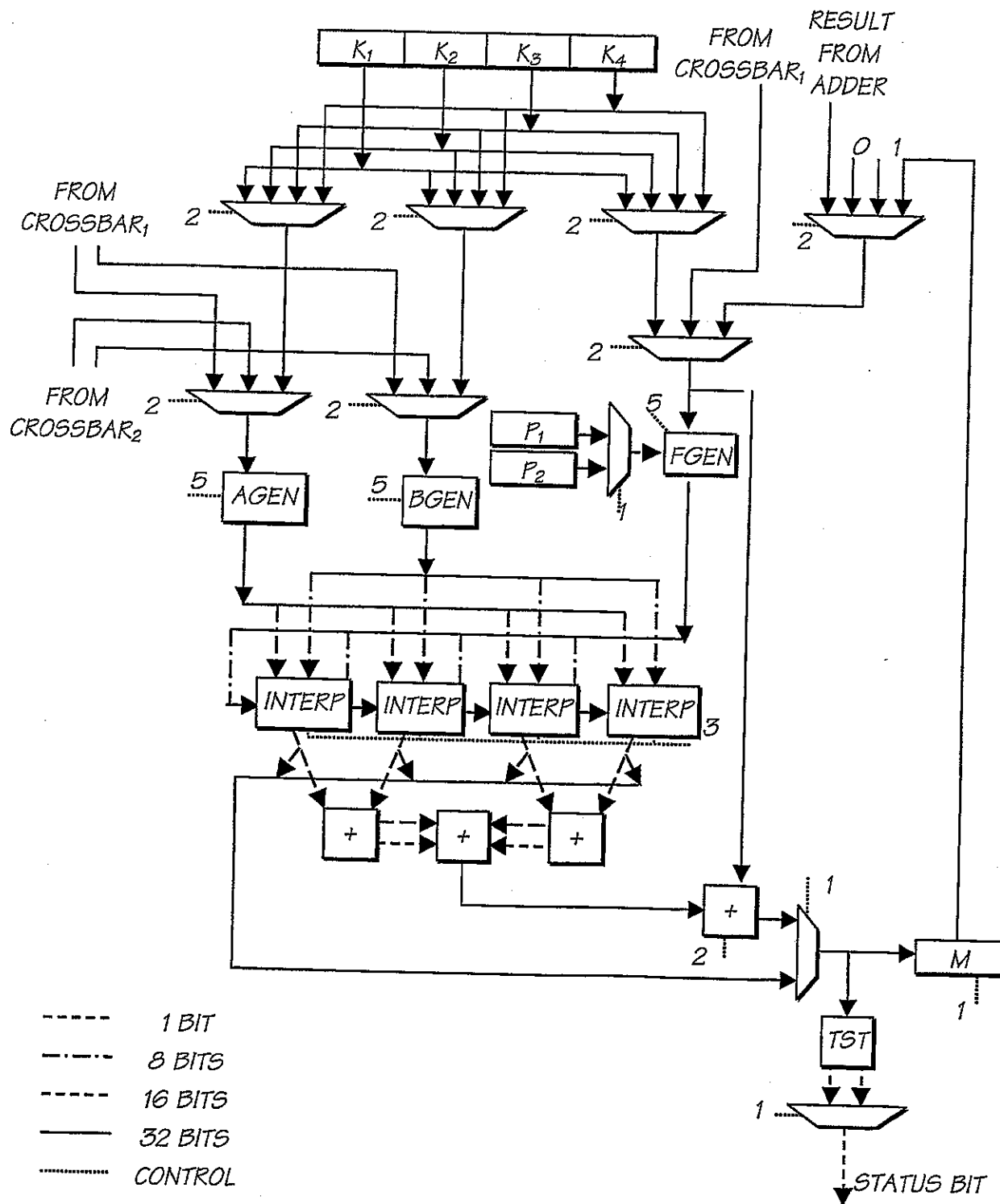


FIG. 15

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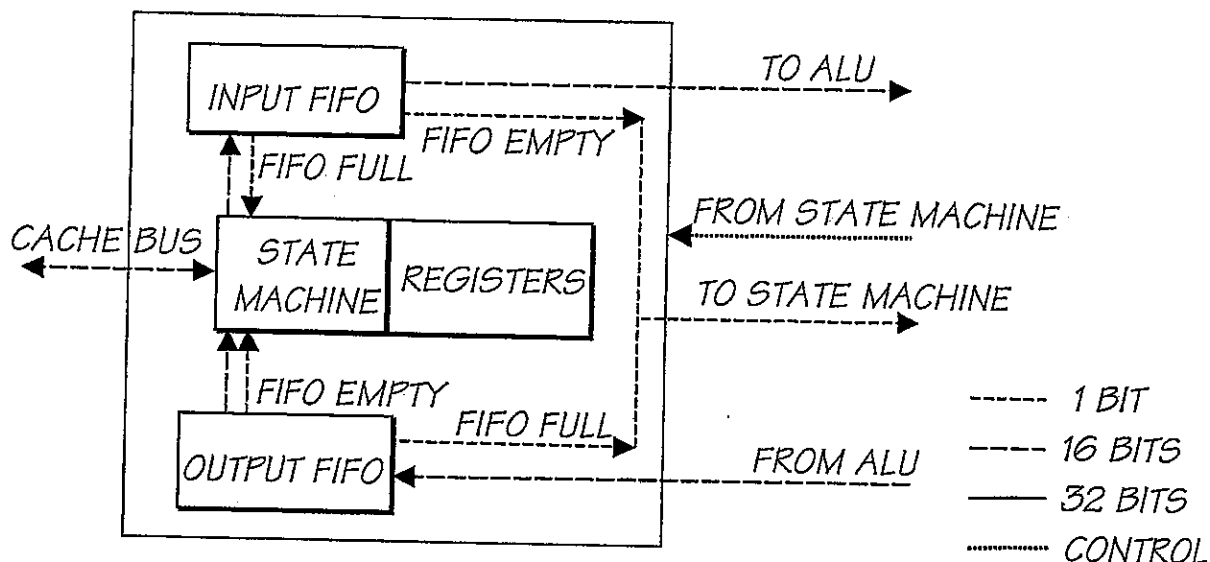


FIG. 16

ORDER OF PIXELS PRESENTED BY A SEQUENTIAL READ ITERATOR
ON A 4 X 2 IMAGE WITH PADDING.

0	1	2	3	
4	5	6	7	

FIG. 17

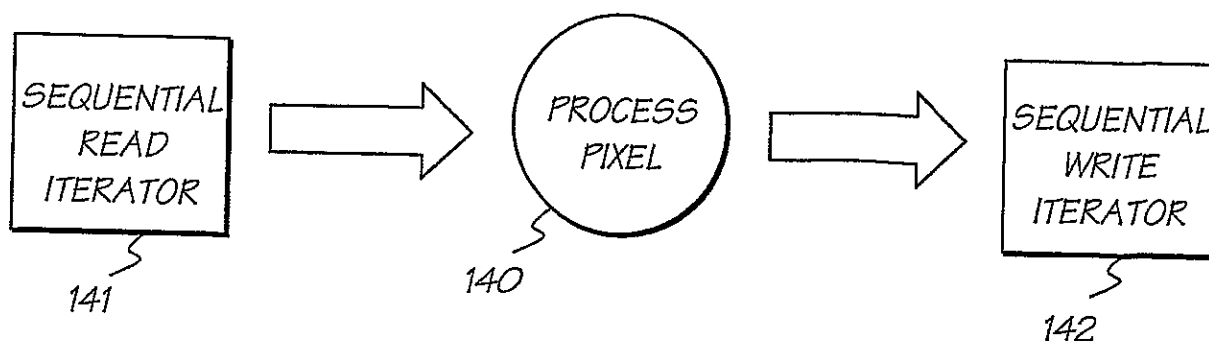
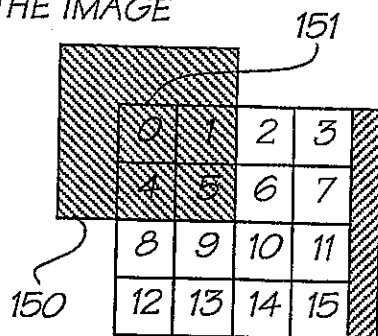


FIG. 18

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A 3x3 BOX VIEW TRAVERSES THE PIXELS IN ORDER: 0, 1, 2, 3, 4, 5, 6, 7, 8
ETC, PLACING A 3x3 BOX CENTERED OVER EACH PIXEL...

3x3 BOX VIEW OF FIRST
PIXEL IN IMAGE = 9 PIXELS,
5 OF WHICH ARE OUTSIDE
THE IMAGE



FIRST 9 PIXELS FROM THE BOX
READ ITERATOR:

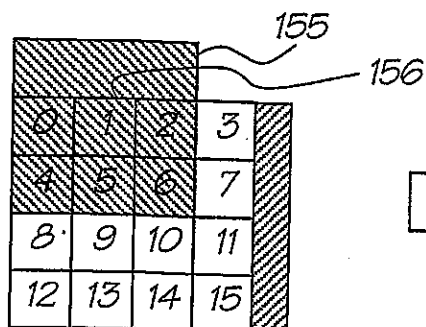
152

IF DUPLICATION OF EDGE PIXELS IS
ON: 0, 0, 0, 0, 0, 1, 4, 4, 5

IF DUPLICATION OF EDGE PIXELS IS
OFF: V, V, V, V, 0, 1, V, 4, 5
WHERE V IS CONSTANT PIXEL
REGISTER VALUE REPRESENTING
"OUTSIDE THE IMAGE"

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3x3 BOX VIEW OF
SECOND PIXEL IN IMAGE
= 9 PIXELS,
3 OF WHICH ARE
OUTSIDE THE IMAGE



SECOND 9 PIXELS FROM THE BOX
READ ITERATOR:

IF DUPLICATION OF EDGE PIXELS
IS ON: 0, 1, 2, 0, 1, 2, 4, 5, 6

IF DUPLICATION OF EDGE PIXELS
IS OFF: V, V, V, 0, 1, 2, 4, 5, 6
WHERE V IS CONSTANT PIXEL
REGISTER VALUE REPRESENTING
"OUTSIDE THE IMAGE"

FIG. 19

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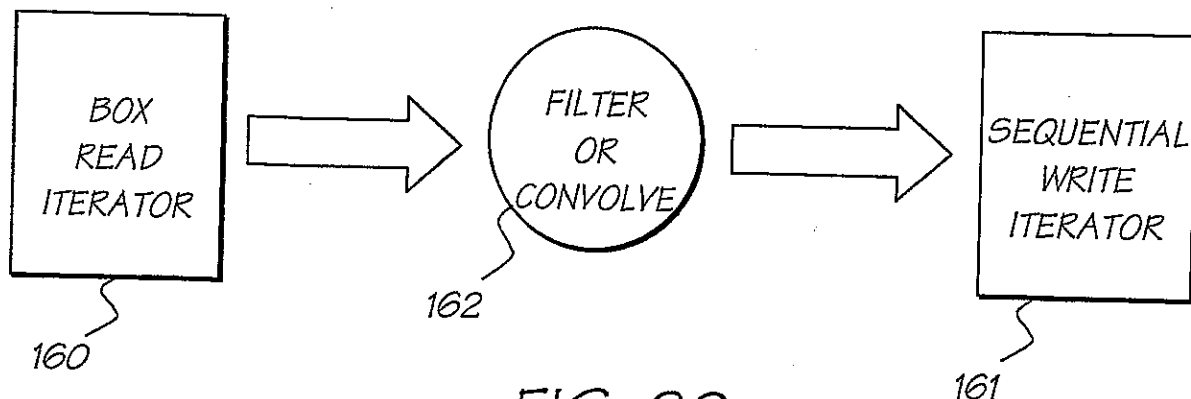
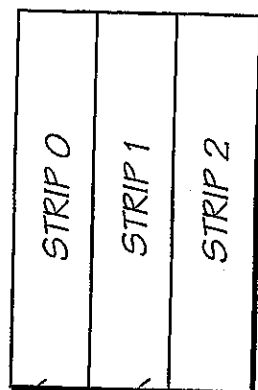
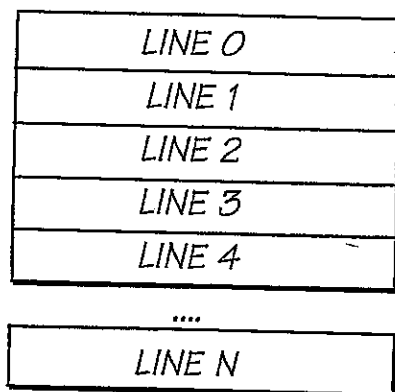


FIG. 20

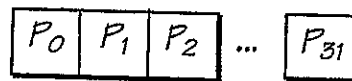
IMAGE BROKEN INTO
VERTICAL STRIPS,
EACH STRIP IS 32
PIXELS ACROSS



LINES ARE ACCESSED
LINE 0 TO LINE N
WITHIN A SINGLE STRIP.



PIXELS ARE ACCESSED
PIXEL 0 - PIXEL 31
WITHIN A SINGLE LINE



169

170

FIG. 21

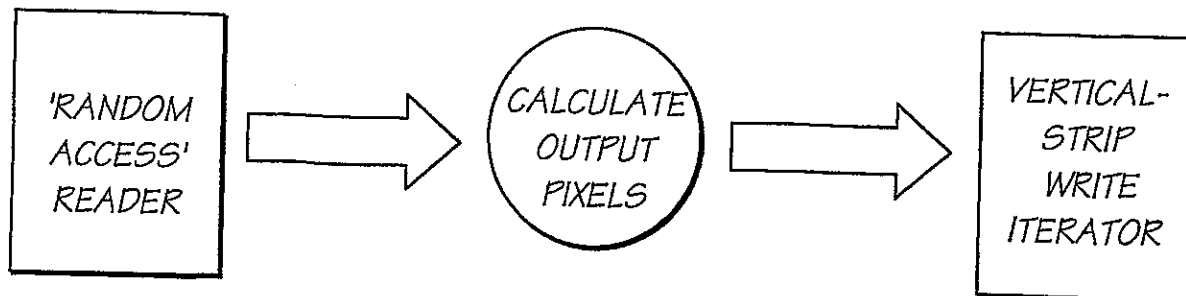


FIG. 22

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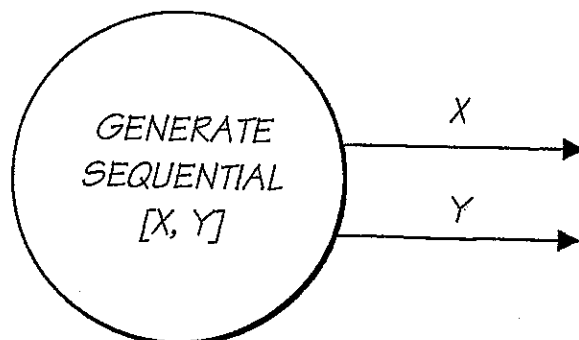


FIG. 23

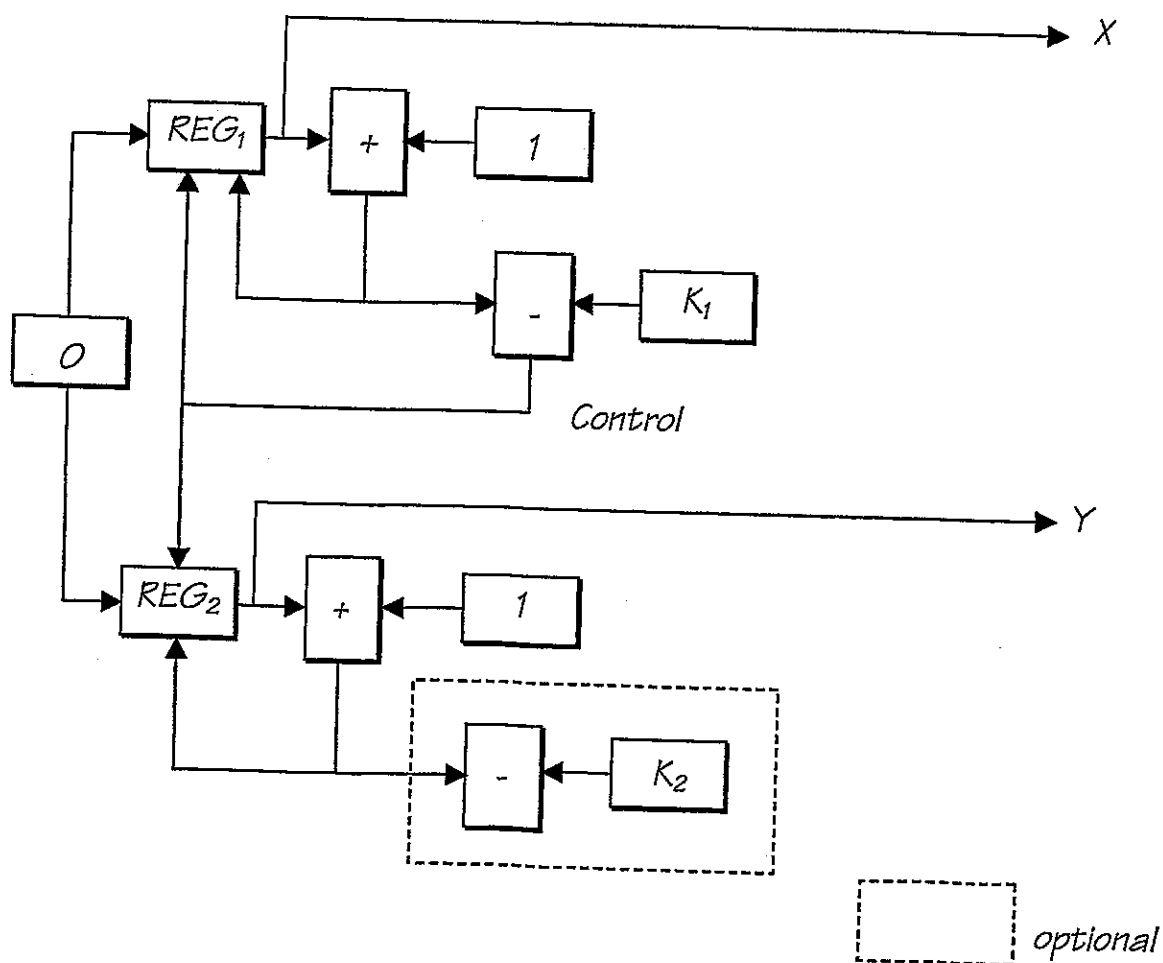


FIG. 24

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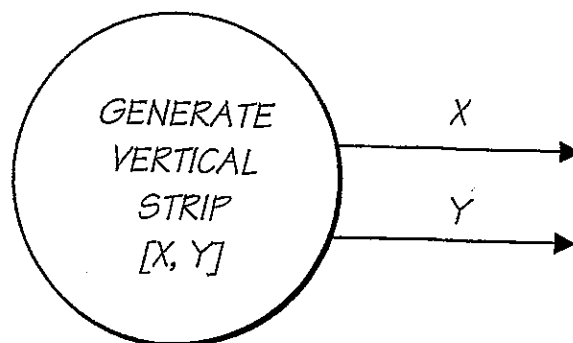


FIG. 25

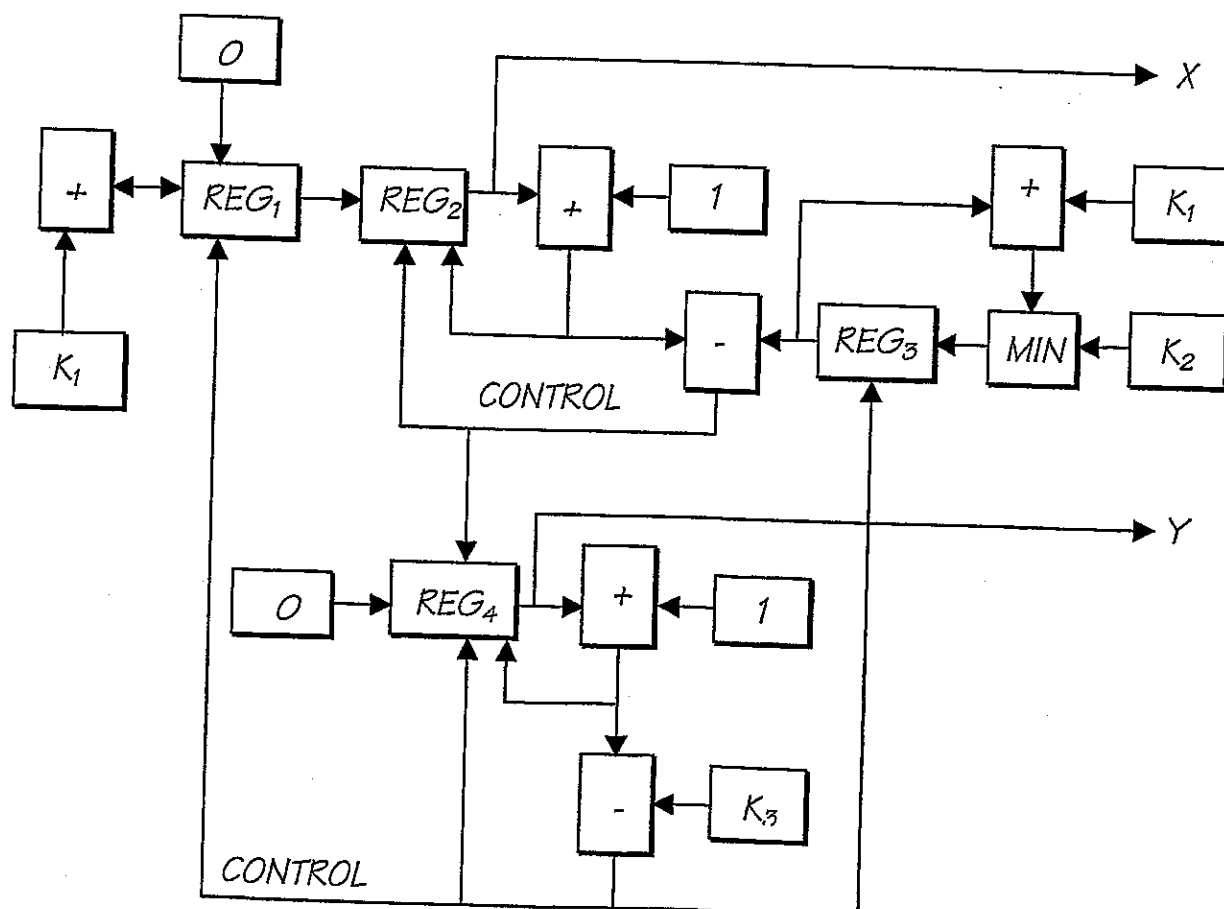
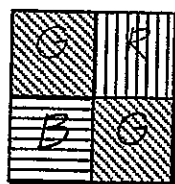


FIG. 26

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2X2 PIXEL BLOCK FROM SENSOR

FIG. 27

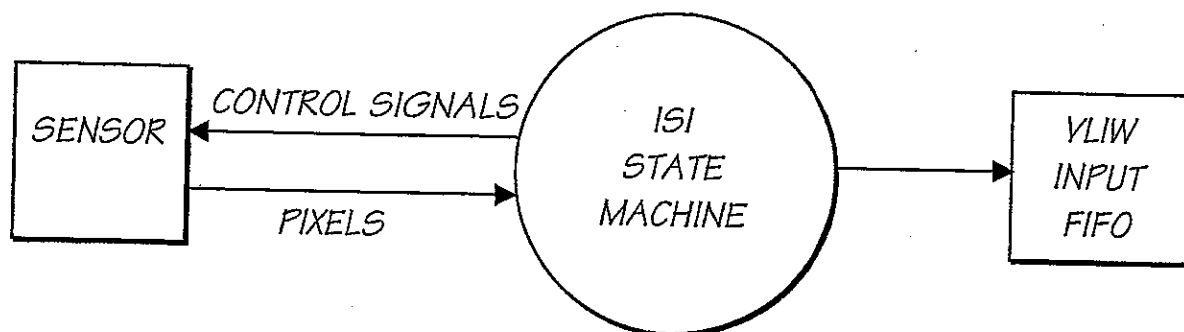


FIG. 28

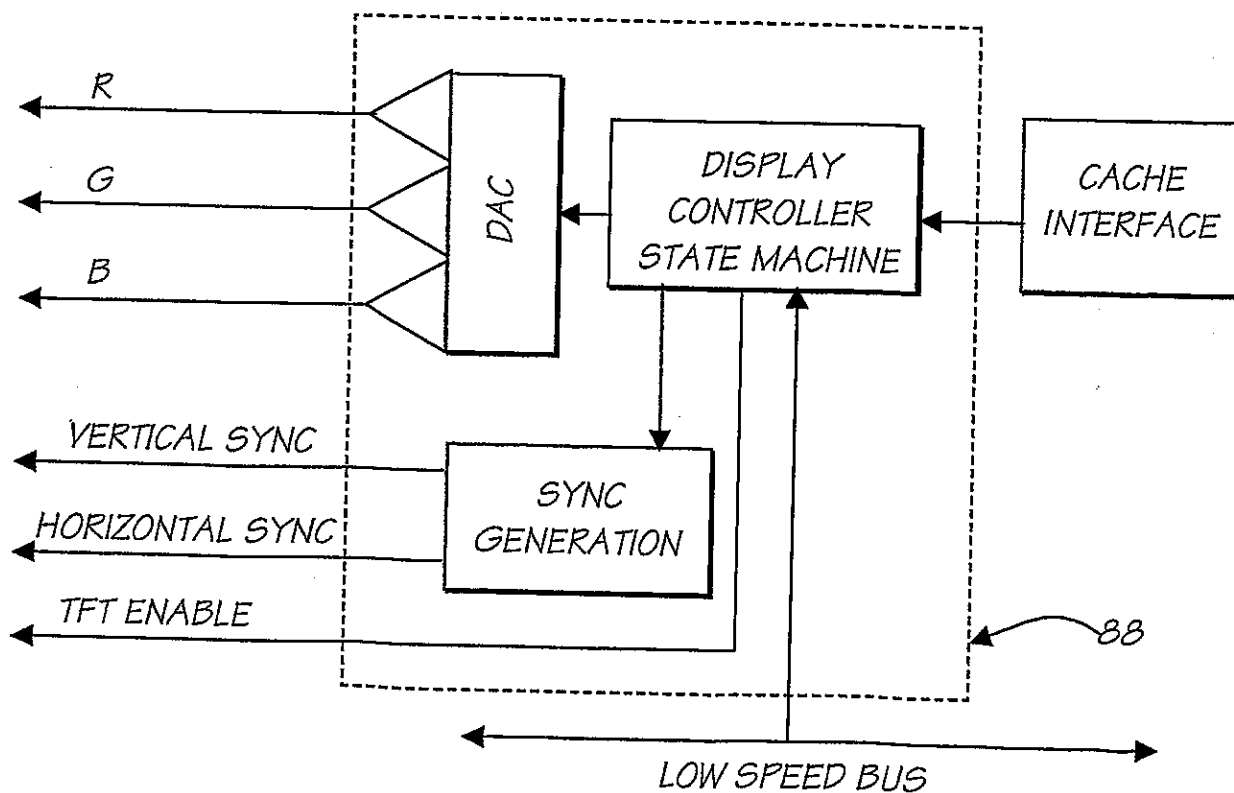
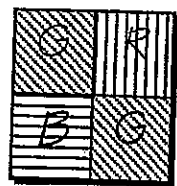


FIG. 29

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2X2 PIXEL BLOCK FROM CCD

FIG. 30

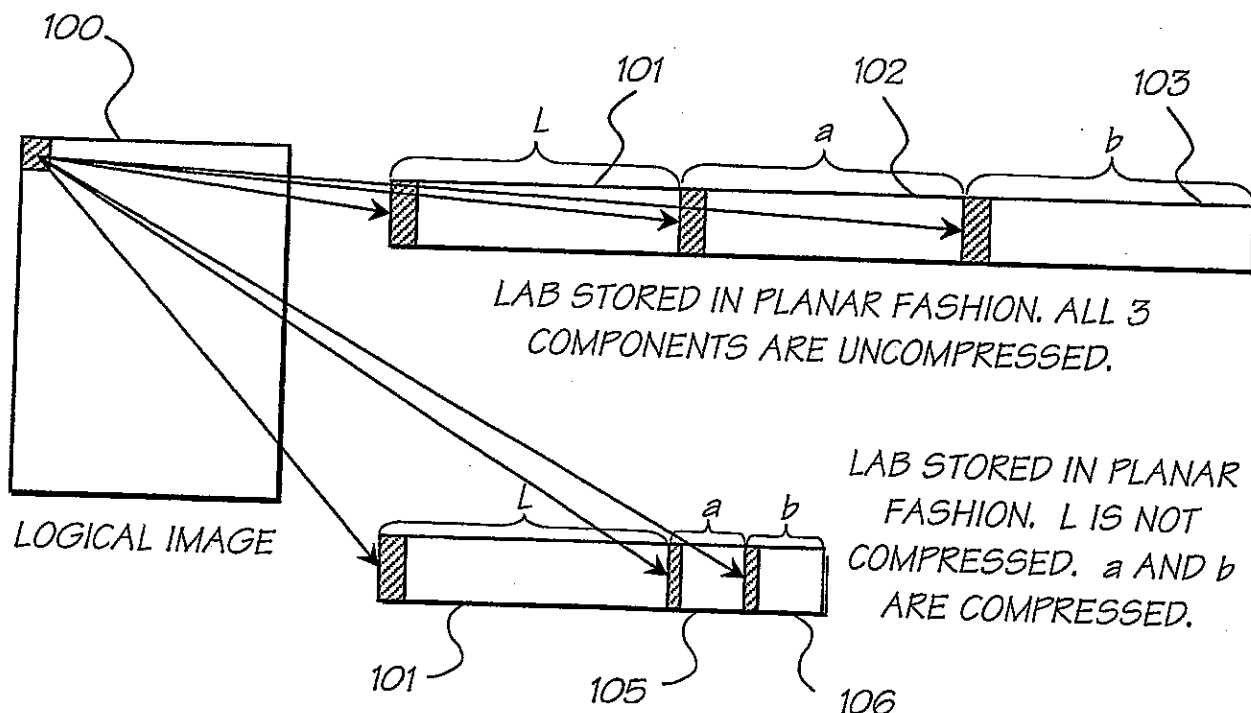


FIG. 31

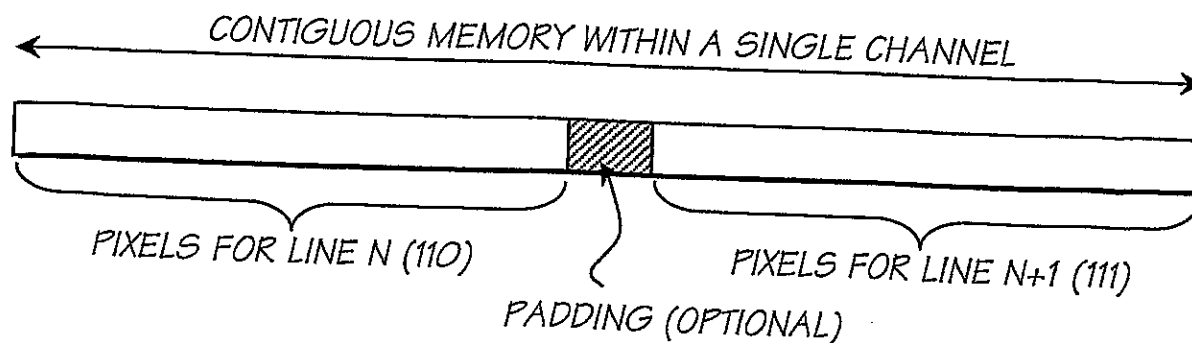


FIG. 32

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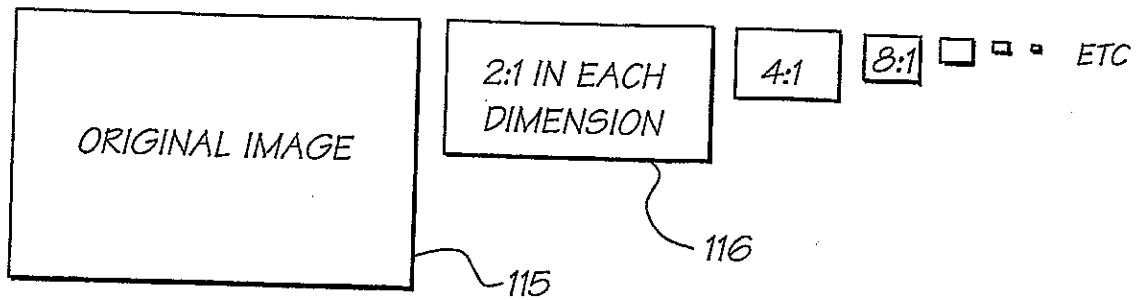


FIG. 33

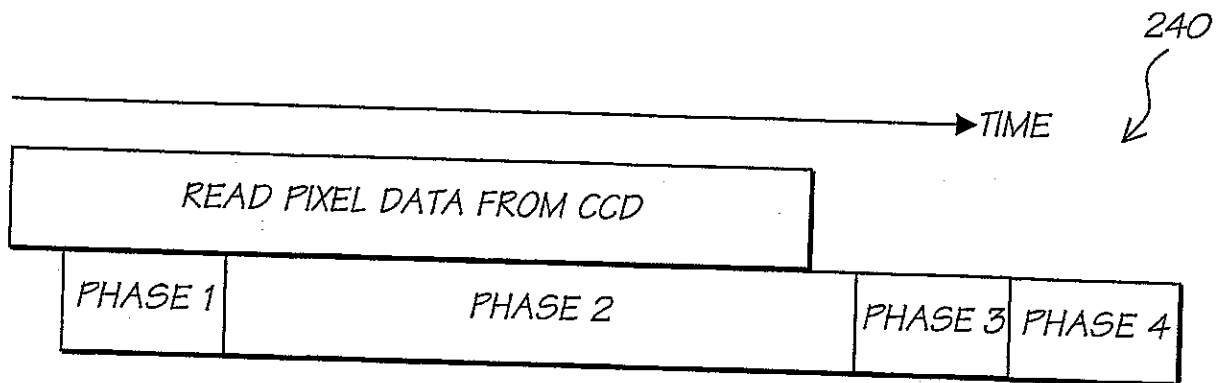


FIG. 34

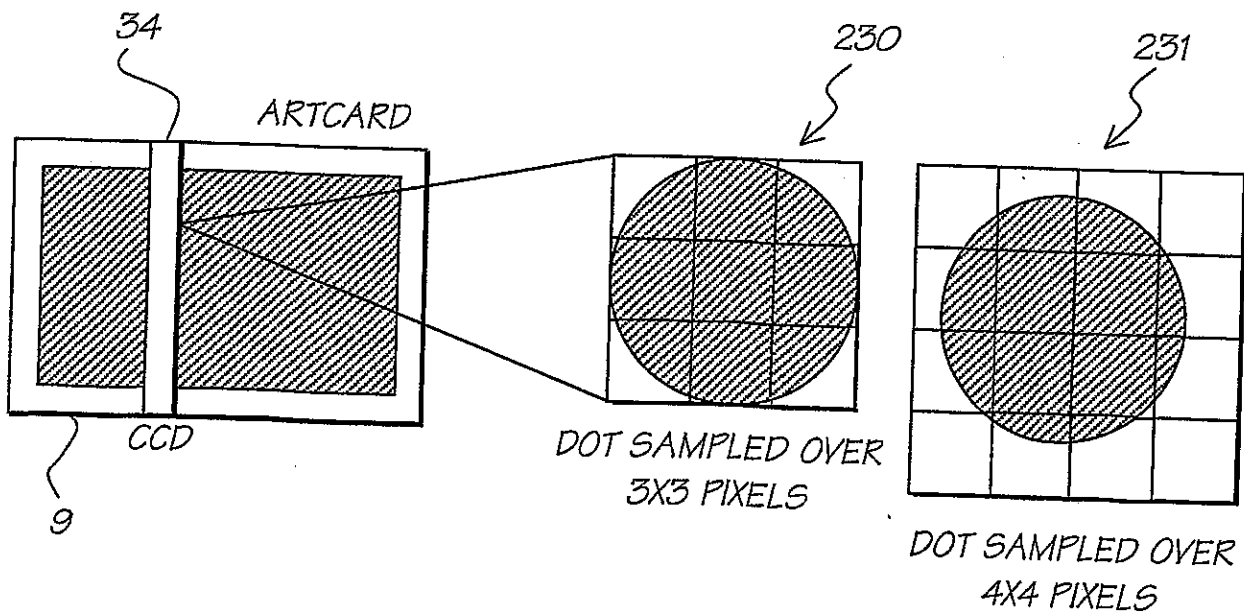


FIG. 35

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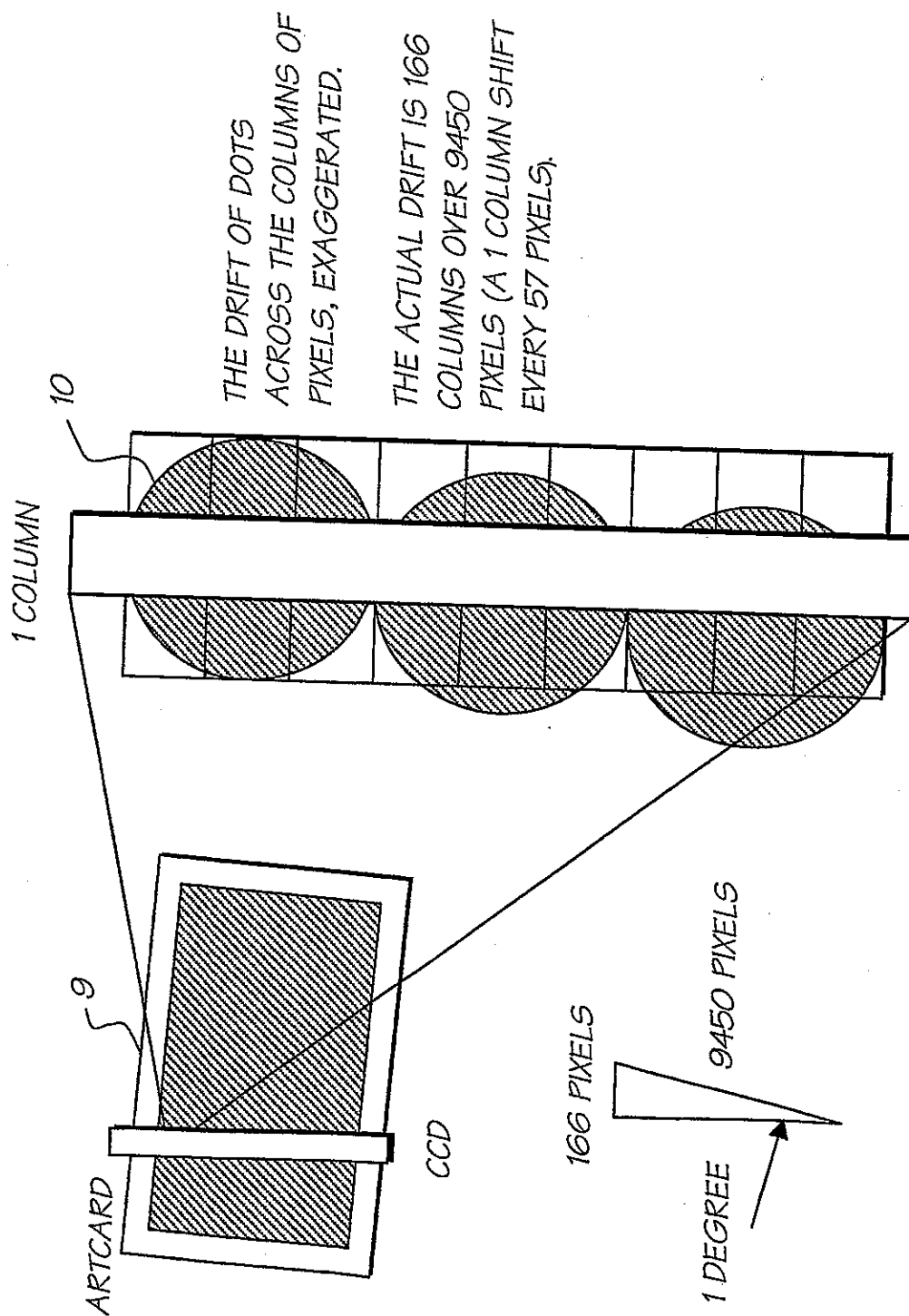


FIG. 36

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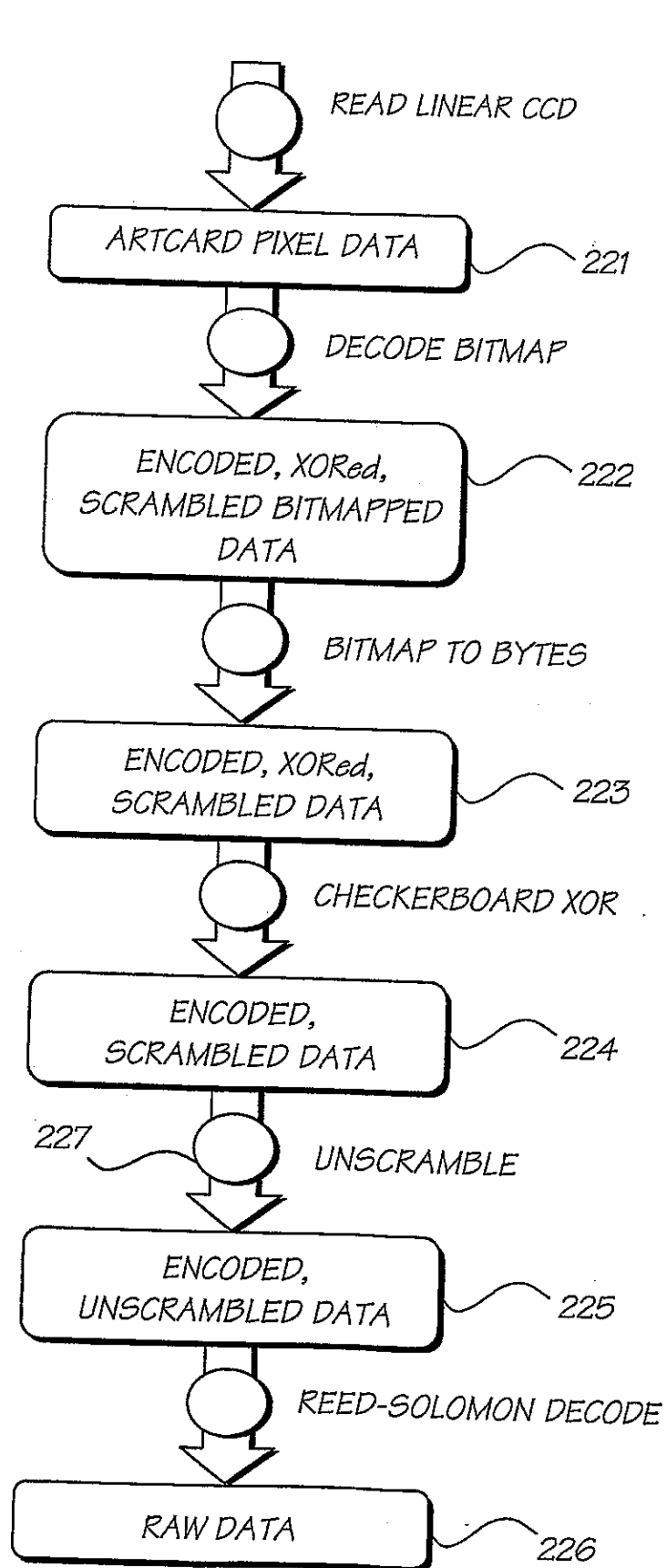


FIG. 37

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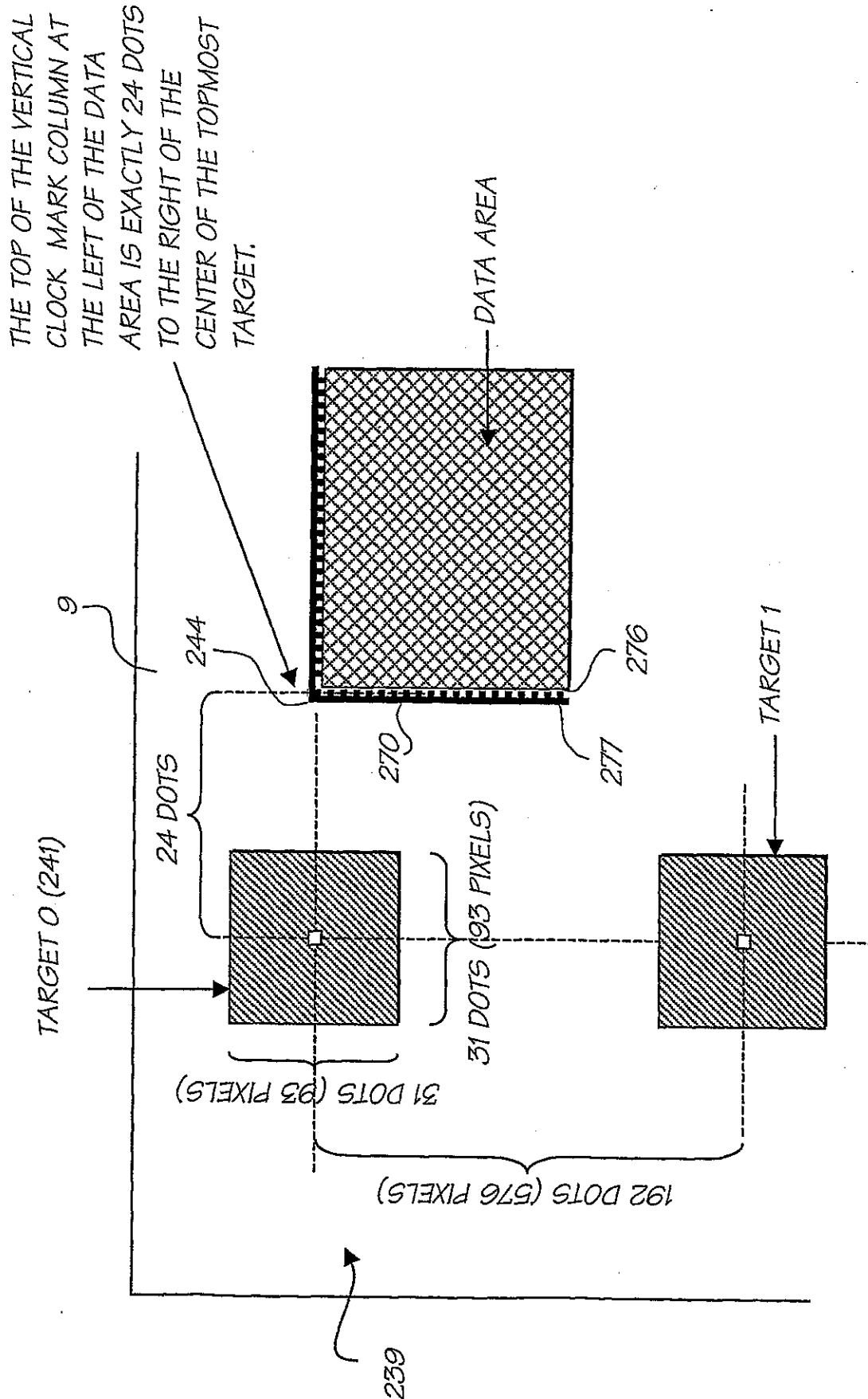


FIG. 38

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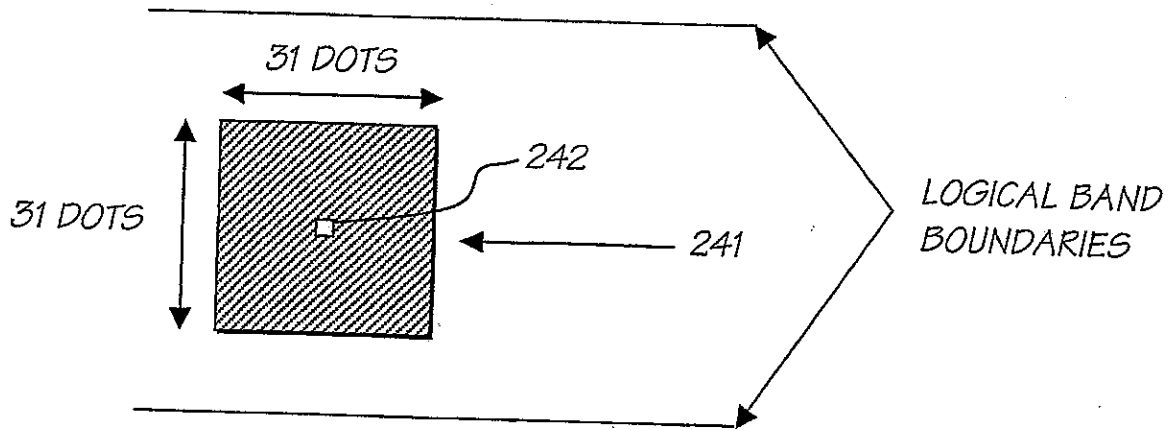


FIG. 39

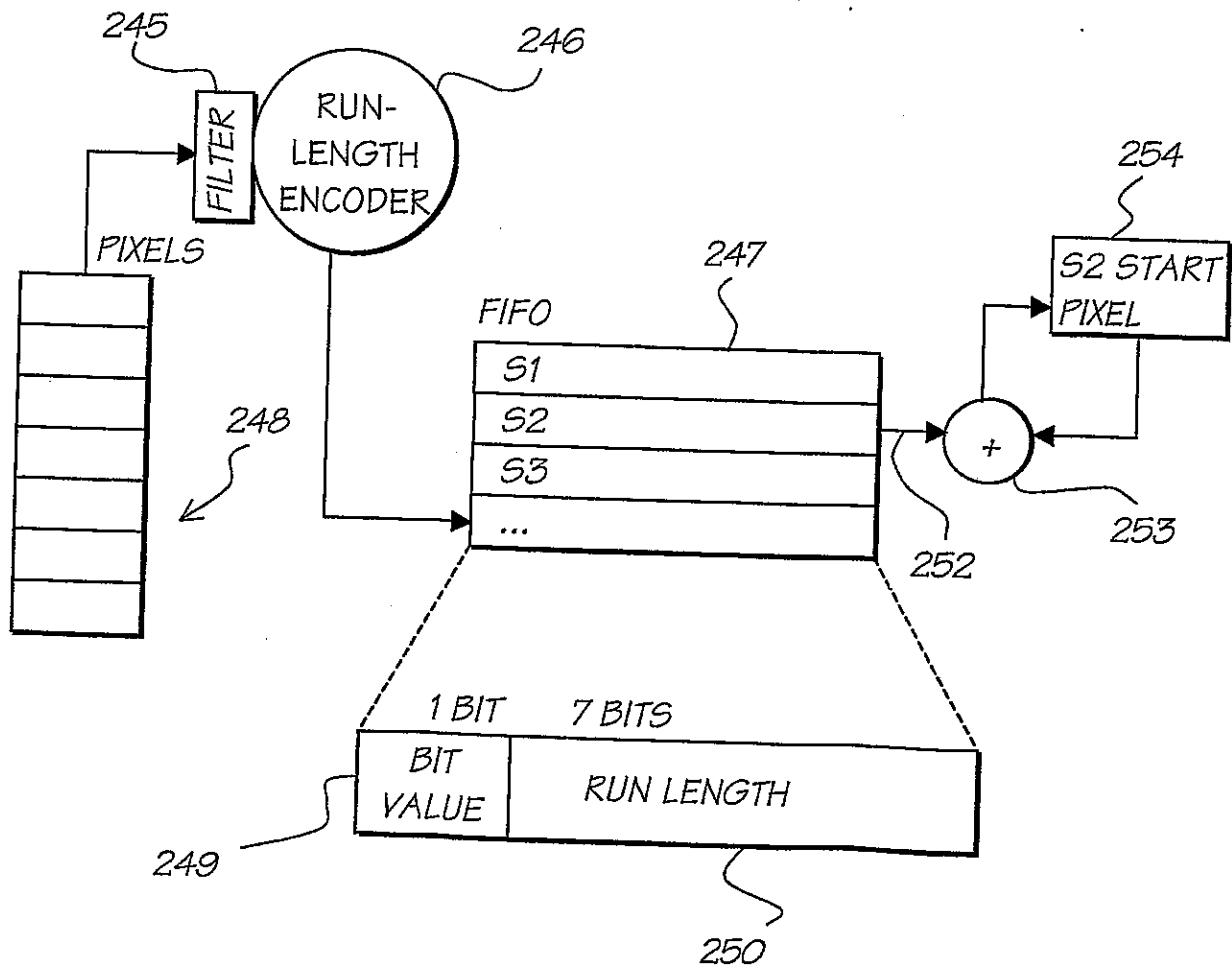


FIG. 40

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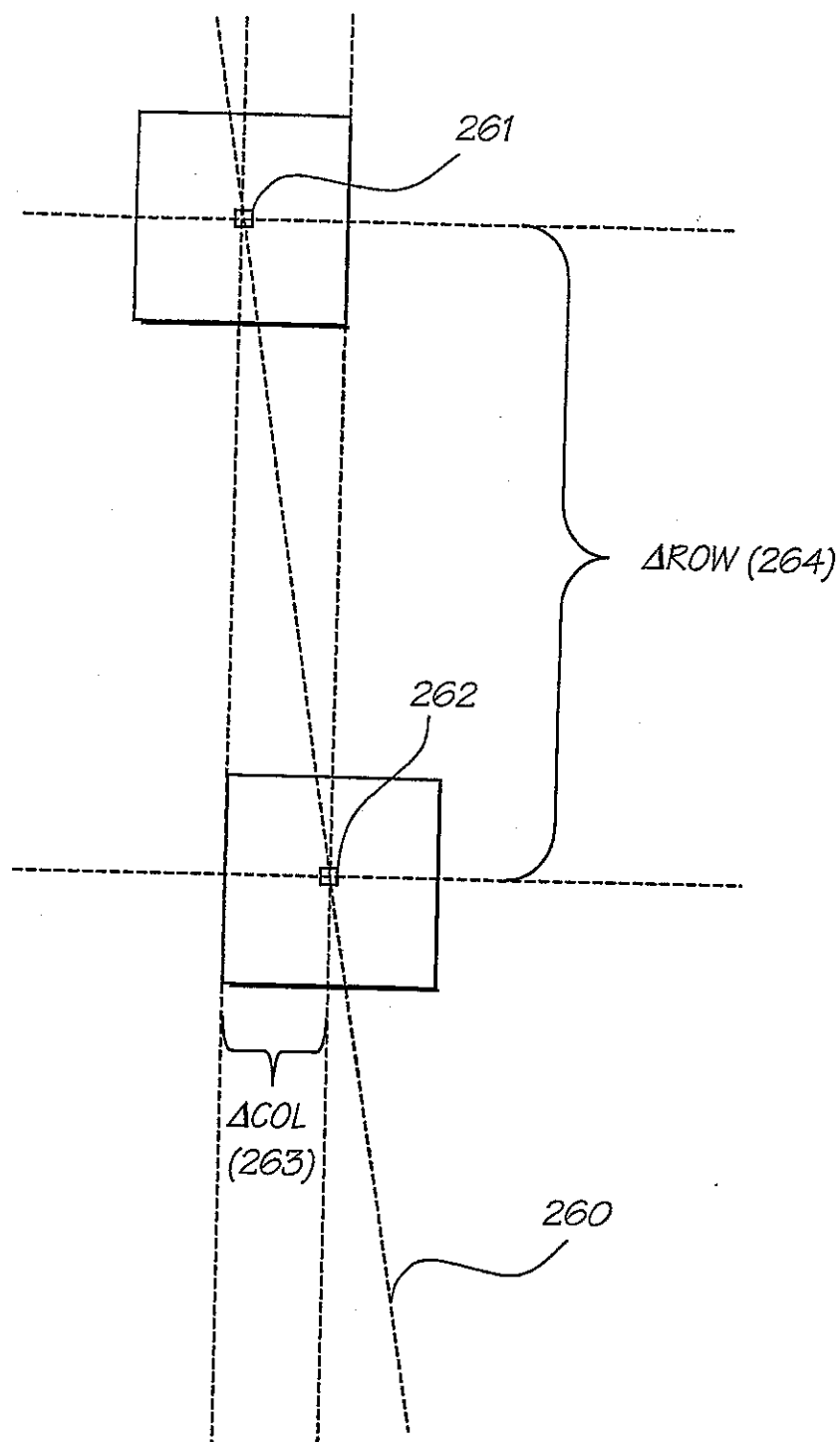


FIG. 41

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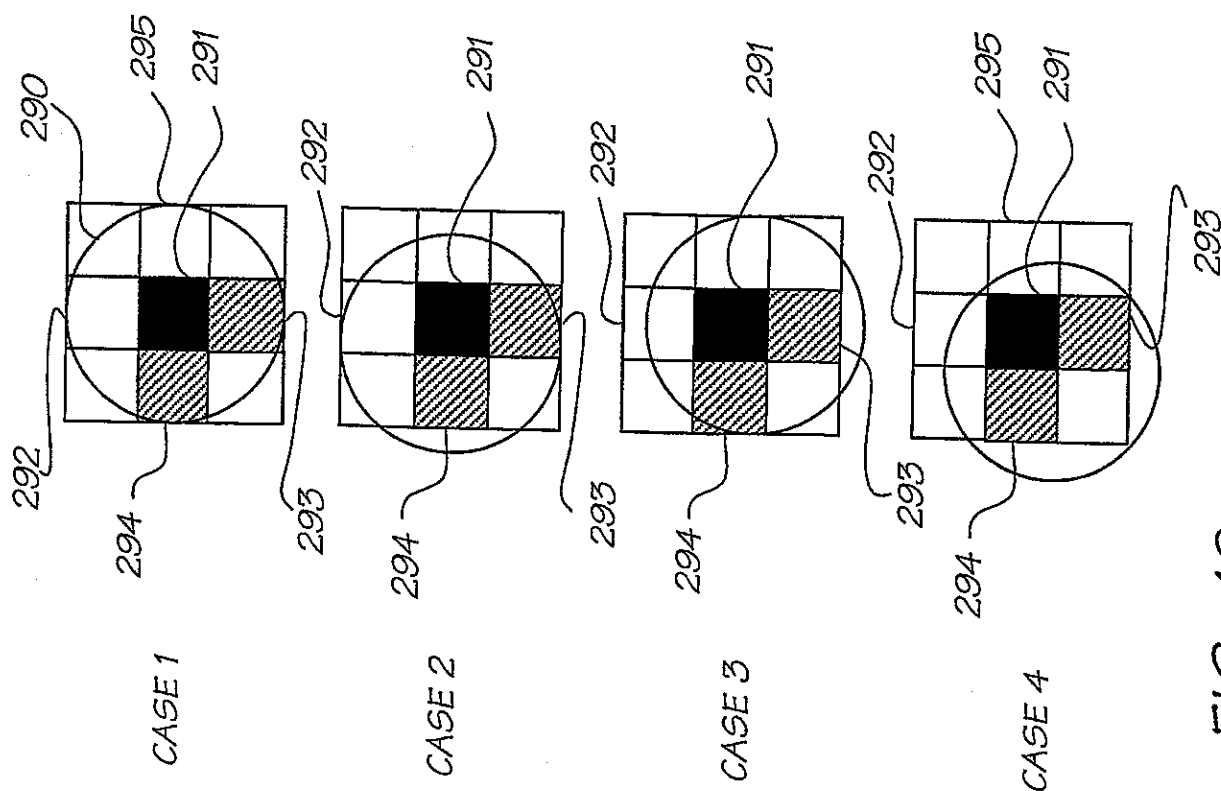


FIG. 42

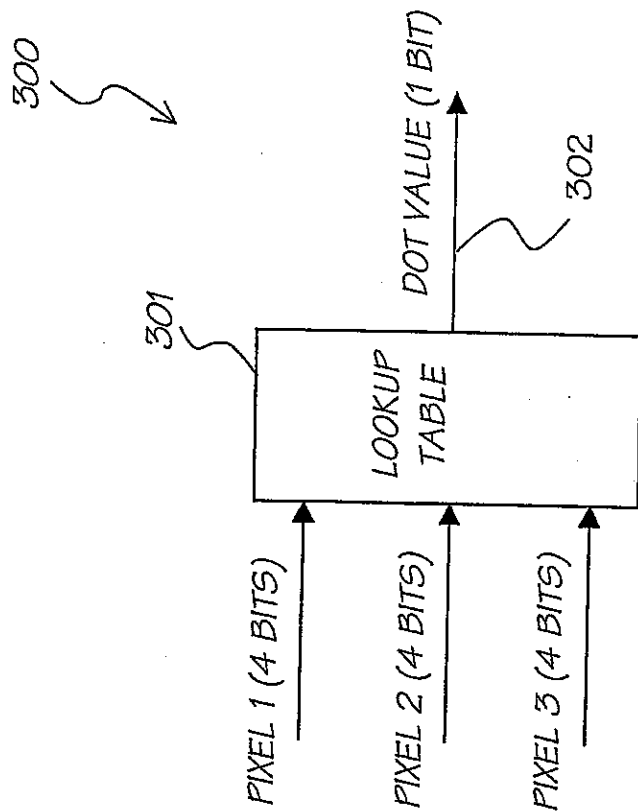


FIG. 43

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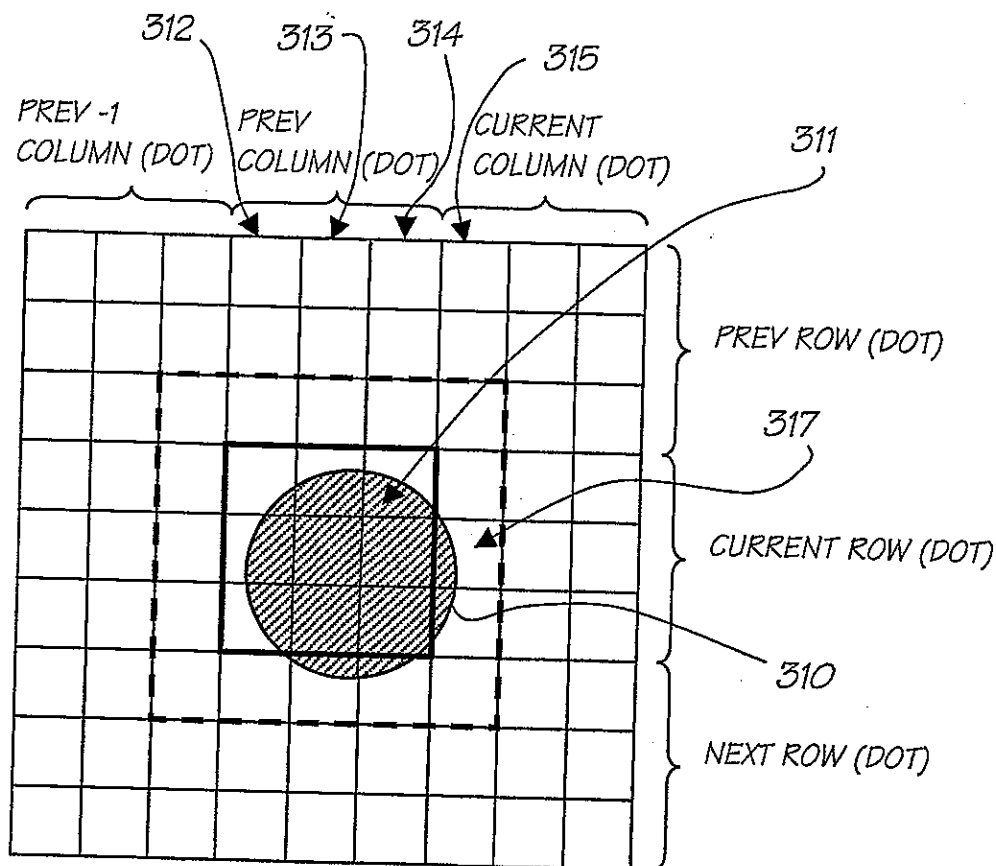


FIG. 44

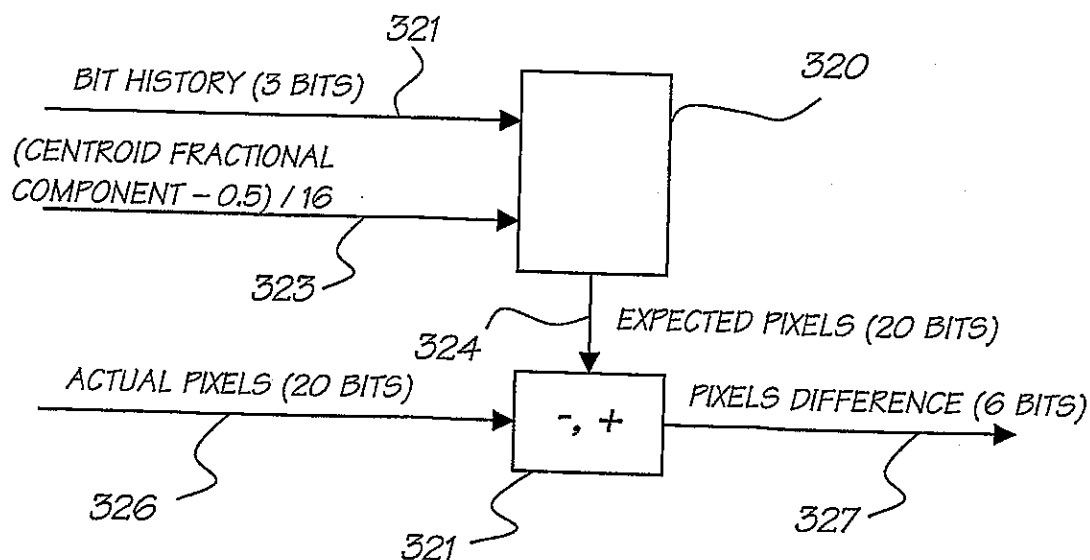


FIG. 45

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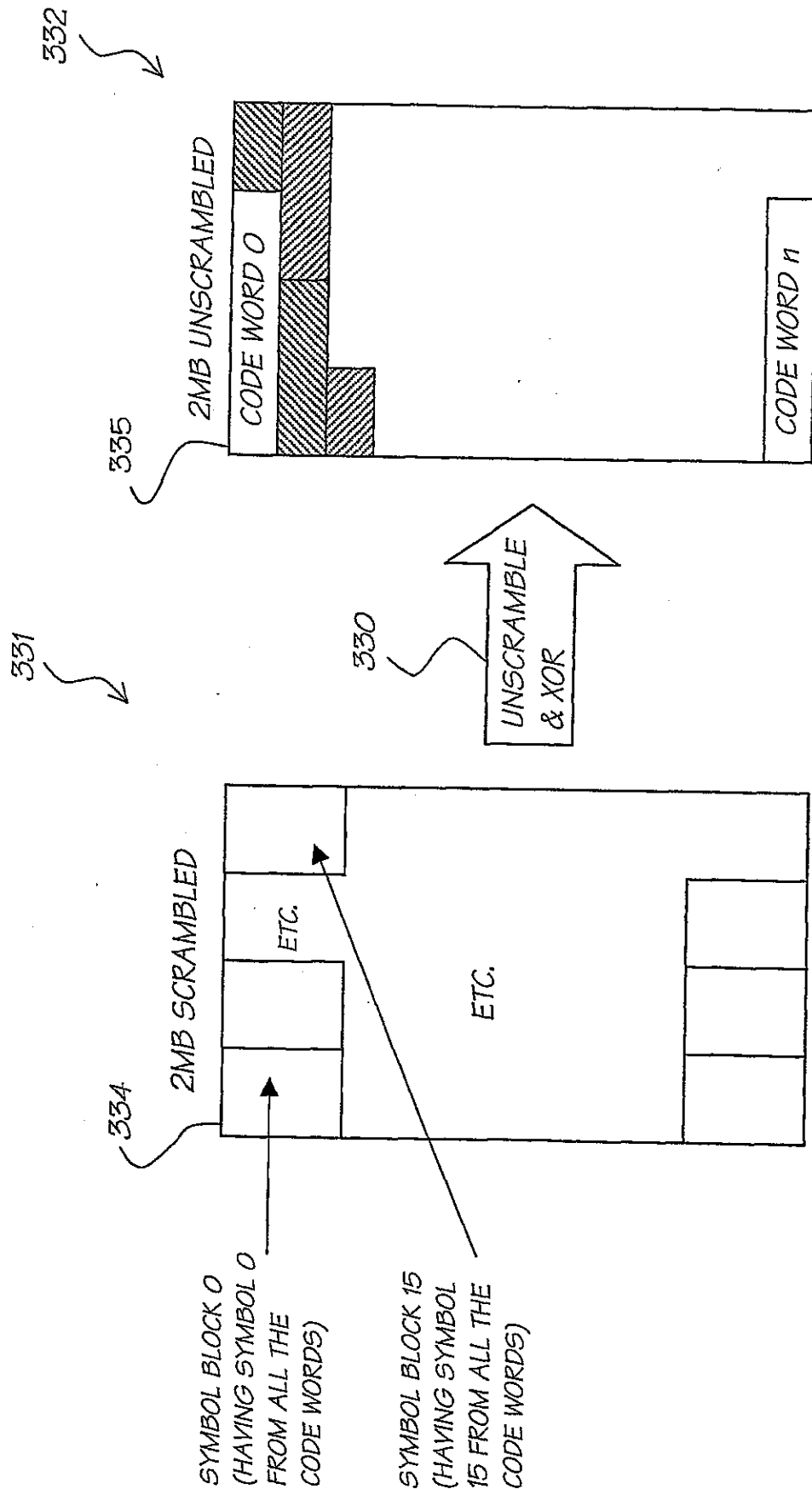


