FIG.1

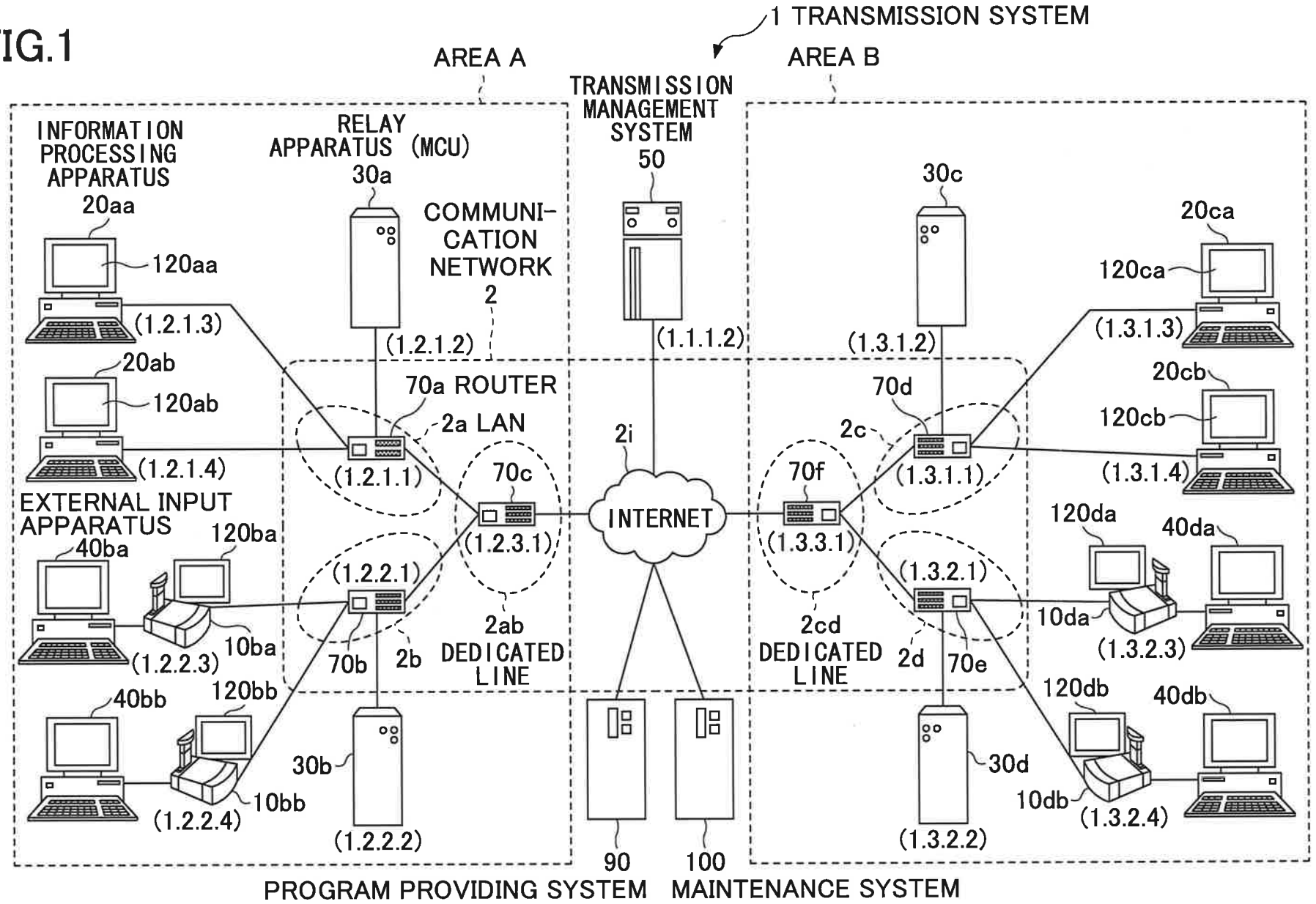

1 TRANSMISSION SYSTEM
AREA A
AREA B
TRANSMISSION MANAGEMENT SYSTEM
50
INFORMATION PROCESSING APPARATUS
20aa
120aa
(1.2.1.3)
20ab
120ab
(1.2.1.4)
EXTERNAL INPUT APPARATUS
40ba
120ba
10ba
(1.2.2.3)
40bb
120bb
10bb
(1.2.2.4)
RELAY APPARATUS (MCU)
30a
(1.2.1.2)
COMMUNI-CATION NETWORK
2
70a ROUTER
2a LAN
(1.2.1.1)
70c
(1.2.3.1)
(1.2.2.1)
70b
2b
2ab DEDICATED LINE
30b
(1.2.2.2)
2i
INTERNET
(1.1.1.2)
90
100
PROGRAM PROVIDING SYSTEM
MAINTENANCE SYSTEM
30c
(1.3.1.2)
70d
2c
(1.3.1.1)
70f
(1.3.3.1)
2cd DEDICATED LINE
(1.3.2.1)
2d
70e
30d
(1.3.2.2)
20ca
120ca
(1.3.1.3)
20cb
120cb
(1.3.1.4)
120da
40da
10da
(1.3.2.3)
120db
40db
10db
(1.3.2.4)

FIG.2

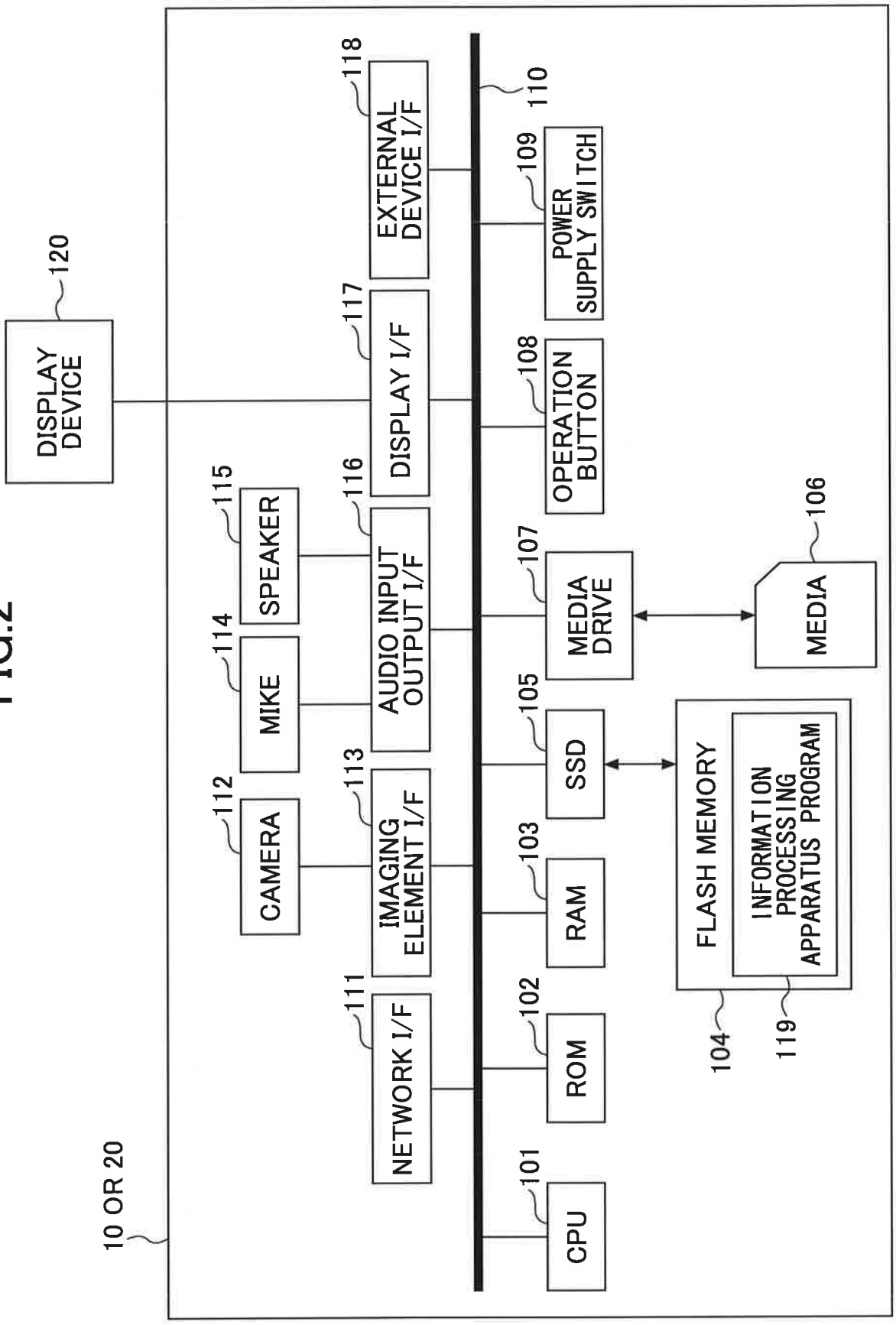

10 OR 20
CPU
101
ROM
102
NETWORK I/F
111
RAM
103
IMAGING ELEMENT I/F
113
SSD
105
CAMERA
112
AUDIO INPUT OUTPUT I/F
116
MEDIA DRIVE
107
MIKE
114
DISPLAY I/F
117
MEDIA
106
SPEAKER
115
OPERATION BUTTON
108
EXTERNAL DEVICE I/F
118
POWER SUPPLY SWITCH
109
110
DISPLAY DEVICE
120
FLASH MEMORY
104
INFORMATION PROCESSING APPARATUS PROGRAM
119

