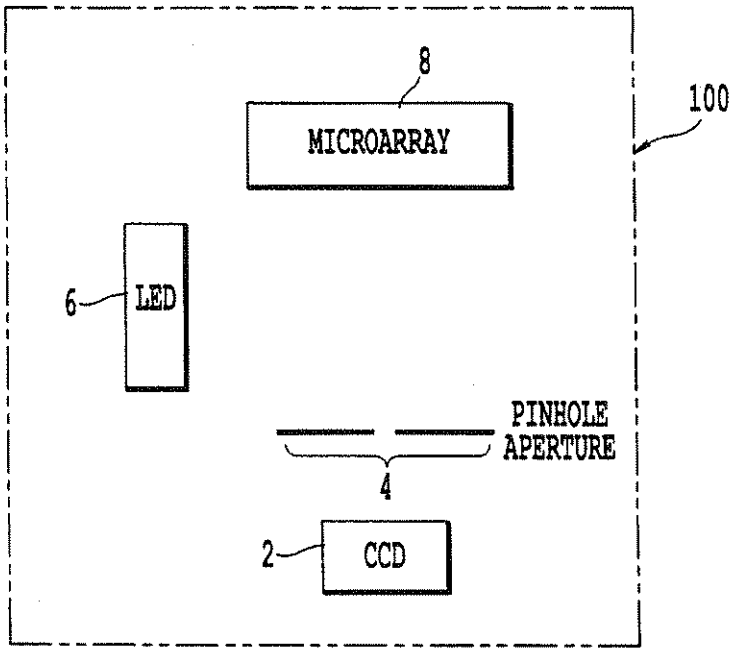

8
MICROARRAY
100
6
LED
PINHOLE
APERTURE
4
2
CCD

Fig.1

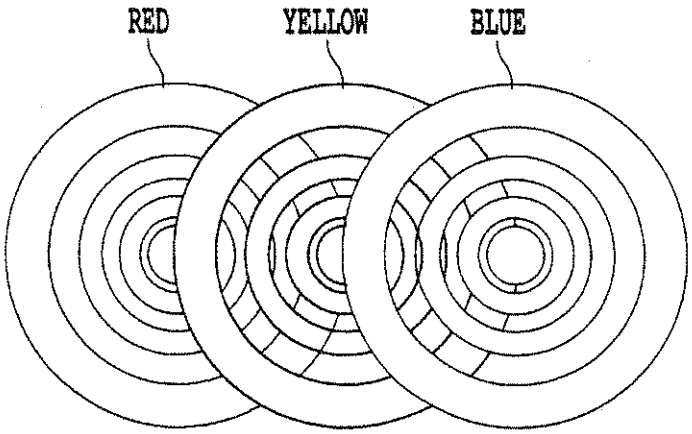

RED
YELLOW
BLUE

Fig.2

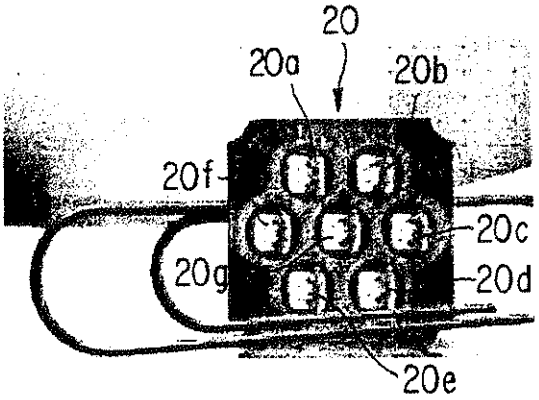


Fig.3

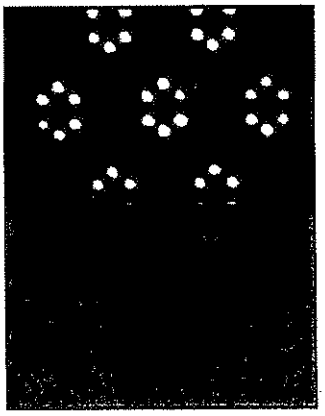


