FIG. 1

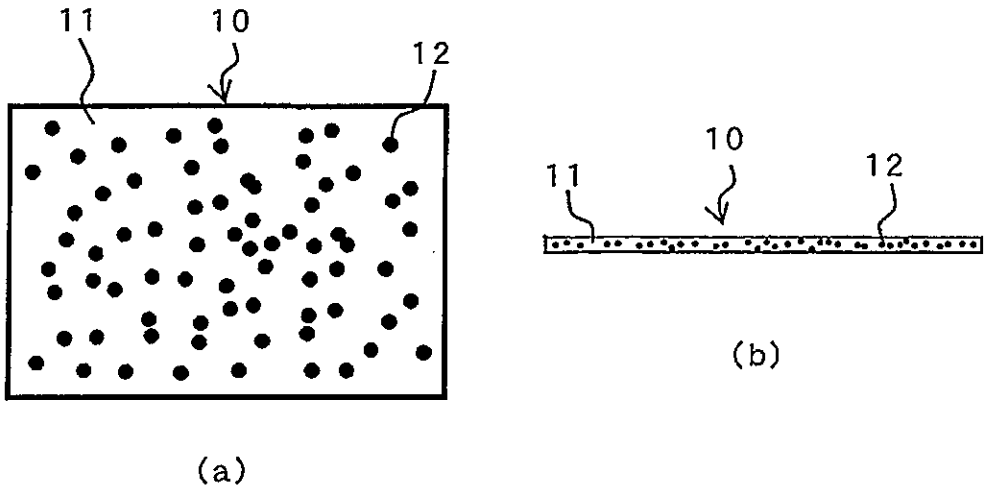


FIG. 2

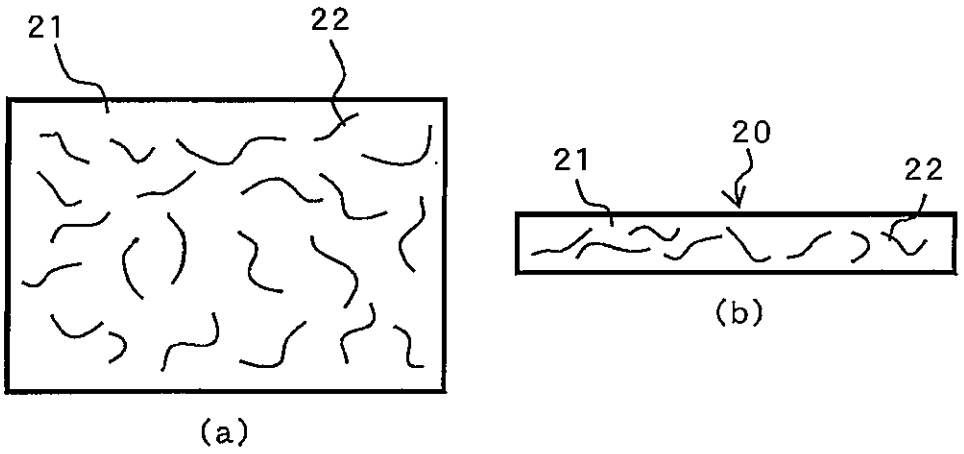


FIG. 3

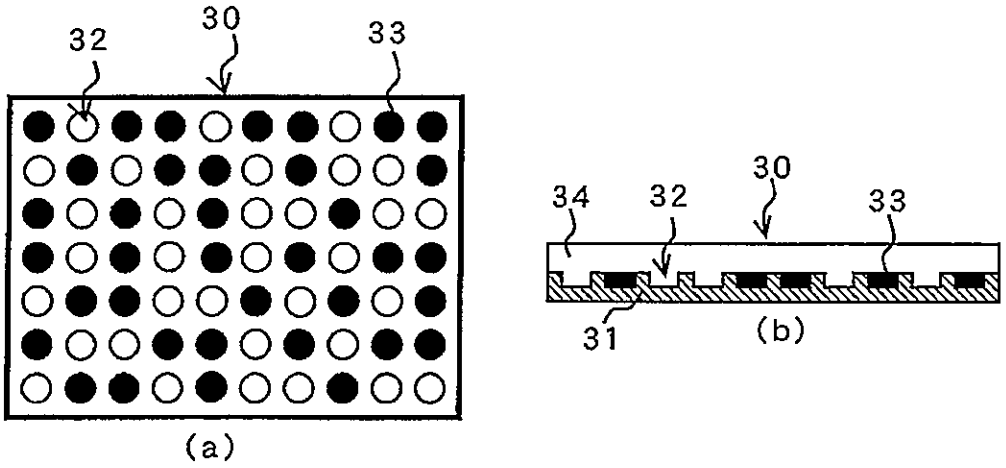


FIG. 4

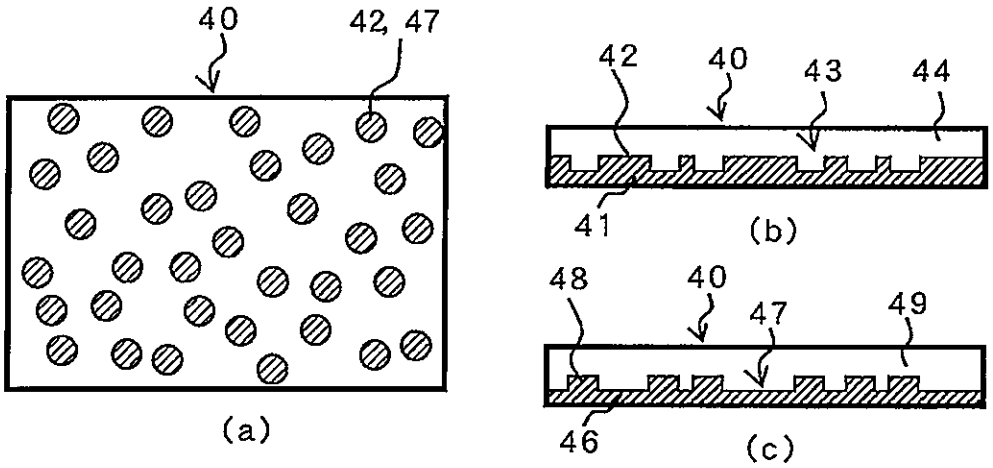


FIG. 5

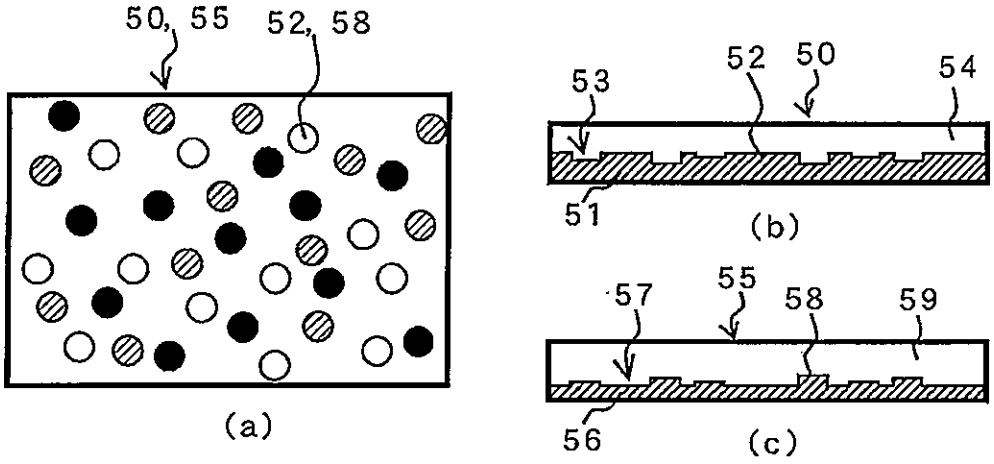


FIG. 6

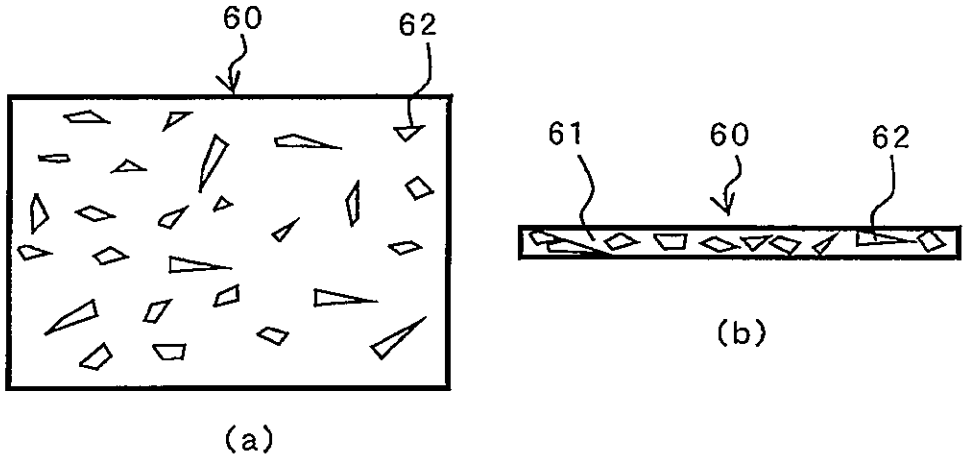


FIG. 7

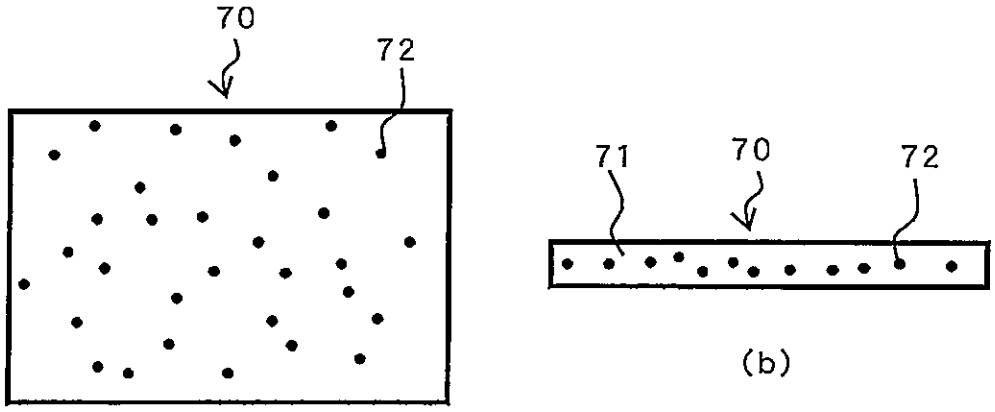


FIG. 8

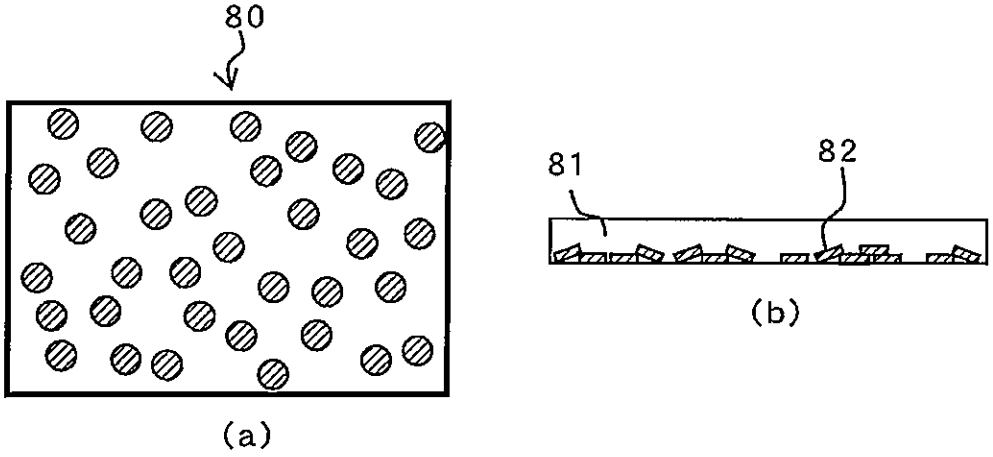


FIG. 9

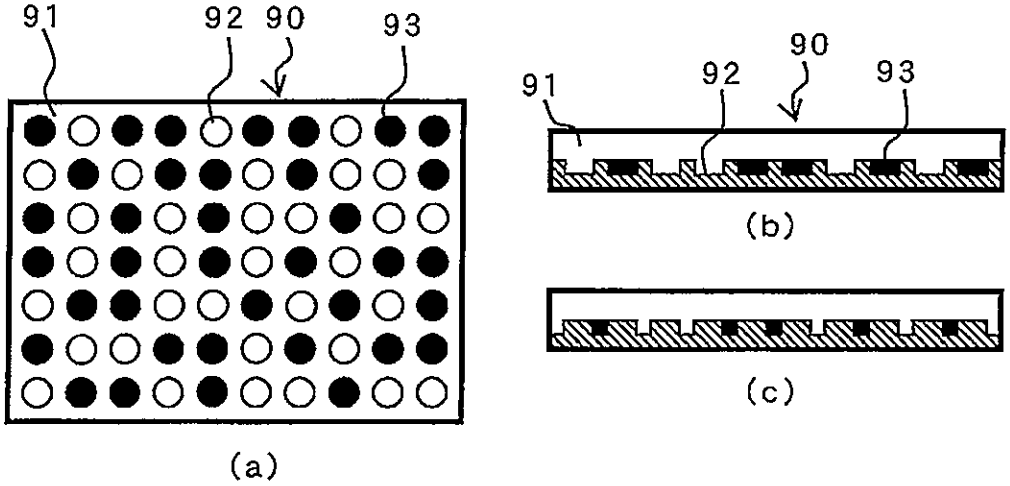


FIG. 10

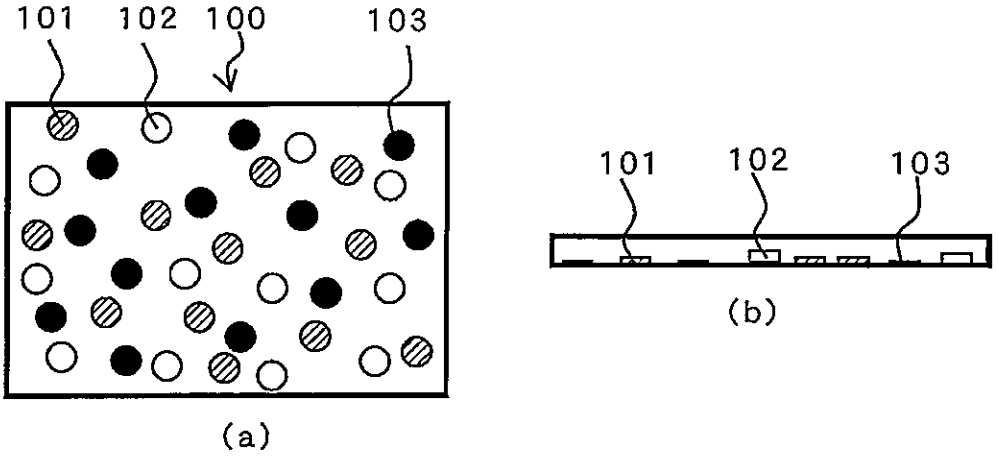
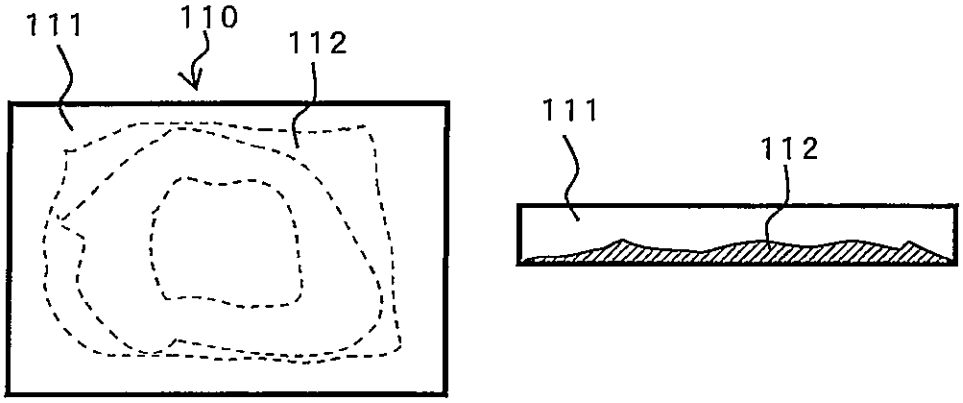
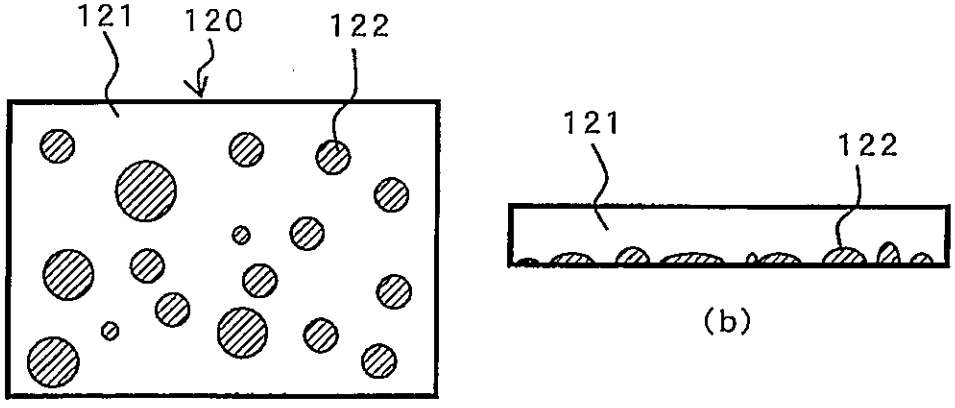


FIG.11



(a)

FIG.12



(b)

(a)

