FIG. 1

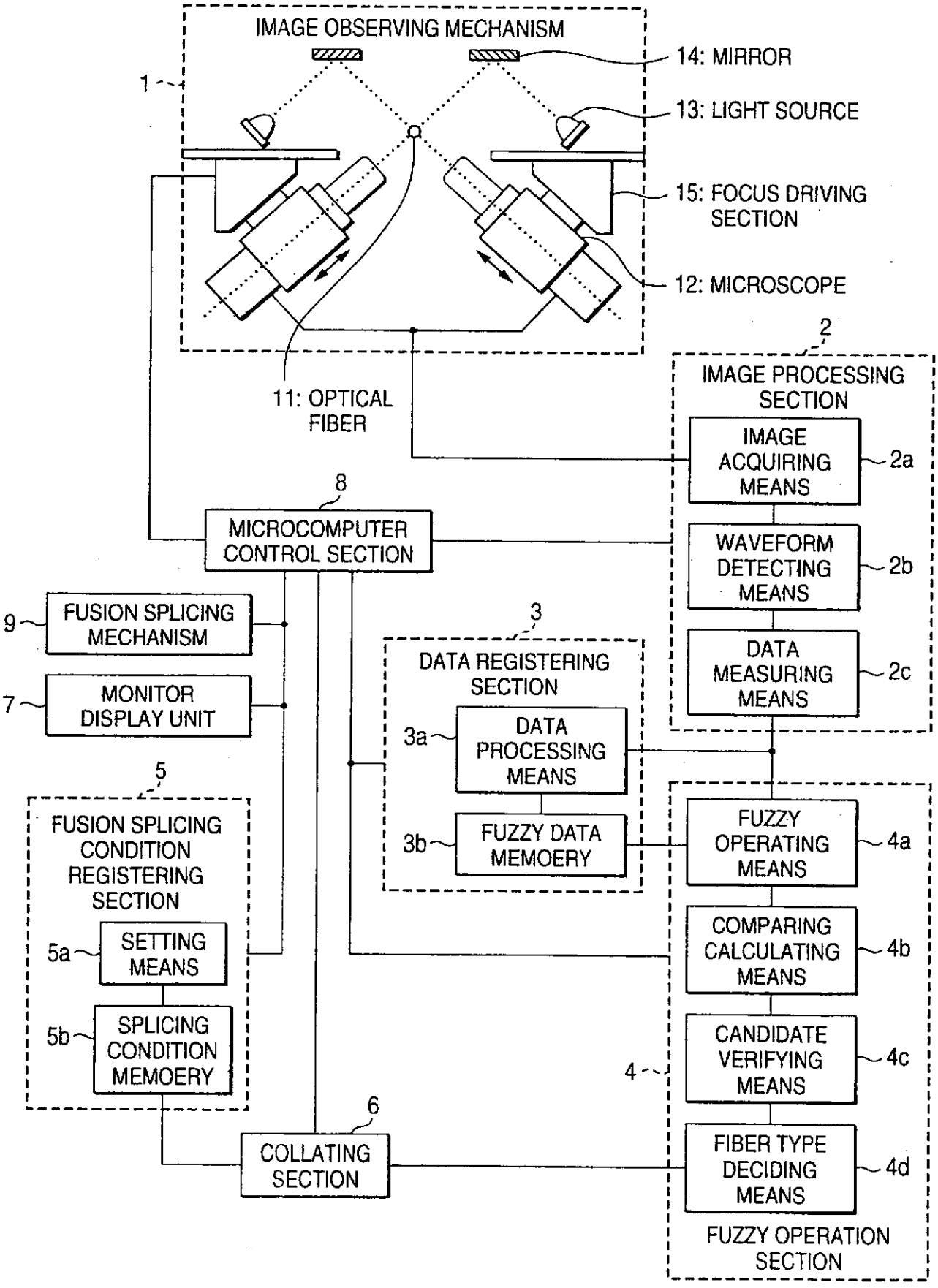