Fig.4

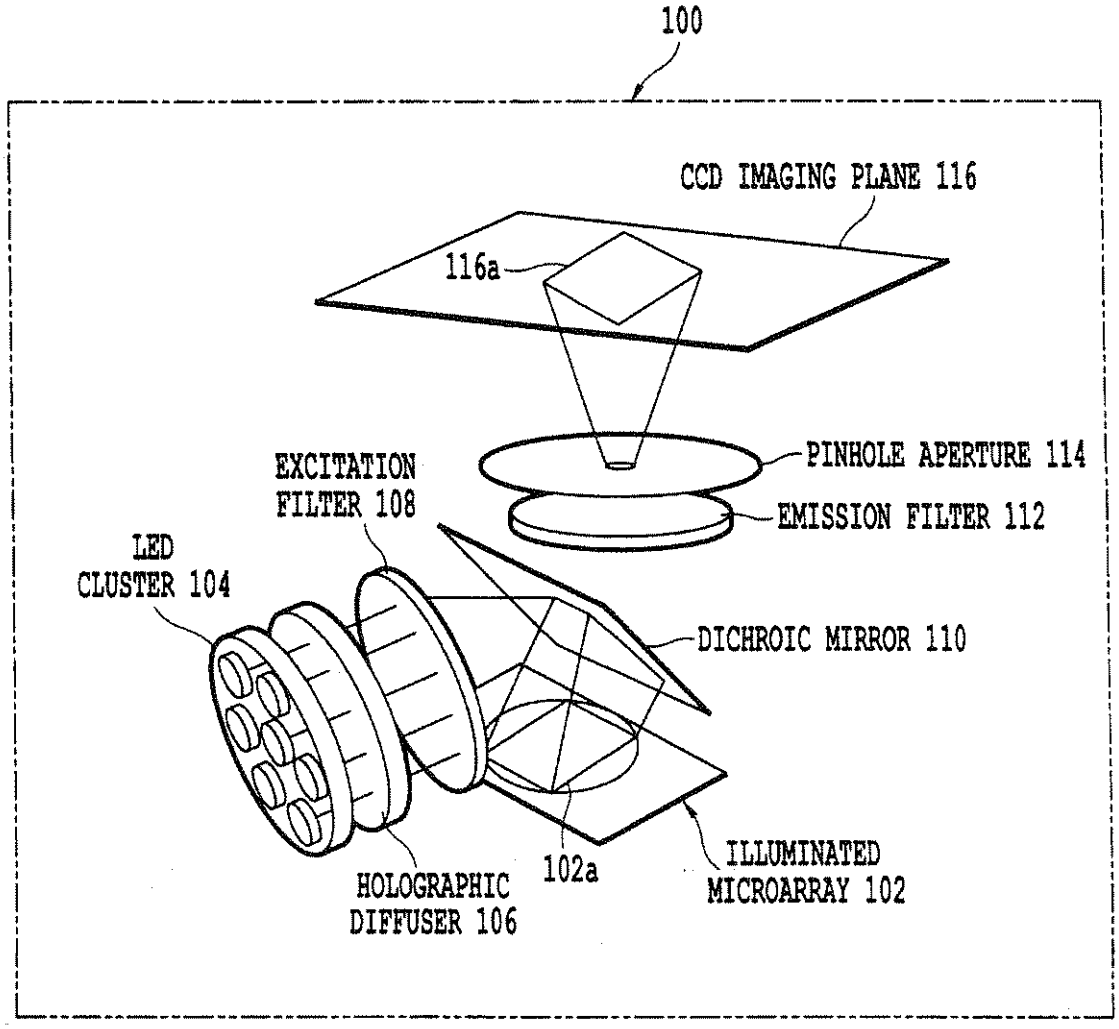

100
CCD IMAGING PLANE 116
116a
PINHOLE APERTURE 114
EMISSION FILTER 112
EXCITATION FILTER 108
LED CLUSTER 104
DICHROIC MIRROR 110
HOLOGRAPHIC DIFFUSER 106
102a
ILLUMINATED MICROARRAY 102