FIG.13

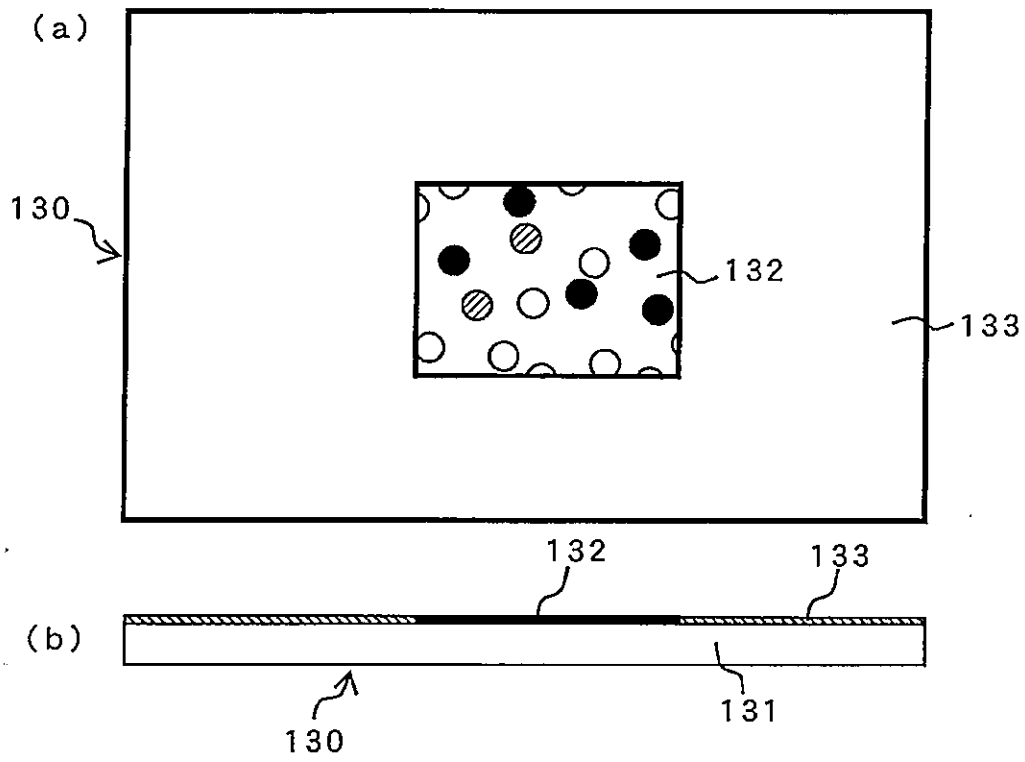


FIG.14

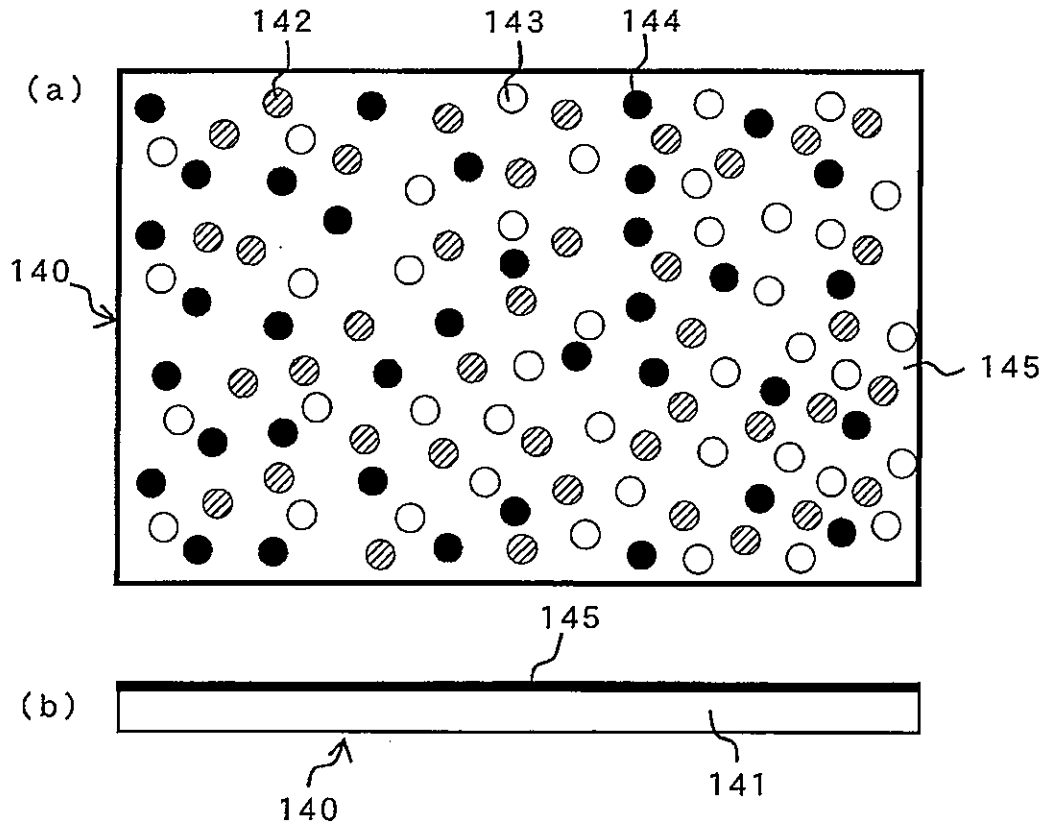


FIG.15

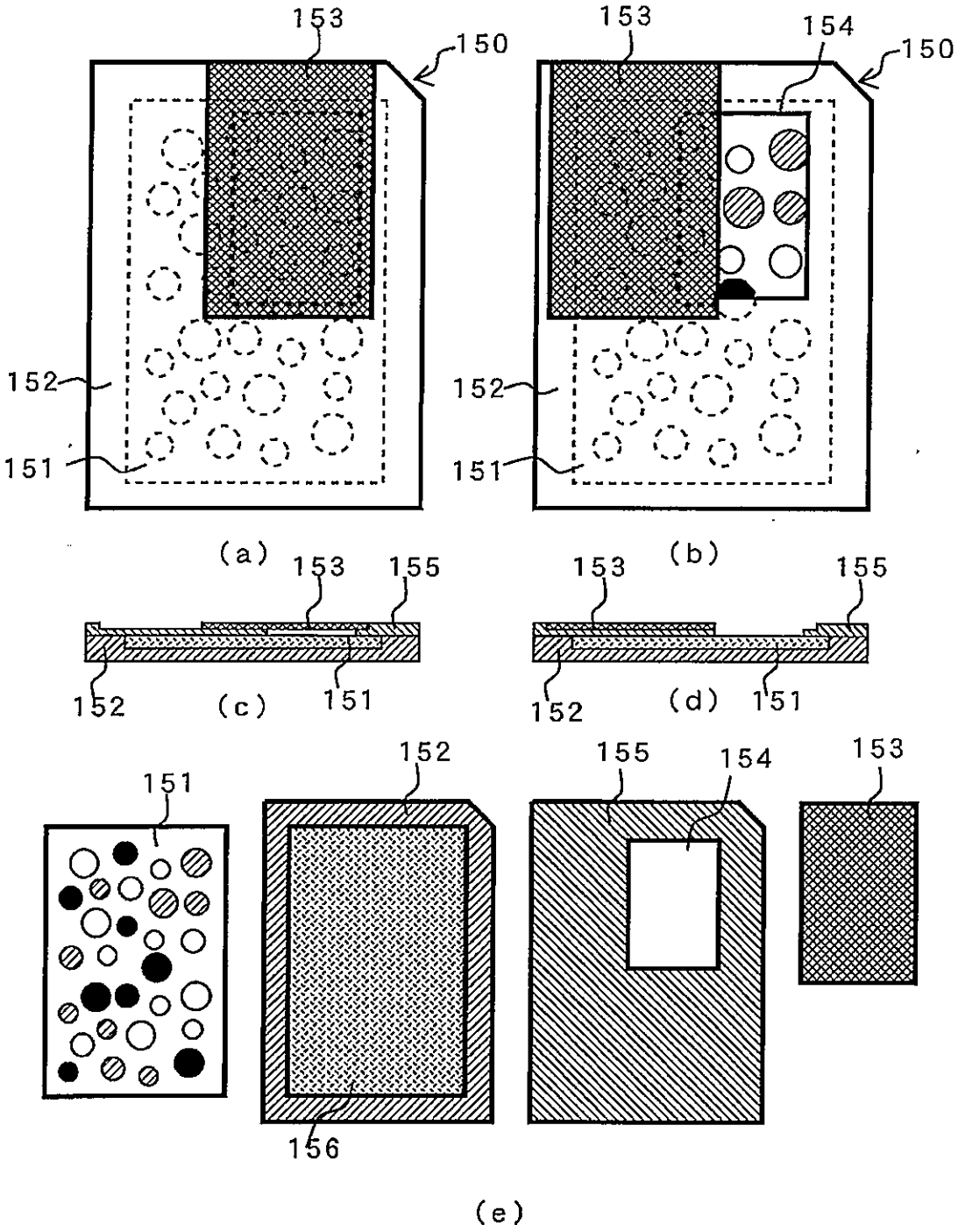

153
150
152
151
(a)
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154
150
152
151
(b)
153
155
152
(c)
151
153
155
152
(d)
151
151
152
156
155
154
153
(e)

FIG.16

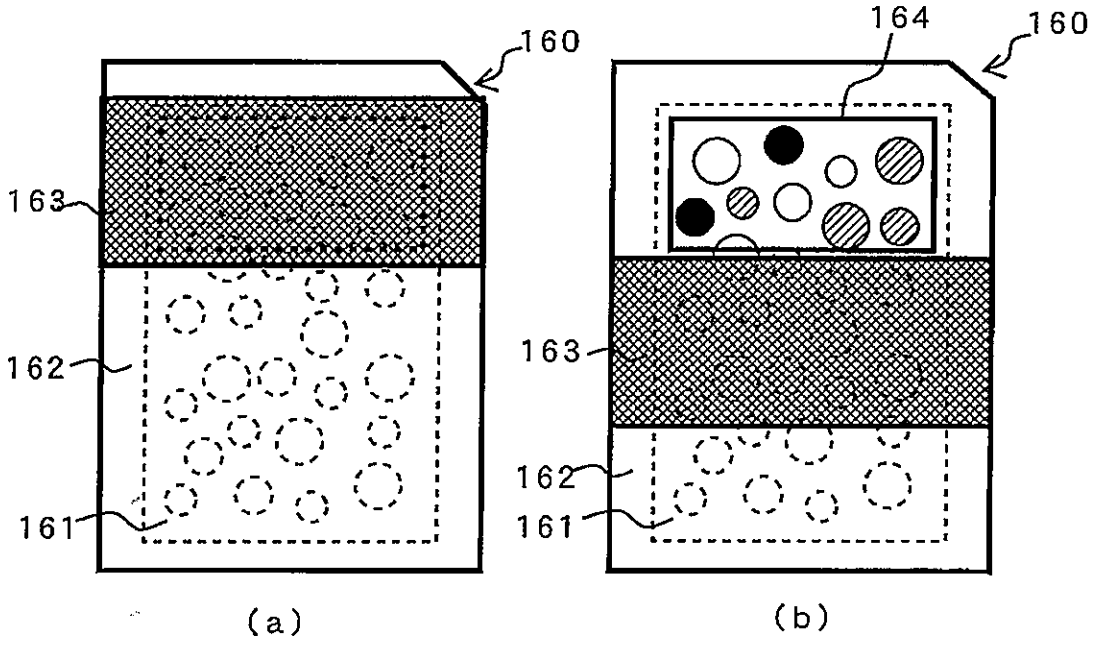


FIG.17

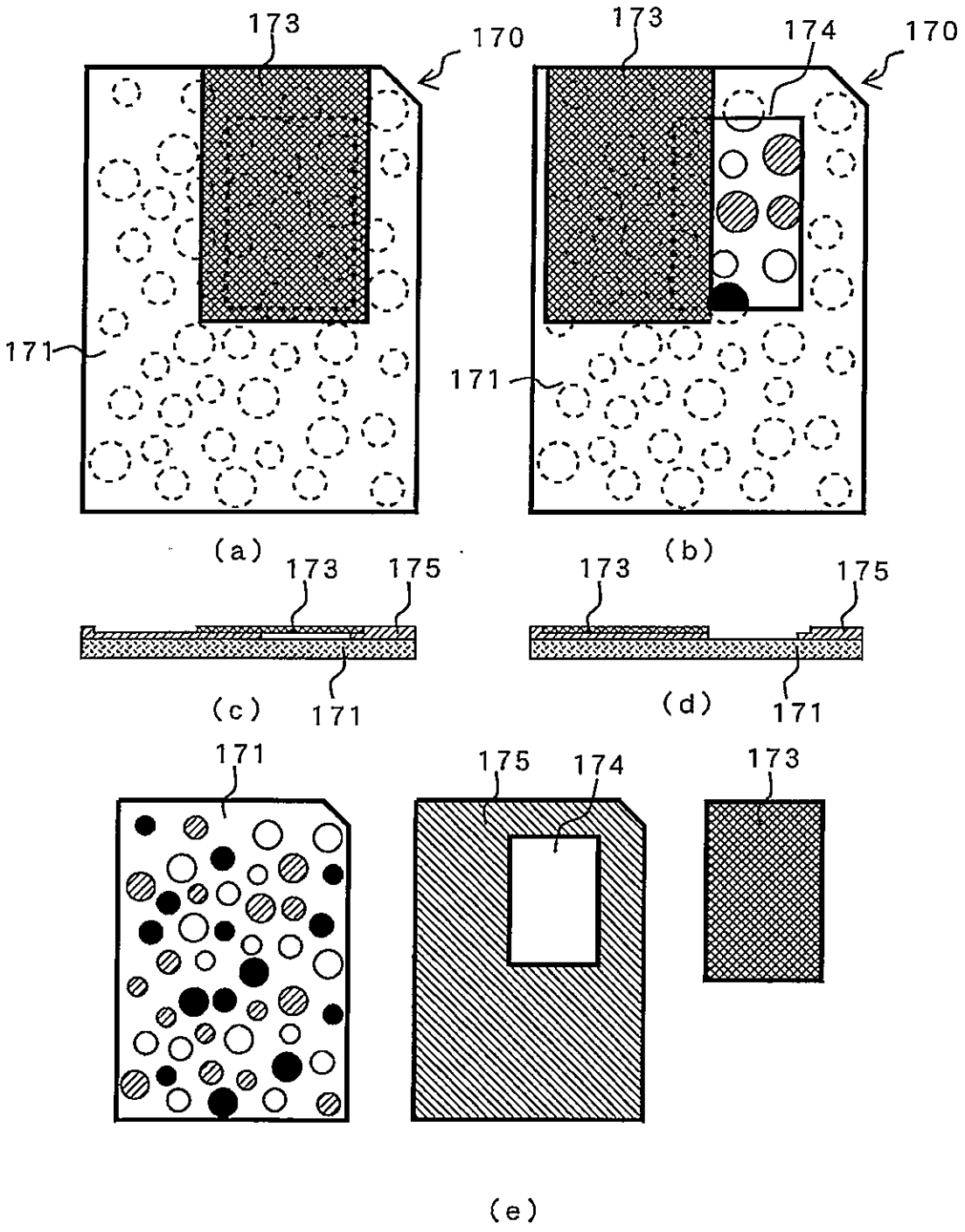

173
170
171
(a)
173
174
170
171
(b)
173
175
(c)
171
173
175
(d)
171
171
175
174
173
(e)