FIG. 46

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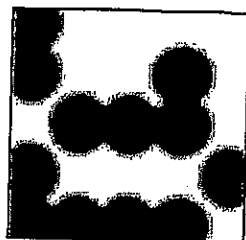
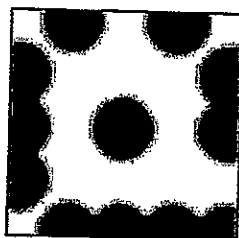
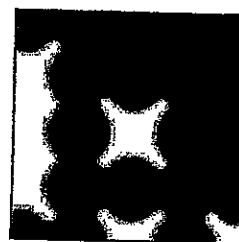
BLACK AND WHITE
DOTSBLACK DOT
SURROUNDED
BY WHITEWHITE DOT
SURROUNDED
BY BLACK

FIG. 47

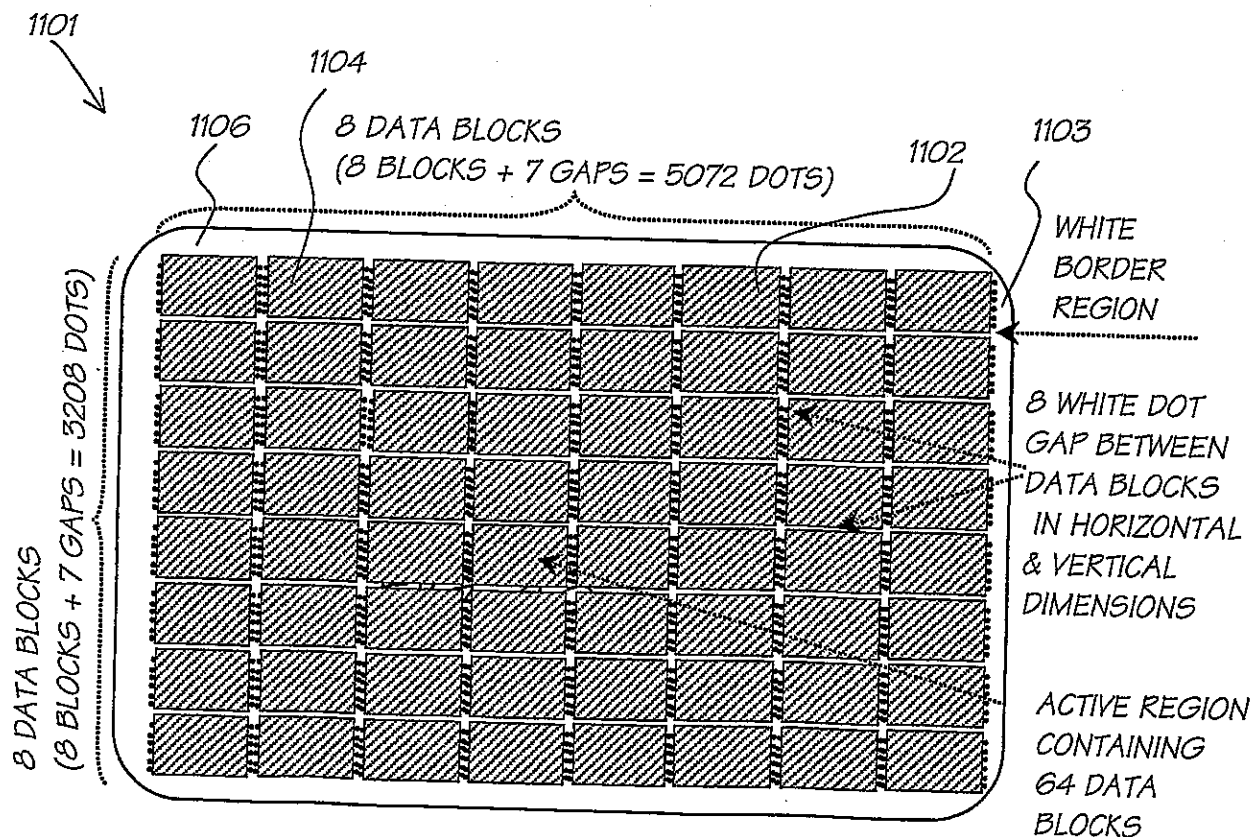


FIG. 48

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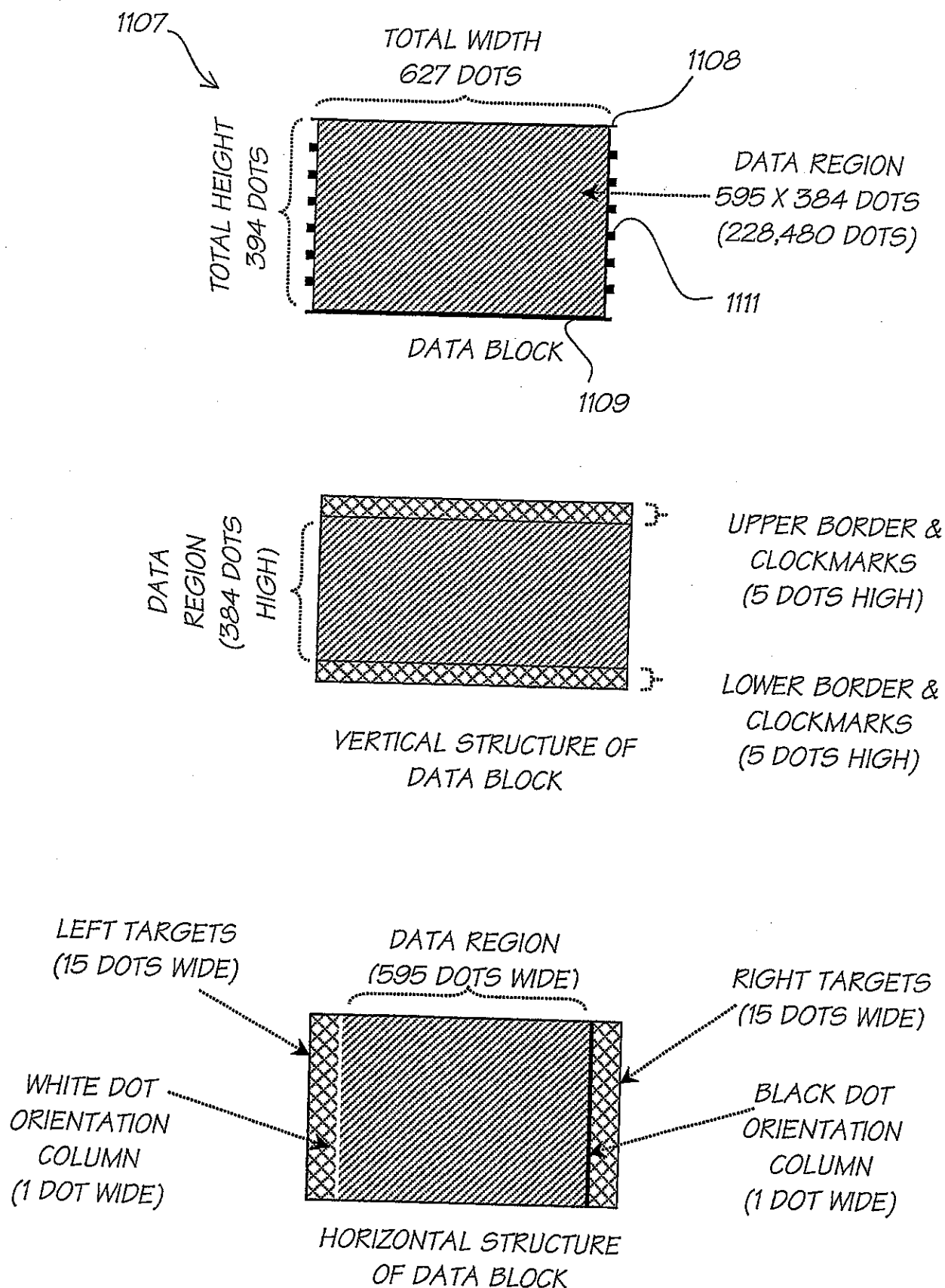


FIG. 49

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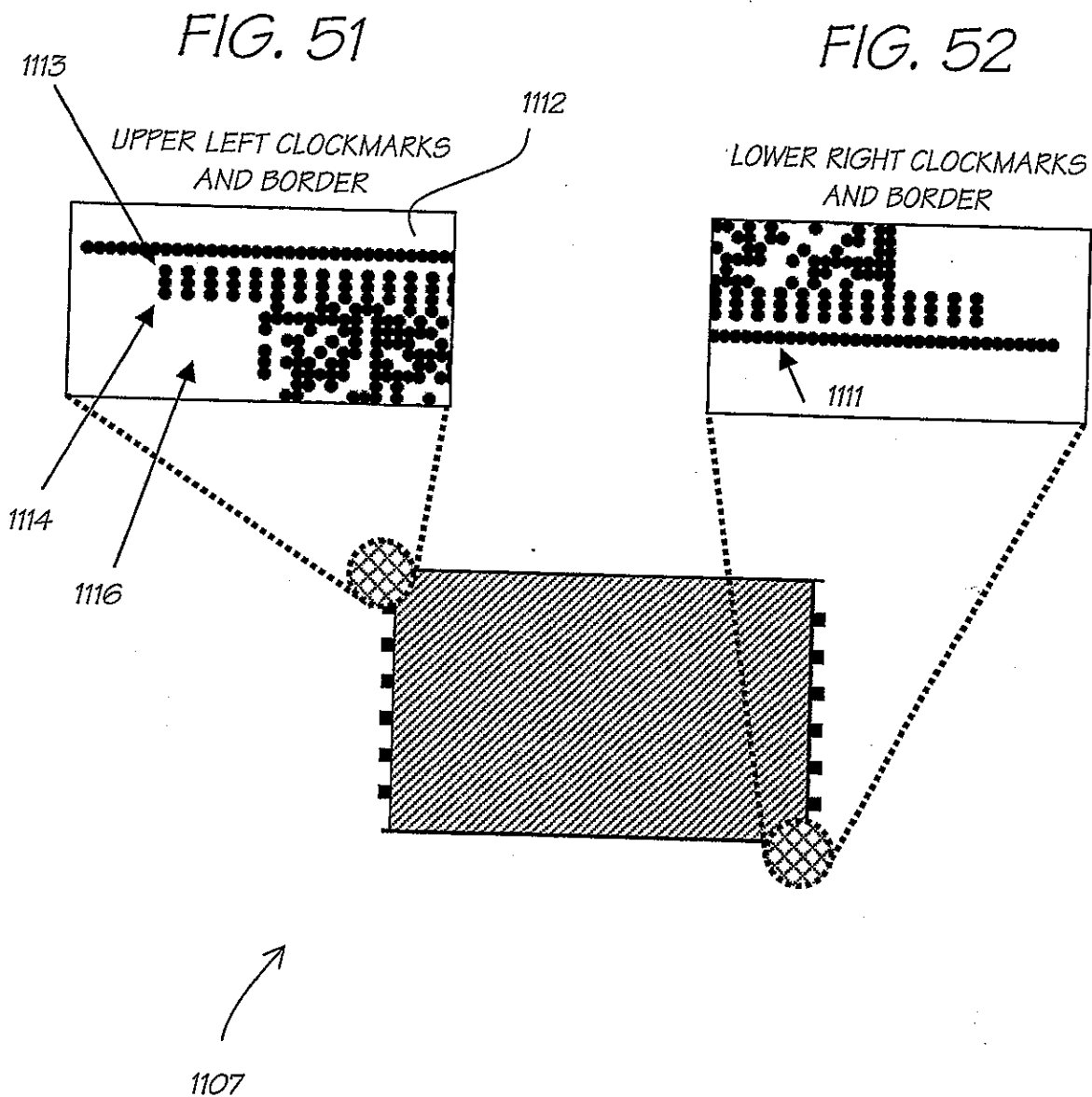


FIG. 50

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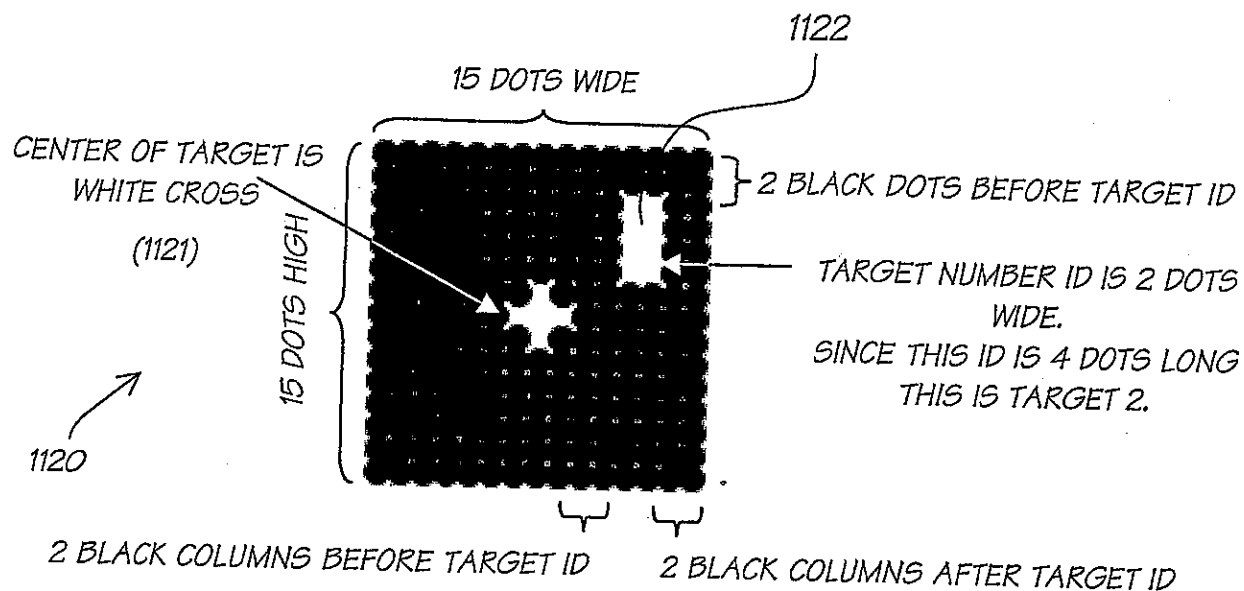


FIG. 53

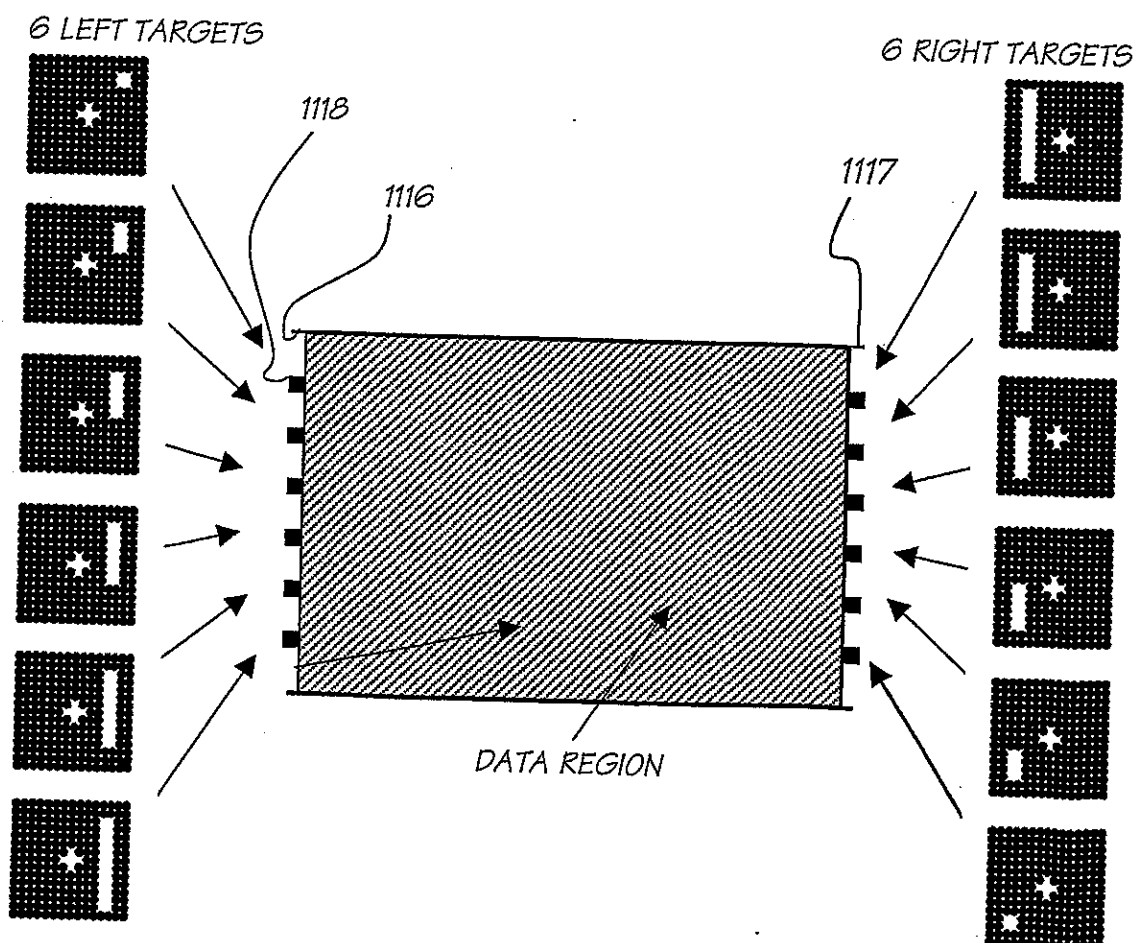


FIG. 54

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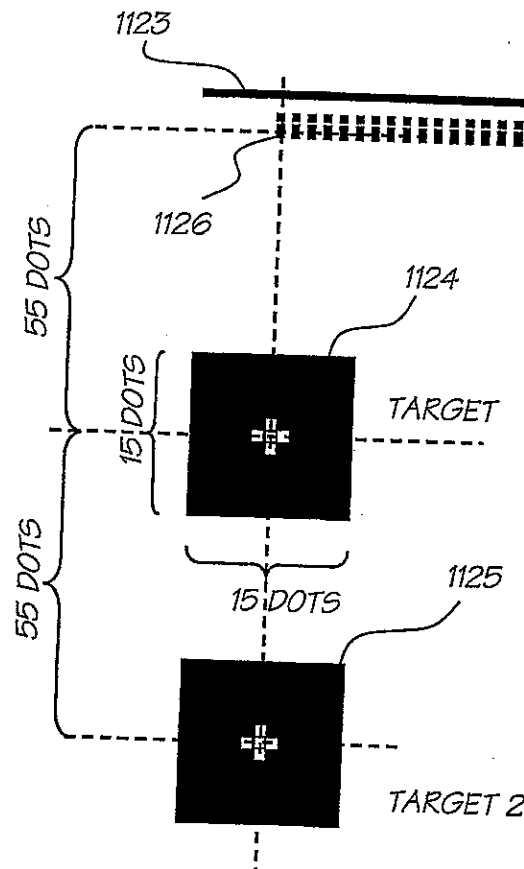


FIG. 55

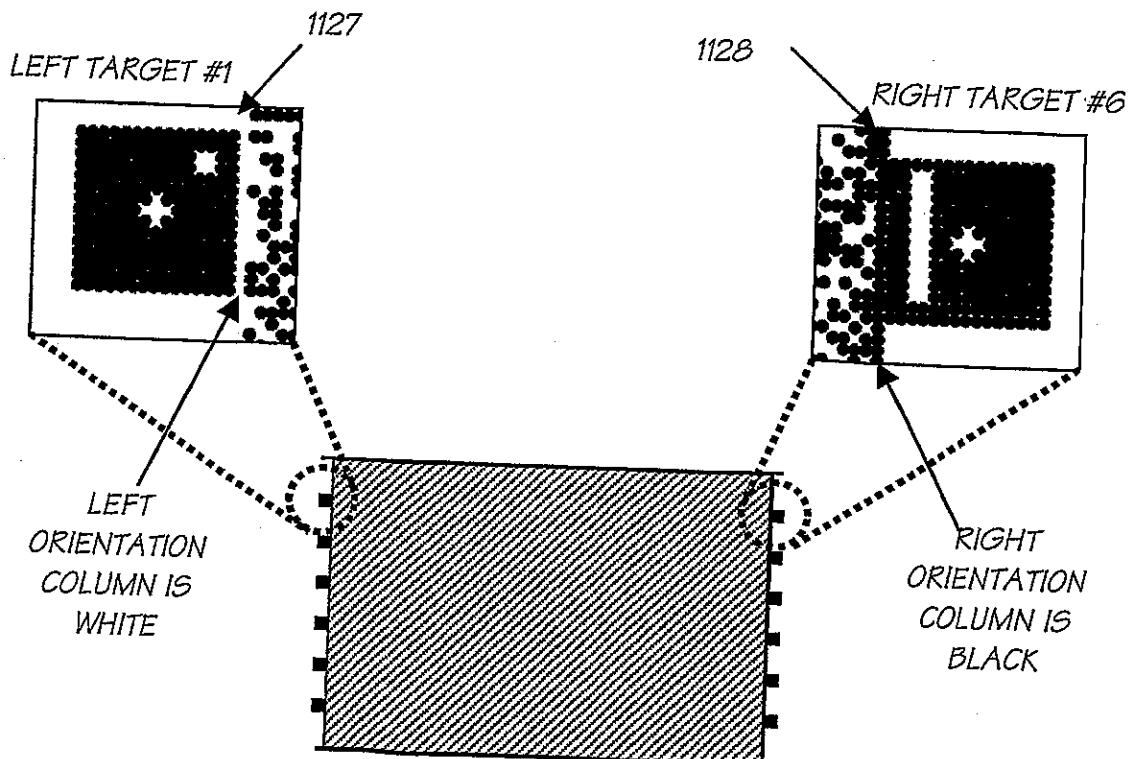


FIG. 56

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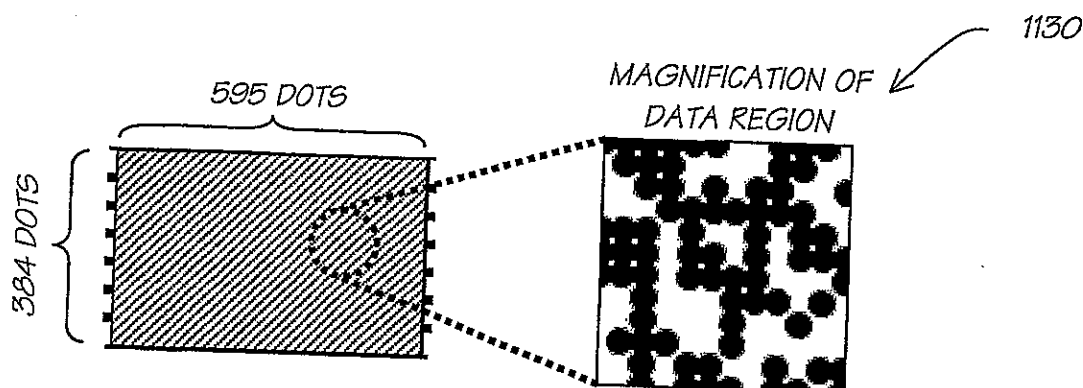


FIG. 57

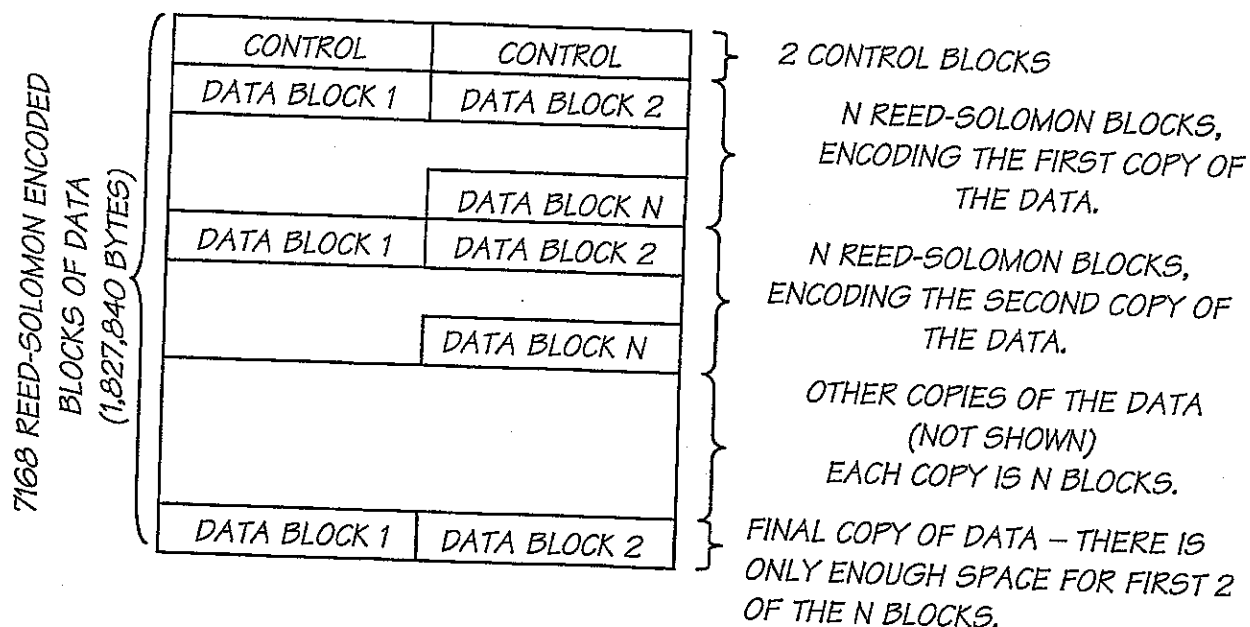


FIG. 58

00:	4F	00	3D	4F	00	3D	4F	00	3D	4F	00	3D
0C:	4F	00	3D	4F	00	3D	4F	00	3D	4F	00	3D
18:	4F	00	3D	4F	00	3D	4F	00	3D	4F	00	3D
24:	4F	00	3D	4F	00	3D	4F	00	3D	4F	00	3D
30:	4F	00	3D	4F	00	3D	4F	00	3D	4F	00	3D
3C:	4F	00	3D	4F	00	3D	4F	00	3D	4F	00	3D
48:	4F	00	3D	4F	00	3D	4F	00	3D	4F	00	3D
54:	4F	00	3D	4F	00	3D	4F	00	3D	4F	00	3D
60:	00	00	00	00	00	00	00	00	00	00	00	00
6C:	00	00	00	00	00	00	00	00	00	00	00	00
78:	00	00	00	00	00	00	00	00	00	00	00	00

32 COPIES OF THE 3 BYTE CONTROL INFORMATION

RESERVED BYTES ARE 0

FIG. 59

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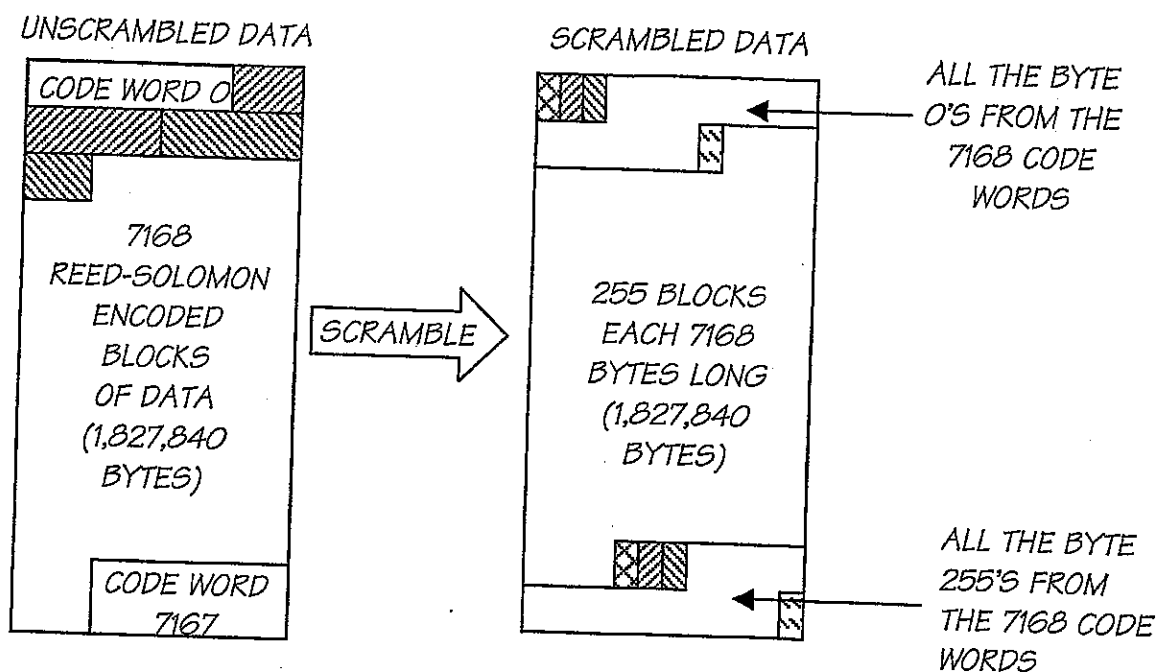


FIG. 60

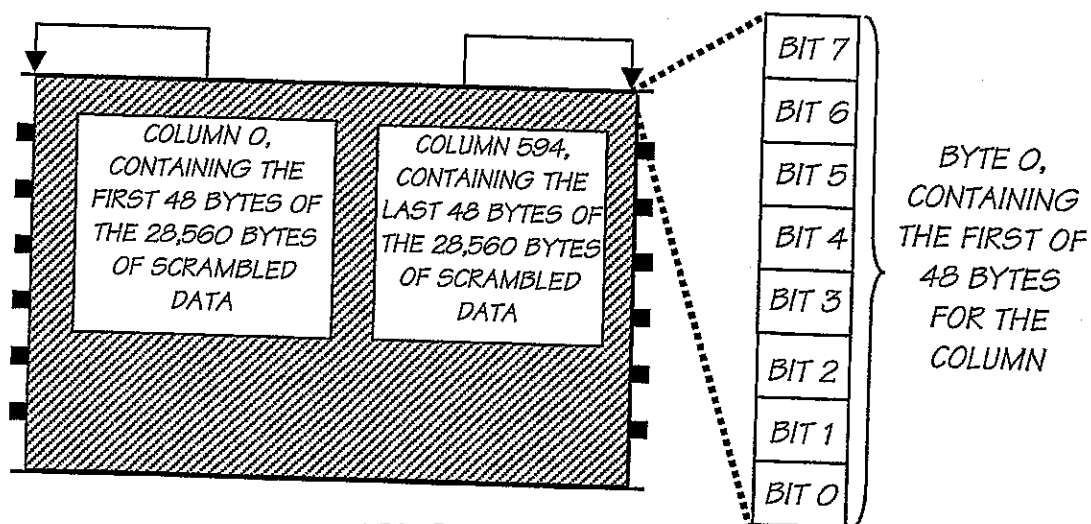


FIG. 61

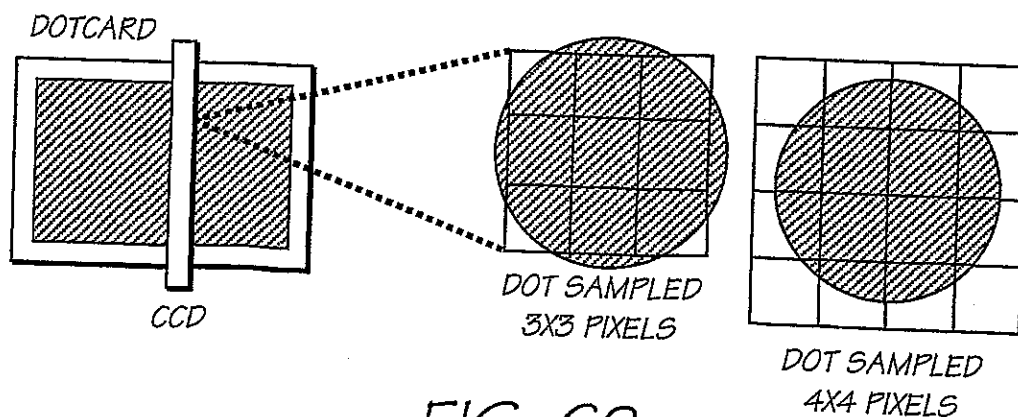


FIG. 62

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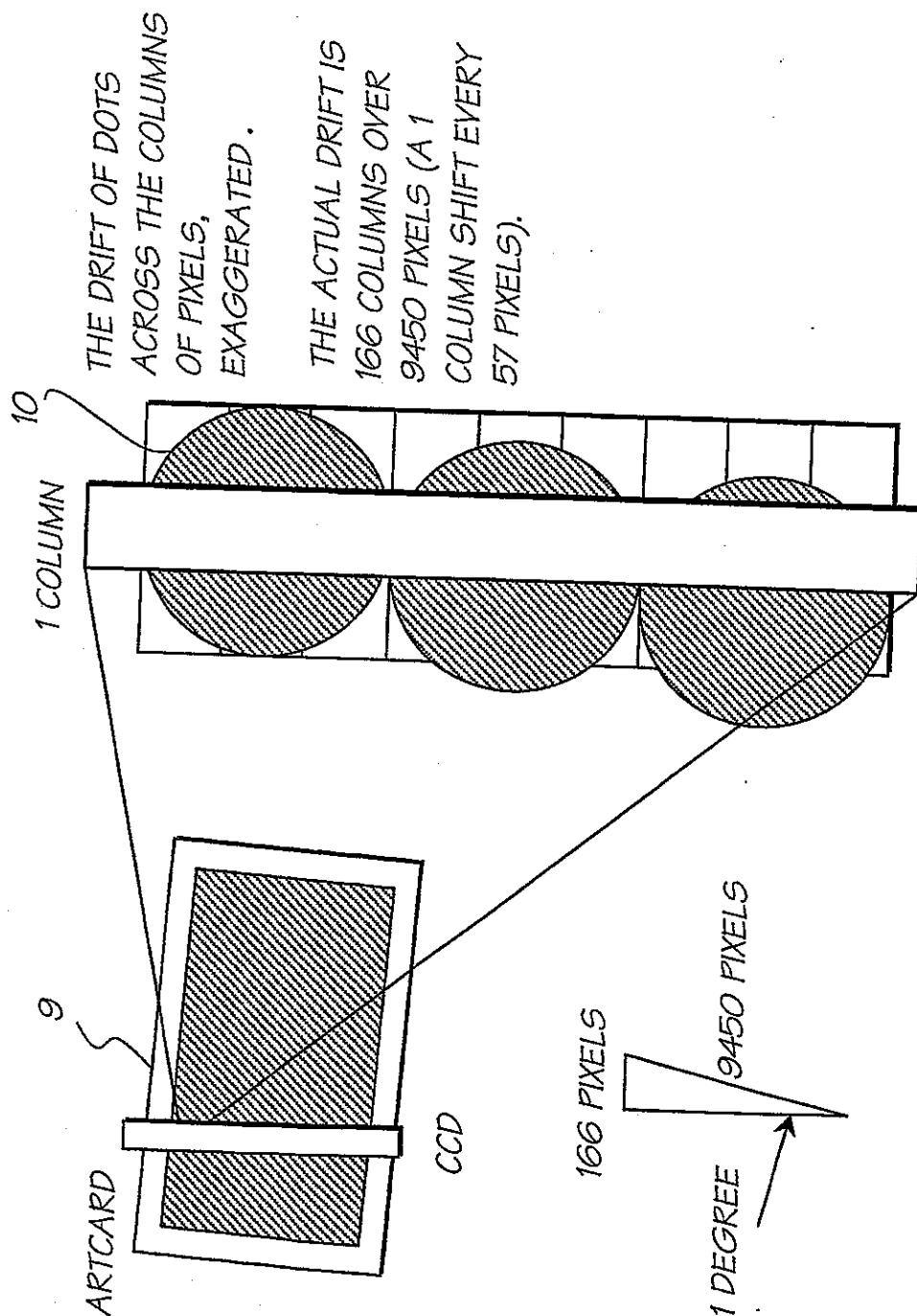


FIG. 63

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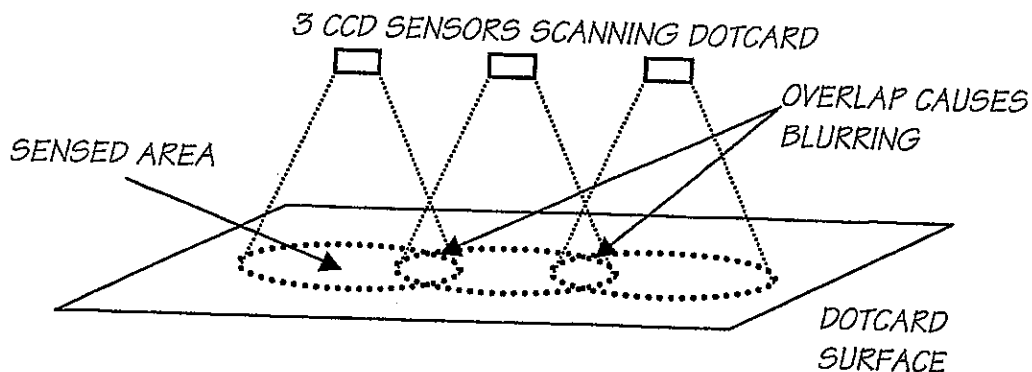


FIG. 64

RANGE OF BLACK DOTS
(FREQUENCY DISTRIBUTION)

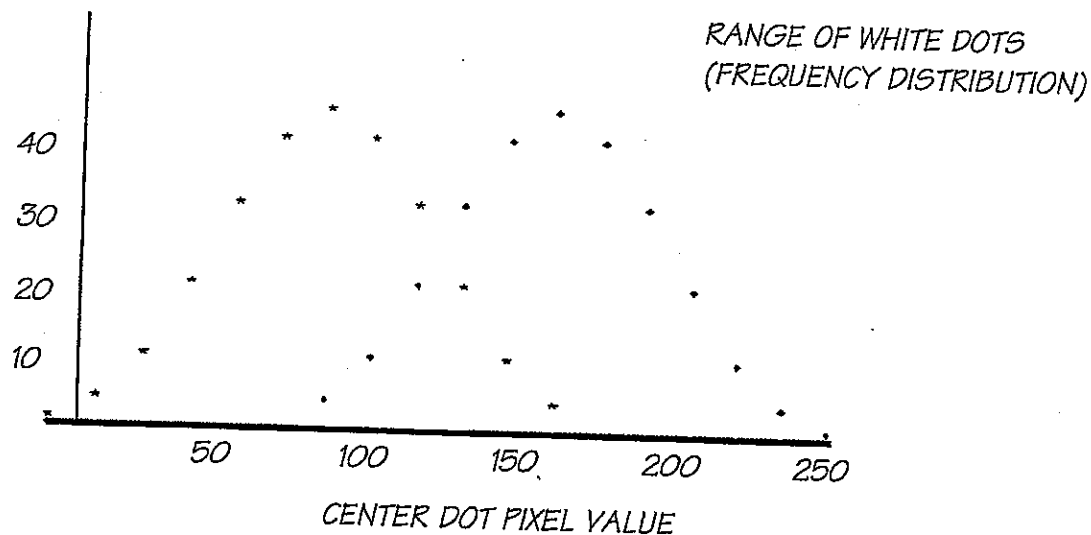


FIG. 65

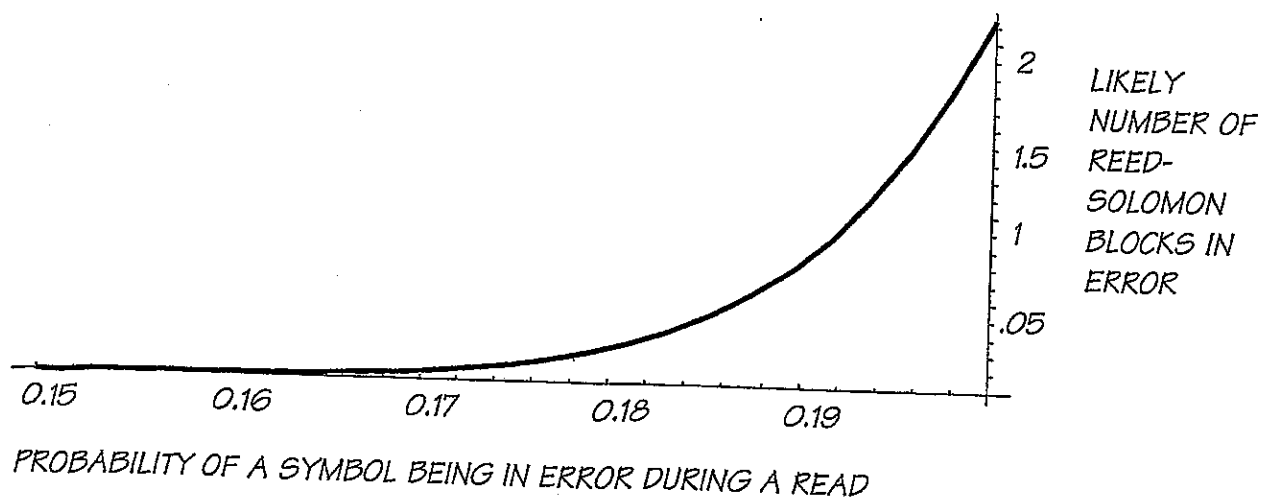
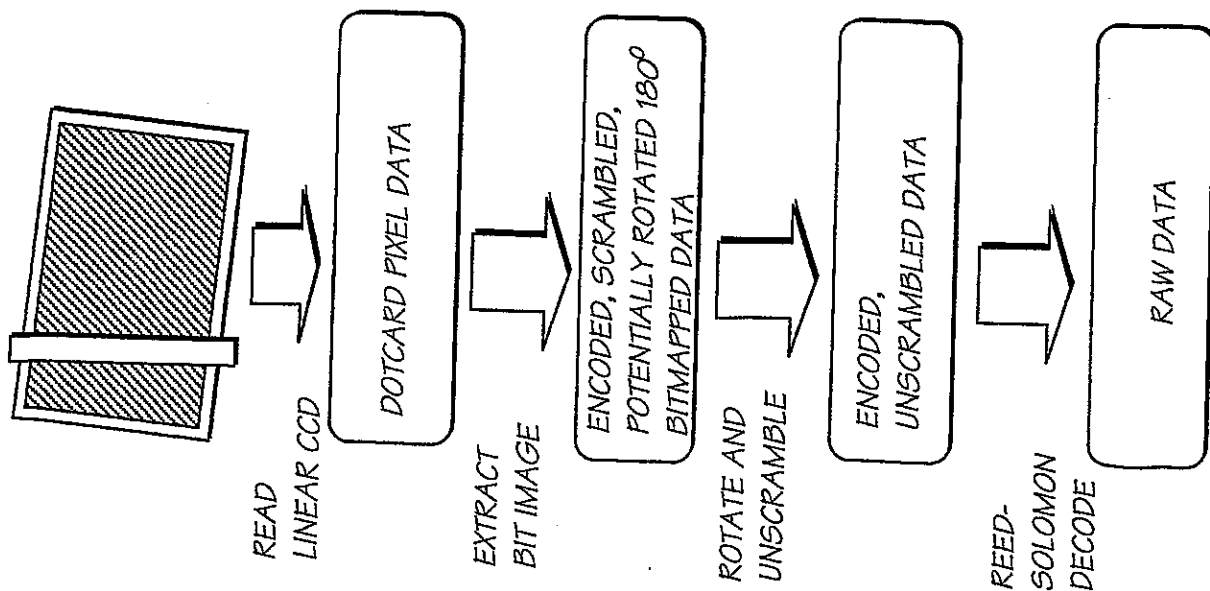


FIG. 66

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FIG. 67



APPROXIMATE DATA SIZES FOR 1600 DPI DOTCARD

86MM + 1MM IN HORIZONTAL DIMENSION FOR 1° ROTATION = 87MM
87MM = 16,252 SCANLINES

16,440 SCANLINES @ 11,000 PIXELS PER SCANLINE = 180,840,000 PIXELS
180,840,000 PIXELS @ 1 BYTE PER PIXEL = 180,840,000 BYTES = 172.5 MB

64 DATA BLOCKS, EACH CONTAINING 597 COLUMNS (595 DATA REGION COLUMNS AND 2 ORIENTATION COLUMNS), @ 48 BYTES PER COLUMN = 28,656 BYTES PER DATA BLOCK FOR A TOTAL OF 1,833,984 BYTES.

64 DATA BLOCKS, EACH CONTAINING 112 ENCODED REED SOLOMON BLOCKS, @ 255 BYTES PER REED SOLOMON BLOCK FOR A TOTAL OF 1,827,840 BYTES.

DECODED DATA, WITH A MAXIMUM SIZE OF 910,082 BYTES.
(64 X 112 X 127 - (2 CONTROL BLOCKS @ 127 BYTES))

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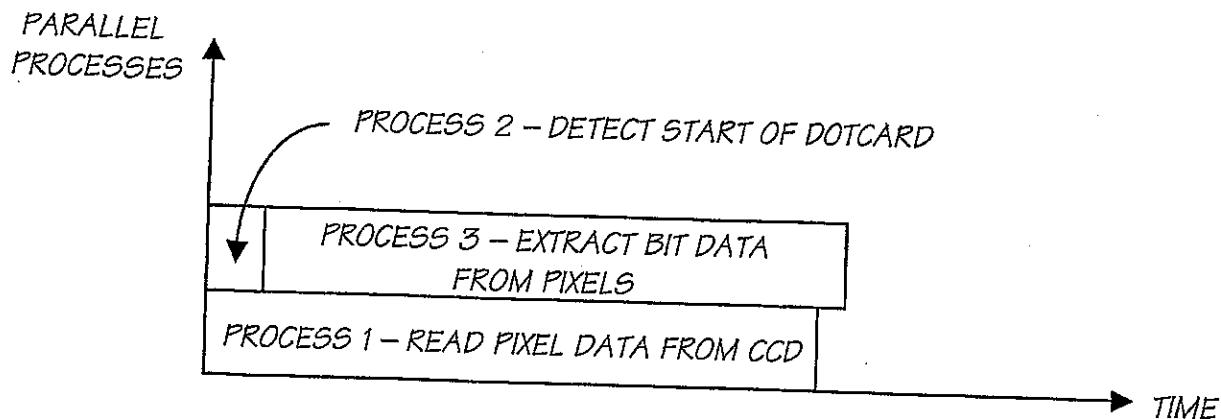


FIG. 68

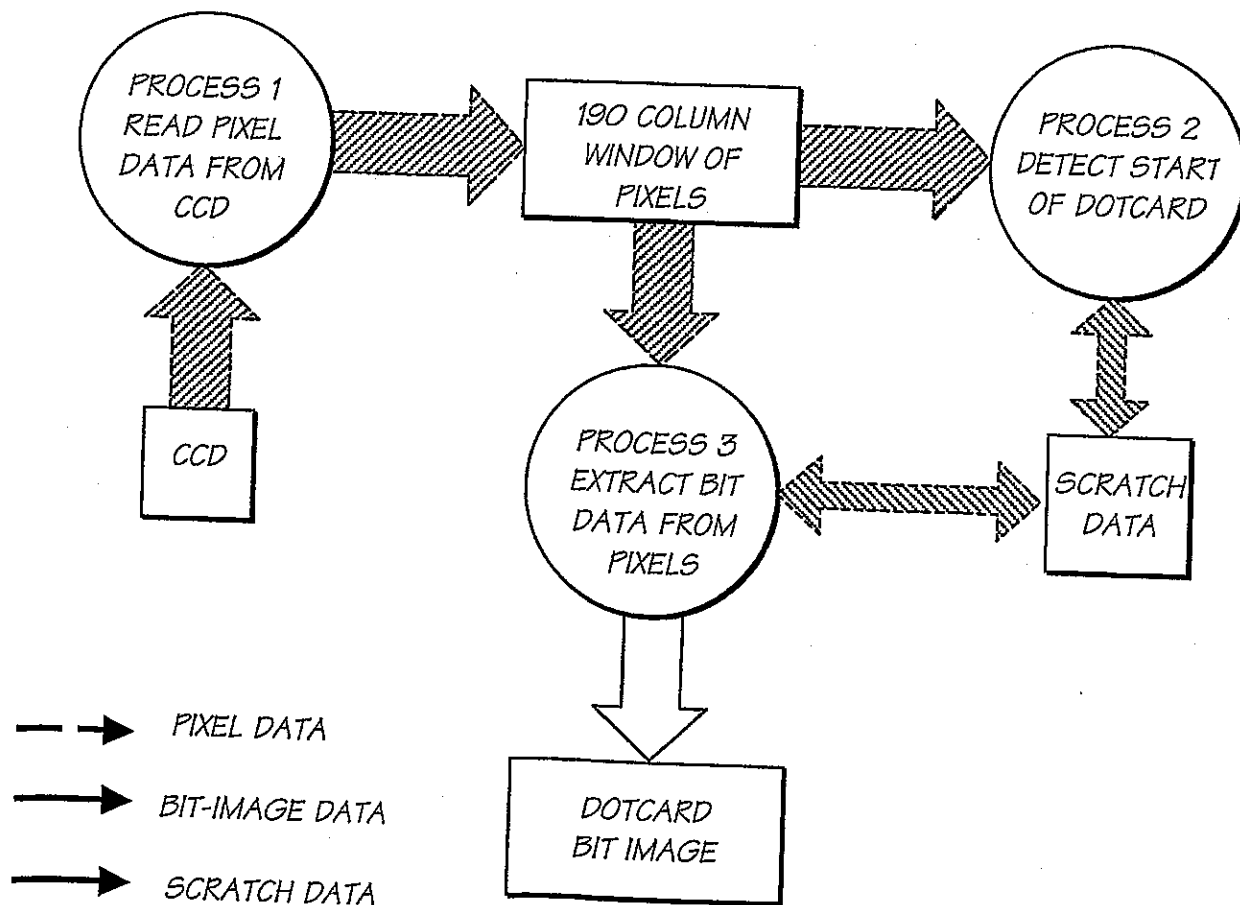


FIG. 69

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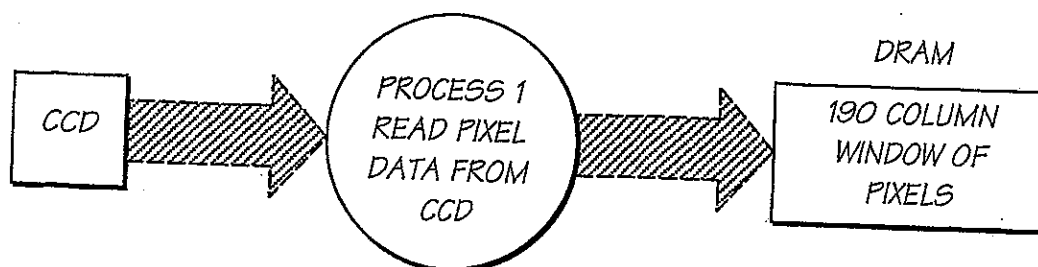


FIG. 70

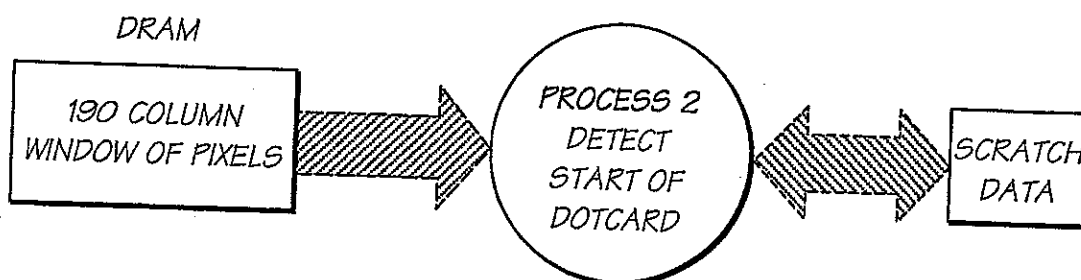


FIG. 71

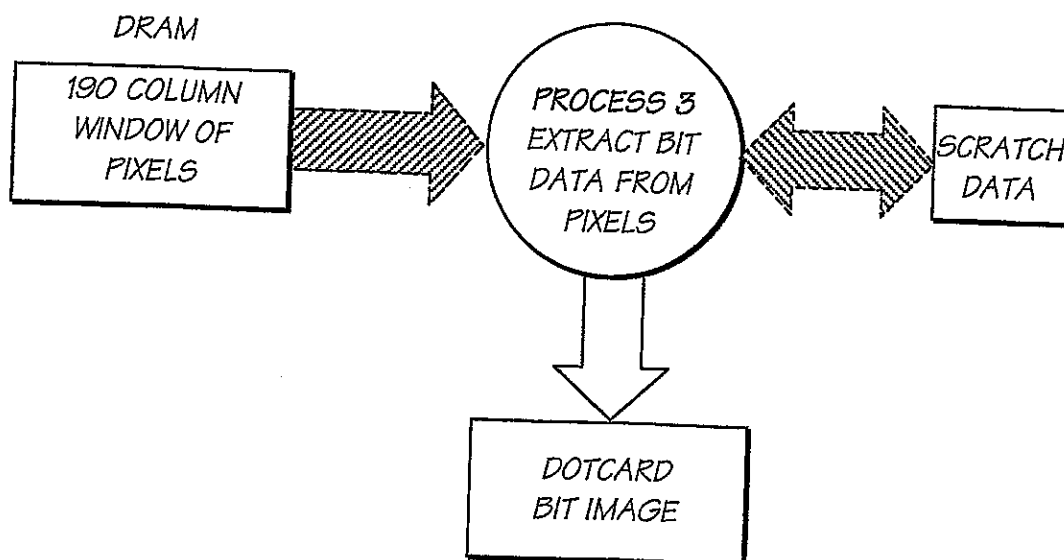


FIG. 72

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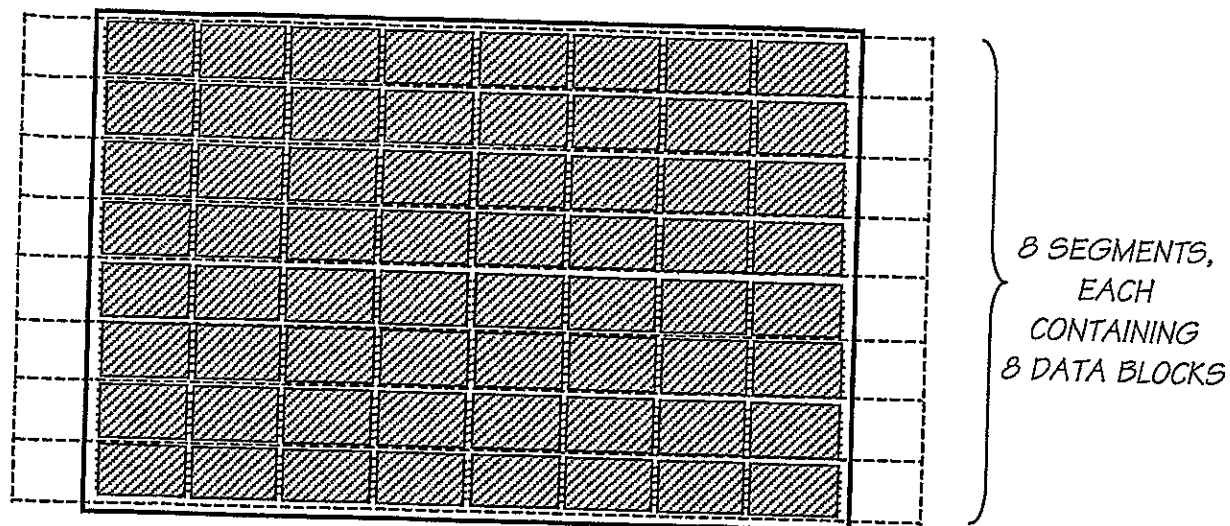


FIG. 73

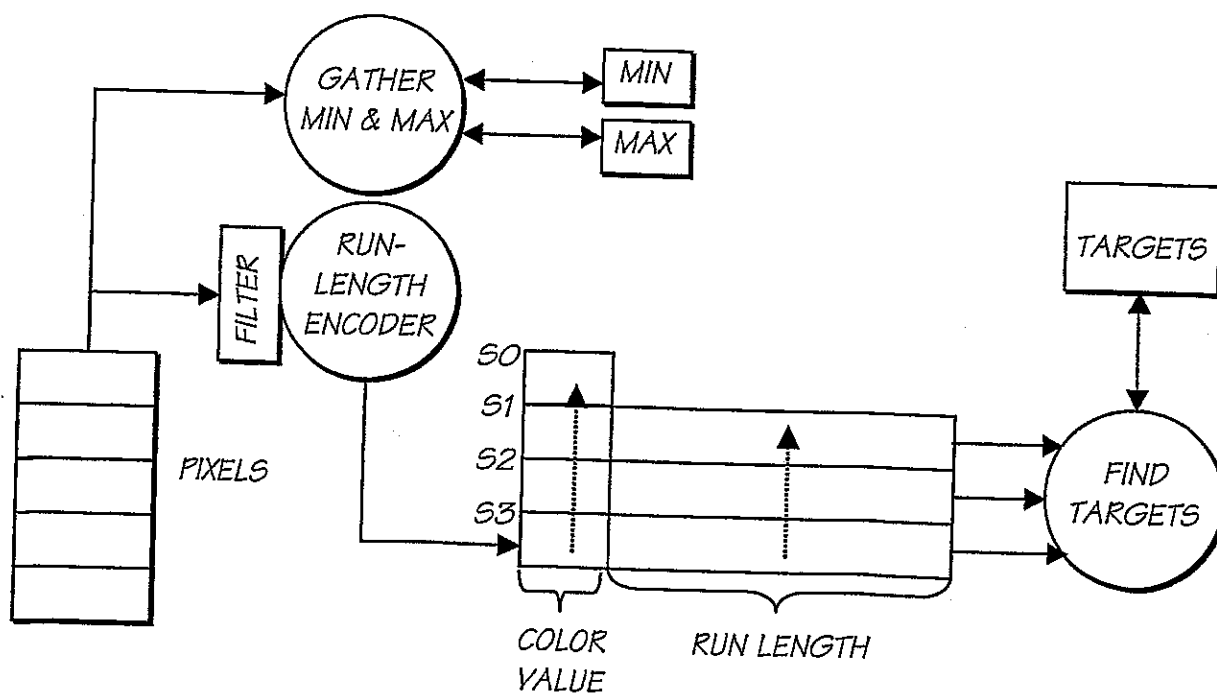


FIG. 74

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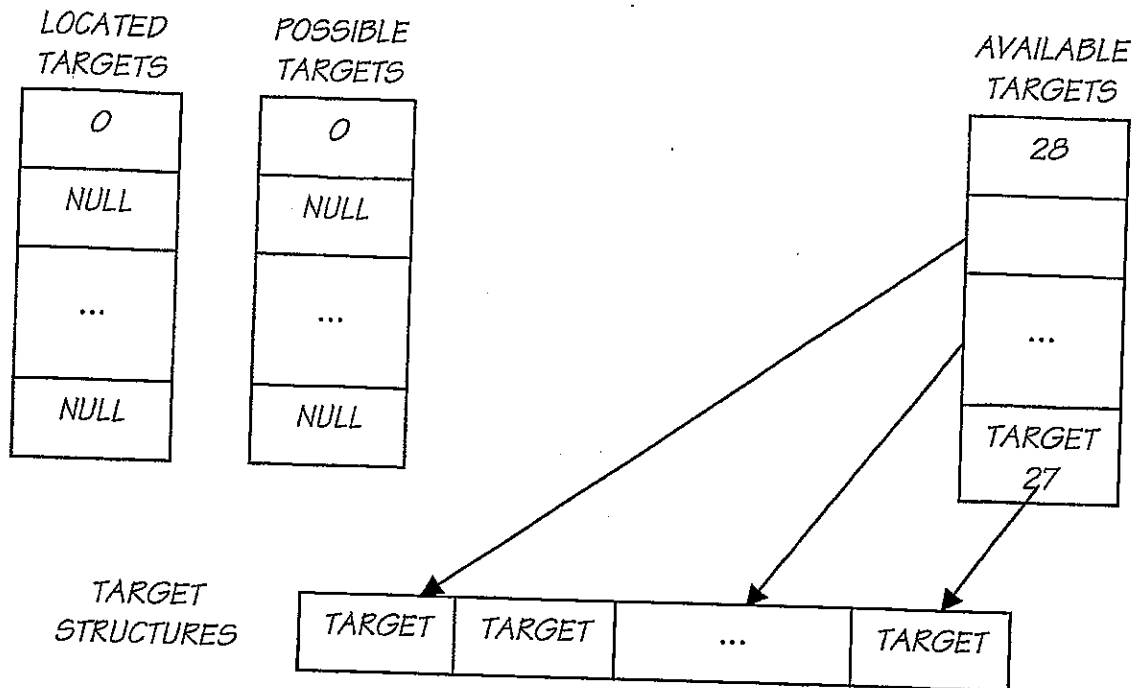


FIG. 75

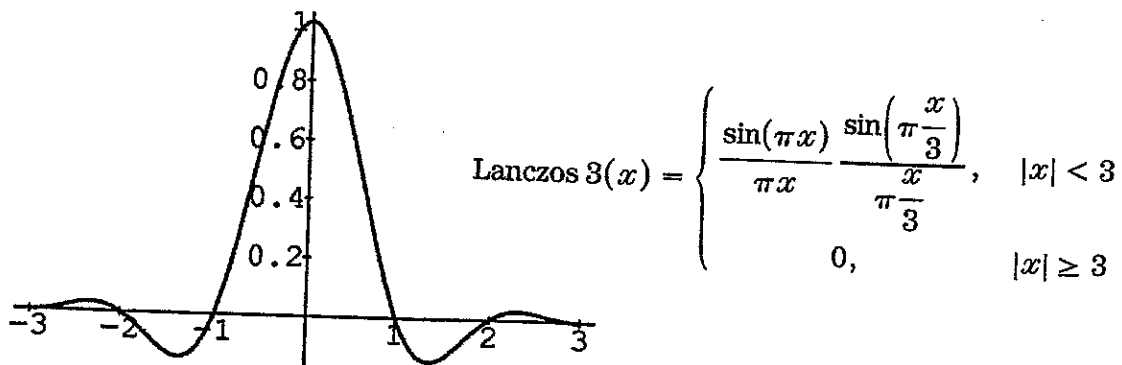


FIG. 76

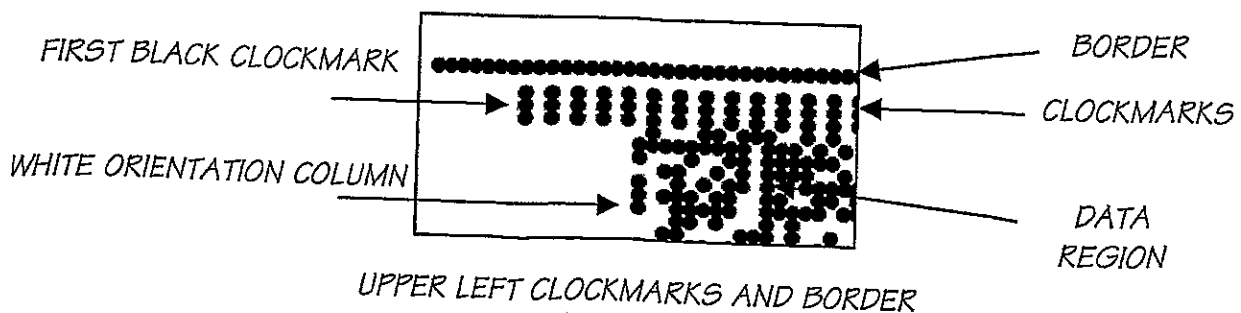


FIG. 77

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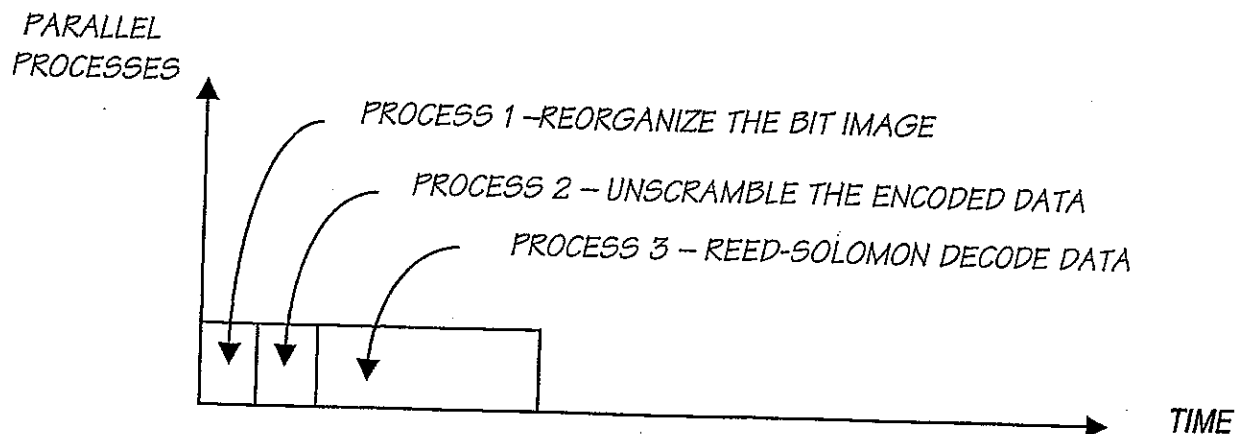