Fig. 5

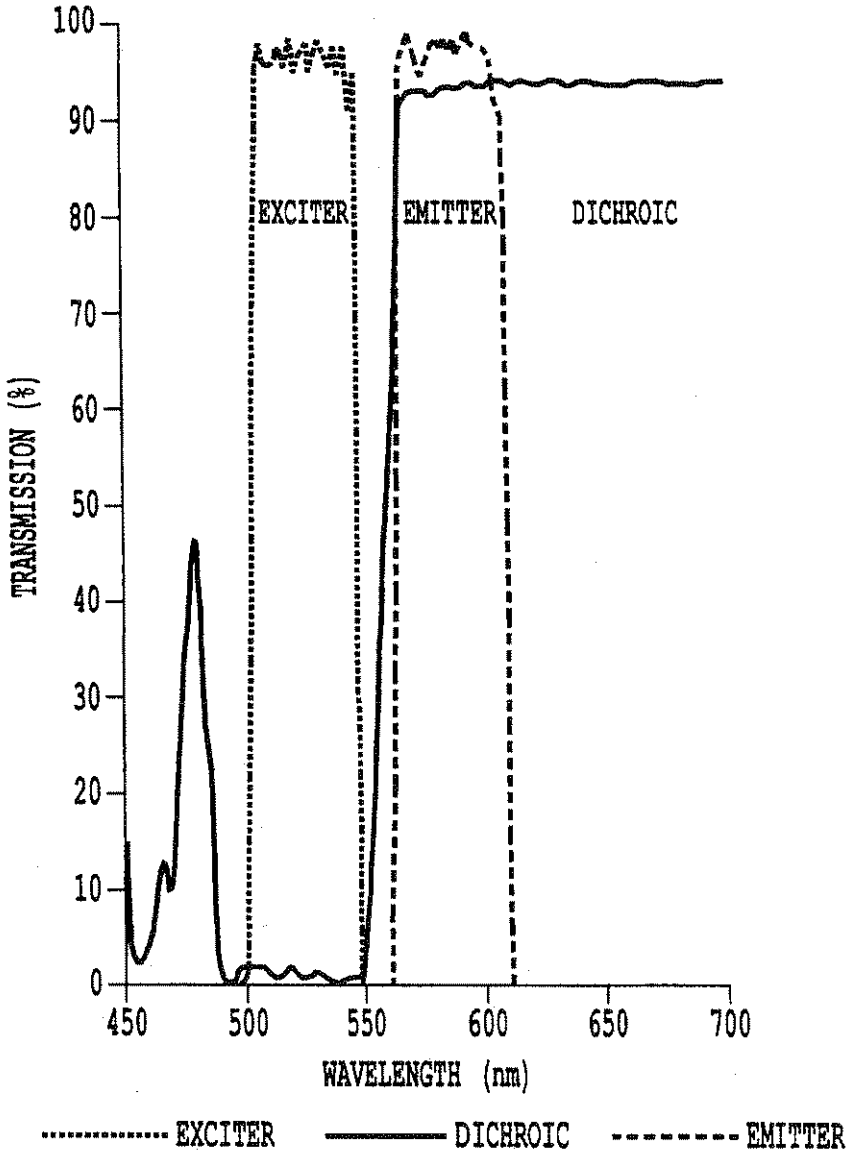

100
90
80
70
60
50
40
30
20
10
0
TRANSMISSION (%)
EXCITER
EMITTER
DICHROIC
450
500
550
600
650
700
WAVELENGTH (nm)
EXCITER
DICHROIC
EMITTER