FIG.18

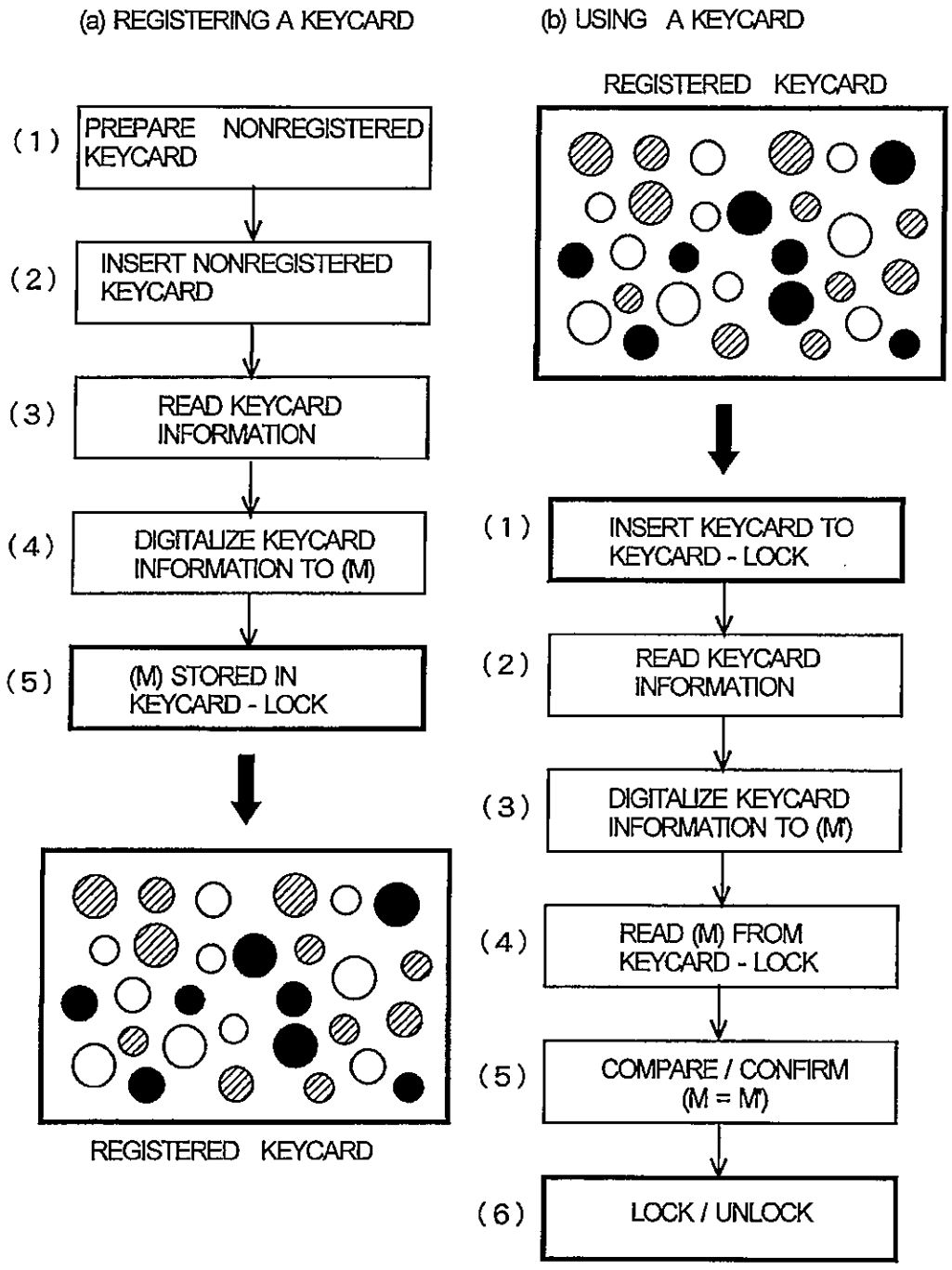

(a) REGISTERING A KEYCARD
(1) PREPARE NONREGISTERED KEYCARD
(2) INSERT NONREGISTERED KEYCARD
(3) READ KEYCARD INFORMATION
(4) DIGITALIZE KEYCARD INFORMATION TO (M)
(5) (M) STORED IN KEYCARD - LOCK
REGISTERED KEYCARD
(b) USING A KEYCARD
REGISTERED KEYCARD
(1) INSERT KEYCARD TO KEYCARD - LOCK
(2) READ KEYCARD INFORMATION
(3) DIGITALIZE KEYCARD INFORMATION TO (M')
(4) READ (M) FROM KEYCARD - LOCK
(5) COMPARE / CONFIRM (M = M')
(6) LOCK / UNLOCK

FIG.19

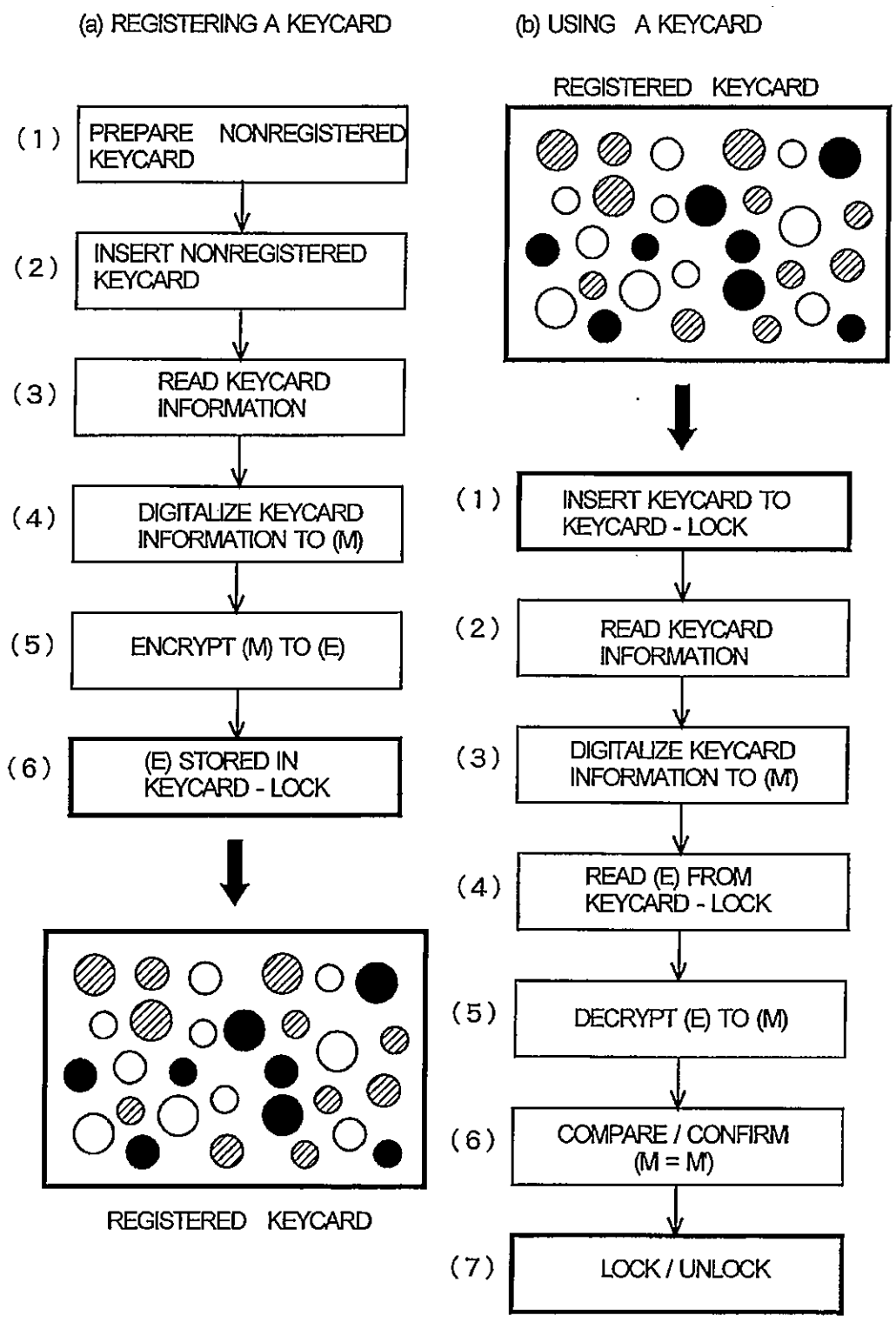

(a) REGISTERING A KEYCARD
(1) PREPARE NONREGISTERED KEYCARD
(2) INSERT NONREGISTERED KEYCARD
(3) READ KEYCARD INFORMATION
(4) DIGITALIZE KEYCARD INFORMATION TO (M)
(5) ENCRYPT (M) TO (E)
(6) (E) STORED IN KEYCARD - LOCK
REGISTERED KEYCARD
(b) USING A KEYCARD
REGISTERED KEYCARD
(1) INSERT KEYCARD TO KEYCARD - LOCK
(2) READ KEYCARD INFORMATION
(3) DIGITALIZE KEYCARD INFORMATION TO (M')
(4) READ (E) FROM KEYCARD - LOCK
(5) DECRYPT (E) TO (M)
(6) COMPARE / CONFIRM (M = M')
(7) LOCK / UNLOCK

FIG.20

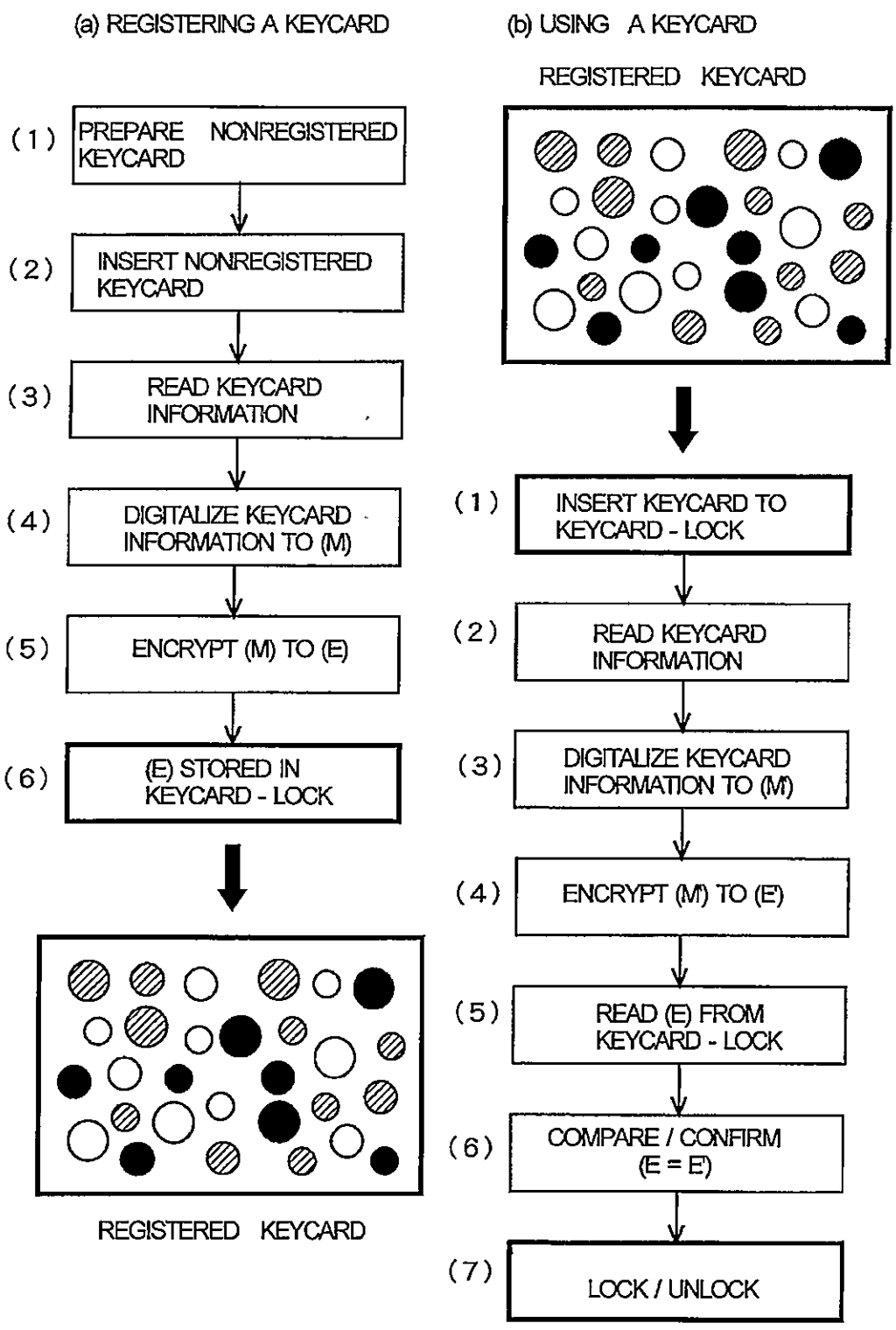

(a) REGISTERING A KEYCARD
(1) PREPARE NONREGISTERED KEYCARD
(2) INSERT NONREGISTERED KEYCARD
(3) READ KEYCARD INFORMATION
(4) DIGITALIZE KEYCARD INFORMATION TO (M)
(5) ENCRYPT (M) TO (E)
(6) (E) STORED IN KEYCARD - LOCK
REGISTERED KEYCARD
(b) USING A KEYCARD
REGISTERED KEYCARD
(1) INSERT KEYCARD TO KEYCARD - LOCK
(2) READ KEYCARD INFORMATION
(3) DIGITALIZE KEYCARD INFORMATION TO (M')
(4) ENCRYPT (M') TO (E')
(5) READ (E) FROM KEYCARD - LOCK
(6) COMPARE / CONFIRM (E = E')
(7) LOCK / UNLOCK