FIG.3

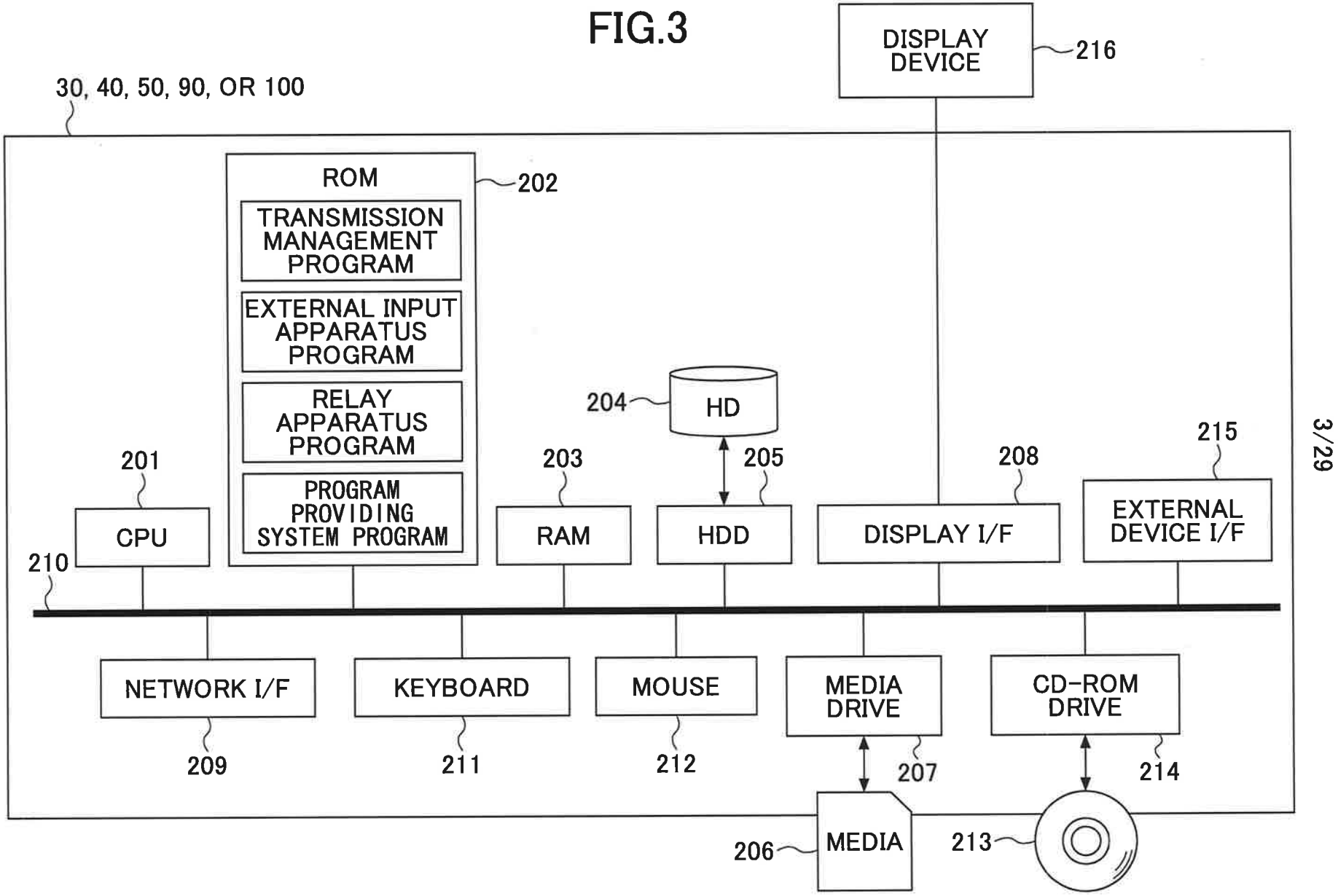

DISPLAY DEVICE
216
30, 40, 50, 90, OR 100
ROM
202
TRANSMISSION MANAGEMENT PROGRAM
EXTERNAL INPUT APPARATUS PROGRAM
RELAY APPARATUS PROGRAM
PROGRAM PROVIDING SYSTEM PROGRAM
204
HD
205
201
CPU
203
RAM
HDD
208
DISPLAY I/F
215
EXTERNAL DEVICE I/F
210
NETWORK I/F
209
KEYBOARD
211
MOUSE
212
MEDIA DRIVE
207
CD-ROM DRIVE
214
206
MEDIA
213