Fig. 6

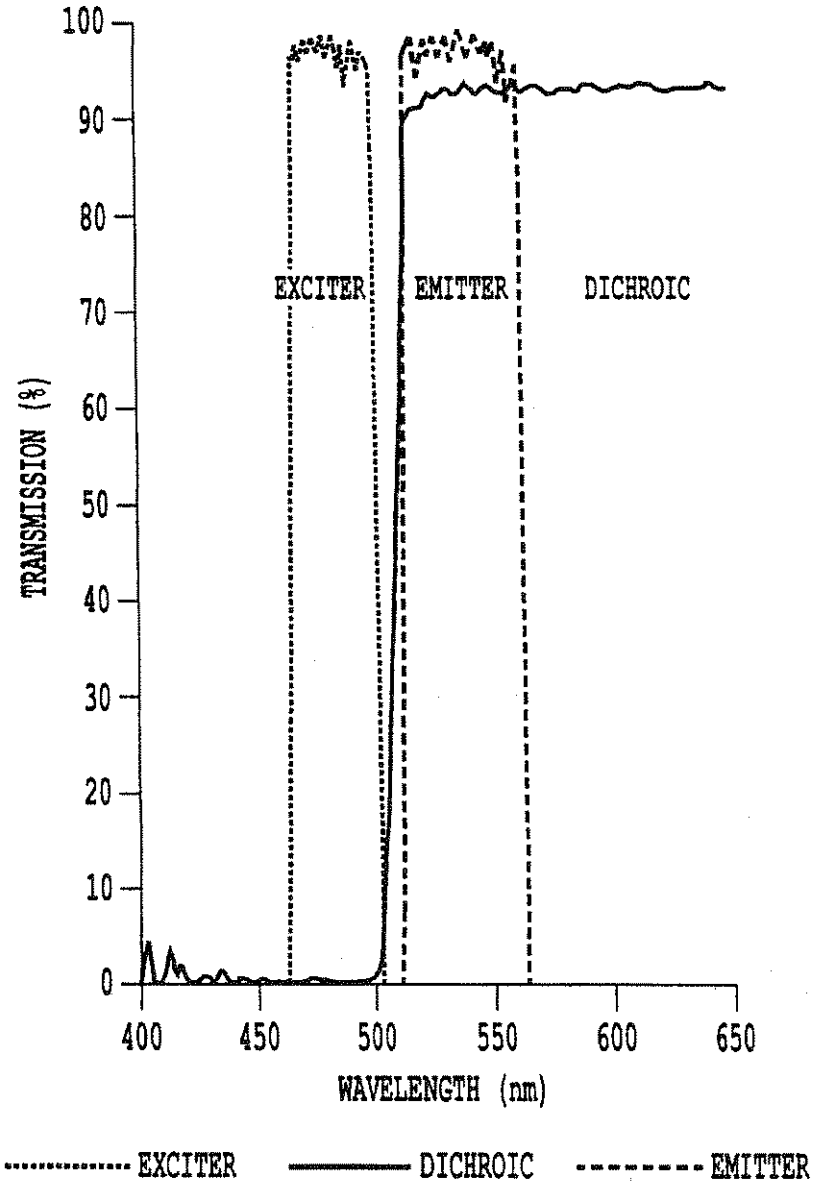

100
90
80
70
60
50
40
30
20
10
0
TRANSMISSION (%)
EXCITER
EMITTER
DICHROIC
400
450
500
550
600
650
WAVELENGTH (nm)
EXCITER
DICHROIC
EMITTER

