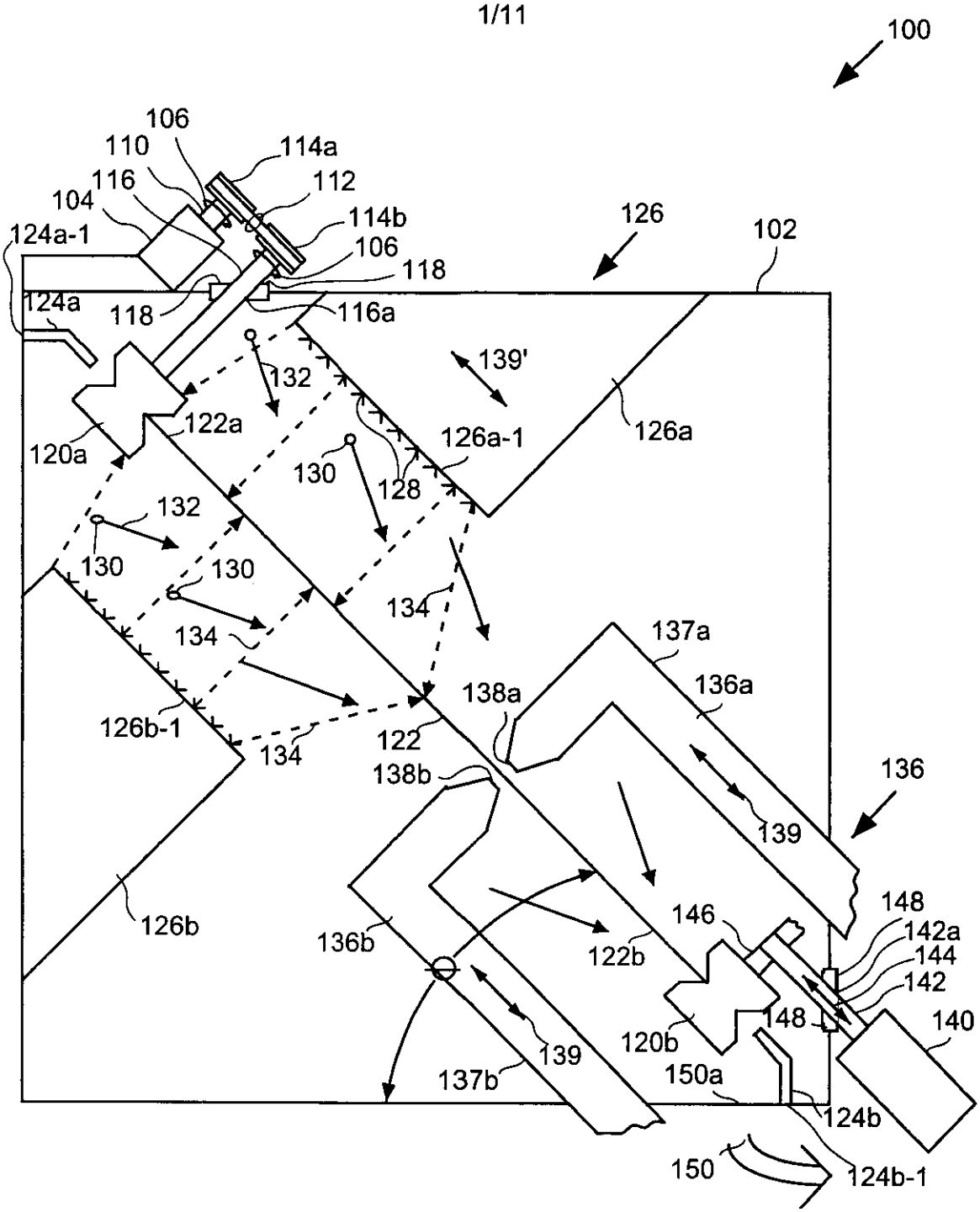

100
106
110
114a
116
112
104
114b
126
102
124a-1
106
118
124a
118
116a
139'
132
122a
126a
120a
126a-1
130
128
132
130
130
134
134
137a
136a
138a
126b-1
122
134
138b
136
139
126b
136b
122b
146
148
142a
144
142
148
140
120b
139
137b
150a
124b
150
124b-1