FIG.4

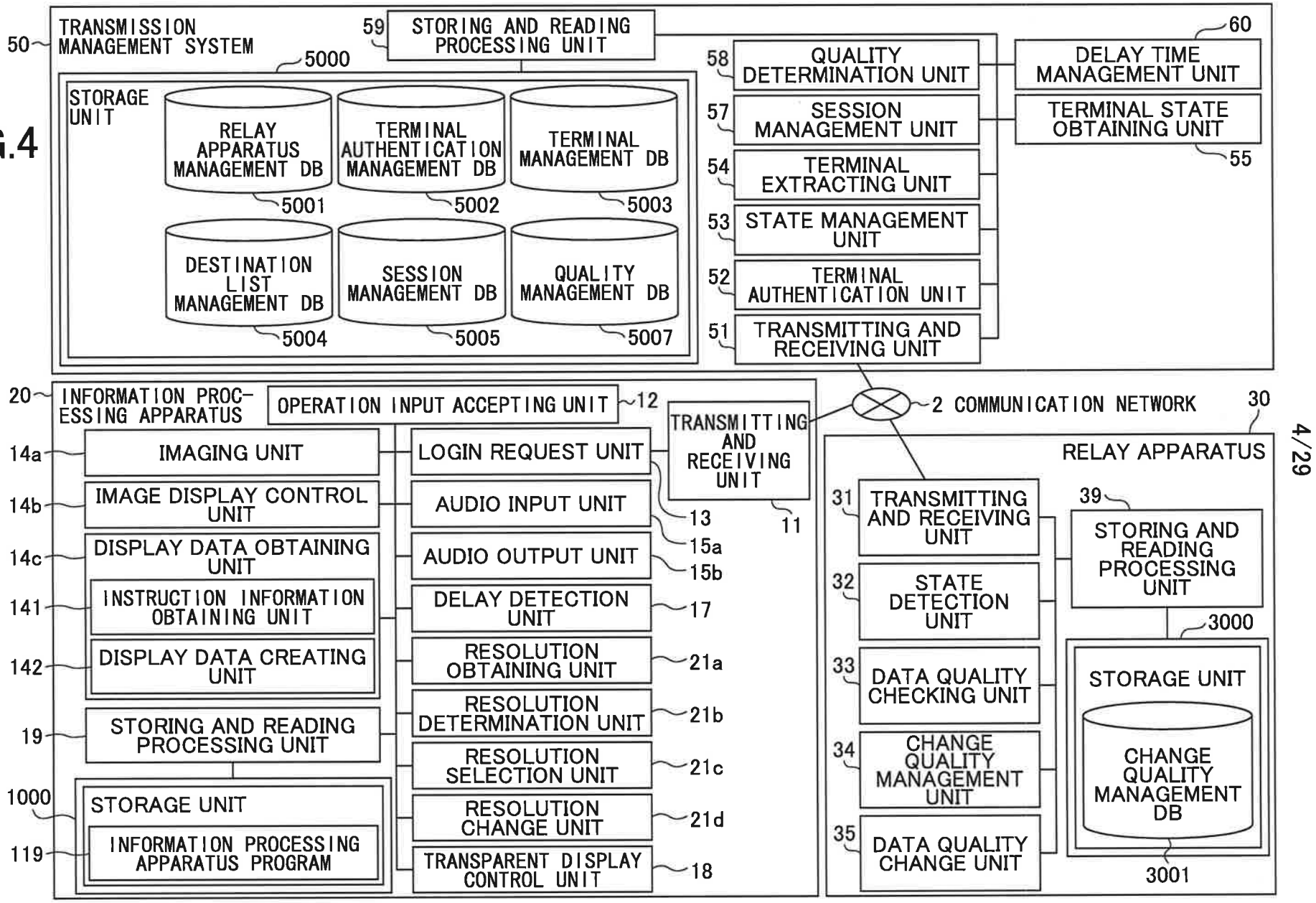

50
TRANSMISSION MANAGEMENT SYSTEM
59
STORING AND READING PROCESSING UNIT
5000
STORAGE UNIT
RELAY APPARATUS MANAGEMENT DB
5001
TERMINAL AUTHENTICATION MANAGEMENT DB
5002
TERMINAL MANAGEMENT DB
5003
DESTINATION LIST MANAGEMENT DB
5004
SESSION MANAGEMENT DB
5005
QUALITY MANAGEMENT DB
5007
58
QUALITY DETERMINATION UNIT
57
SESSION MANAGEMENT UNIT
54
TERMINAL EXTRACTING UNIT
53
STATE MANAGEMENT UNIT
52
TERMINAL AUTHENTICATION UNIT
51
TRANSMITTING AND RECEIVING UNIT
60
DELAY TIME MANAGEMENT UNIT
TERMINAL STATE OBTAINING UNIT
55
20
INFORMATION PROCESSING APPARATUS
OPERATION INPUT ACCEPTING UNIT
12
TRANSMITTING AND RECEIVING UNIT
11
2 COMMUNICATION NETWORK
30
RELAY APPARATUS
14a
IMAGING UNIT
14b
IMAGE DISPLAY CONTROL UNIT
14c
DISPLAY DATA OBTAINING UNIT
141
INSTRUCTION INFORMATION OBTAINING UNIT
142
DISPLAY DATA CREATING UNIT
19
STORING AND READING PROCESSING UNIT
1000
STORAGE UNIT
119
INFORMATION PROCESSING APPARATUS PROGRAM
LOGIN REQUEST UNIT
AUDIO INPUT UNIT
13
AUDIO OUTPUT UNIT
15a
15b
DELAY DETECTION UNIT
17
RESOLUTION OBTAINING UNIT
21a
RESOLUTION DETERMINATION UNIT
21b
RESOLUTION SELECTION UNIT
21c
RESOLUTION CHANGE UNIT
21d
TRANSPARENT DISPLAY CONTROL UNIT
18
31
TRANSMITTING AND RECEIVING UNIT
32
STATE DETECTION UNIT
33
DATA QUALITY CHECKING UNIT
34
CHANGE QUALITY MANAGEMENT UNIT
35
DATA QUALITY CHANGE UNIT
39
STORING AND READING PROCESSING UNIT
3000
STORAGE UNIT
CHANGE QUALITY MANAGEMENT DB
3001

FIG.5A

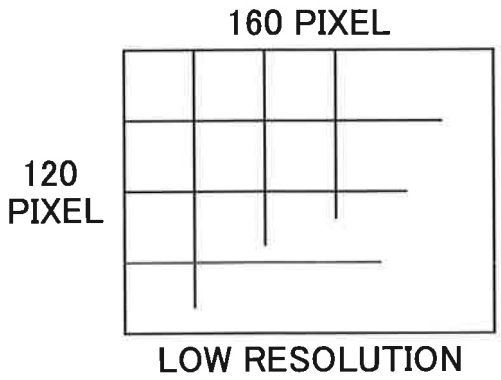


FIG.5B

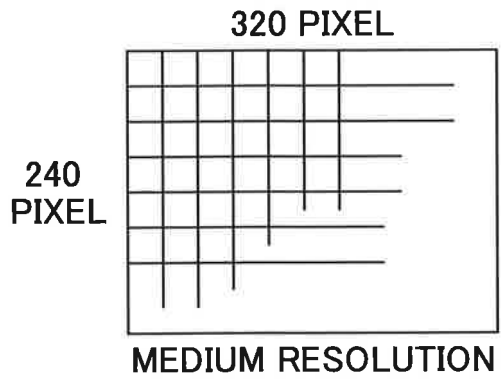


FIG.5C

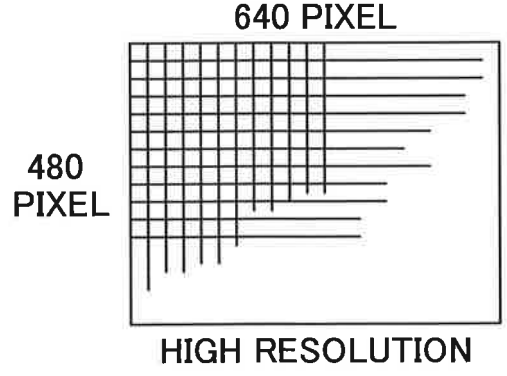


FIG.6

301t CHANGE QUALITY MANAGEMENT TABLE

IP ADDRESS OF RELAY DESTINATION TERMINAL	IMAGE QUALITY OF RELAYED IMAGE DATA (QUALITY OF IMAGE)
1.3.2.4	HIGH IMAGE QUALITY
1.3.1.3	LOW IMAGE QUALITY
1.3.4.3	MEDIUM IMAGE QUALITY
...	...

FIG.7

501t RELAY APPARATUS MANAGEMENT TABLE

RELAY APPARATUS ID	OPERA-TIONAL STATE	RECEIVE DATE AND TIME	IP ADDRESS OF RELAY APPARATUS	MAXIMUM DATA TRANSMISSION RATE (Mbps)
111a	ONLINE	2009.11.10.13:00	1.2.1.2	100
111b	ONLINE	2009.11.10.13:10	1.2.2.2	1000
111c	OFFLINE	2009.11.10.13:20	1.3.1.2	100
111d	ONLINE	2009.11.10.13:30	1.3.2.2	10

FIG.8

502t TERMINAL AUTHENTICATION MANAGEMENT TABLE

TERMINAL ID	PASSWORD
01aa	aaaa
01ab	abab
01ba	baba
...	...

FIG.9

503t TERMINAL MANAGEMENT TABLE

TERMINAL ID	OPERATIONAL STATE	RECEIVE DATE AND TIME	IP ADDRESS OF TERMINAL
01aa	ONLINE	2009.11.10.13:40	1.2.1.3
01ab	OFFLINE	2009.11.09.12:00	1.2.1.4
01ba	ONLINE	2009.11.10.13:45	1.2.2.3
...	...	...	...
01db	ONLINE	2009.11.10.13:50	1.3.2.4

FIG.10

504t DESTINATION LIST MANAGEMENT TABLE

REQUEST SOURCE TERMINAL ID	DESTINATION TERMINAL ID
01aa	01ab,01ba,01db
01ab	01aa,01ba,01ca
01ba	01aa,01ab,01cb,01da
...	...
01db	01aa,01ab,01da

FIG.11

505t SESSION MANAGEMENT TABLE

SELECTION SESSION ID	RELAY APPARATUS ID	REQUEST SOURCE TERMINAL ID	DESTI-NATION TERMINAL ID	DELAY TIME (ms)	RECEIVE DATE AND TIME WHEN DELAY INFORMATION IS RECEIVED
se1	111a	01aa	01db	200	2009.11.10.14:00
se2	111b	01ba	01ca	50	2009.11.10.14:10
se3	111d	01bb	01da	400	2009.11.10.14:20
...	...	...	...	...	...

FIG.12

507t QUALITY MANAGEMENT TABLE

DELAY TIME (ms)	IMAGE QUALITY OF IMAGE DATA (QUALITY OF IMAGE)
0～100	HIGH IMAGE QUALITY
100～300	MEDIUM IMAGE QUALITY
300～500	LOW IMAGE QUALITY
500～	(INTERRUPTION)