Fig. 7

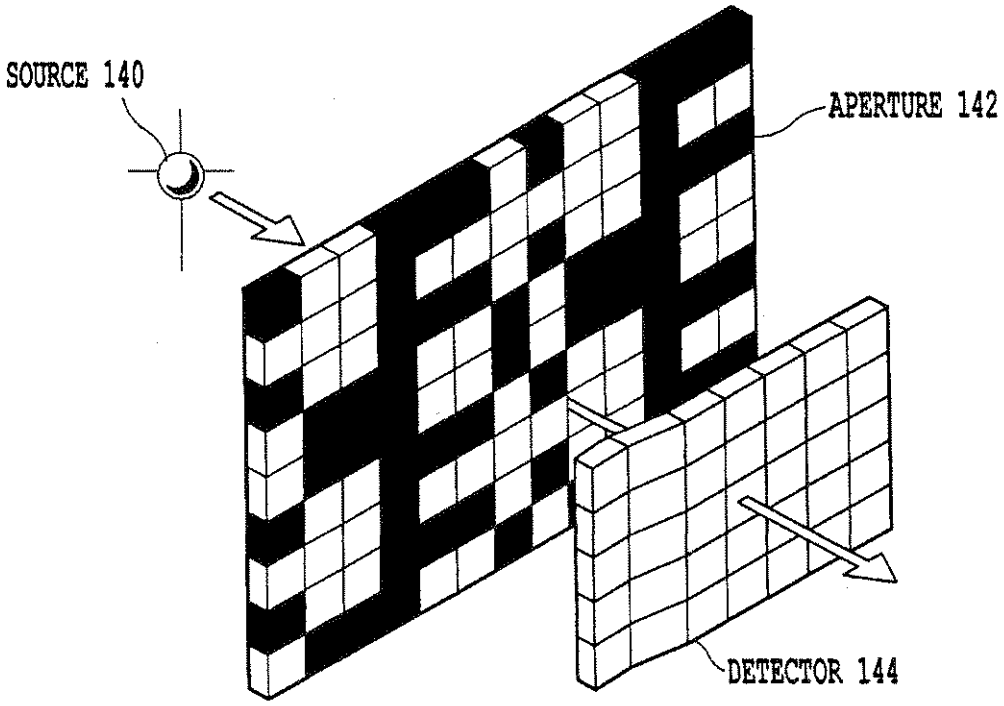


Fig. 8

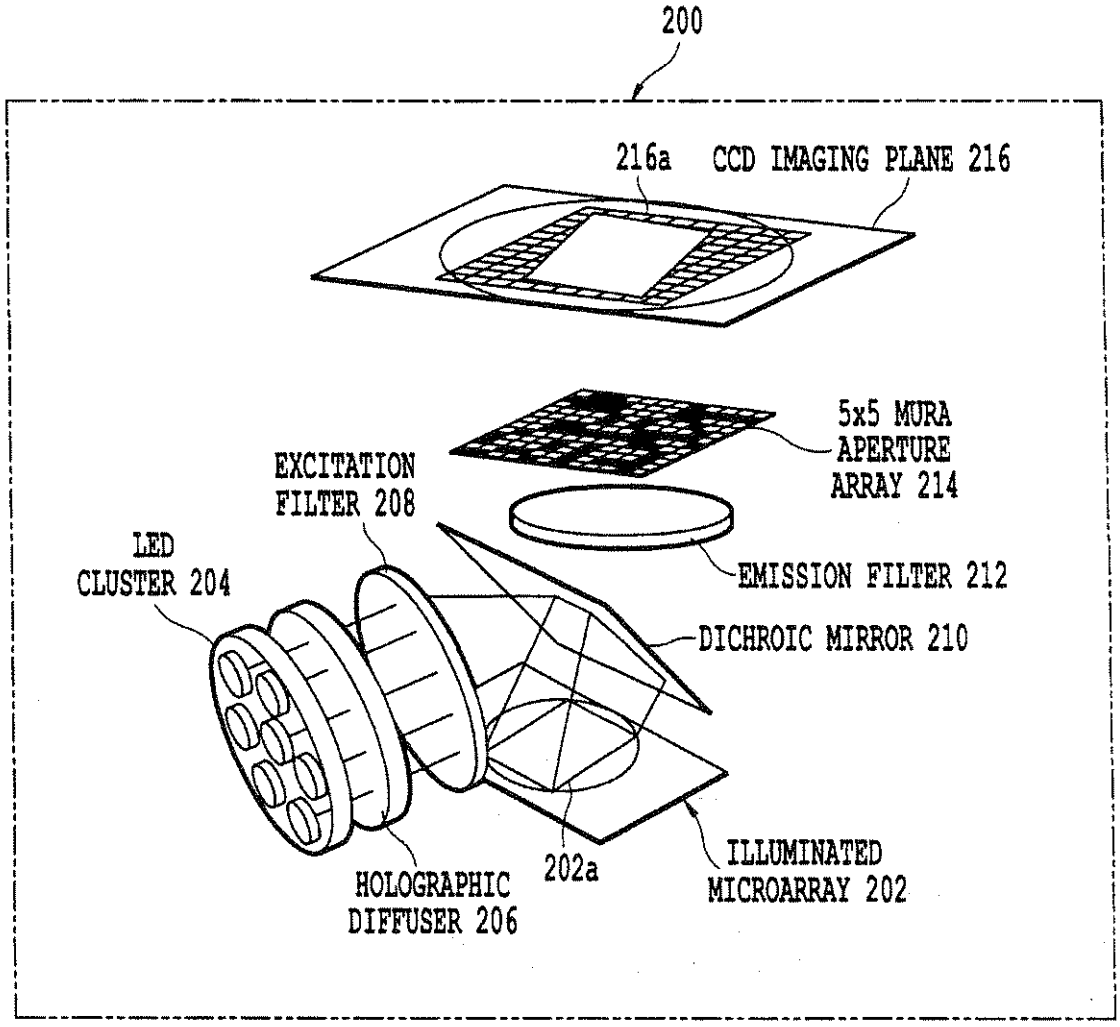

200
216a
CCD IMAGING PLANE 216
5x5 MURA
APERTURE
ARRAY 214
EXCITATION
FILTER 208
LED
CLUSTER 204
EMISSION FILTER 212
DICHROIC MIRROR 210
ILLUMINATED
MICROARRAY 202
202a
HOLOGRAPHIC
DIFFUSER 206

