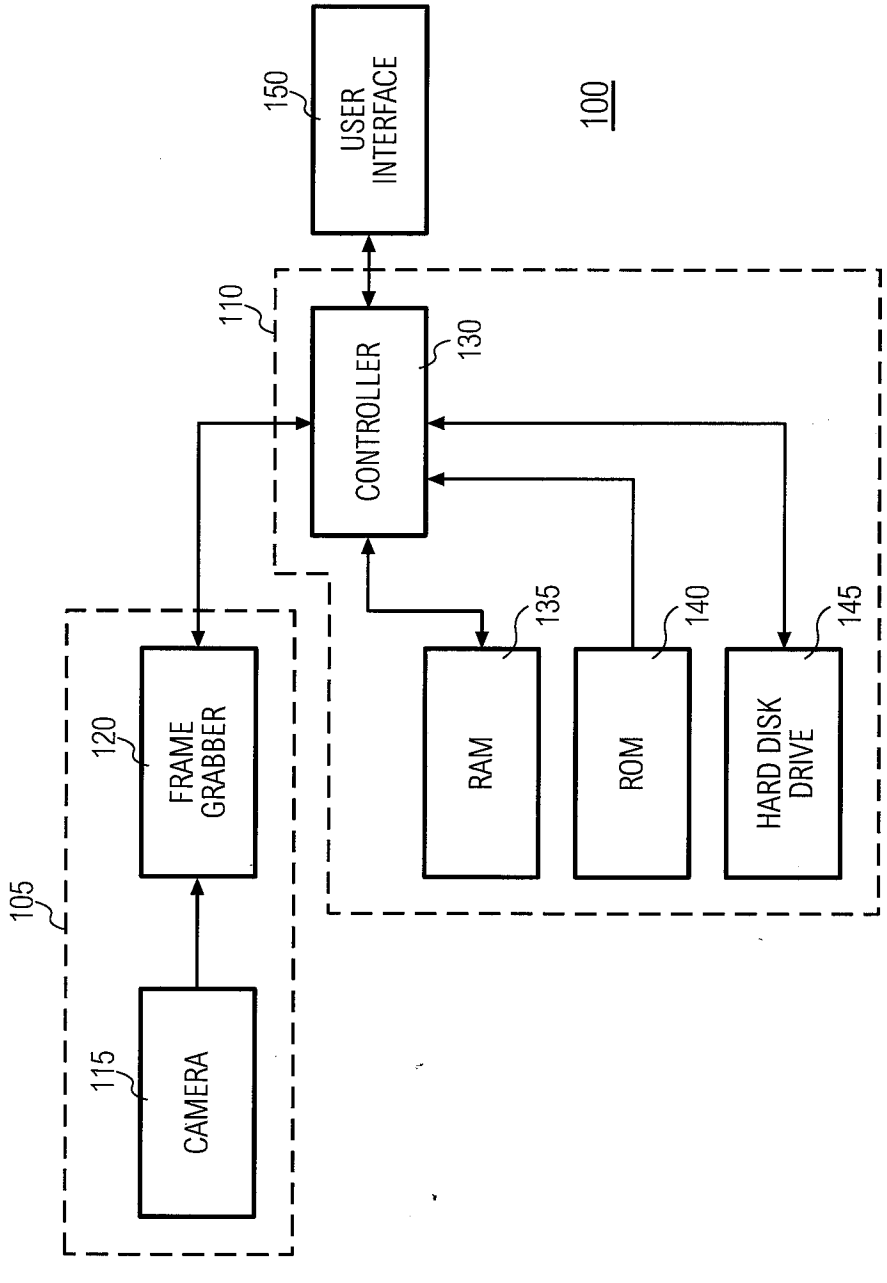

100
150
USER INTERFACE
110
CONTROLLER
130
105
120
FRAME GRABBER
115
CAMERA
135
RAM
140
ROM
145
HARD DISK DRIVE

FIG. 1

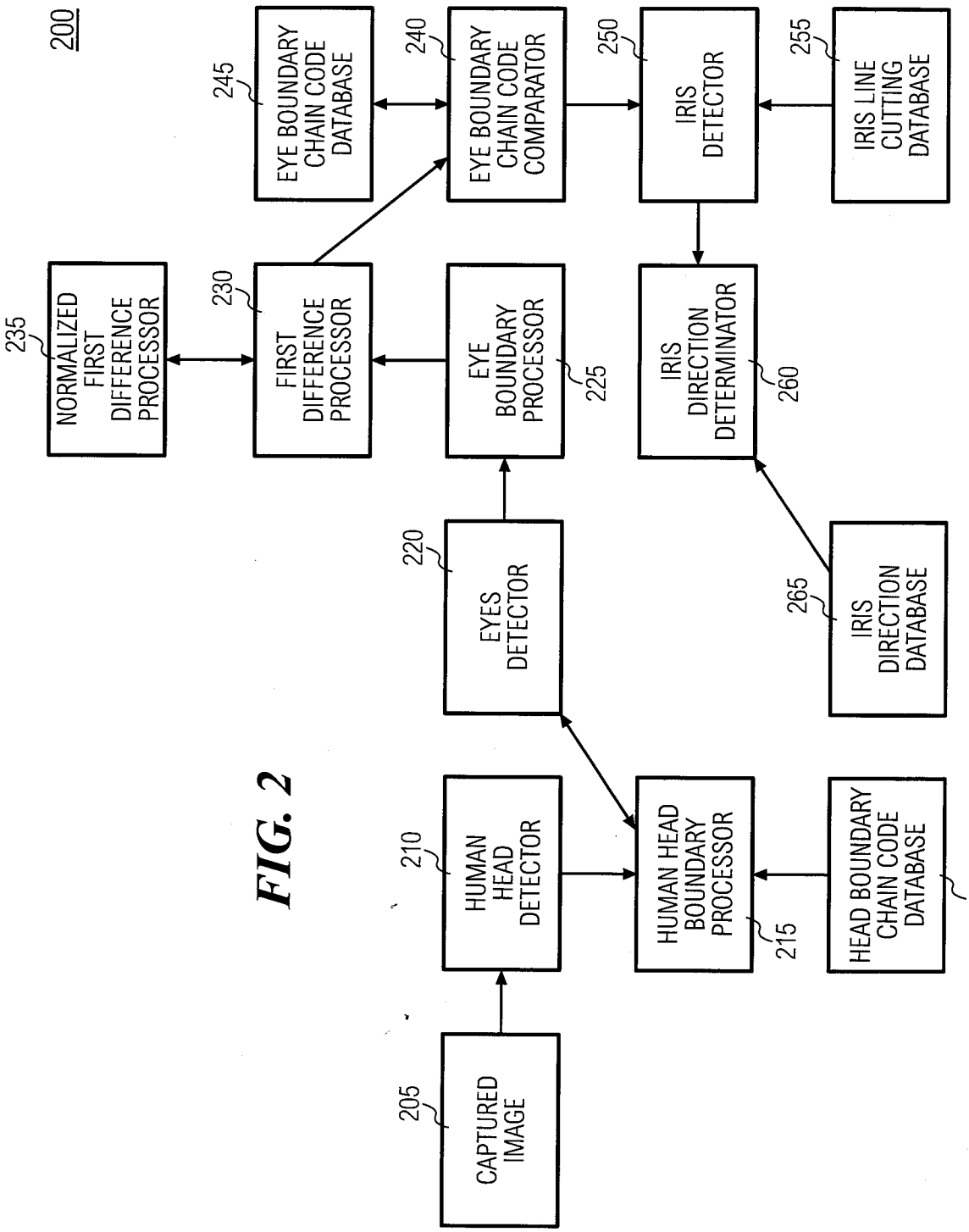

200
205
CAPTURED IMAGE
210
HUMAN HEAD DETECTOR
215
HUMAN HEAD BOUNDARY PROCESSOR
217
HEAD BOUNDARY CHAIN CODE DATABASE
220
EYES DETECTOR
225
EYE BOUNDARY PROCESSOR
230
FIRST DIFFERENCE PROCESSOR
235
NORMALIZED FIRST DIFFERENCE PROCESSOR
240
EYE BOUNDARY CHAIN CODE COMPARATOR
245
EYE BOUNDARY CHAIN CODE DATABASE
250
IRIS DETECTOR
255
IRIS LINE CUTTING DATABASE
260
IRIS DIRECTION DETERMINATOR
265
IRIS DIRECTION DATABASE