FIG.13

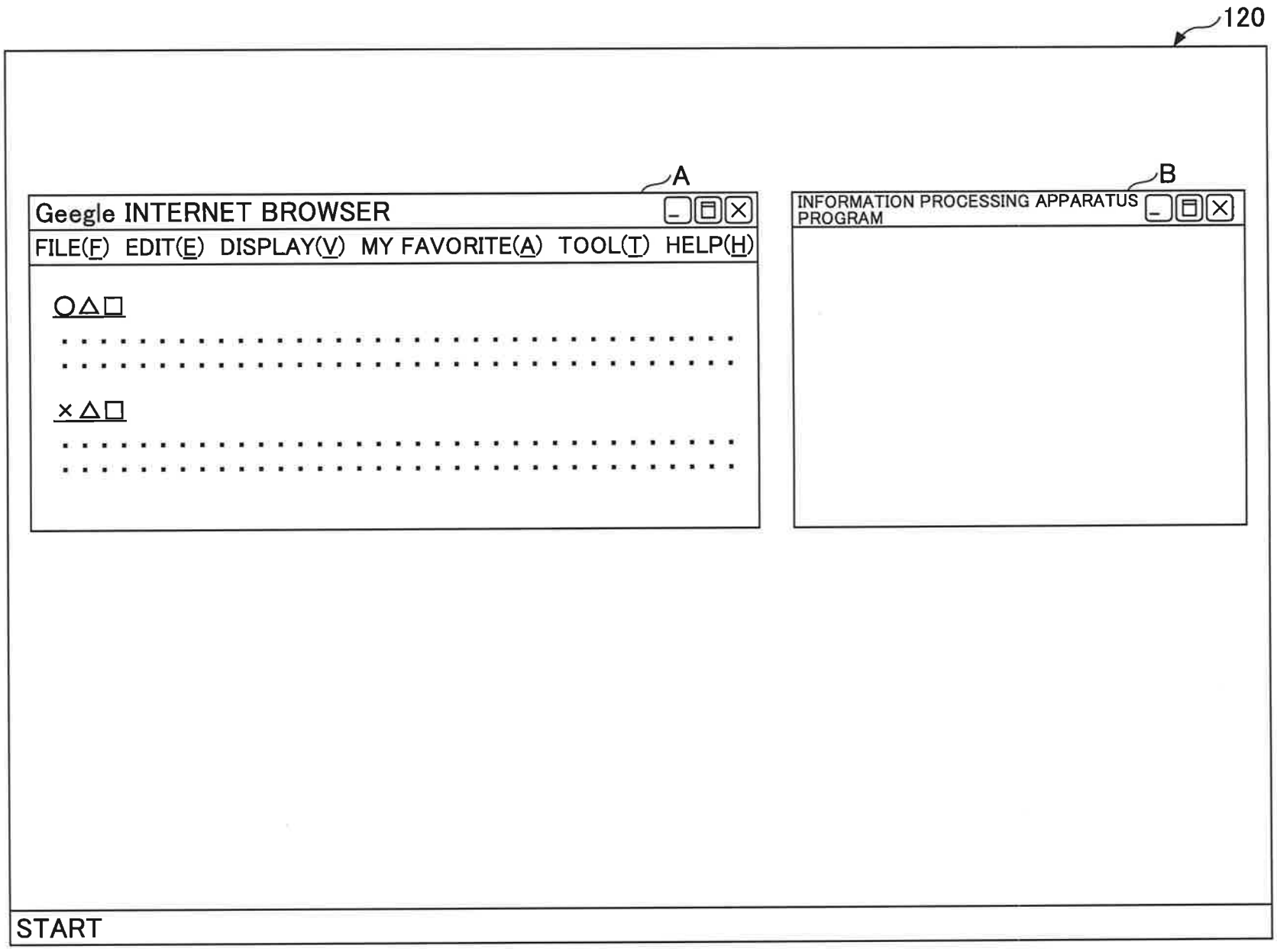
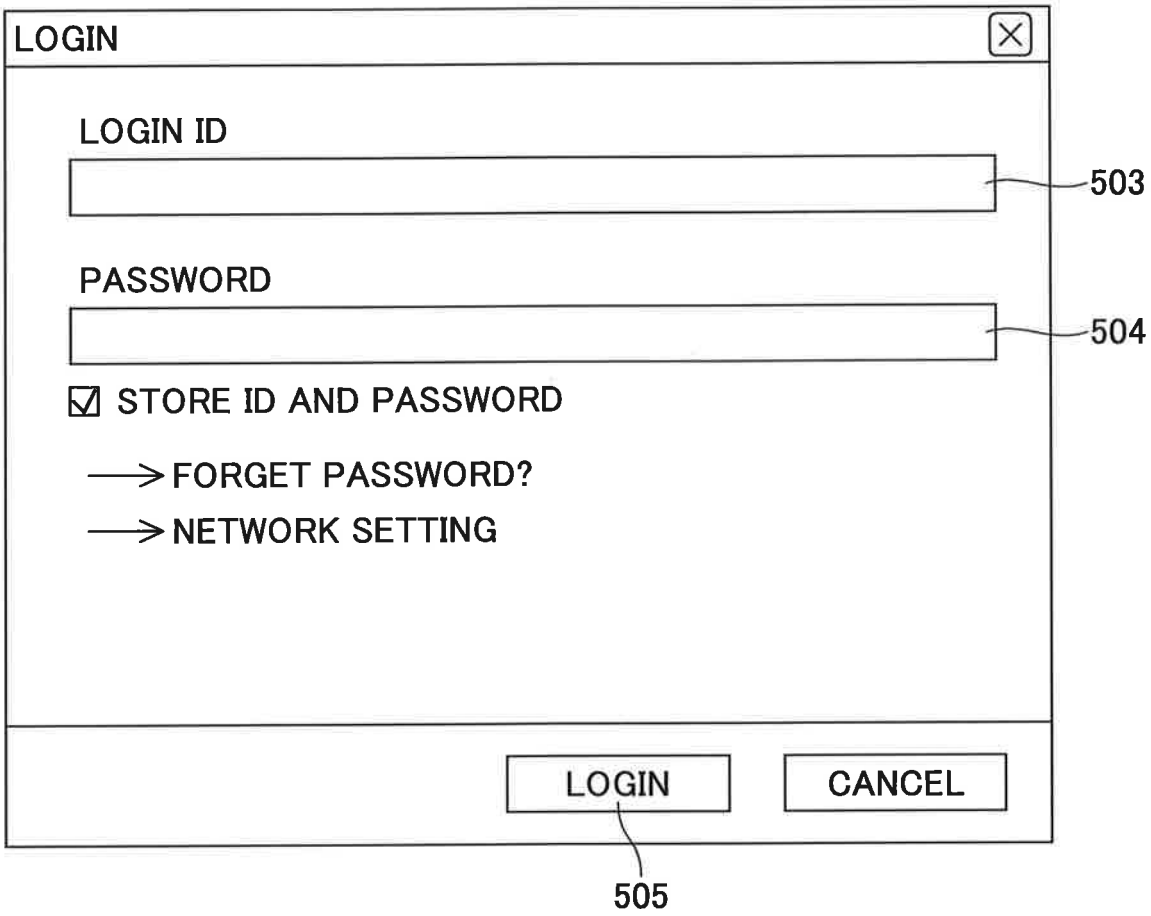

120
A
Geegle INTERNET BROWSER
FILE(F) EDIT(E) DISPLAY(V) MY FAVORITE(A) TOOL(T) HELP(H)
○△□
×△□
B
INFORMATION PROCESSING APPARATUS PROGRAM
START