FIG. 1

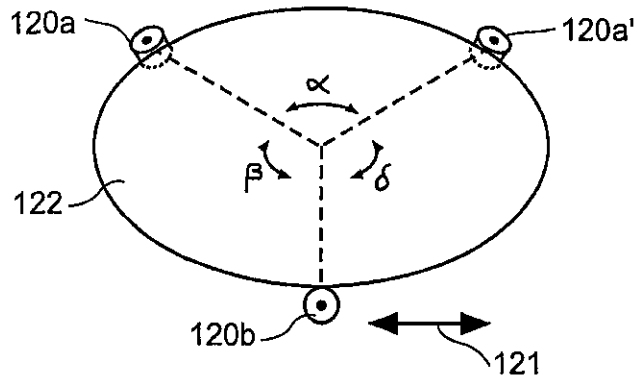


FIG. 2A

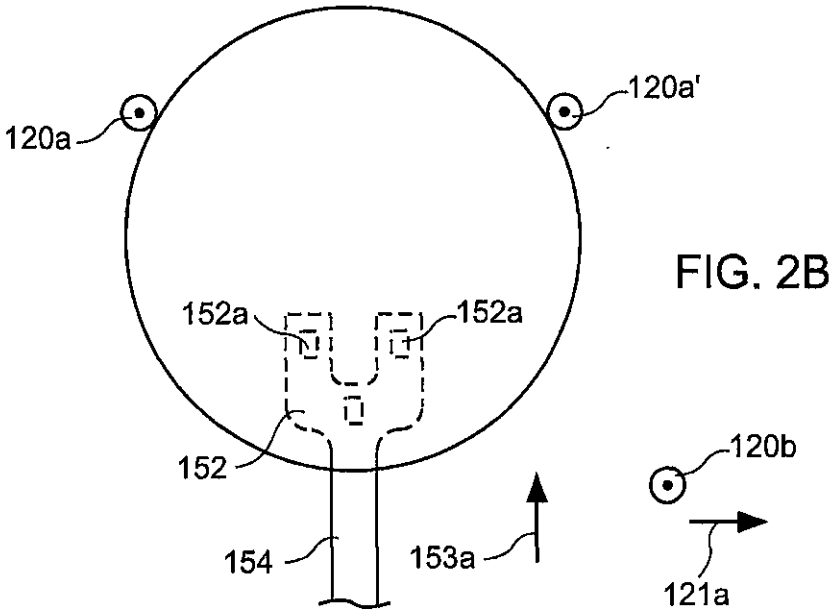


FIG. 2B

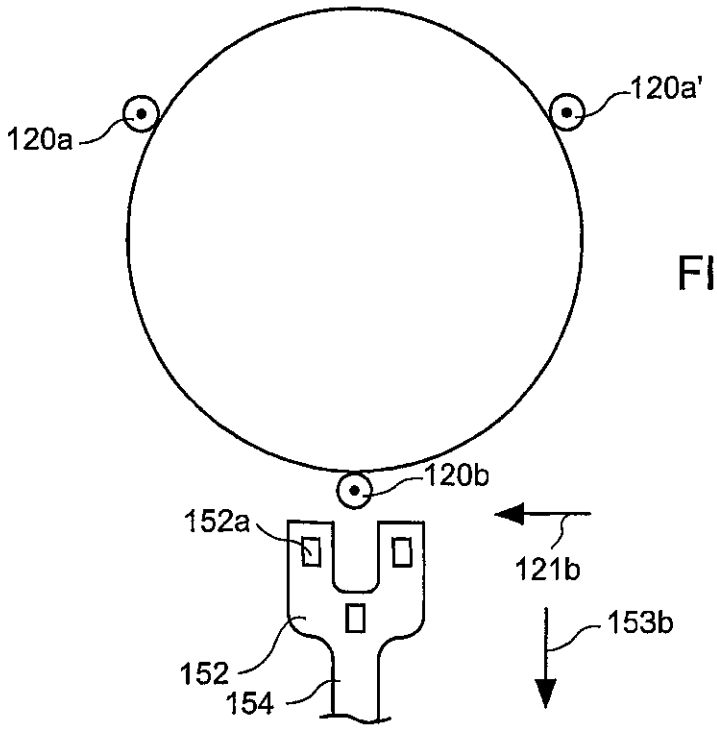


FIG. 2C

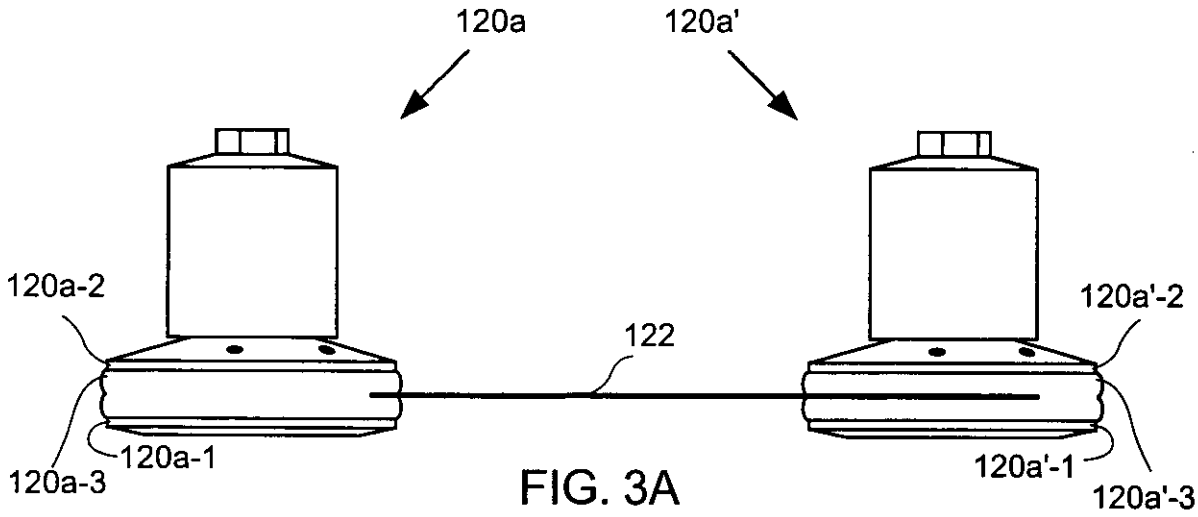

120a
120a'
120a-2
122
120a'-2
120a-3
120a-1
120a'-1