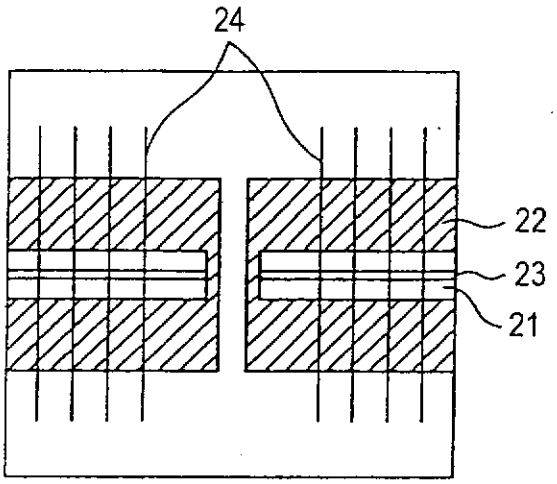
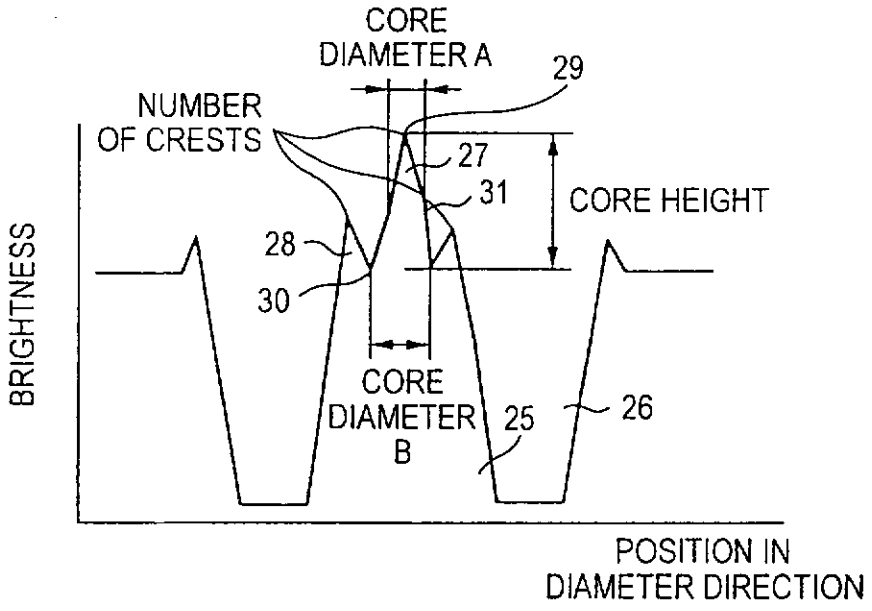