FIG.14


LOGIN
LOGIN ID
503
PASSWORD
504
STORE ID AND PASSWORD
FORGET PASSWORD?
NETWORK SETTING
LOGIN
CANCEL
505

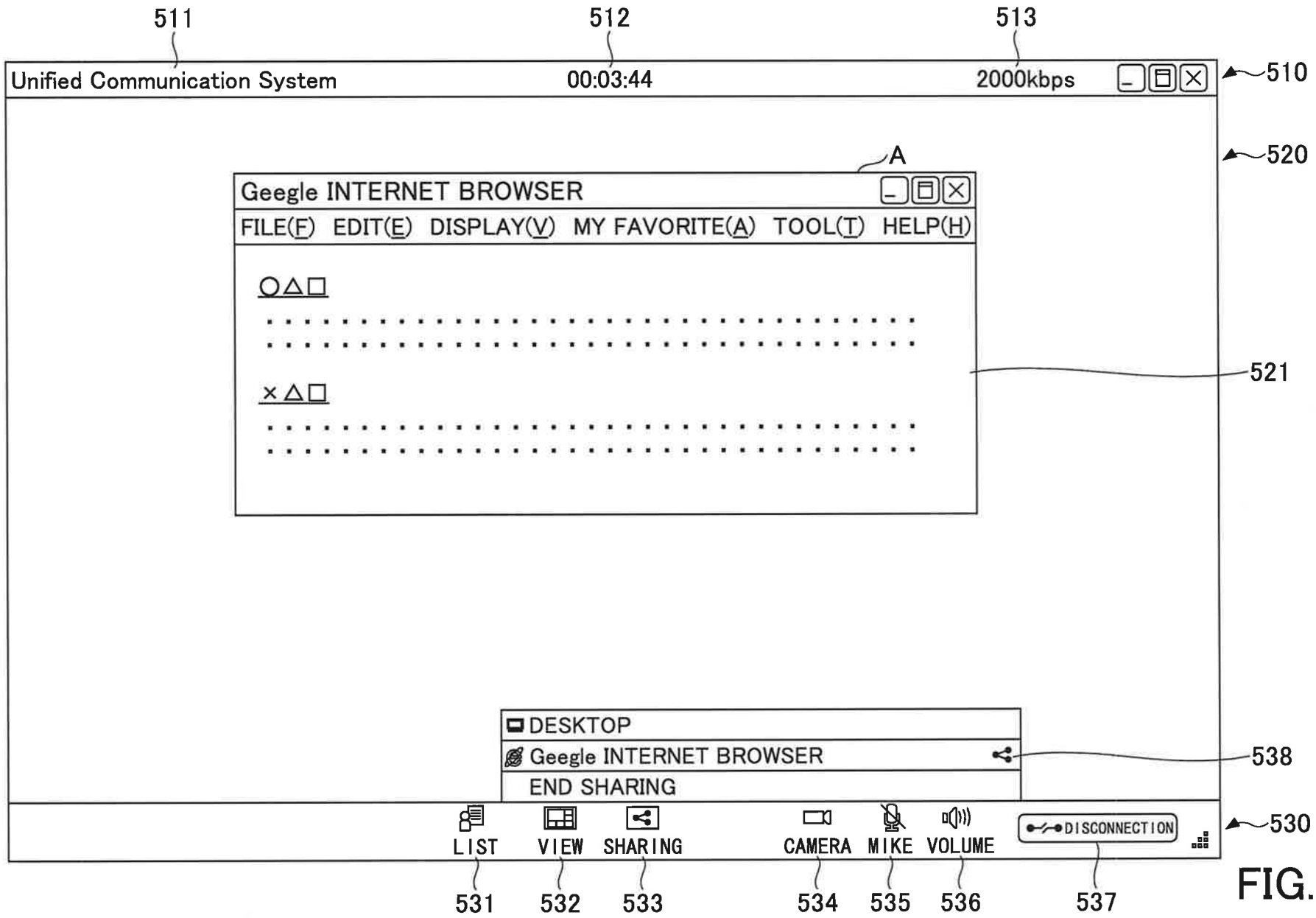

511
512
513
Unified Communication System
00:03:44
2000kbps
510
520
A
Geegle INTERNET BROWSER
FILE(F) EDIT(E) DISPLAY(V) MY FAVORITE(A) TOOL(T) HELP(H)
○△□
×△□
521
DESKTOP
Geegle INTERNET BROWSER
END SHARING
538
530
LIST
VIEW
SHARING
CAMERA
MIKE
VOLUME
DISCONNECTION
531
532
533
534
535
536
537

FIG.15

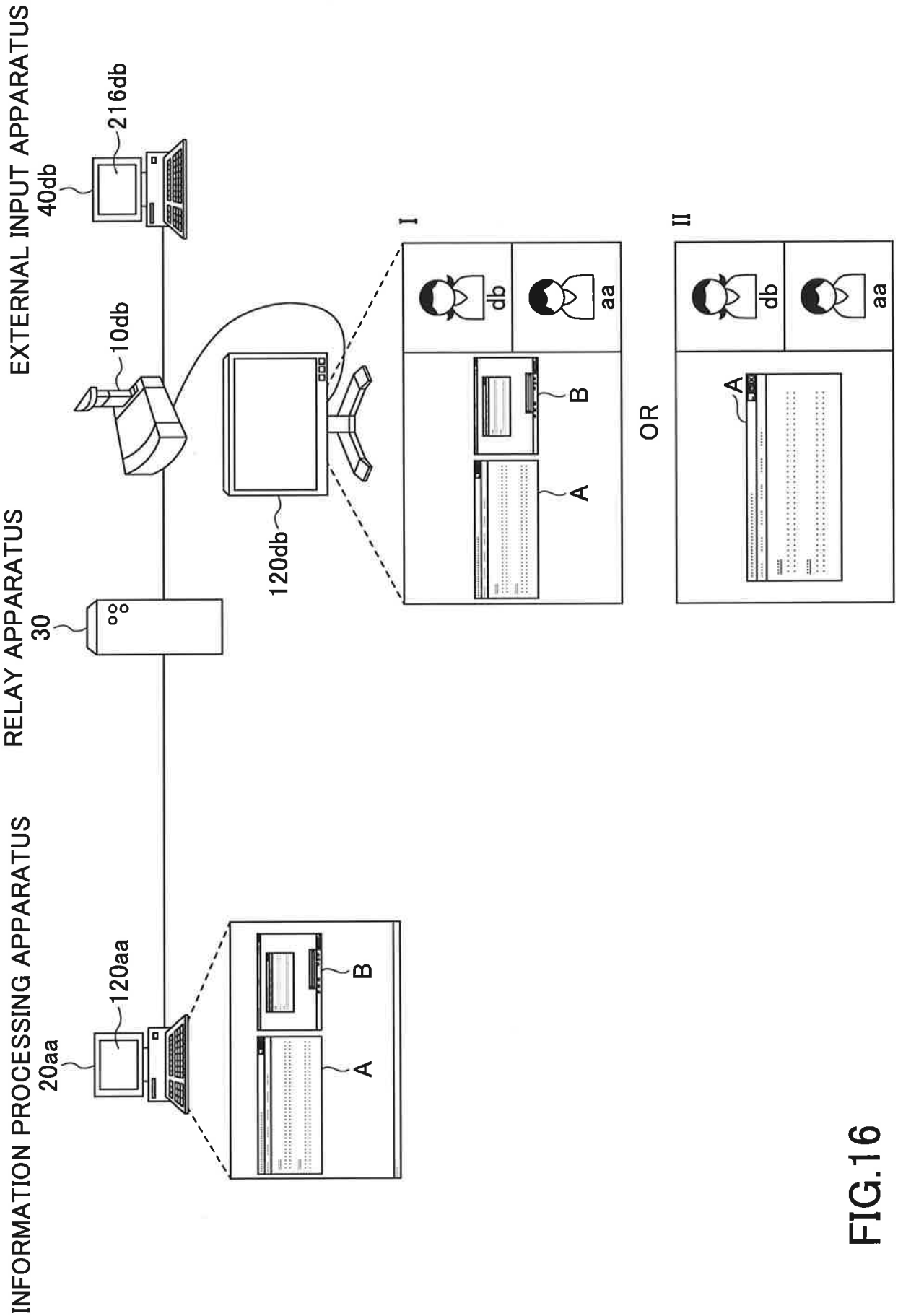

INFORMATION PROCESSING APPARATUS
20aa
120aa
A
B
RELAY APPARATUS
30
EXTERNAL INPUT APPARATUS
40db
216db
10db
120db
I
db
aa
B
A
OR
II
db
aa
A