120a'-3

FIG. 3A

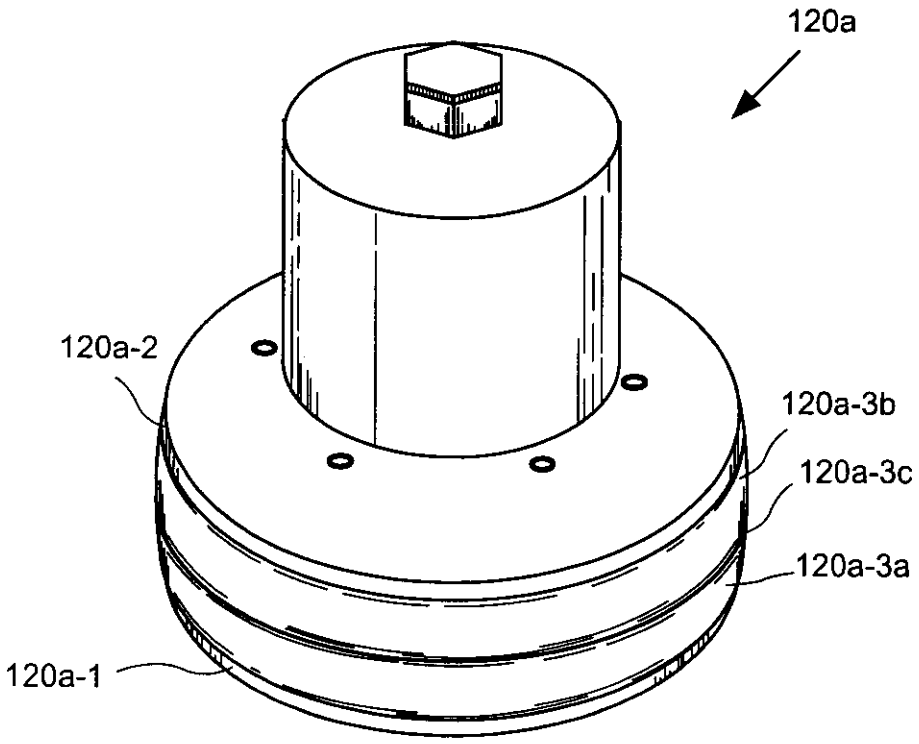

120a
120a-2
120a-3b
120a-3c
120a-3a
120a-1

FIG. 3B

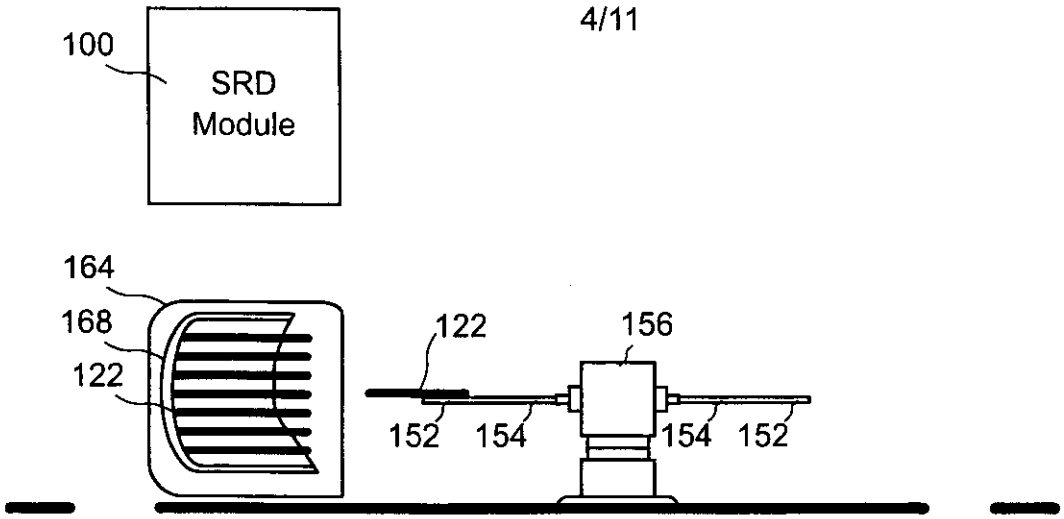


FIG. 4A

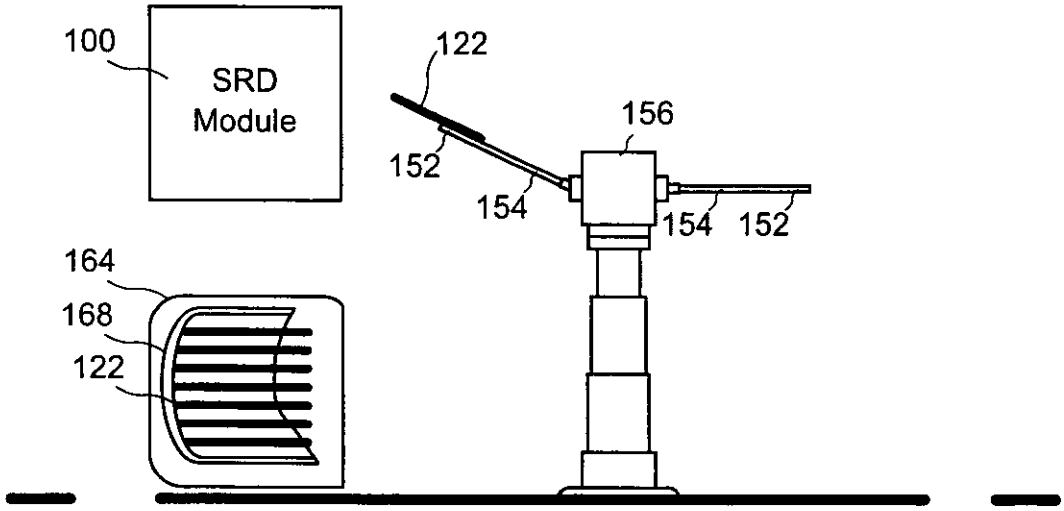


FIG. 4B

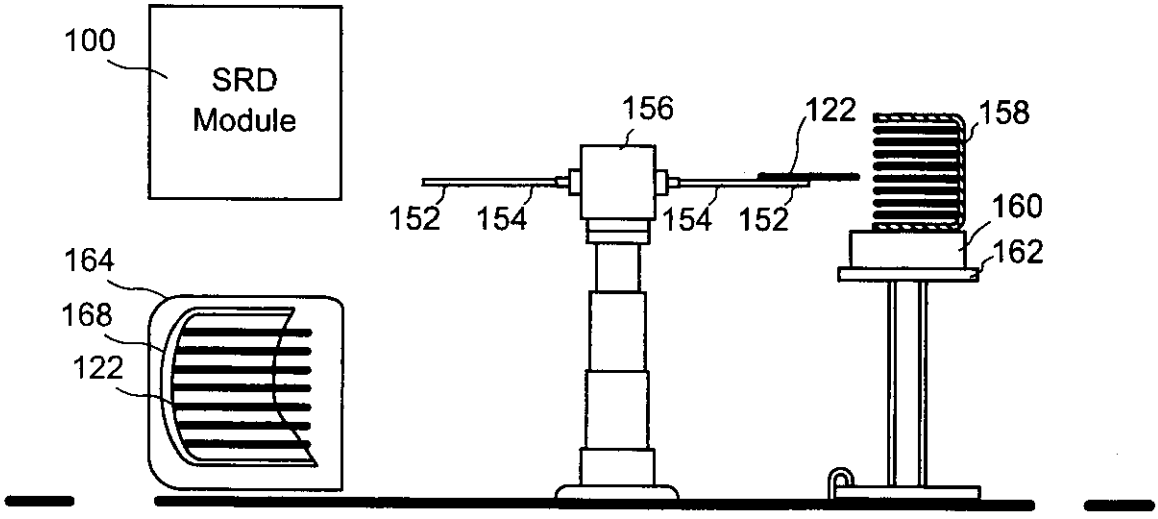