FIG. 78

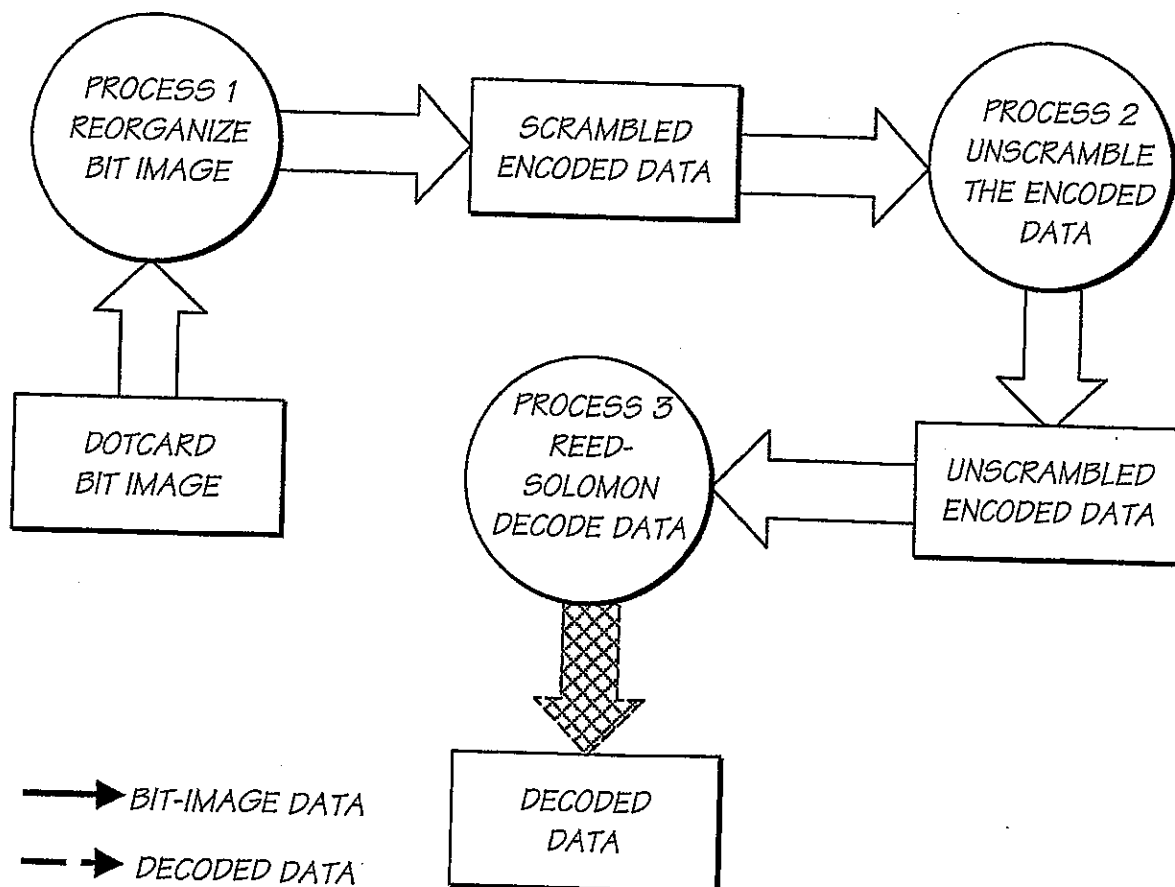


FIG. 79

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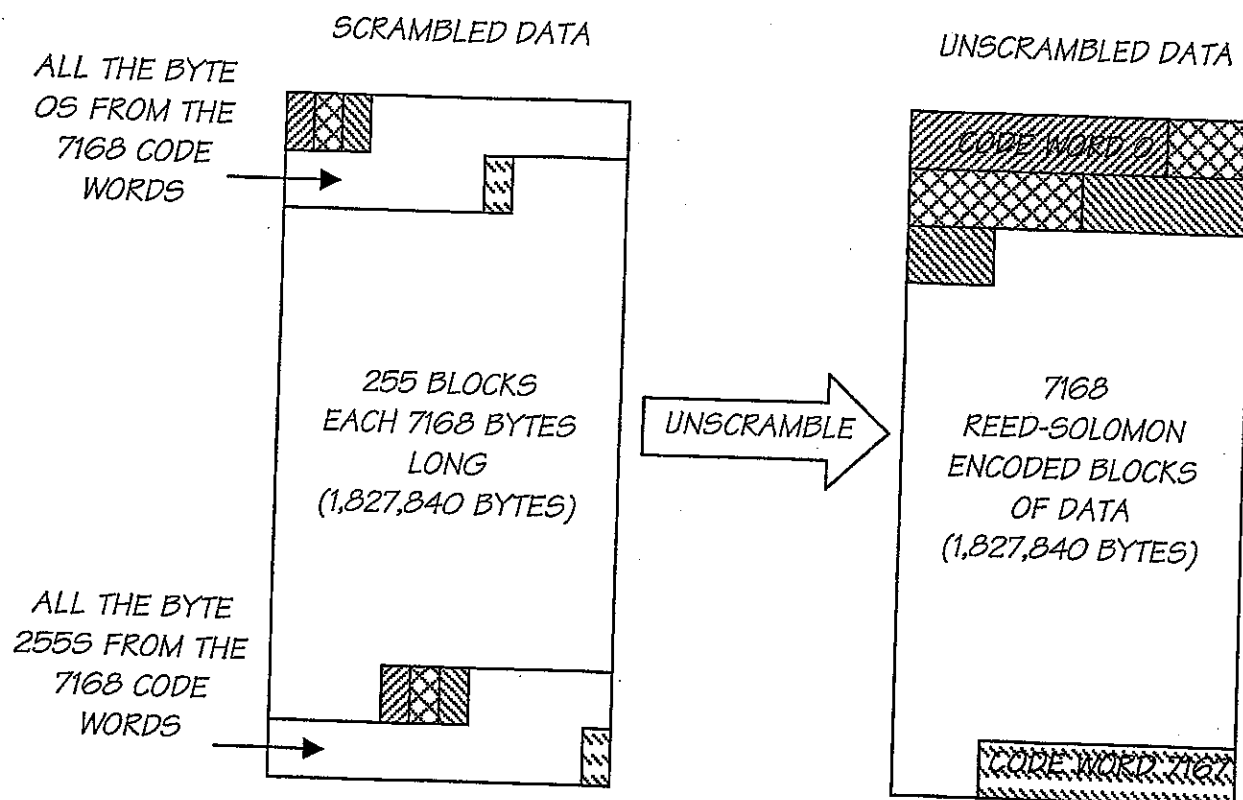


FIG. 80

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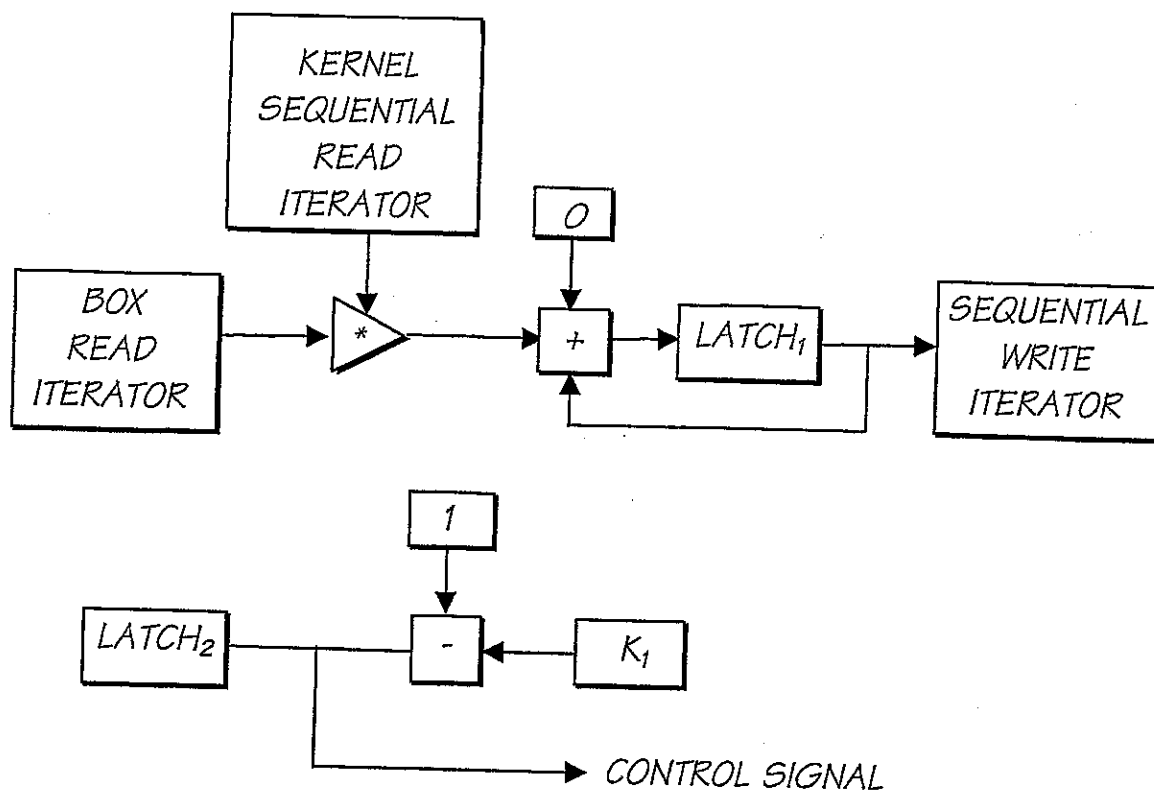


FIG. 81

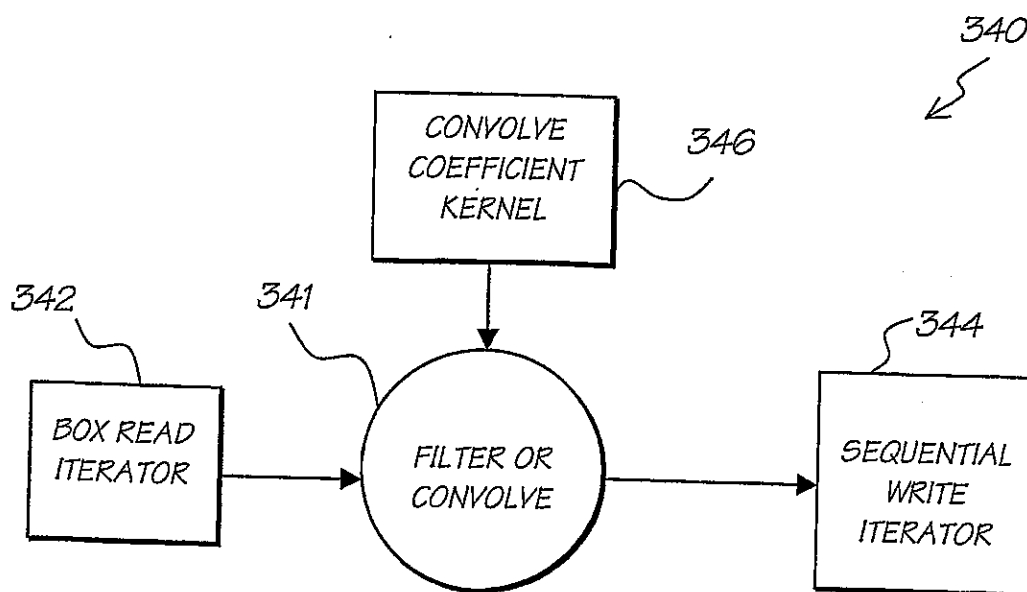


FIG. 82

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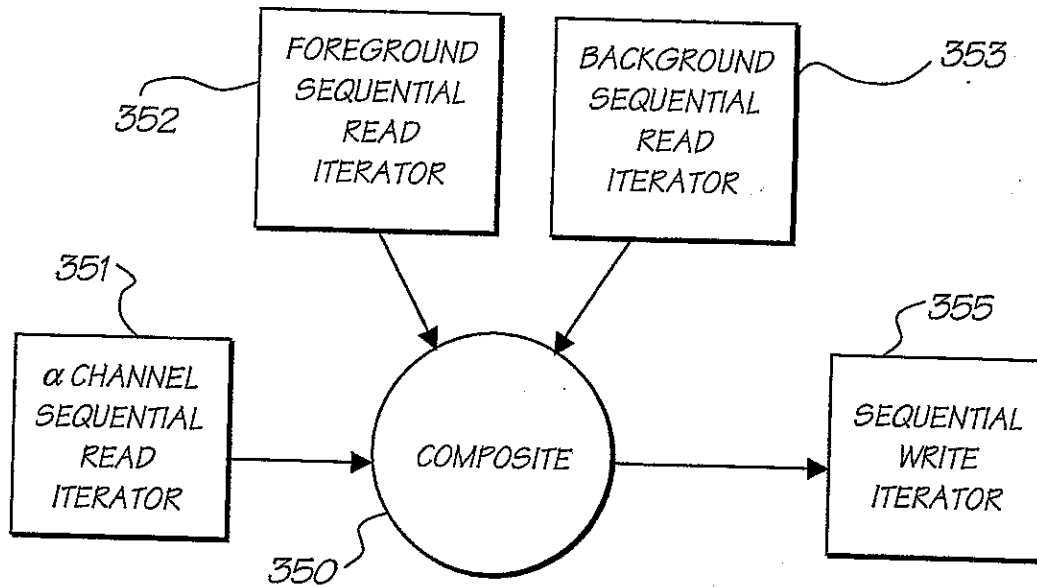


FIG. 83

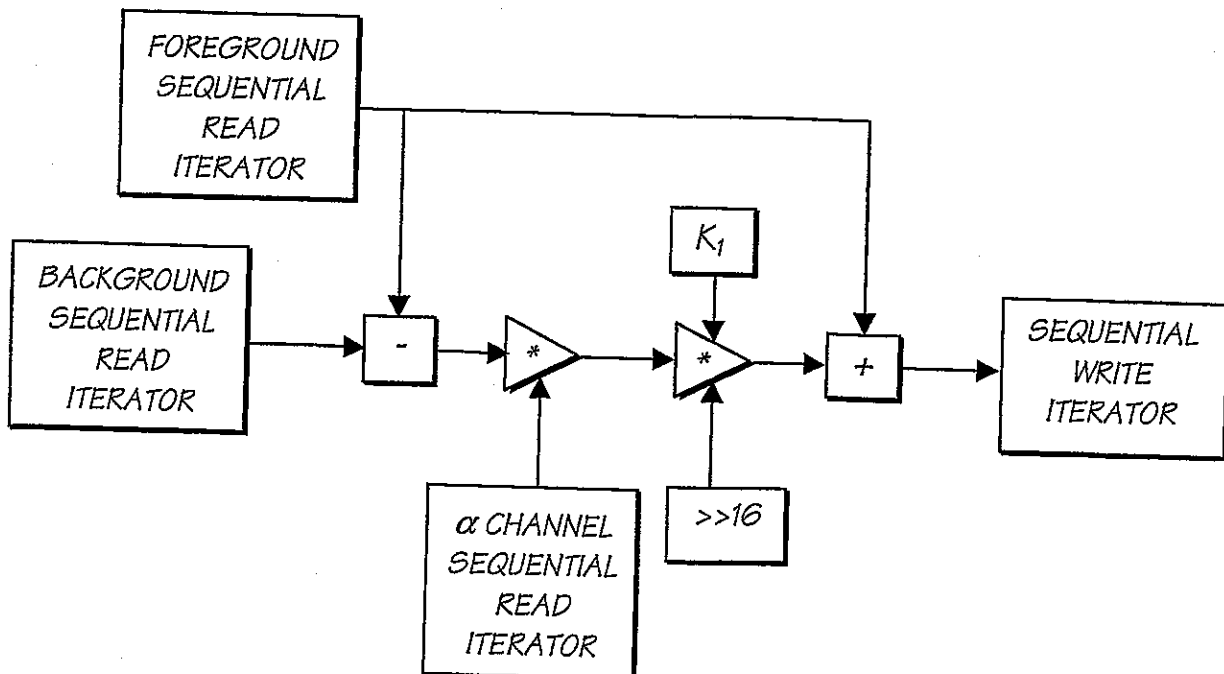


FIG. 84

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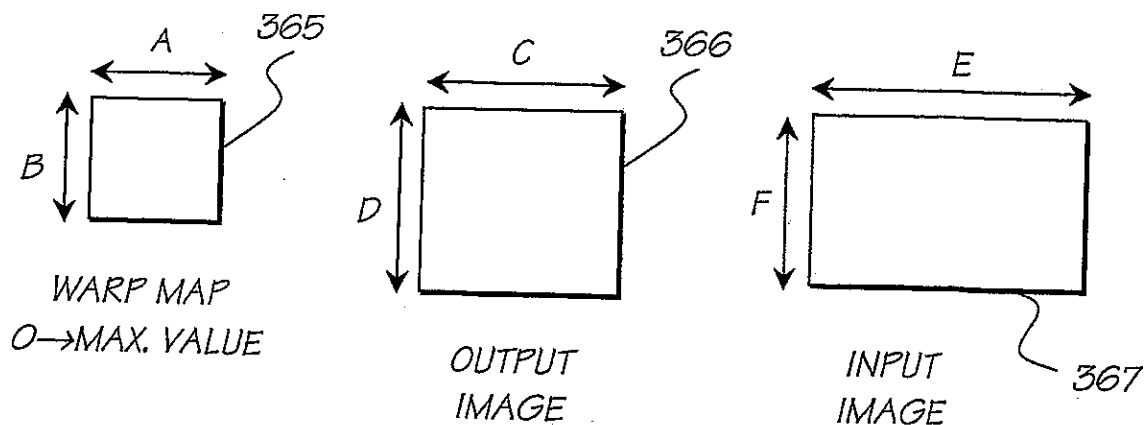


FIG. 85

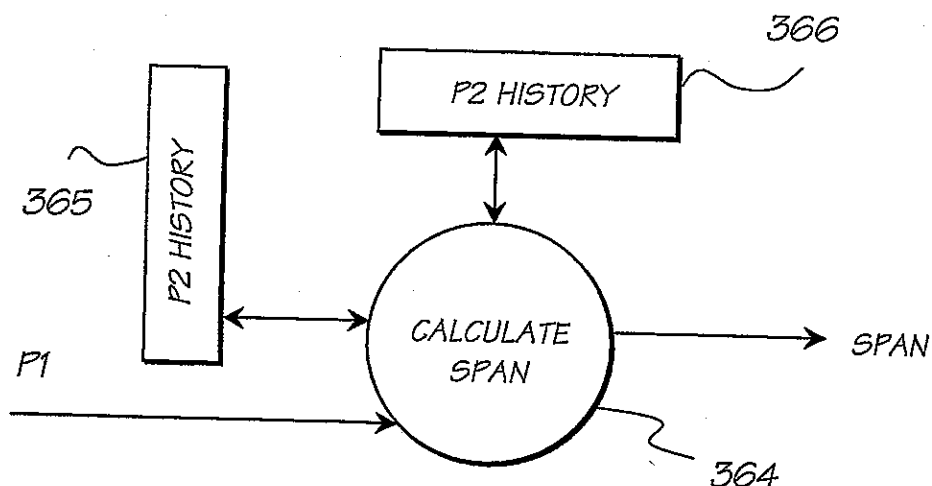


FIG. 86

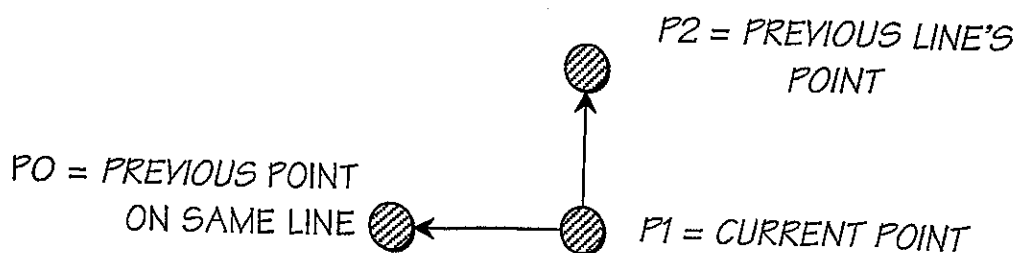


FIG. 88

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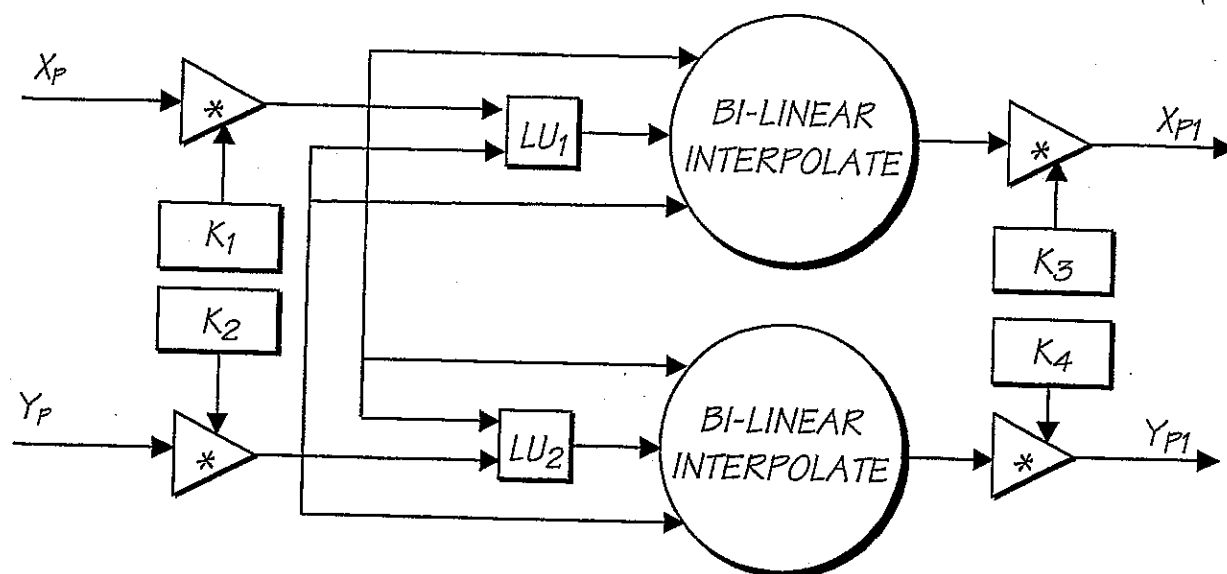


FIG. 87

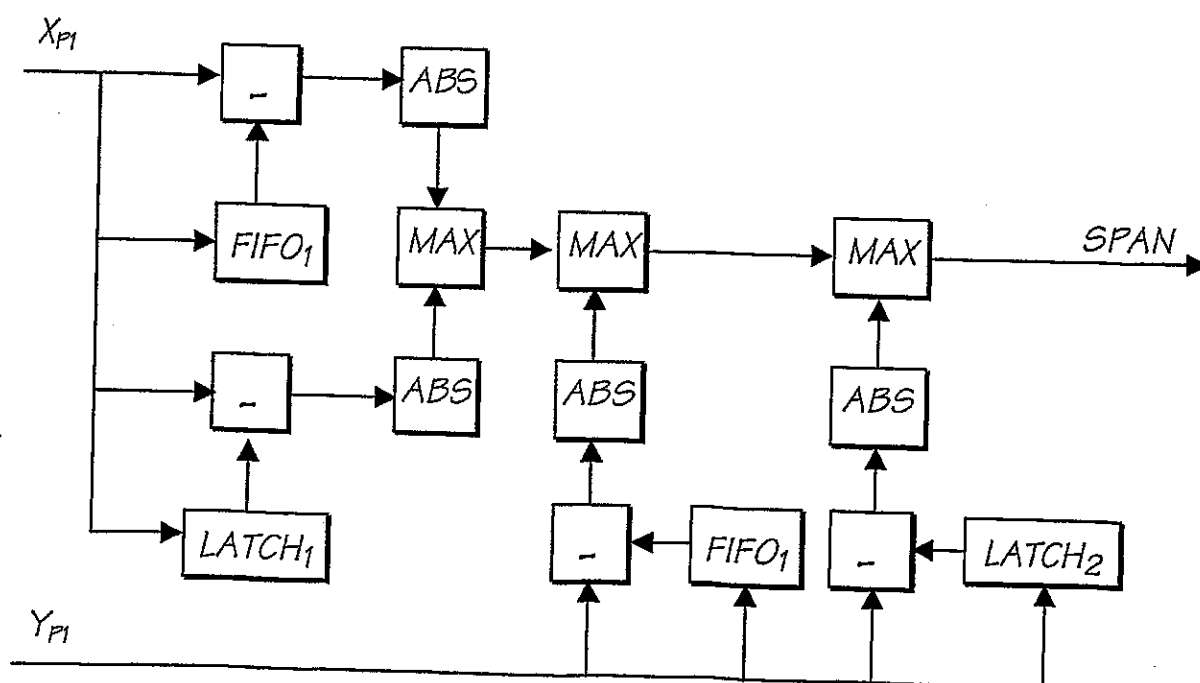


FIG. 89

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POINT (x, y) ON LEVEL B
OF PYRAMID

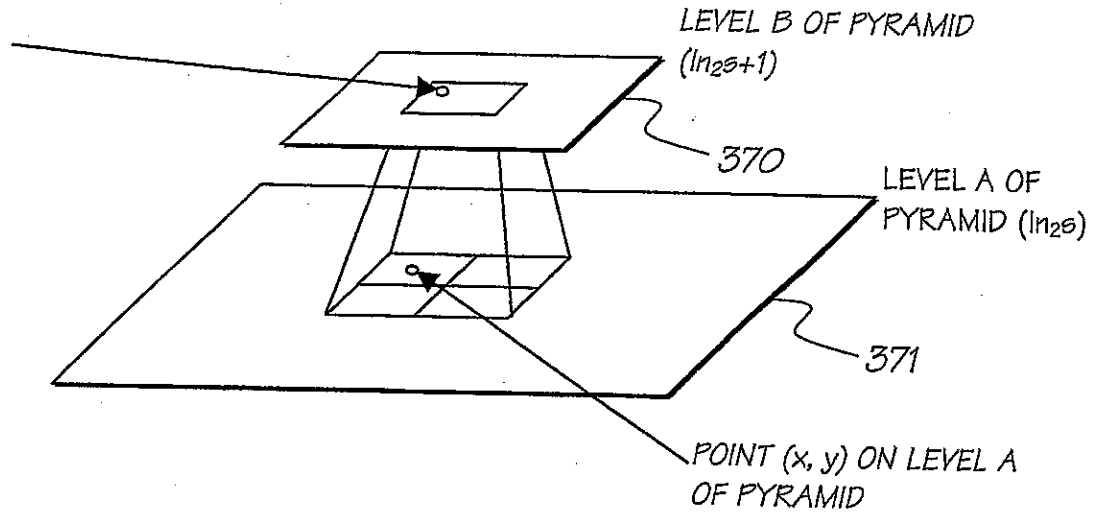


FIG. 90

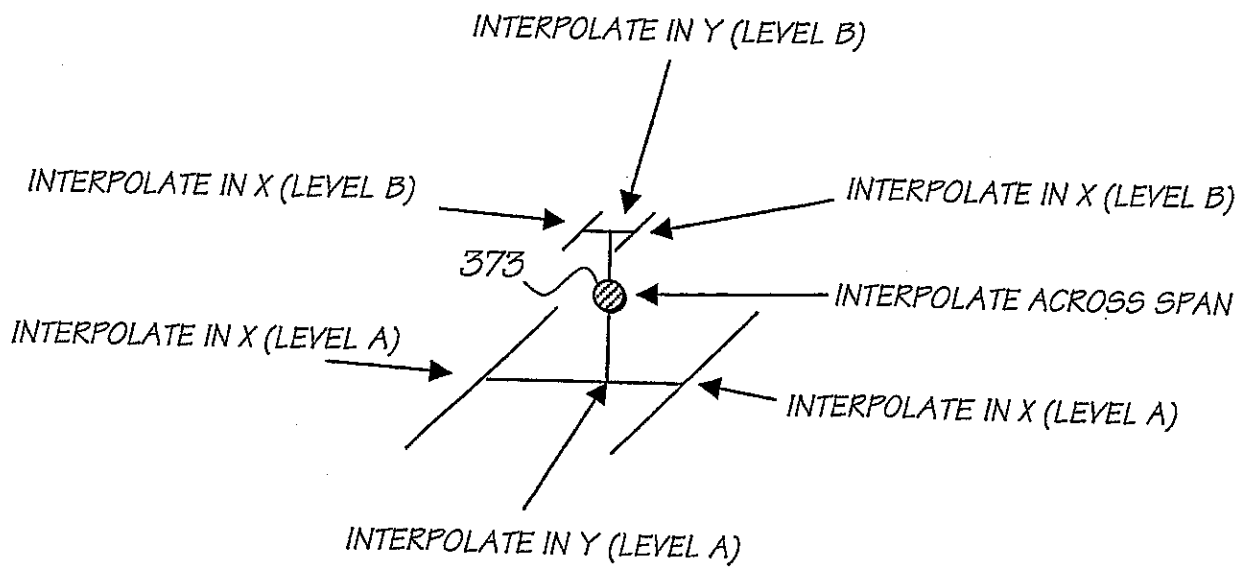


FIG. 91

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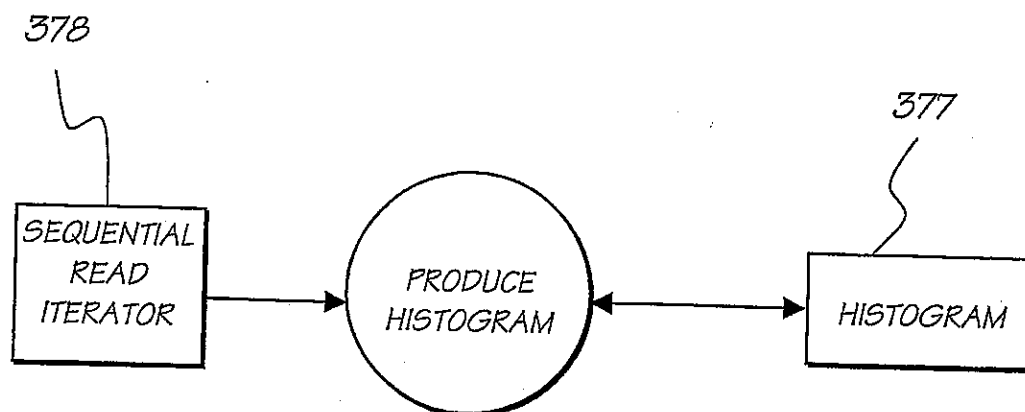


FIG. 92

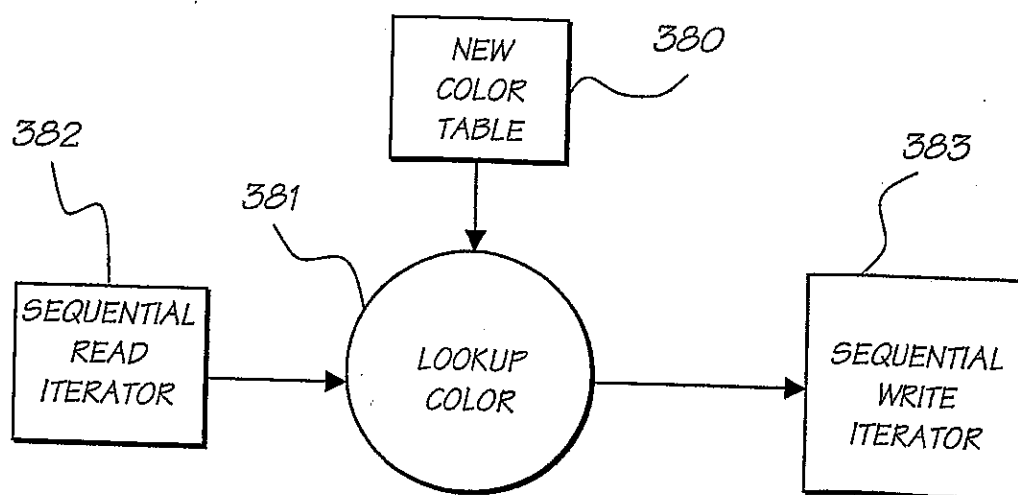


FIG. 93

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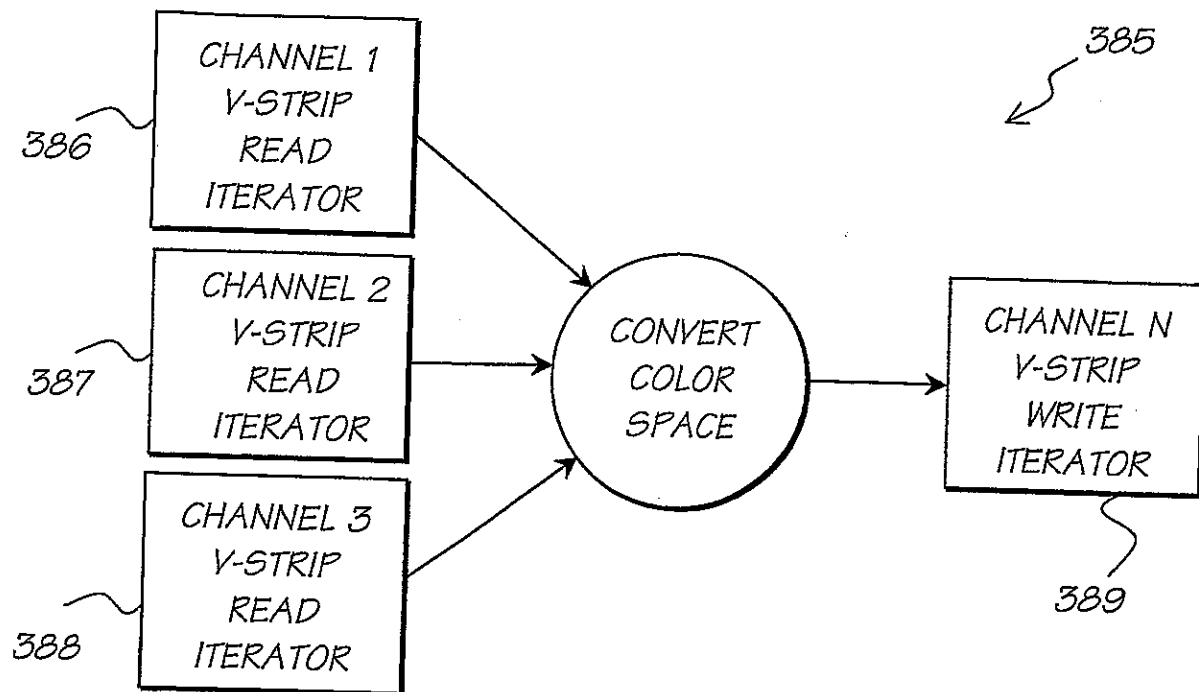


FIG. 94

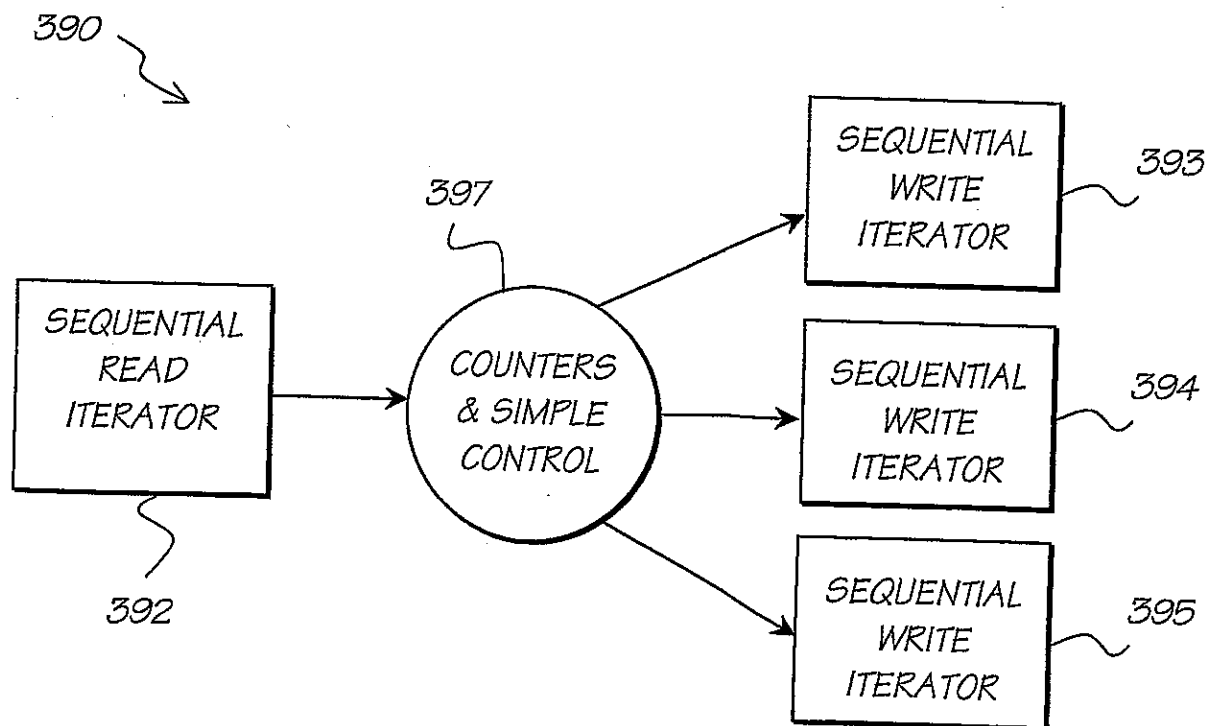


FIG. 101

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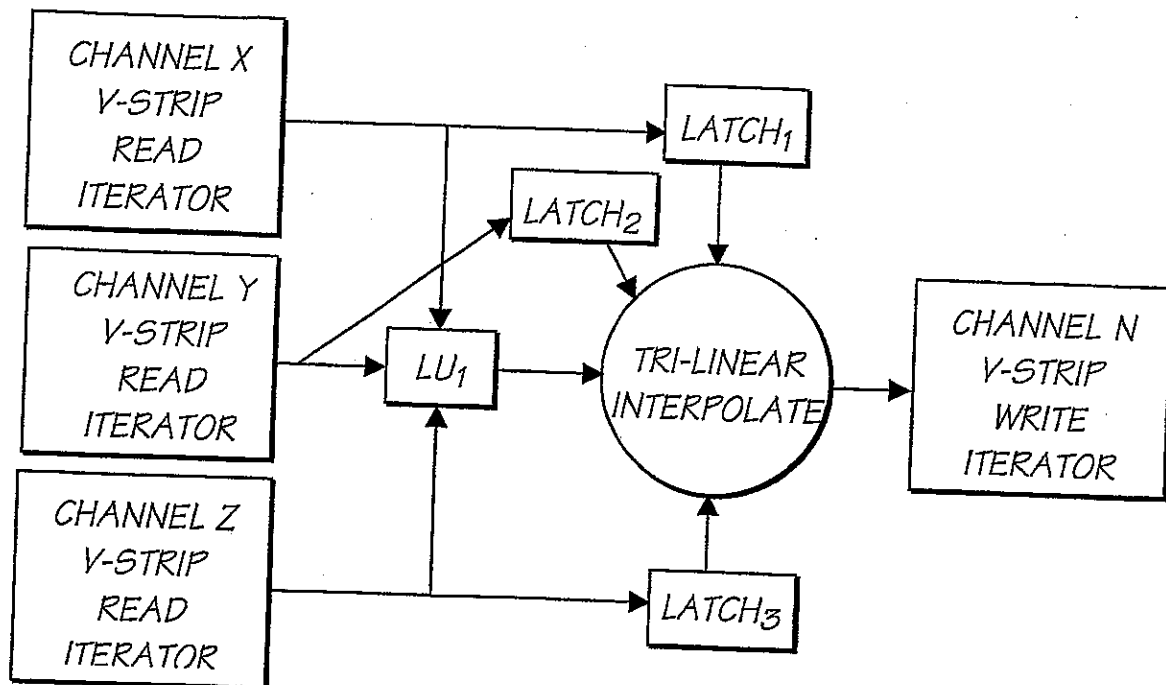


FIG. 95

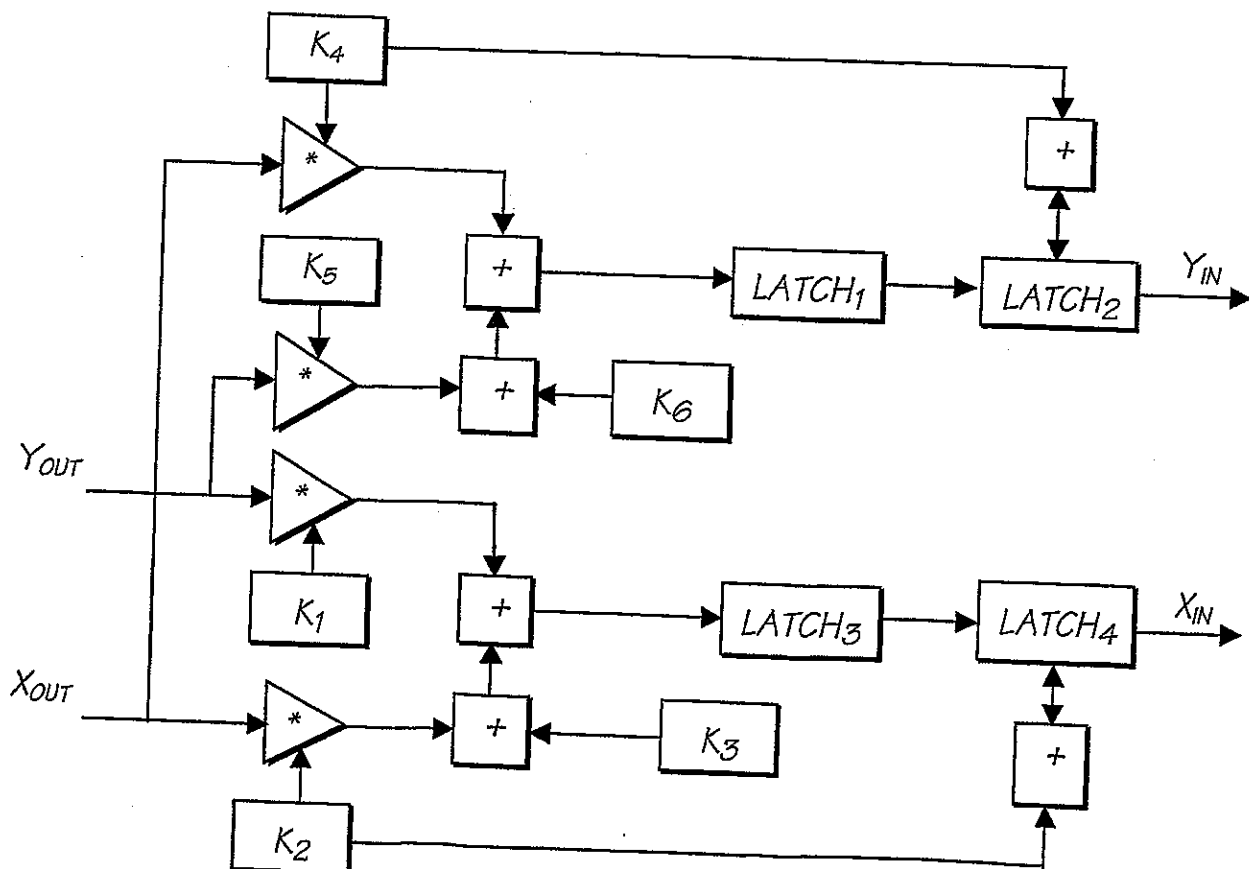


FIG. 96

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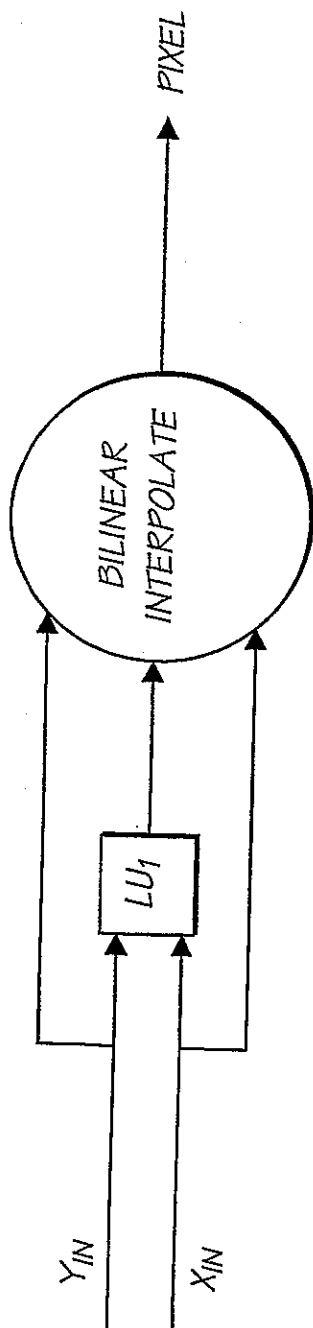


FIG. 97

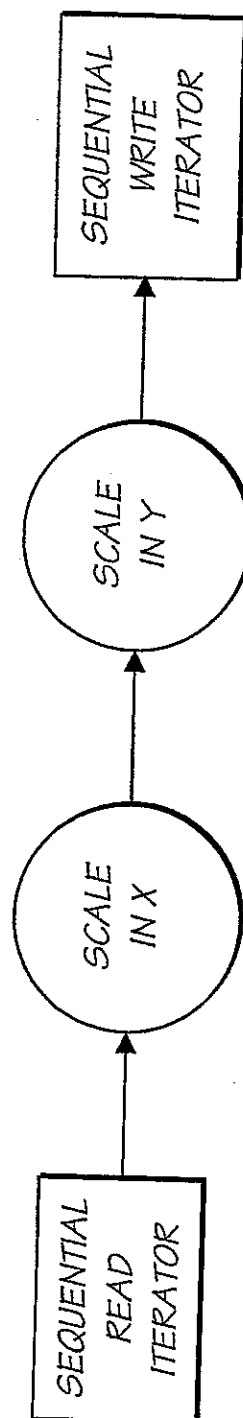


FIG. 98

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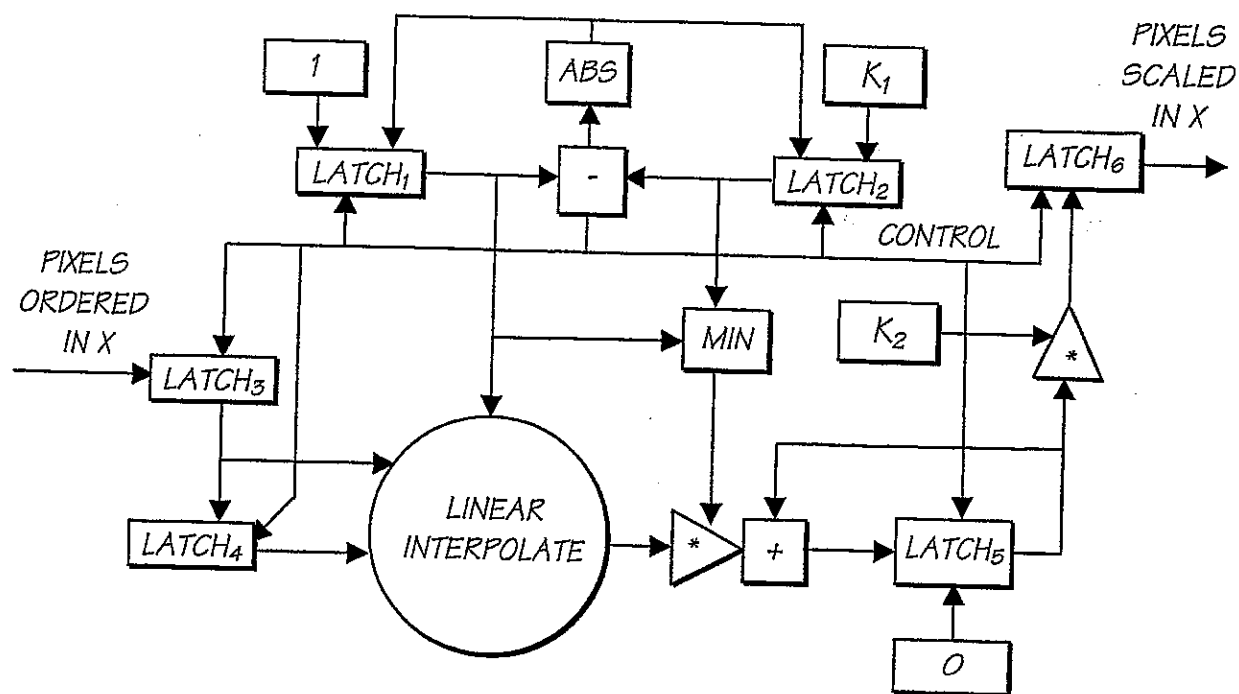


FIG. 99

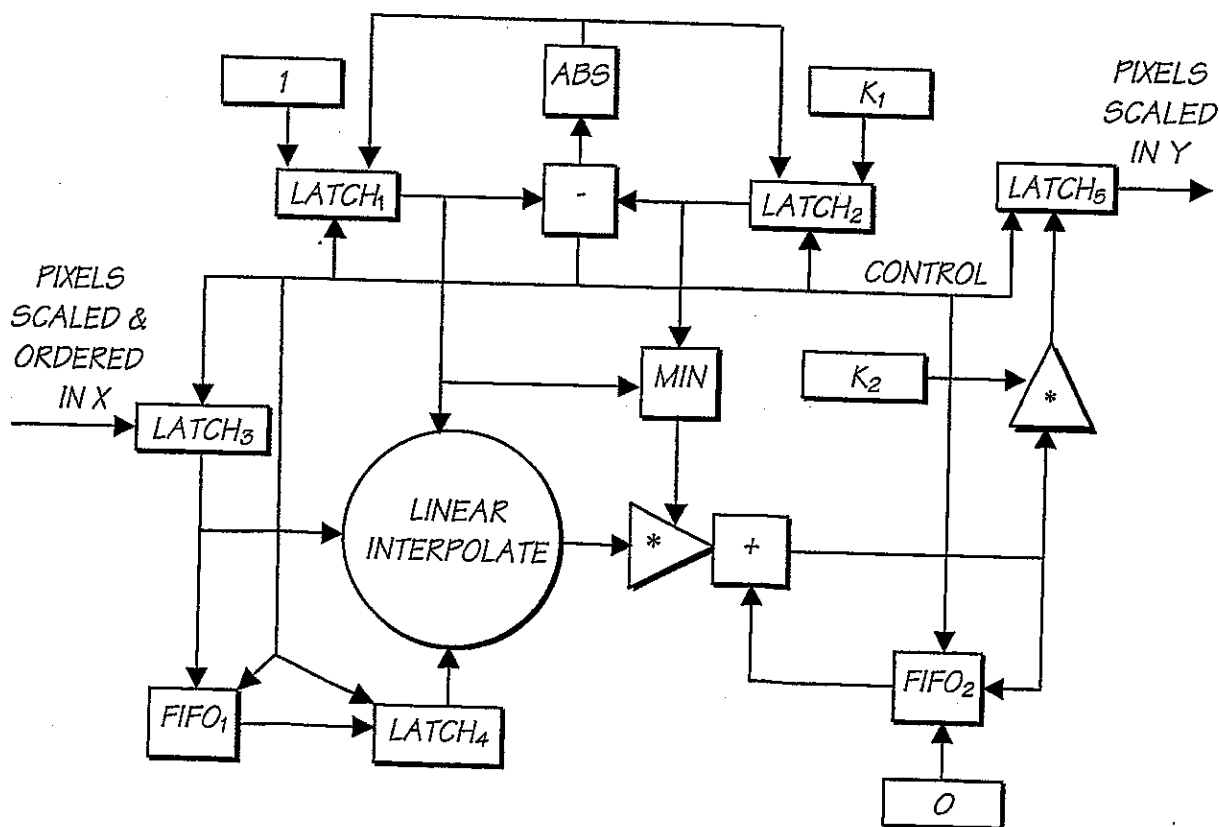
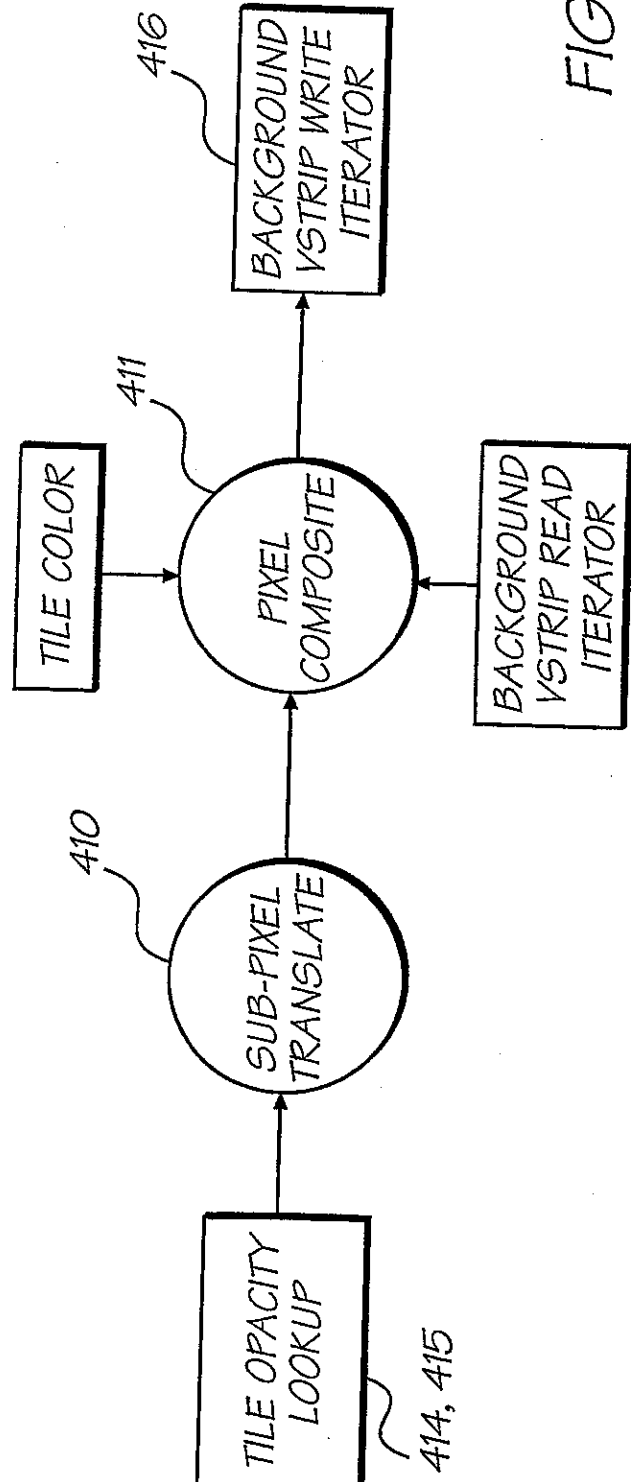
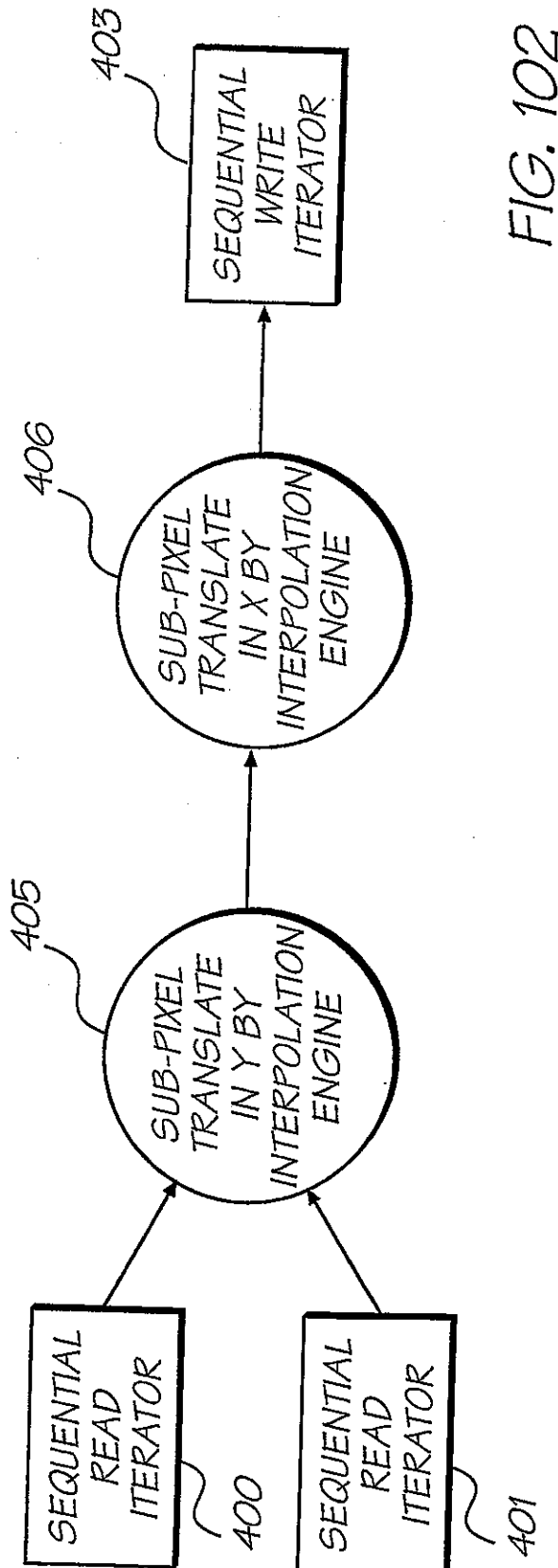
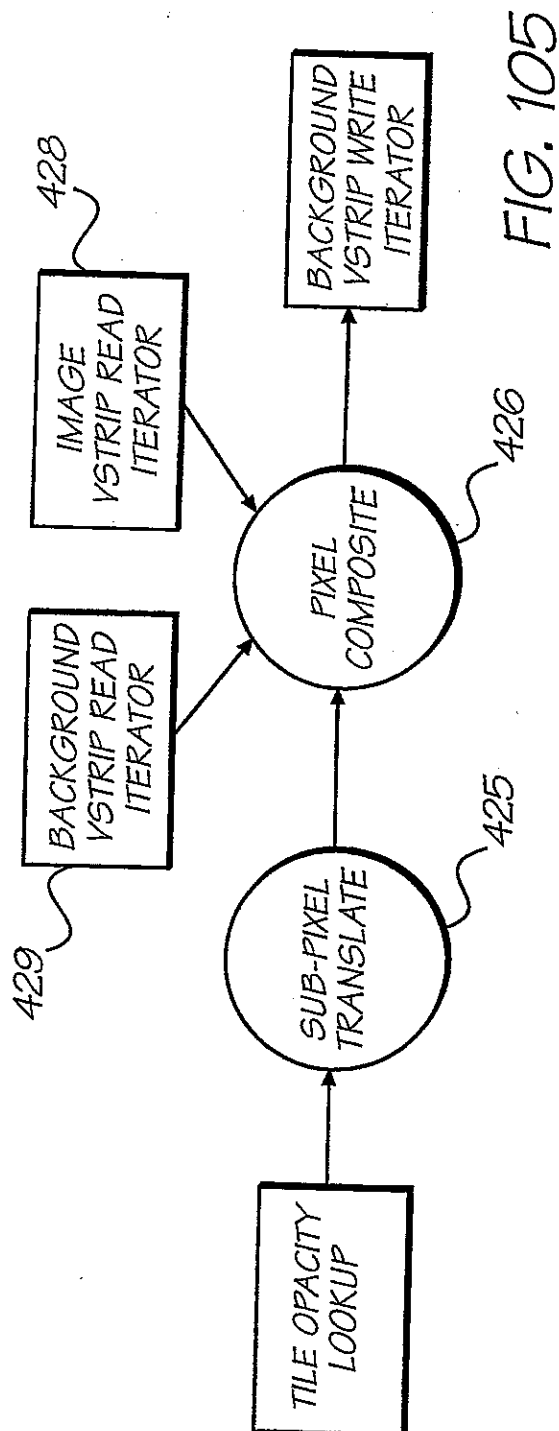
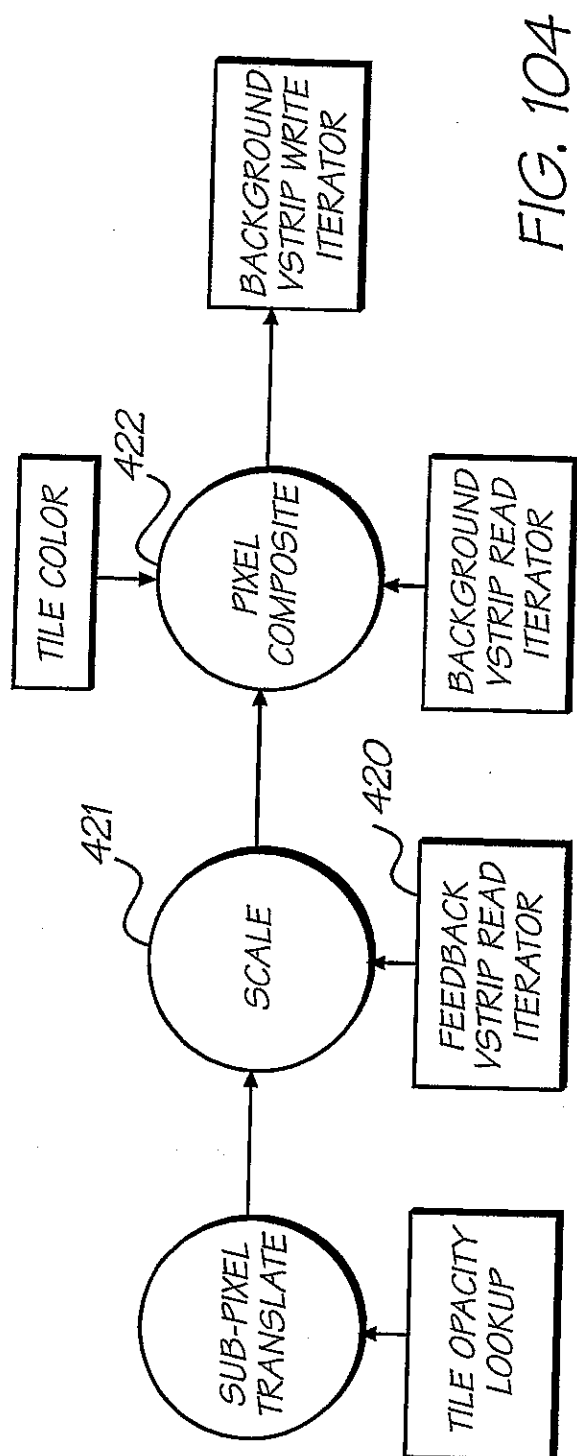


FIG. 100

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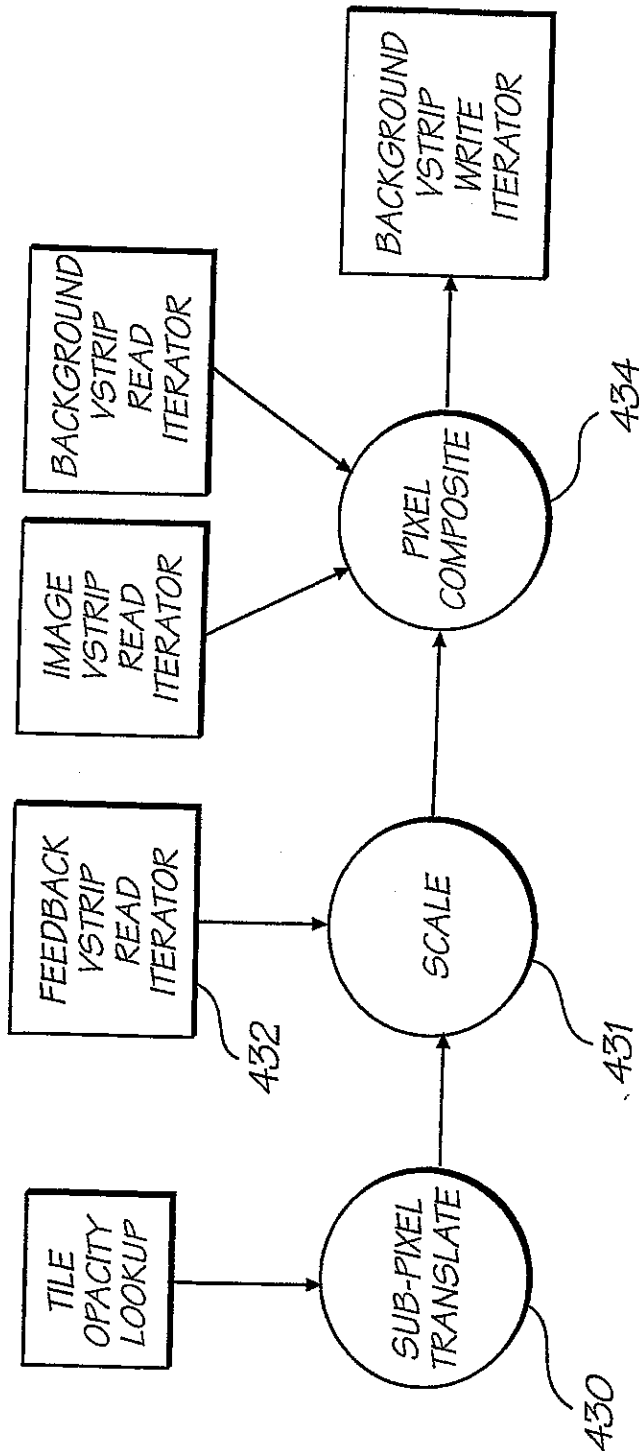


FIG. 106

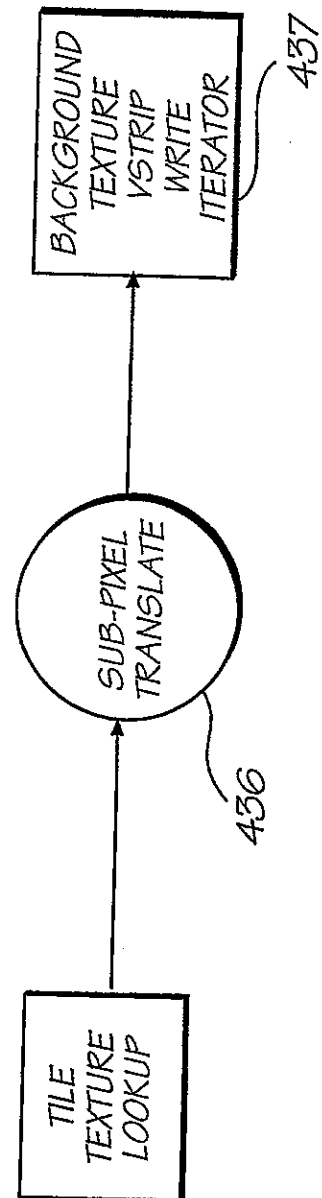
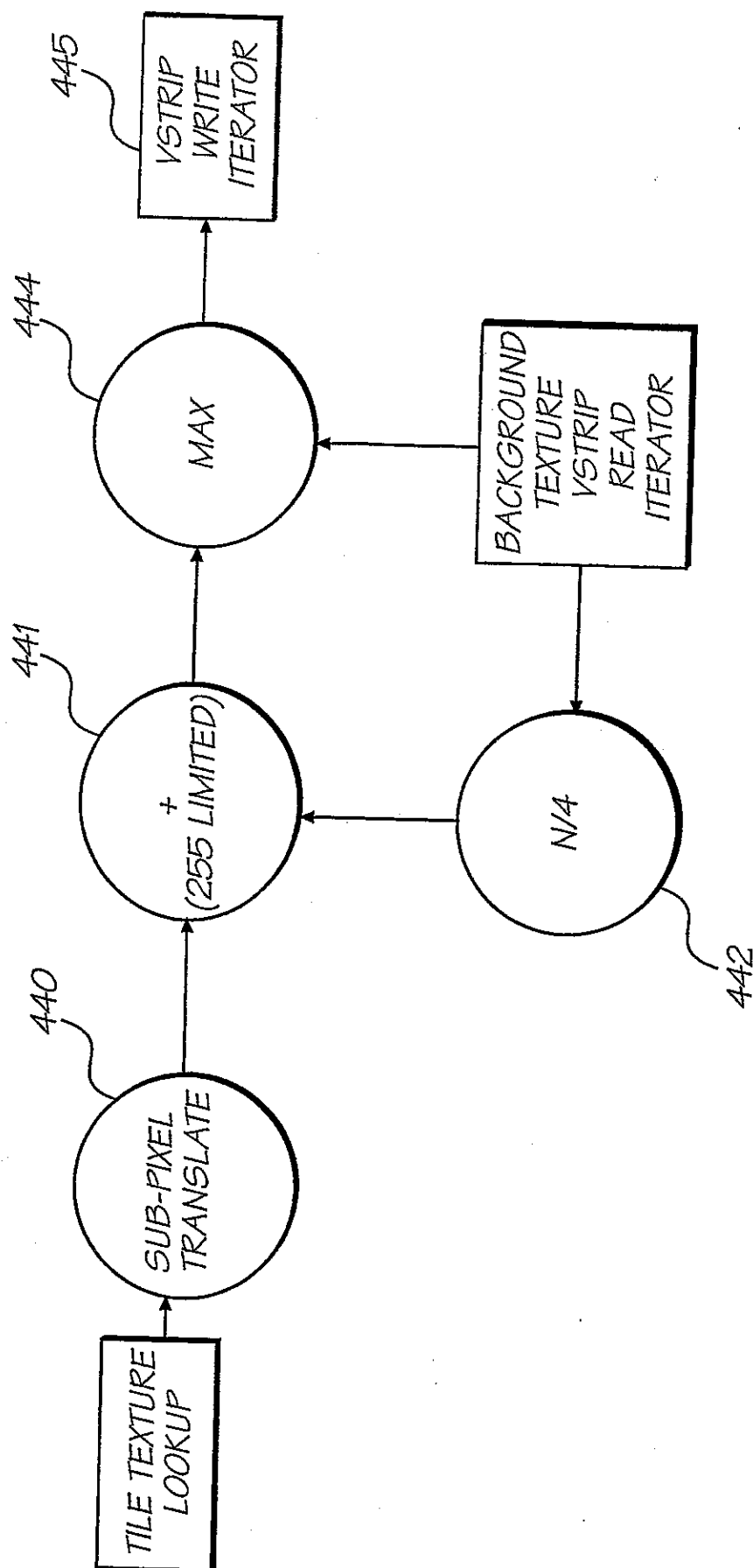