FIG. 2

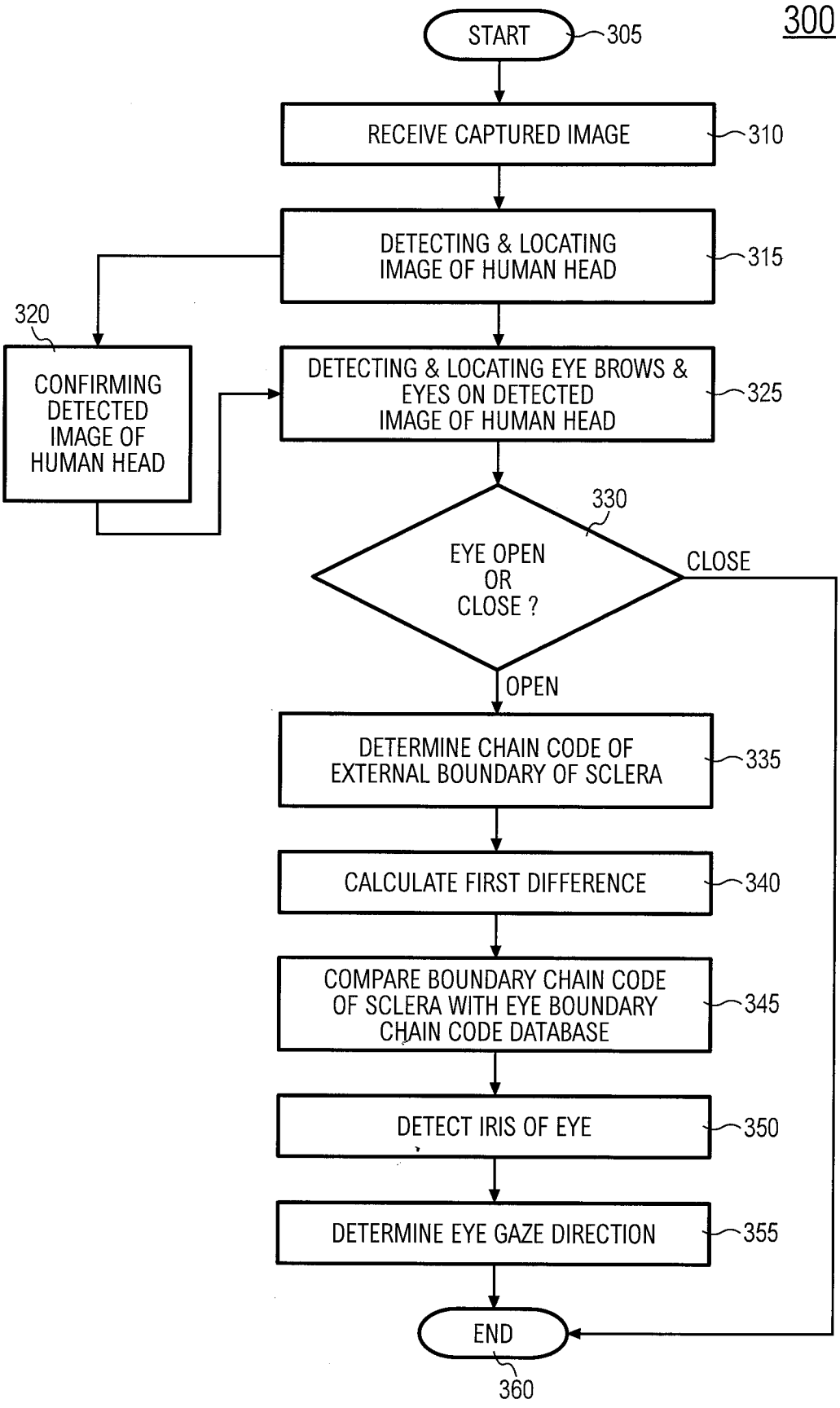

300
START
305
RECEIVE CAPTURED IMAGE
310
DETECTING & LOCATING IMAGE OF HUMAN HEAD
315
320
CONFIRMING DETECTED IMAGE OF HUMAN HEAD
DETECTING & LOCATING EYE BROWS & EYES ON DETECTED IMAGE OF HUMAN HEAD
325
330
EYE OPEN OR CLOSE ?
CLOSE
OPEN
DETERMINE CHAIN CODE OF EXTERNAL BOUNDARY OF SCLERA
335
CALCULATE FIRST DIFFERENCE
340
COMPARE BOUNDARY CHAIN CODE OF SCLERA WITH EYE BOUNDARY CHAIN CODE DATABASE
345
DETECT IRIS OF EYE
350
DETERMINE EYE GAZE DIRECTION
355
END
360