FIG. 4C

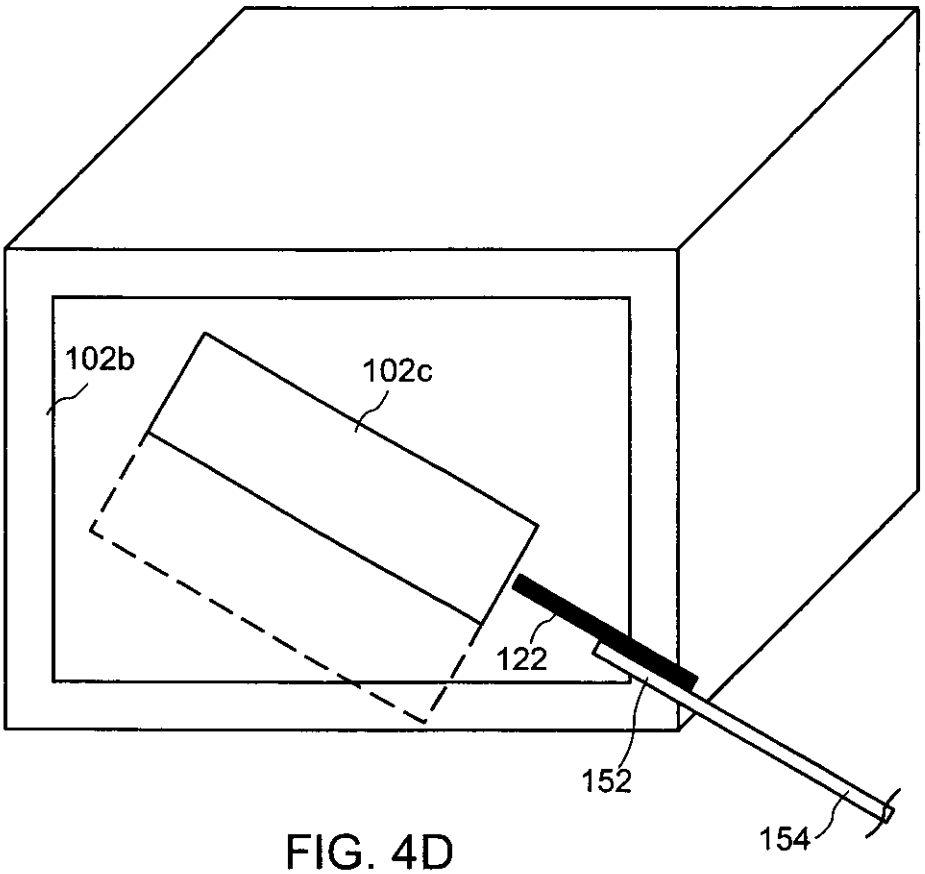


FIG. 4D

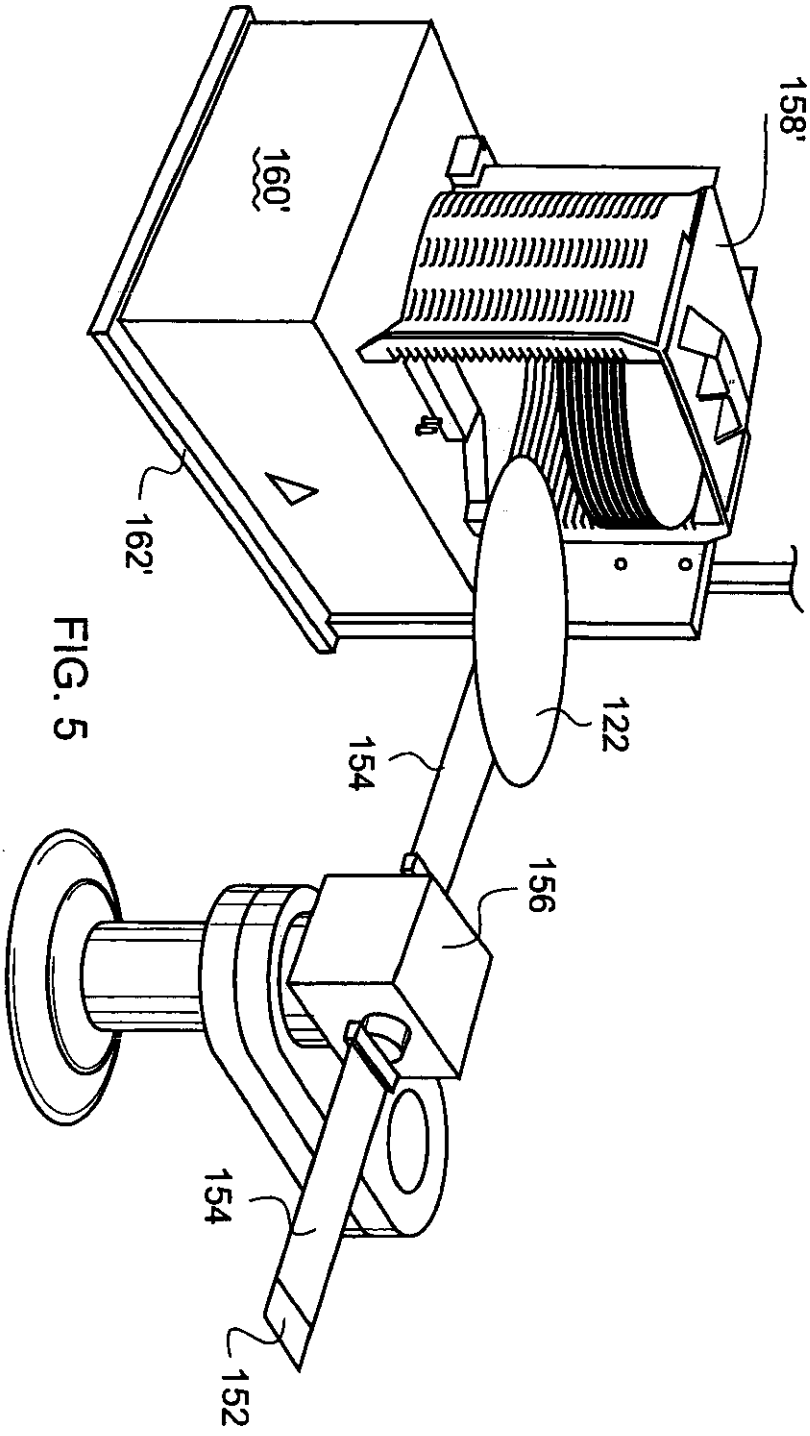


FIG. 5

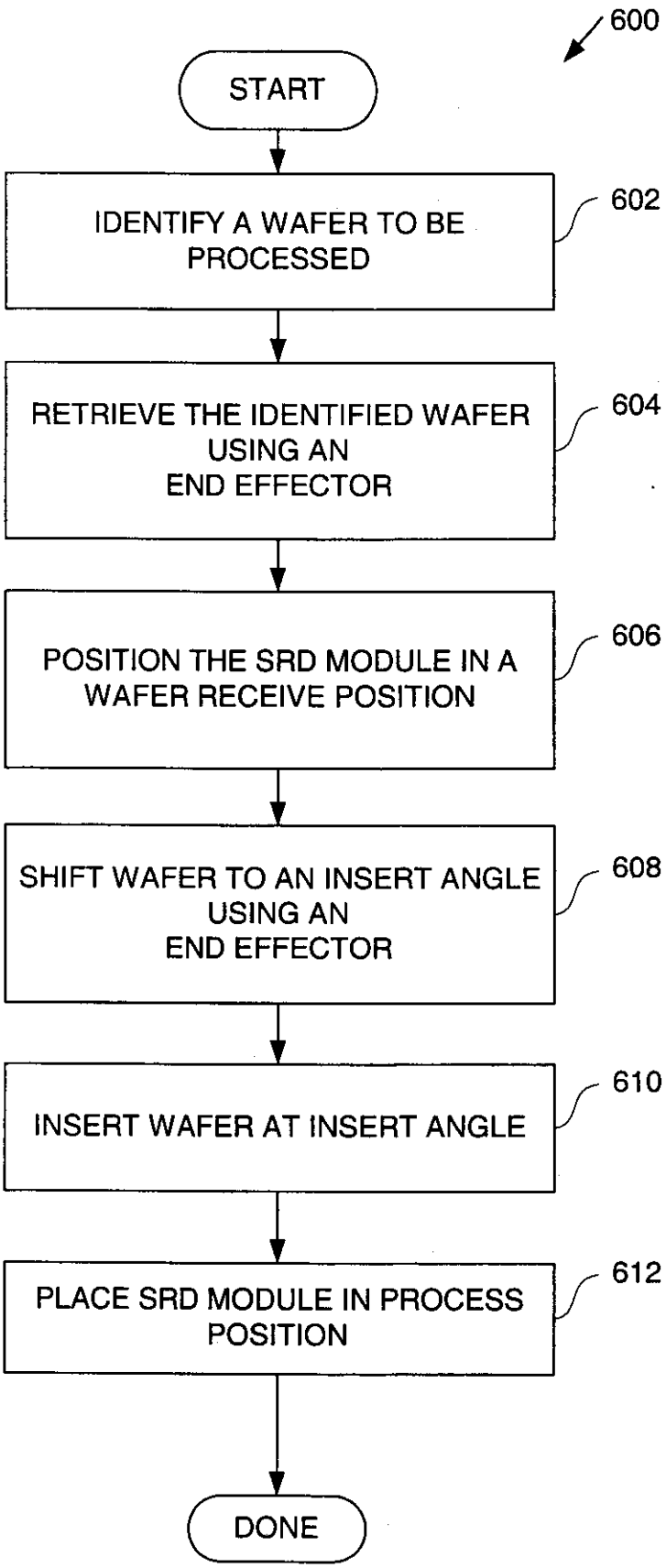

600
START
IDENTIFY A WAFER TO BE PROCESSED
602
RETRIEVE THE IDENTIFIED WAFER USING AN END EFFECTOR