FIG.21

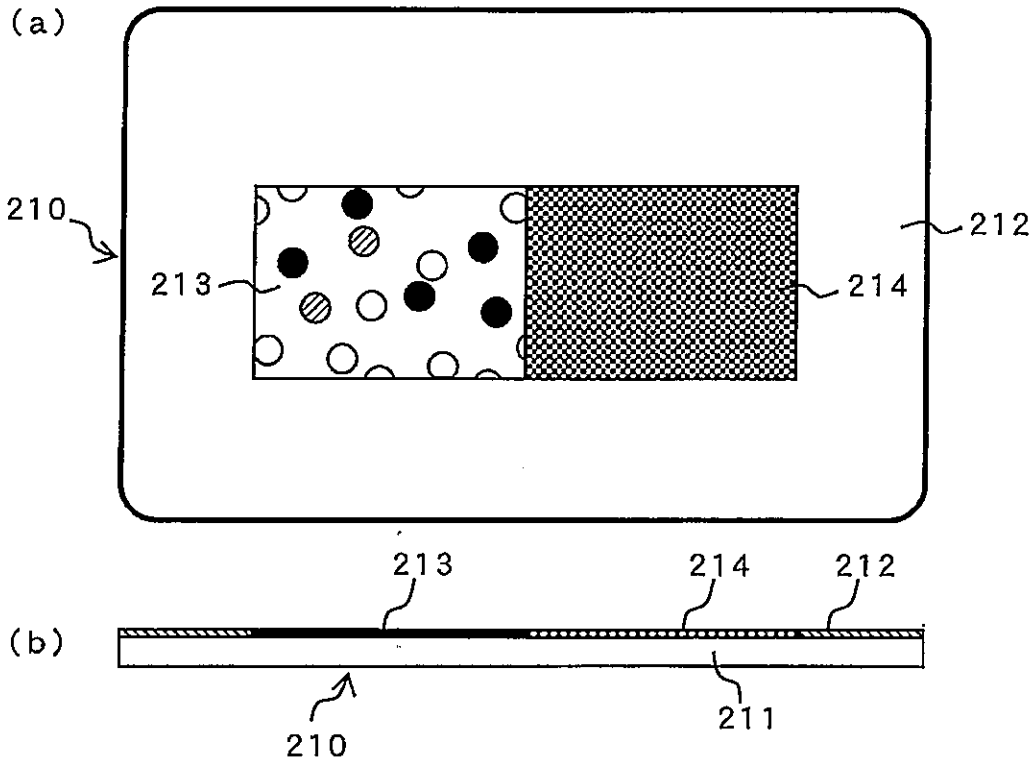

(a)
210
213
214
212
213
214
212
(b)
210
211

FIG.22

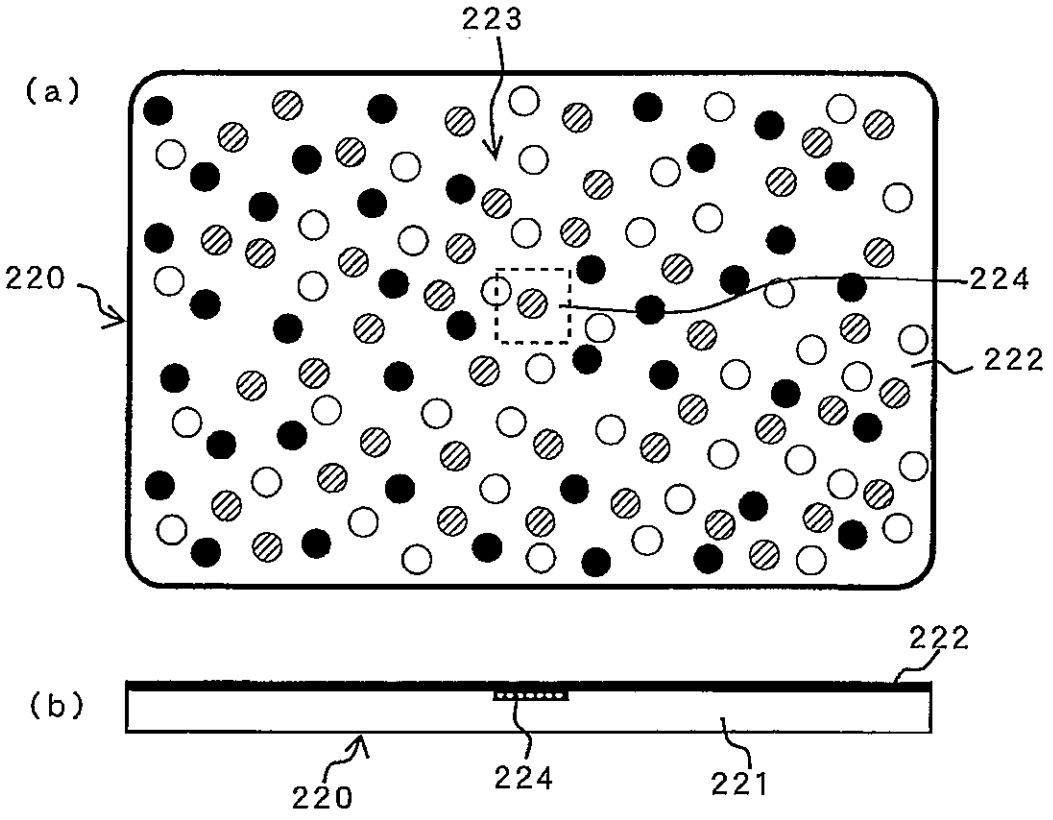

223
(a)
220
224
222
222
(b)
220
224
221

FIG.23

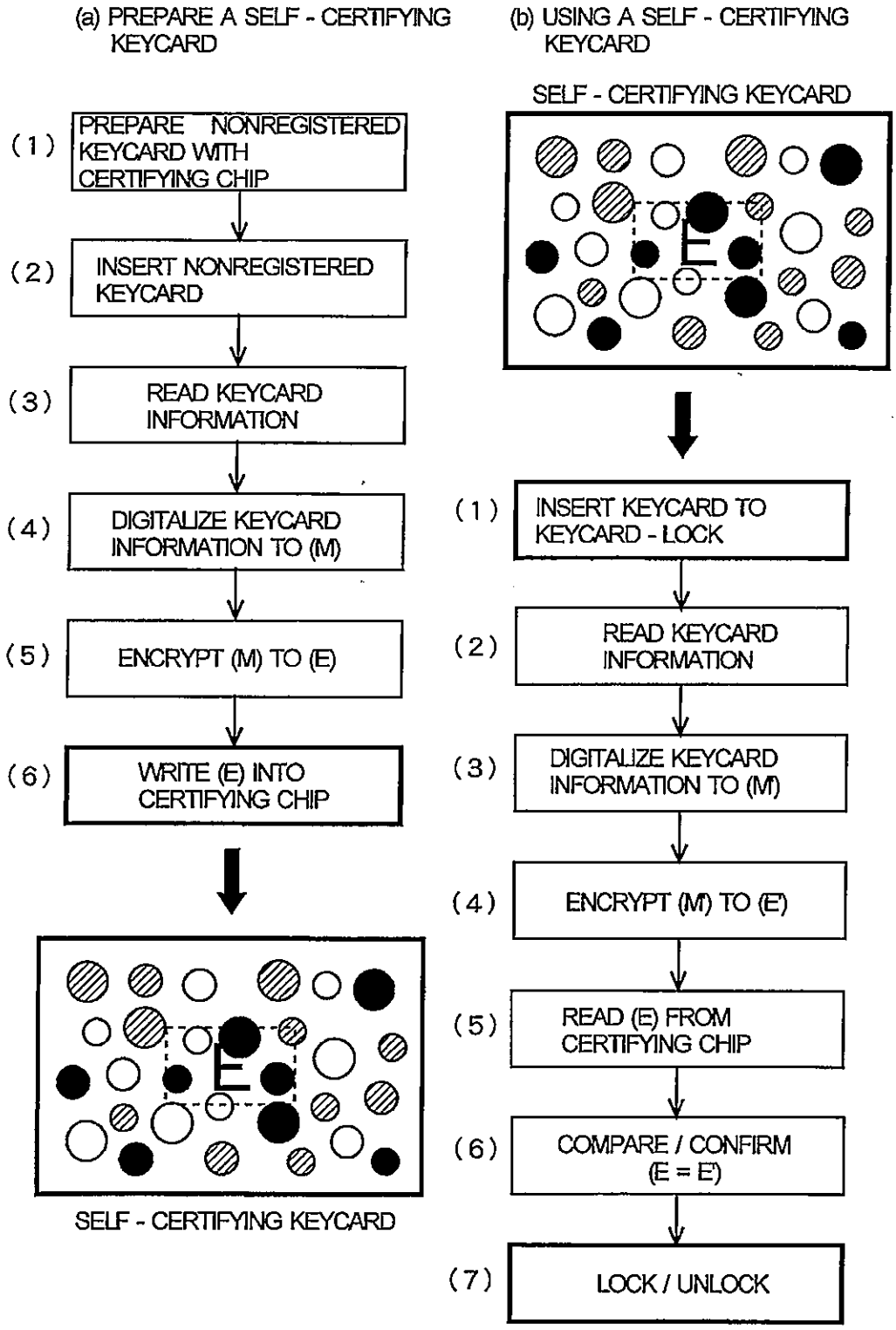

(a) PREPARE A SELF - CERTIFYING KEYCARD
(1) PREPARE NONREGISTERED KEYCARD WITH CERTIFYING CHIP
(2) INSERT NONREGISTERED KEYCARD
(3) READ KEYCARD INFORMATION
(4) DIGITALIZE KEYCARD INFORMATION TO (M)
(5) ENCRYPT (M) TO (E)
(6) WRITE (E) INTO CERTIFYING CHIP
E
SELF - CERTIFYING KEYCARD
(b) USING A SELF - CERTIFYING KEYCARD
SELF - CERTIFYING KEYCARD
E
(1) INSERT KEYCARD TO KEYCARD - LOCK
(2) READ KEYCARD INFORMATION
(3) DIGITALIZE KEYCARD INFORMATION TO (M')
(4) ENCRYPT (M') TO (E')
(5) READ (E) FROM CERTIFYING CHIP
(6) COMPARE / CONFIRM (E = E')
(7) LOCK / UNLOCK