IMAGE OBSERVING MECHANISM
1
14: MIRROR
13: LIGHT SOURCE
15: FOCUS DRIVING SECTION
12: MICROSCOPE
11: OPTICAL FIBER
2
IMAGE PROCESSING SECTION
IMAGE ACQUIRING MEANS
2a
WAVEFORM DETECTING MEANS
2b
DATA MEASURING MEANS
2c
8
MICROCOMPUTER CONTROL SECTION
9
FUSION SPLICING MECHANISM
7
MONITOR DISPLAY UNIT
3
DATA REGISTERING SECTION
3a
DATA PROCESSING MEANS
3b
FUZZY DATA MEMOERY
5
FUSION SPLICING CONDITION REGISTERING SECTION
5a
SETTING MEANS
5b
SPLICING CONDITION MEMOERY
6
COLLATING SECTION
4
FUZZY OPERATING MEANS
4a
COMPARING CALCULATING MEANS
4b
CANDIDATE VERIFYING MEANS
4c
FIBER TYPE DECIDING MEANS
4d
FUZZY OPERATION SECTION

FIG. 2



(FIBER ABUTTING SCREEN)

FIG. 3



(BRIGHTNESS DISTRIBUTION WAVEFORM)

FIG. 4

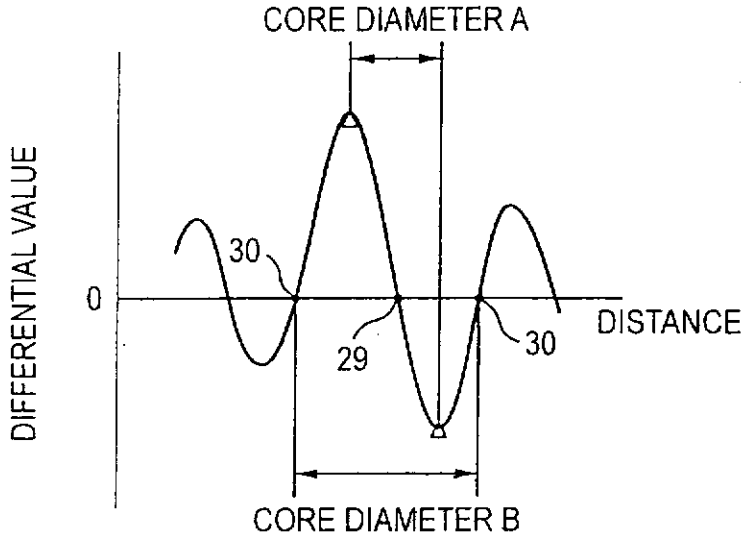

CORE DIAMETER A
DIFFERENTIAL VALUE
0
30
29
30
DISTANCE
CORE DIAMETER B

FIG. 5

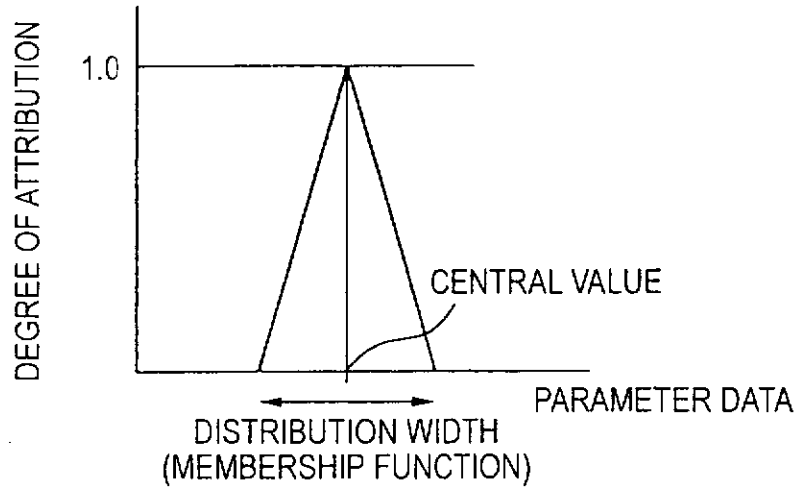

DEGREE OF ATTRIBUTION
1.0
CENTRAL VALUE
PARAMETER DATA
DISTRIBUTION WIDTH
(MEMBERSHIP FUNCTION)