604
POSITION THE SRD MODULE IN A WAFER RECEIVE POSITION
606
SHIFT WAFER TO AN INSERT ANGLE USING AN END EFFECTOR
608
INSERT WAFER AT INSERT ANGLE
610
PLACE SRD MODULE IN PROCESS POSITION
612
DONE

FIG. 6

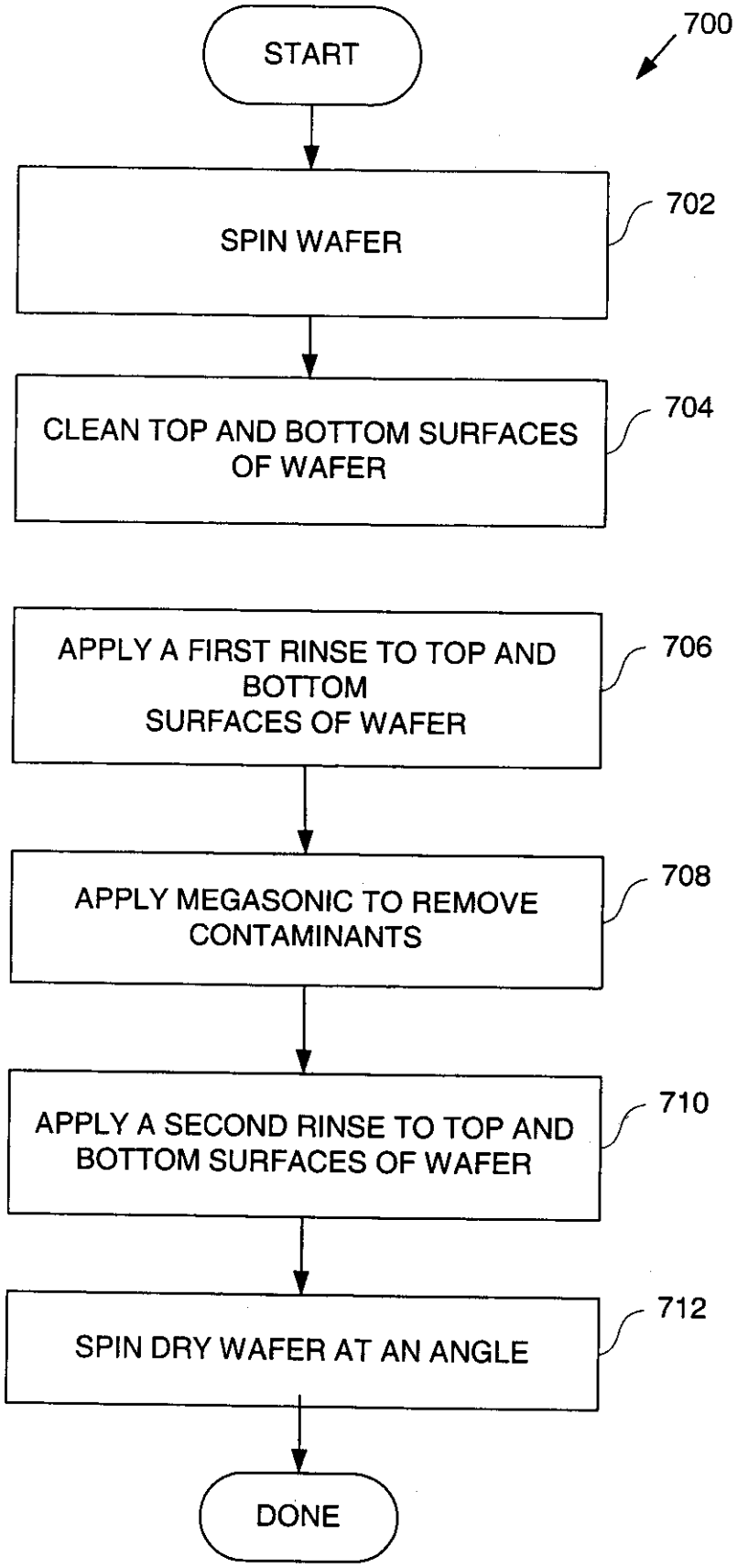

START
700
SPIN WAFER
702
CLEAN TOP AND BOTTOM SURFACES OF WAFER
704
APPLY A FIRST RINSE TO TOP AND BOTTOM SURFACES OF WAFER
706
APPLY MEGASONIC TO REMOVE CONTAMINANTS
708
APPLY A SECOND RINSE TO TOP AND BOTTOM SURFACES OF WAFER
710
SPIN DRY WAFER AT AN ANGLE
712
DONE

