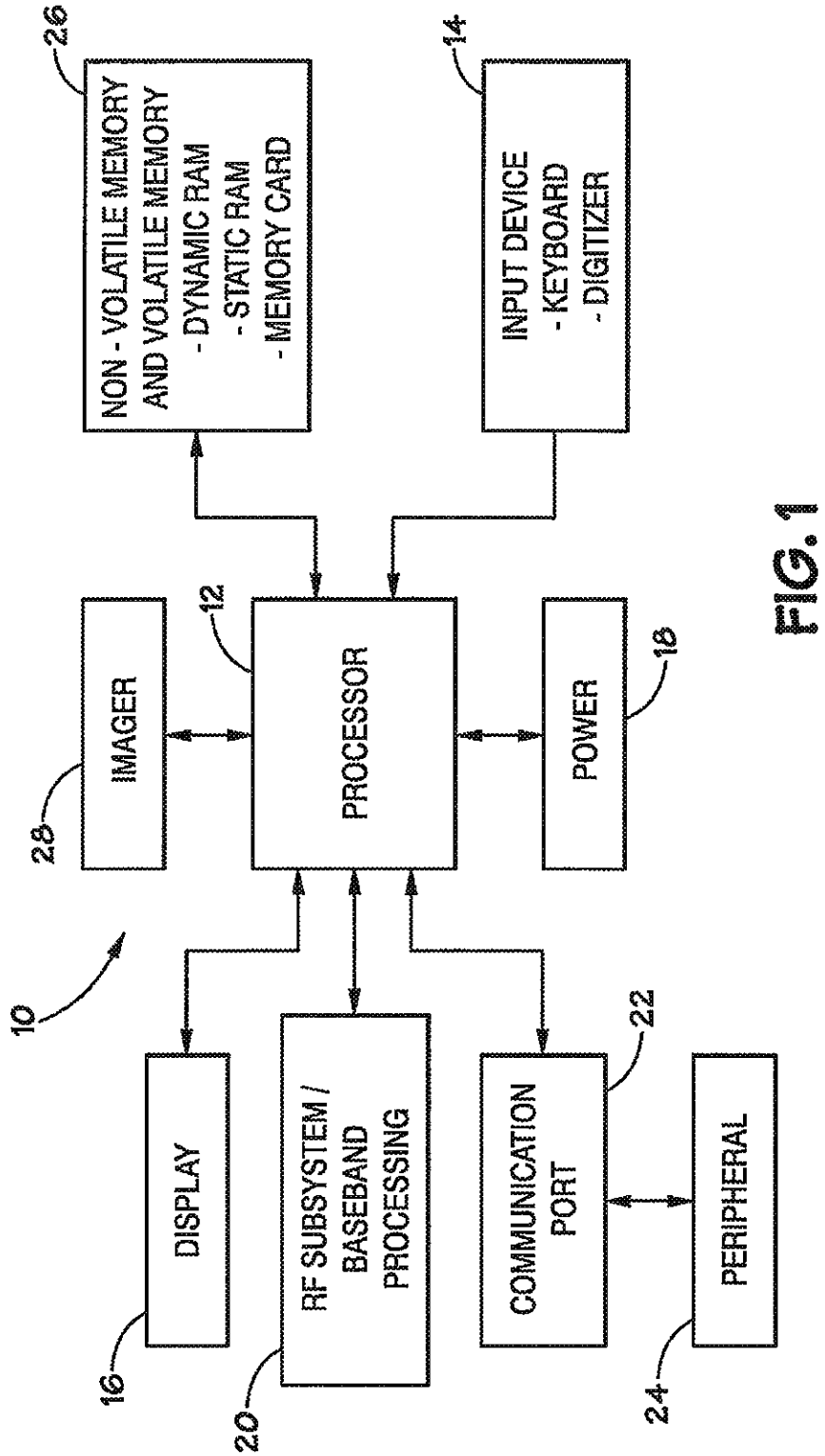

NON - VOLATILE MEMORY AND VOLATILE MEMORY
- DYNAMIC RAM
- STATIC RAM
- MEMORY CARD
26
INPUT DEVICE
- KEYBOARD
- DIGITIZER
14
IMAGER
28
PROCESSOR
12
POWER
18
10
DISPLAY
16
RF SUBSYSTEM / BASEBAND PROCESSING
20
COMMUNICATION PORT
22
PERIPHERAL
24