FIG. 107

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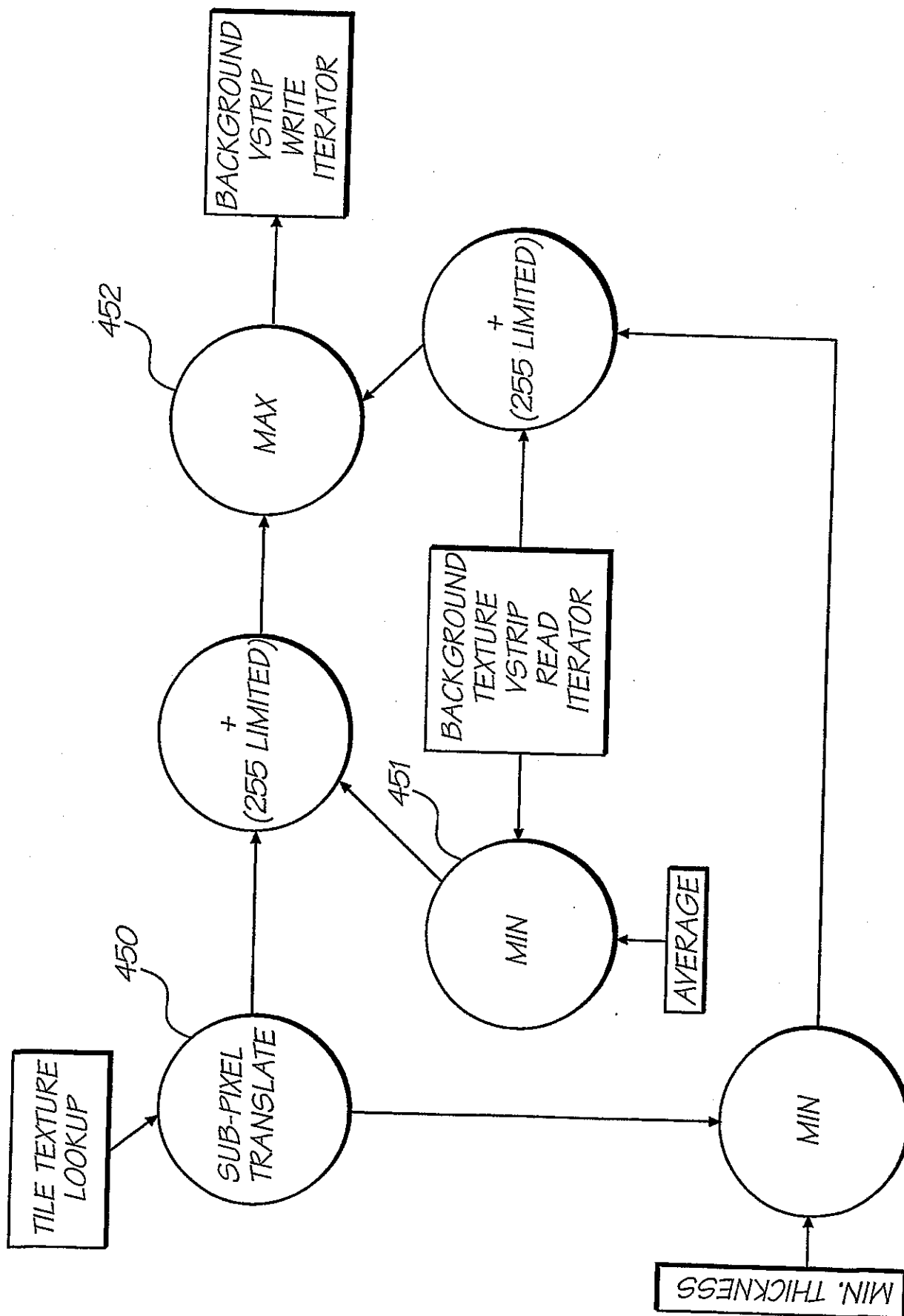


FIG. 109

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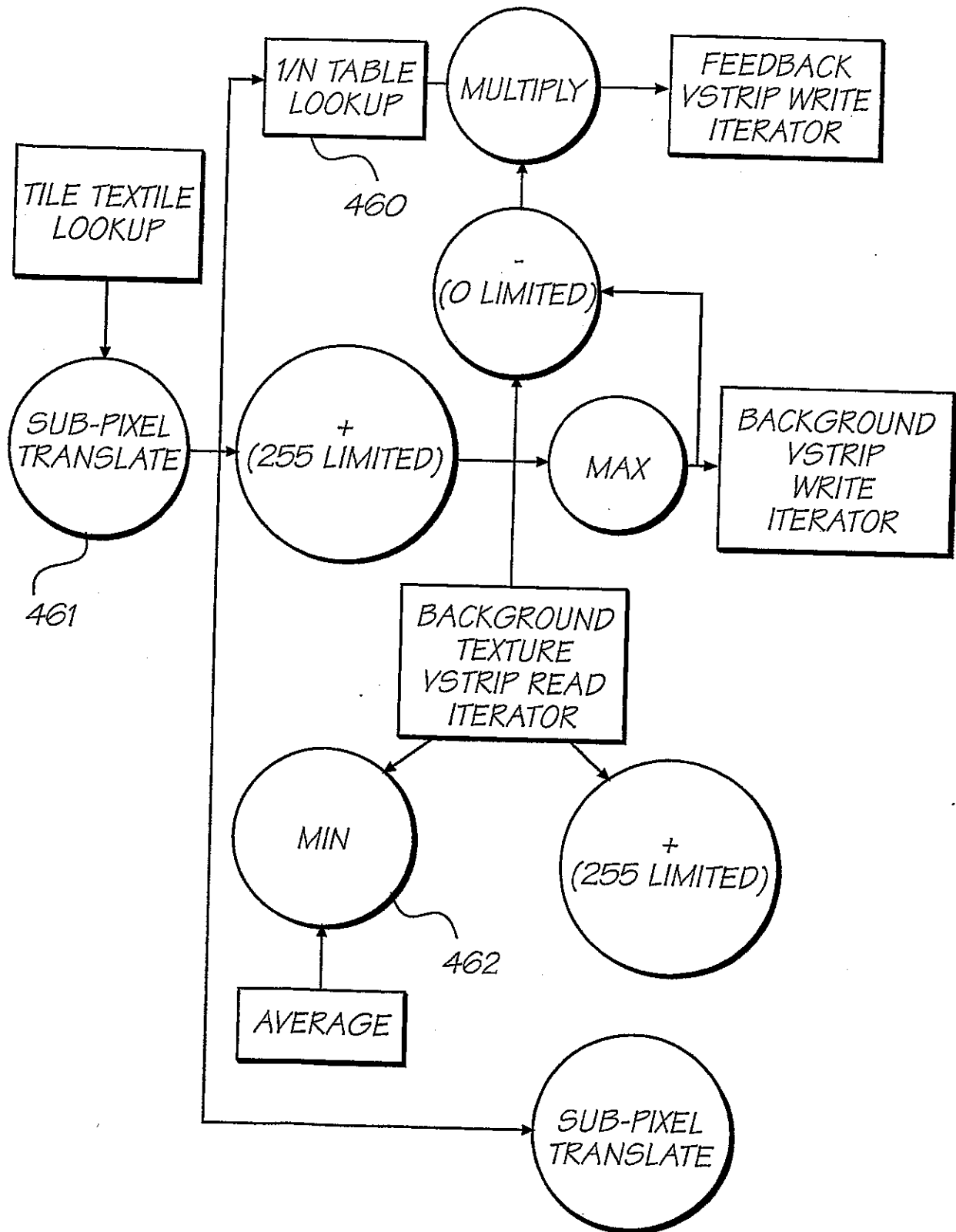


FIG. 110

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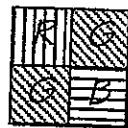
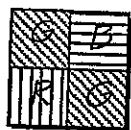
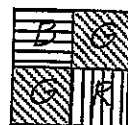
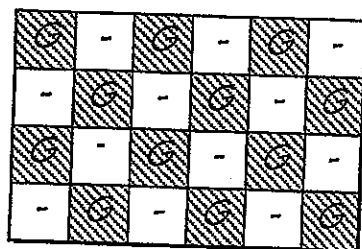
2X2 PIXEL BLOCK,
0 DEGREES2X2 PIXEL BLOCK,
90 DEGREES2X2 PIXEL BLOCK,
180 DEGREES2X2 PIXEL BLOCK,
270 DEGREES

FIG. 111

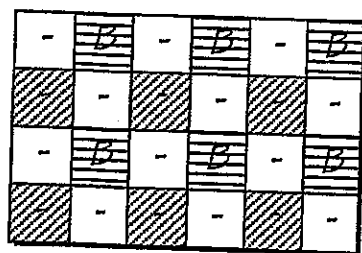


LINEAR INTERPOLATED PIXELS



ACTUAL PIXELS (NOT INTERPOLATED)

FIG. 112



LINEAR INTERPOLATED PIXELS

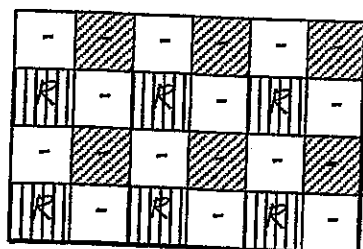


BI-LINEAR INTERPOLATED PIXELS



ACTUAL PIXELS (NOT INTERPOLATED)

FIG. 113



LINEAR INTERPOLATED PIXELS



BI-LINEAR INTERPOLATED PIXELS



ACTUAL PIXELS (NOT INTERPOLATED)

FIG. 114

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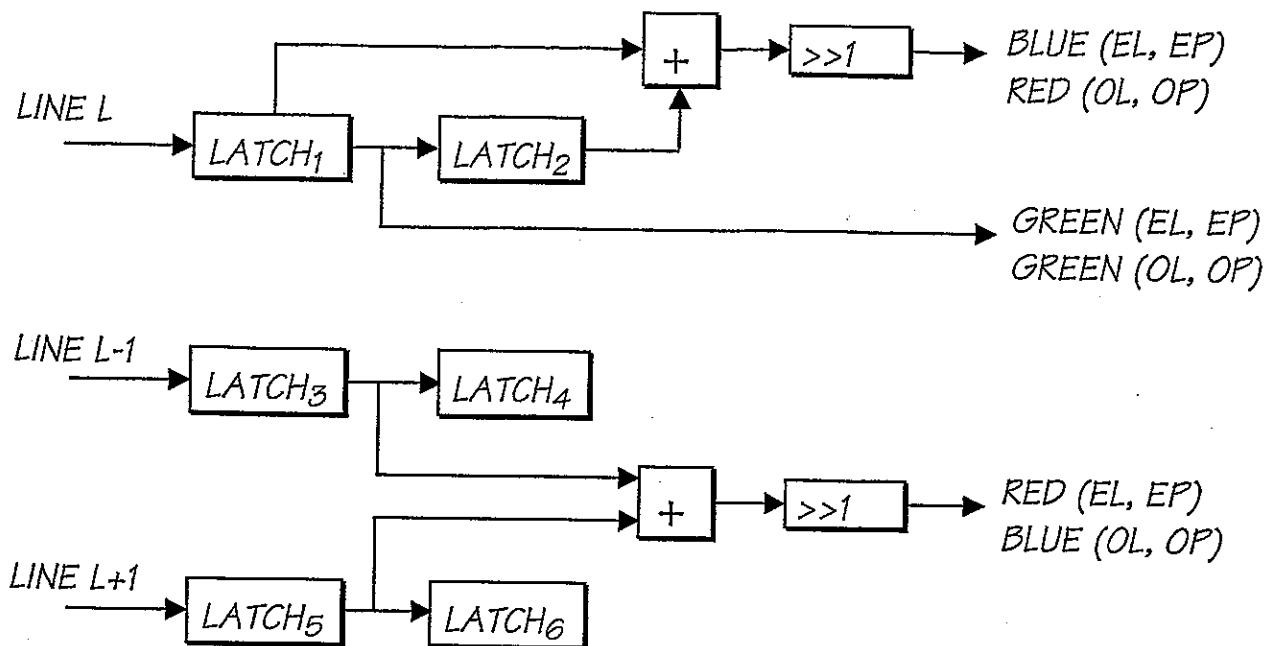


FIG. 115

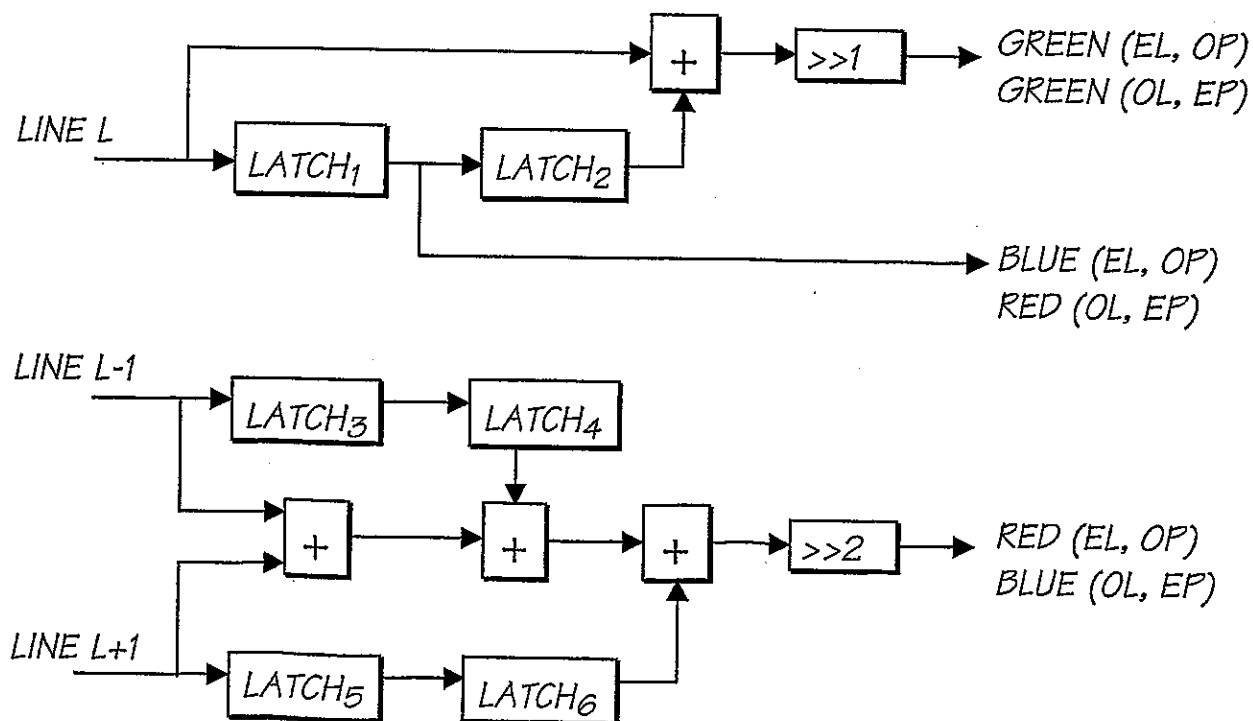


FIG. 116

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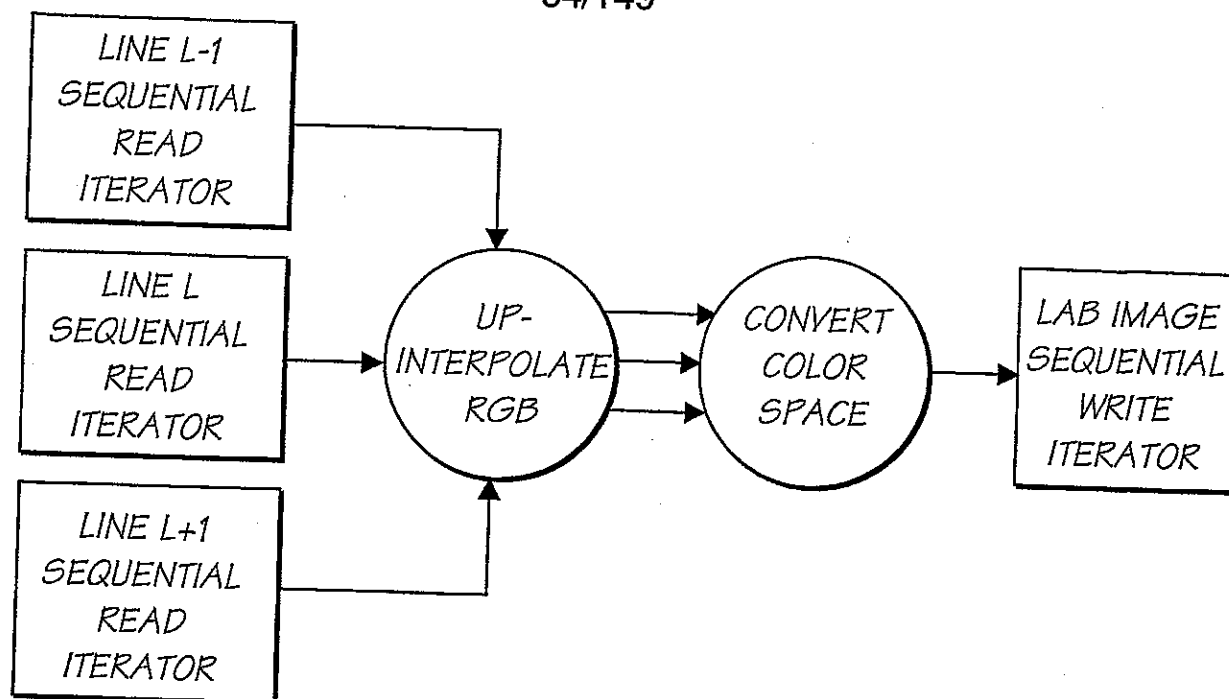


FIG. 117

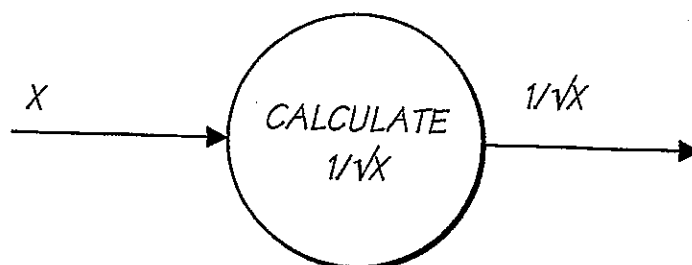
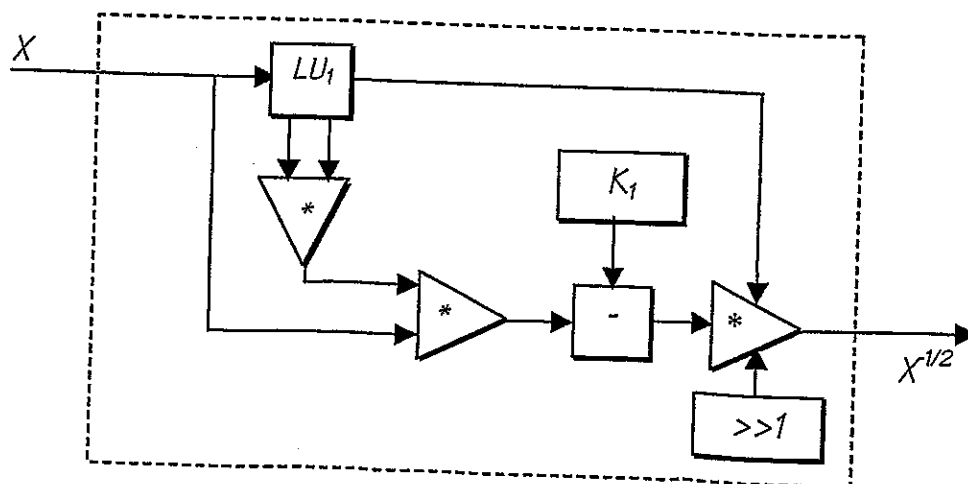


FIG. 118

FIG. 119
SUBSTITUTE SHEET (RULE 26) RO/AU

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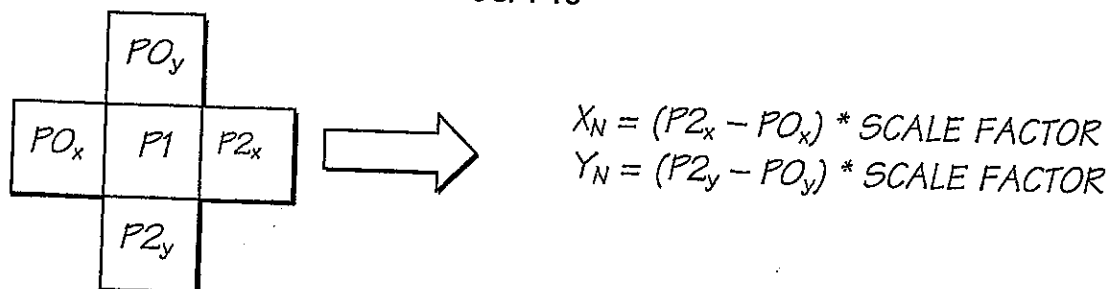


FIG. 120

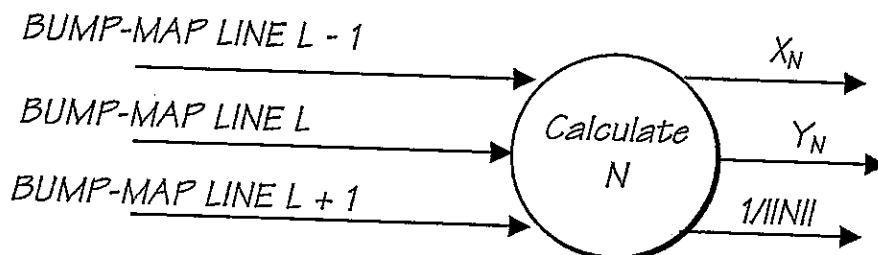


FIG. 121

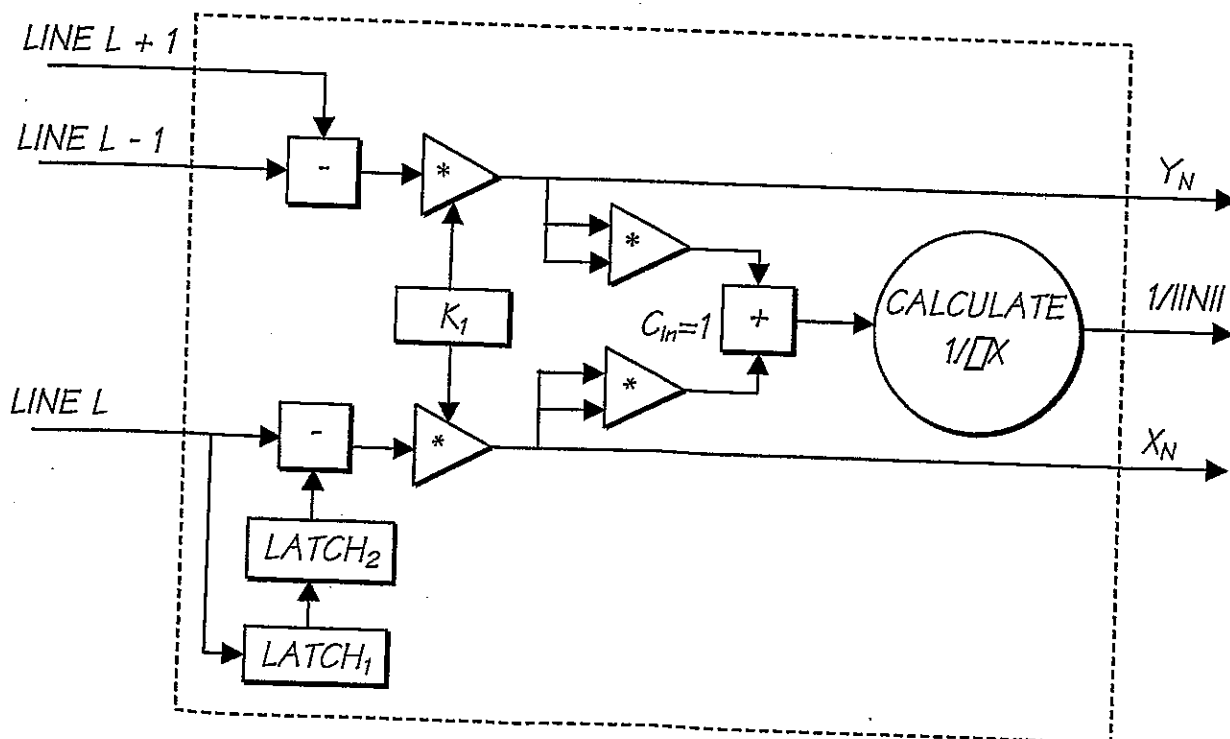


FIG. 122

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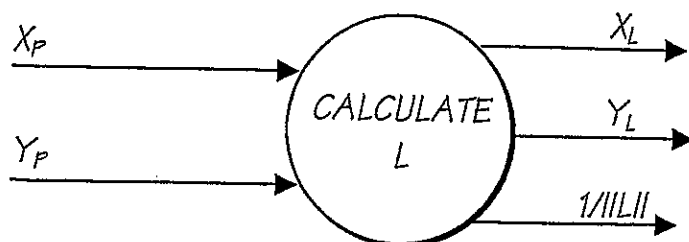


FIG. 123

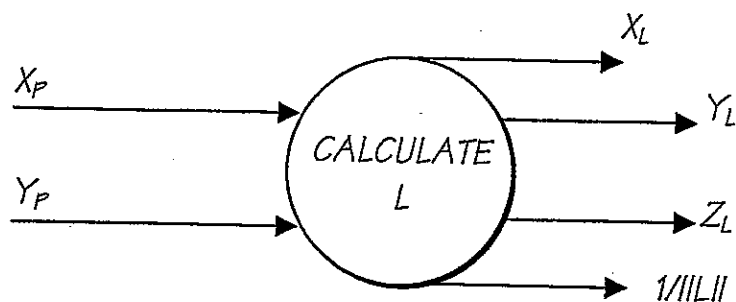


FIG. 124

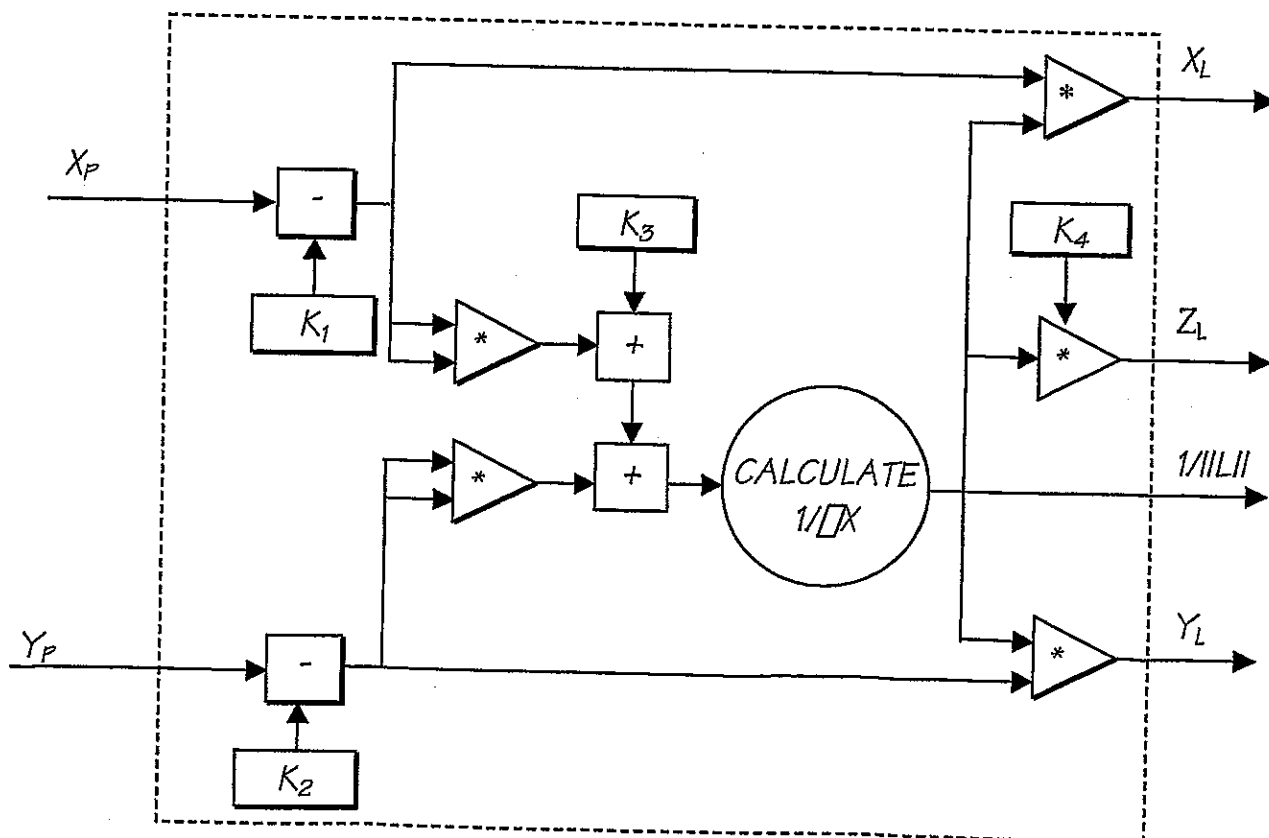


FIG. 125

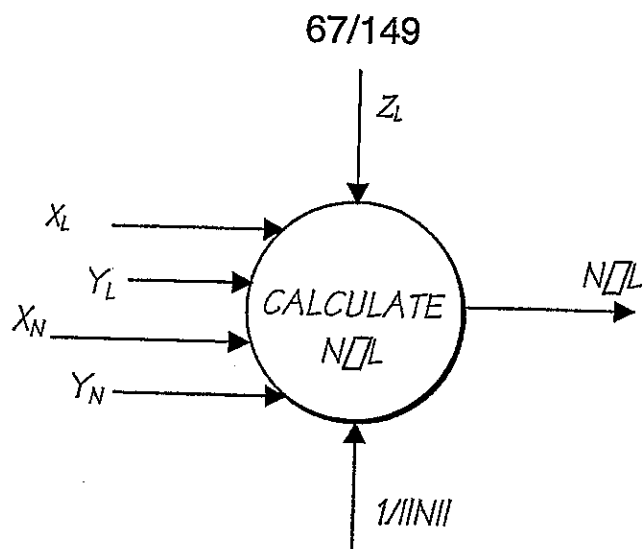


FIG. 126

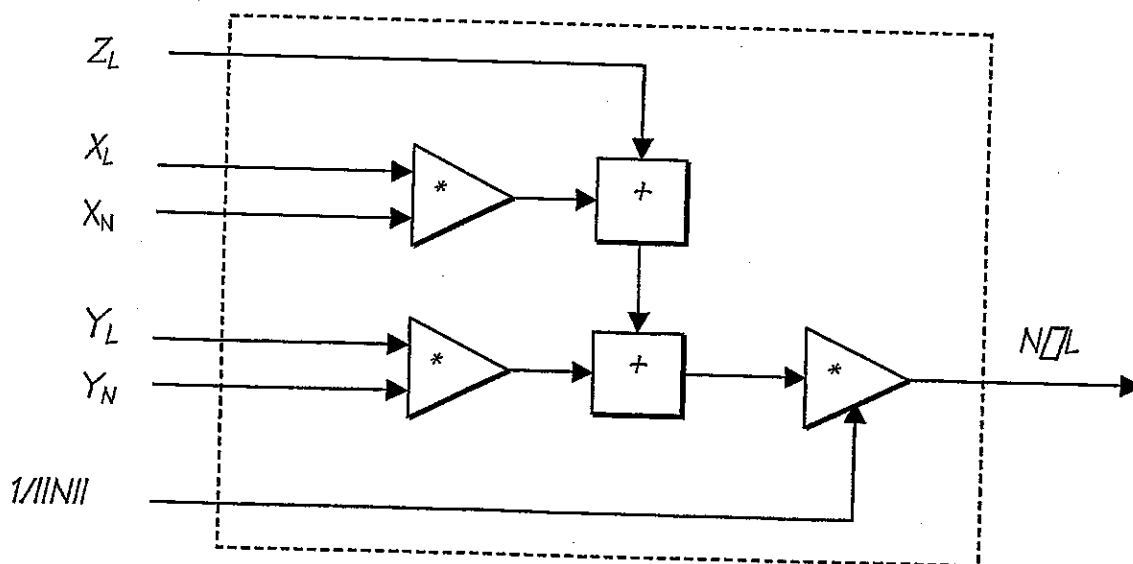


FIG. 127

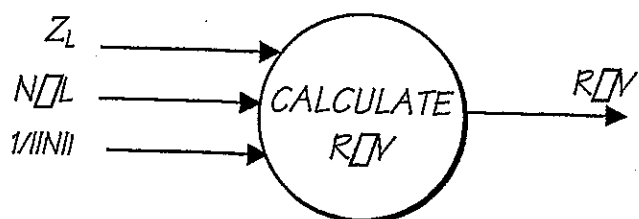


FIG. 128

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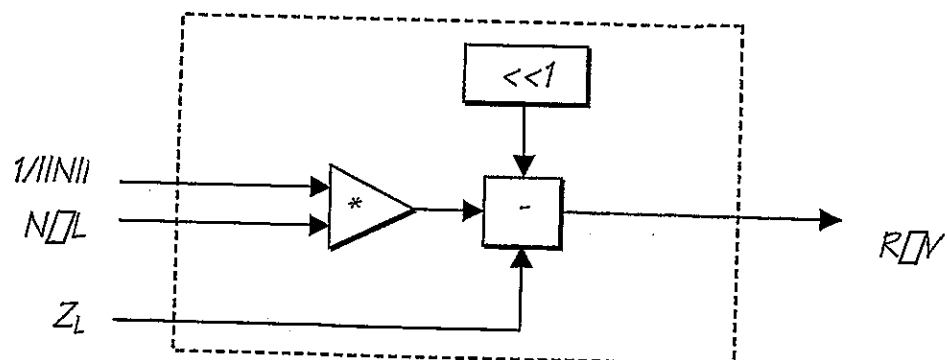


FIG. 129

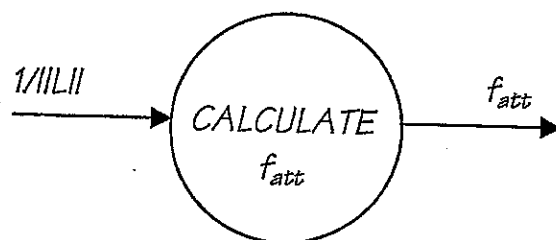


FIG. 130

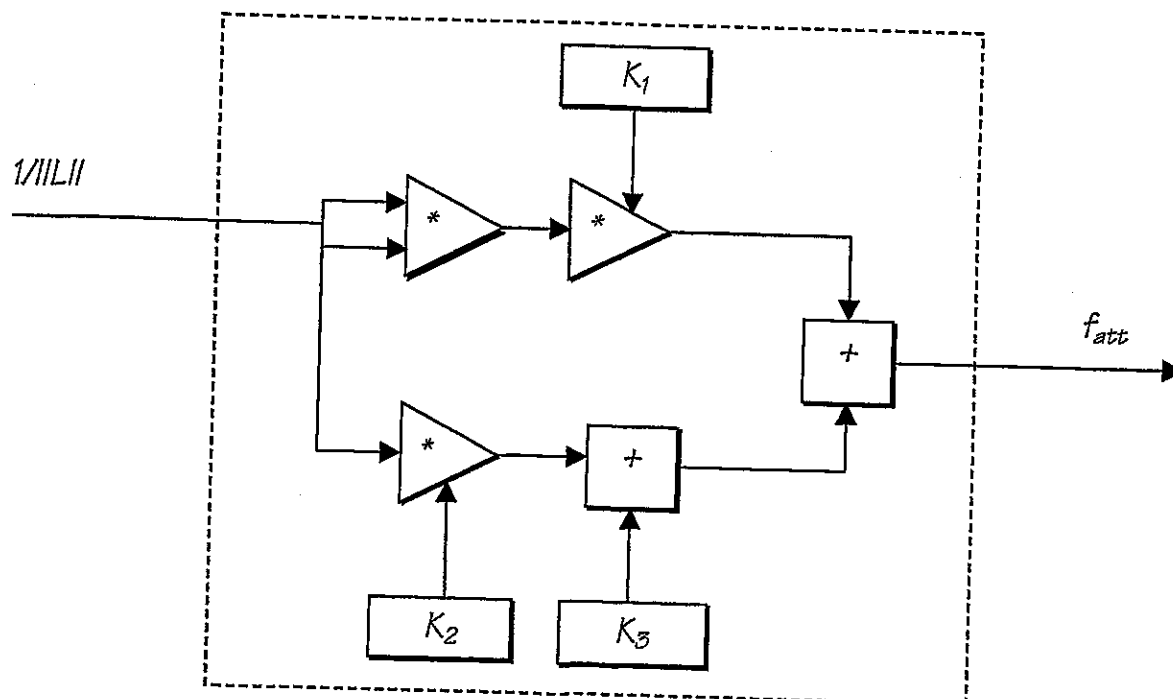


FIG. 131

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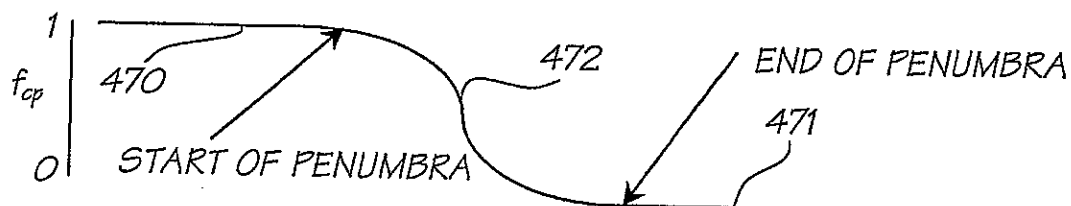


FIG. 132

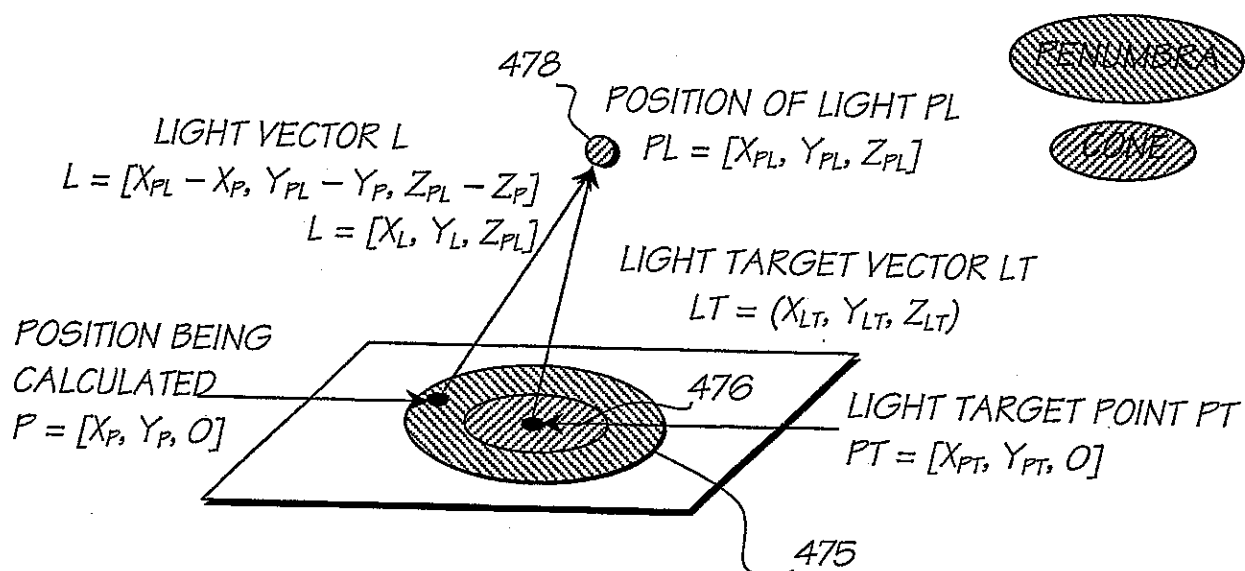


FIG. 133

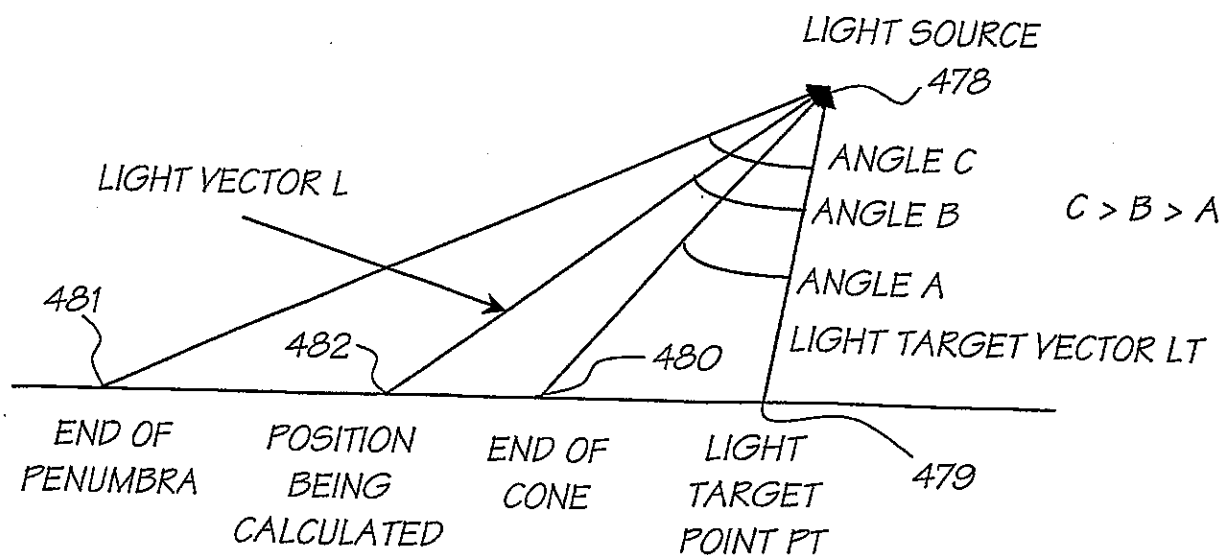


FIG. 134

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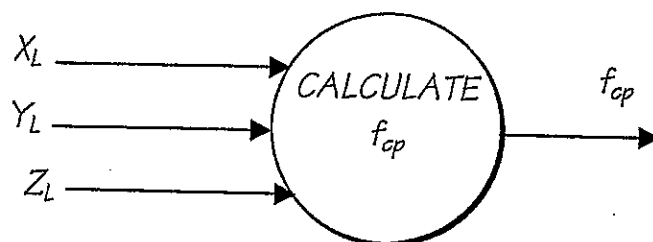


FIG. 135

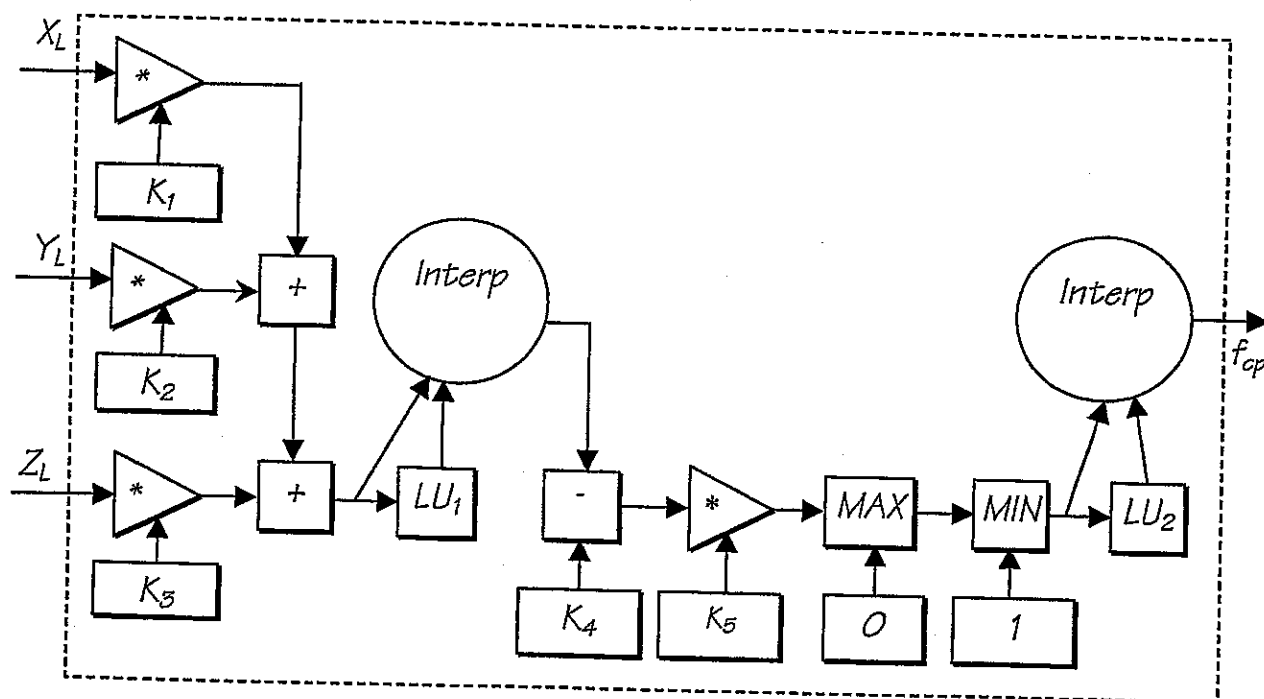


FIG. 136

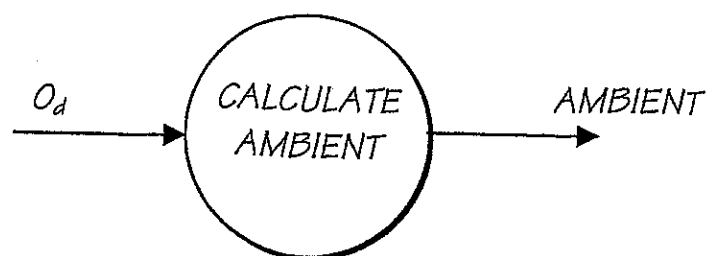


FIG. 137

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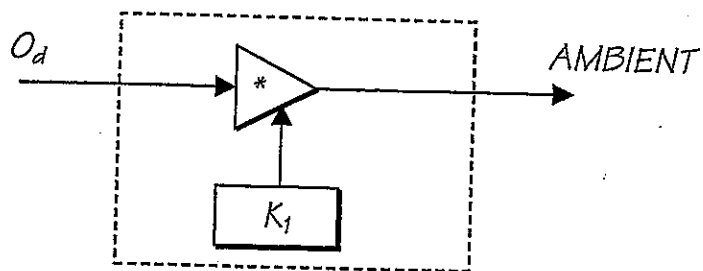


FIG. 138

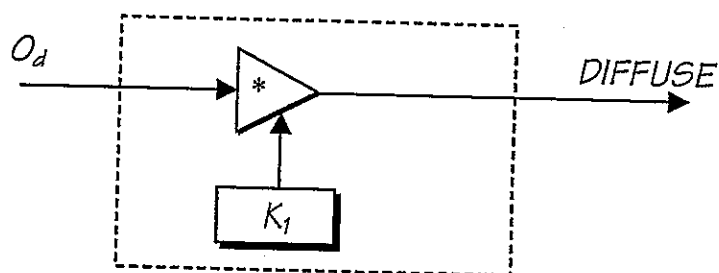


FIG. 139

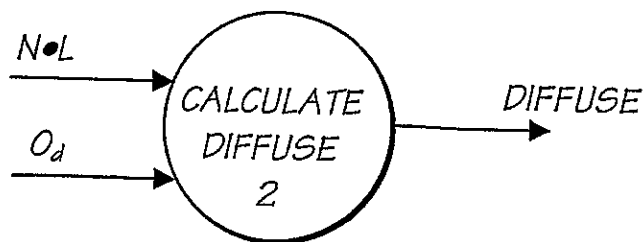


FIG. 140

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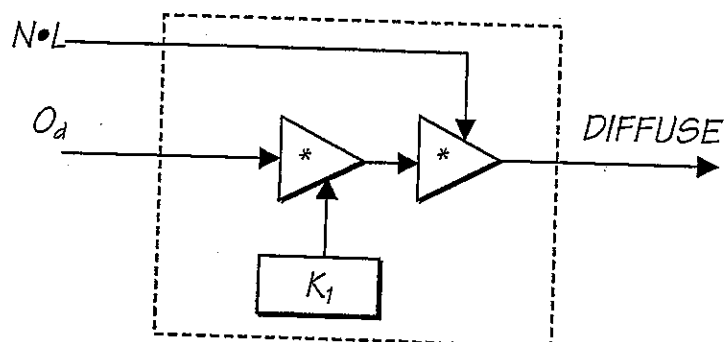


FIG. 141

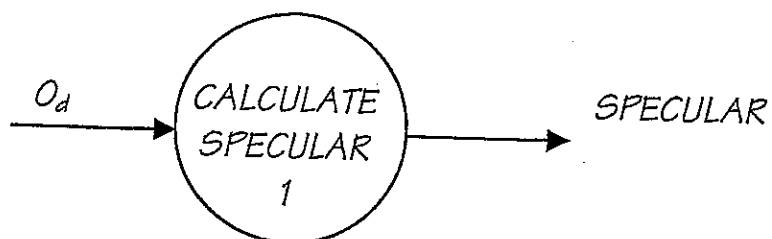


FIG. 142

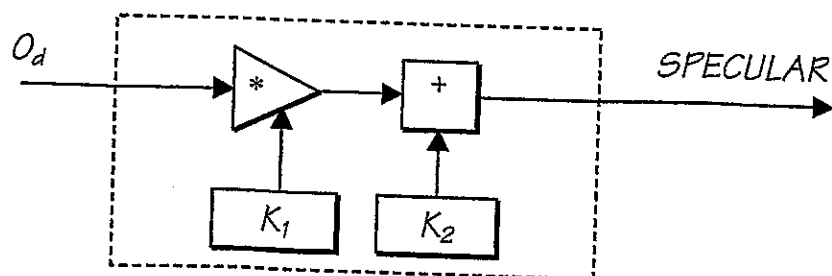


FIG. 143

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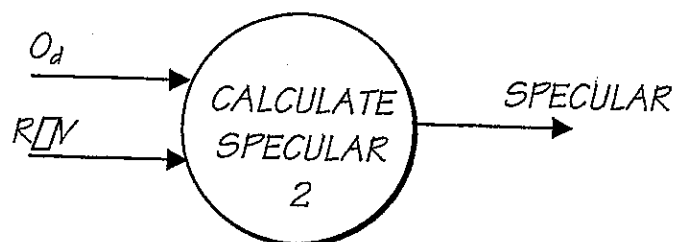


FIG. 144

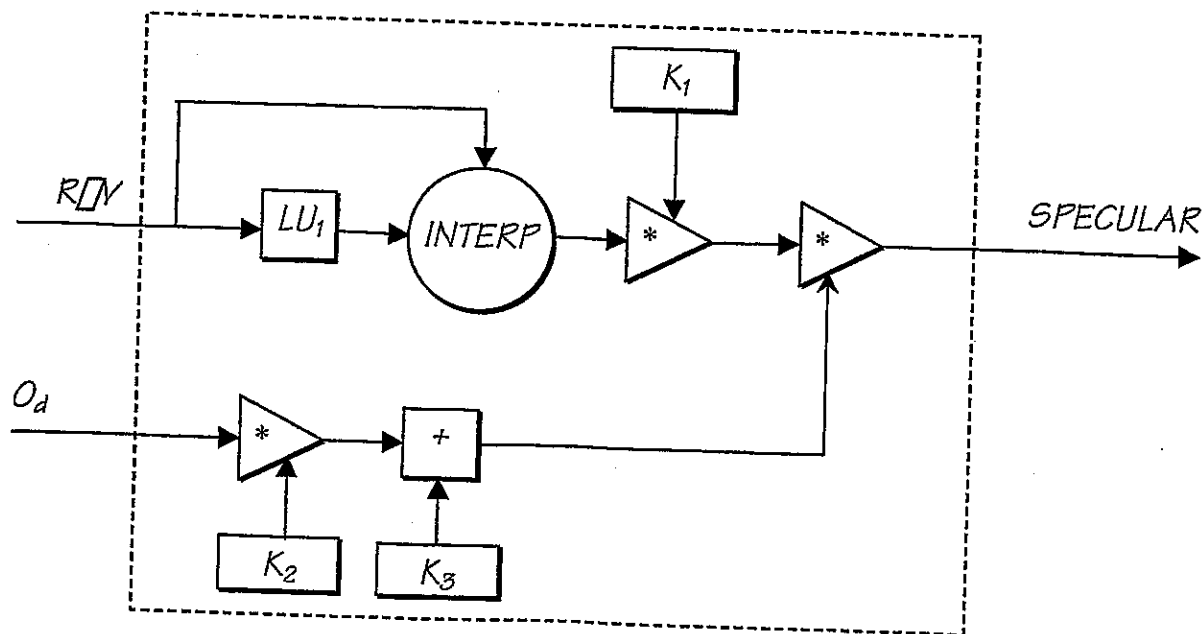


FIG. 145

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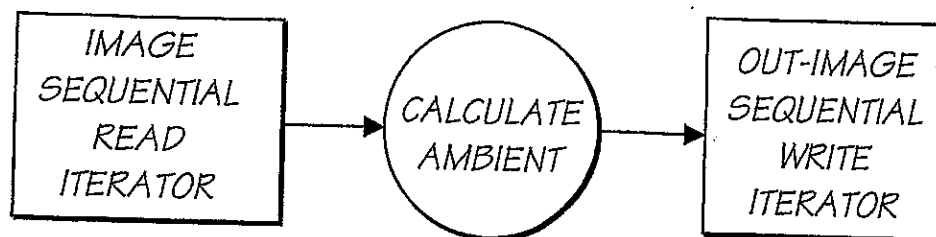


FIG. 146

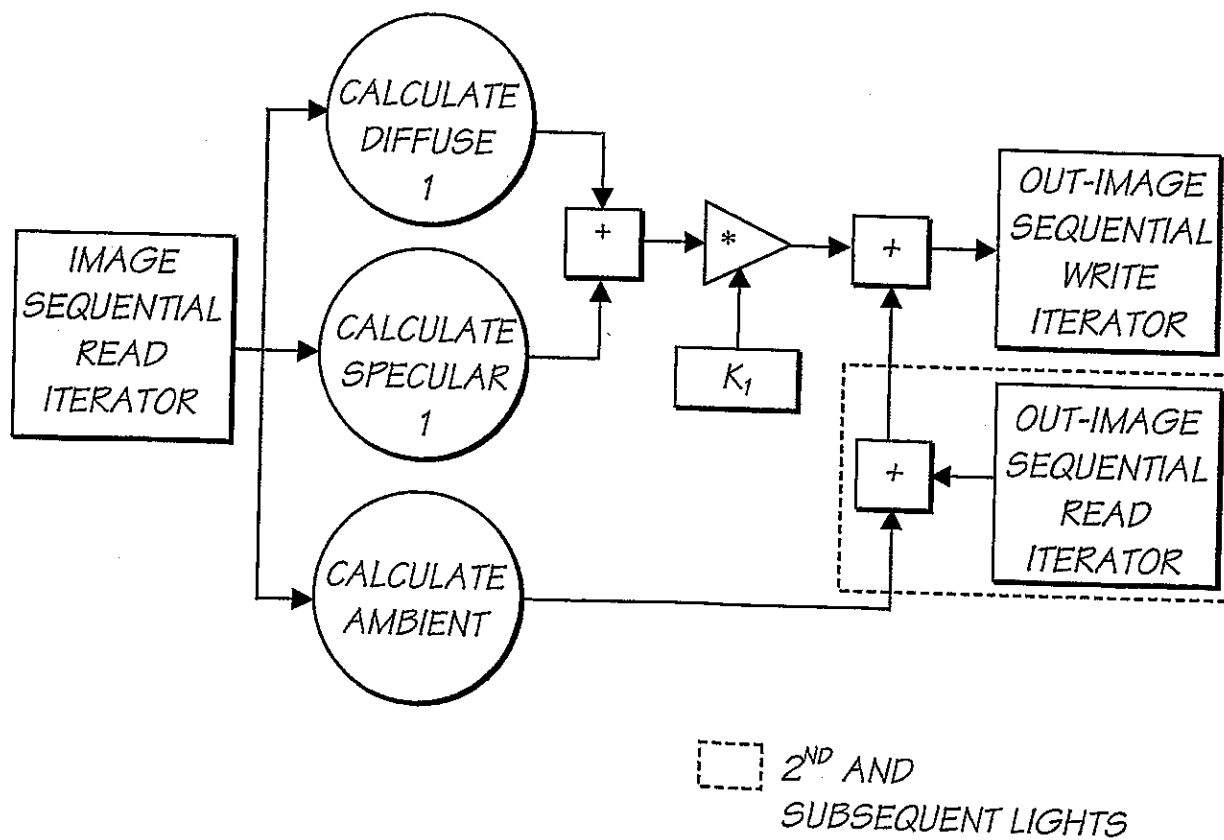


FIG. 147

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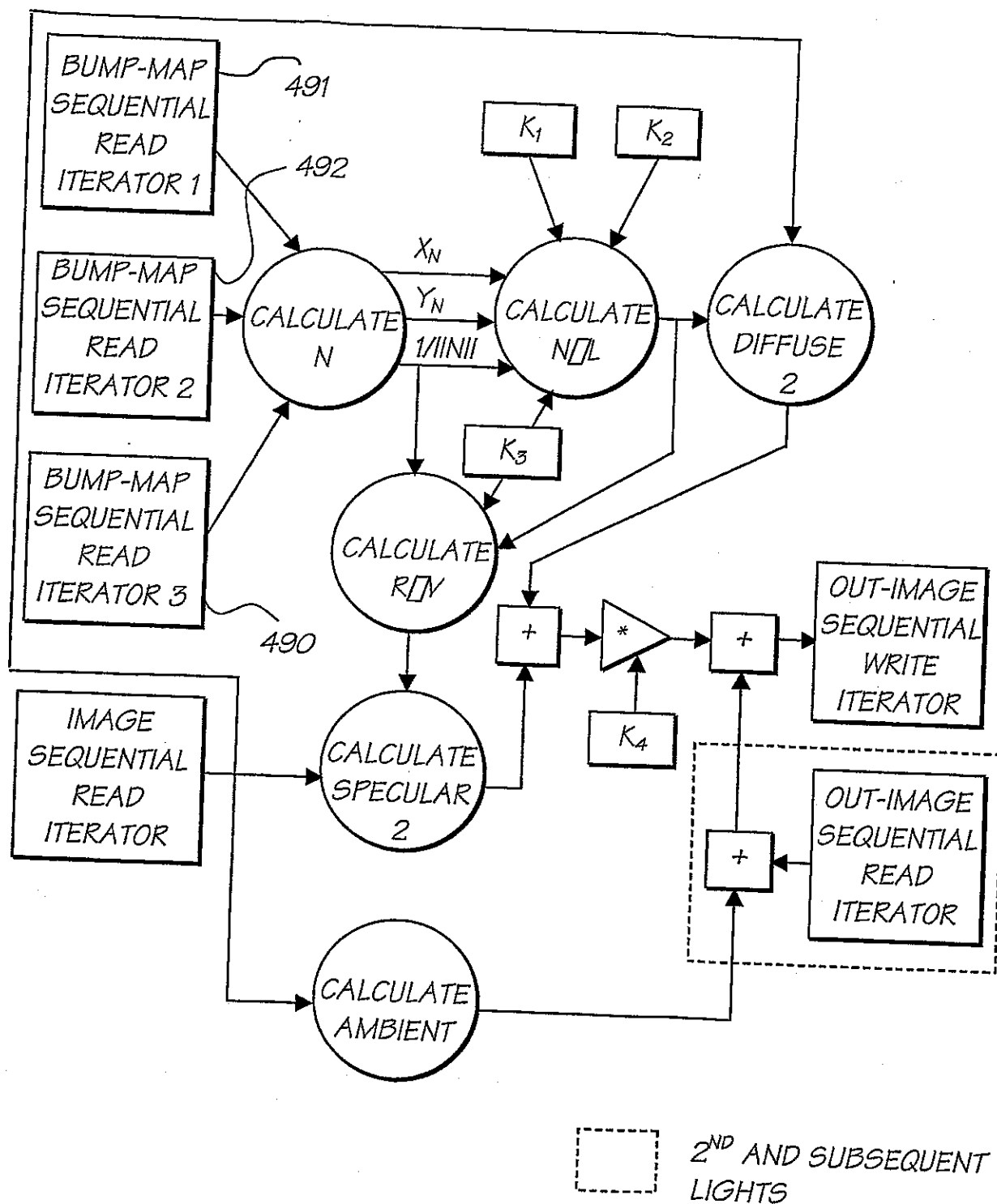


FIG. 148

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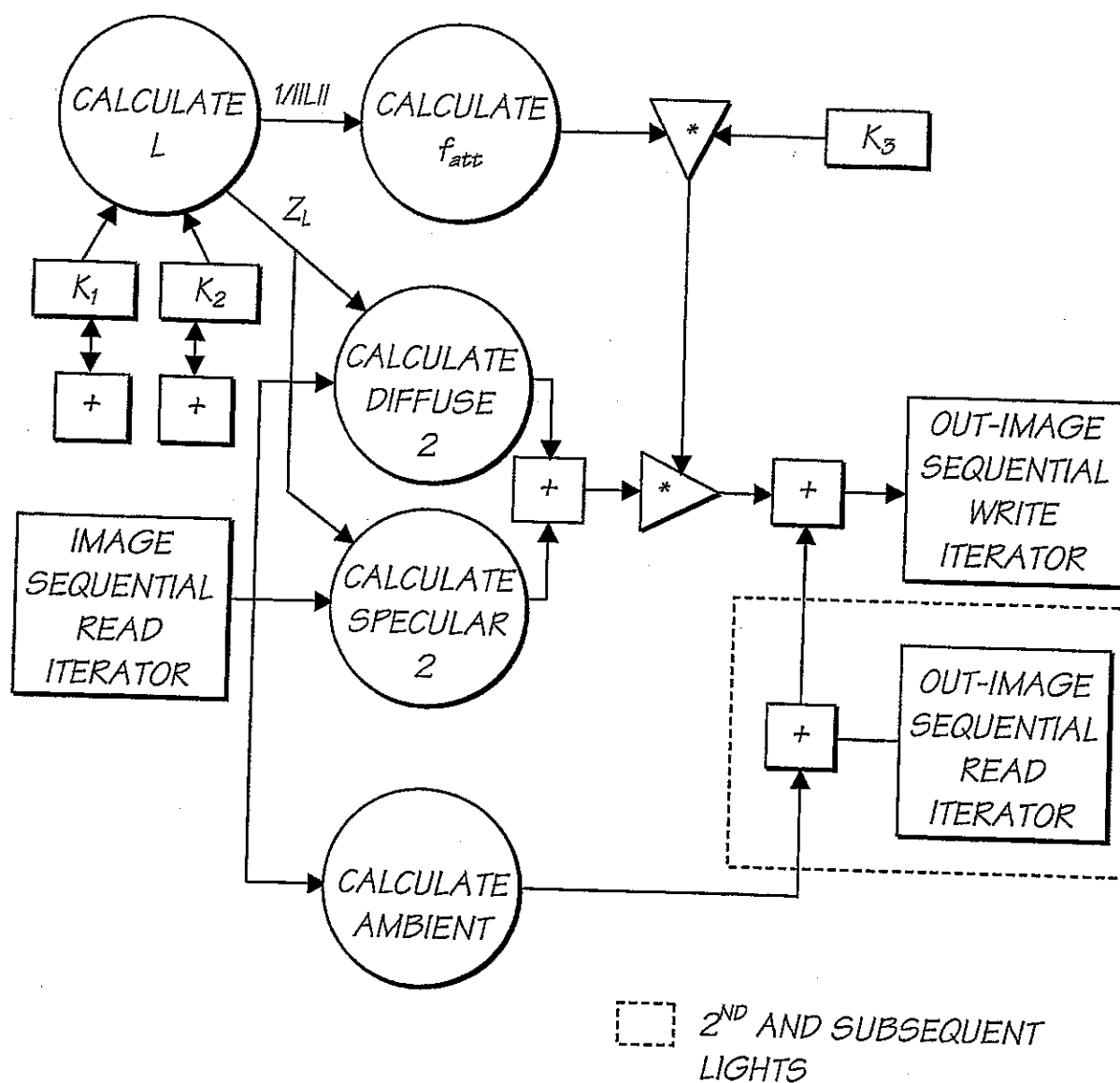


FIG. 149

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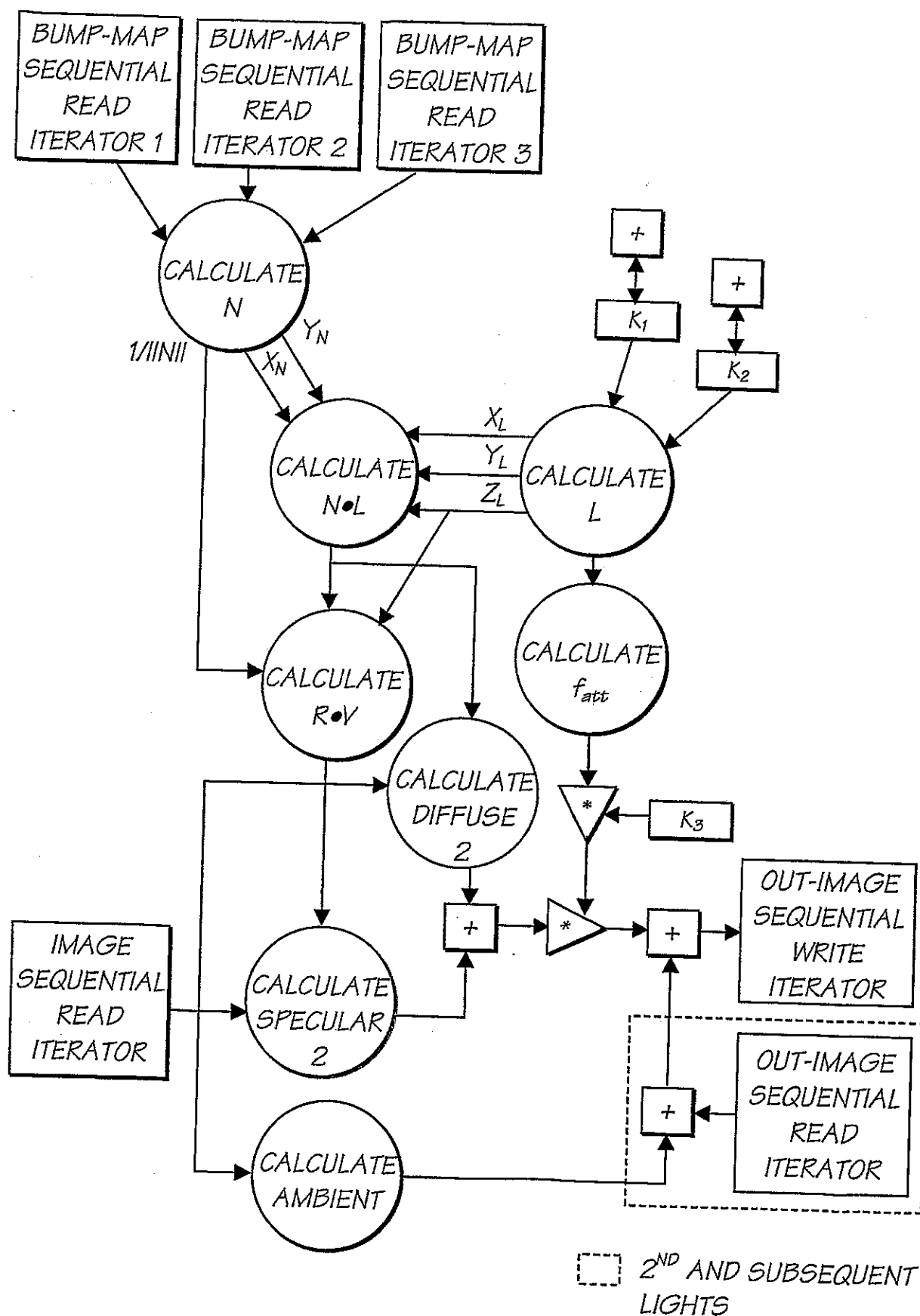