FIG.16

FIG.17

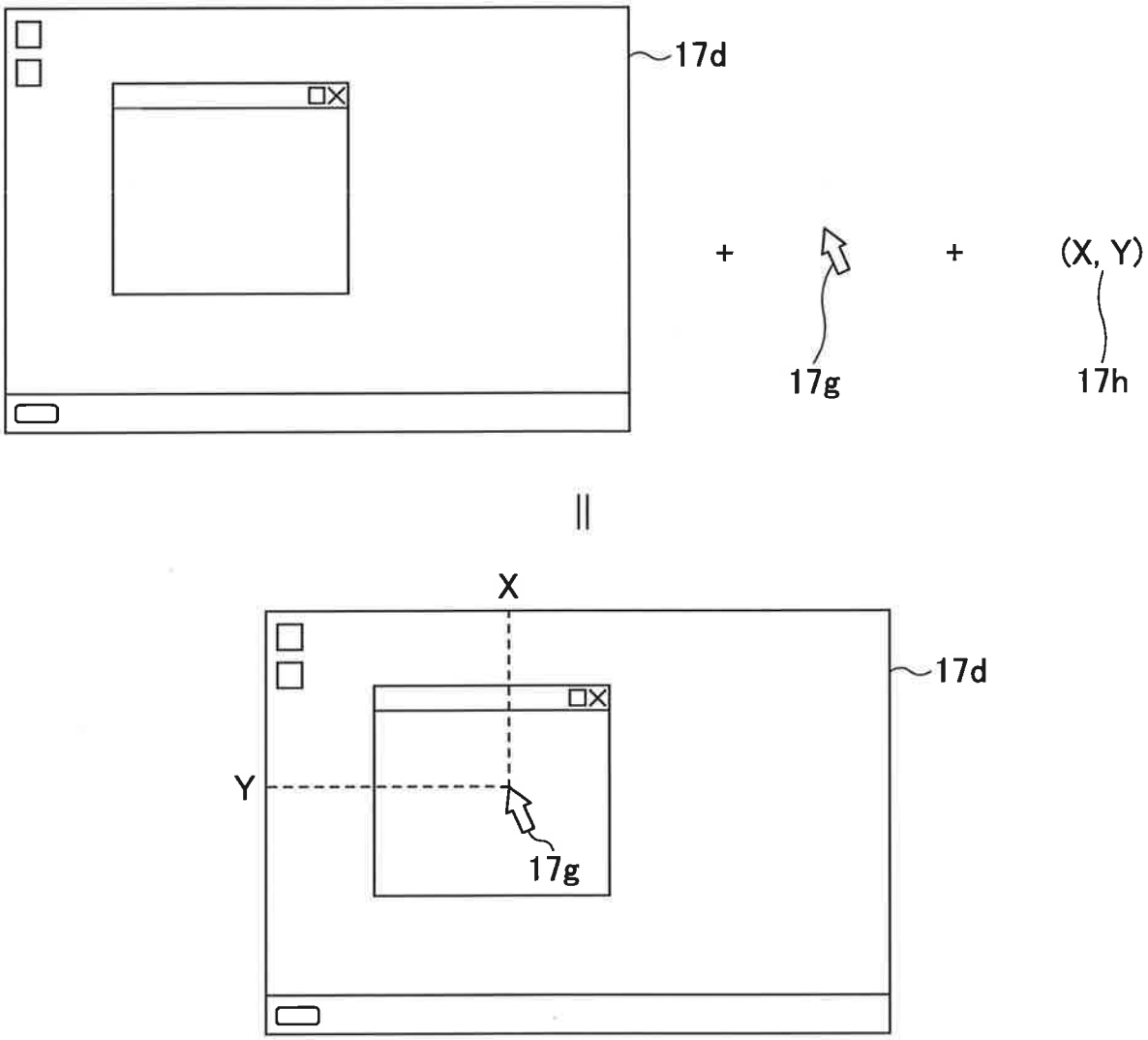


FIG.18

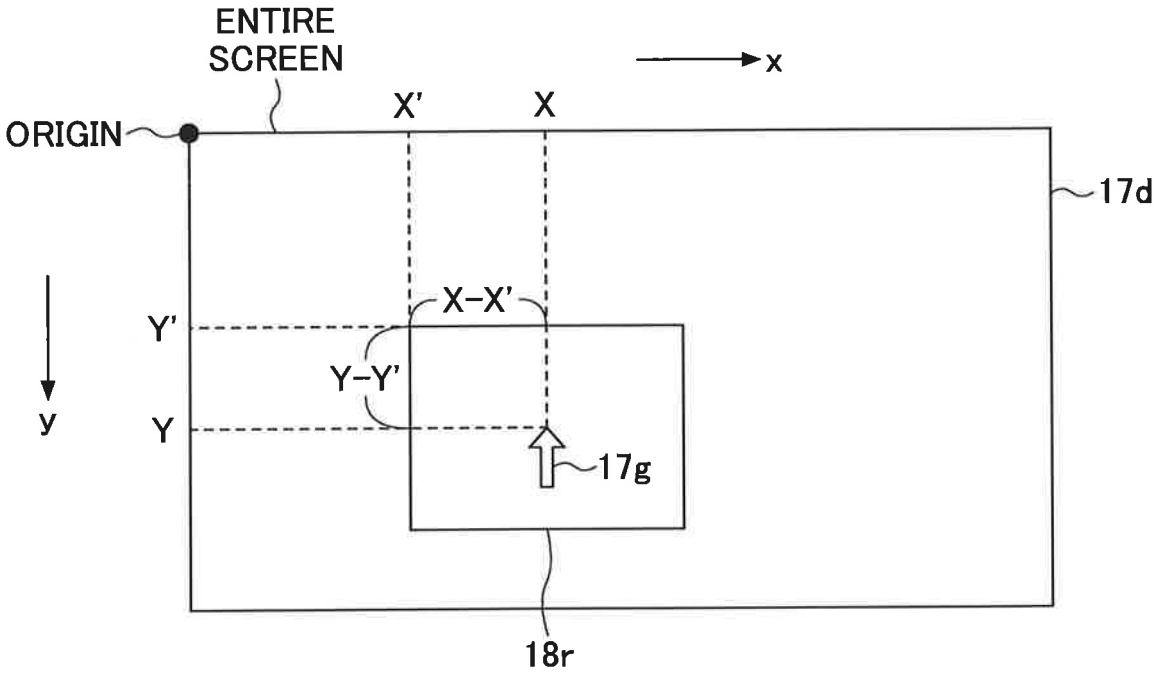


FIG.19

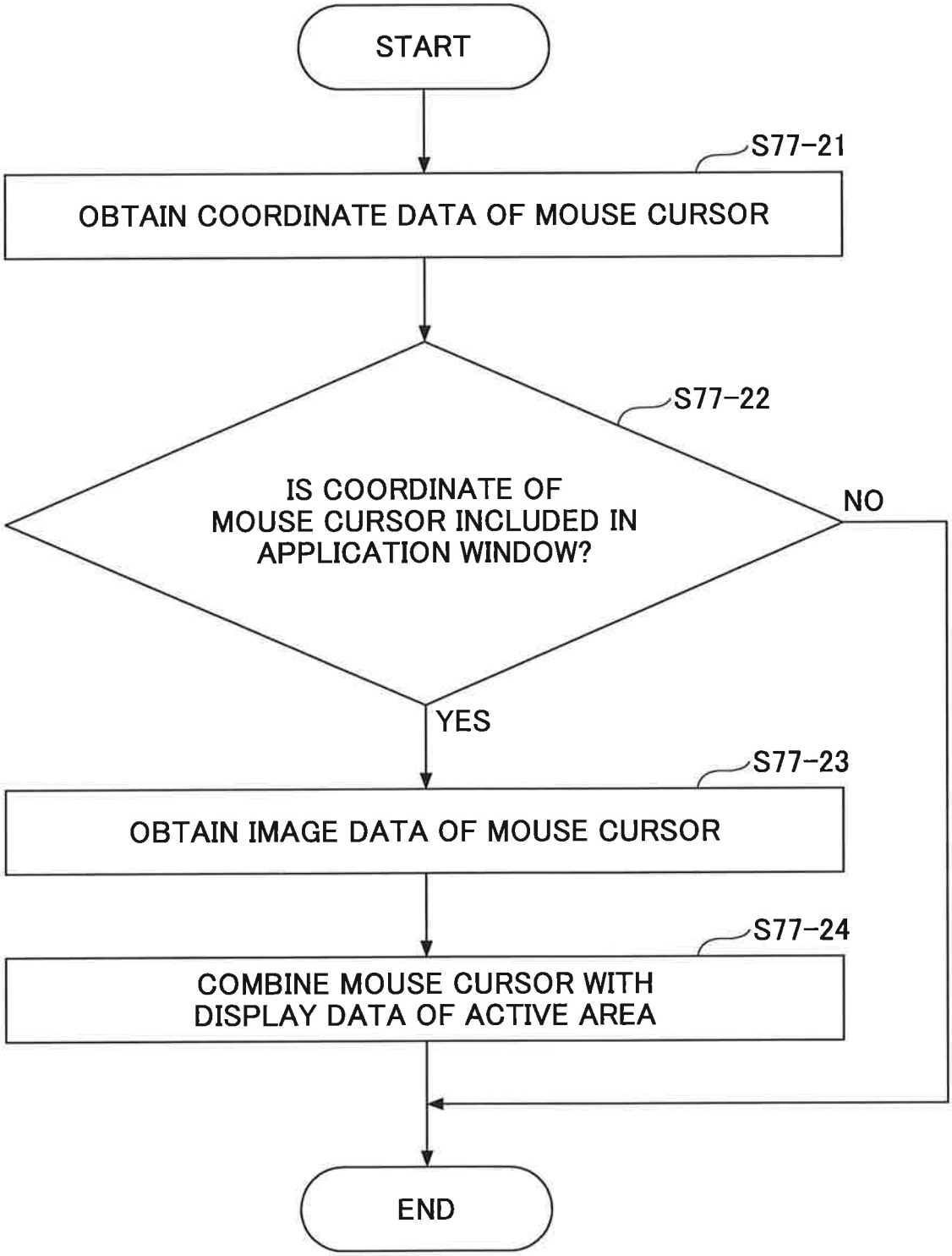
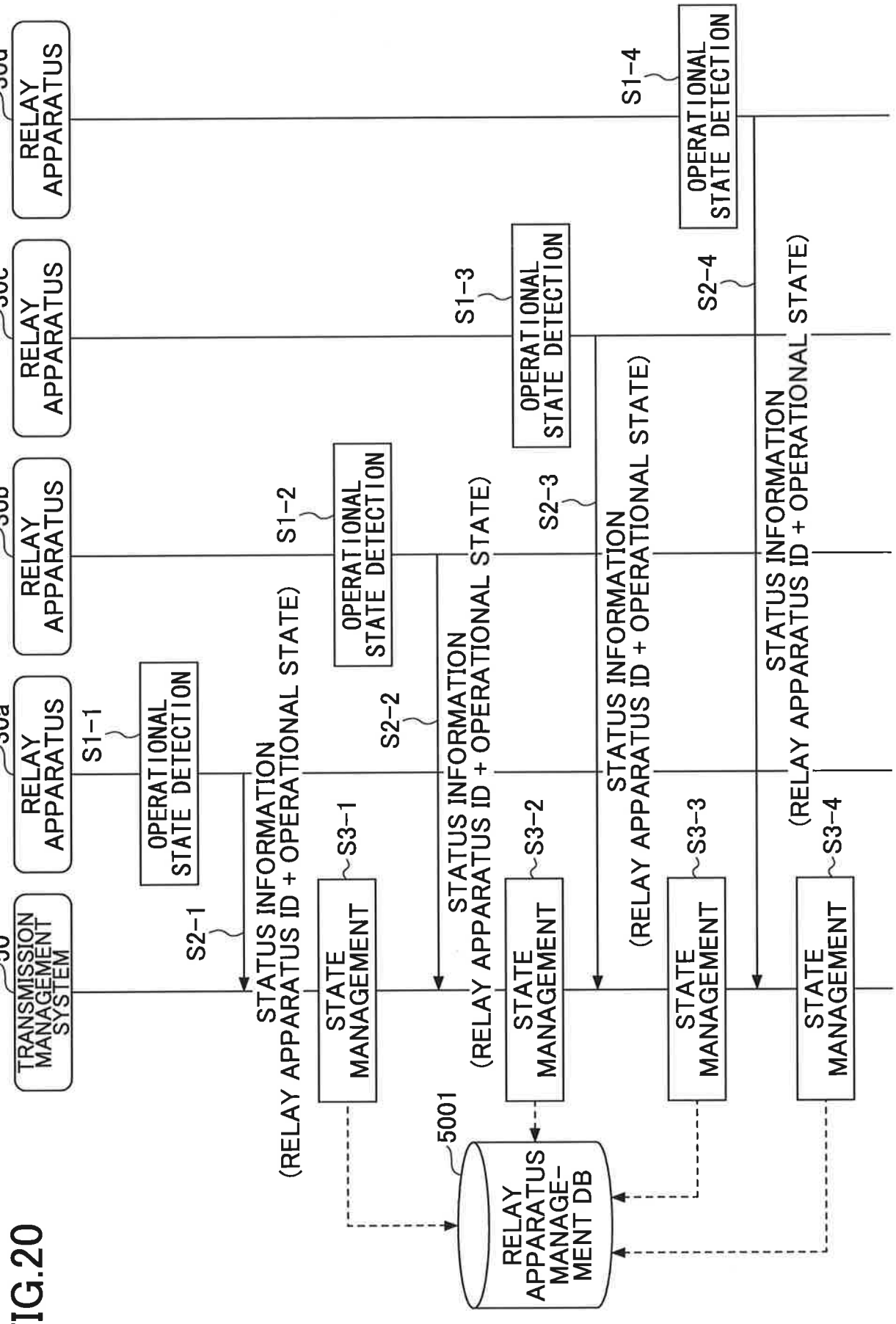