FIG. 1

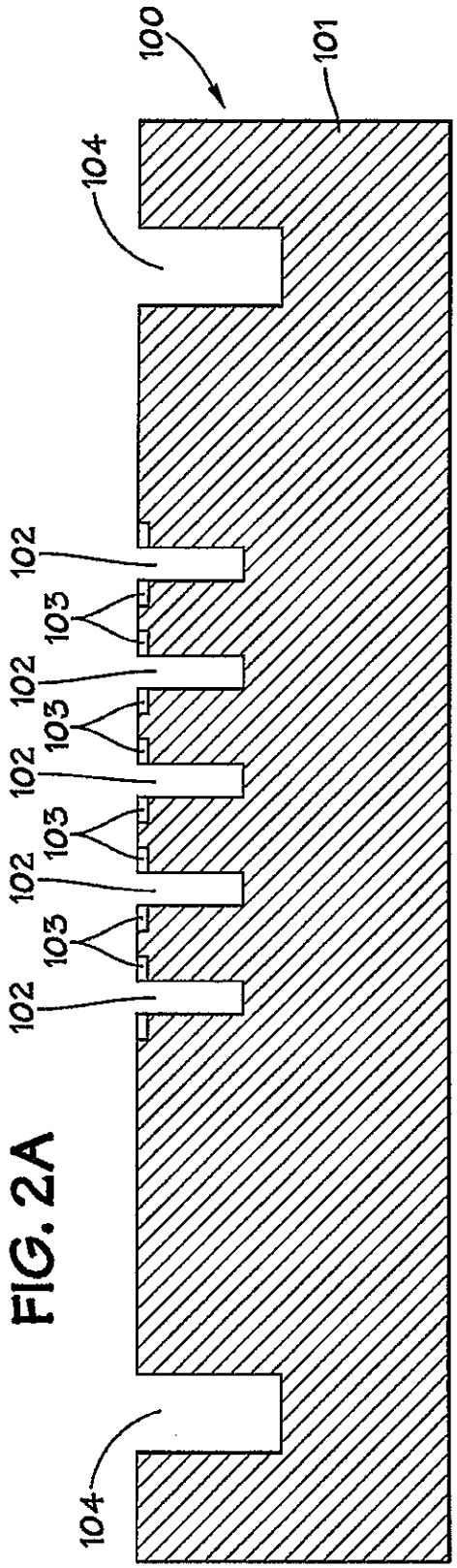

100
101
104
102
103
102
103
102
103
102
103
102
104

FIG. 2A

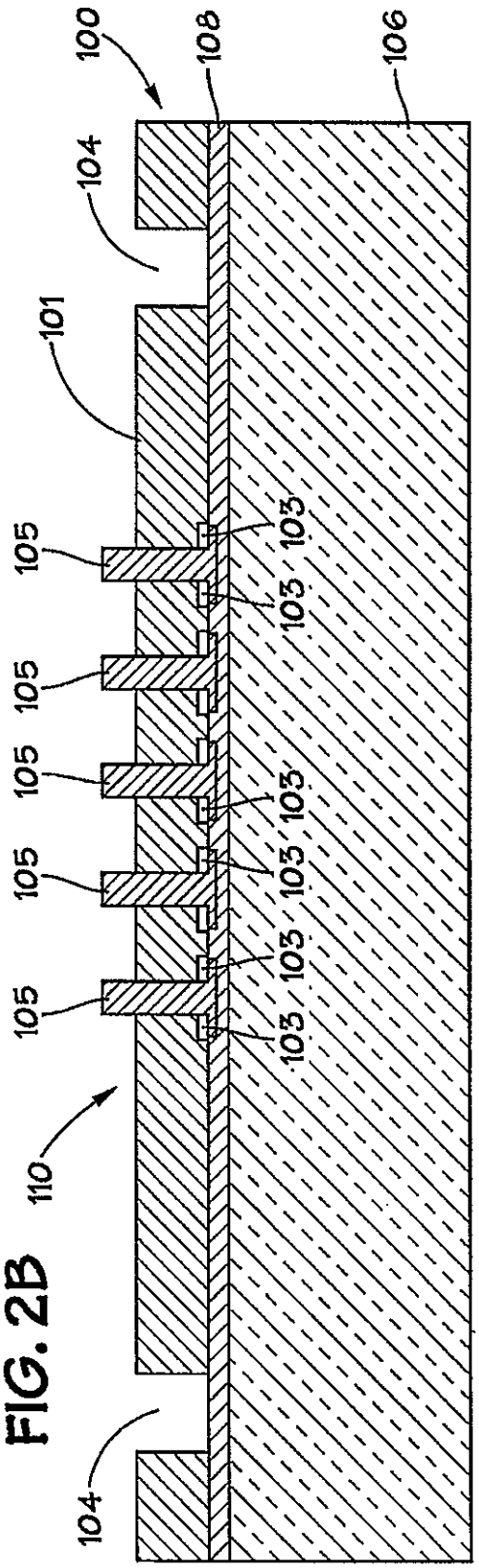

100
108
106
104
101
105
103
105
103
105
103
105
103
105
103
110
104

FIG. 2B

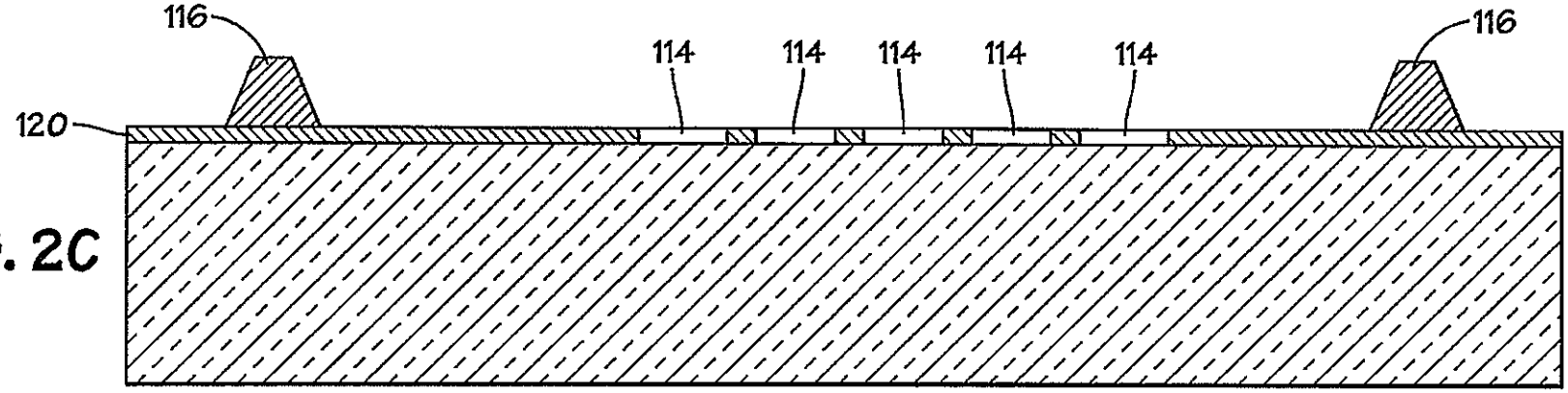

116
114
114
114
114
114
116
120
112

FIG. 2C