FIG. 3

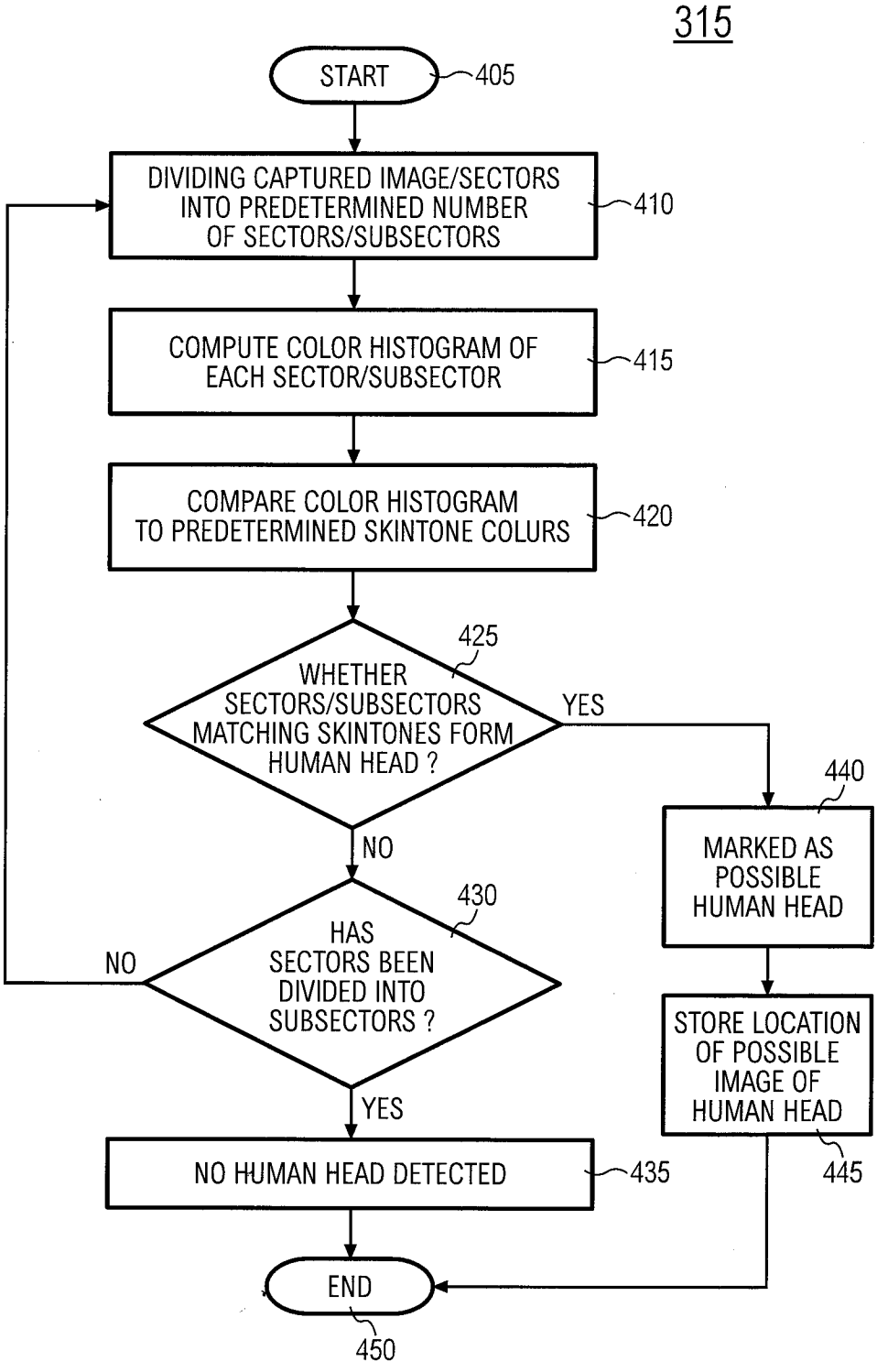

315
START
405
DIVIDING CAPTURED IMAGE/SECTORS INTO PREDETERMINED NUMBER OF SECTORS/SUBSECTORS
410
COMPUTE COLOR HISTOGRAM OF EACH SECTOR/SUBSECTOR
415
COMPARE COLOR HISTOGRAM TO PREDETERMINED SKINTONE COLURS
420
425
WHETHER SECTORS/SUBSECTORS MATCHING SKINTONES FORM HUMAN HEAD ?
YES
NO
440
MARKED AS POSSIBLE HUMAN HEAD
430
HAS SECTORS BEEN DIVIDED INTO SUBSECTORS ?
NO
YES