FIG. 150
 SUBSTITUTE SHEET (RULE 26) RO/AU

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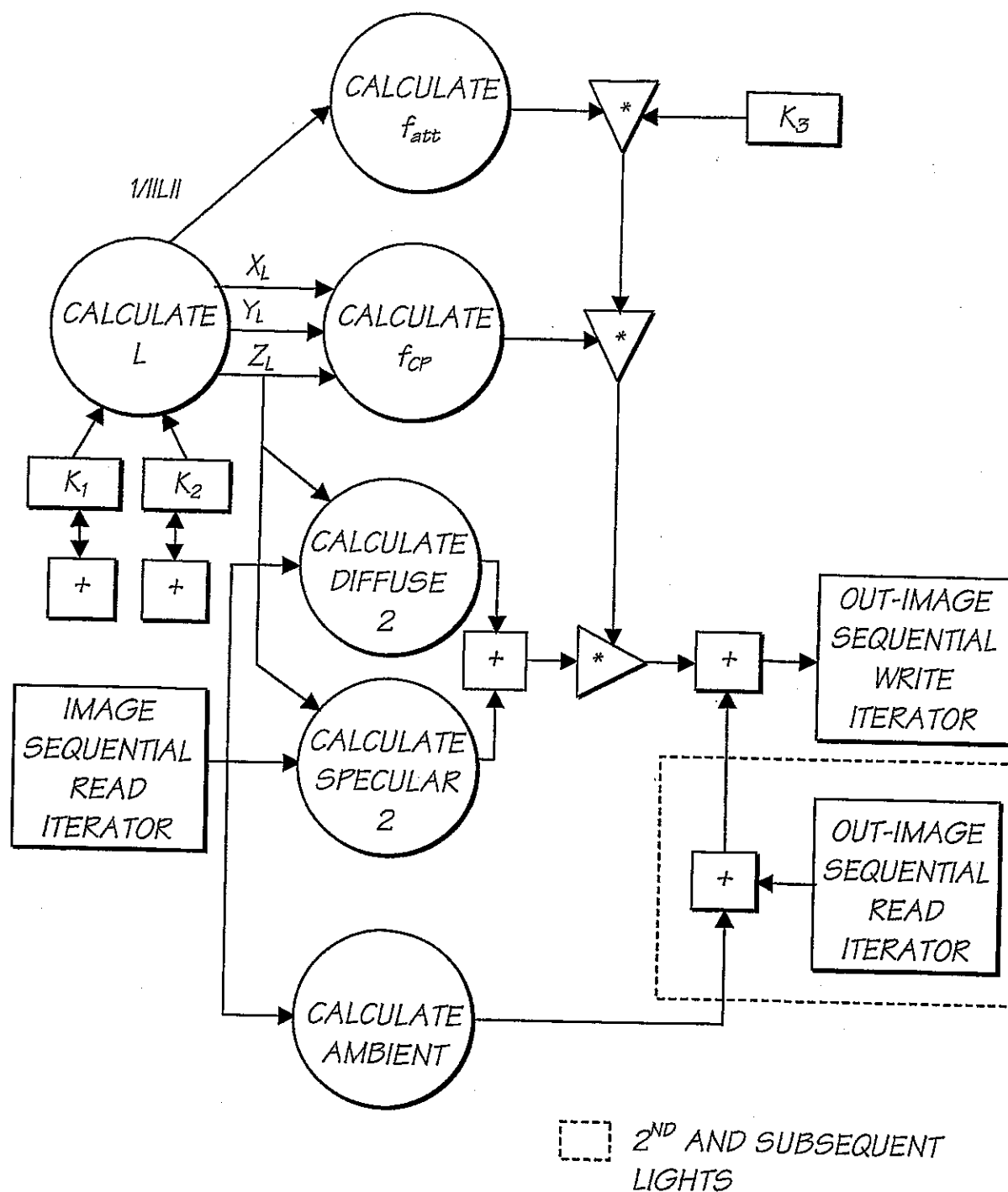


FIG. 151

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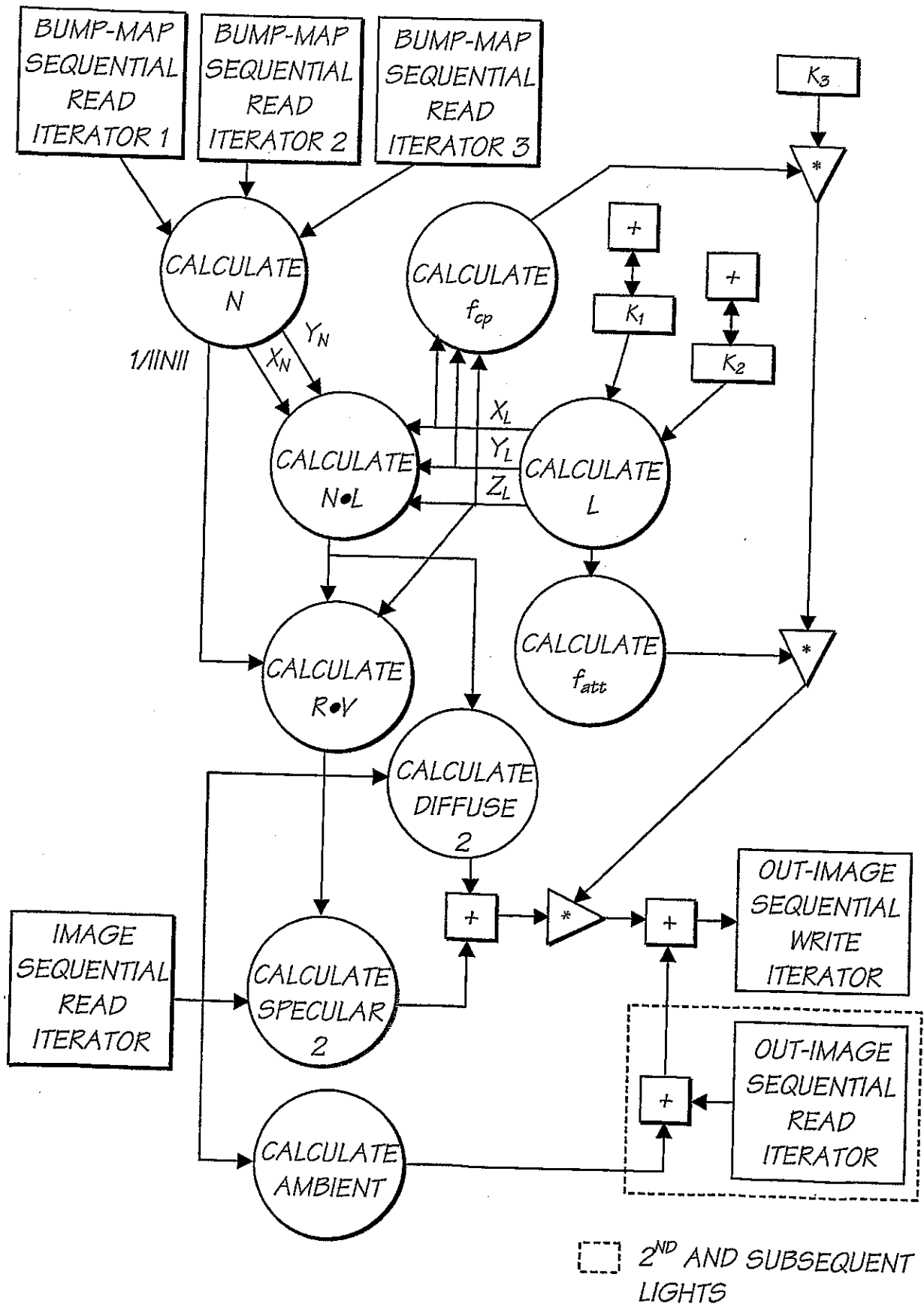
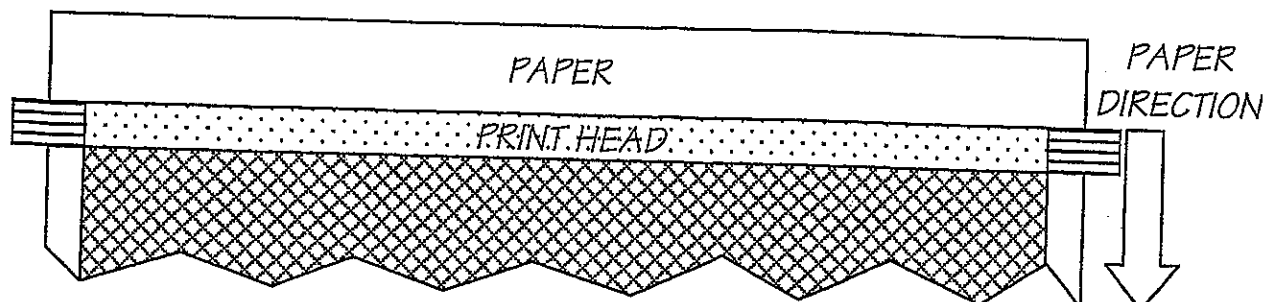


FIG. 152

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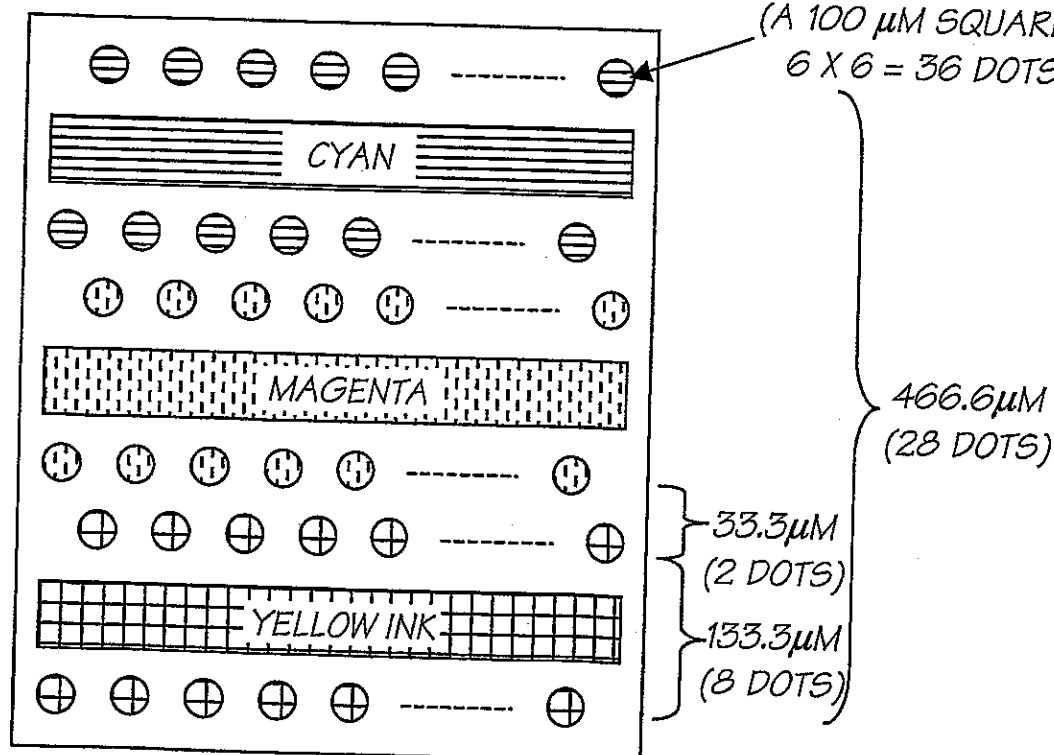
8 PRINT HEAD SEGMENTS IN PRINT HEAD

SEGMENT	SEGMENT	SEGMENT	SEGMENT	SEGMENT	SEGMENT	SEGMENT	SEGMENT
0	1	2	3	4	5	6	7

1250 μM (375 DOTS PER SEGMENT ROW,
OR 750 DOTS PER SEGMENT COLOR)

1 DOT IS $16.6\mu\text{M}$ IN
DIAMETER

(A 100 μM SQUARE =
6 X 6 = 36 DOTS)



EACH SEGMENT CONTAINS 6 ROWS OF DOTS:
ODD AND EVEN CYAN, MAGENTA, AND YELLOW.

FIG. 153

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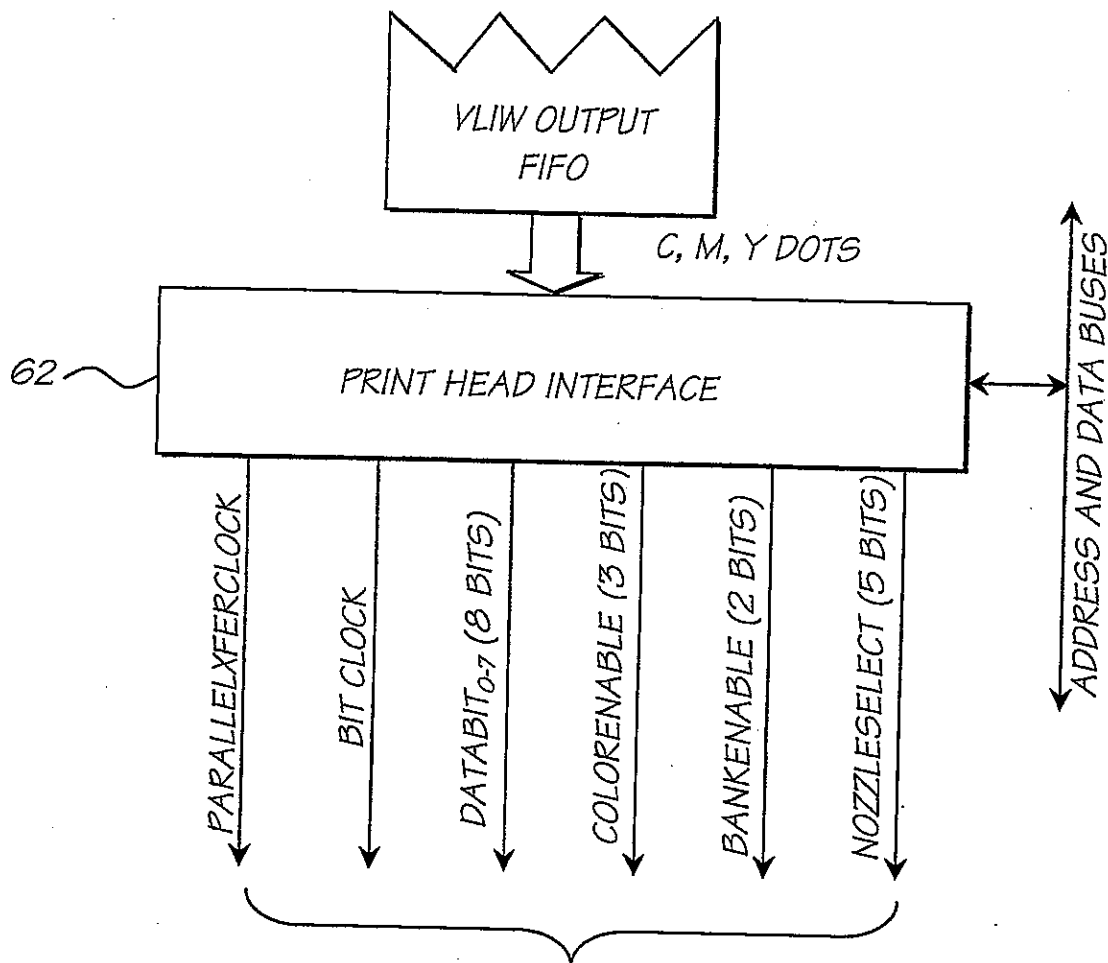


FIG. 154

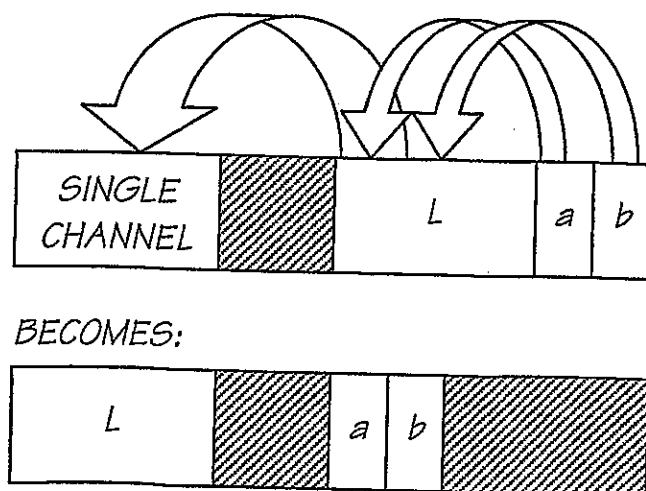


FIG. 155

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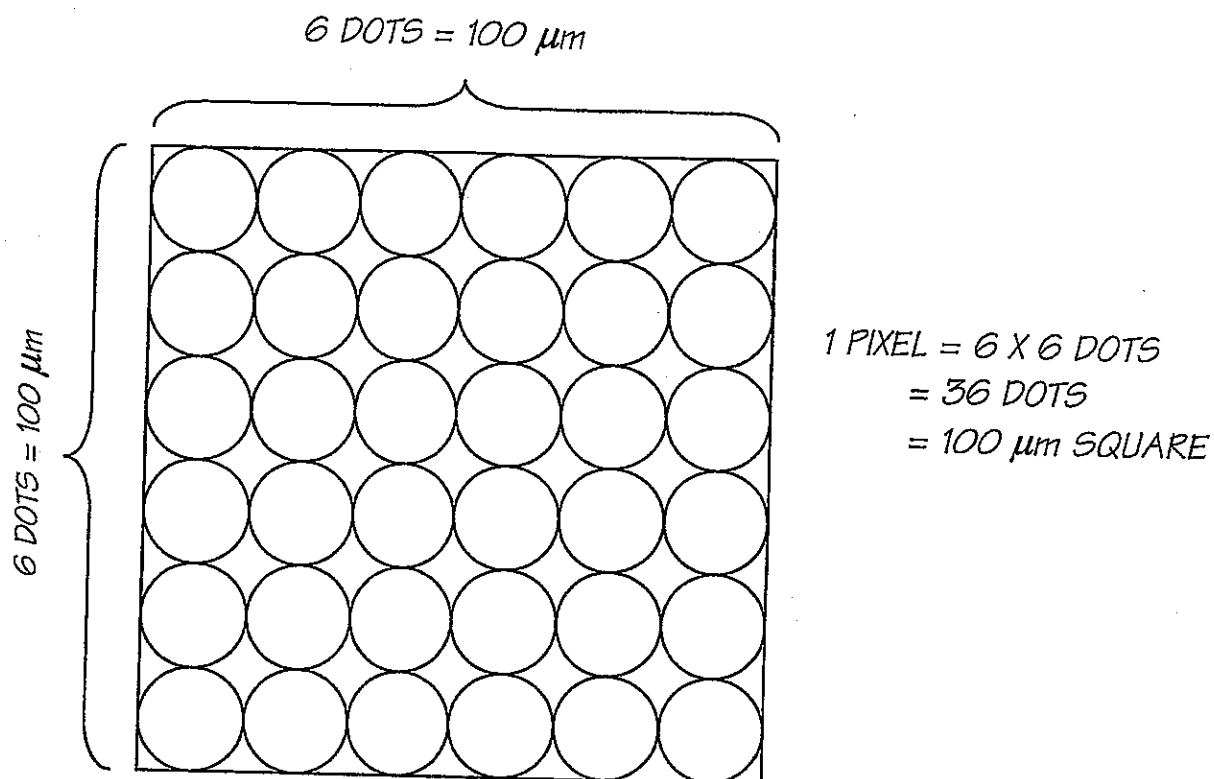


FIG. 156

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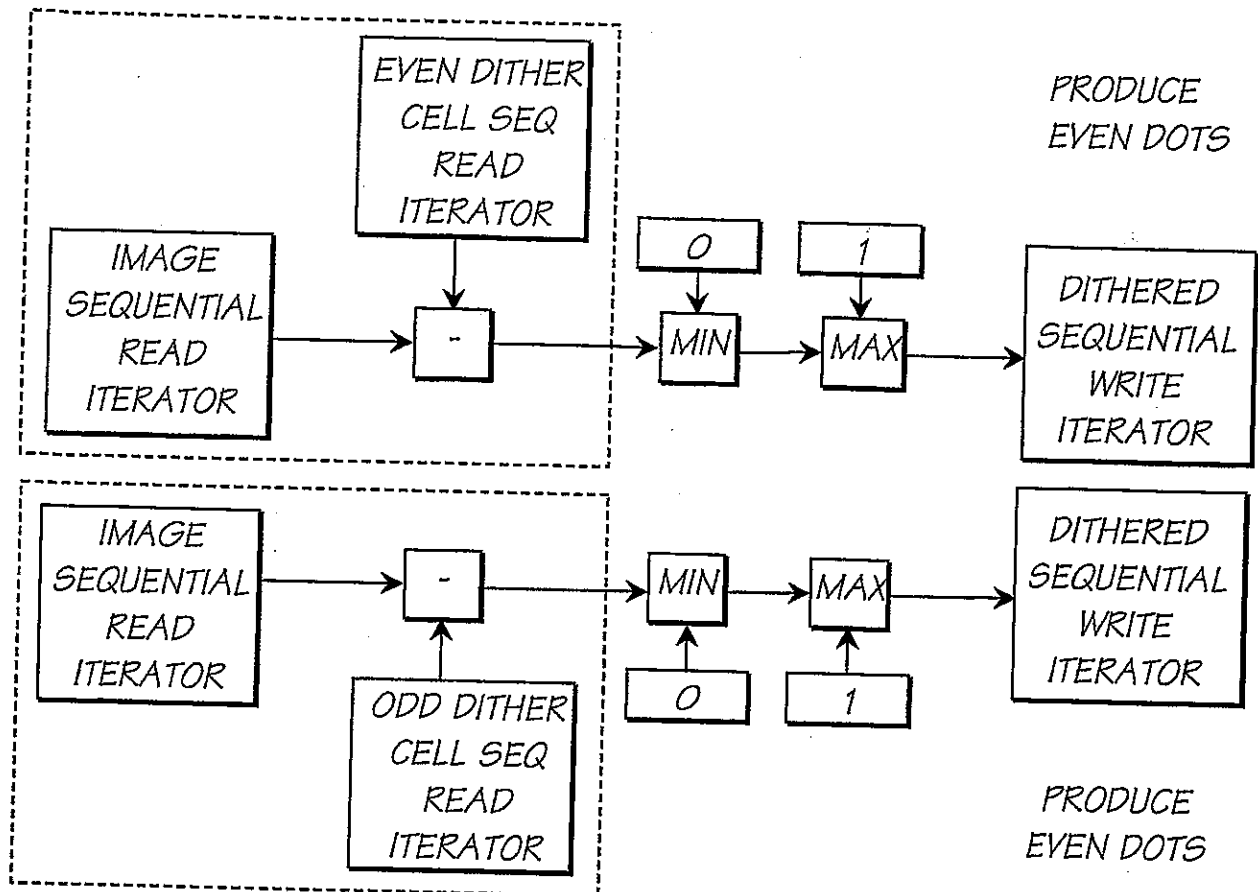


FIG. 157

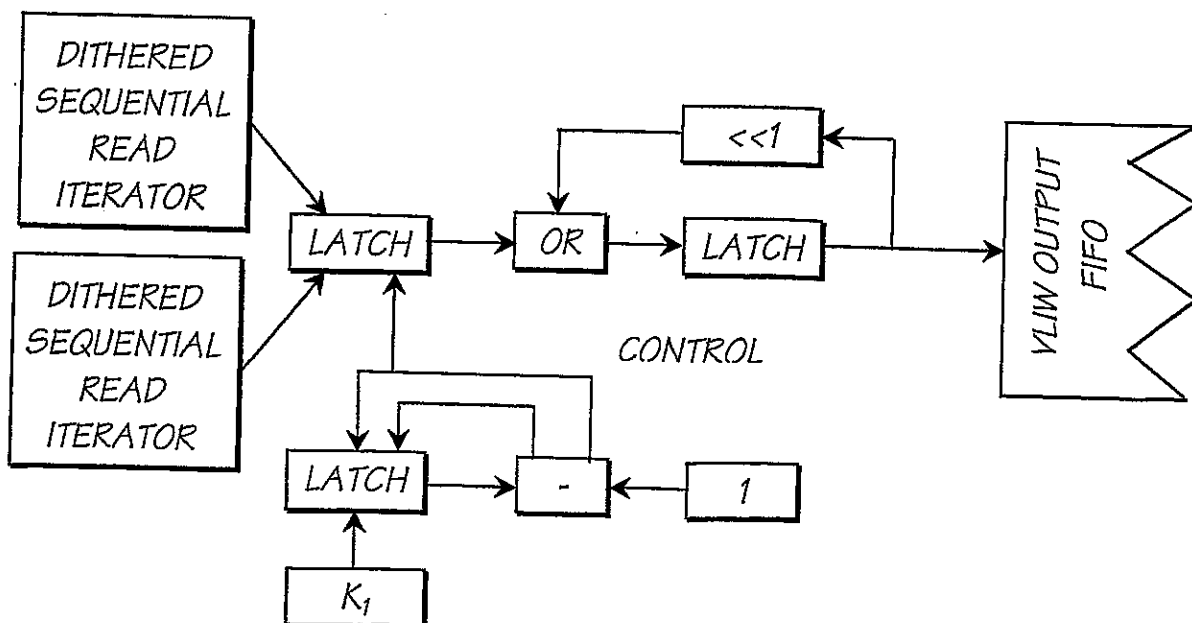


FIG. 158

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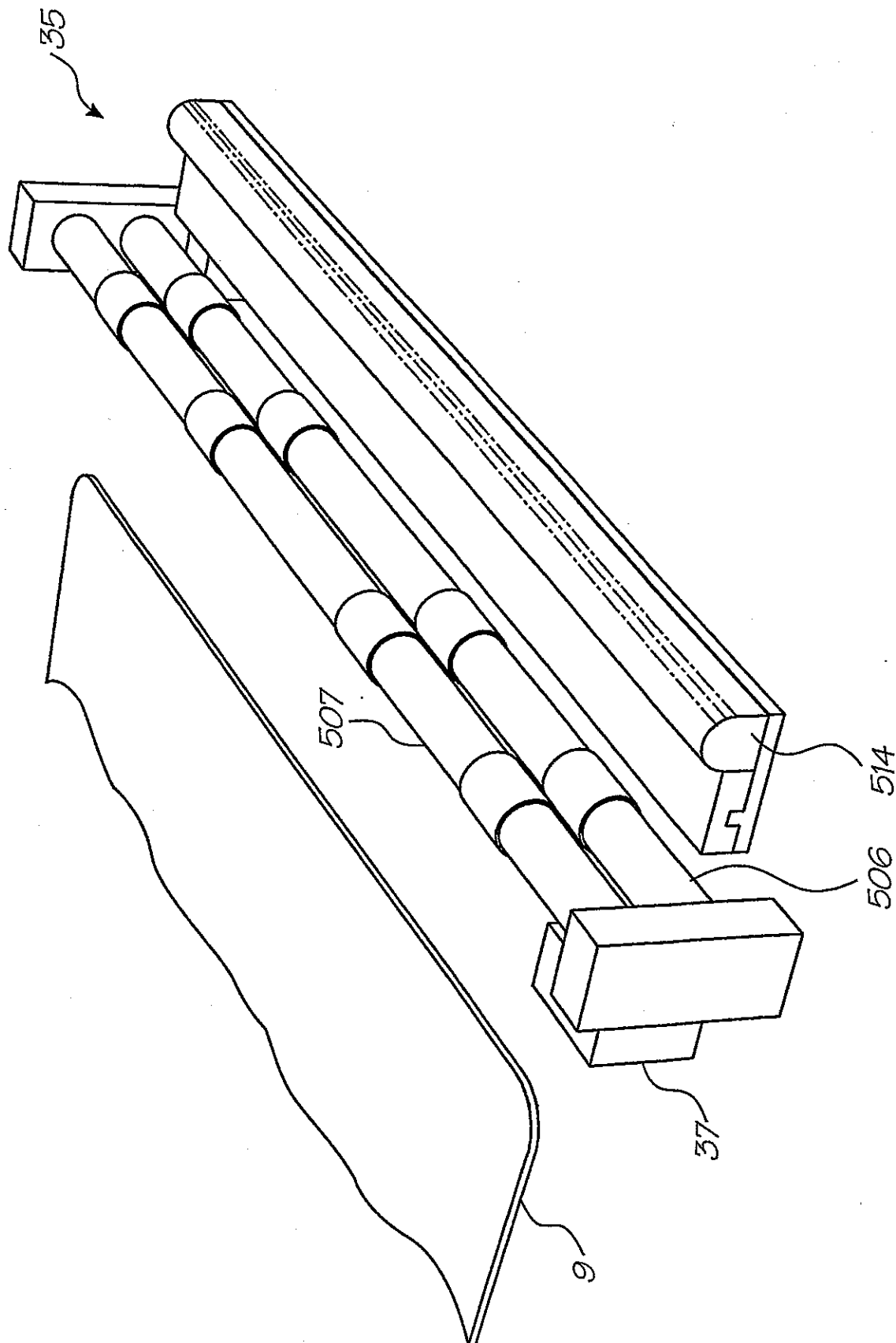
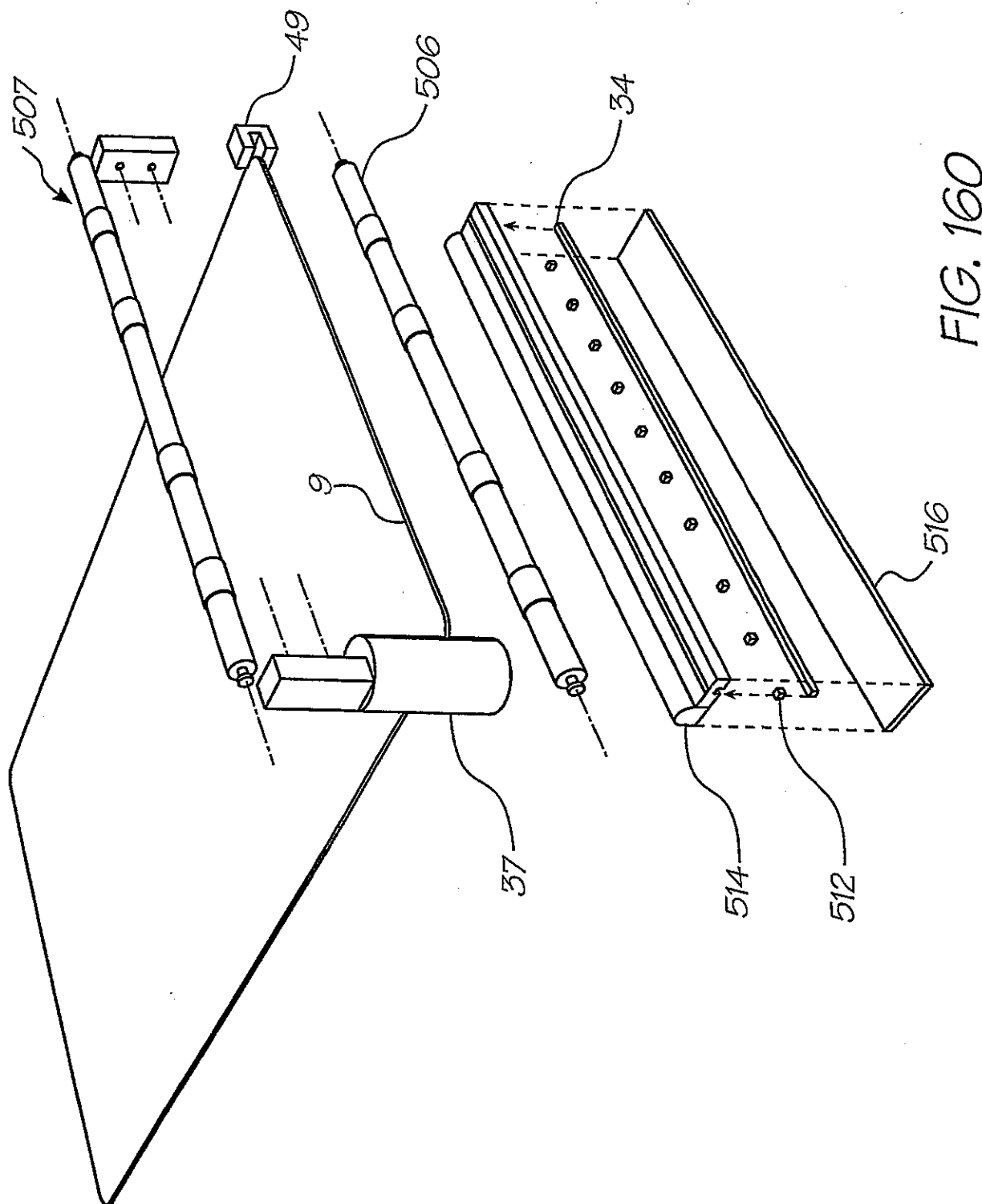
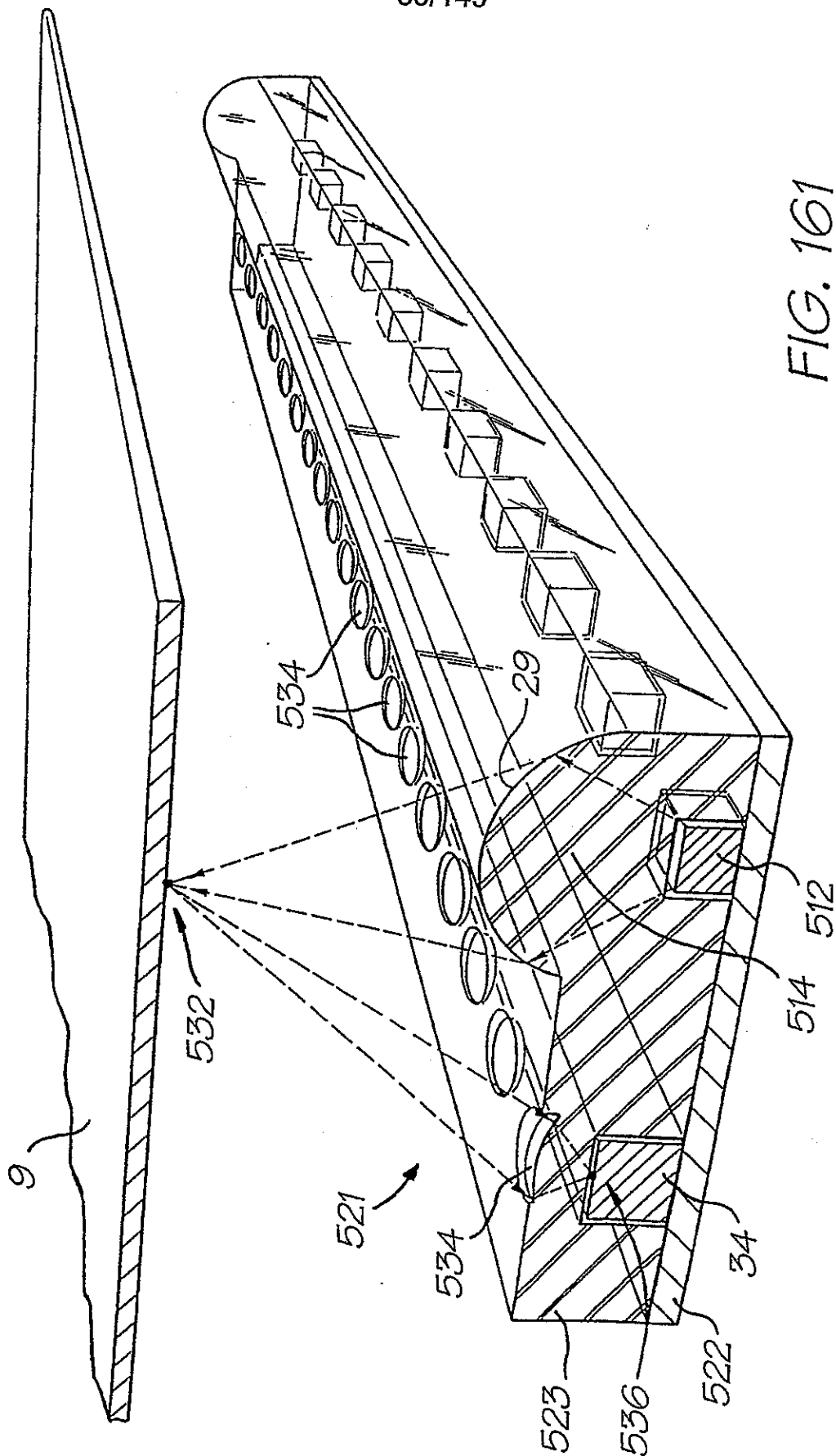


FIG. 159

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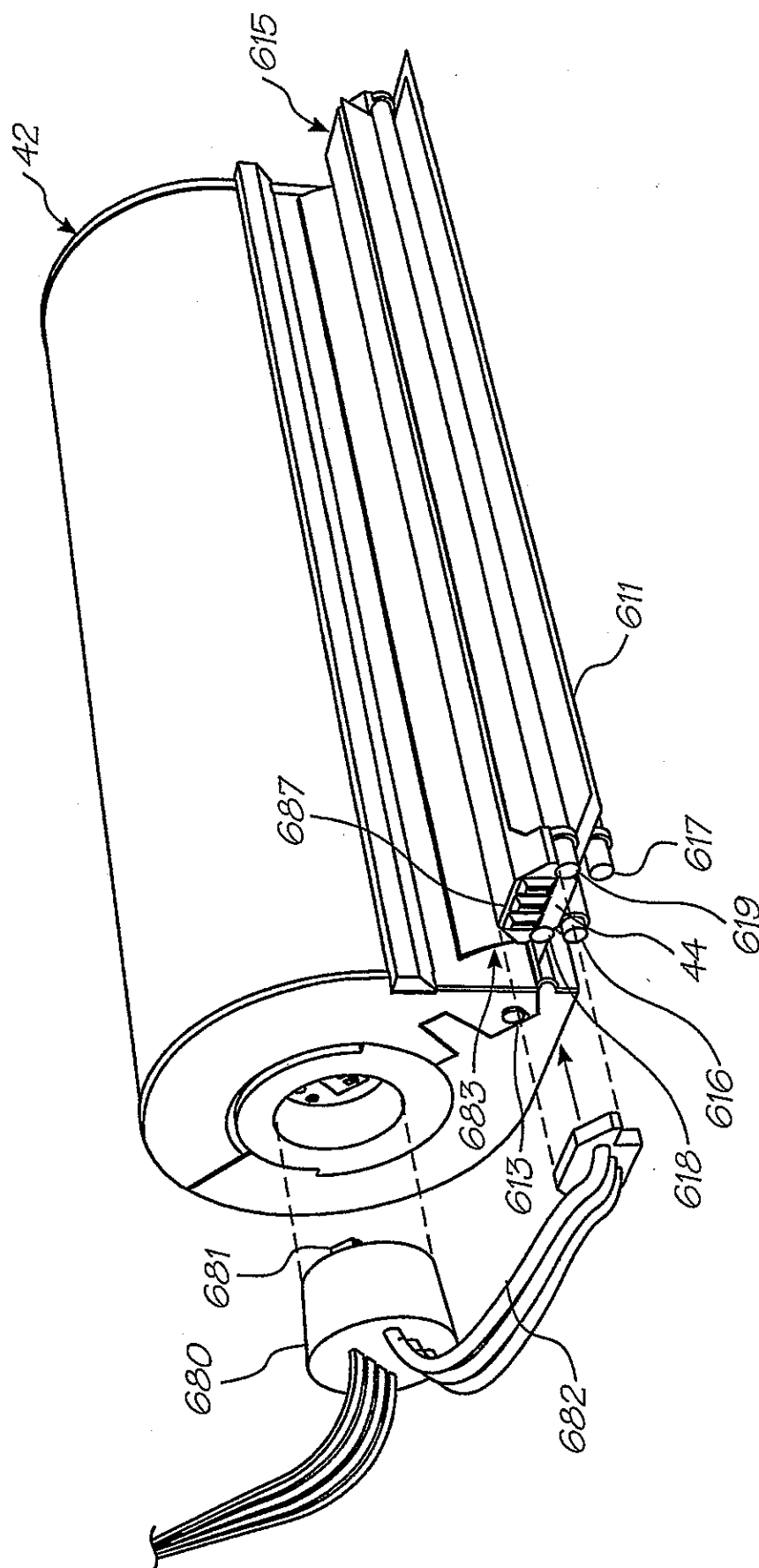


FIG. 162

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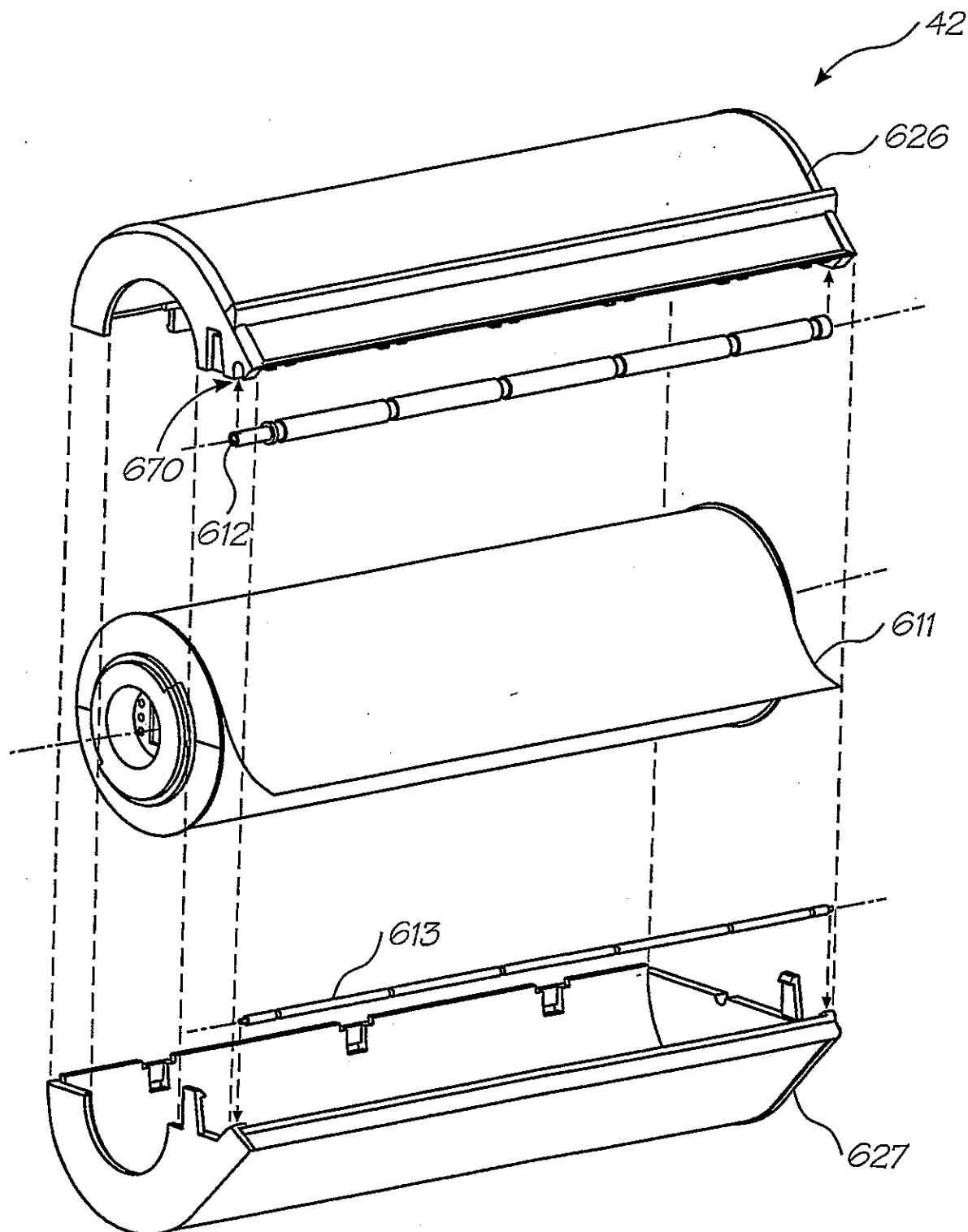


FIG. 163

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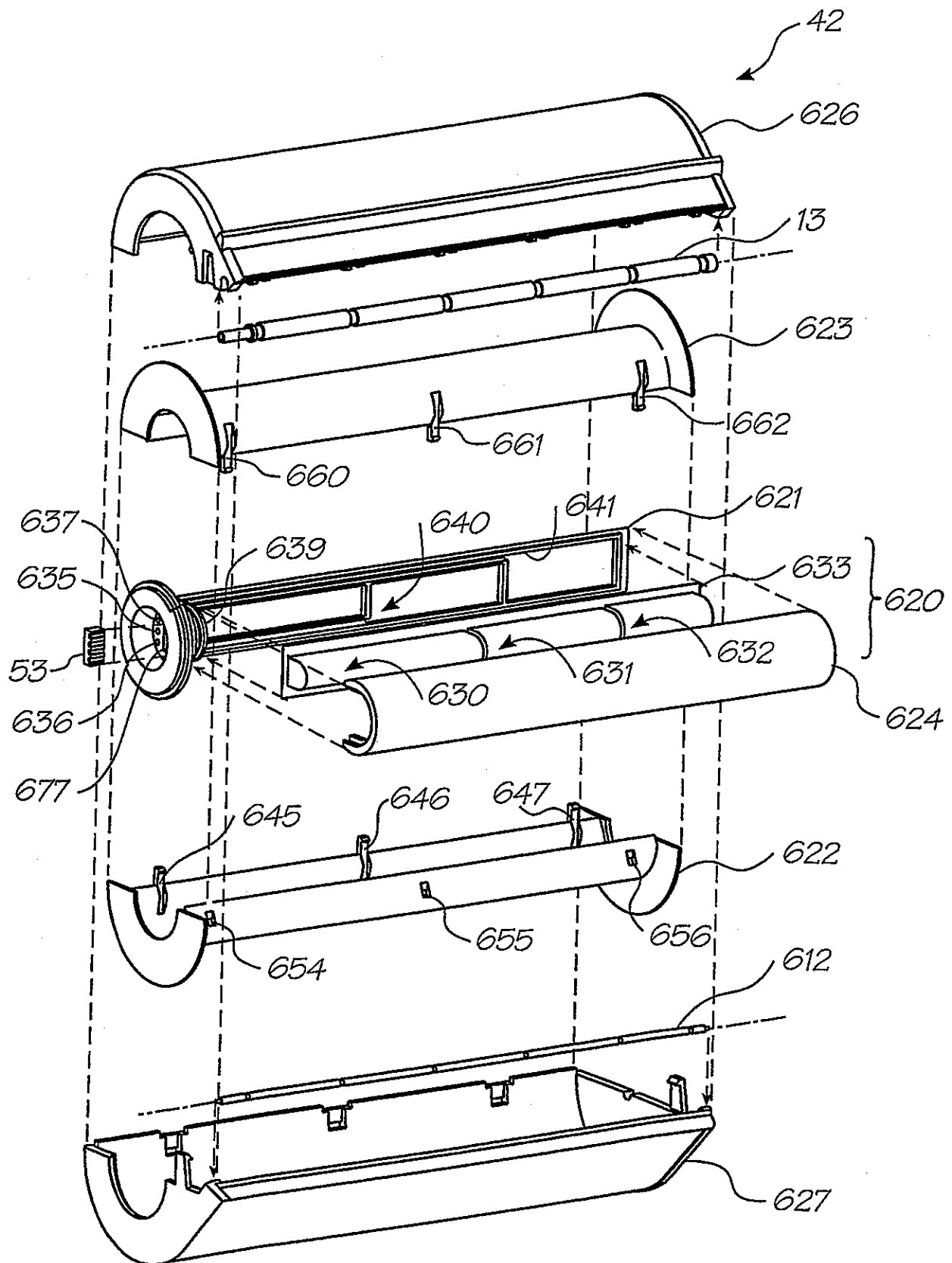


FIG. 164

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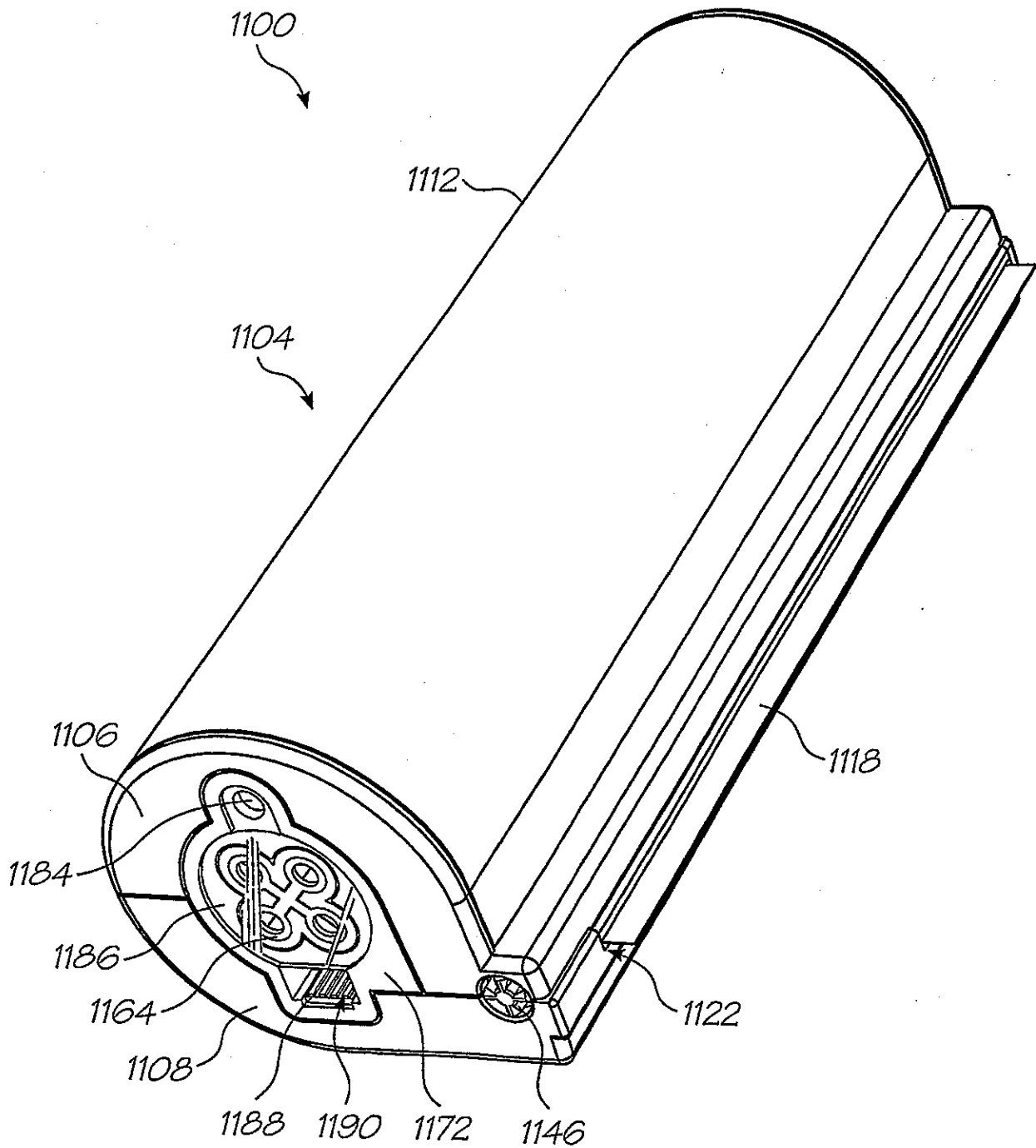


FIG. 164A

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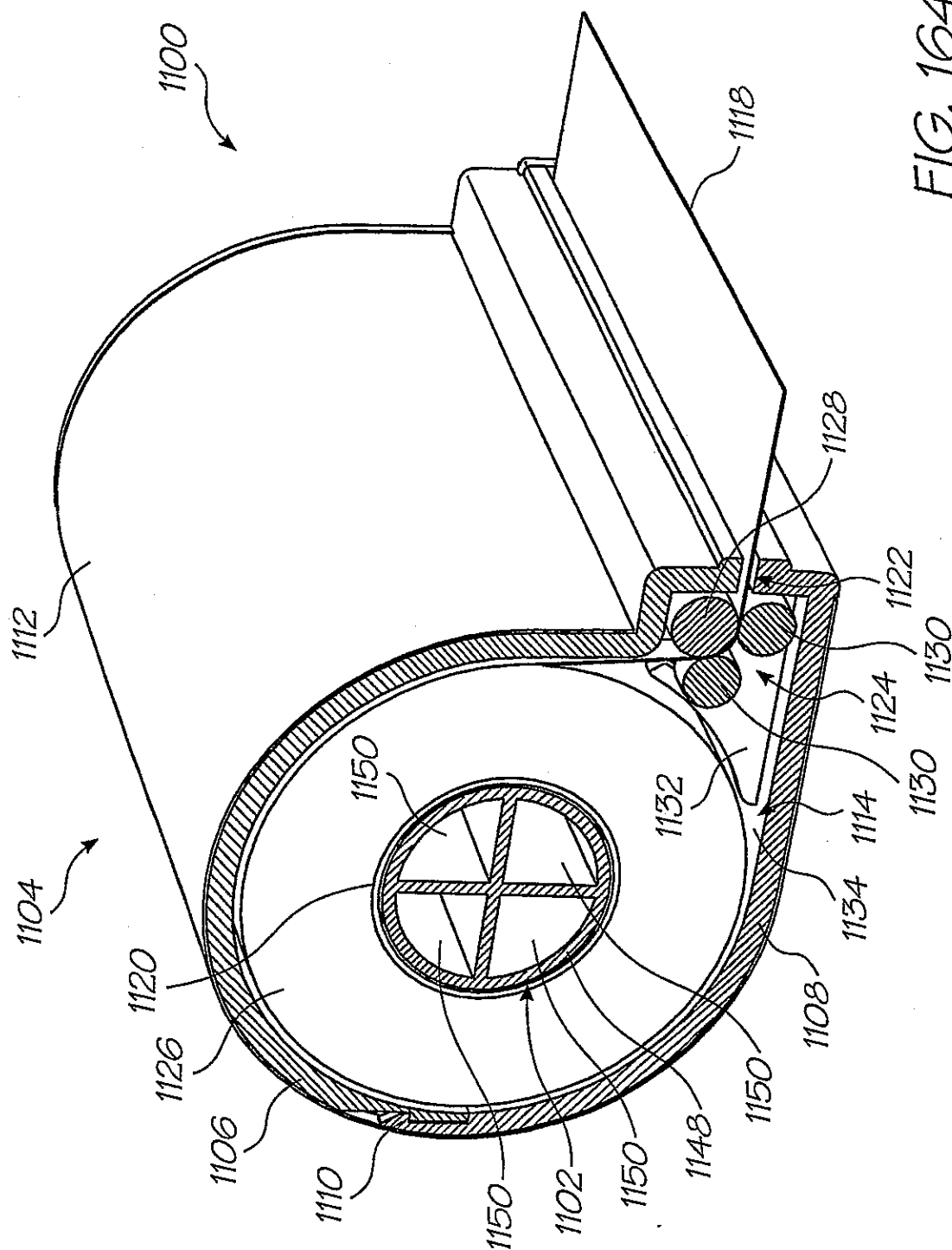
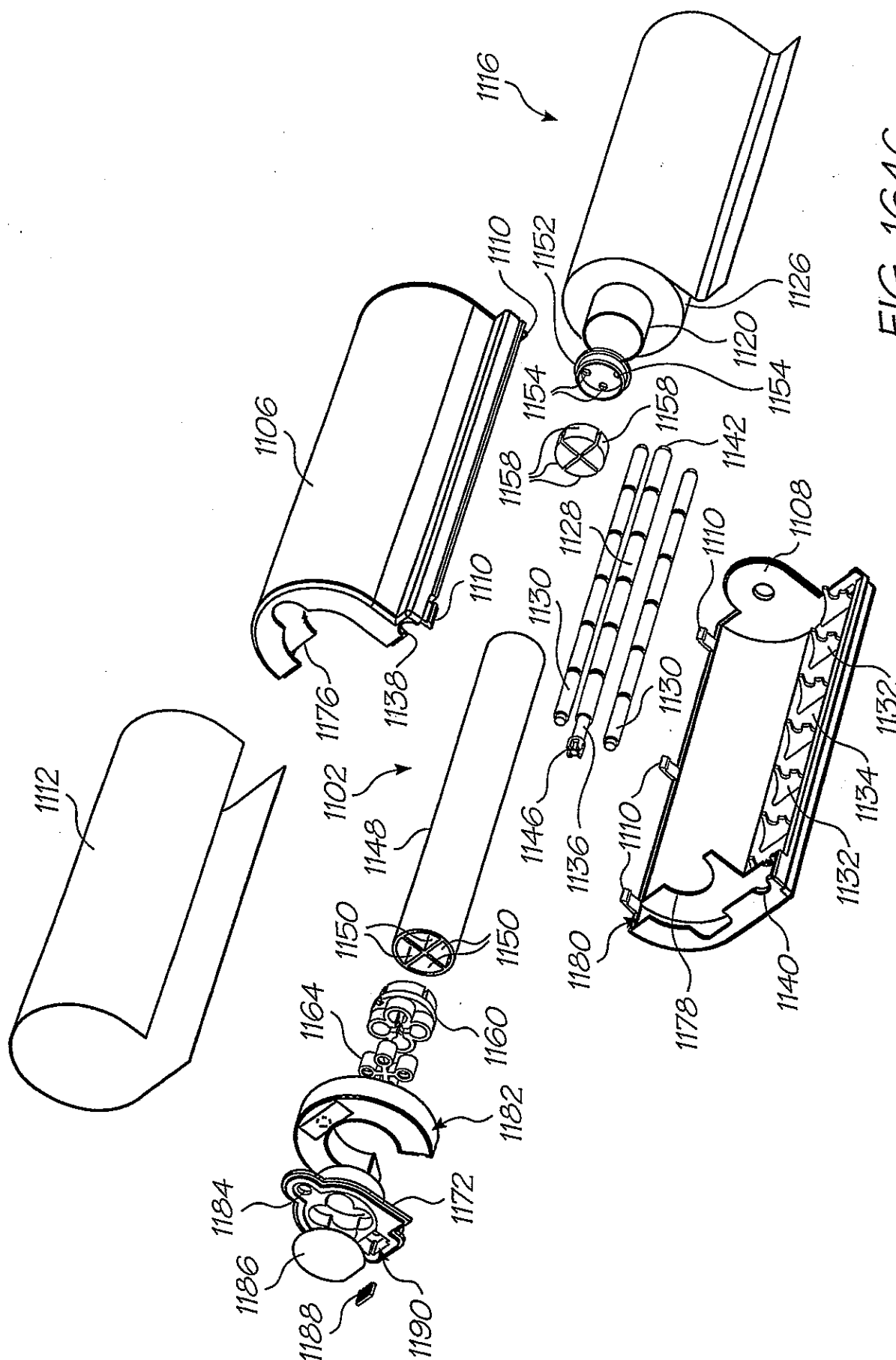


FIG. 164B

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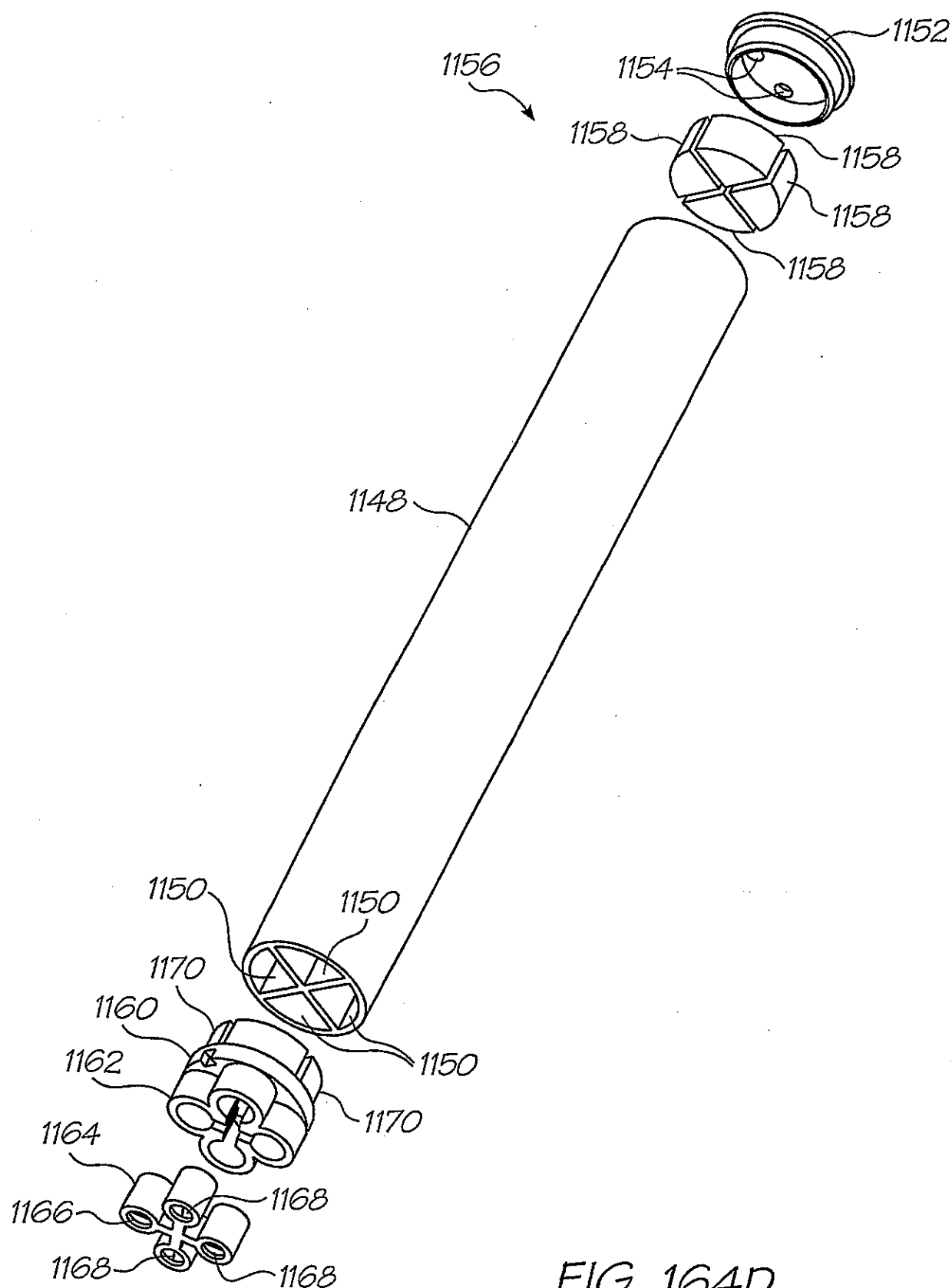


FIG. 164D

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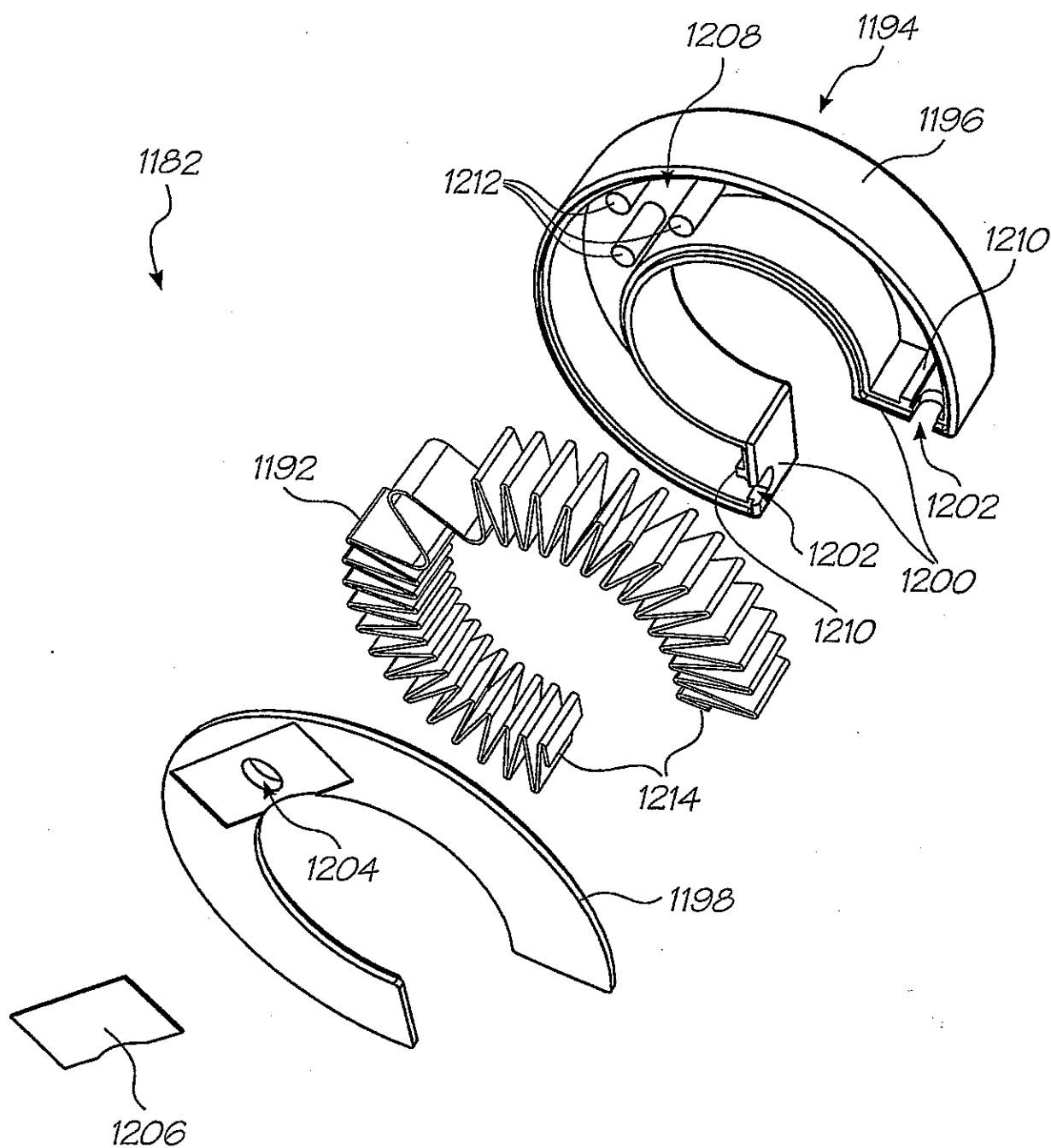