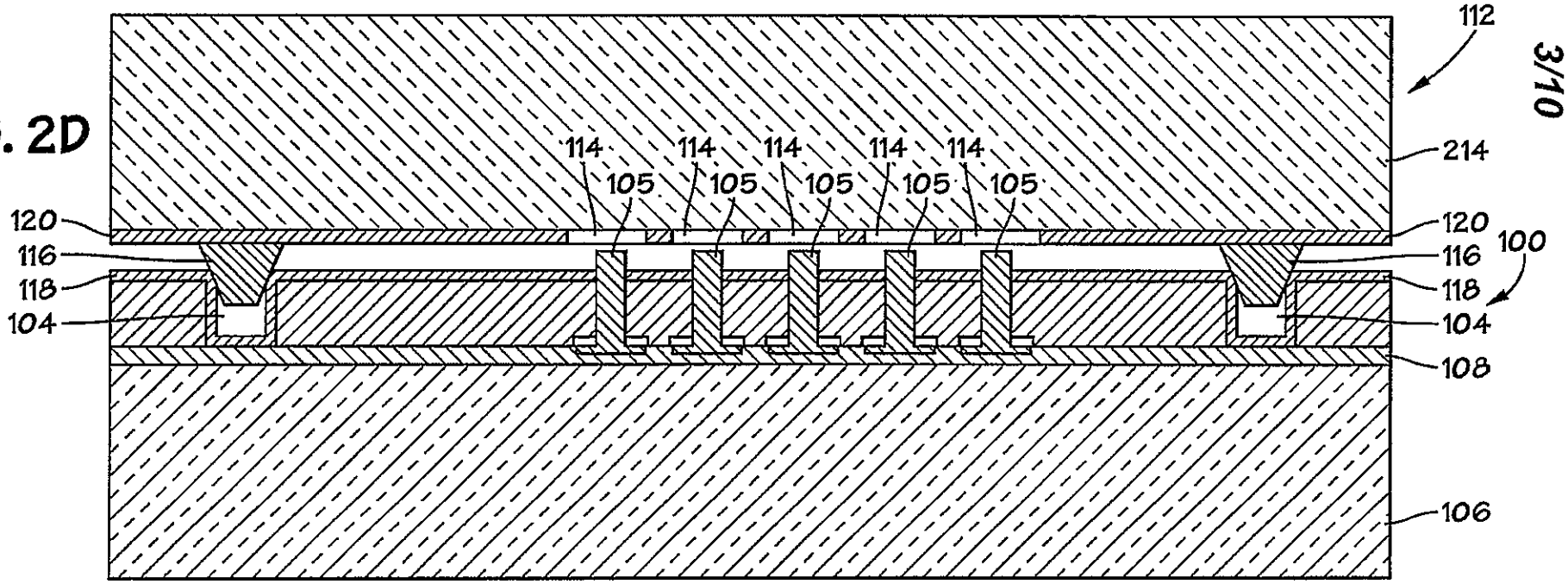

112
114
114
114
114
114
105
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105
105
105
214
120
116
118
104
120
116
118
104
100
108
106

FIG. 2D

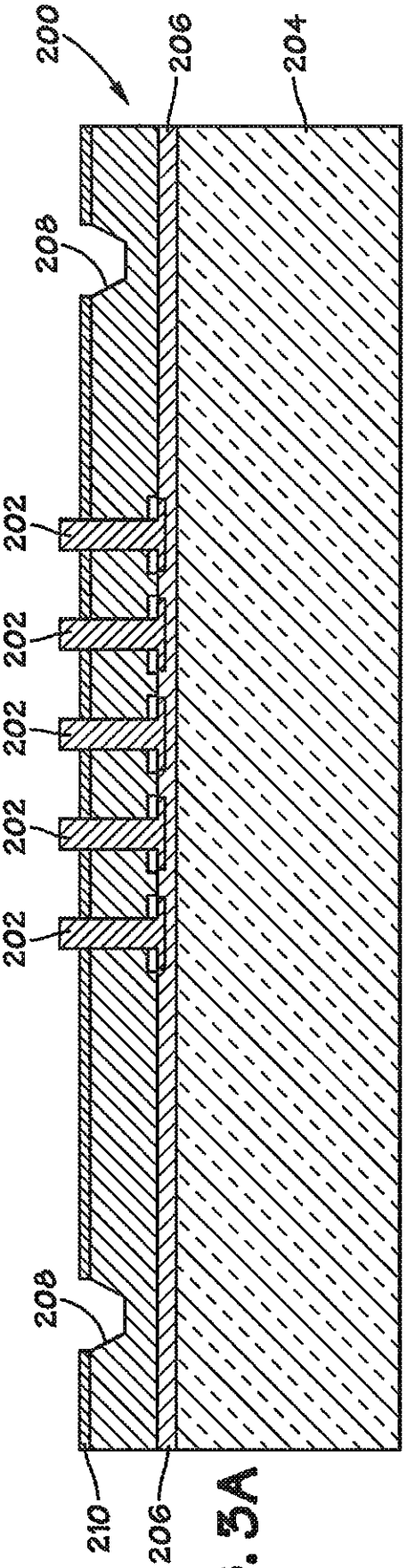

200
206
204
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202
202
202
208
210
206