FIG.24

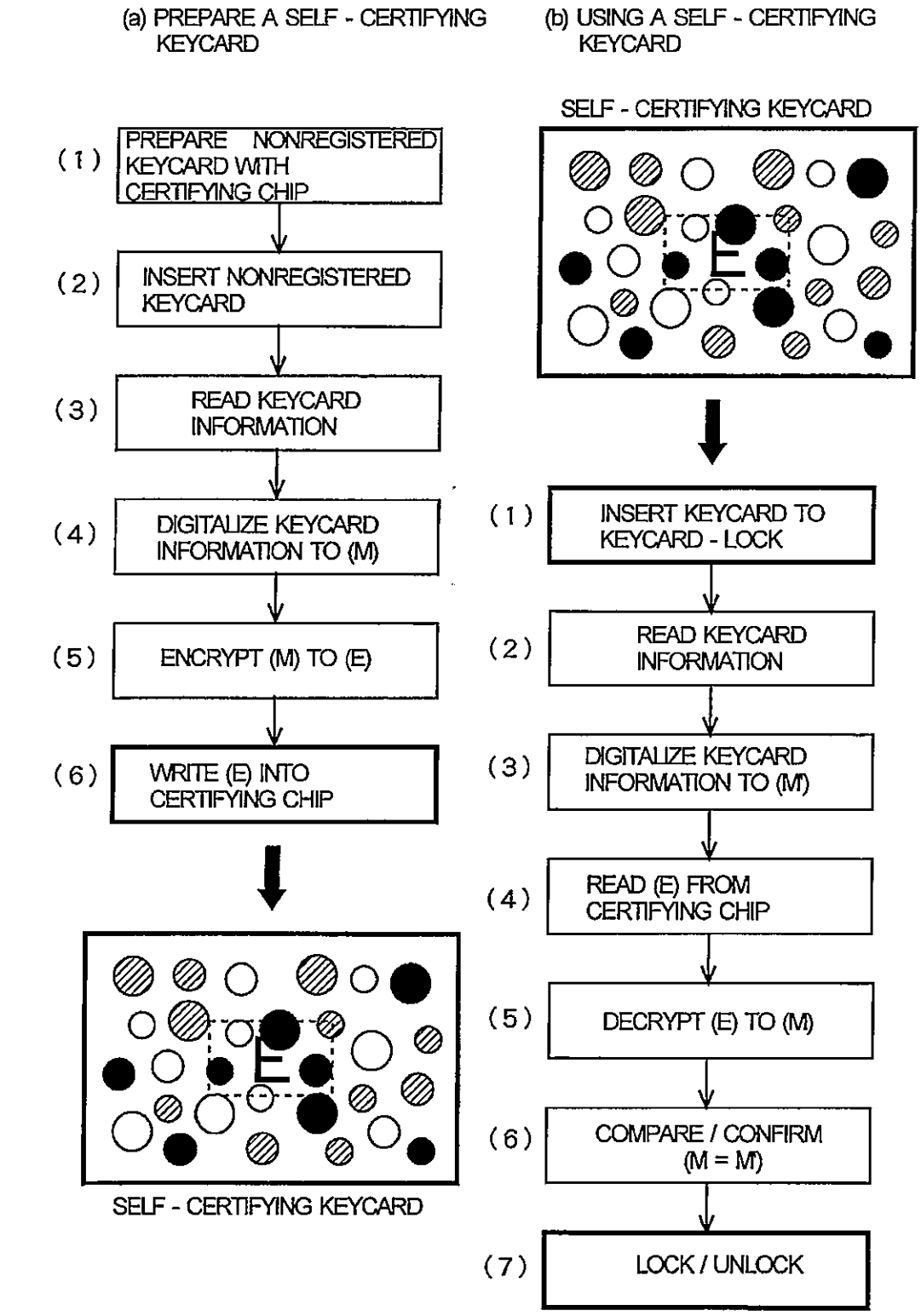

(a) PREPARE A SELF - CERTIFYING KEYCARD
(b) USING A SELF - CERTIFYING KEYCARD
(1) PREPARE NONREGISTERED KEYCARD WITH CERTIFYING CHIP
(2) INSERT NONREGISTERED KEYCARD
(3) READ KEYCARD INFORMATION
(4) DIGITALIZE KEYCARD INFORMATION TO (M)
(5) ENCRYPT (M) TO (E)
(6) WRITE (E) INTO CERTIFYING CHIP
E
SELF - CERTIFYING KEYCARD
SELF - CERTIFYING KEYCARD
E
(1) INSERT KEYCARD TO KEYCARD - LOCK
(2) READ KEYCARD INFORMATION
(3) DIGITALIZE KEYCARD INFORMATION TO (M)
(4) READ (E) FROM CERTIFYING CHIP
(5) DECRYPT (E) TO (M)
(6) COMPARE / CONFIRM (M = M')
(7) LOCK / UNLOCK