START
S77-21
OBTAIN COORDINATE DATA OF MOUSE CURSOR
S77-22
IS COORDINATE OF MOUSE CURSOR INCLUDED IN APPLICATION WINDOW?
NO
YES
S77-23
OBTAIN IMAGE DATA OF MOUSE CURSOR
S77-24
COMBINE MOUSE CURSOR WITH DISPLAY DATA OF ACTIVE AREA
END

FIG.20


50
TRANSMISSION MANAGEMENT SYSTEM
30a
RELAY APPARATUS
30b
RELAY APPARATUS
30c
RELAY APPARATUS
30d
RELAY APPARATUS
S1-1
OPERATIONAL STATE DETECTION
S1-2
OPERATIONAL STATE DETECTION
S1-3
OPERATIONAL STATE DETECTION
S1-4
OPERATIONAL STATE DETECTION
S2-1
STATUS INFORMATION (RELAY APPARATUS ID + OPERATIONAL STATE)
S2-2
STATUS INFORMATION (RELAY APPARATUS ID + OPERATIONAL STATE)
S2-3
STATUS INFORMATION (RELAY APPARATUS ID + OPERATIONAL STATE)
S2-4
STATUS INFORMATION (RELAY APPARATUS ID + OPERATIONAL STATE)
S3-1
STATE MANAGEMENT
S3-2
STATE MANAGEMENT
S3-3
STATE MANAGEMENT
S3-4
STATE MANAGEMENT
5001
RELAY APPARATUS MANAGE-MENT DB

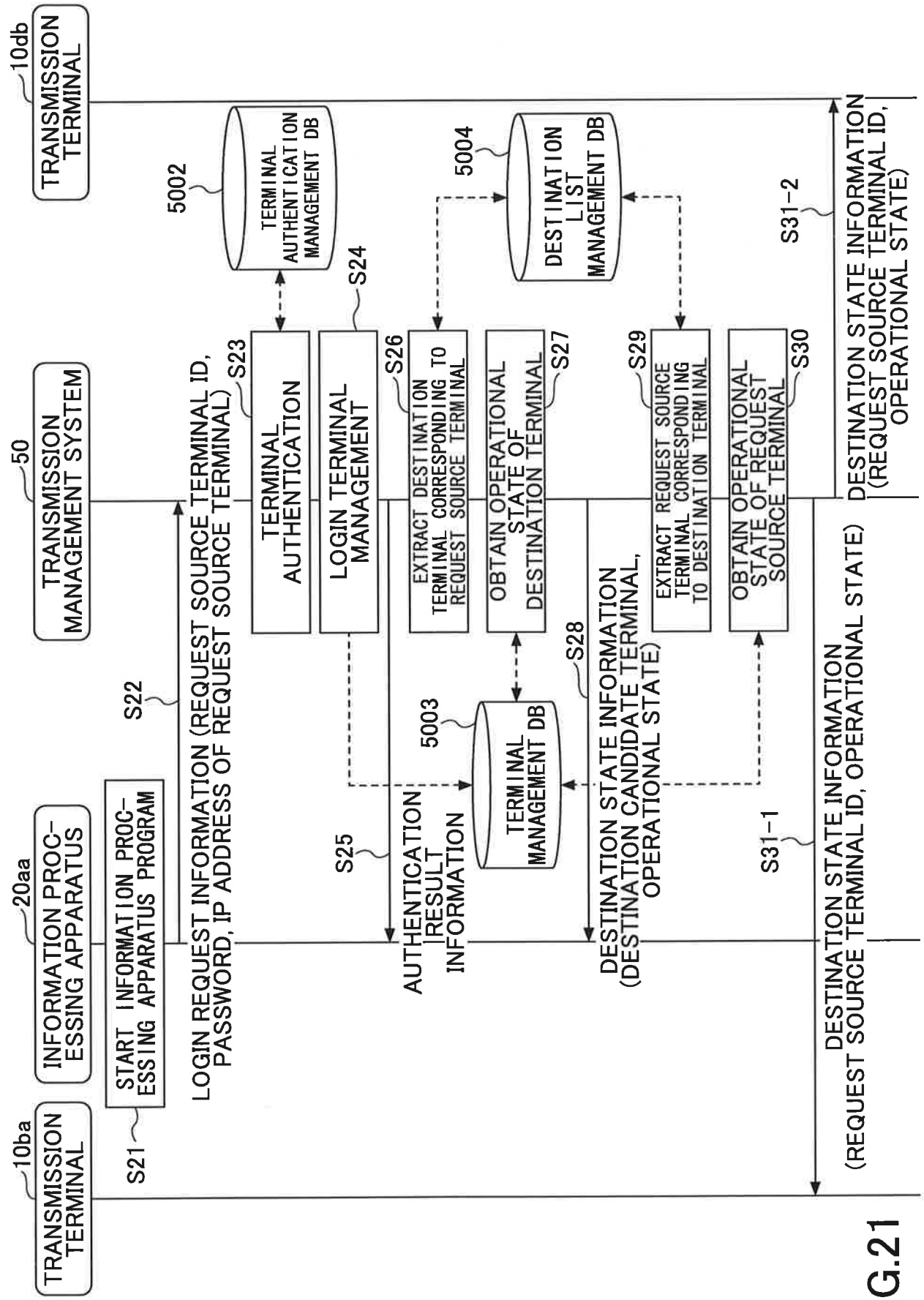

10ba
TRANSMISSION TERMINAL
20aa
INFORMATION PROCESSING APPARATUS
START INFORMATION PROCESSING APPARATUS PROGRAM
50
TRANSMISSION MANAGEMENT SYSTEM
10db
TRANSMISSION TERMINAL
S21
S22
LOGIN REQUEST INFORMATION (REQUEST SOURCE TERMINAL ID, PASSWORD, IP ADDRESS OF REQUEST SOURCE TERMINAL)
S23
TERMINAL AUTHENTICATION
5002
TERMINAL AUTHENTICATION MANAGEMENT DB
S24
LOGIN TERMINAL MANAGEMENT
S25
AUTHENTICATION RESULT INFORMATION
S26
EXTRACT DESTINATION TERMINAL CORRESPONDING TO REQUEST SOURCE TERMINAL
5003
TERMINAL MANAGEMENT DB
S27
OBTAIN OPERATIONAL STATE OF DESTINATION TERMINAL
5004
DESTINATION LIST MANAGEMENT DB
S28
DESTINATION STATE INFORMATION (DESTINATION CANDIDATE TERMINAL, OPERATIONAL STATE)
S29
EXTRACT REQUEST SOURCE TERMINAL CORRESPONDING TO DESTINATION TERMINAL
S30
OBTAIN OPERATIONAL STATE OF REQUEST SOURCE TERMINAL
S31-1
DESTINATION STATE INFORMATION (REQUEST SOURCE TERMINAL ID, OPERATIONAL STATE)
S31-2
DESTINATION STATE INFORMATION (REQUEST SOURCE TERMINAL ID, OPERATIONAL STATE)