FIG. 7

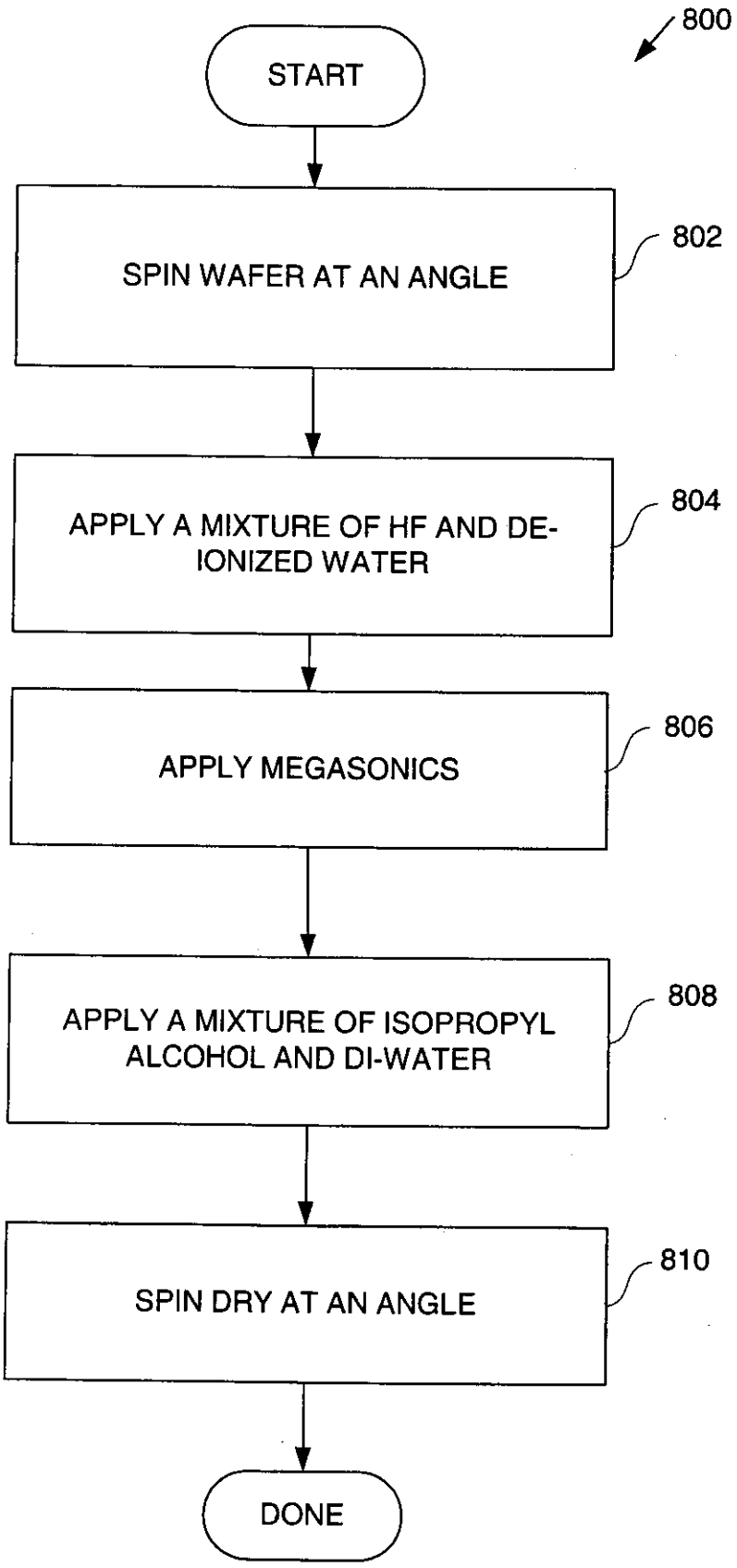

800
START
SPIN WAFER AT AN ANGLE
802
APPLY A MIXTURE OF HF AND DE-IONIZED WATER
804
APPLY MEGASONICS
806
APPLY A MIXTURE OF ISOPROPYL ALCOHOL AND DI-WATER
808
SPIN DRY AT AN ANGLE
810
DONE