FIG.25

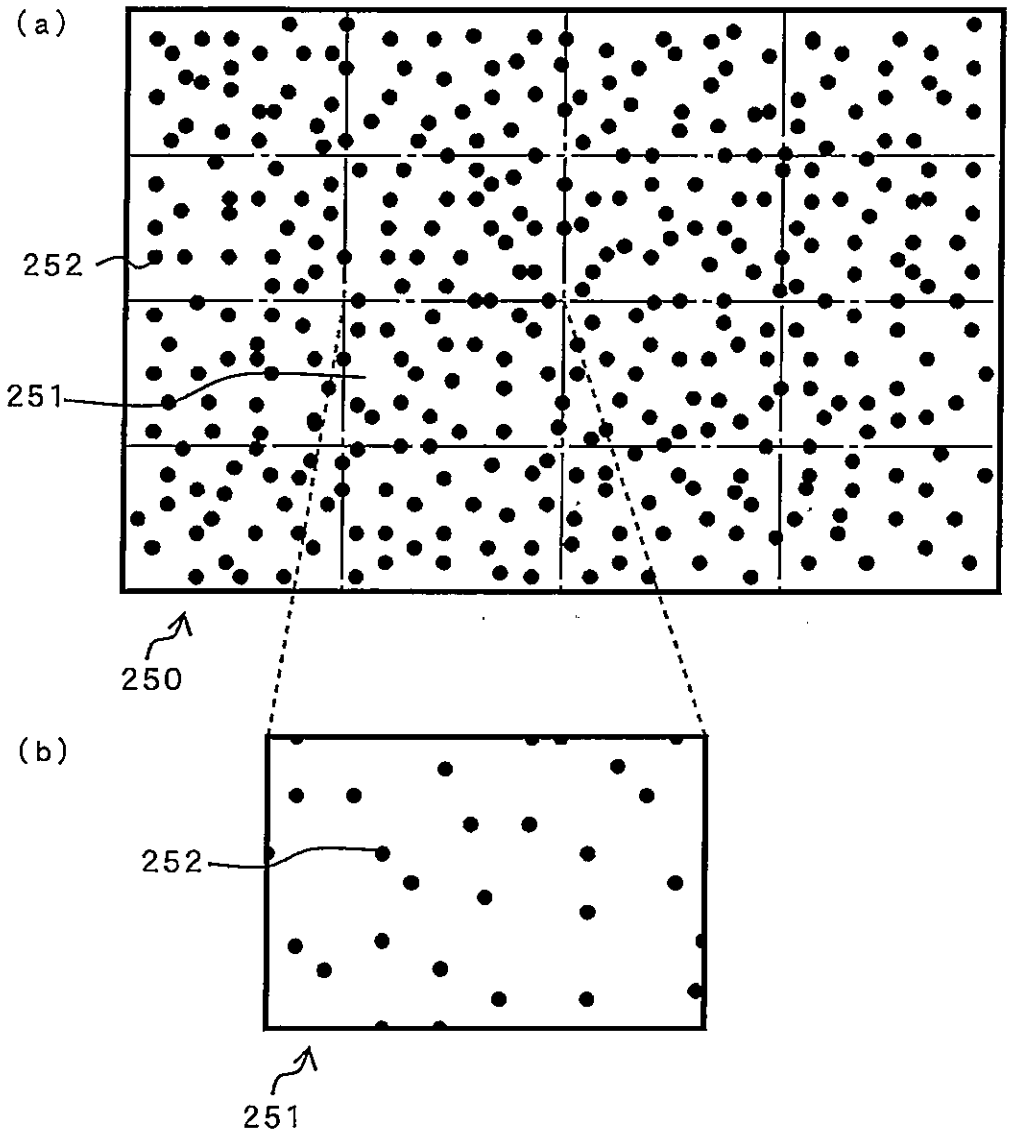


FIG.26

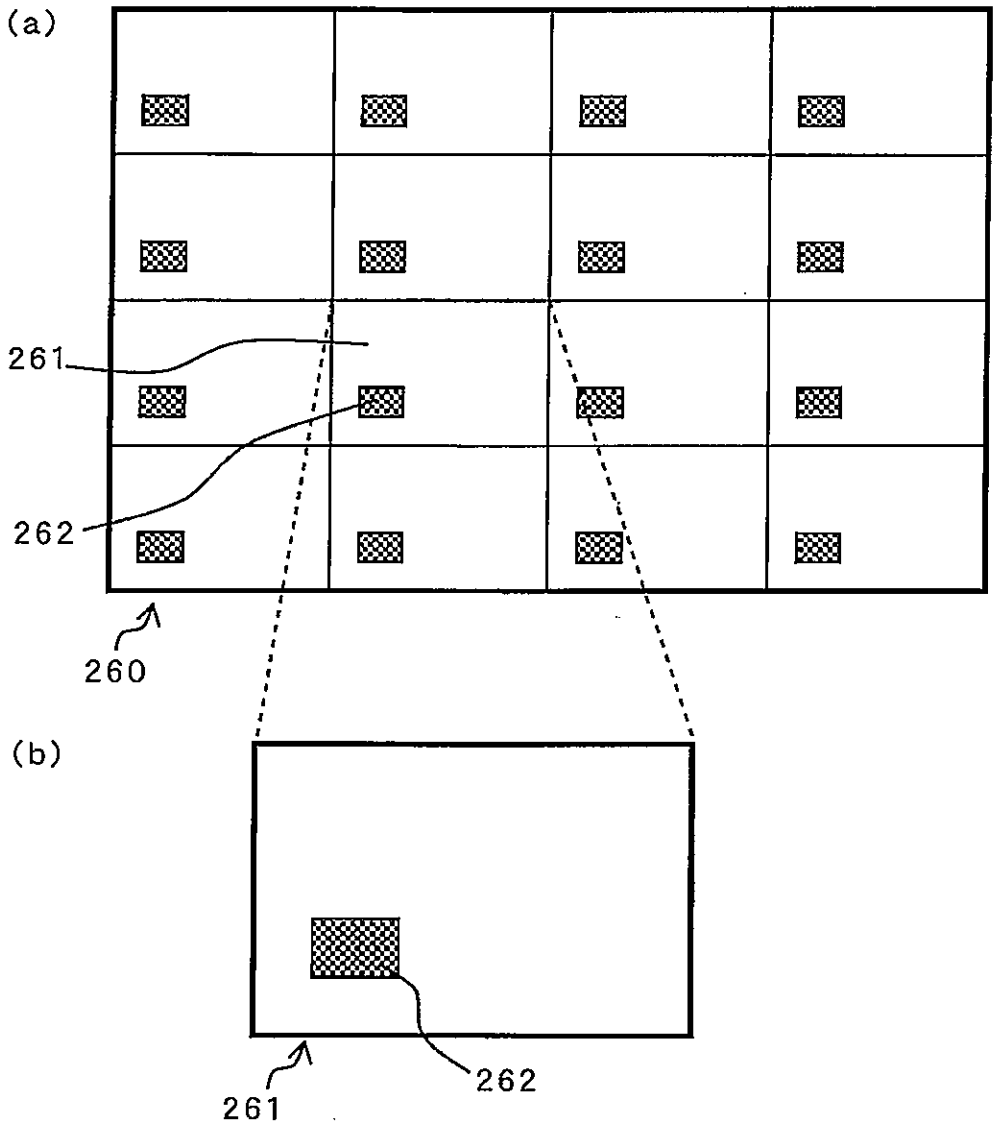


FIG.27

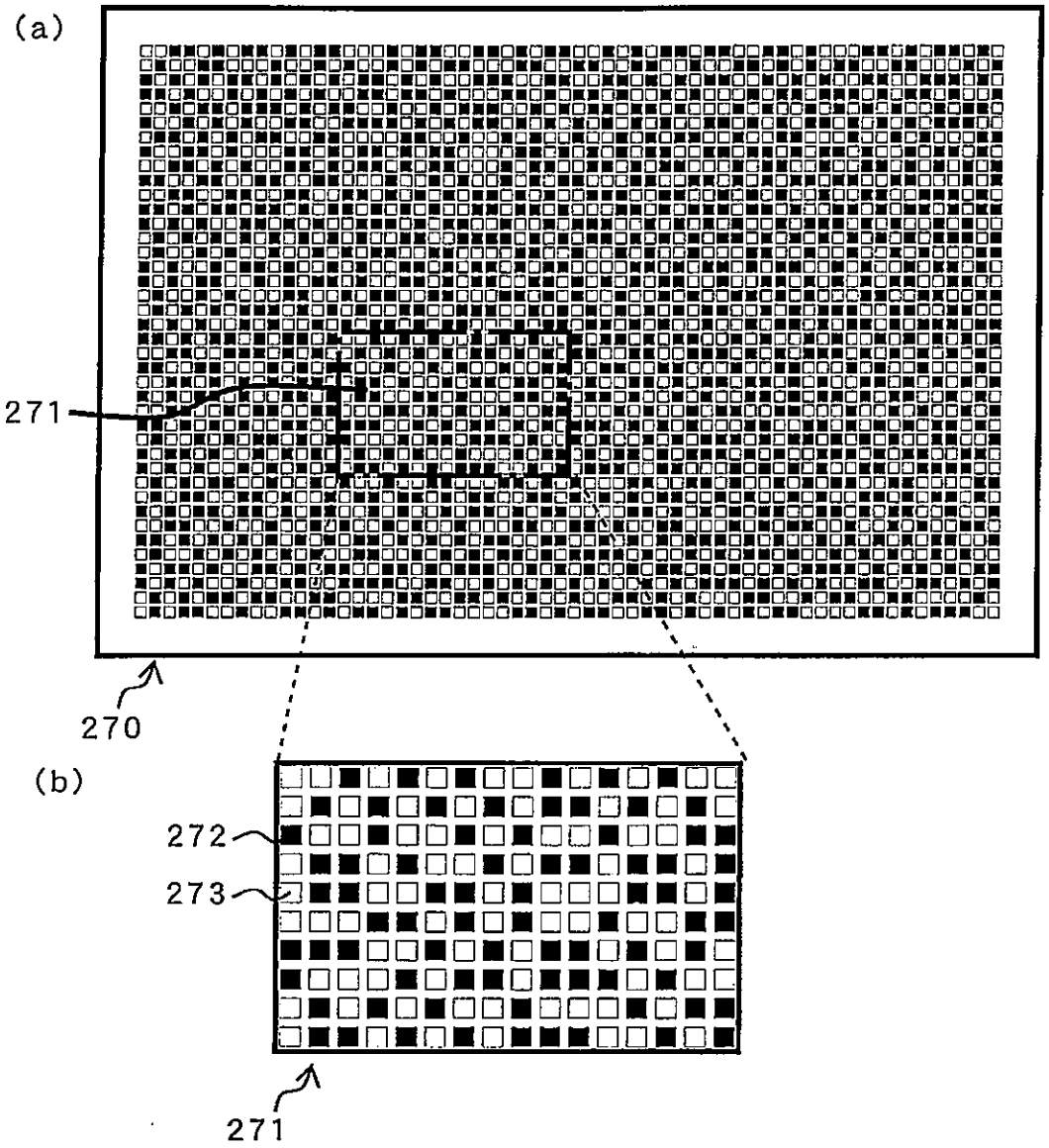


FIG.28

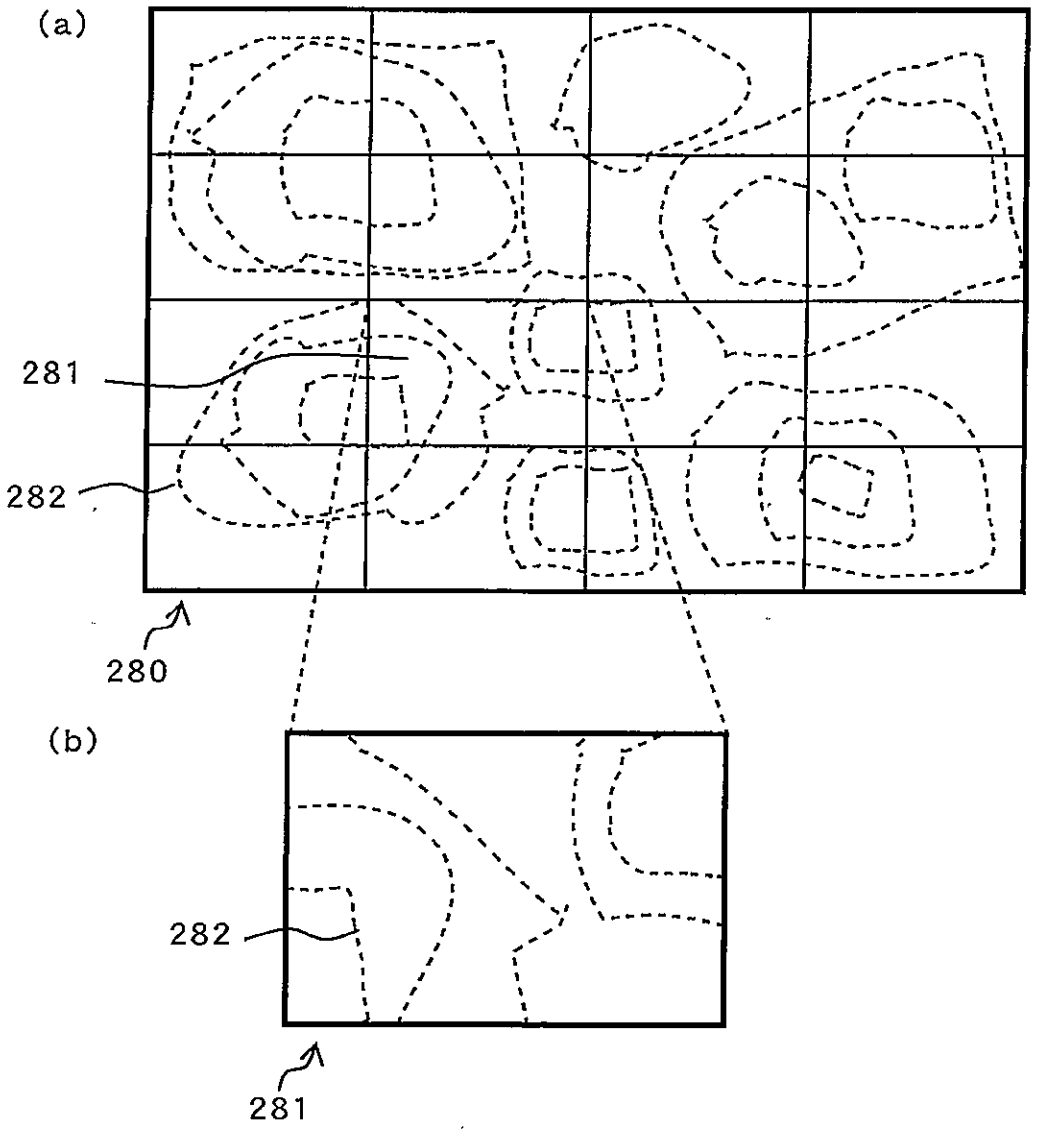


FIG.29

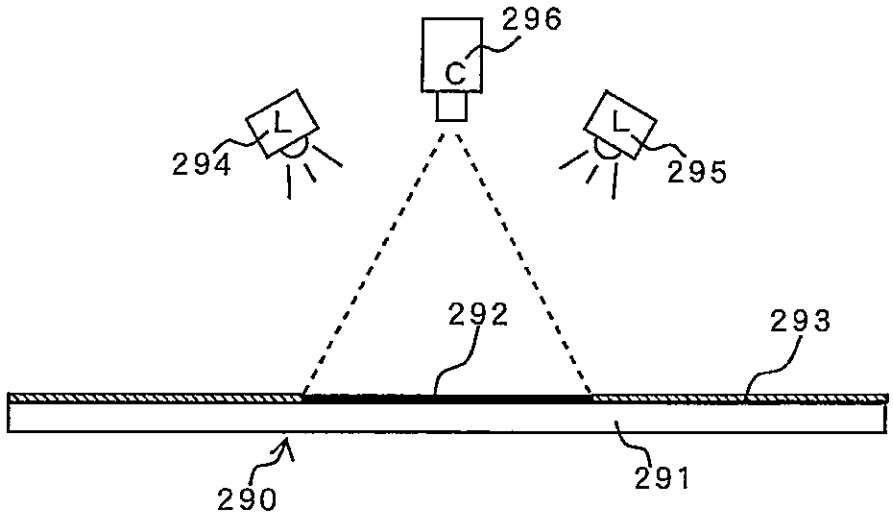


FIG.30

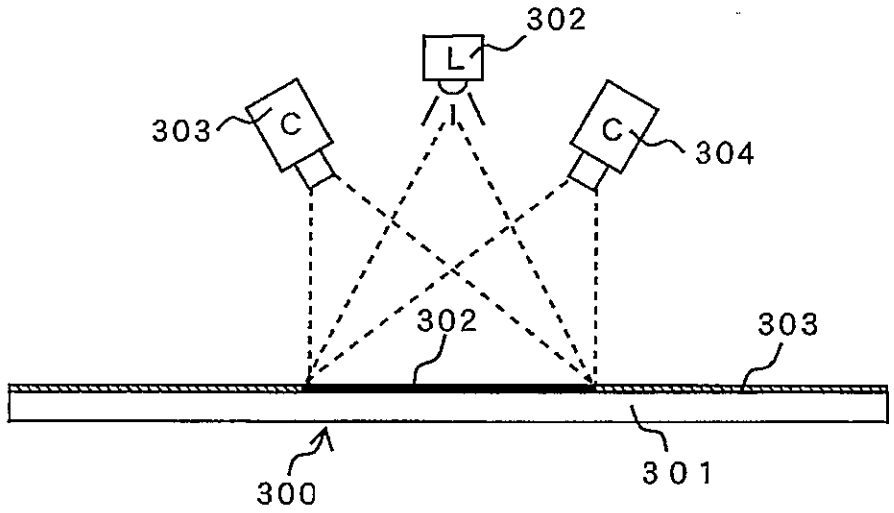