Fig. 9

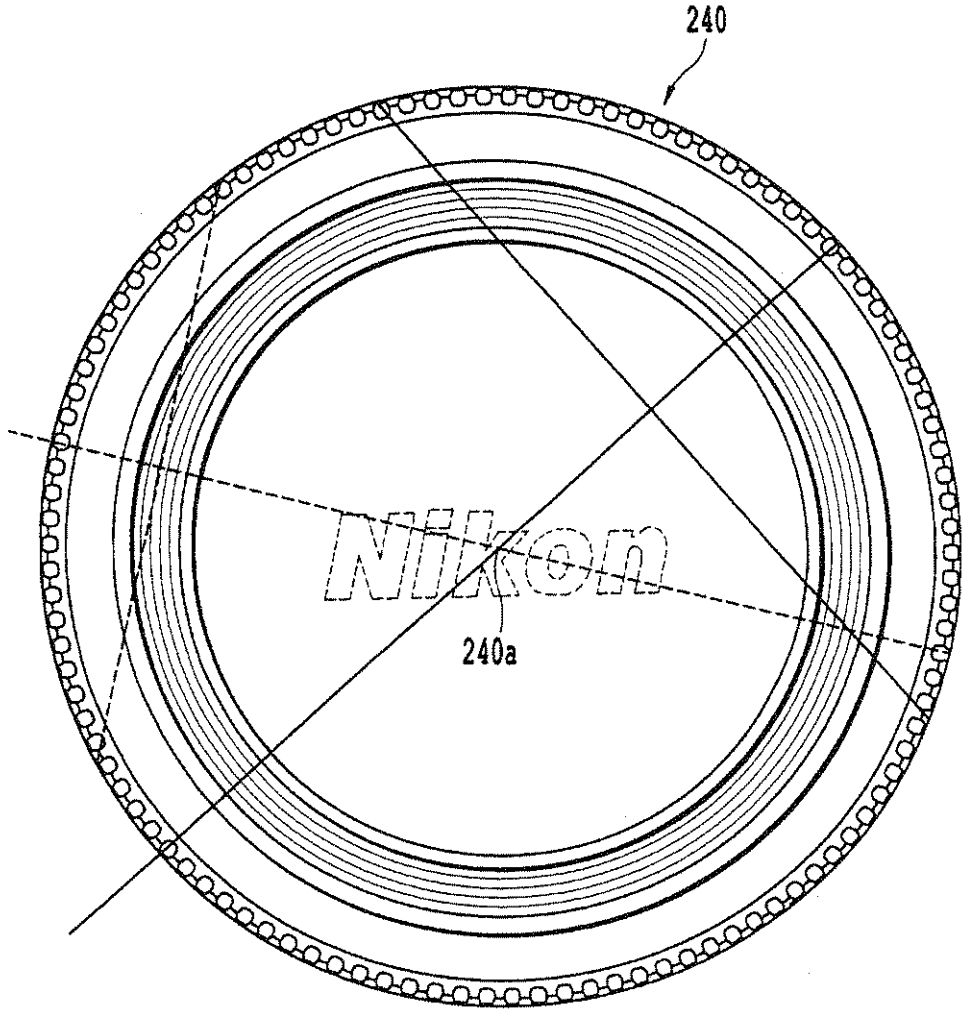


Fig. 10

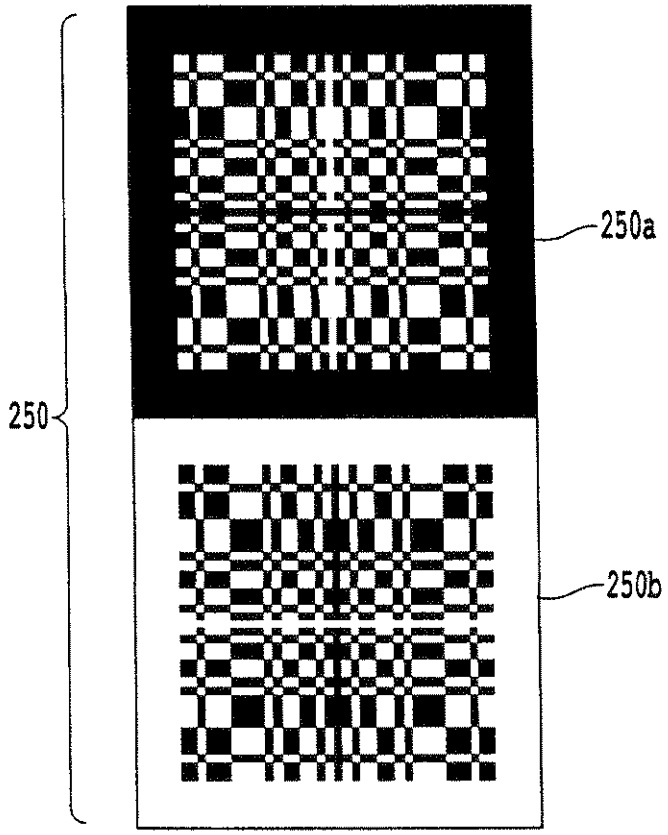


Fig.11

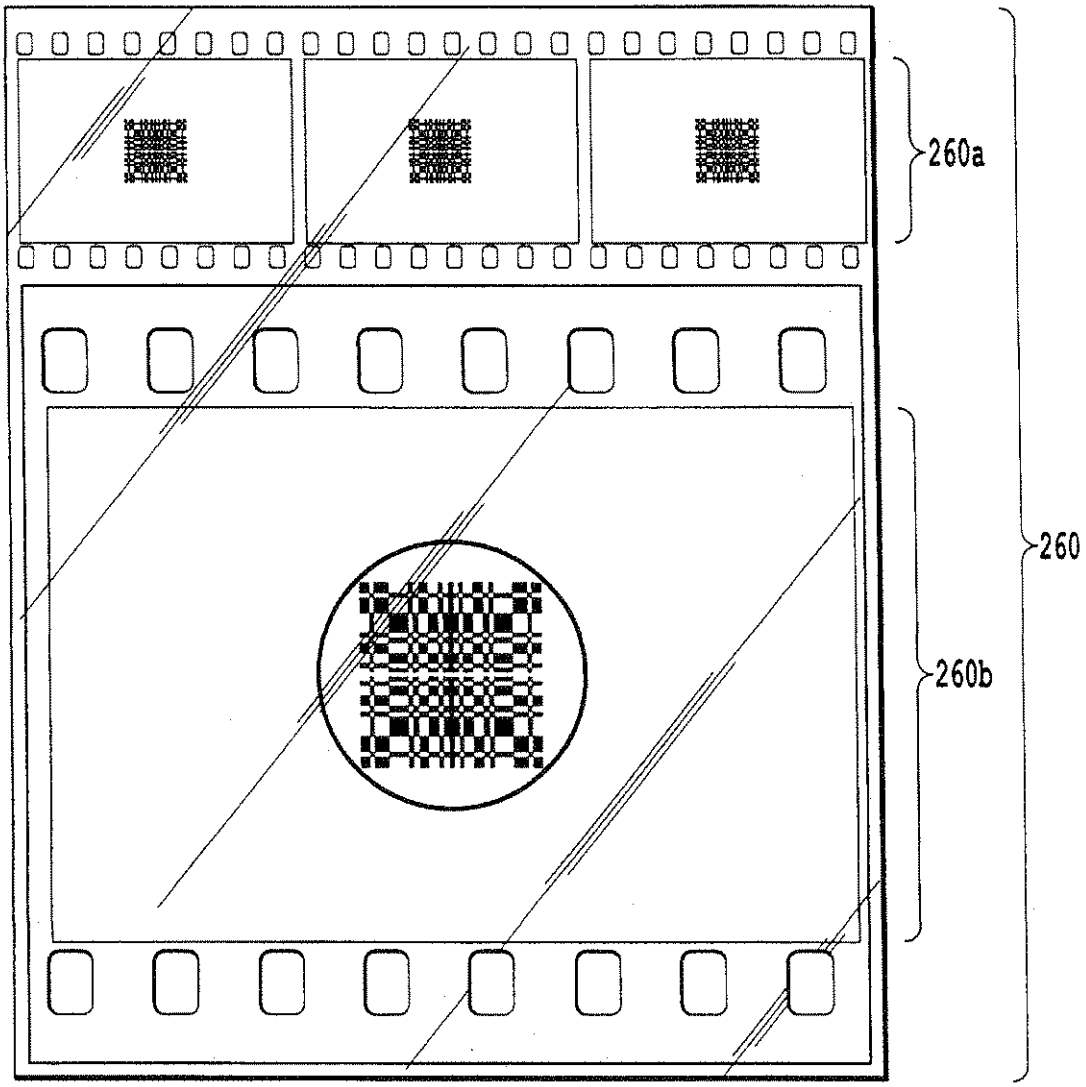


Fig.12

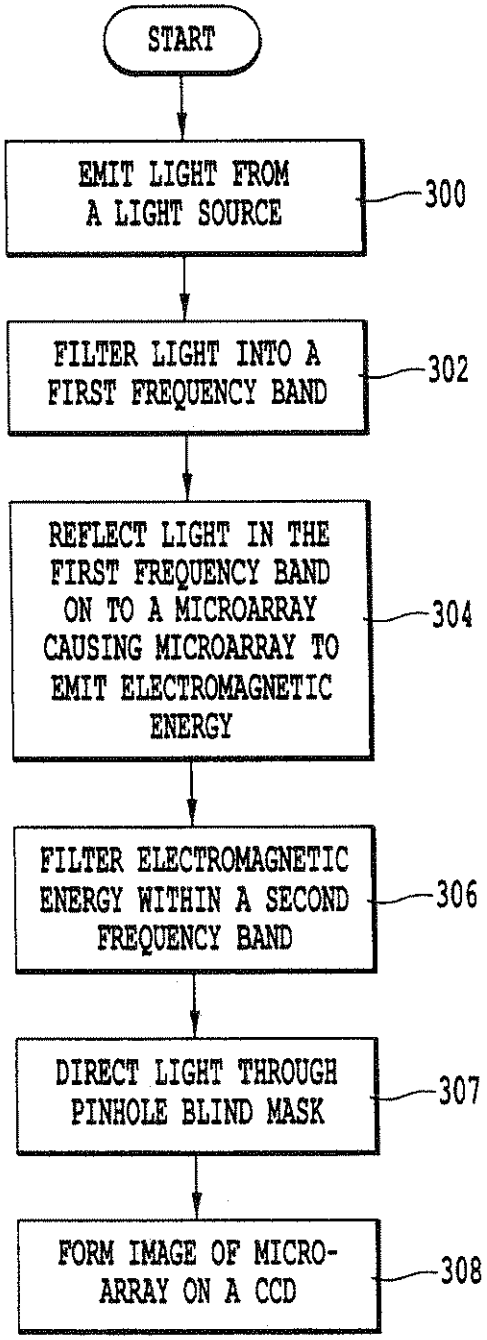

START
EMIT LIGHT FROM A LIGHT SOURCE
300
FILTER LIGHT INTO A FIRST FREQUENCY BAND
302
REFLECT LIGHT IN THE FIRST FREQUENCY BAND ON TO A MICROARRAY CAUSING MICROARRAY TO EMIT ELECTROMAGNETIC ENERGY
304
FILTER ELECTROMAGNETIC ENERGY WITHIN A SECOND FREQUENCY BAND
306
DIRECT LIGHT THROUGH PINHOLE BLIND MASK
307
FORM IMAGE OF MICRO-ARRAY ON A CCD
308

Fig. 13