FIG. 8

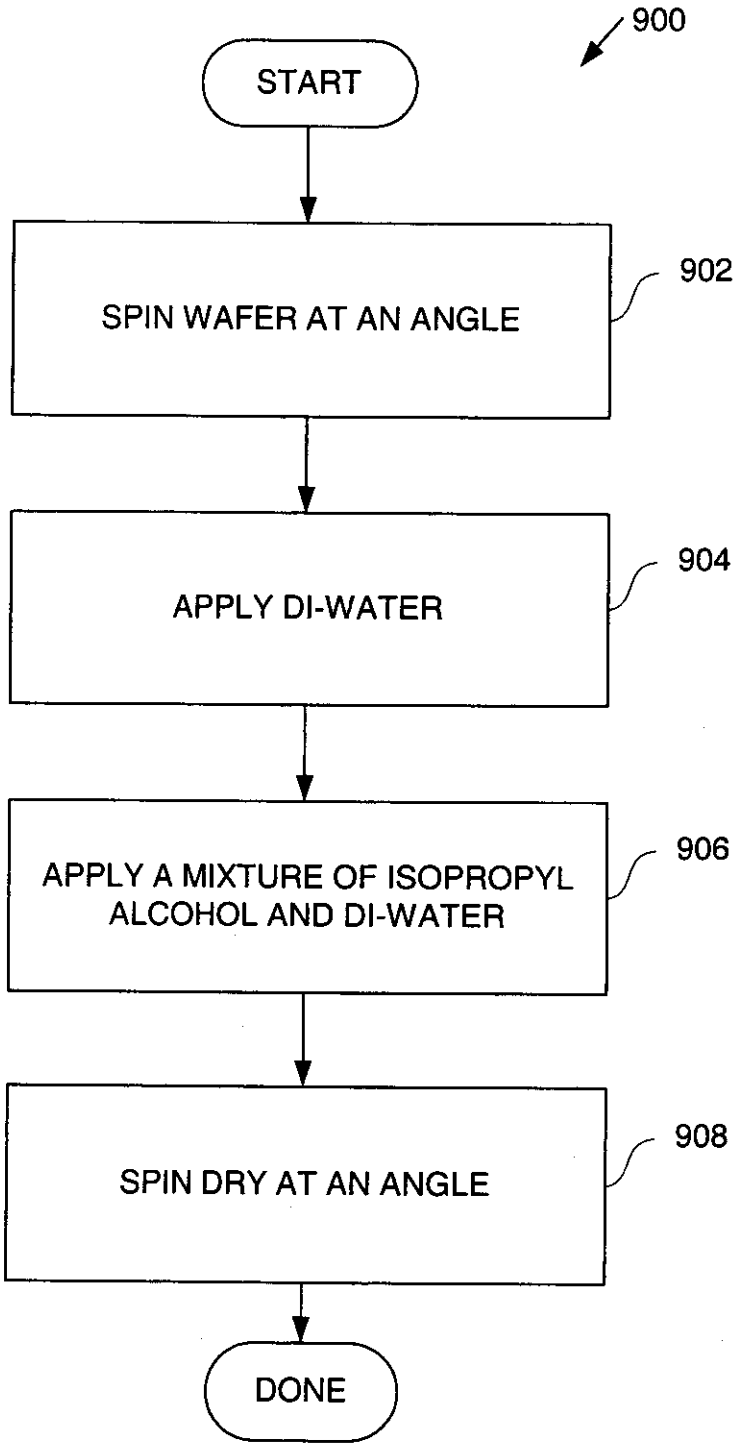

900
START
SPIN WAFER AT AN ANGLE
902
APPLY DI-WATER
904
APPLY A MIXTURE OF ISOPROPYL ALCOHOL AND DI-WATER
906
SPIN DRY AT AN ANGLE
908
DONE

FIG. 9

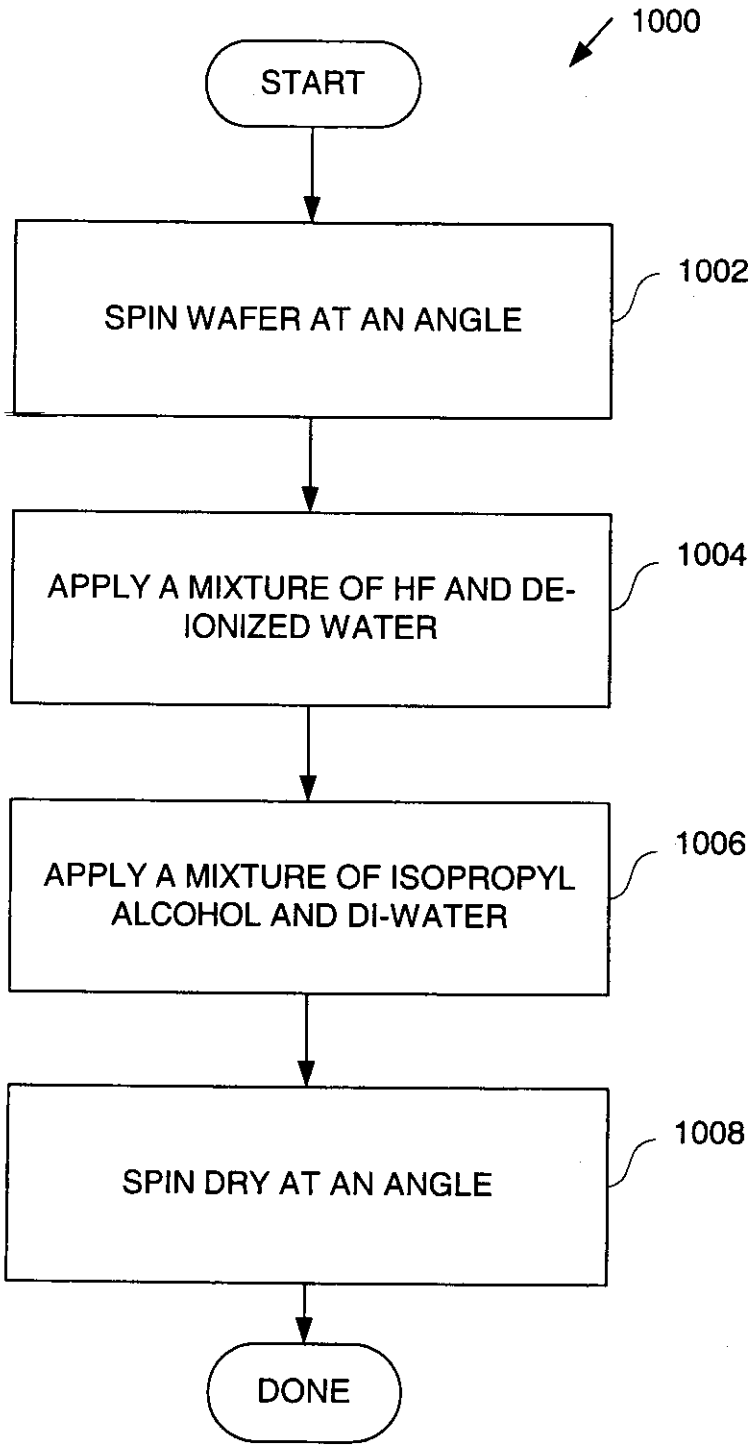

1000
START
SPIN WAFER AT AN ANGLE
1002
APPLY A MIXTURE OF HF AND DE-IONIZED WATER
1004
APPLY A MIXTURE OF ISOPROPYL ALCOHOL AND DI-WATER
1006
SPIN DRY AT AN ANGLE
1008
DONE

FIG. 10