FIG.31

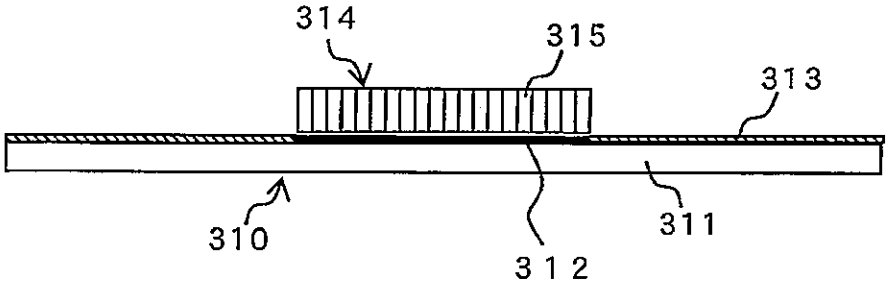

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FIG.32

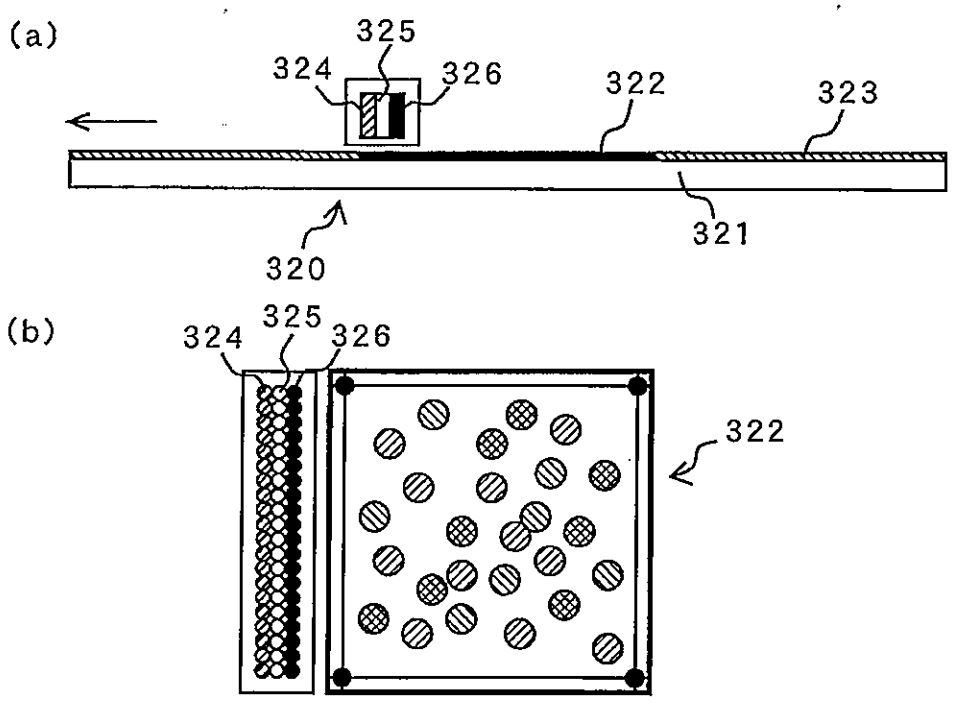

(a)
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(b)
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325
326
322