FIG. 6

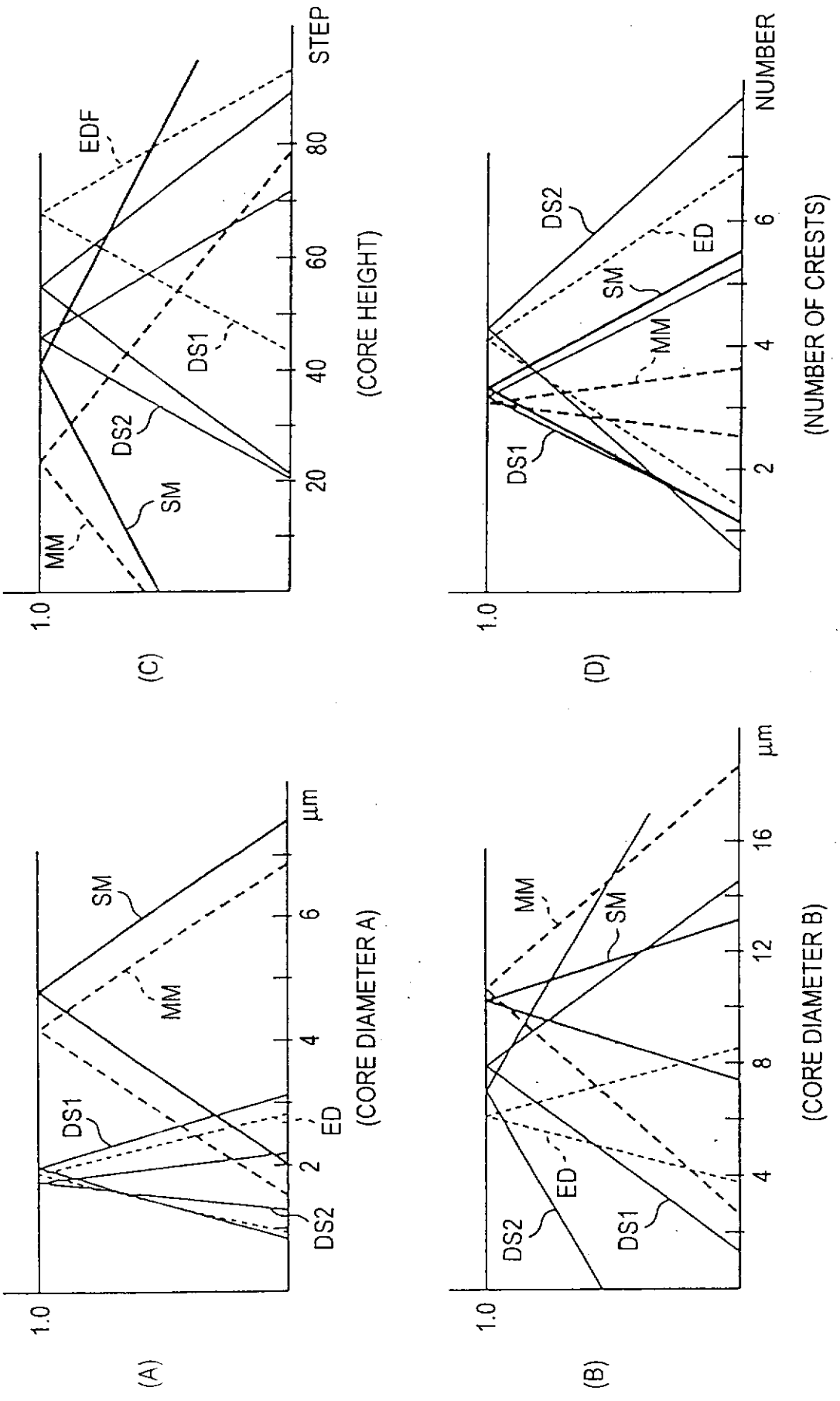

(A)
1.0
SM
MM
DS1
ED
DS2
2
4
6
μm
(CORE DIAMETER A)
(B)
1.0
MM
SM
DS2
ED
DS1
4
8
12
16
μm
(CORE DIAMETER B)
(C)
1.0
EDF
DS1
DS2
SM
MM
20
40
60
80
STEP
(CORE HEIGHT)
(D)
1.0
DS2
SM
ED
MM
DS1
2
4
6
NUMBER
(NUMBER OF CRESTS)