FIG. 164E

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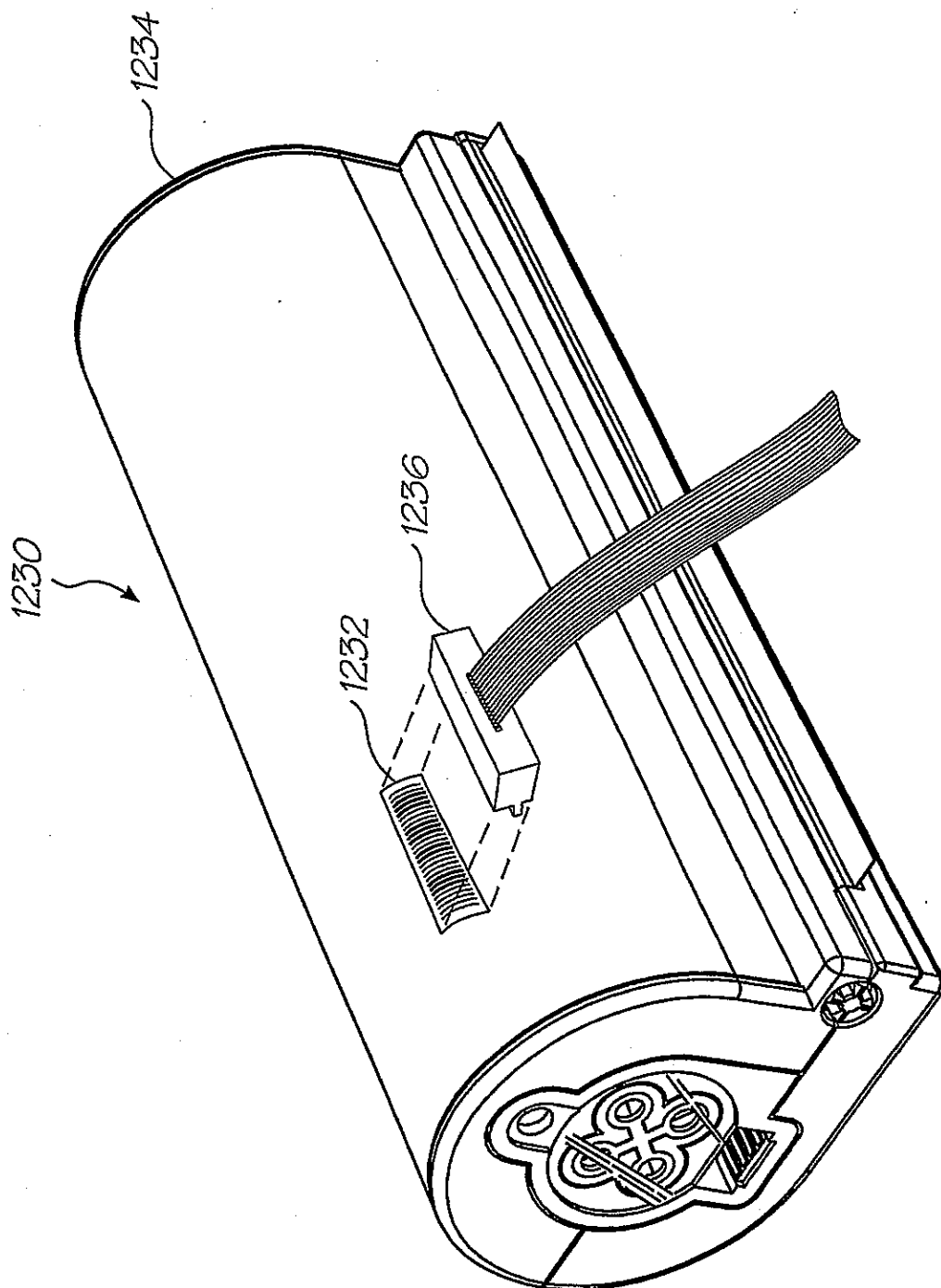


FIG. 164F

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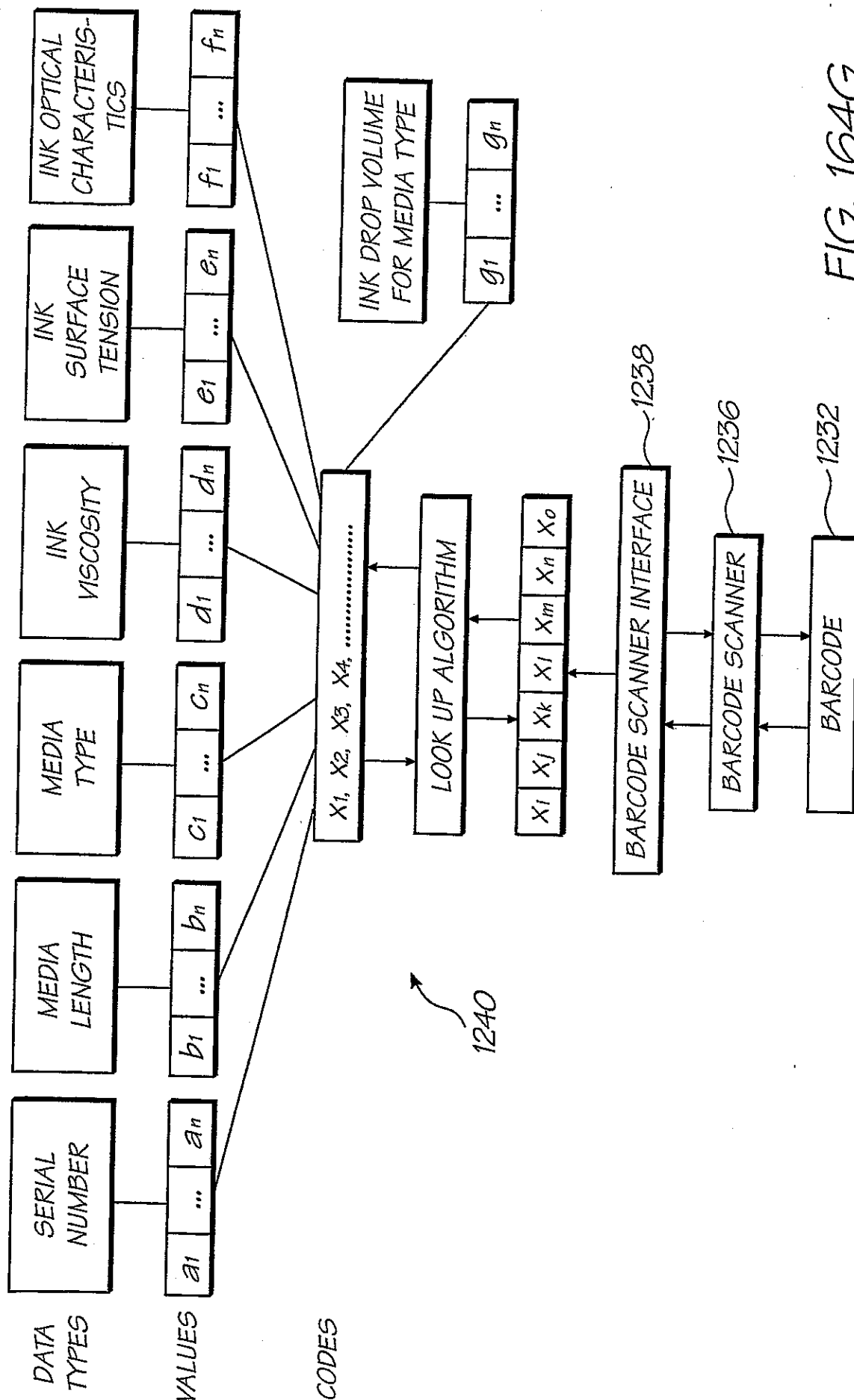


FIG. 164G

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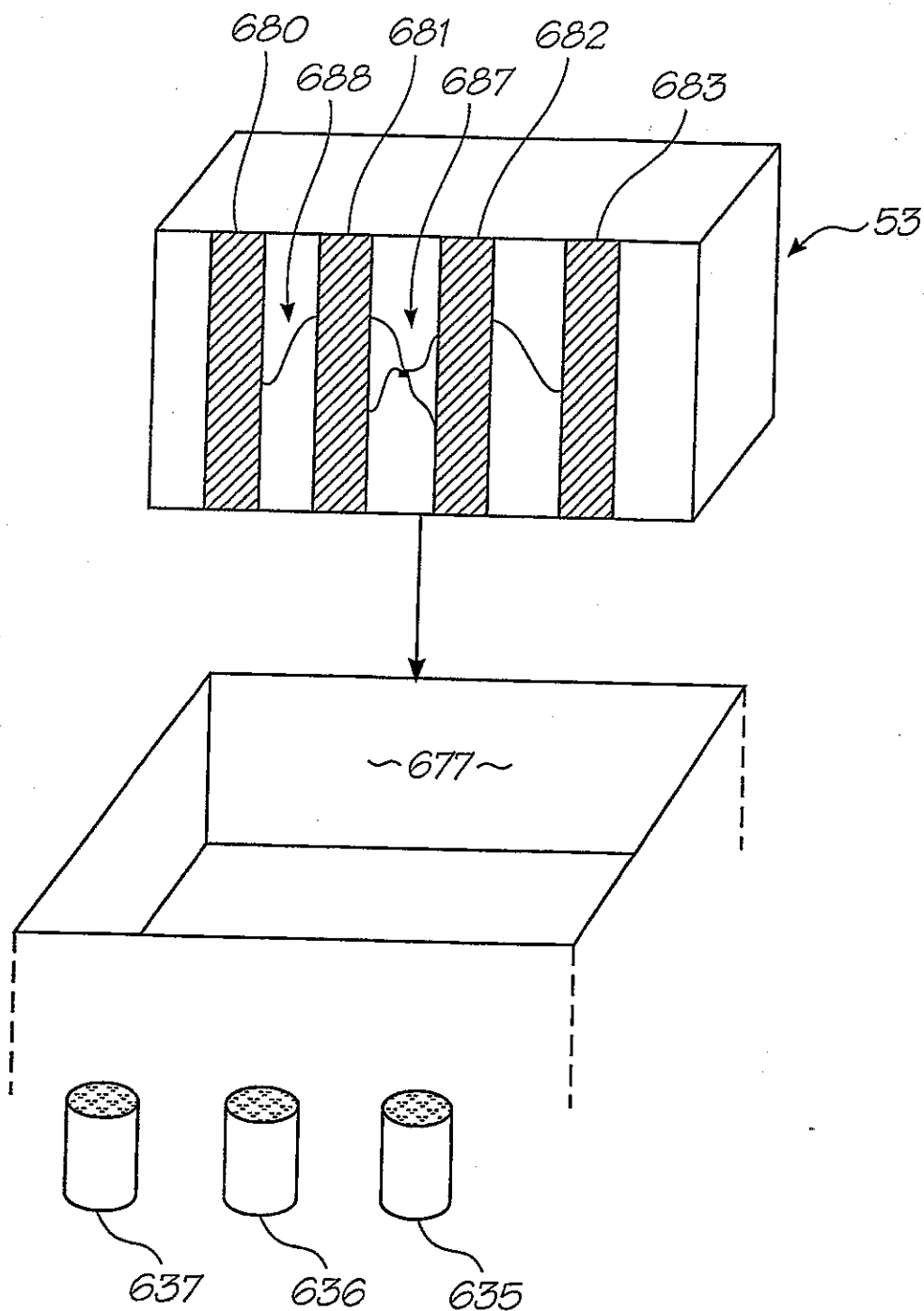


FIG. 165

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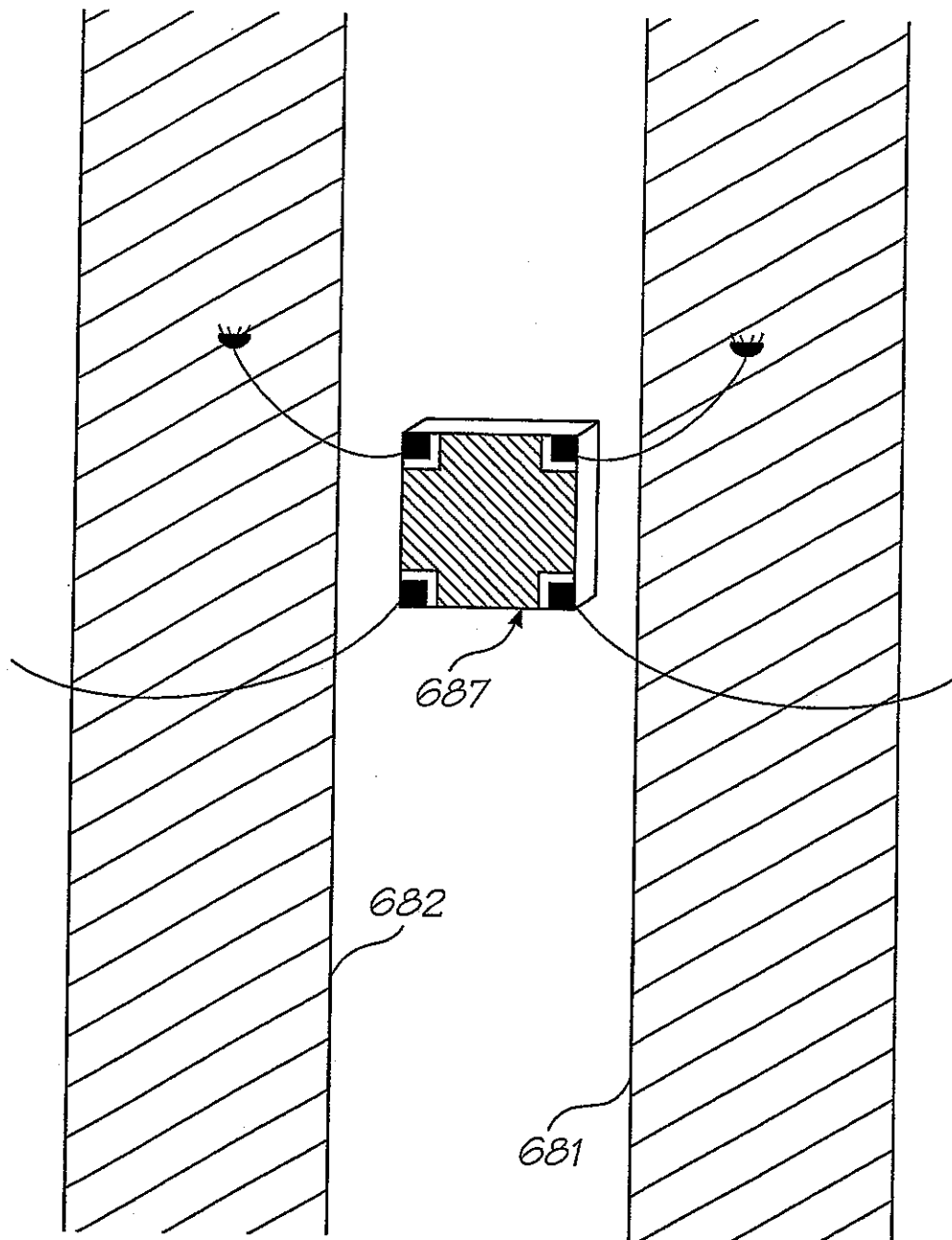


FIG. 166

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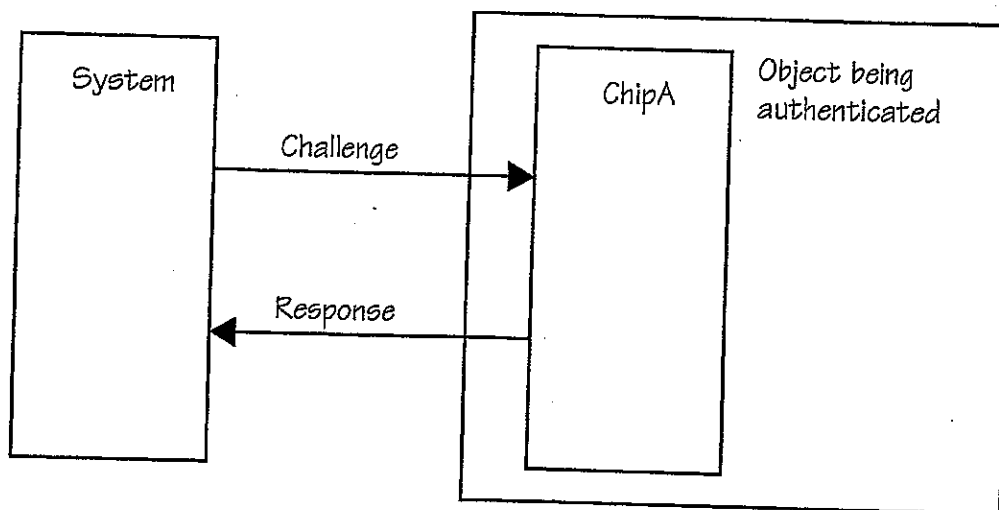


FIG. 167

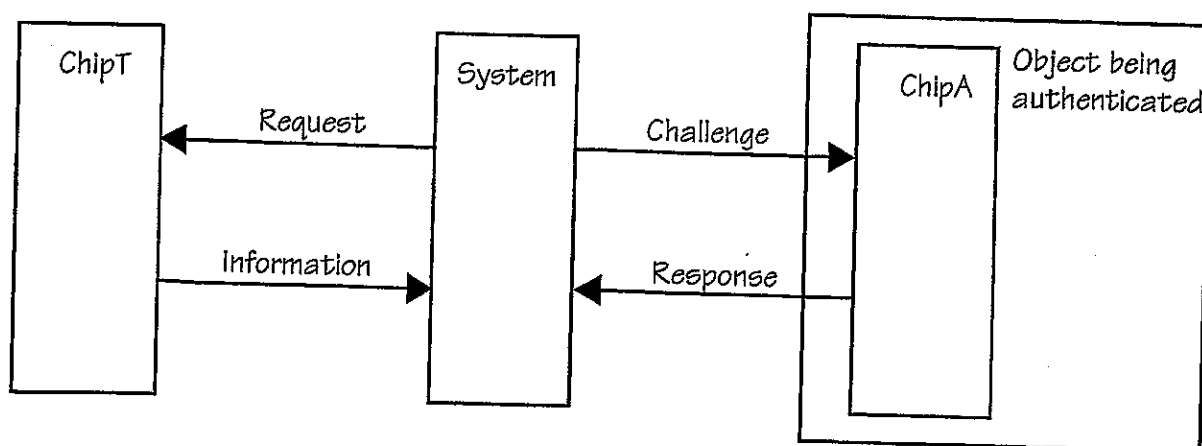


FIG. 168

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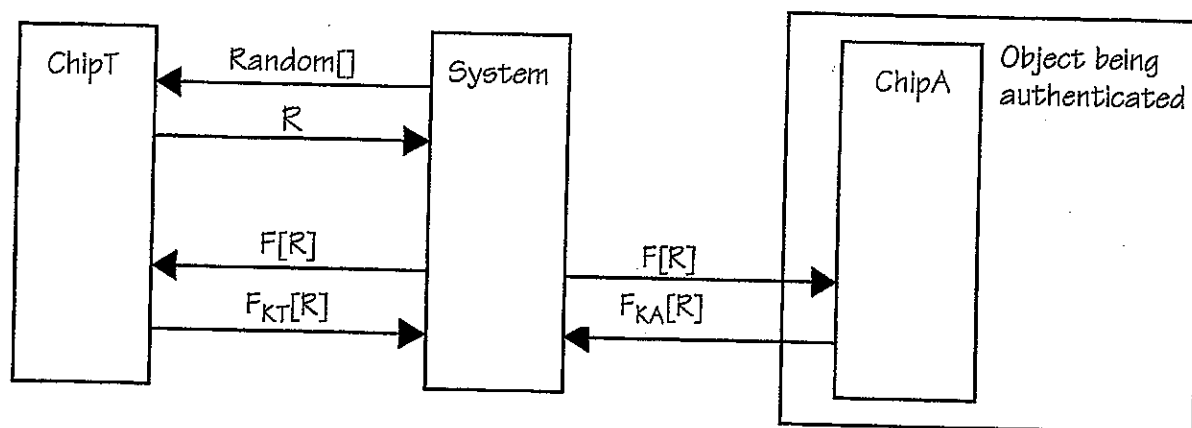


FIG. 169

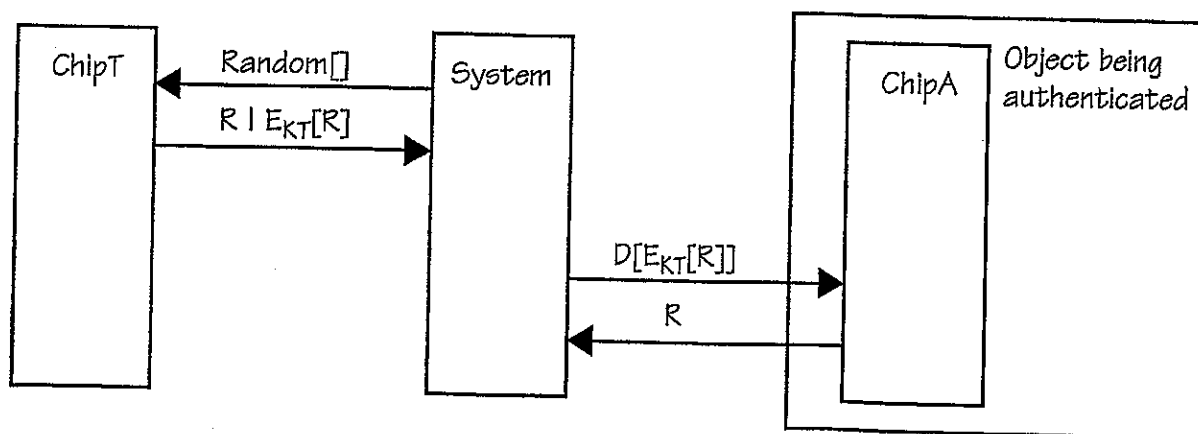


FIG. 170

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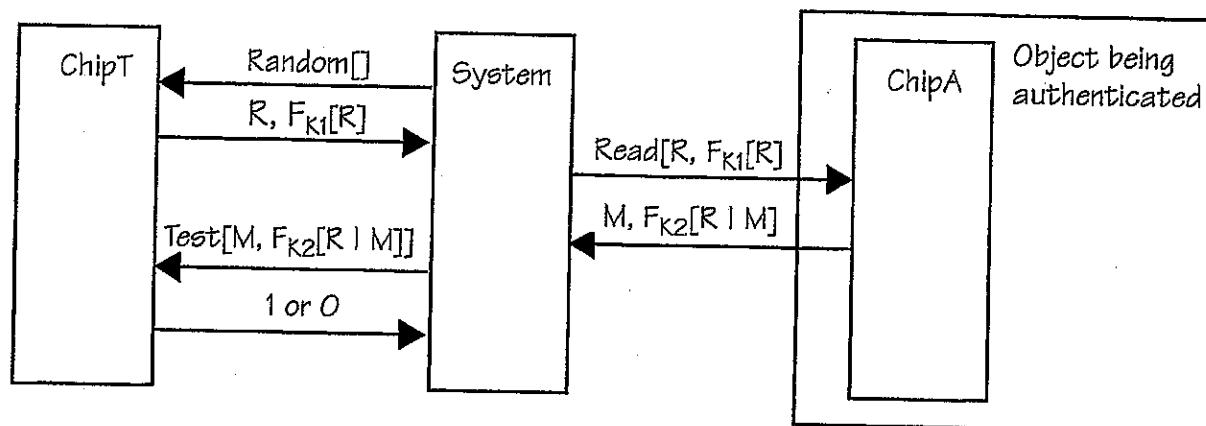


FIG. 171

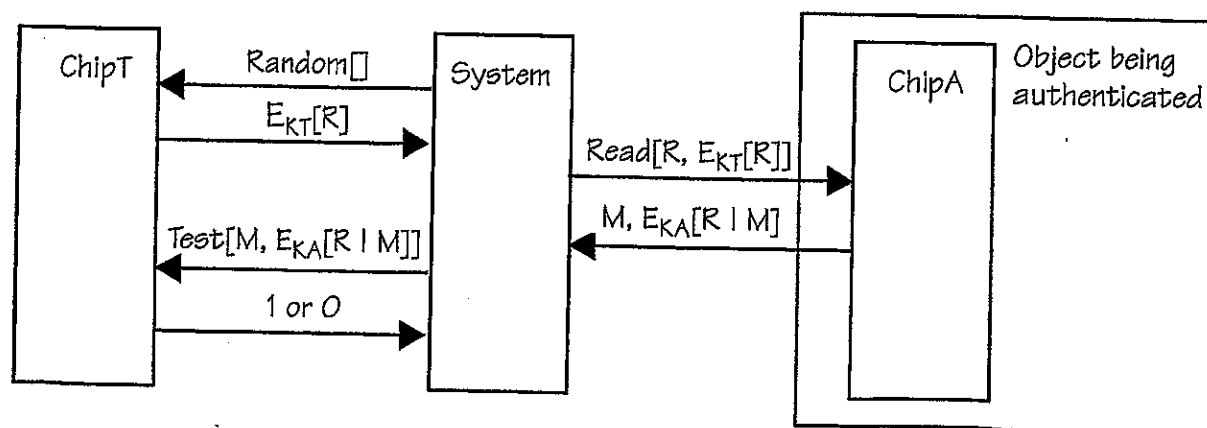


FIG. 172

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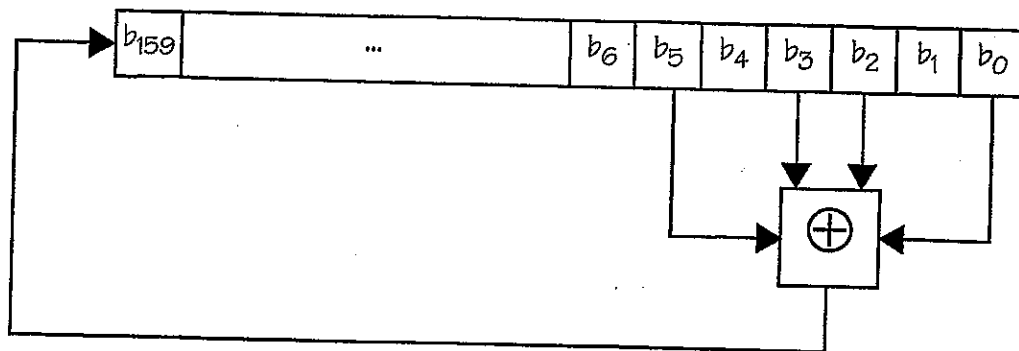


FIG. 173

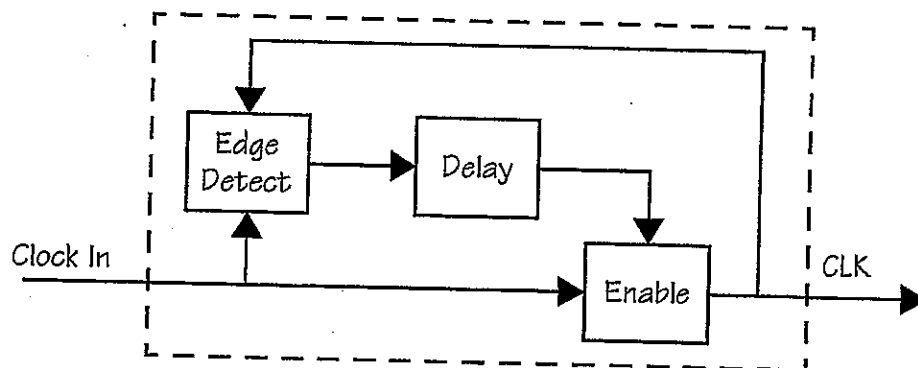


FIG. 174

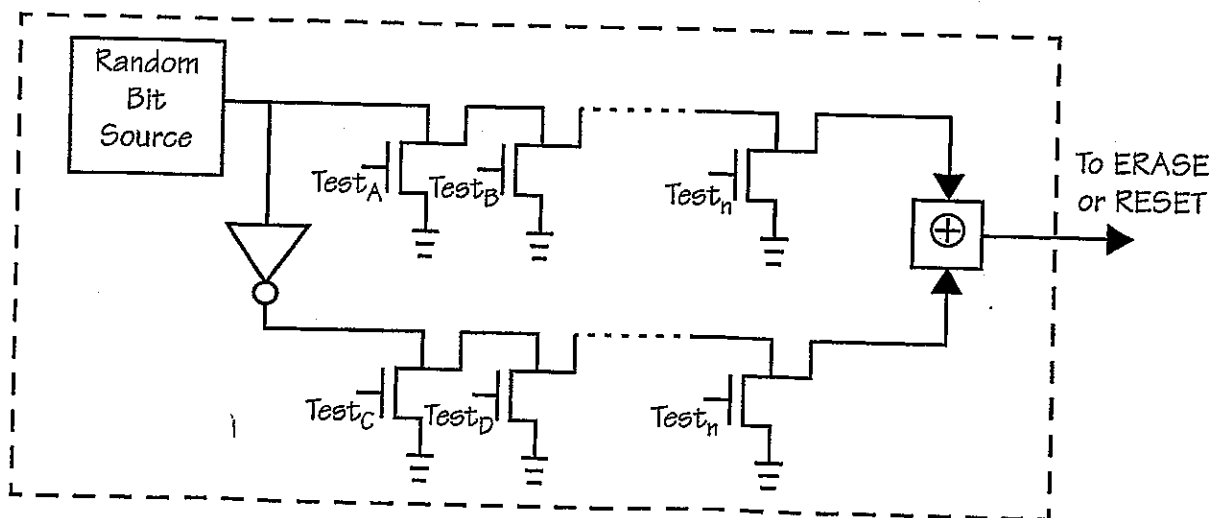


FIG. 175

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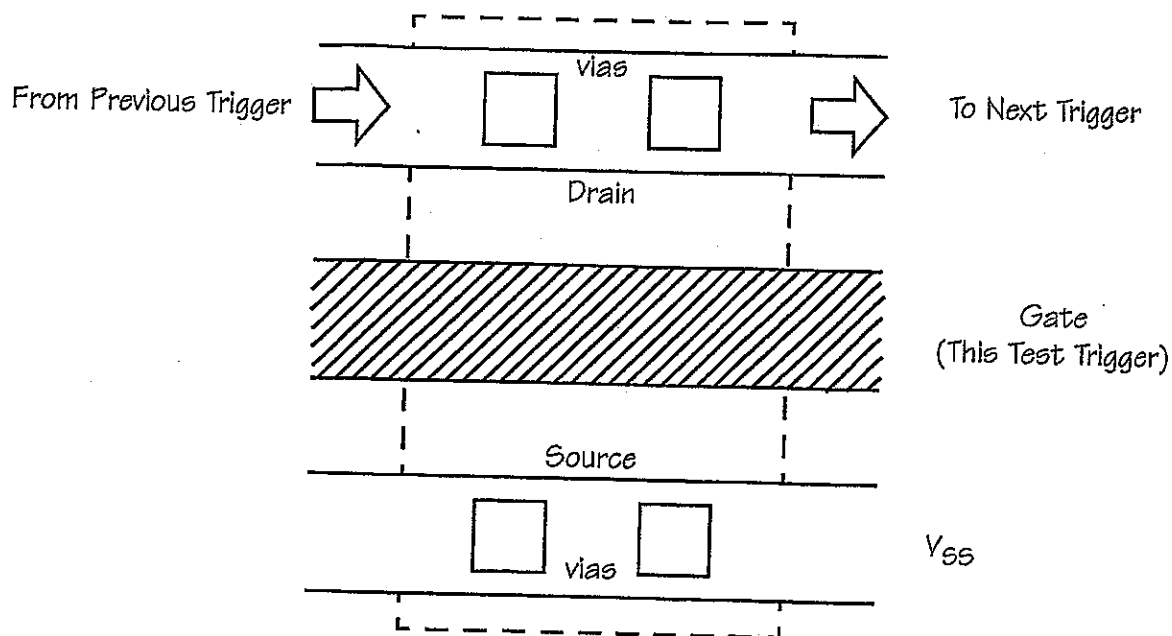


FIG. 176

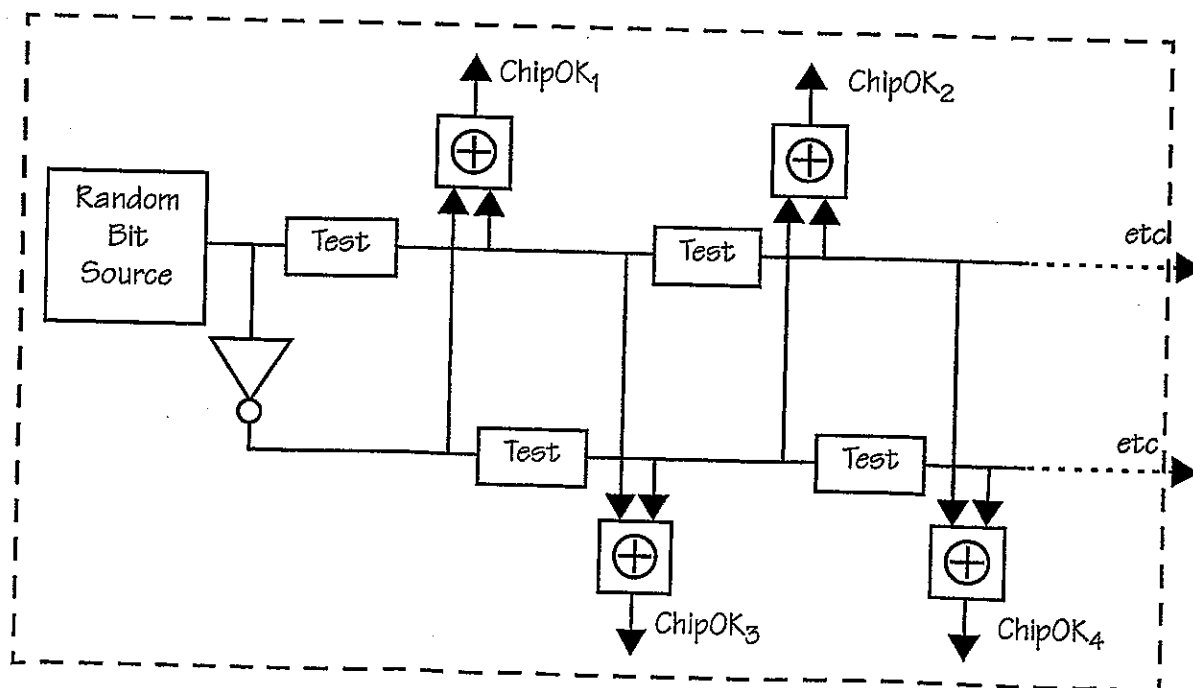


FIG. 177

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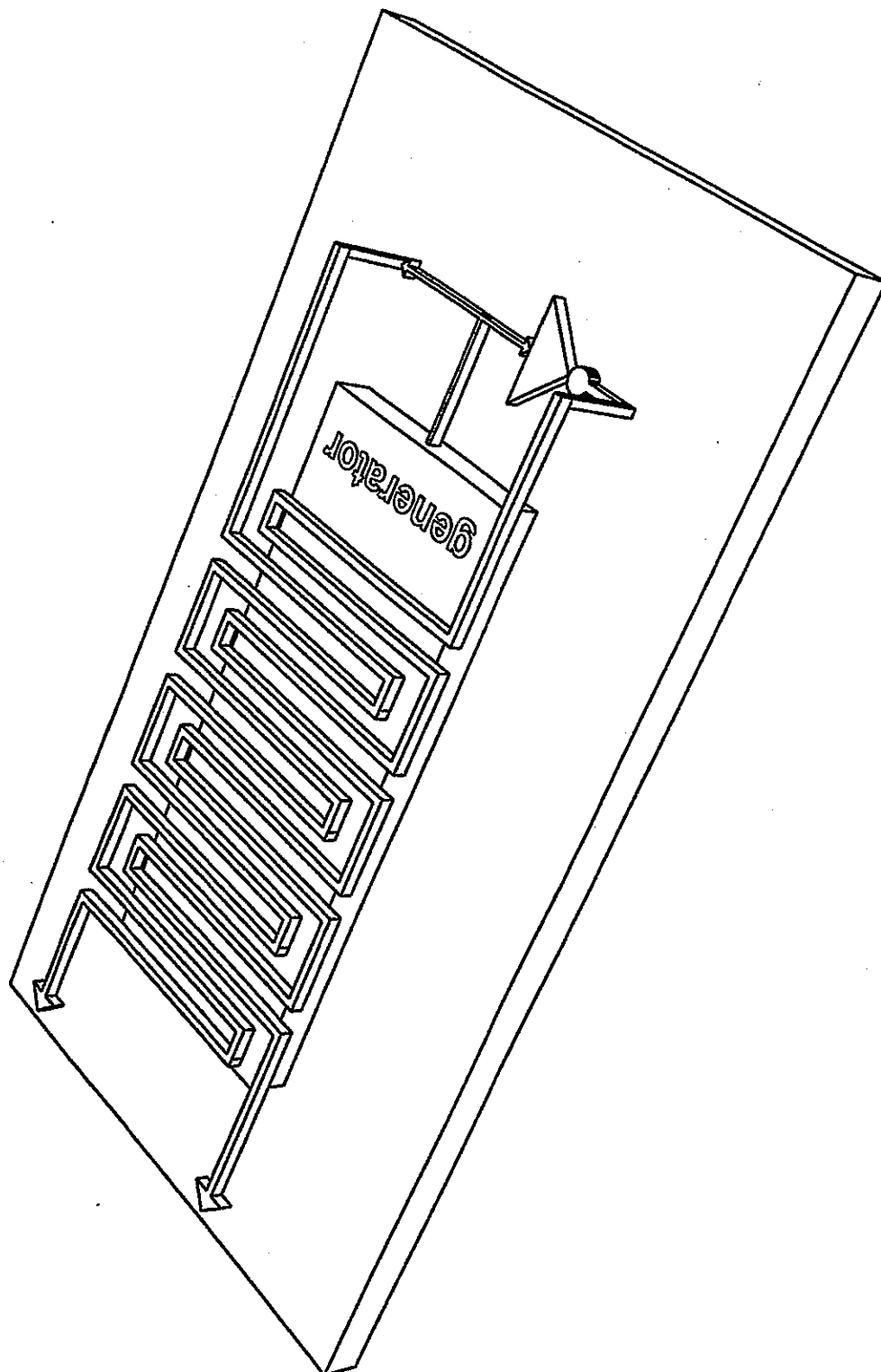


FIG. 178

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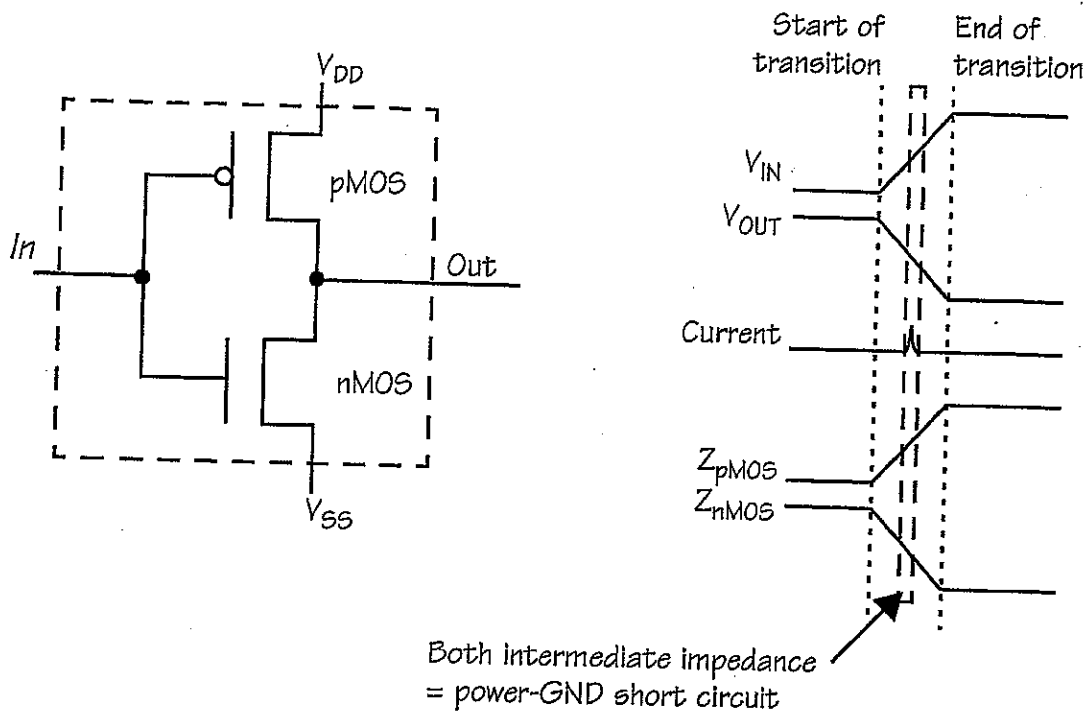


FIG. 179

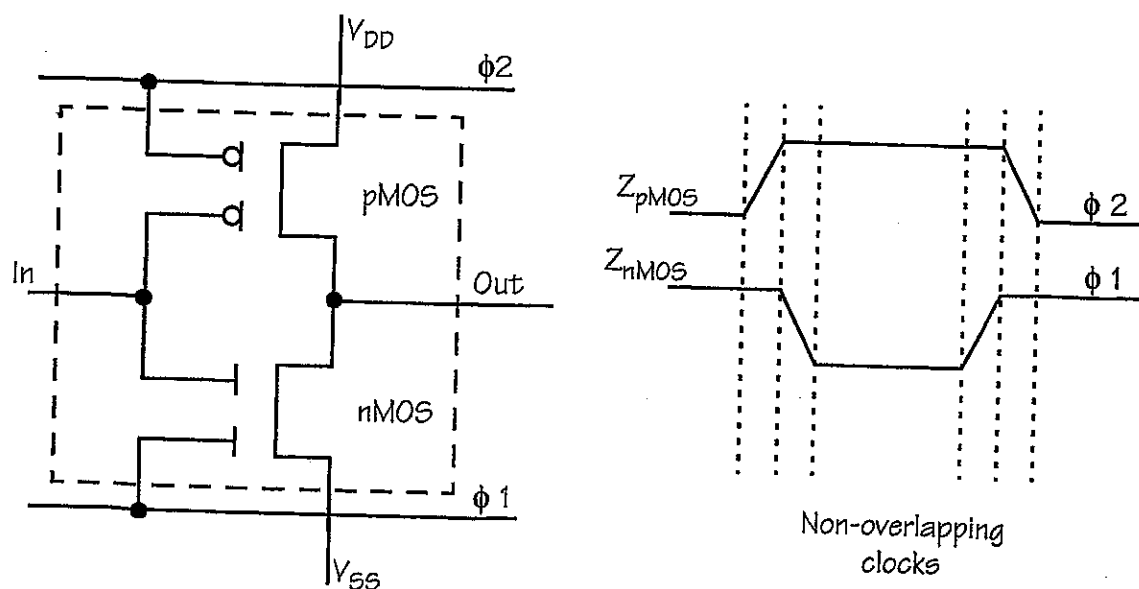


FIG. 180

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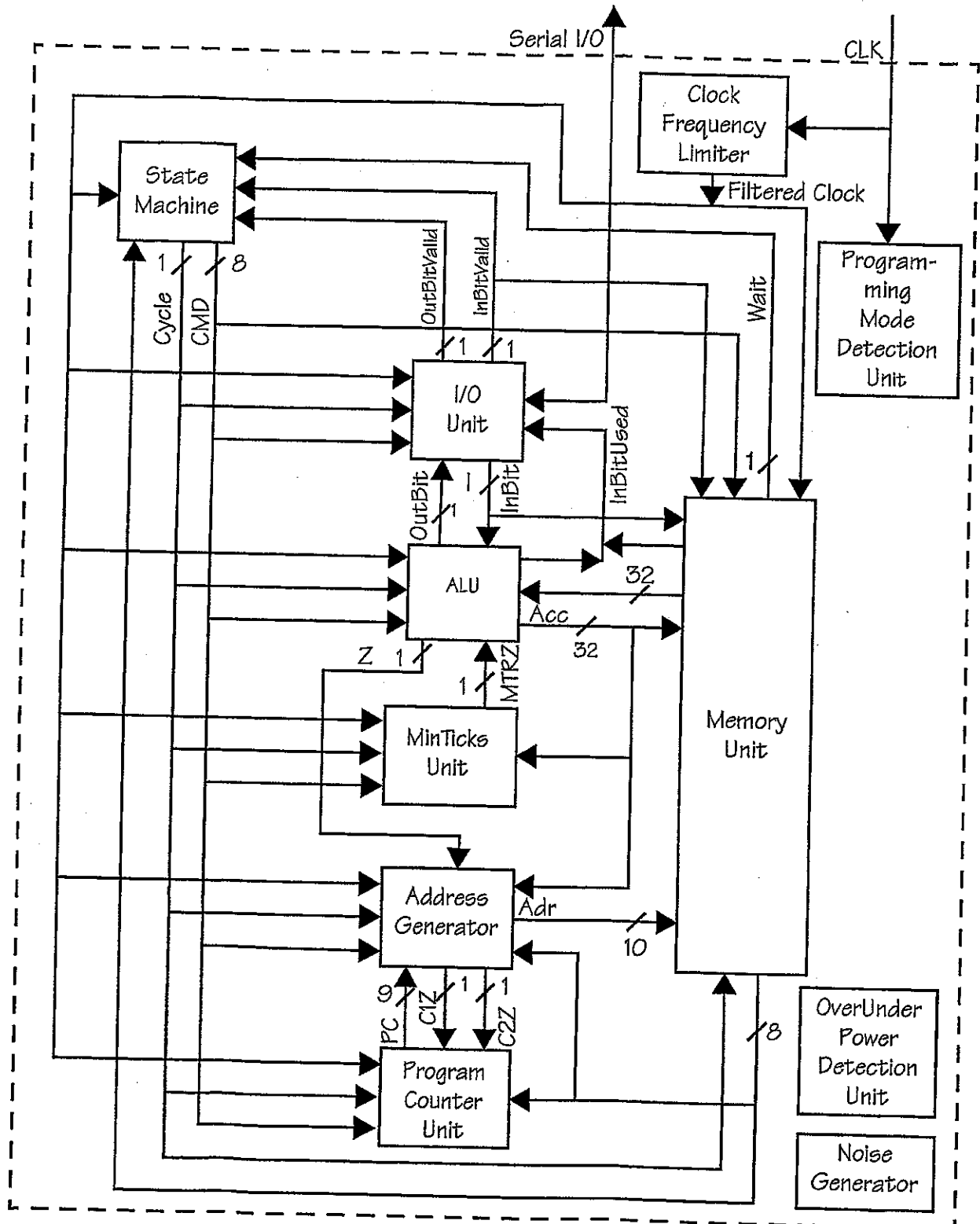


FIG. 181

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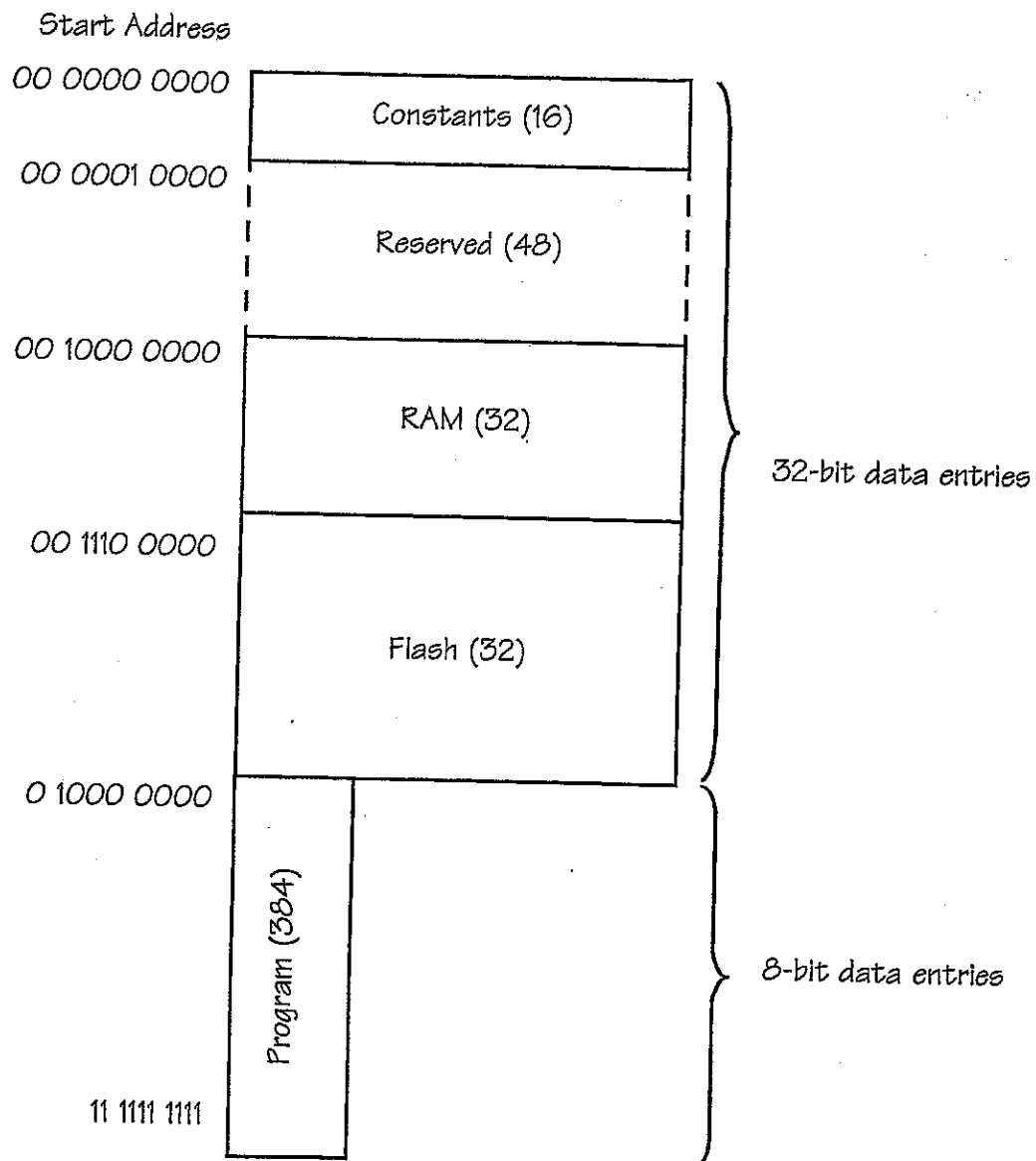


FIG. 182

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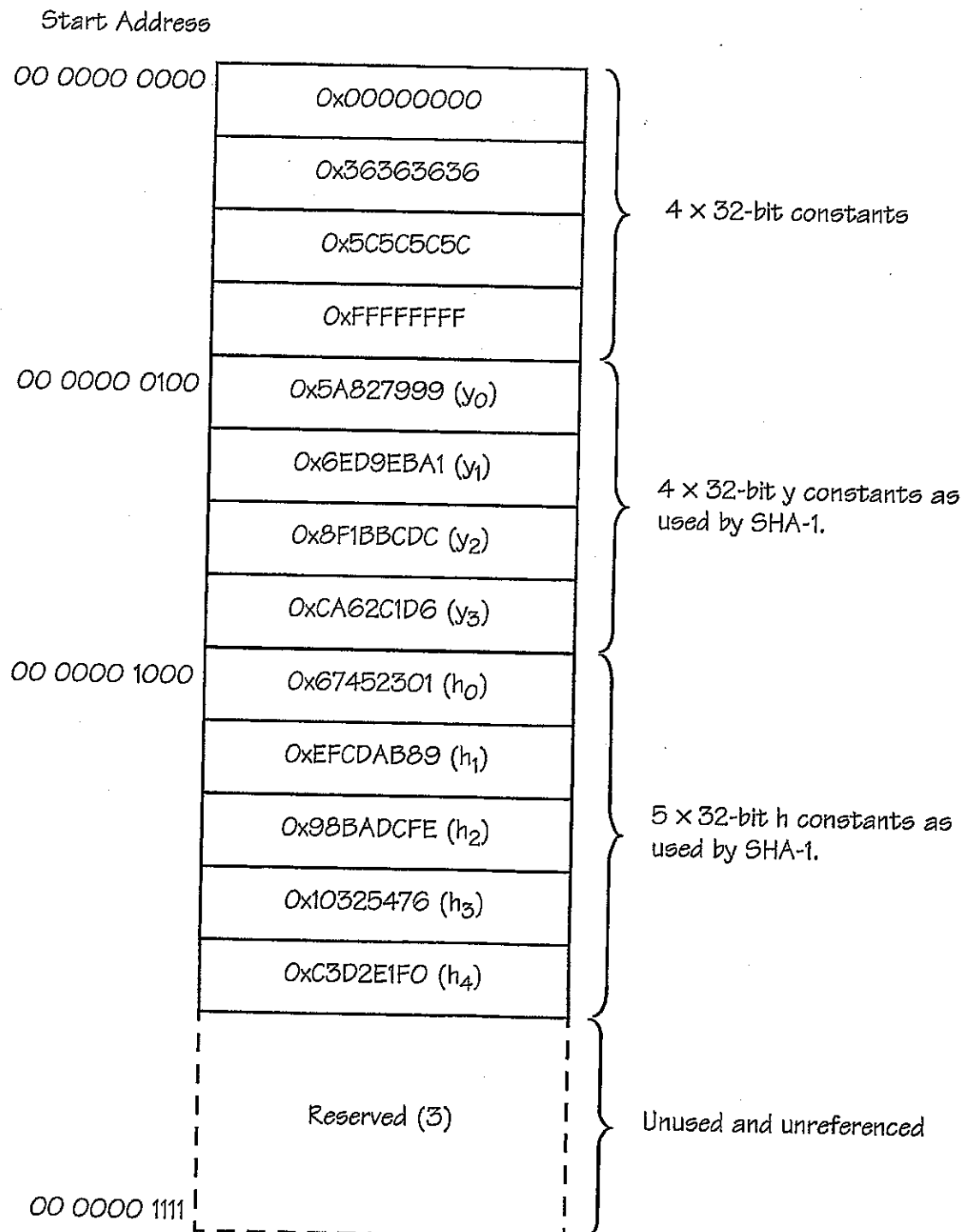


FIG. 183

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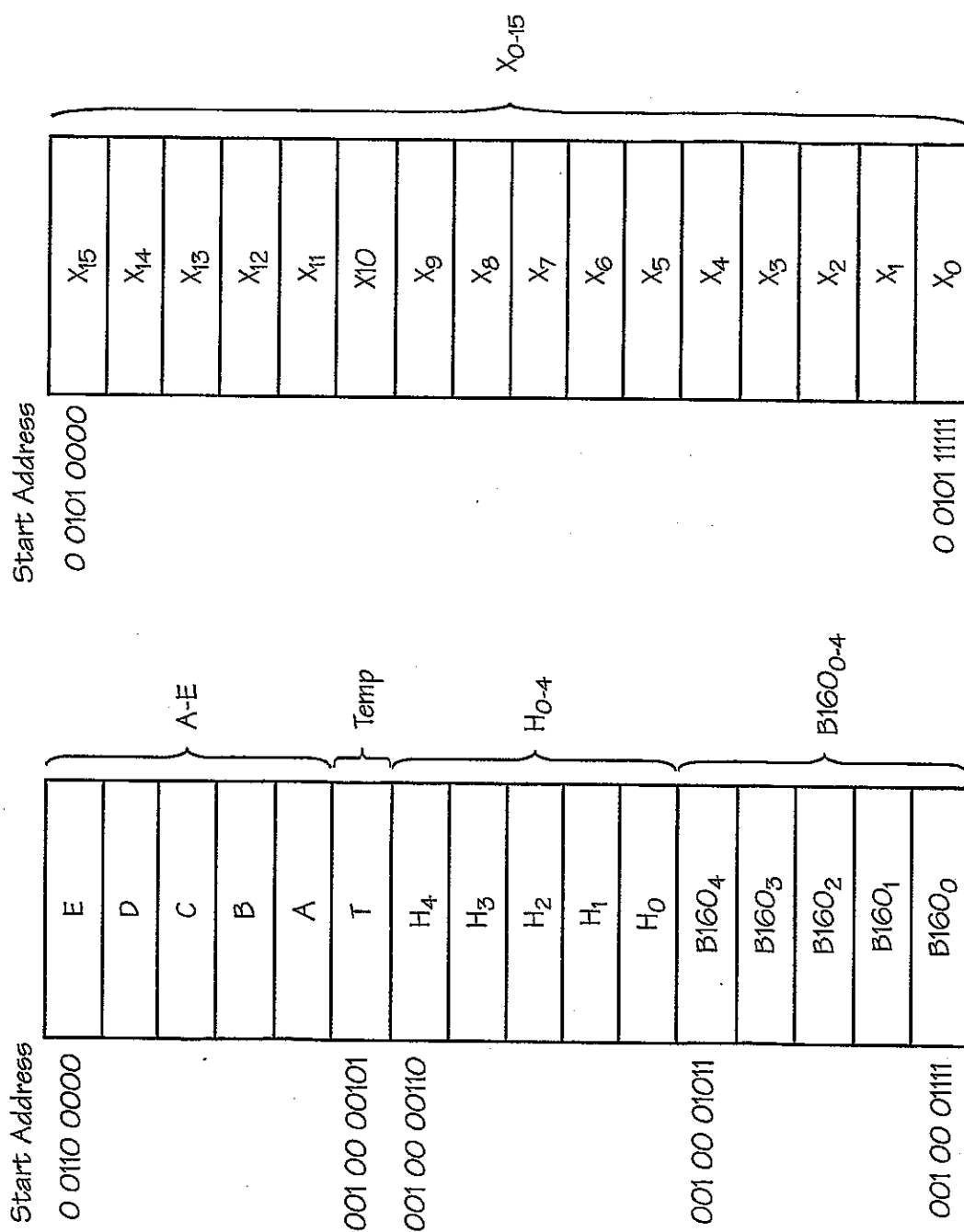


FIG. 184

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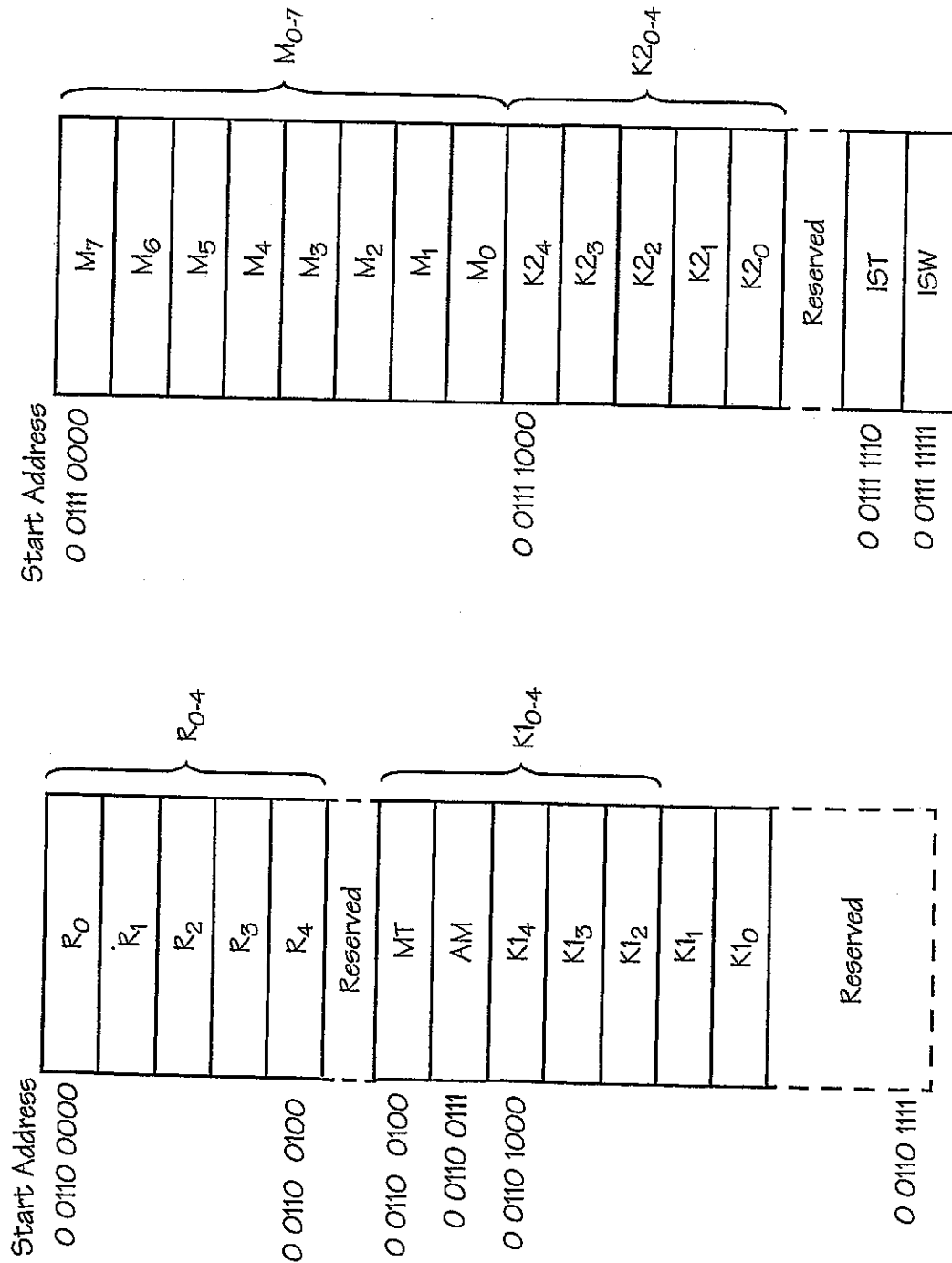


FIG. 185

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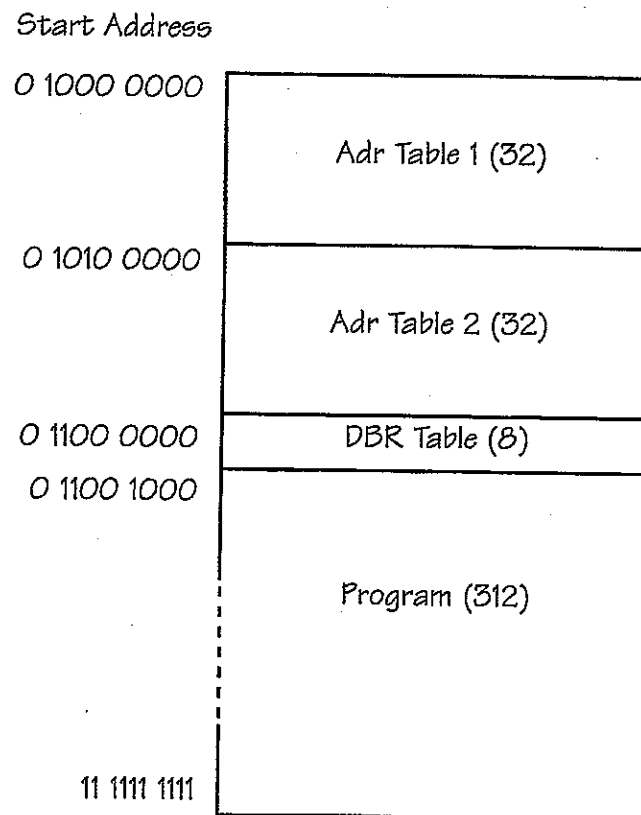


FIG. 186

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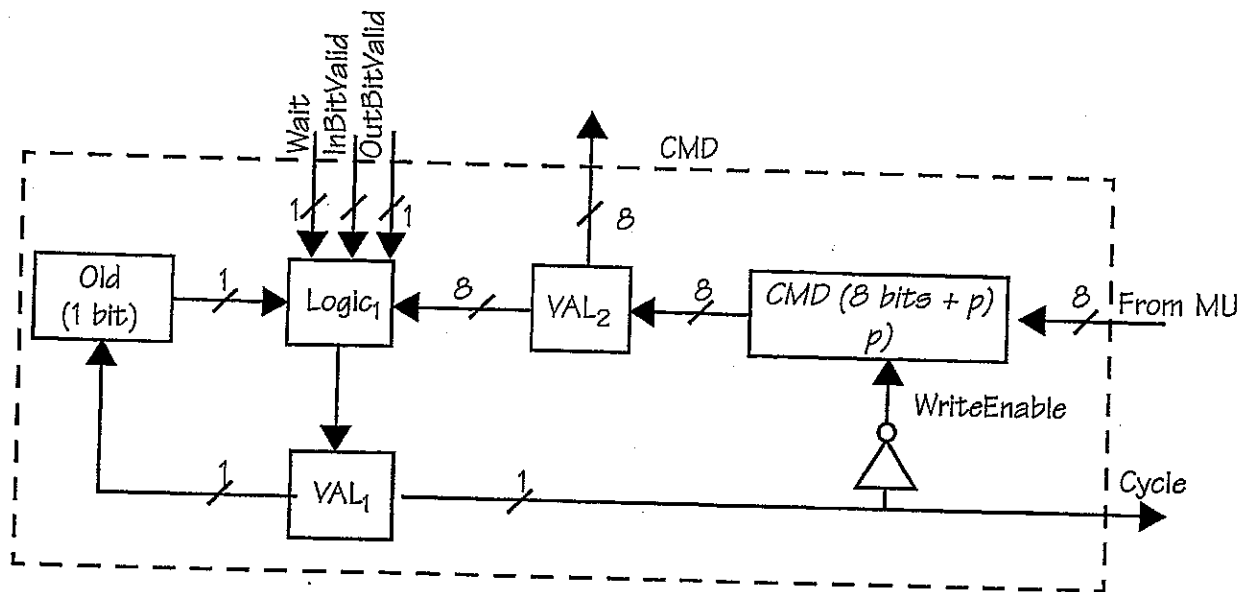