FIG.33

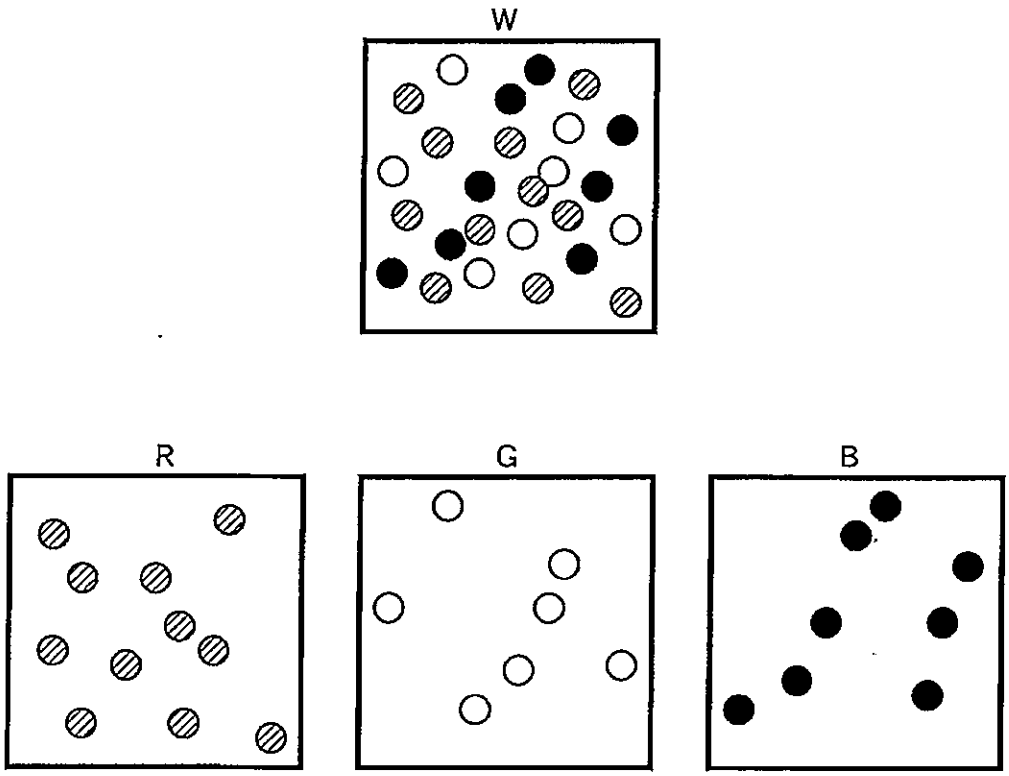


FIG.34

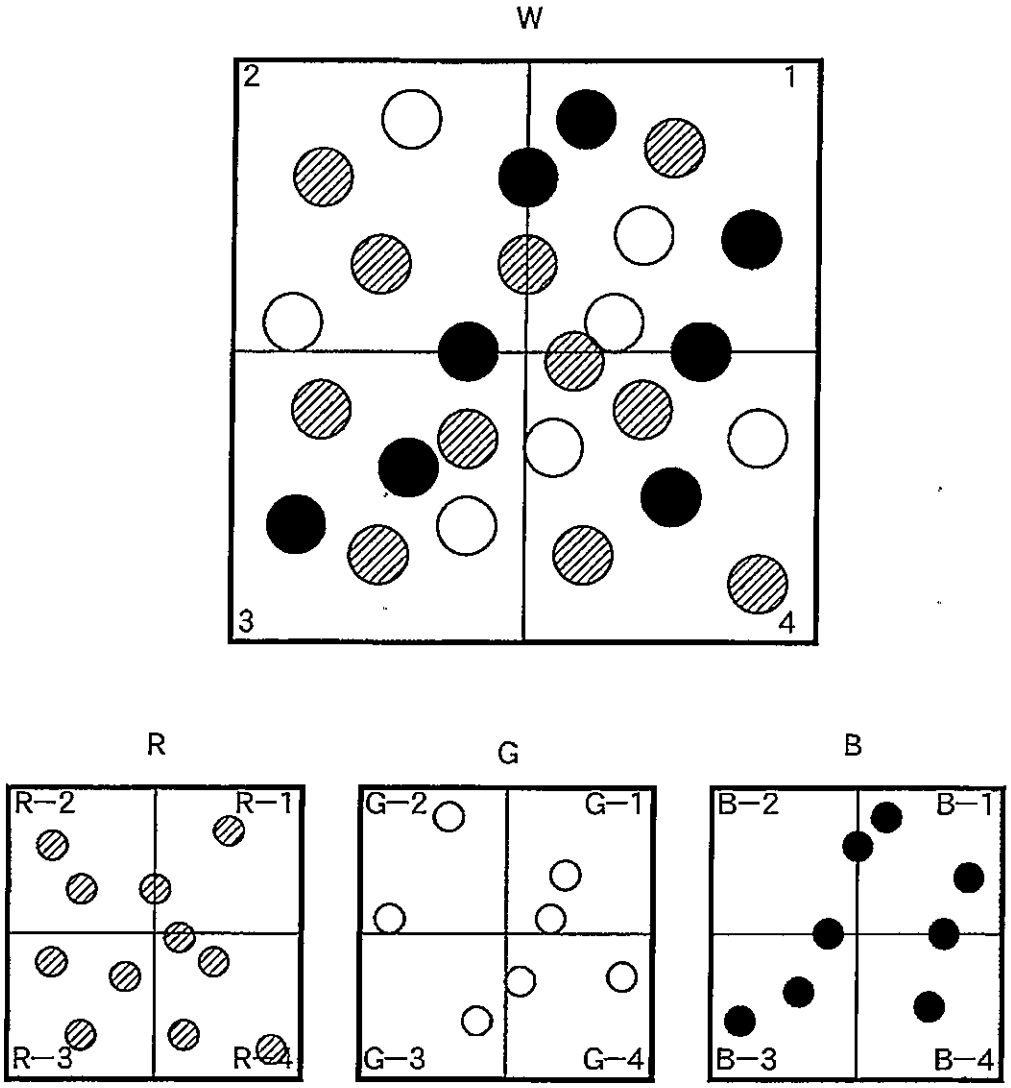
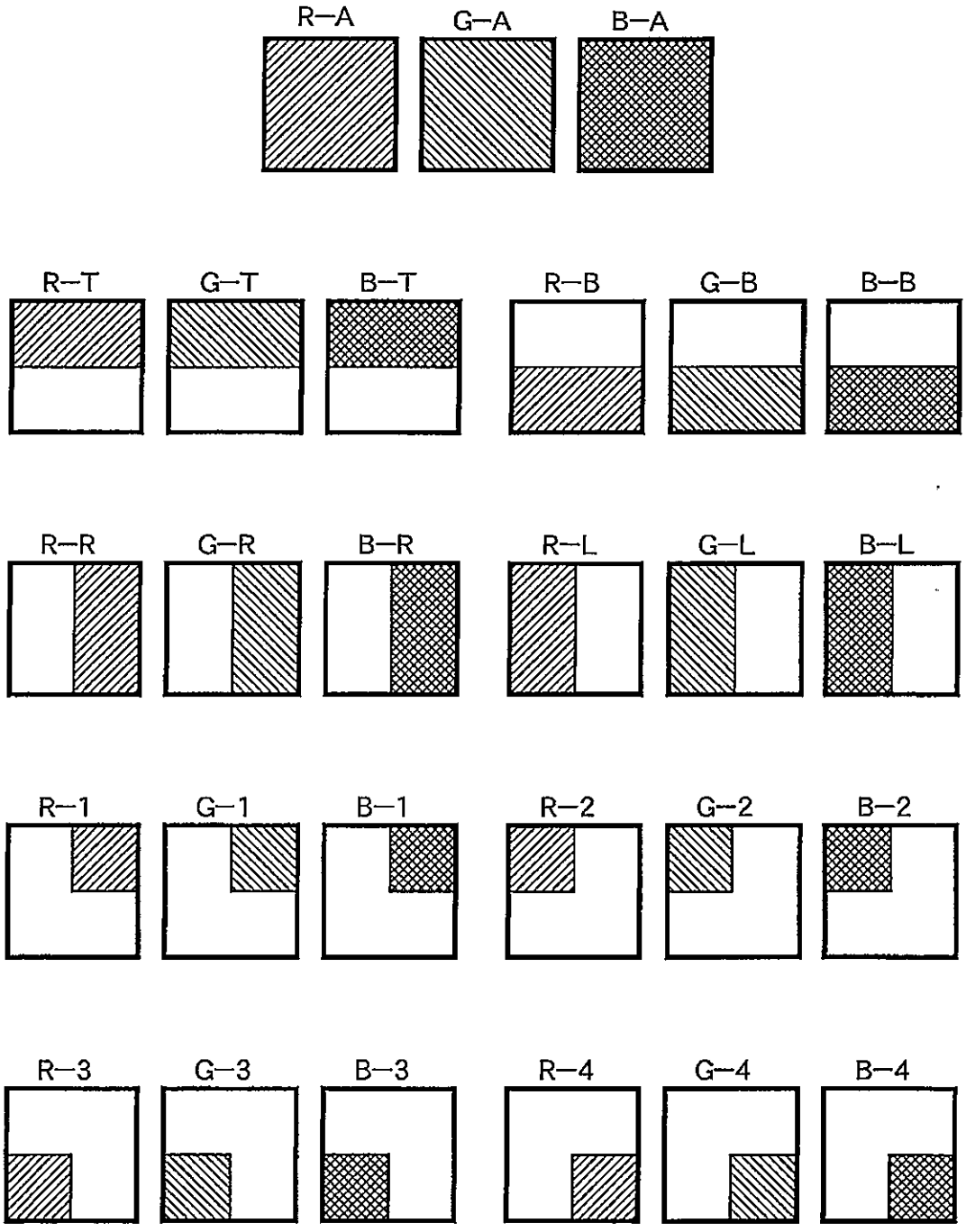


FIG.35


R—A
G—A
B—A
R—T
G—T
B—T
R—B
G—B
B—B
R—R
G—R
B—R
R—L
G—L
B—L
R—1
G—1
B—1
R—2
G—2
B—2
R—3
G—3
B—3
R—4
G—4
B—4