STORE LOCATION OF POSSIBLE IMAGE OF HUMAN HEAD
445
NO HUMAN HEAD DETECTED
435
END
450

FIG. 4

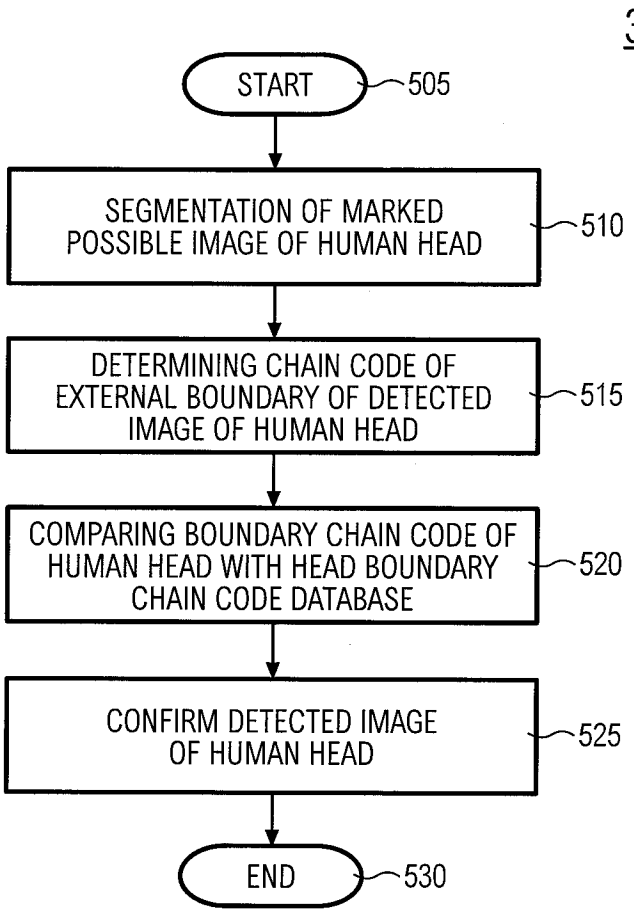

320
START
505
SEGMENTATION OF MARKED POSSIBLE IMAGE OF HUMAN HEAD
510
DETERMINING CHAIN CODE OF EXTERNAL BOUNDARY OF DETECTED IMAGE OF HUMAN HEAD
515
COMPARING BOUNDARY CHAIN CODE OF HUMAN HEAD WITH HEAD BOUNDARY CHAIN CODE DATABASE
520
CONFIRM DETECTED IMAGE OF HUMAN HEAD
525
END
530