FIG. 3A

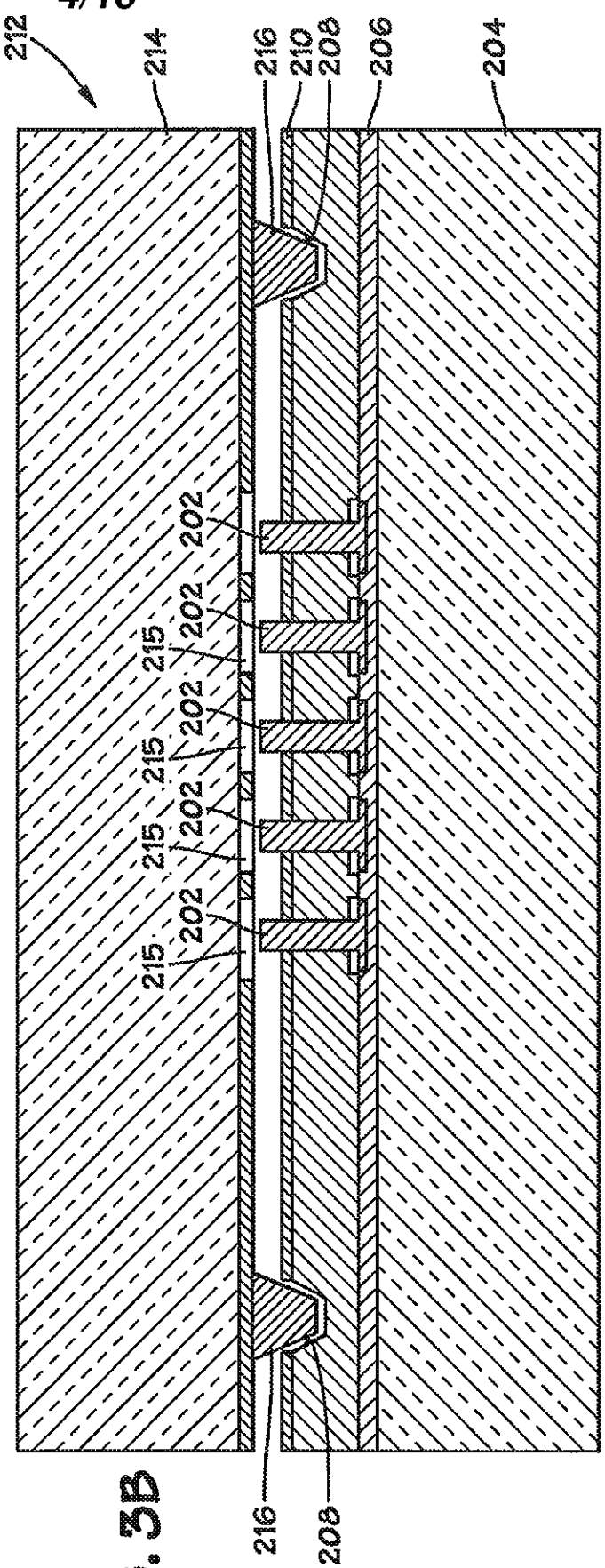

212
214
216
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204
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215
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215
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215
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215
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215
216
208