FIG. 187

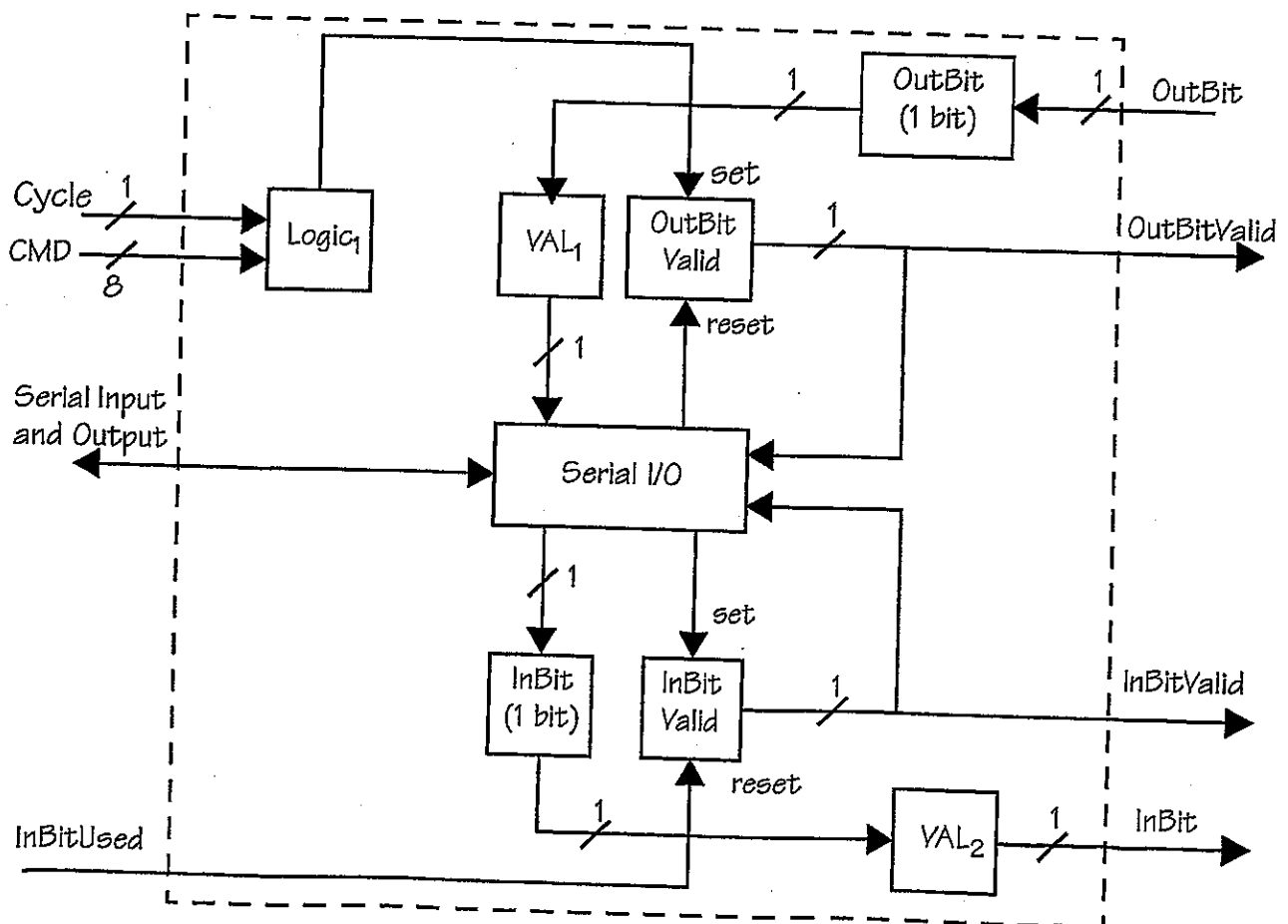


FIG. 188

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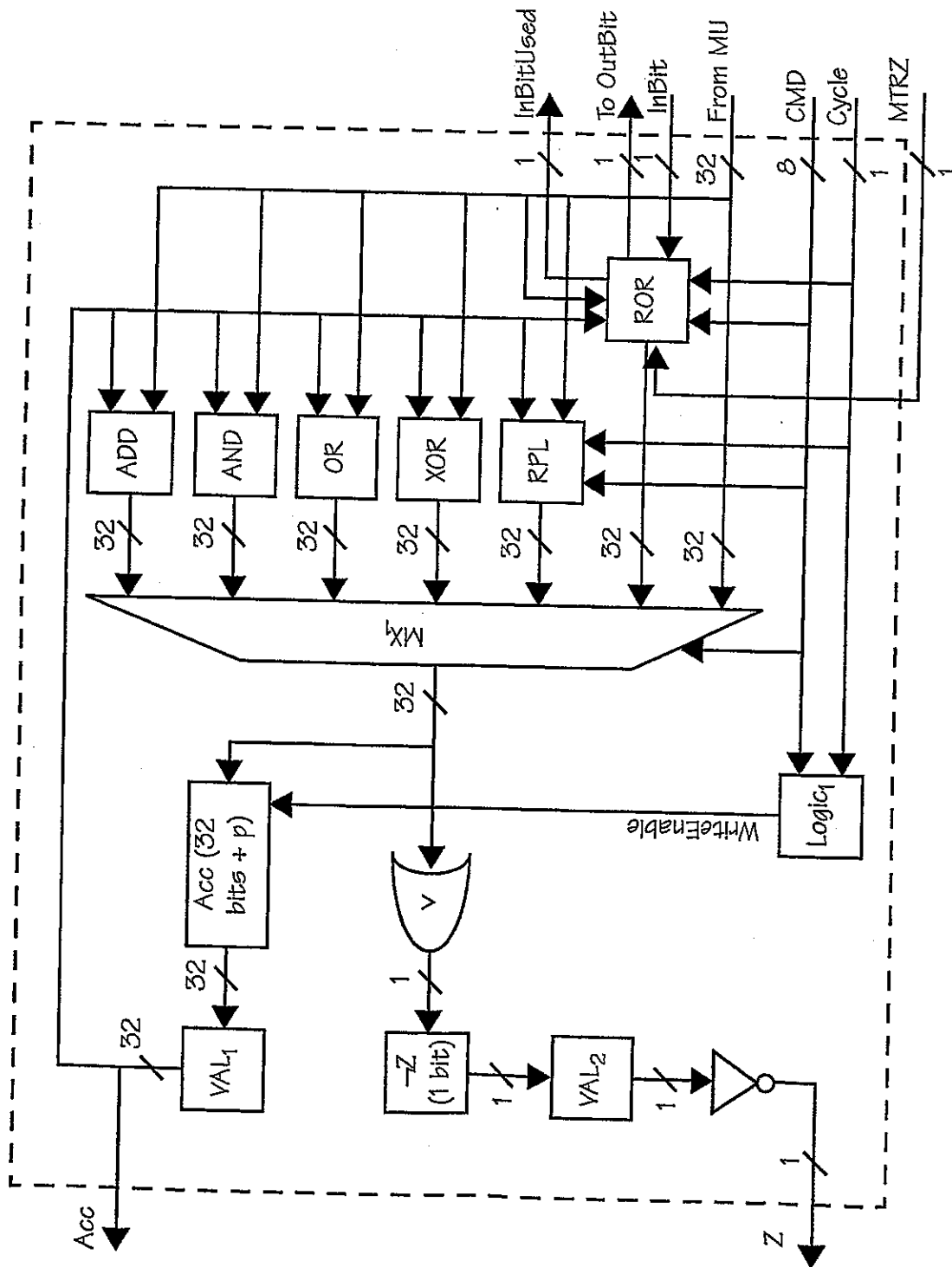


FIG. 189

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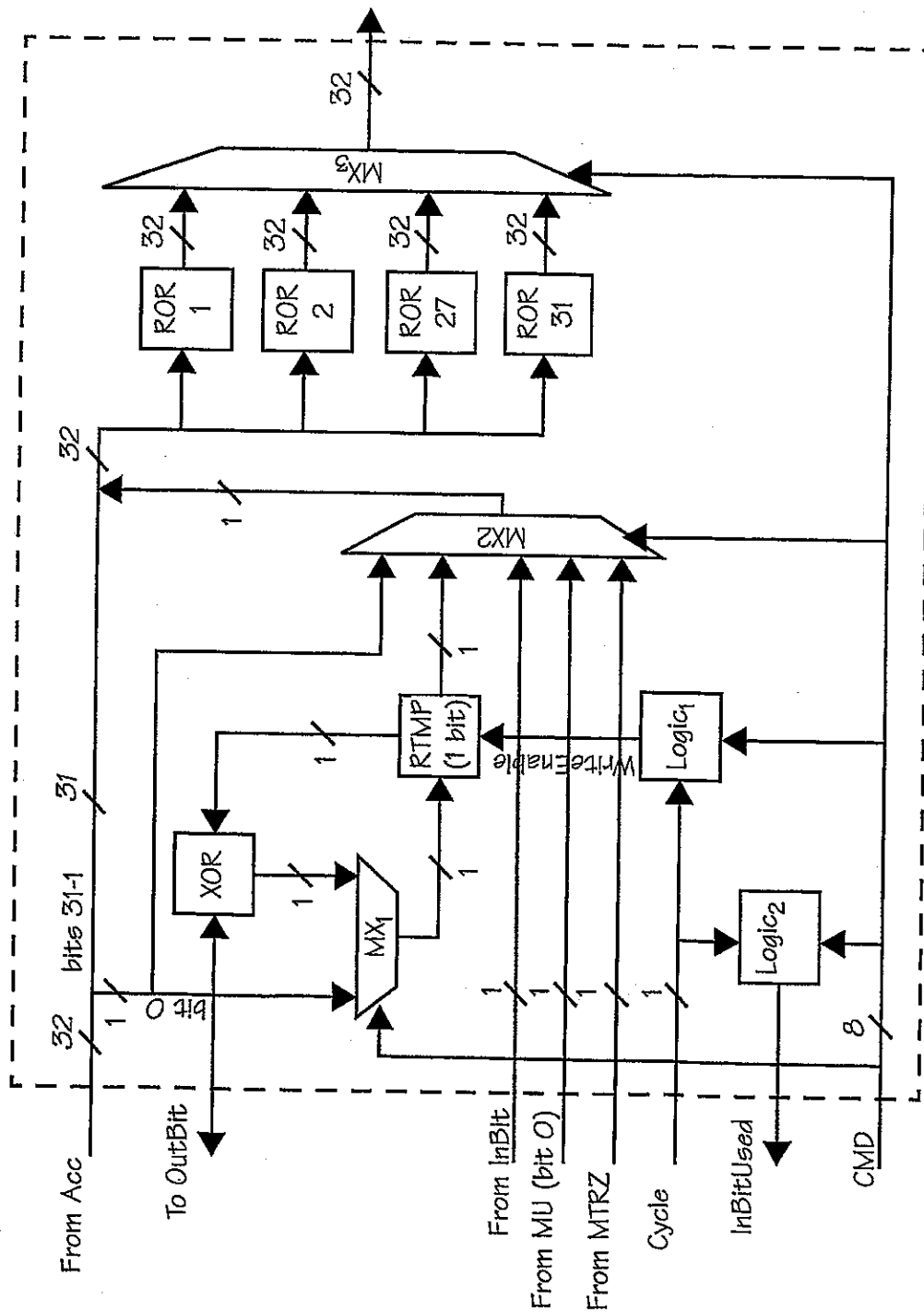


FIG. 190

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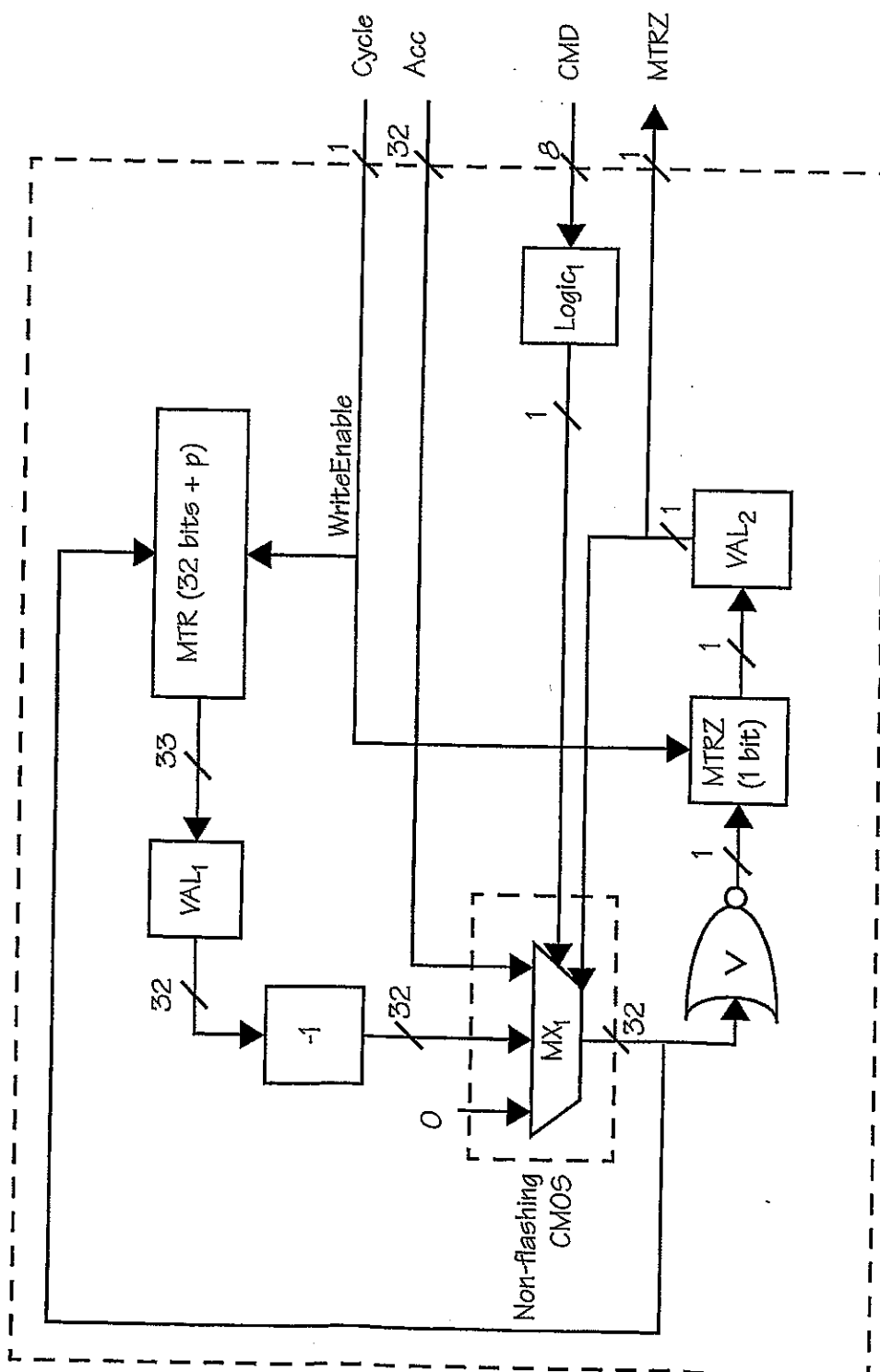


FIG. 191

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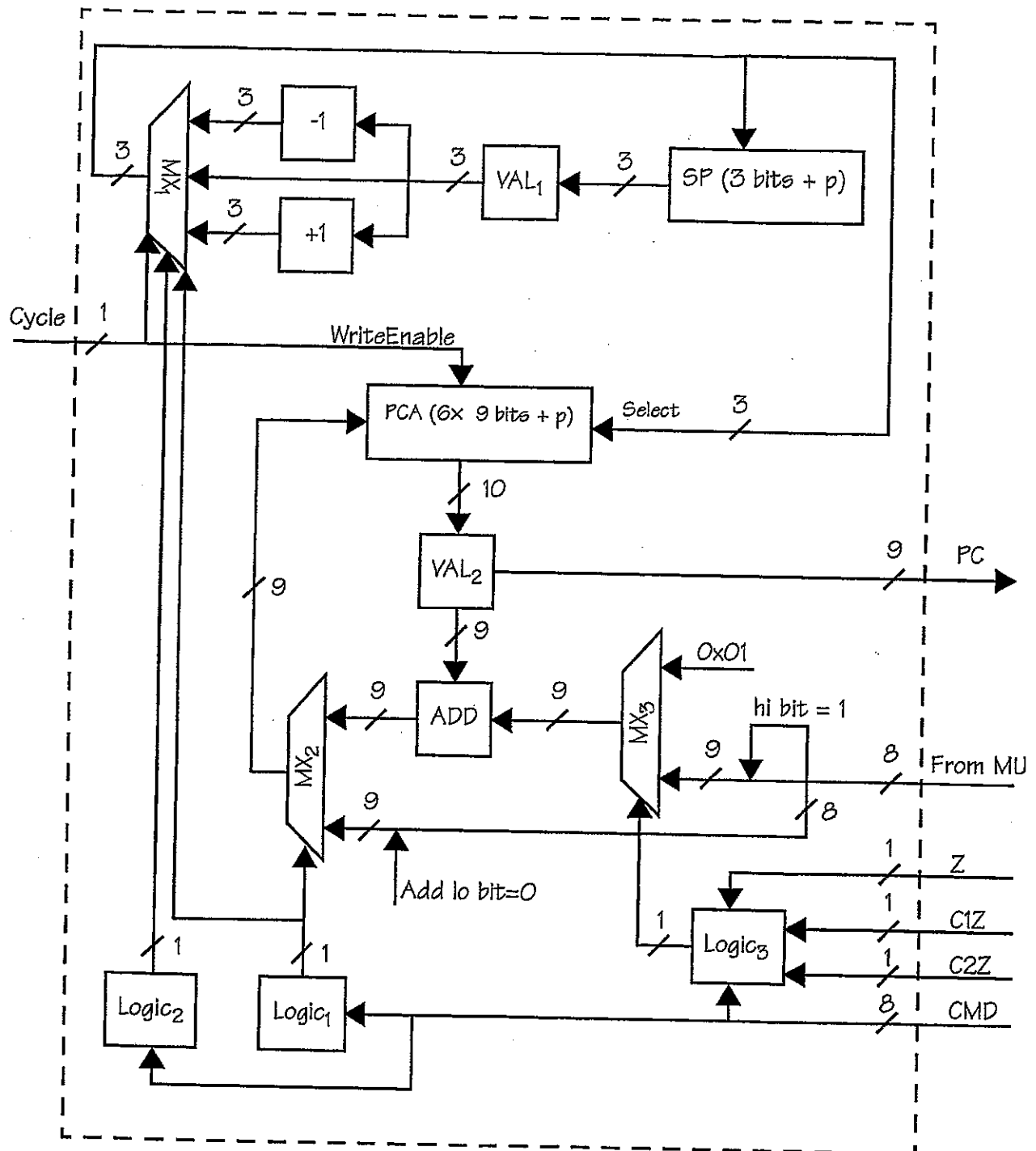


FIG. 192

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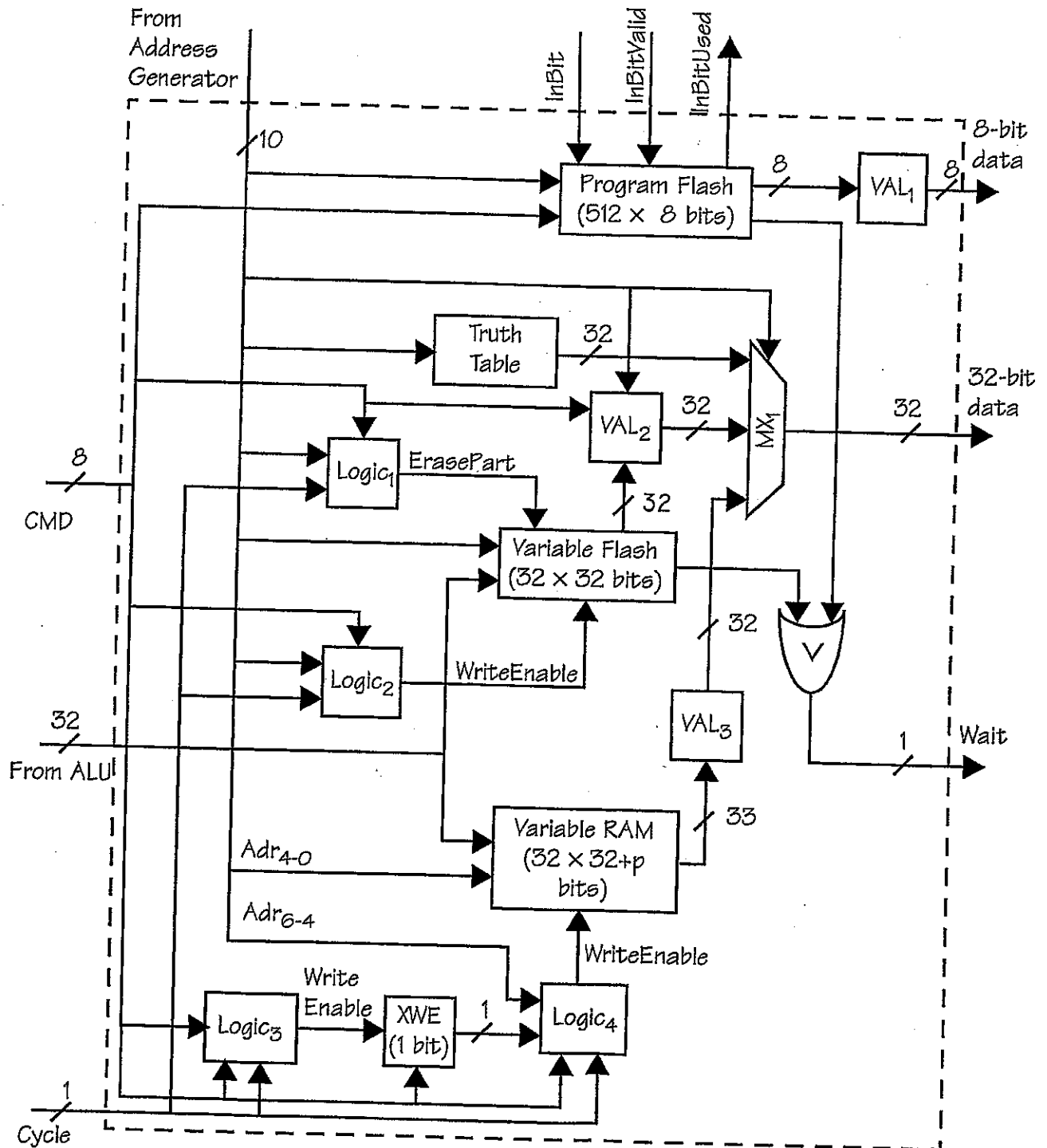


FIG. 193

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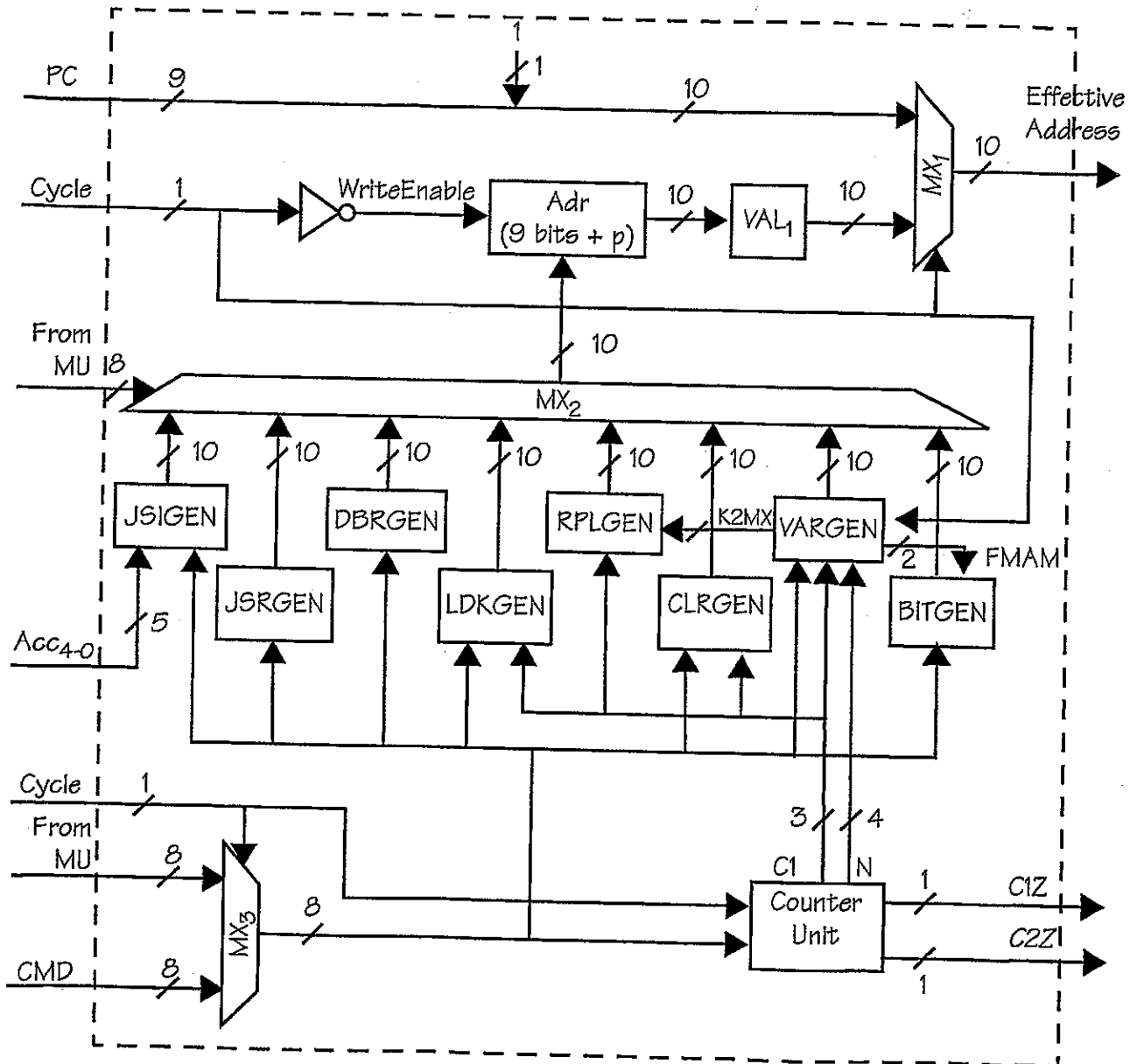


FIG. 194

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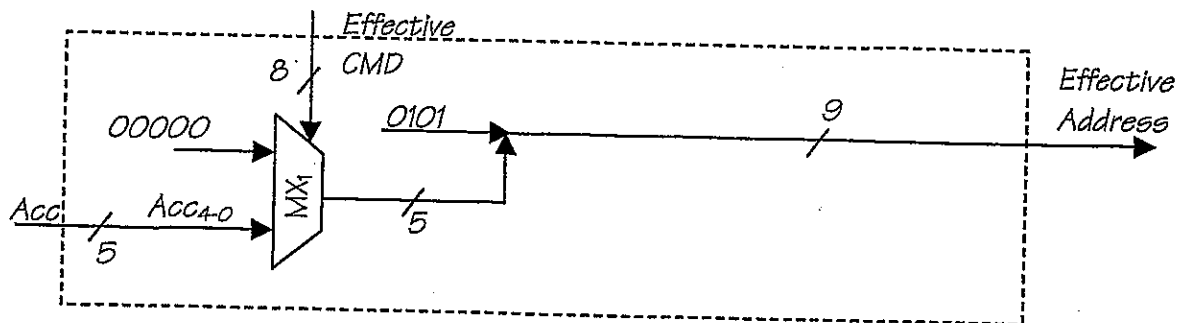


FIG. 195

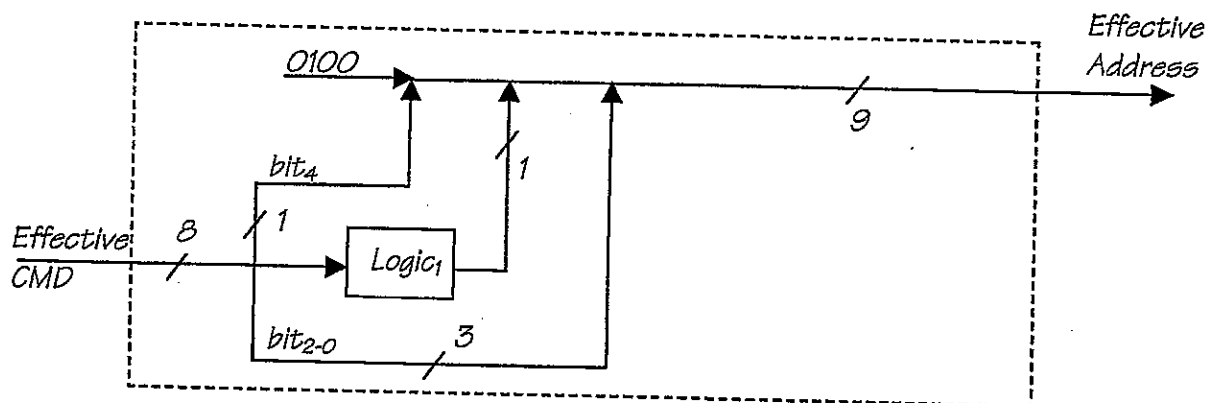


FIG. 196

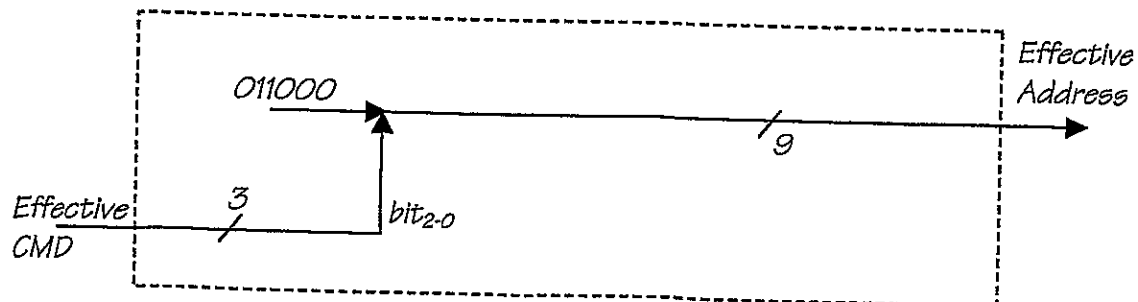


FIG. 197

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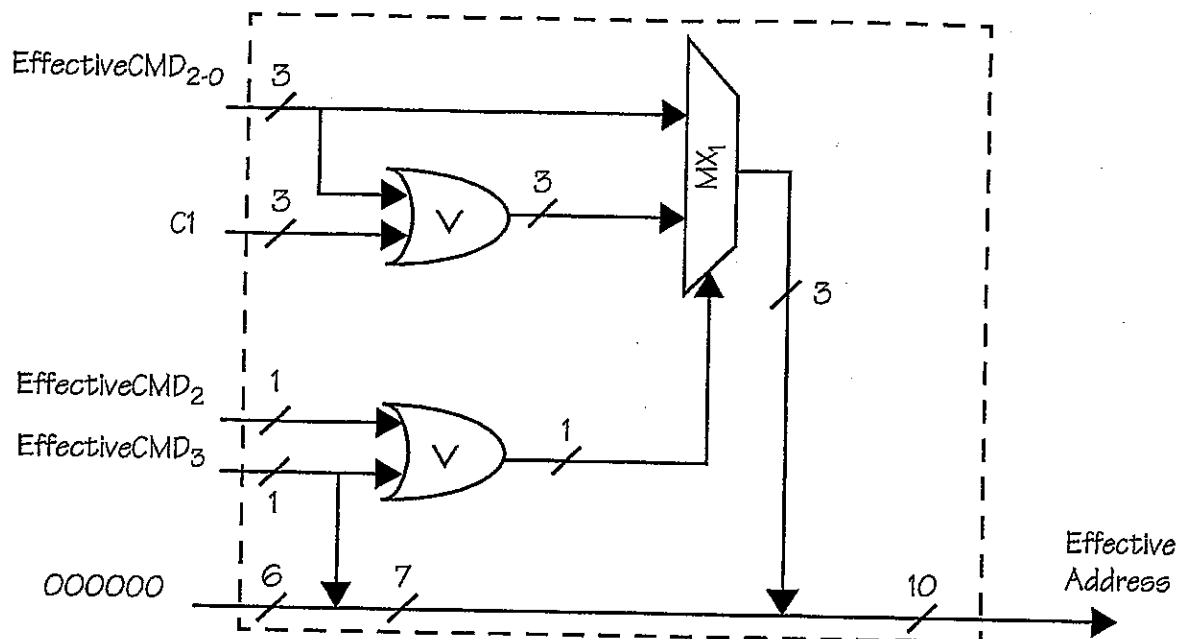


FIG. 198

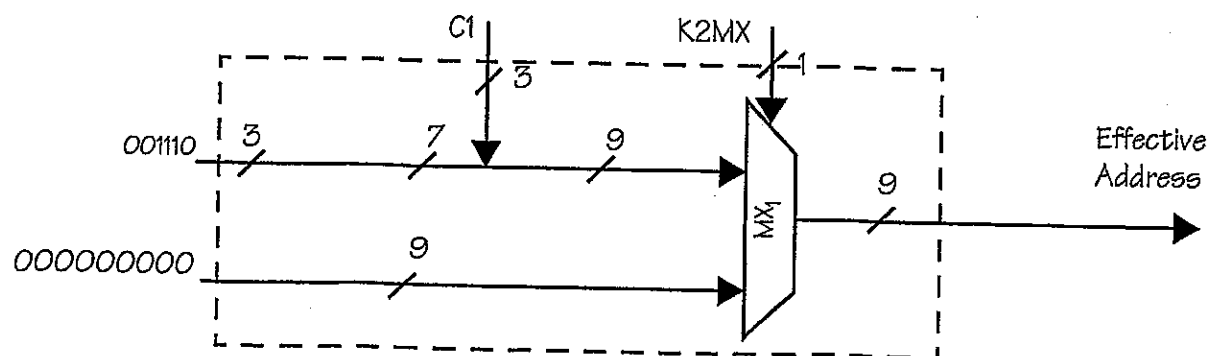


FIG. 199

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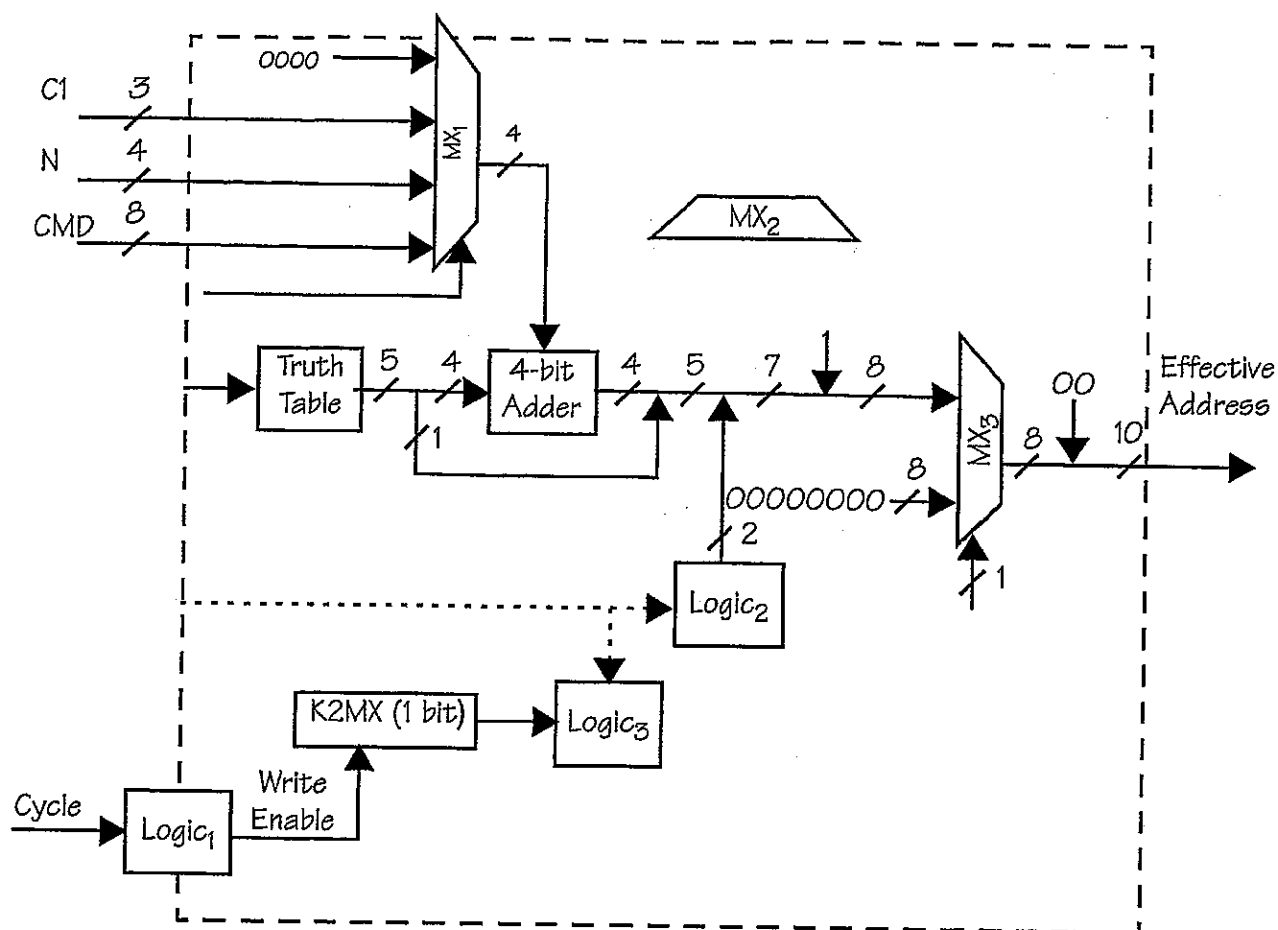


FIG. 200

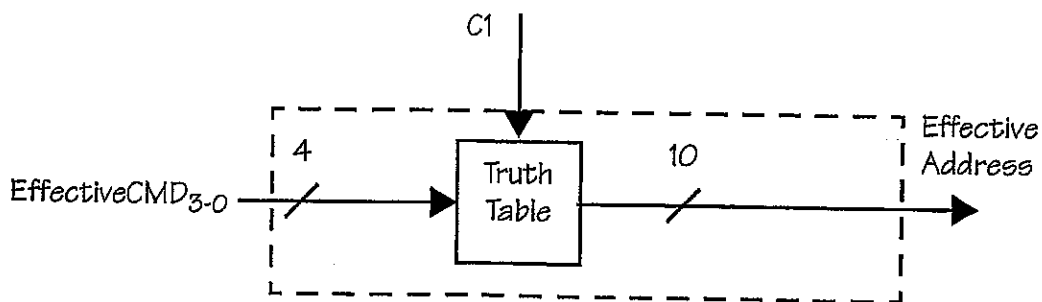


FIG. 201

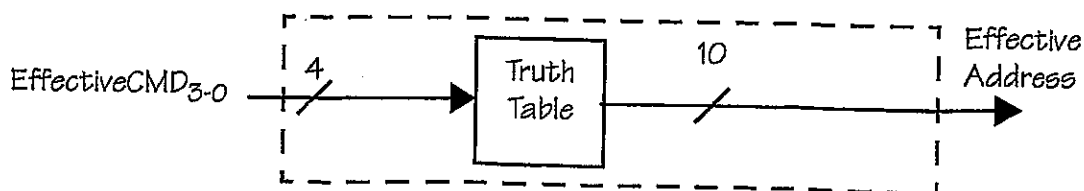


FIG. 202

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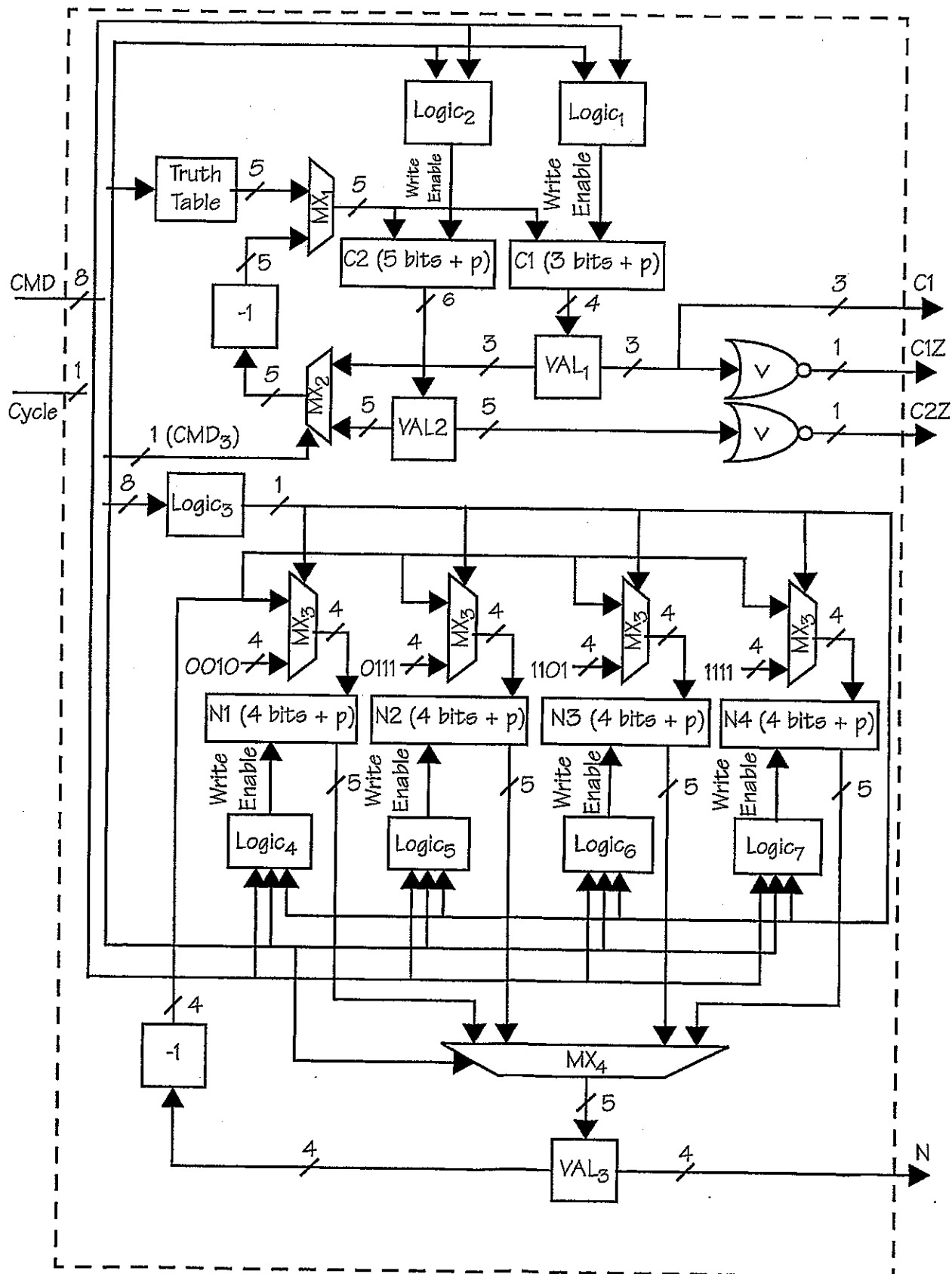


FIG. 203

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705

DATA TYPE	BITS
Factory Code	16
Batch Number	32
Serial Number	48
Manufacturing Date	16
Media Length	24
Media Type	8
Preprinted Media Length	16
Cyan Ink Viscosity	8
Magenta Ink Viscosity	8
Yellow Ink Viscosity	8
Cyan Drop Volume	8
Magenta Drop Volume	8
Yellow Drop Volume	8
Cyan Ink Color	24
Magenta Ink Color	24
Yellow Ink Color	24
Remaining-media Length Indicator	16
Authentication Key	128
Copyrightable bit pattern	512
Reserved for Camera Use	88
Total	1024

728

FIG. 204

```
graph TD; 774[INK COLOUR VISCOSITY] --> 771[PULSE PROFILE CHARACTERIZER]; 775[INK COLOUR DROP VOLUME] --> 771; 776[INK COLOUR] --> 771; 771 --> 761[PRINT HEAD CONTROLLER]; 762[MEDIA TYPE] --> 771; 763[REMAINING ROLL MEDIA] --> 771;
```

The diagram illustrates a system for pulse profile characterization. It features a central block labeled "PULSE PROFILE CHARACTERIZER" (771). Five input blocks provide data to this central block: "INK COLOUR VISCOSITY" (774), "INK COLOUR DROP VOLUME" (775), "INK COLOUR" (776), "MEDIA TYPE" (762), and "REMAINING ROLL MEDIA" (763). The output of the "PULSE PROFILE CHARACTERIZER" (771) is sent to a "PRINT HEAD CONTROLLER" (761).

SUBSTITUTE SHEET (RULE 26) RO/AU

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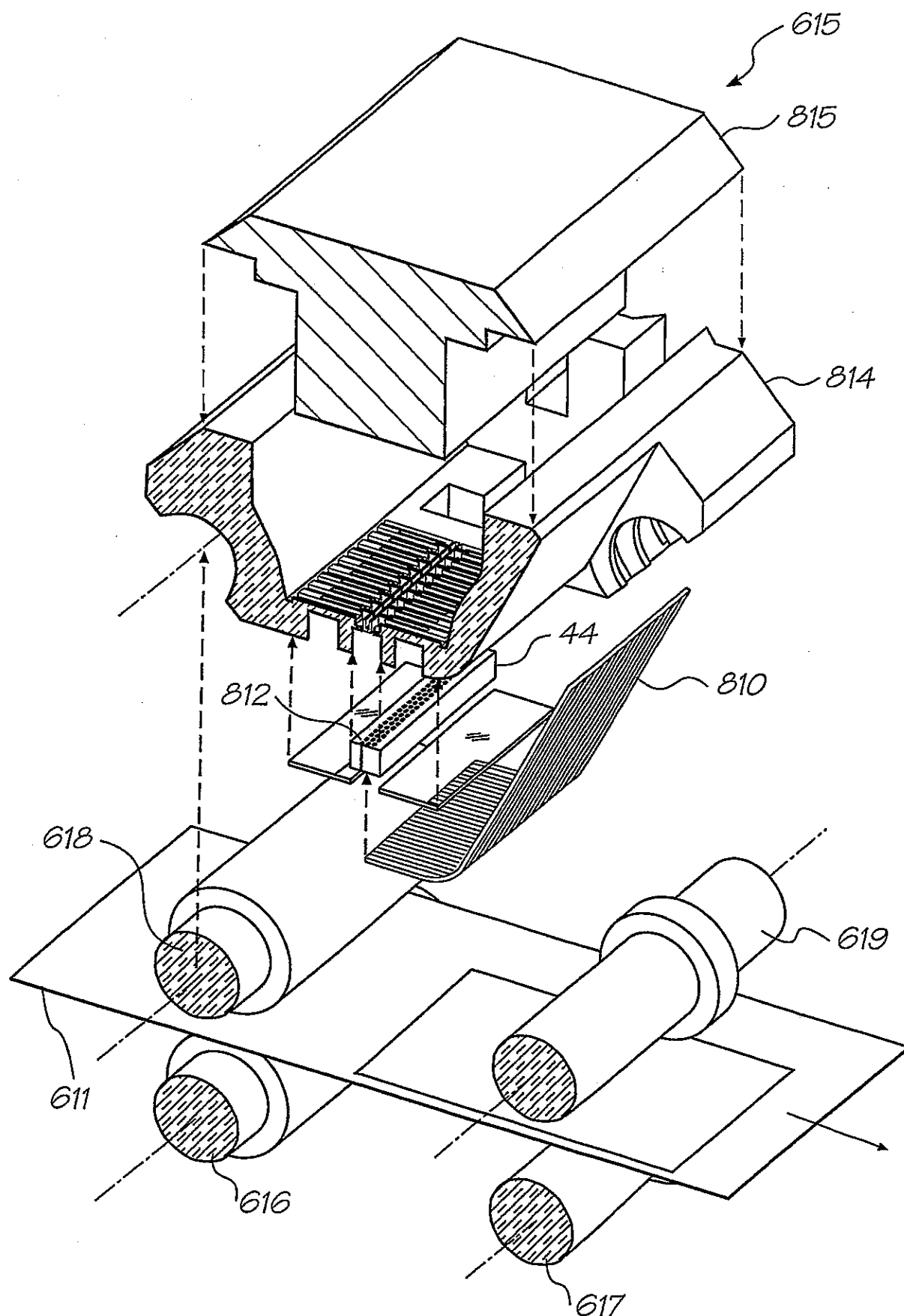


FIG. 206
SUBSTITUTE SHEET (RULE 26) RO/AU

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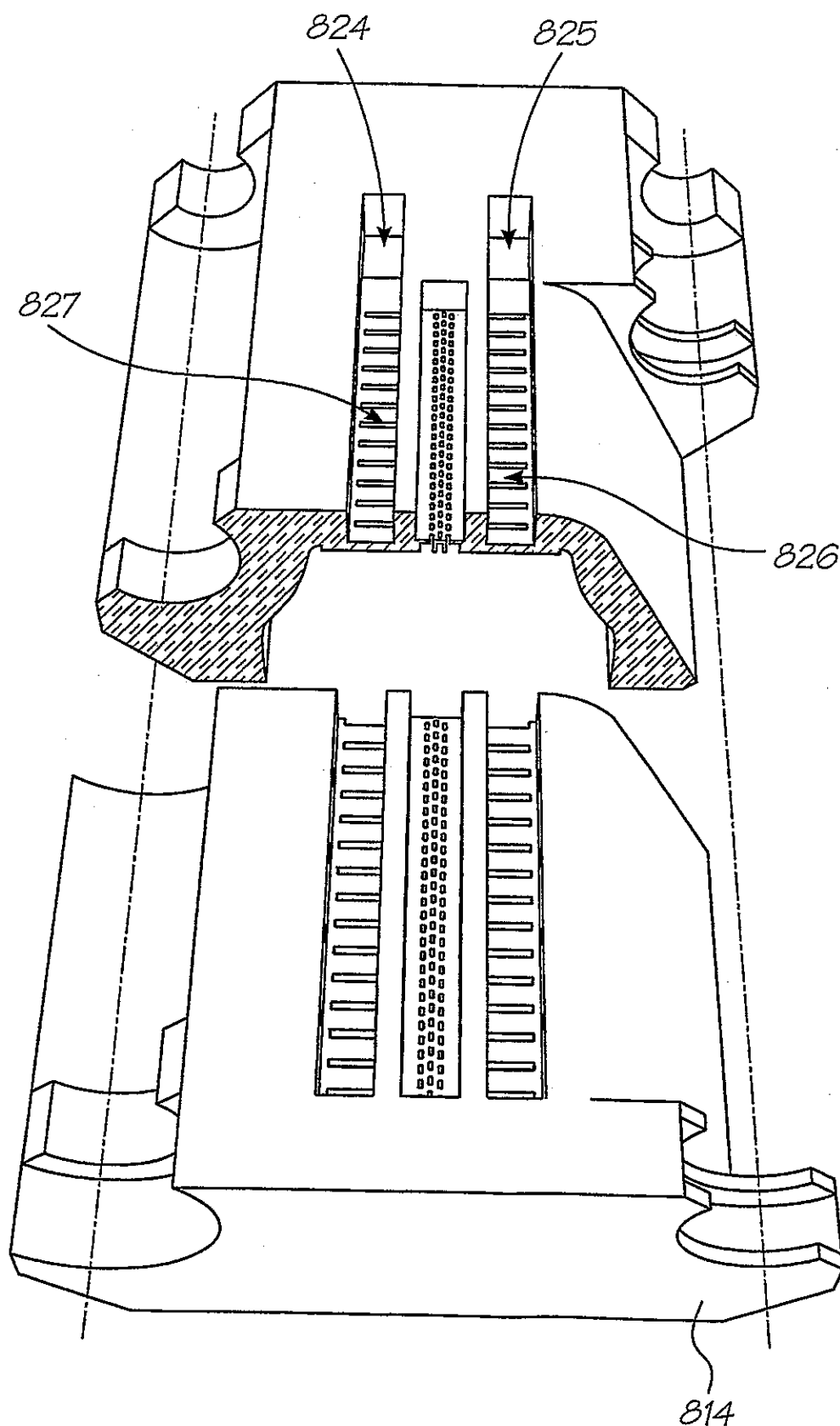
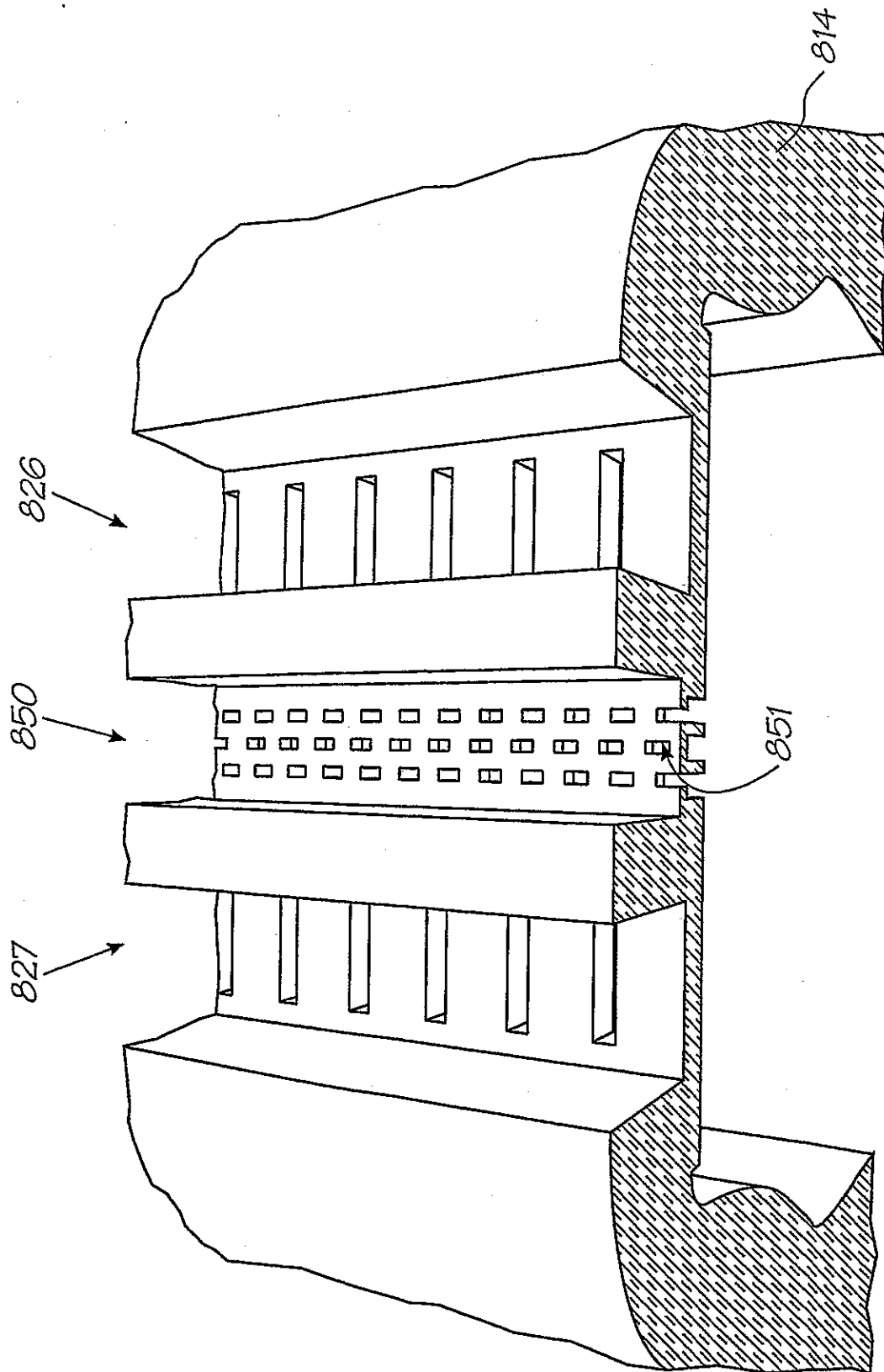


FIG. 207

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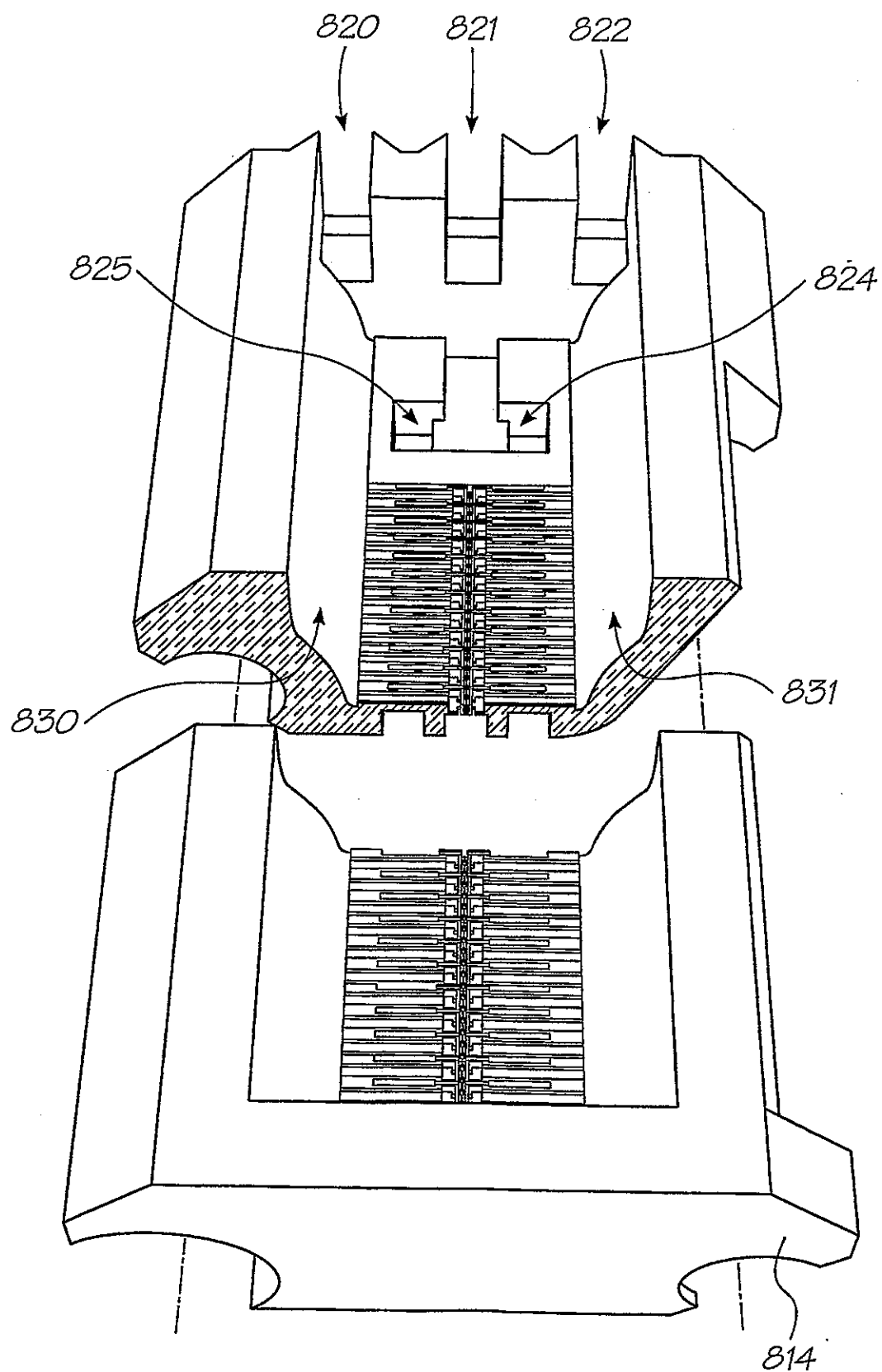


FIG. 209

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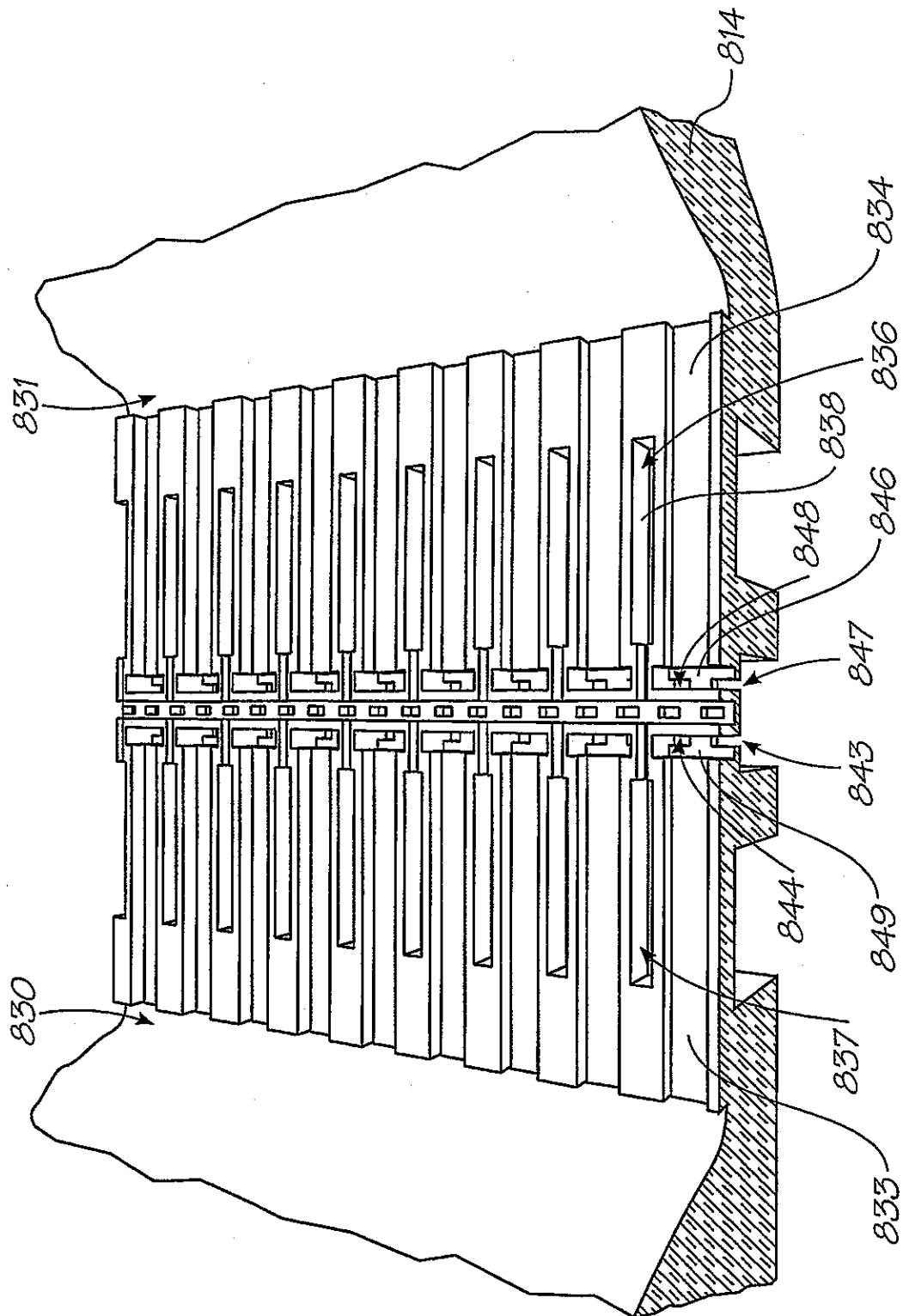


FIG. 210

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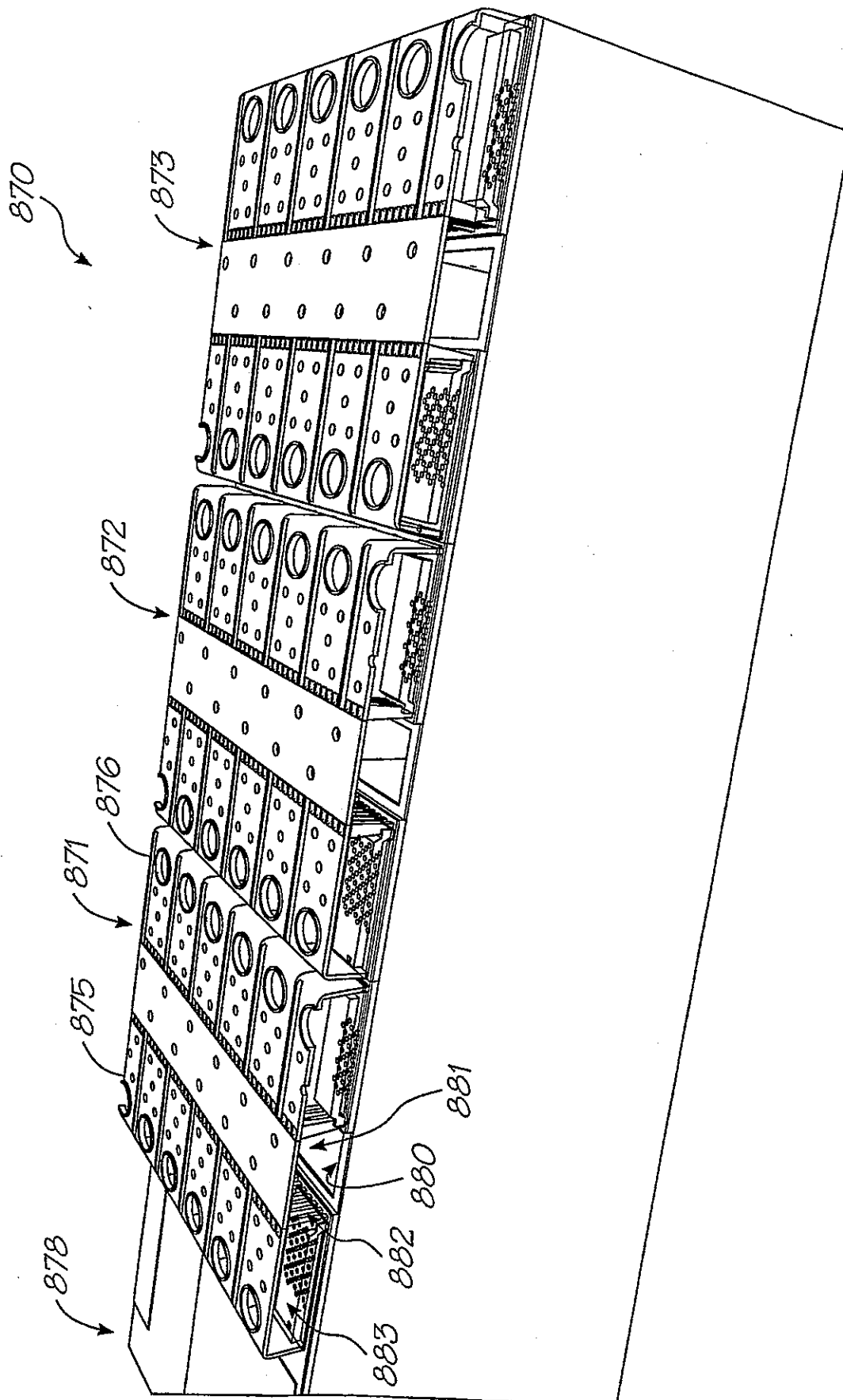


FIG. 211

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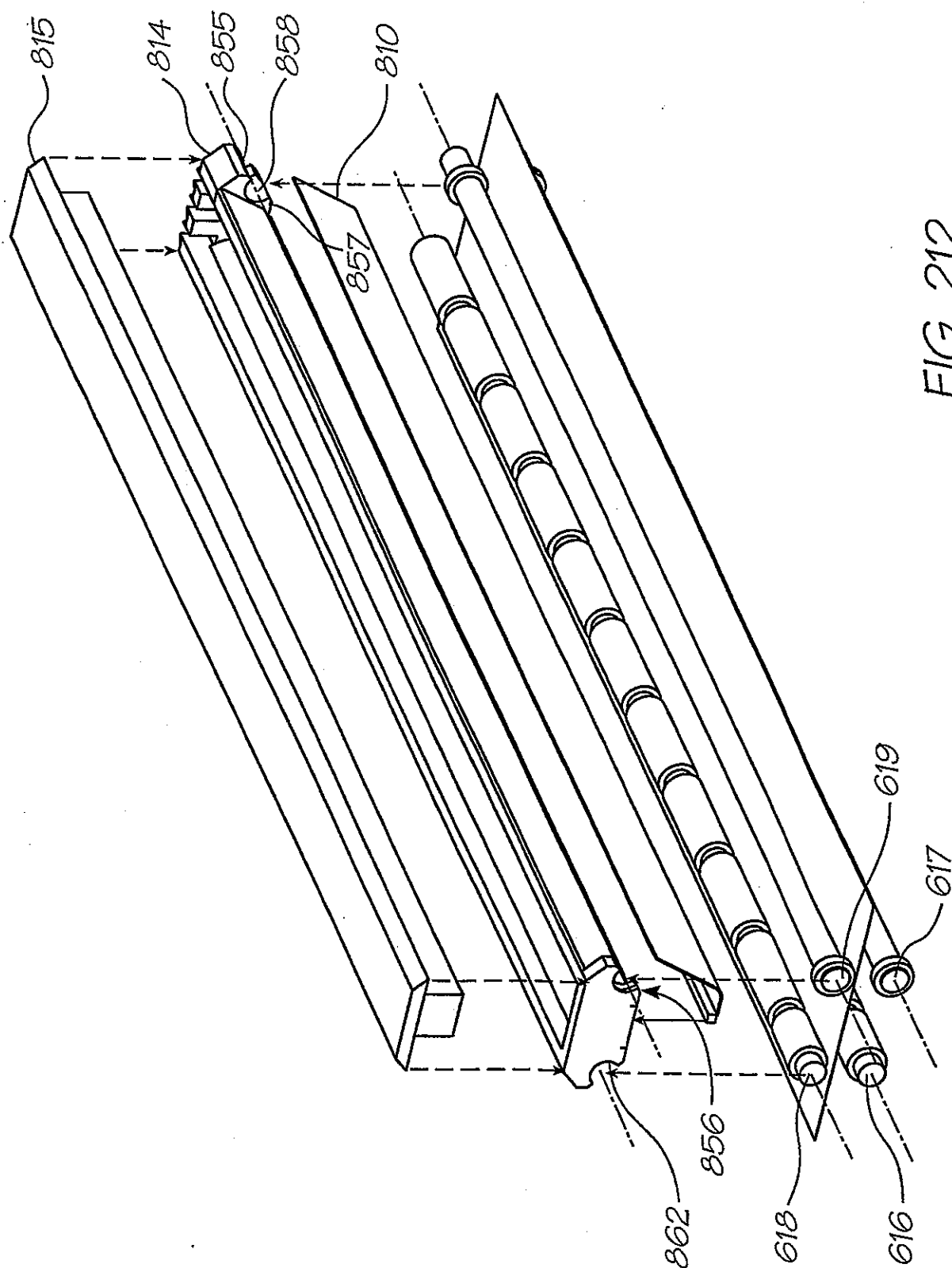