FIG. 5

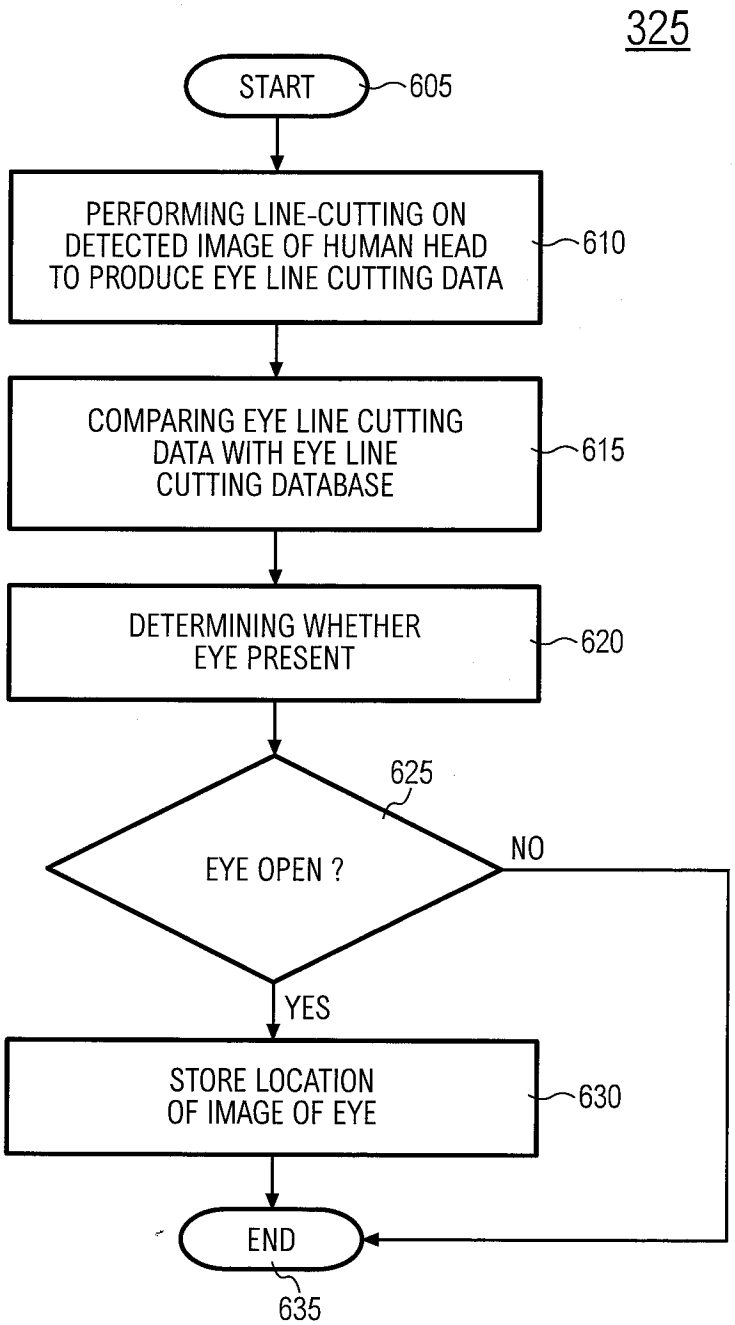

325
START
605
PERFORMING LINE-CUTTING ON DETECTED IMAGE OF HUMAN HEAD TO PRODUCE EYE LINE CUTTING DATA
610
COMPARING EYE LINE CUTTING DATA WITH EYE LINE CUTTING DATABASE
615
DETERMINING WHETHER EYE PRESENT
620
625
EYE OPEN ?
NO
YES
STORE LOCATION OF IMAGE OF EYE
630
END
635

FIG. 6

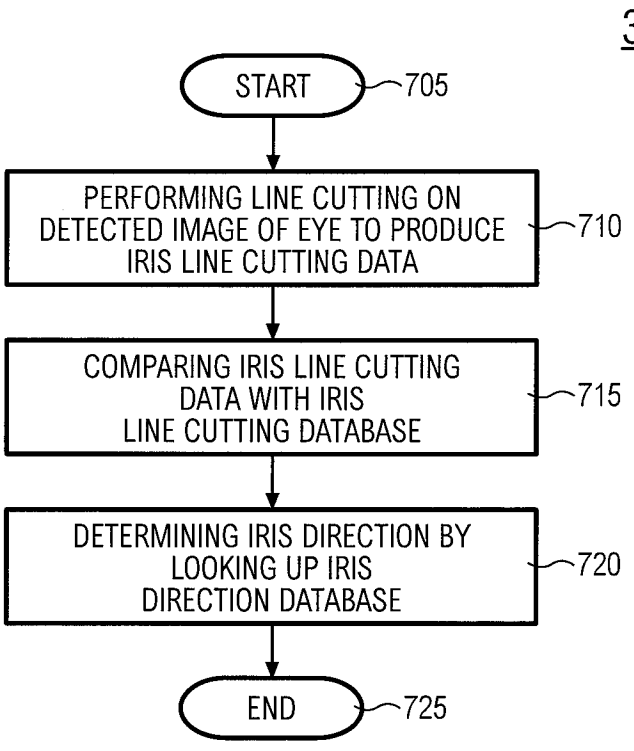

350
START
705
PERFORMING LINE CUTTING ON DETECTED IMAGE OF EYE TO PRODUCE IRIS LINE CUTTING DATA
710
COMPARING IRIS LINE CUTTING DATA WITH IRIS LINE CUTTING DATABASE
715
DETERMINING IRIS DIRECTION BY LOOKING UP IRIS DIRECTION DATABASE
720
END
725