FIG. 3B

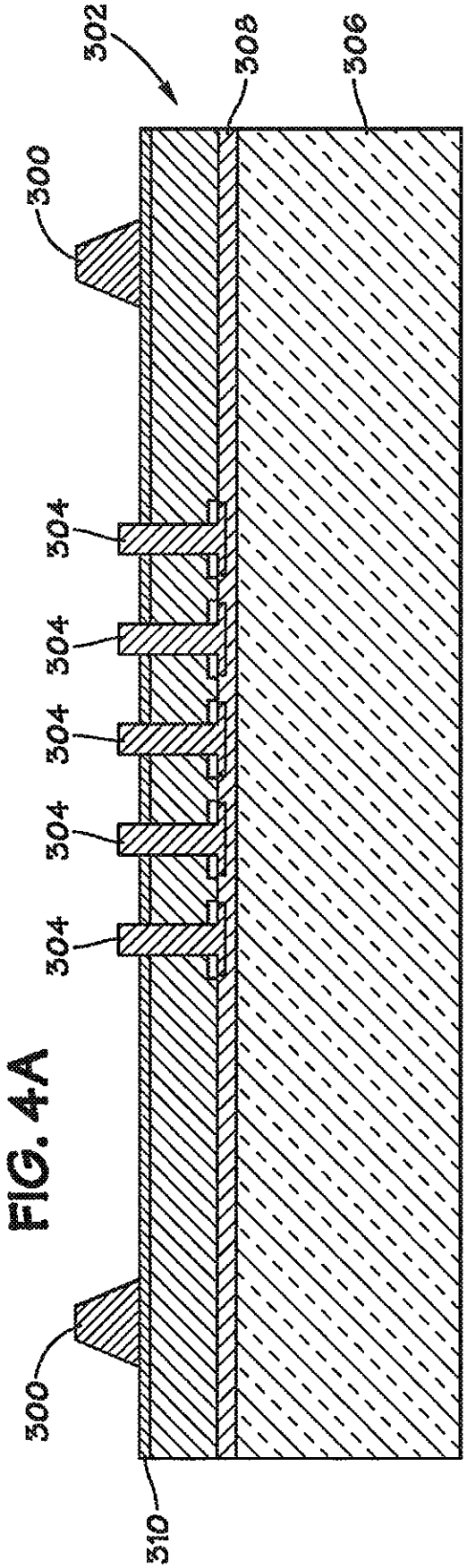

302
308
306
300
304
304
304
304
304
300
310

FIG. 4A

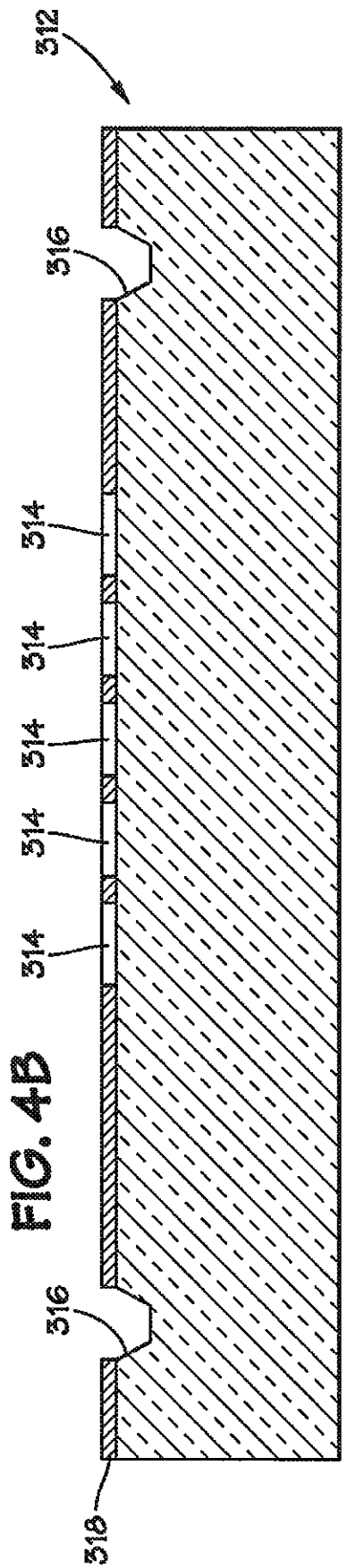

312
316
314
314
314
314
314
316
318

FIG. 4B

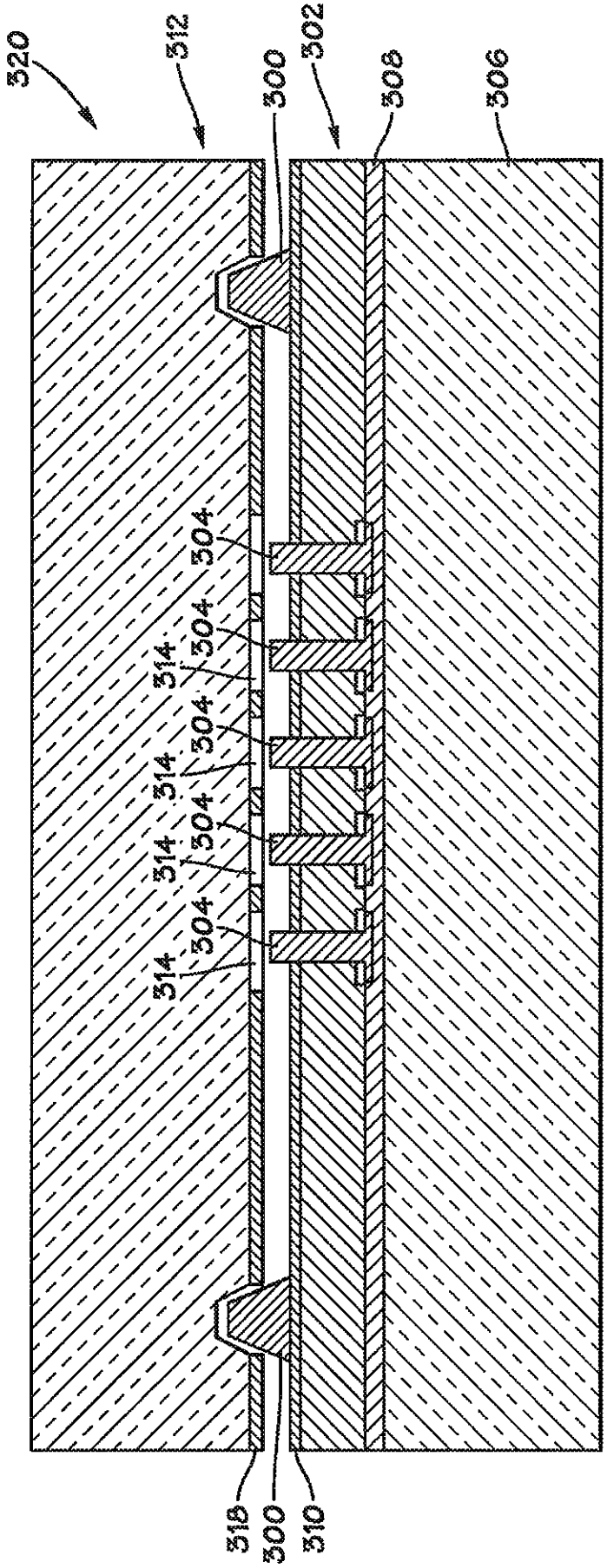

320
312
300
302
308
306
304
304
314
304
314