FIG. 212

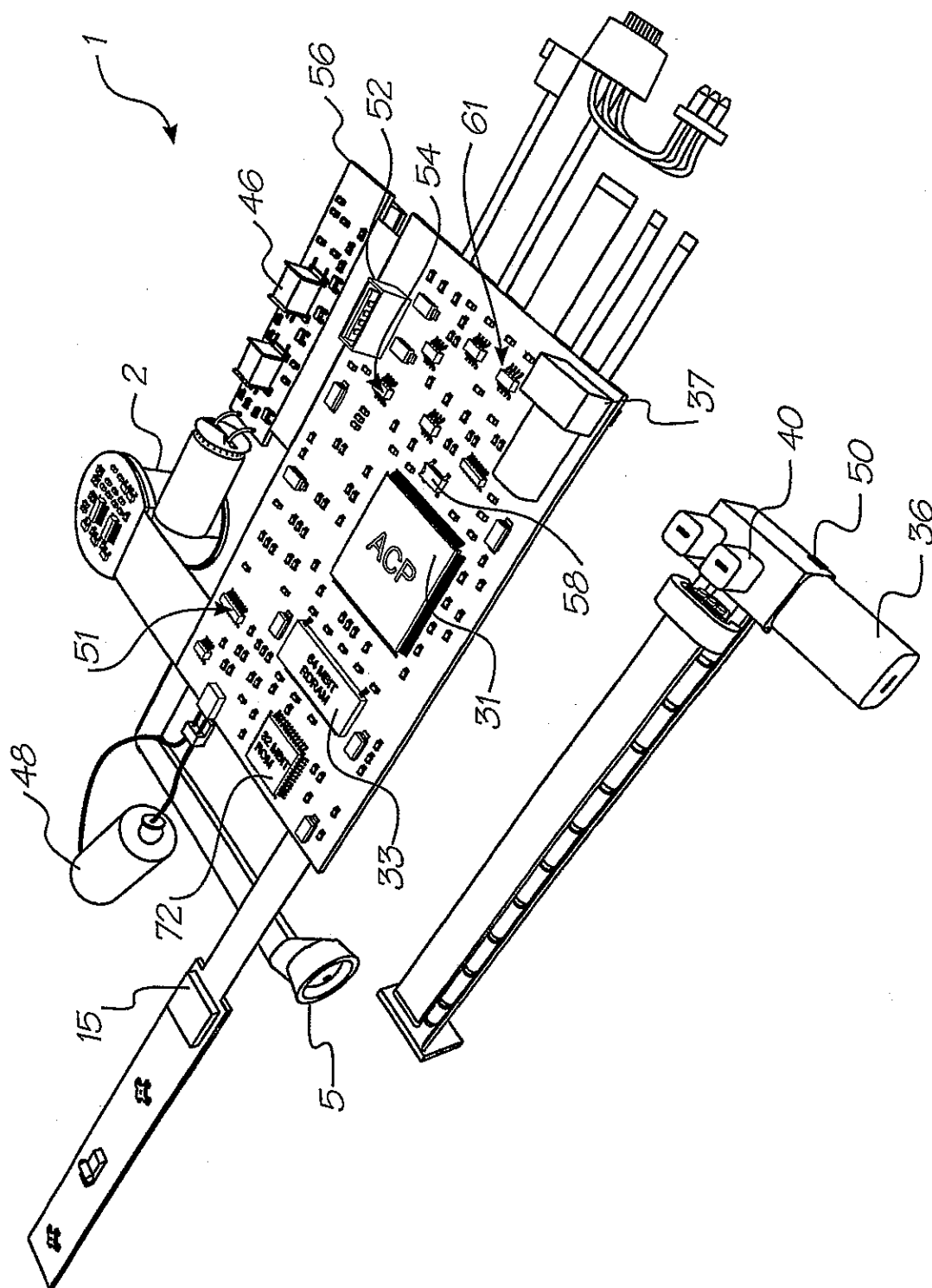


FIG. 213

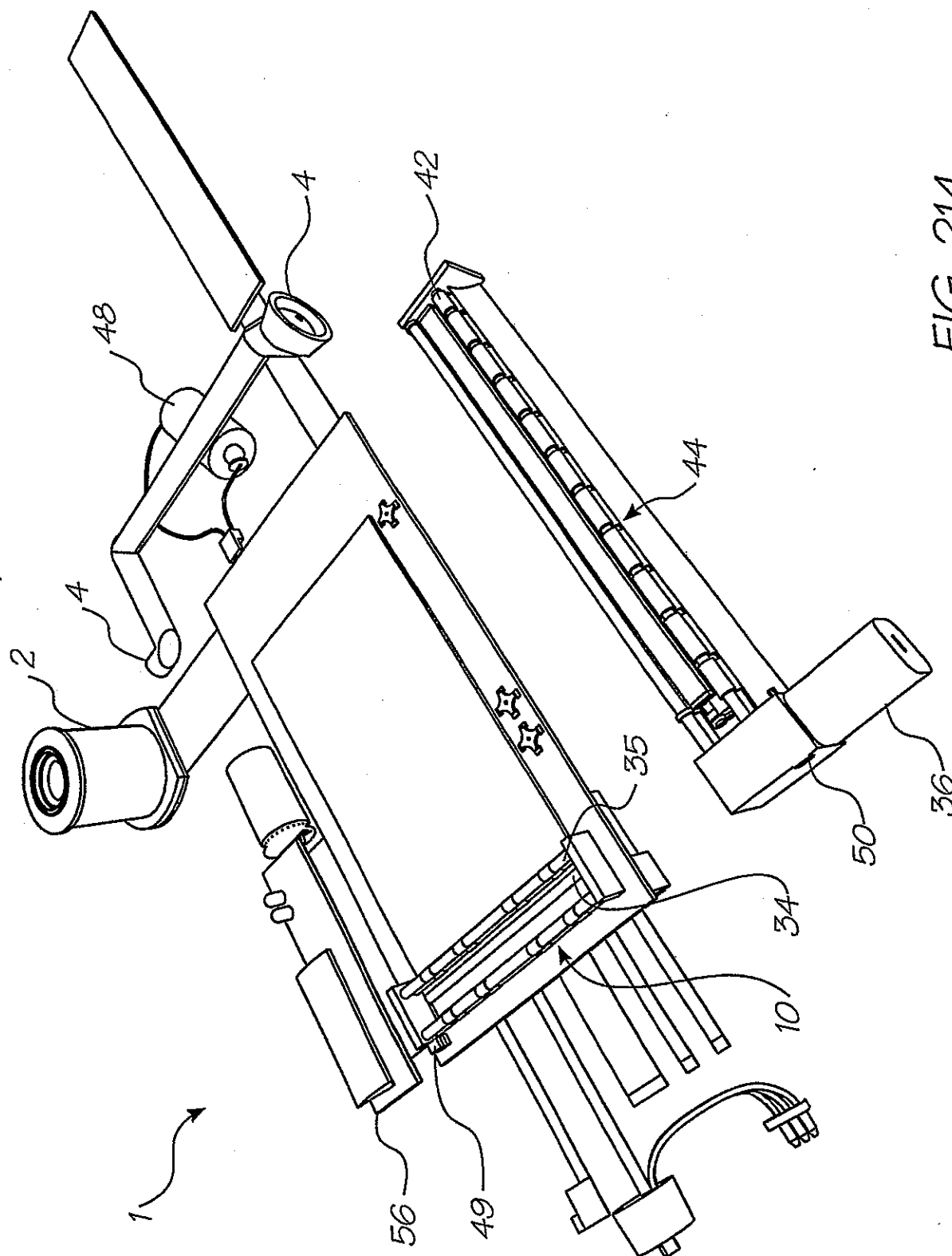


FIG. 214

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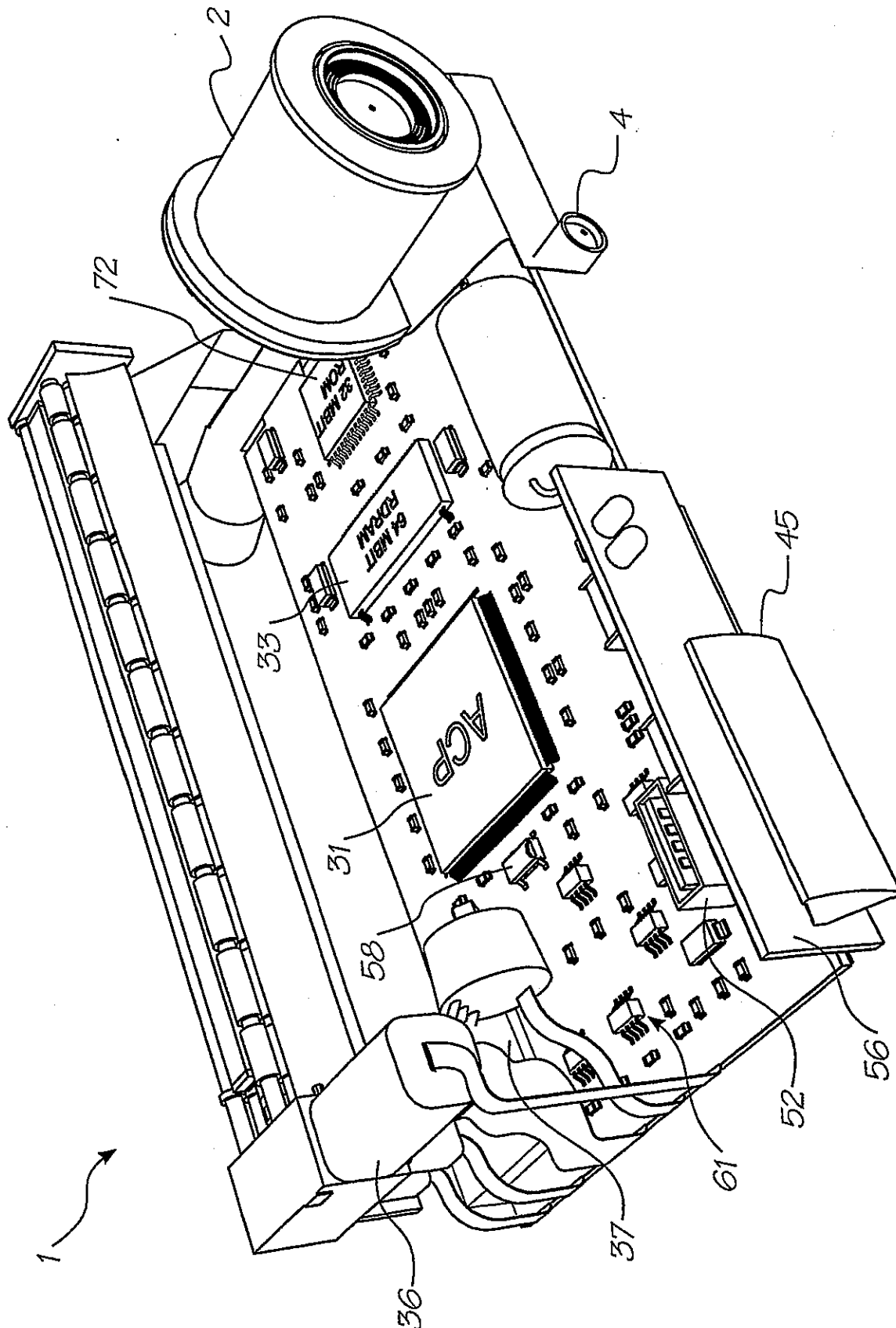


FIG. 215

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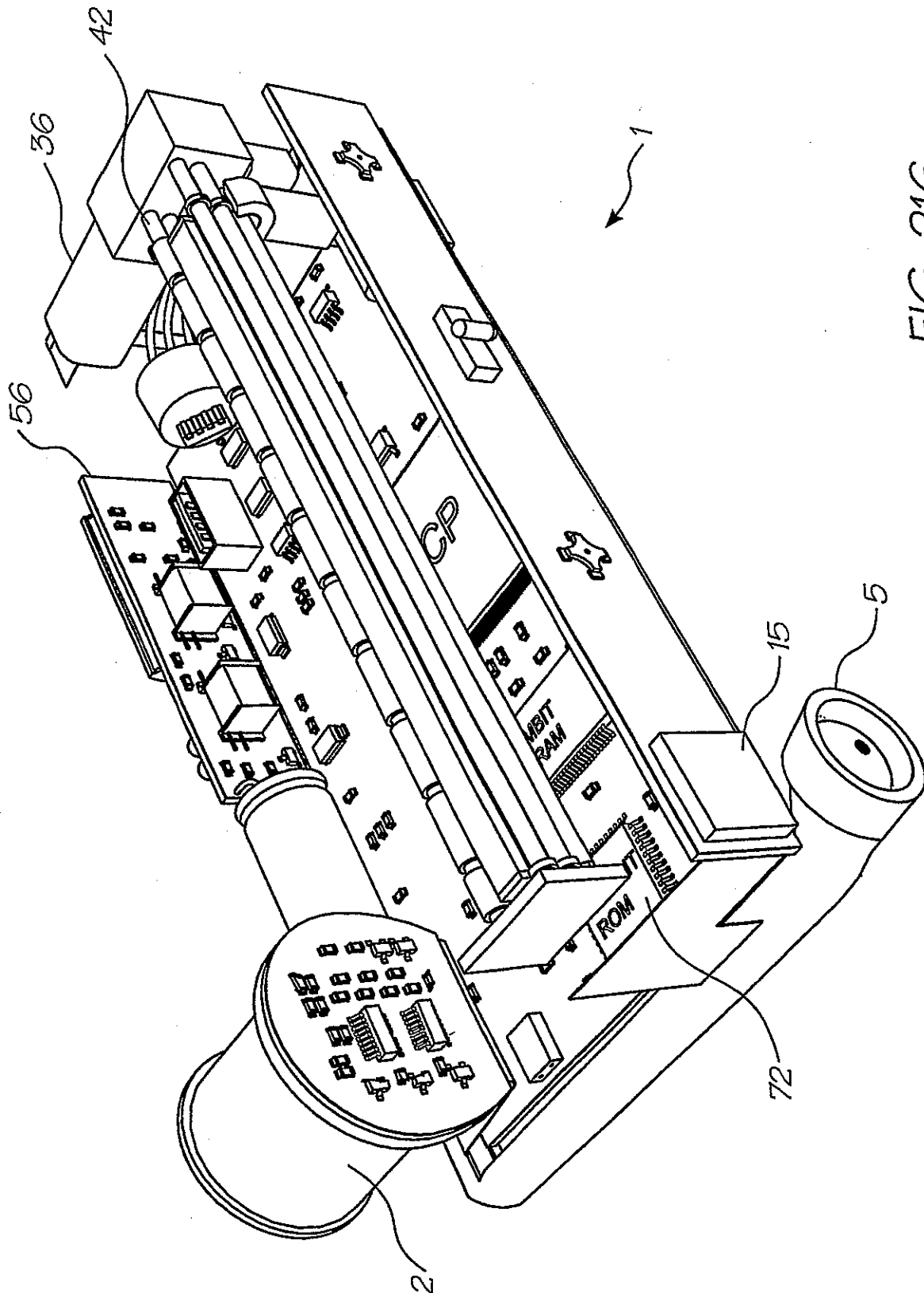


FIG. 216

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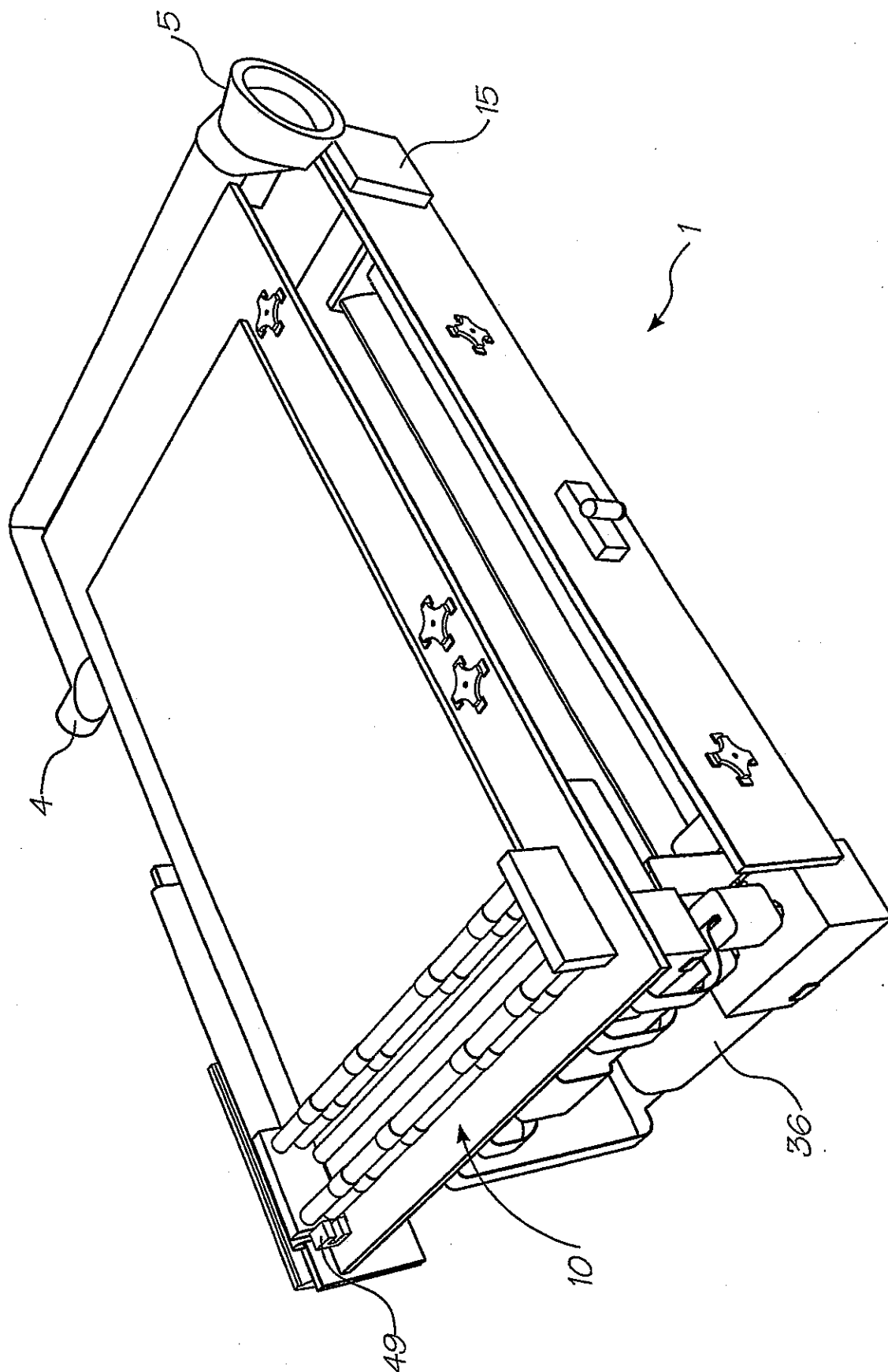


FIG. 217

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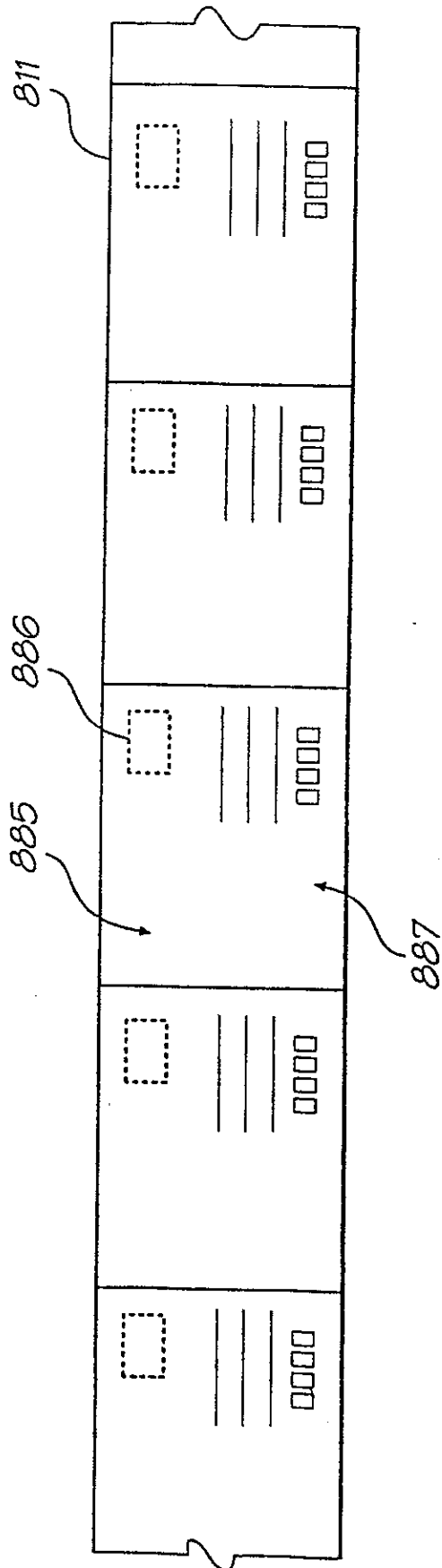


FIG. 218

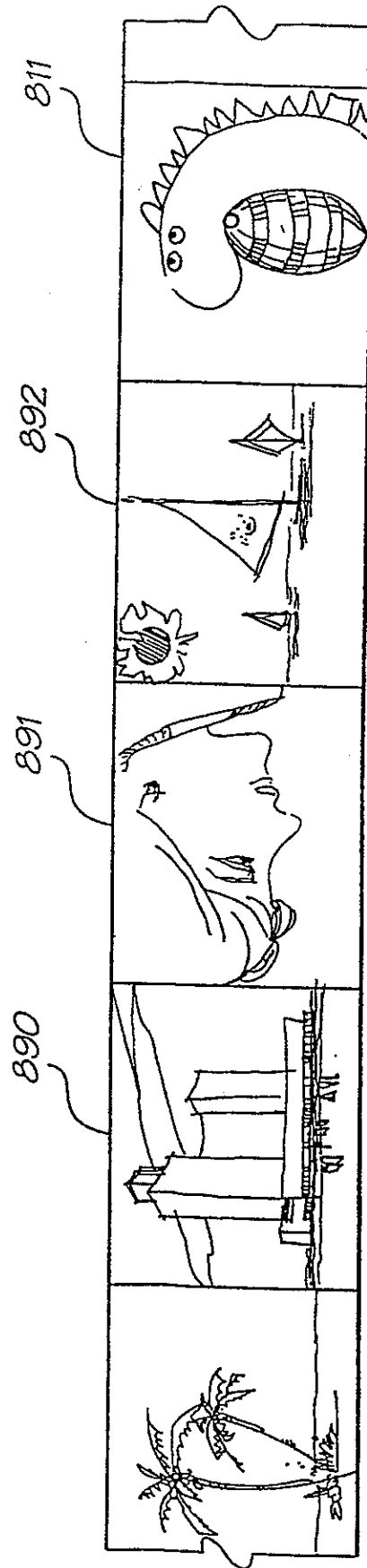


FIG. 219

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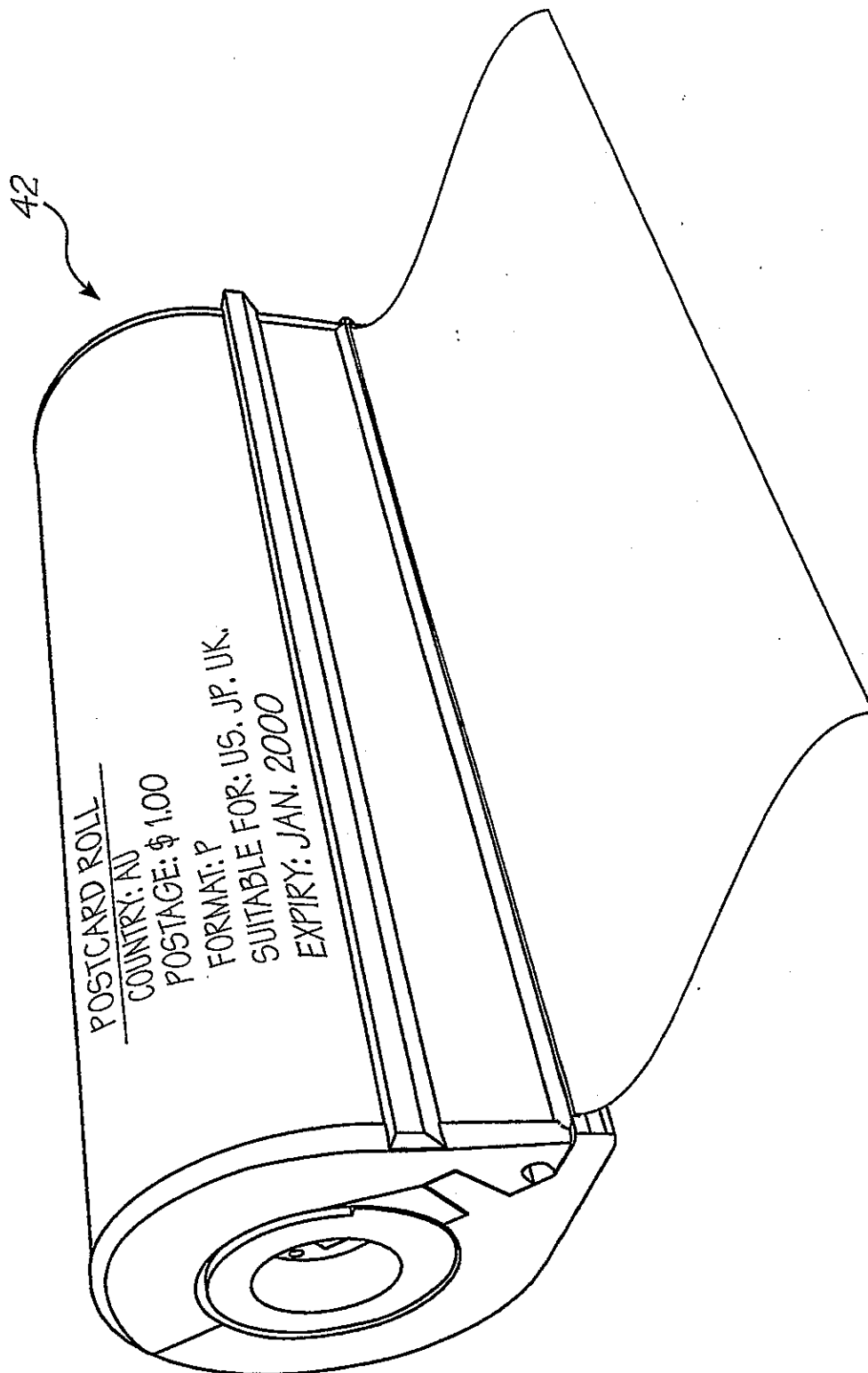


FIG. 220

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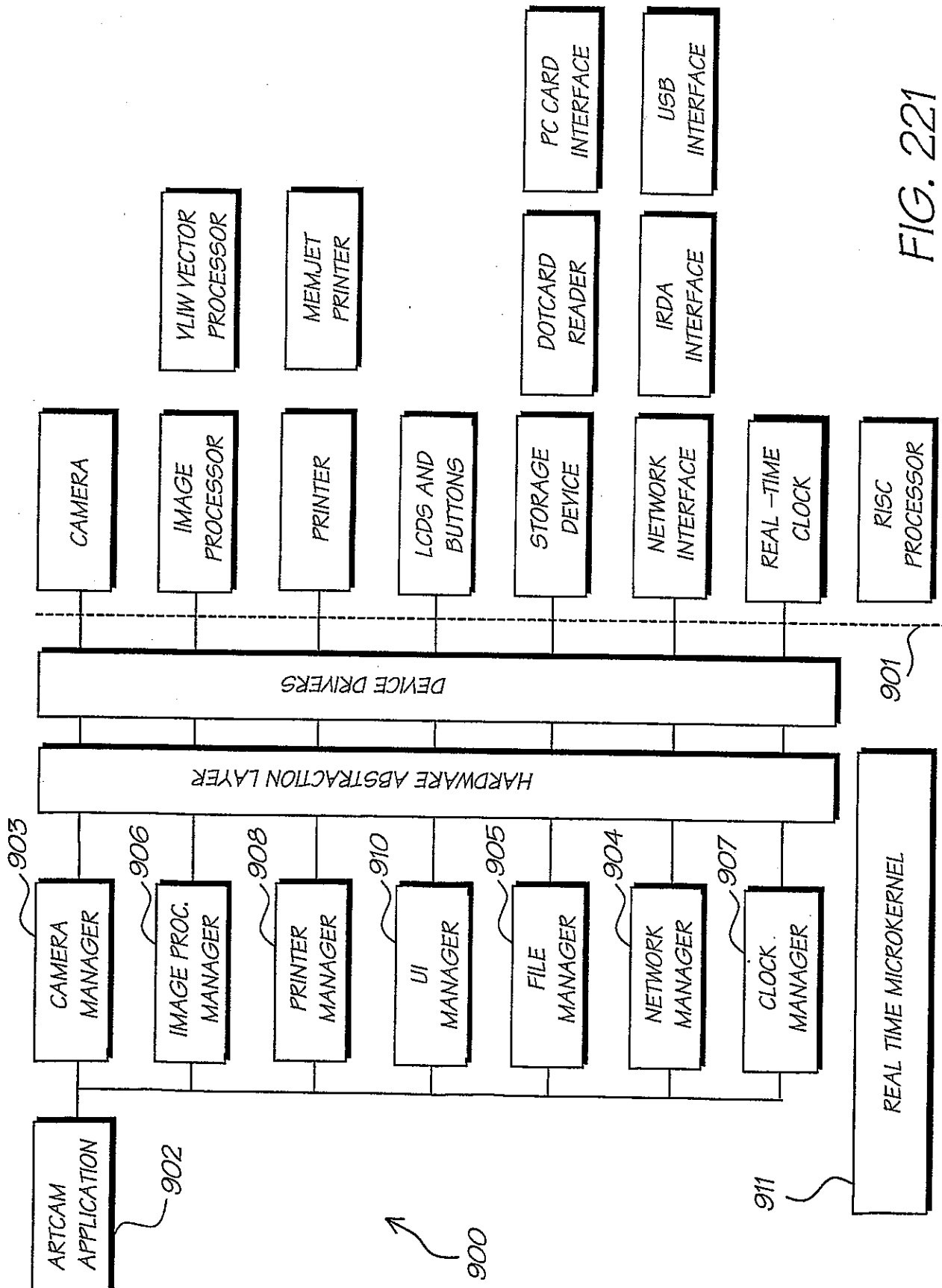


FIG. 221

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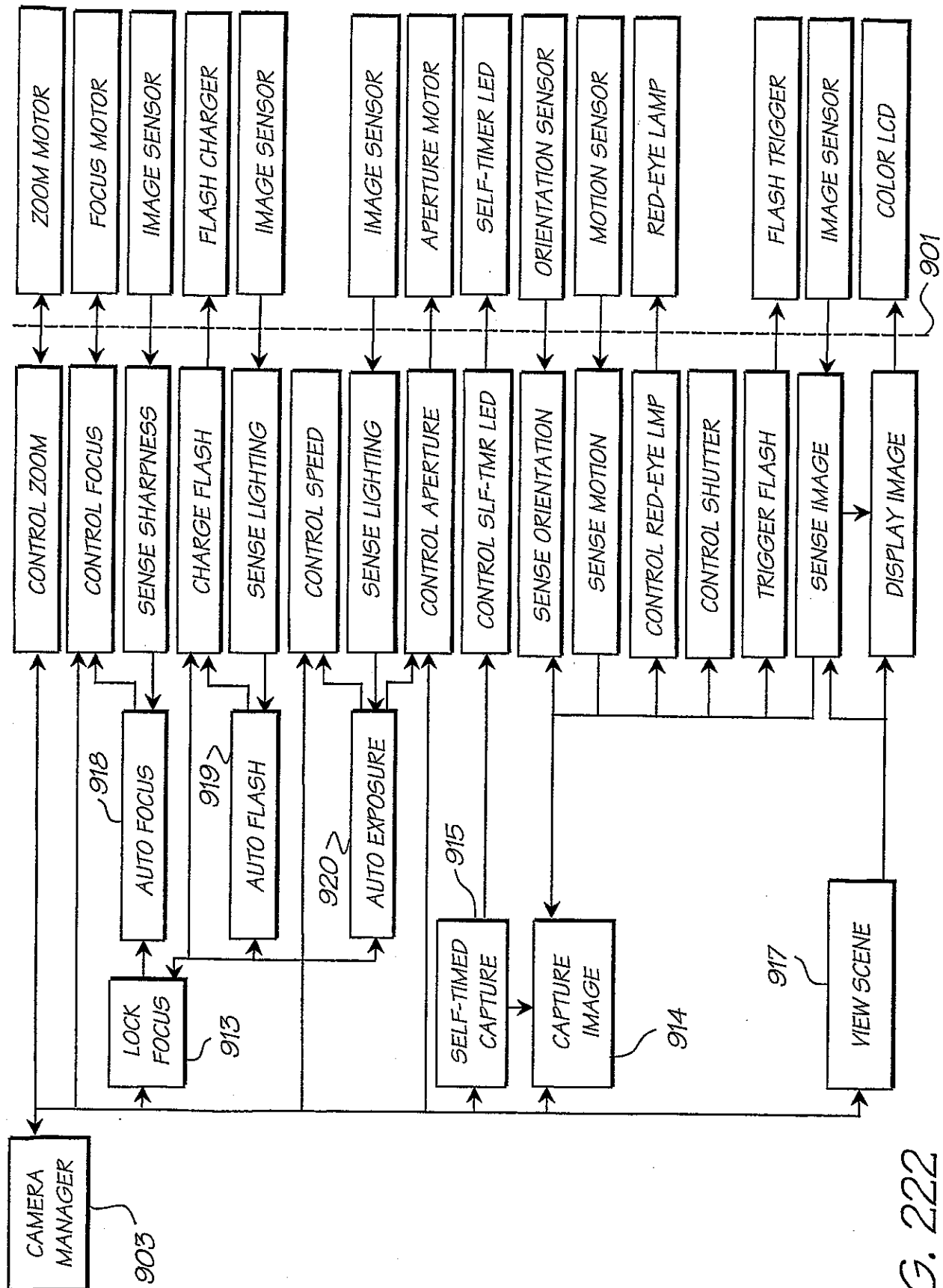


FIG. 222

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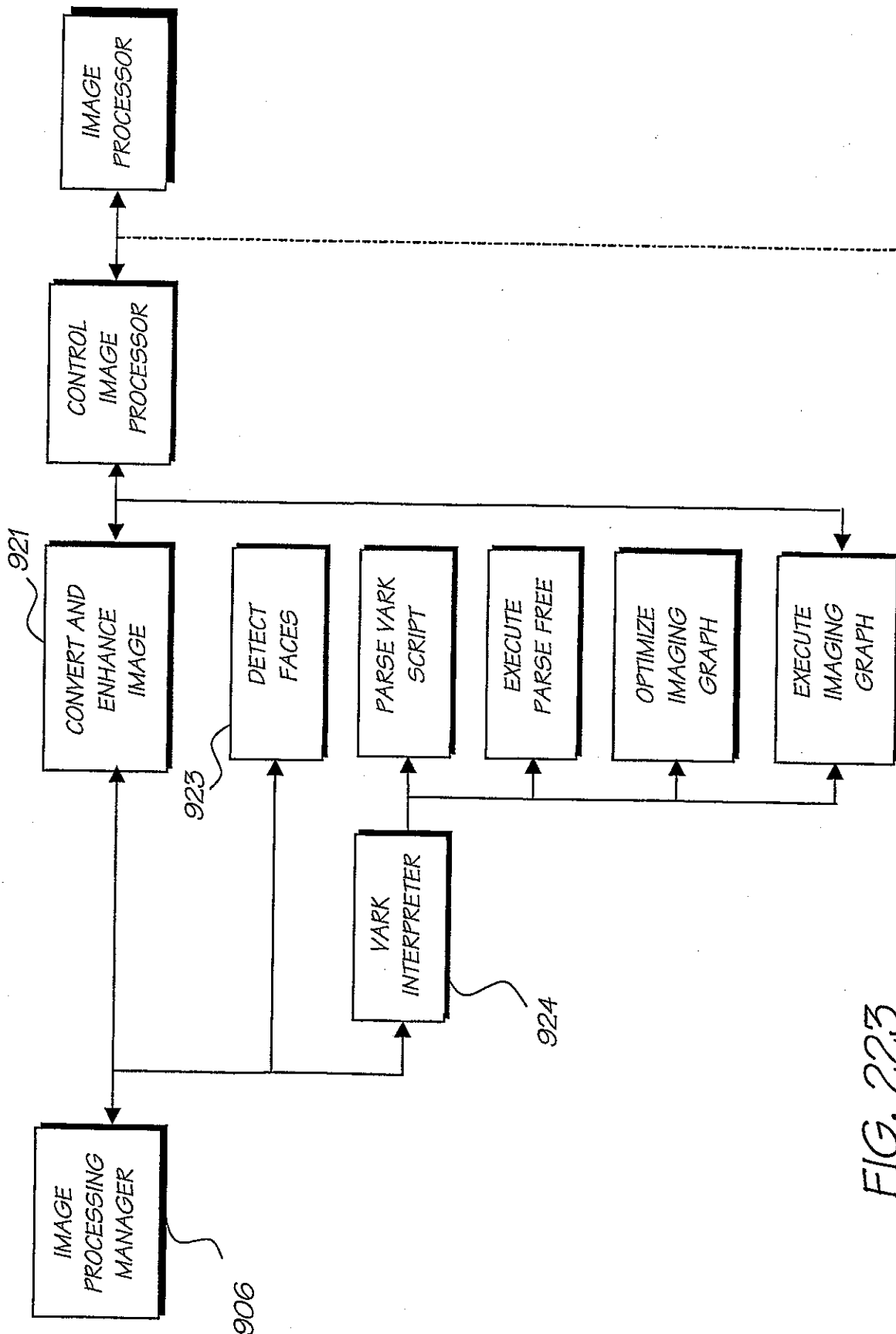


FIG. 223

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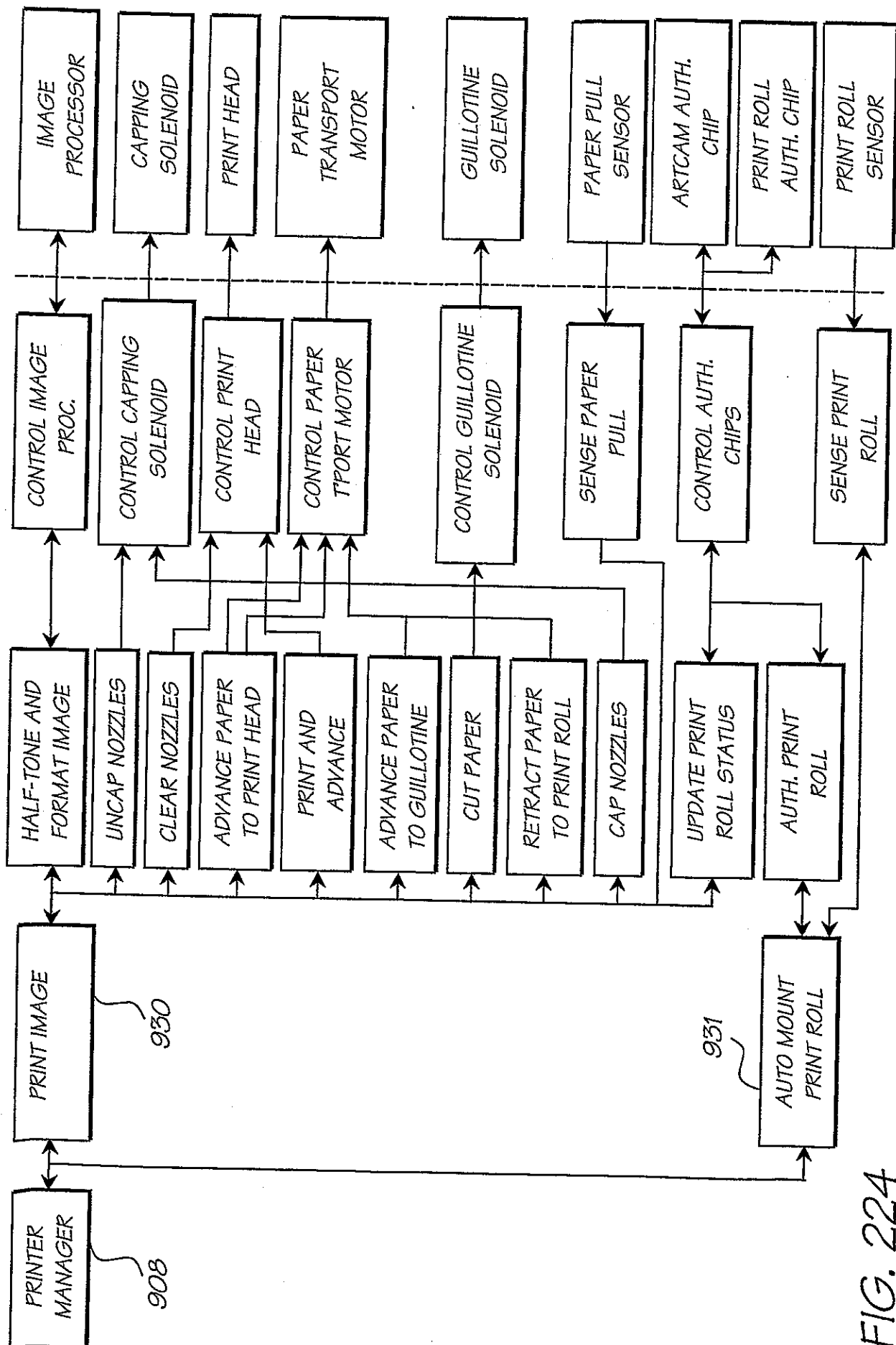


FIG. 224

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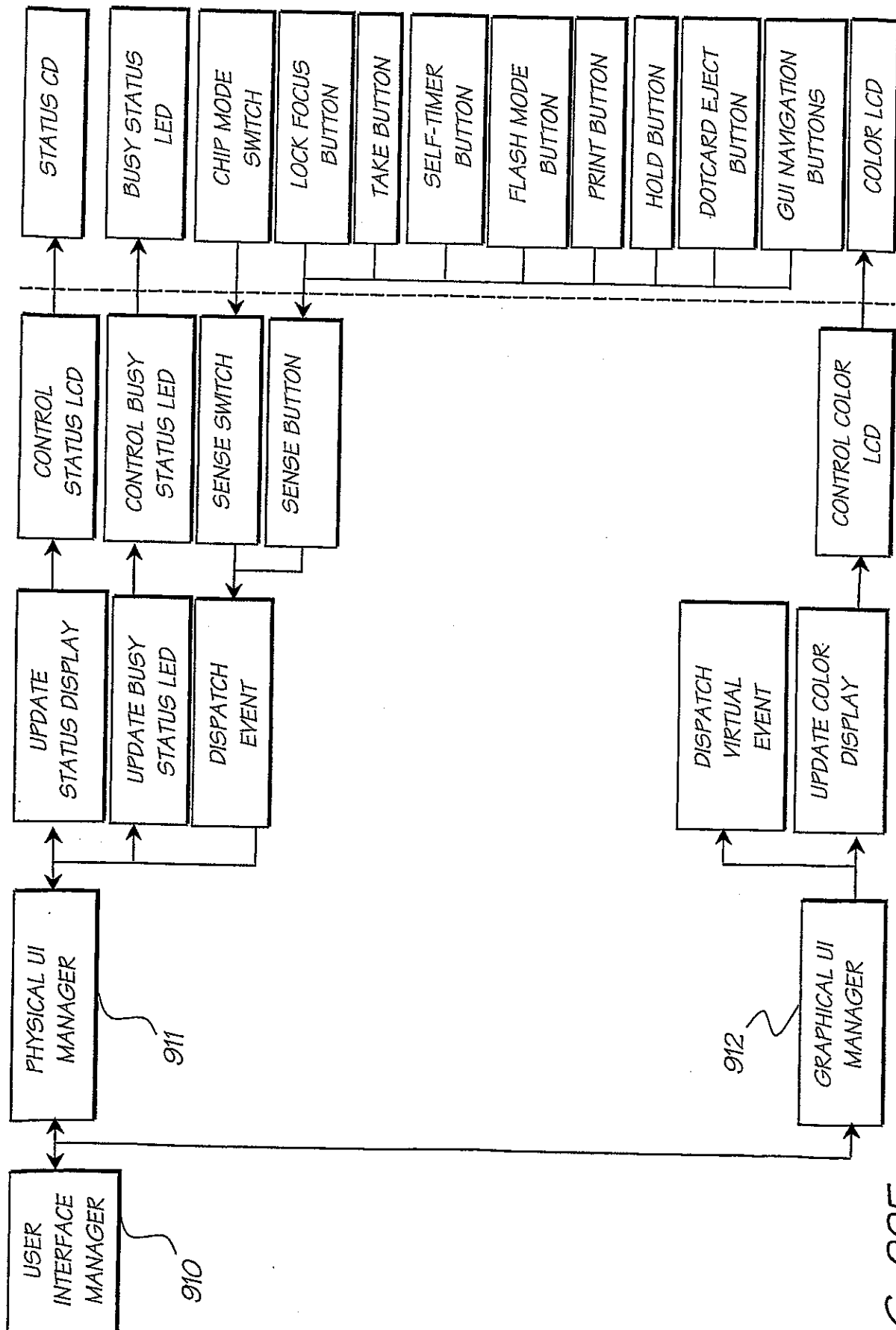


FIG. 225

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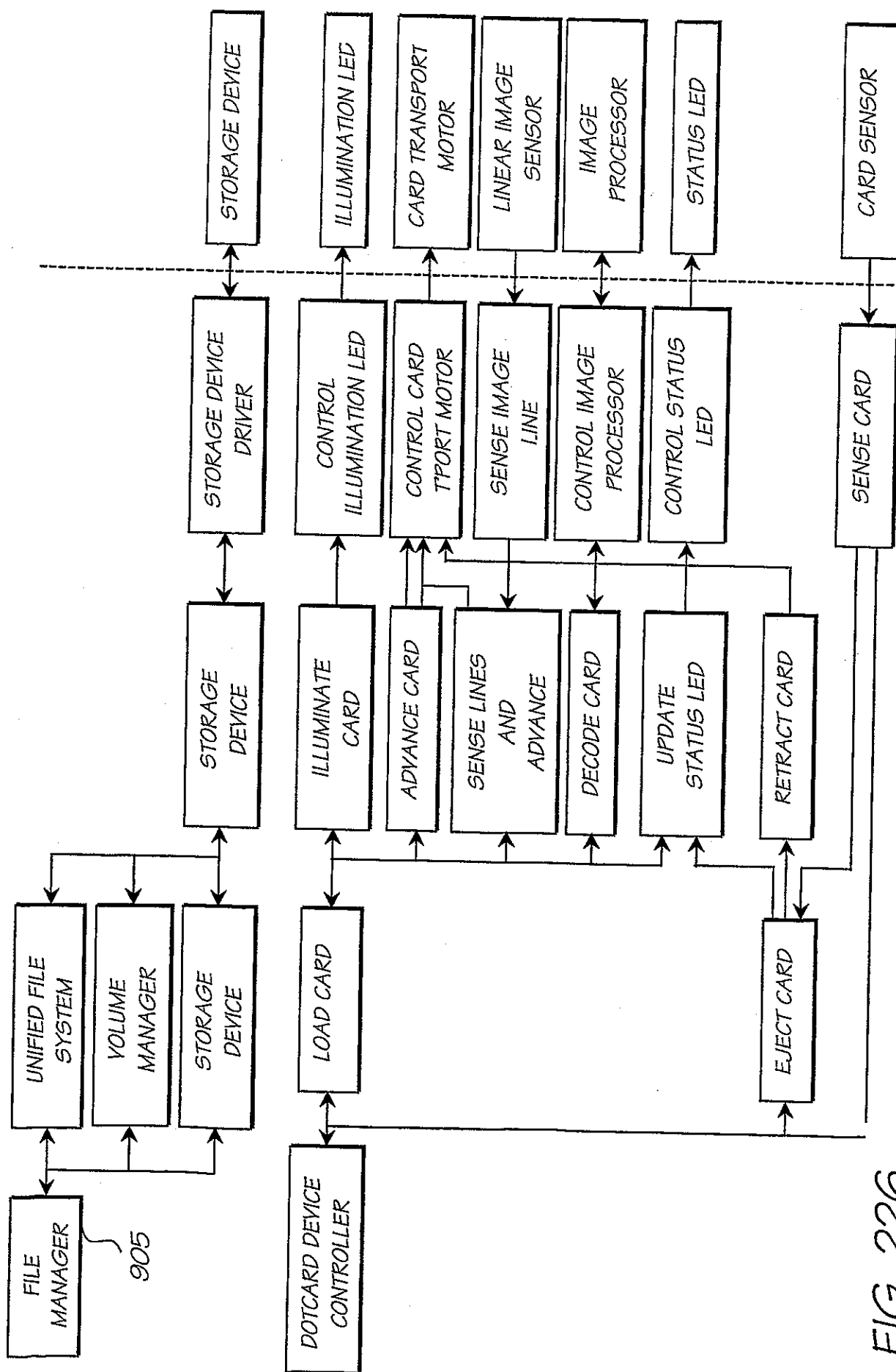


FIG. 226

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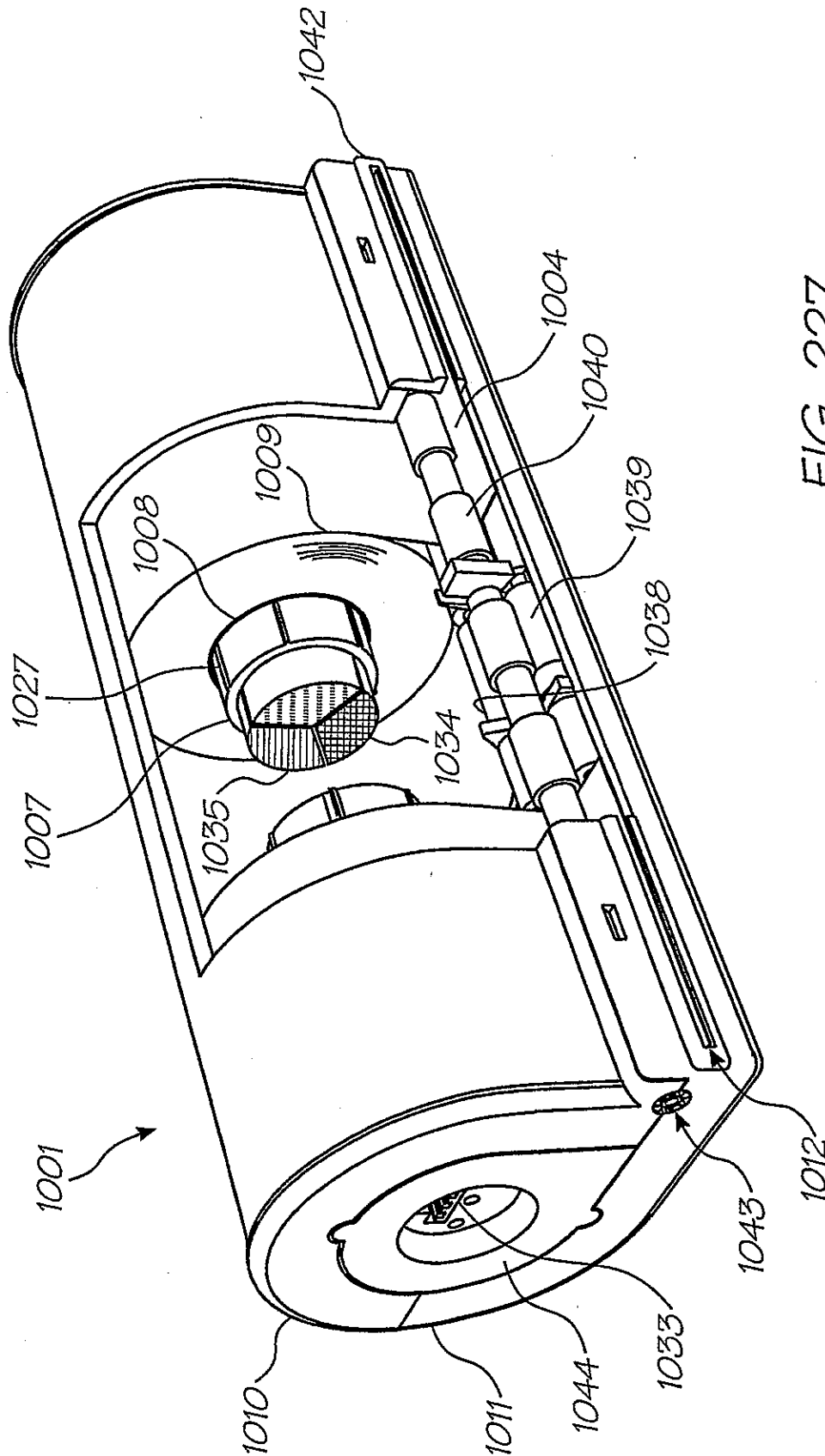


FIG. 227

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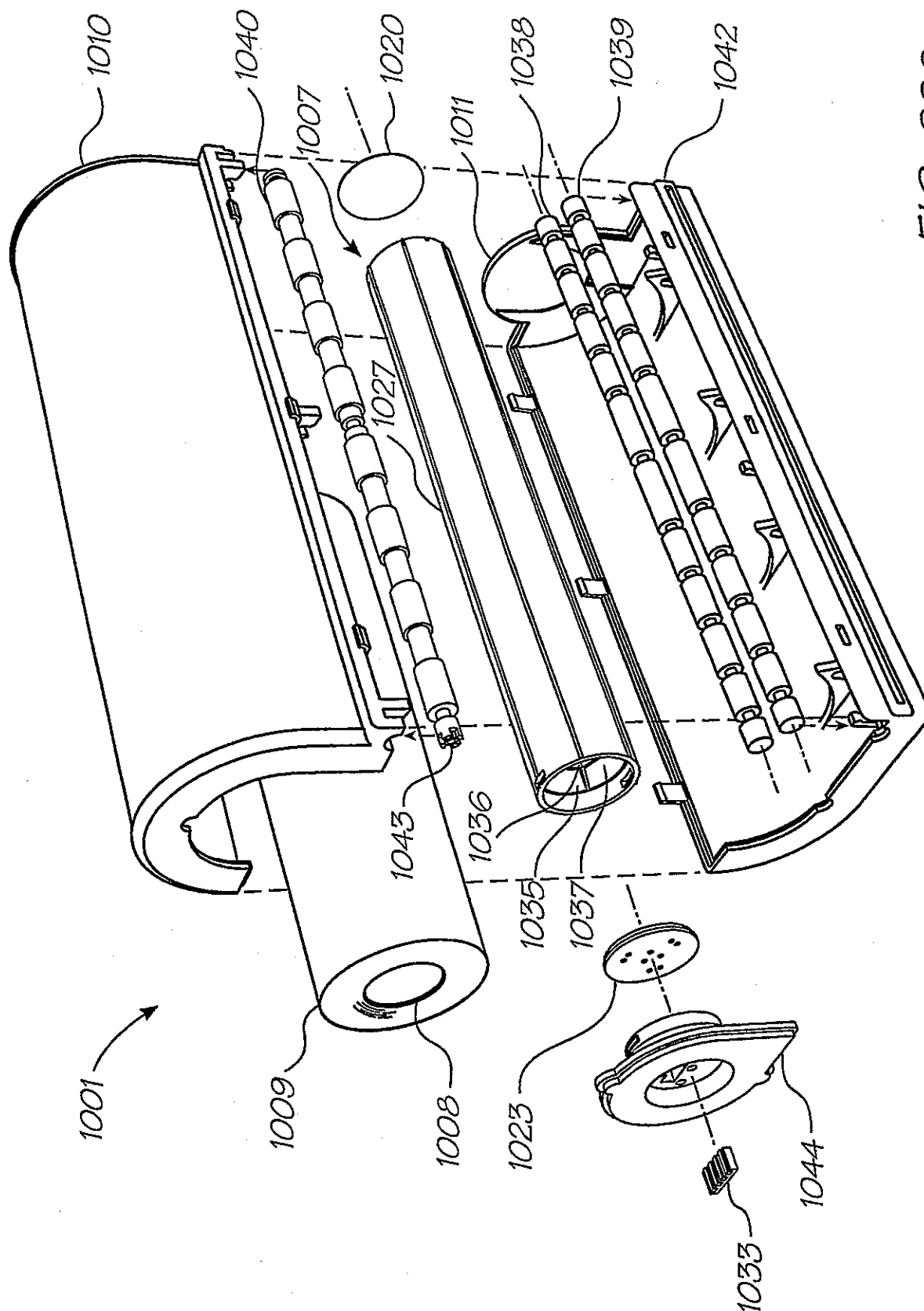
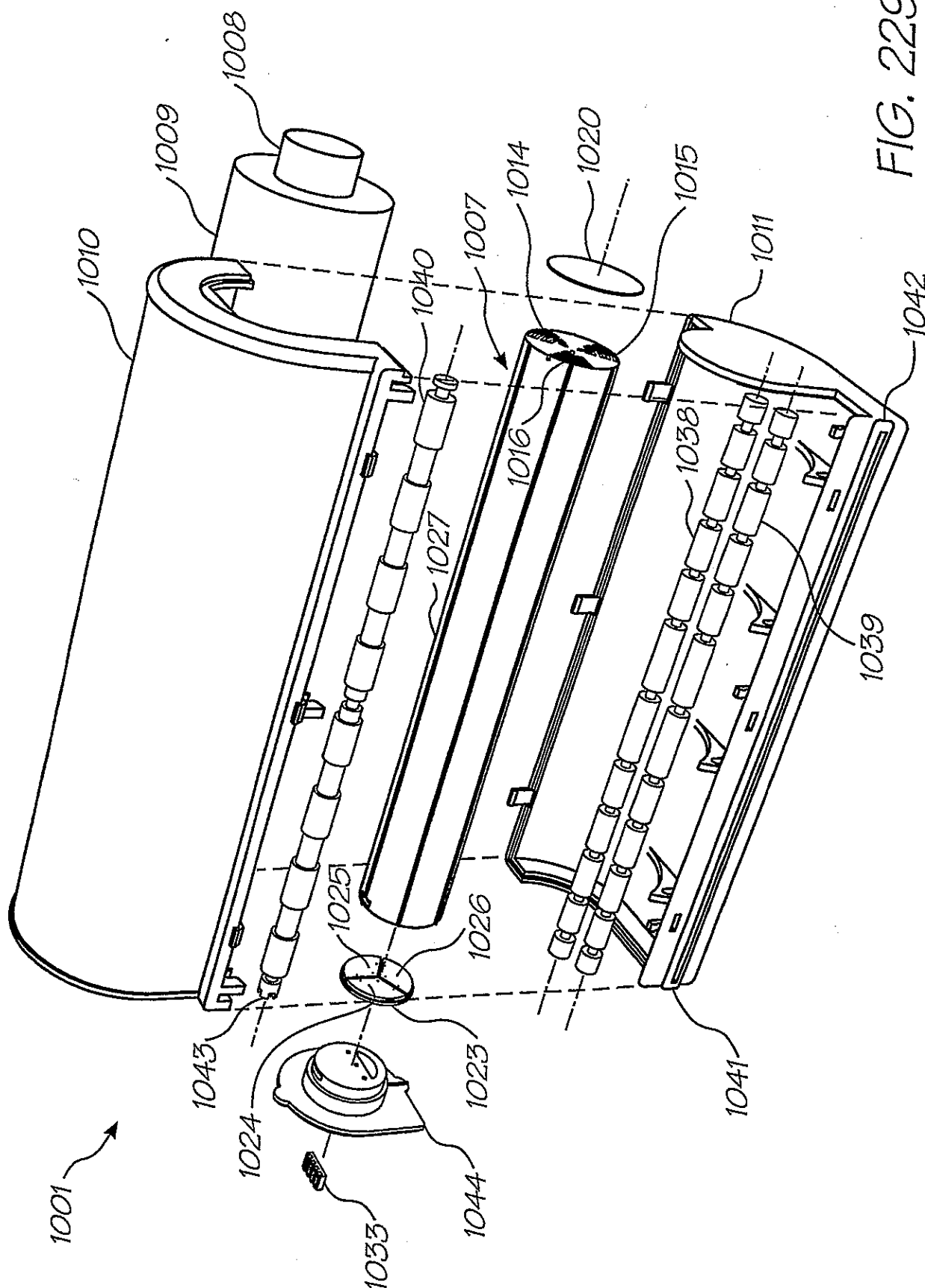


FIG. 228

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FIG. 229



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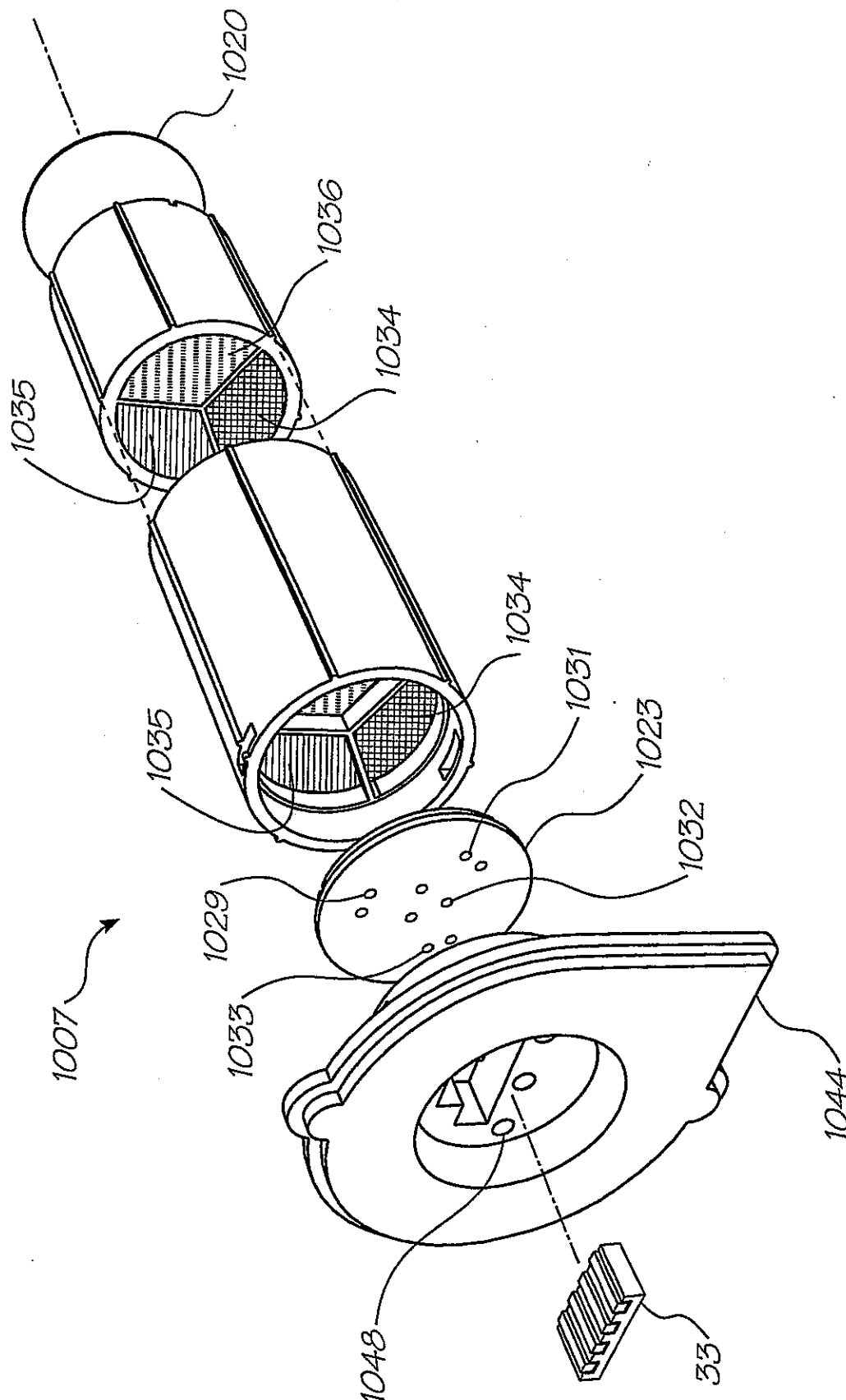


FIG. 230

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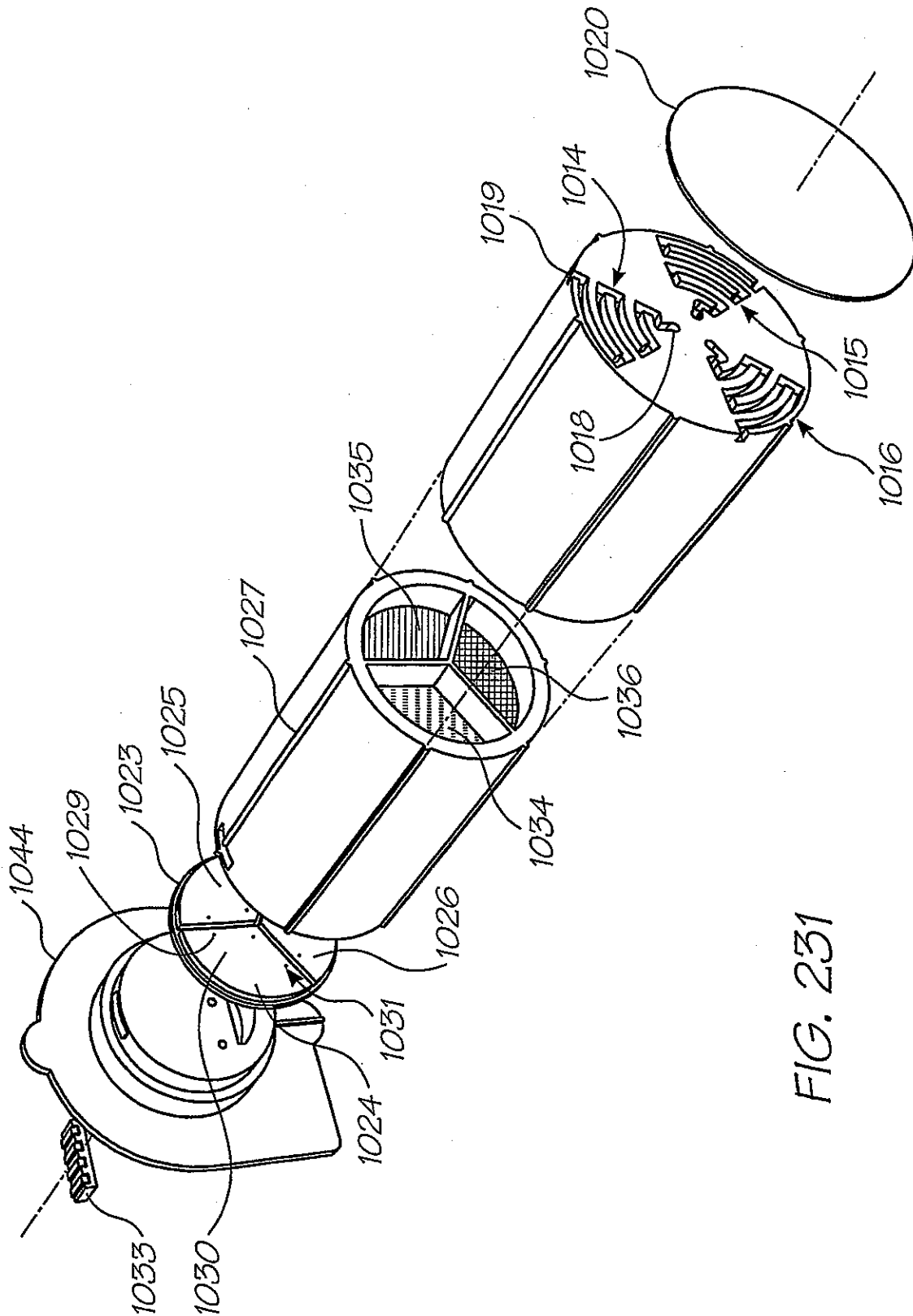


FIG. 231