FIG. 7

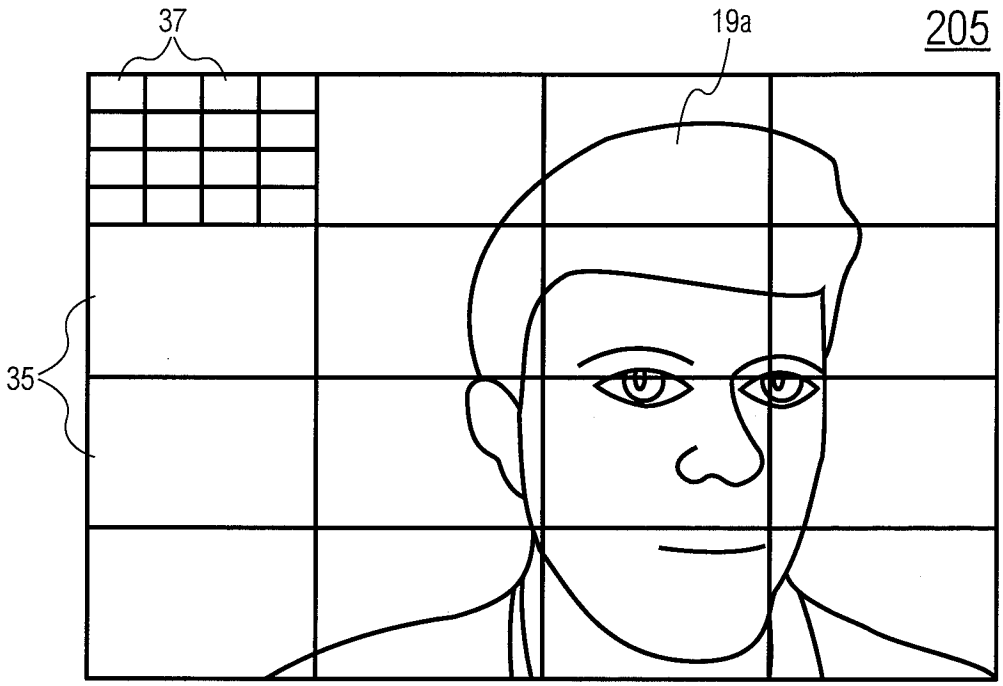


FIG. 8A