304
314
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314
304
318
300
310

FIG. 4C

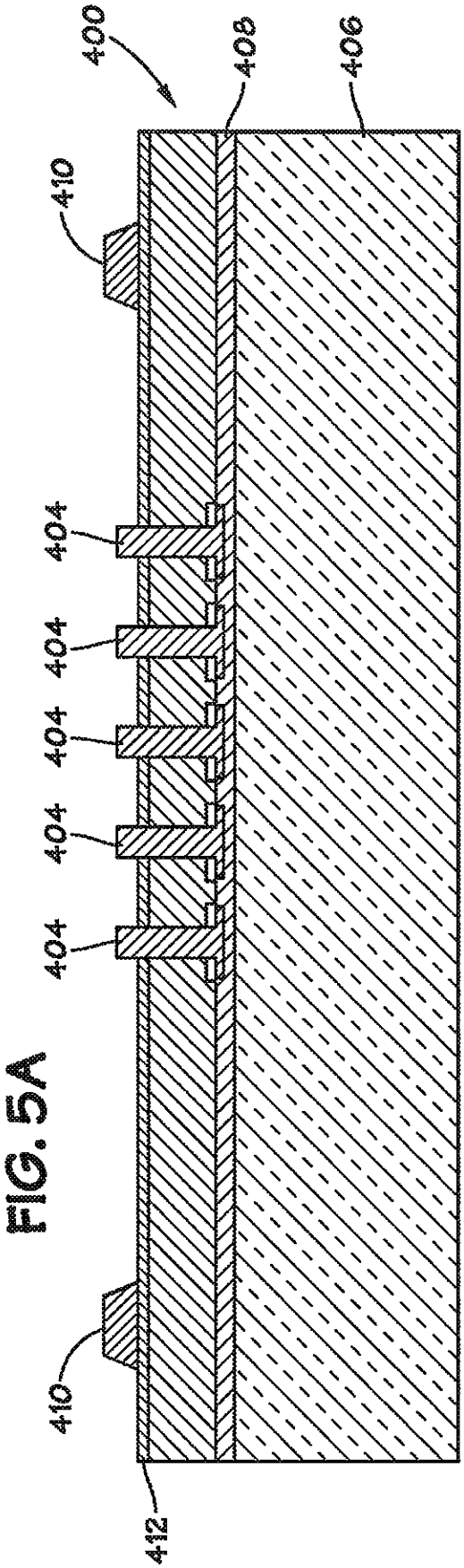

400
408
406
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404
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404
404
404
410
412