FIG. 7

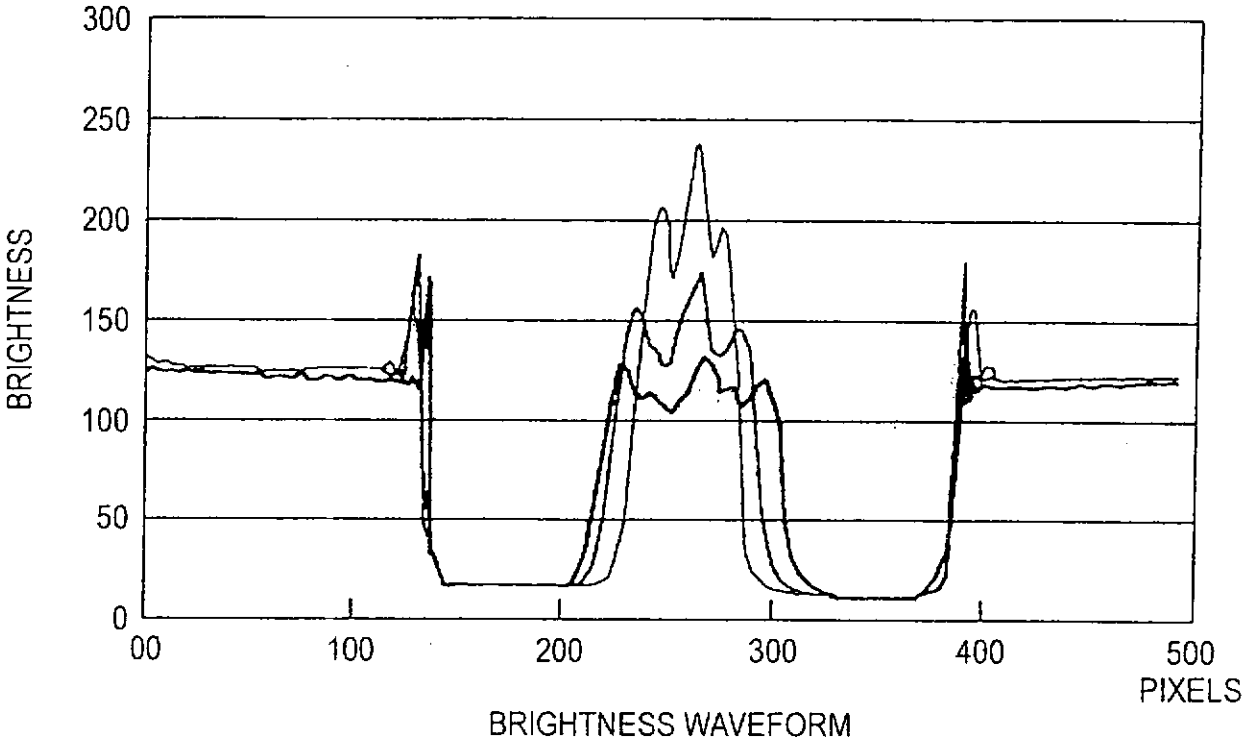

300
250
200
150
100
50
0
BRIGHTNESS
00
100
200
300
400
500
PIXELS
BRIGHTNESS WAVEFORM

FIG. 8

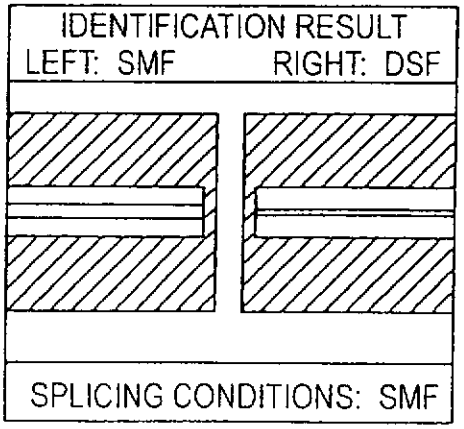
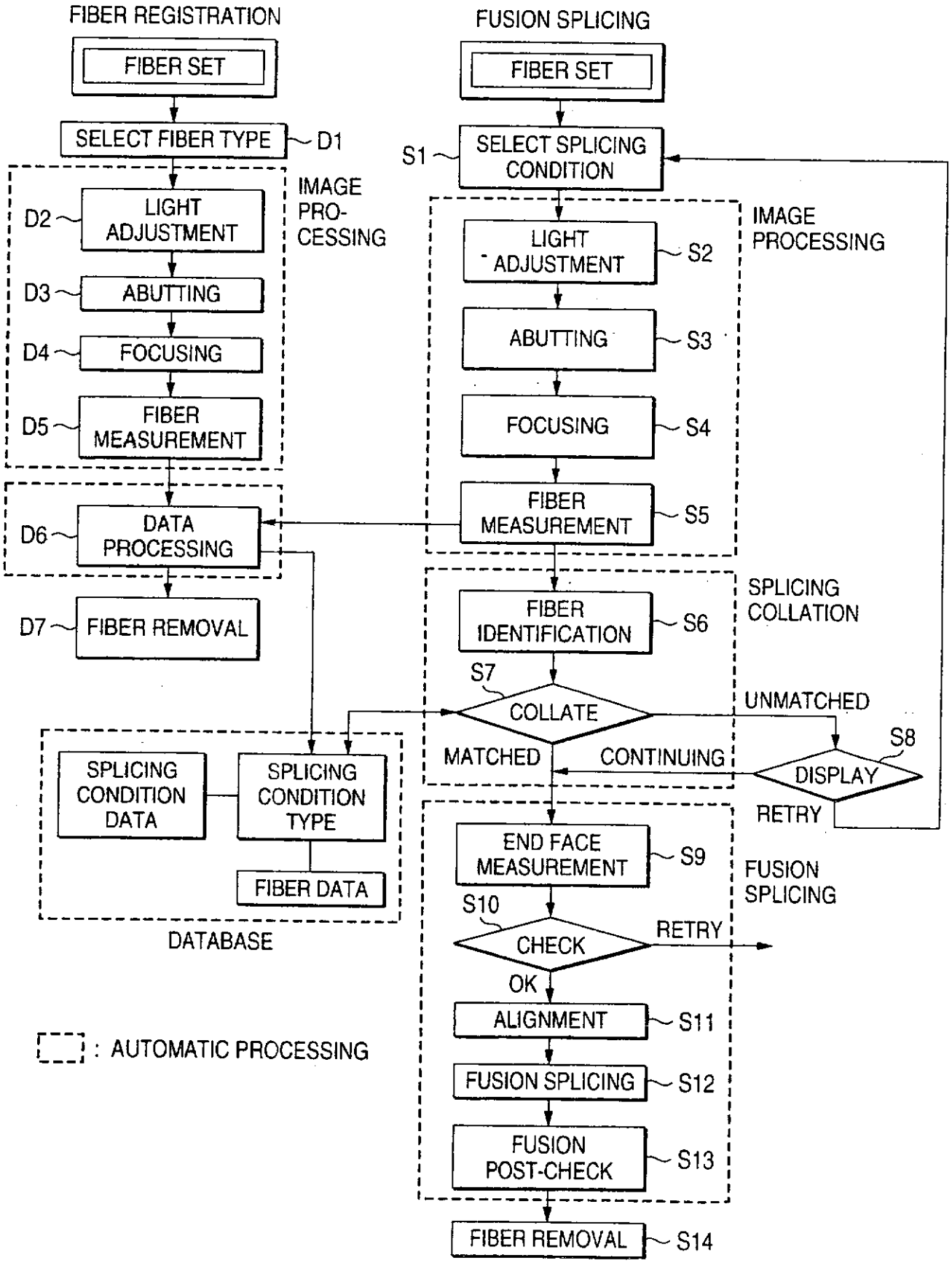

IDENTIFICATION RESULT
LEFT: SMF
RIGHT: DSF
SPLICING CONDITIONS: SMF

FIG. 9


FIBER REGISTRATION
FIBER SET
SELECT FIBER TYPE
D1
IMAGE PRO-CESSING
D2
LIGHT ADJUSTMENT
D3
ABUTTING
D4
FOCUSING
D5
FIBER MEASUREMENT
D6
DATA PROCESSING
D7
FIBER REMOVAL
SPLICING CONDITION DATA
SPLICING CONDITION TYPE
FIBER DATA
DATABASE
: AUTOMATIC PROCESSING
FUSION SPLICING
FIBER SET
S1
SELECT SPLICING CONDITION
IMAGE PROCESSING
LIGHT ADJUSTMENT
S2
ABUTTING
S3
FOCUSING
S4
FIBER MEASUREMENT
S5
SPLICING COLLATION
FIBER IDENTIFICATION
S6
S7
COLLATE
UNMATCHED
MATCHED
CONTINUING
S8
DISPLAY
RETRY
END FACE MEASUREMENT
S9
FUSION SPLICING
S10
CHECK
RETRY
OK
ALIGNMENT
S11
FUSION SPLICING
S12
FUSION POST-CHECK
S13
FIBER REMOVAL
S14