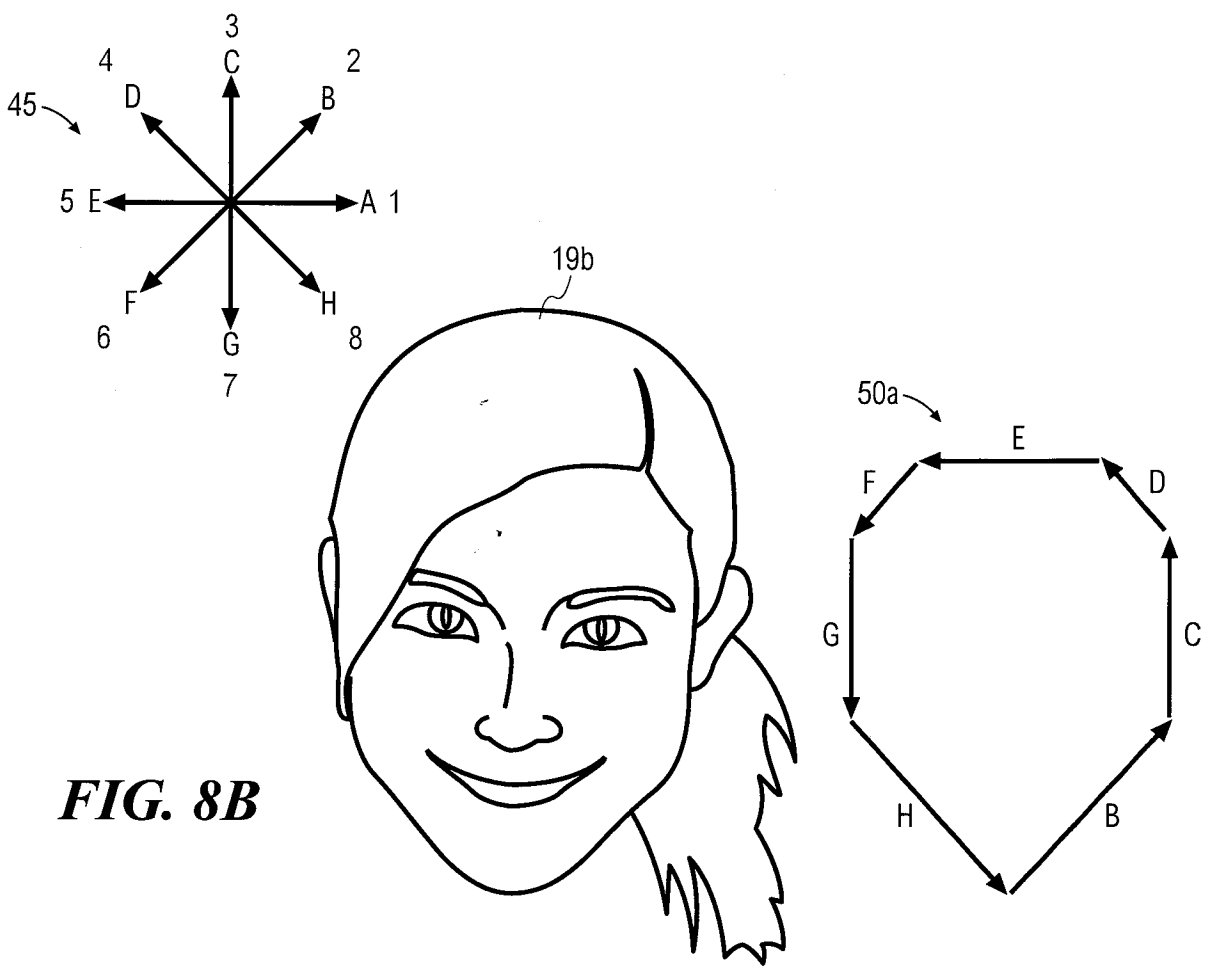


FIG. 8B

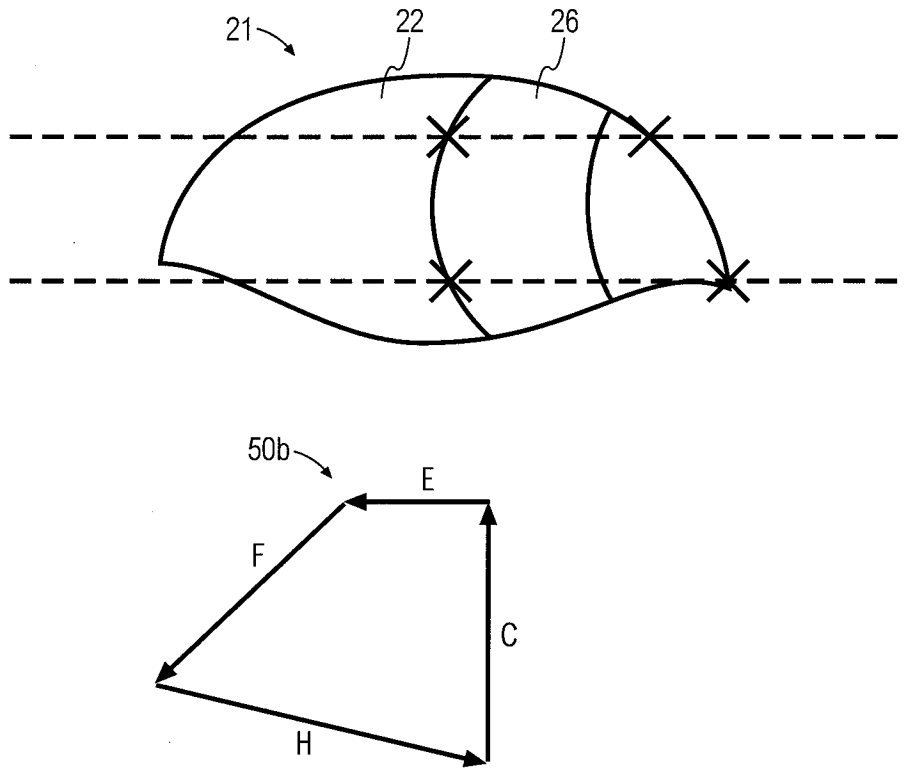


FIG. 9