FIG. 5A

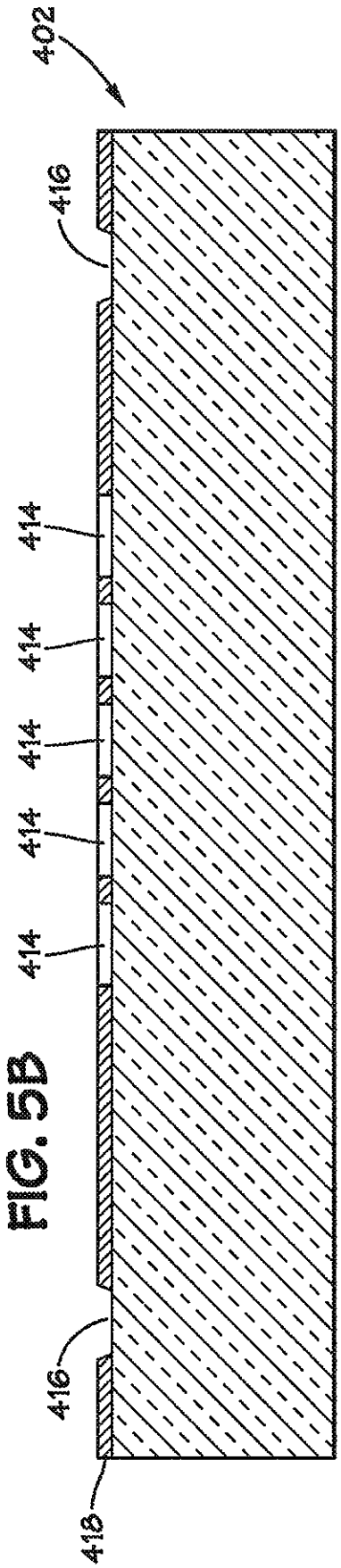

402
416
414
414
414
414
414
416
418

FIG. 5B

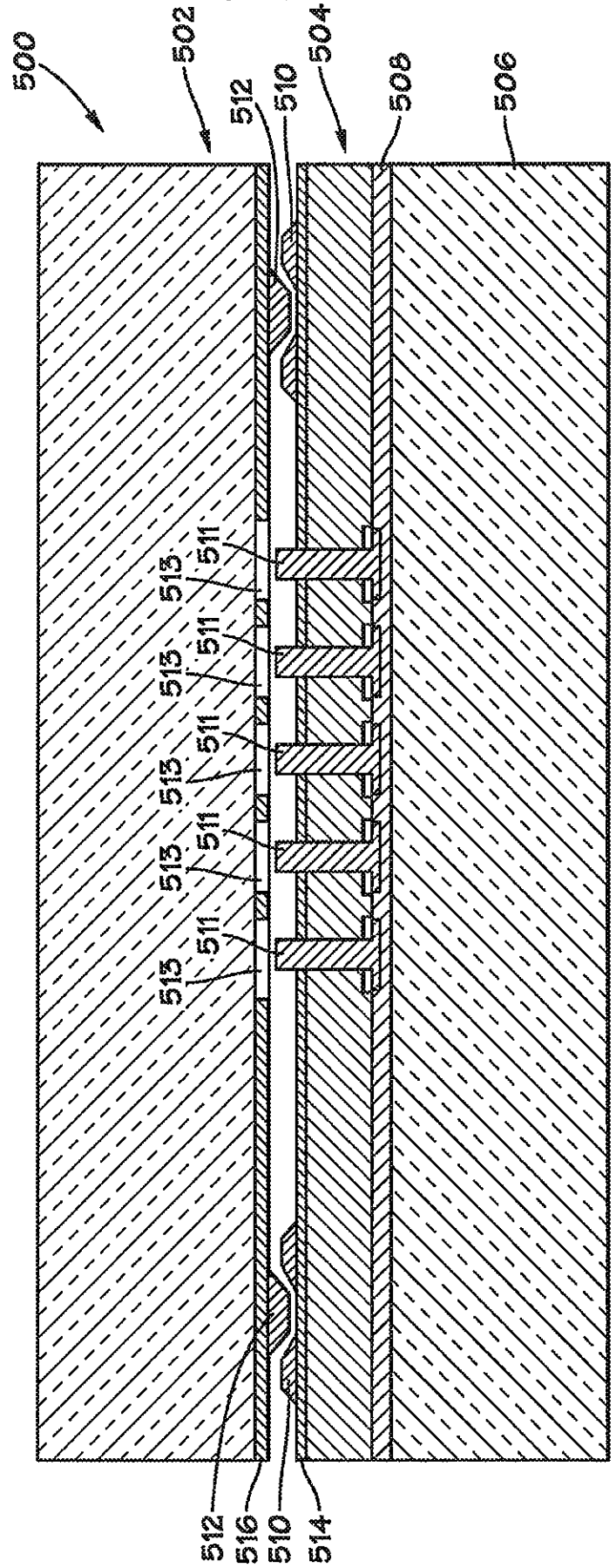


FIG. 6

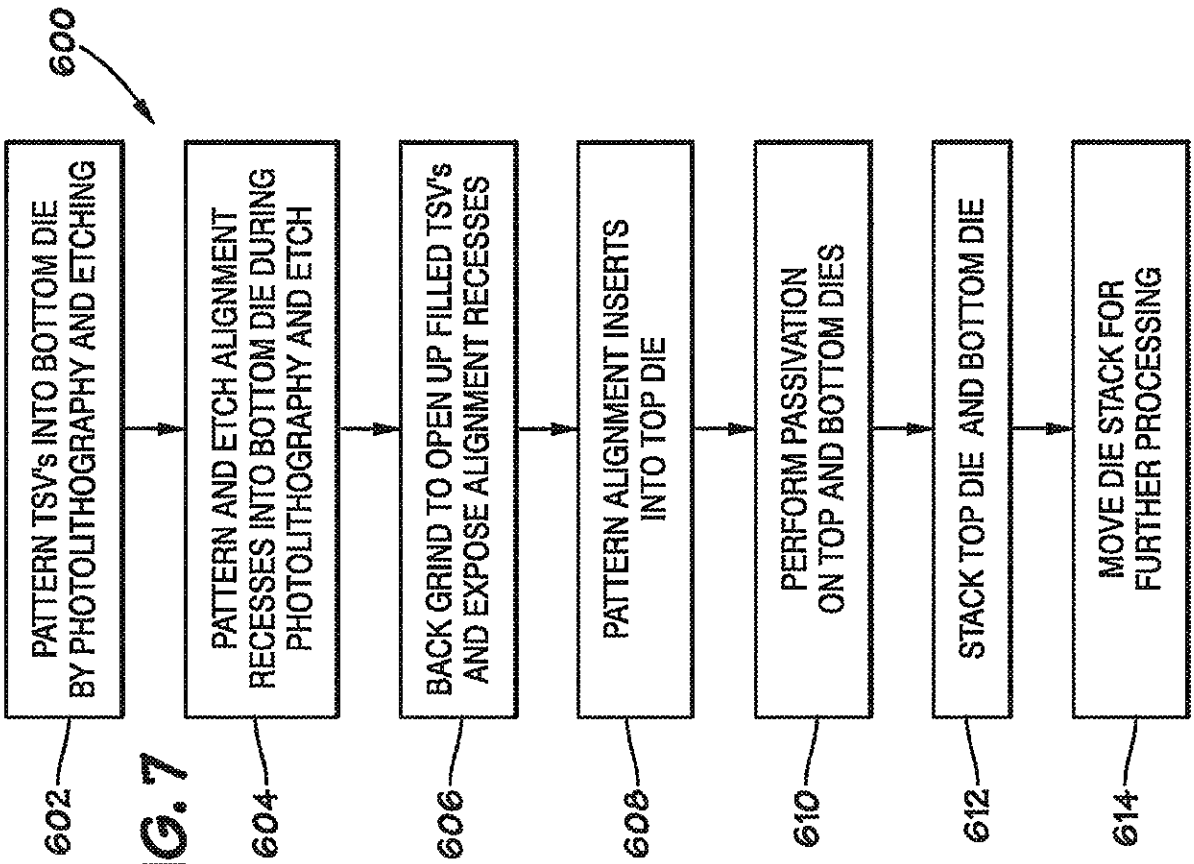

600
PATTERN TSV's INTO BOTTOM DIE BY PHOTOLITHOGRAPHY AND ETCHING
602
PATTERN AND ETCH ALIGNMENT RECESSES INTO BOTTOM DIE DURING PHOTOLITHOGRAPHY AND ETCH
604
BACK GRIND TO OPEN UP FILLED TSV's AND EXPOSE ALIGNMENT RECESSES
606
PATTERN ALIGNMENT INSERTS INTO TOP DIE
608
PERFORM PASSIVATION ON TOP AND BOTTOM DIES
610
STACK TOP DIE AND BOTTOM DIE
612
MOVE DIE STACK FOR FURTHER PROCESSING
614

FIG. 7

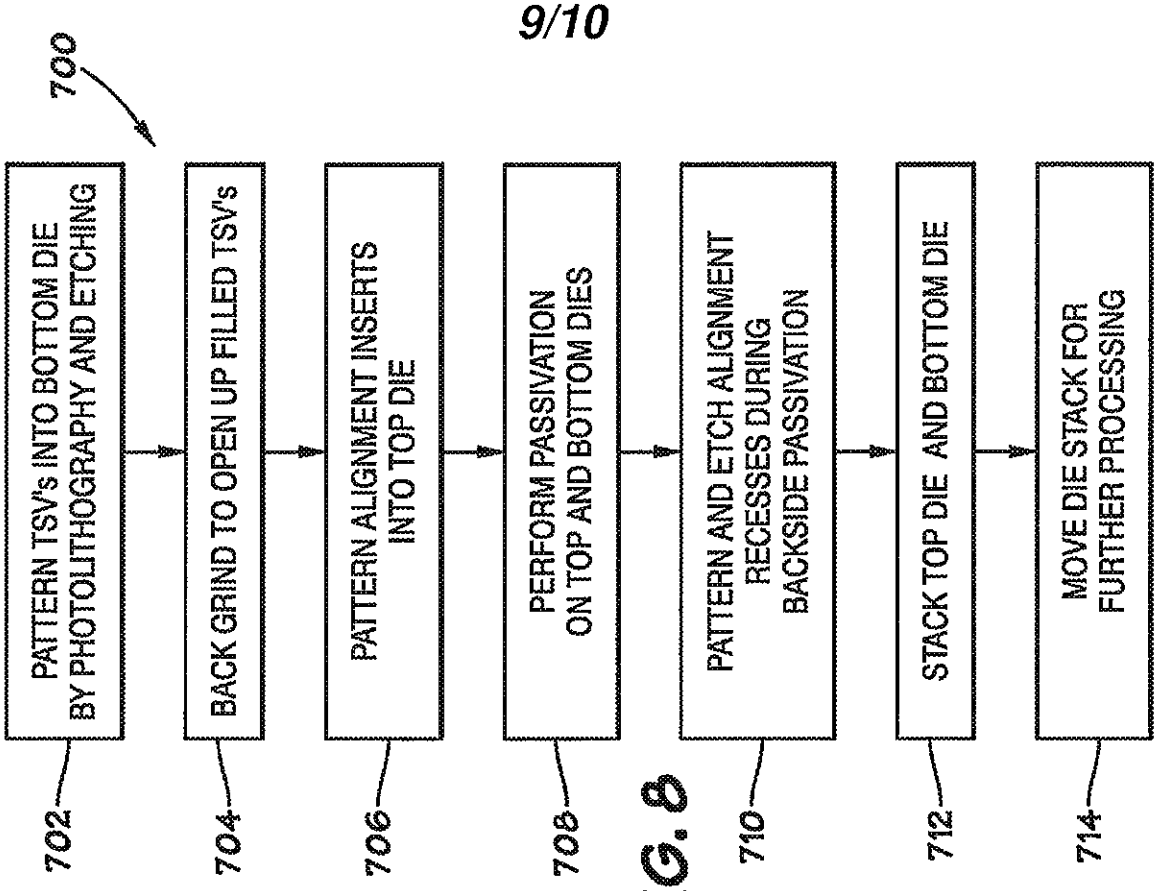

700
PATTERN TSV's INTO BOTTOM DIE BY PHOTOLITHOGRAPHY AND ETCHING
702
BACK GRIND TO OPEN UP FILLED TSV's
704
PATTERN ALIGNMENT INSERTS INTO TOP DIE
706
PERFORM PASSIVATION ON TOP AND BOTTOM DIES
708
PATTERN AND ETCH ALIGNMENT RECESSES DURING BACKSIDE PASSIVATION
710
STACK TOP DIE AND BOTTOM DIE
712
MOVE DIE STACK FOR FURTHER PROCESSING
714

FIG. 8

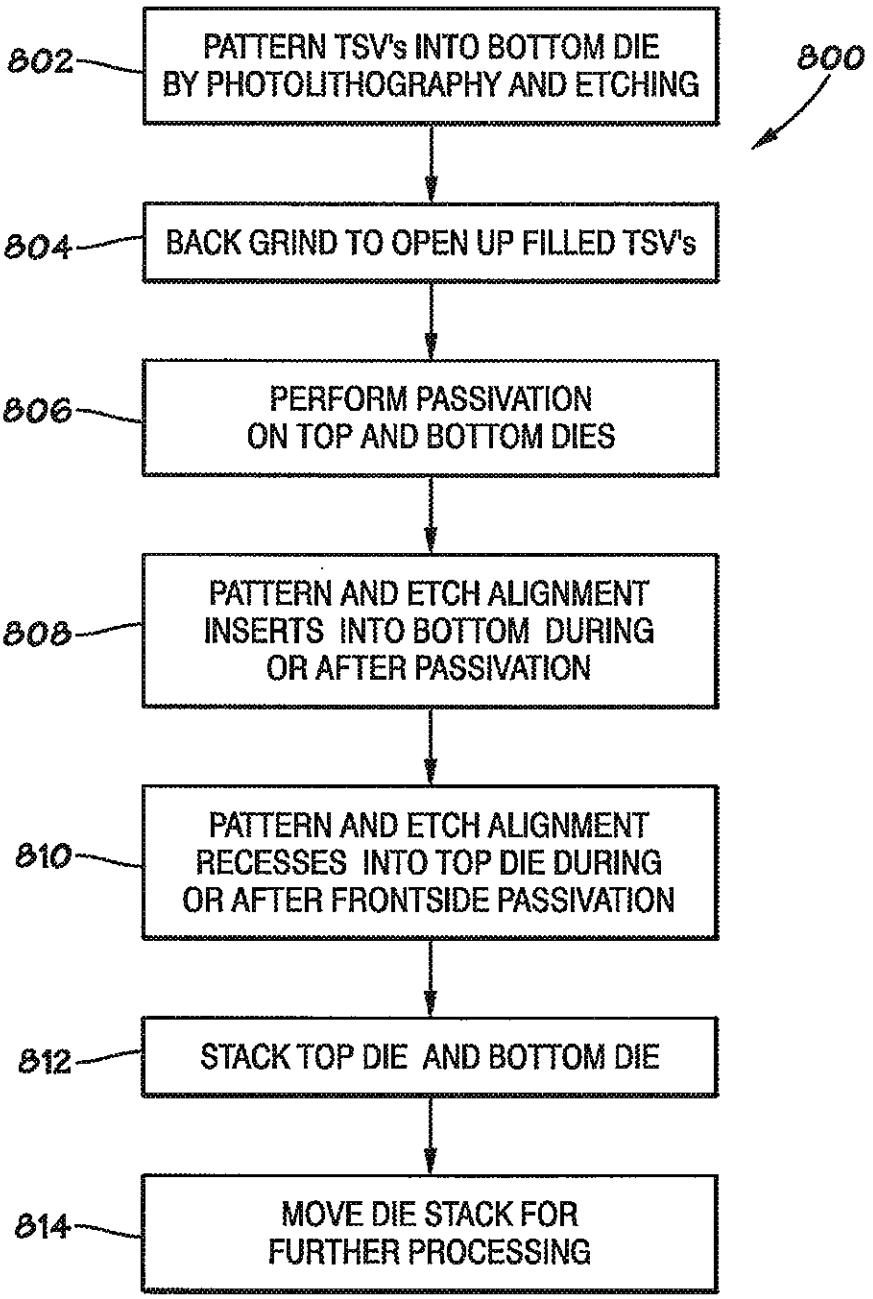

802
PATTERN TSV's INTO BOTTOM DIE BY PHOTOLITHOGRAPHY AND ETCHING
800
804
BACK GRIND TO OPEN UP FILLED TSV's
806
PERFORM PASSIVATION ON TOP AND BOTTOM DIES
808
PATTERN AND ETCH ALIGNMENT INSERTS INTO BOTTOM DURING OR AFTER PASSIVATION
810
PATTERN AND ETCH ALIGNMENT RECESSES INTO TOP DIE DURING OR AFTER FRONTSIDE PASSIVATION
812
STACK TOP DIE AND BOTTOM DIE
814
MOVE DIE STACK FOR FURTHER PROCESSING

FIG. 9