FIG.21

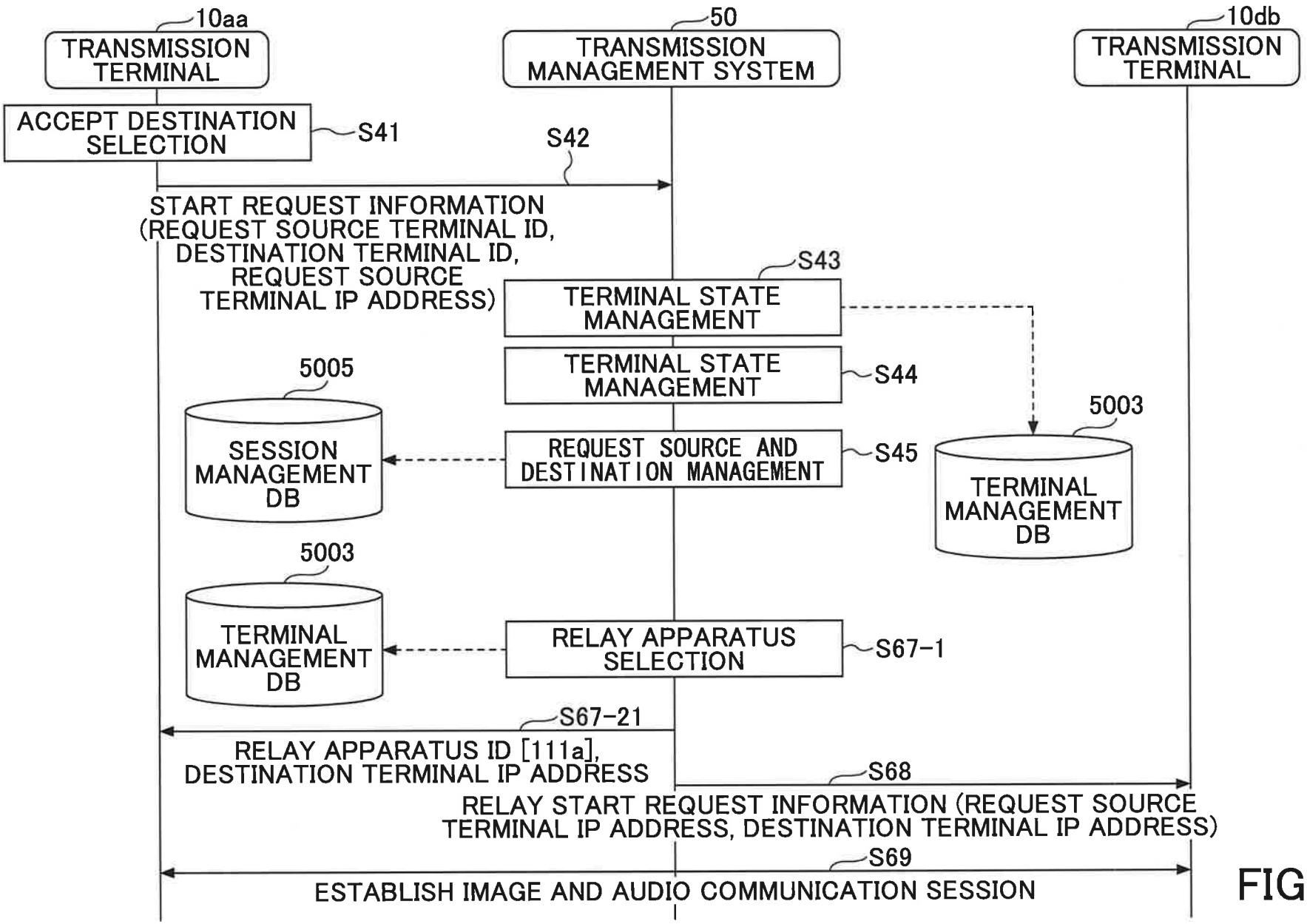

10aa
TRANSMISSION TERMINAL
50
TRANSMISSION MANAGEMENT SYSTEM
10db
TRANSMISSION TERMINAL
ACCEPT DESTINATION SELECTION
S41
S42
START REQUEST INFORMATION (REQUEST SOURCE TERMINAL ID, DESTINATION TERMINAL ID, REQUEST SOURCE TERMINAL IP ADDRESS)
S43
TERMINAL STATE MANAGEMENT
TERMINAL STATE MANAGEMENT
S44
5005
SESSION MANAGEMENT DB
REQUEST SOURCE AND DESTINATION MANAGEMENT
S45
5003
TERMINAL MANAGEMENT DB
5003
TERMINAL MANAGEMENT DB
RELAY APPARATUS SELECTION
S67-1
S67-21
RELAY APPARATUS ID [111a], DESTINATION TERMINAL IP ADDRESS
S68
RELAY START REQUEST INFORMATION (REQUEST SOURCE TERMINAL IP ADDRESS, DESTINATION TERMINAL IP ADDRESS)
S69
ESTABLISH IMAGE AND AUDIO COMMUNICATION SESSION

FIG.22

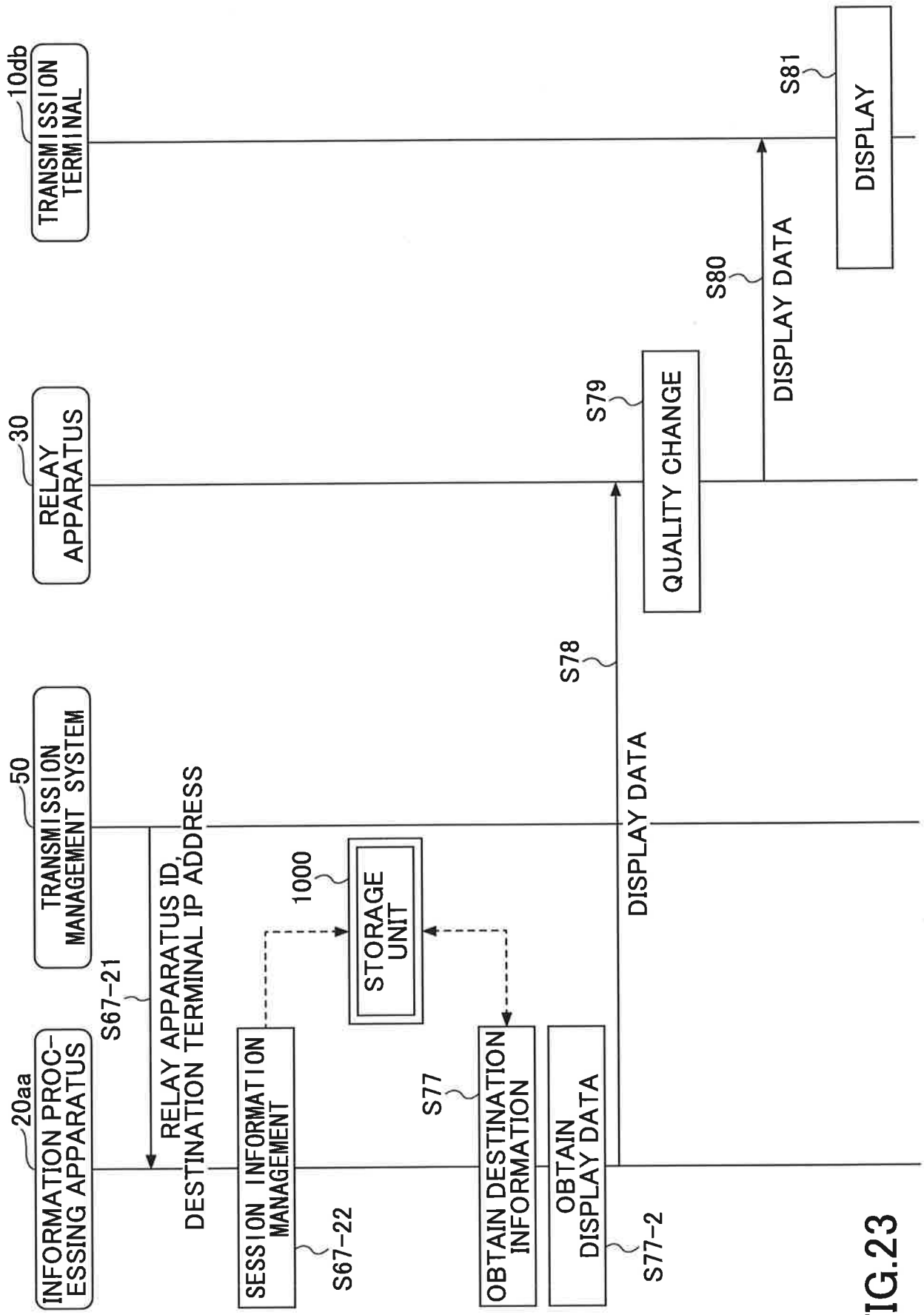

20aa
INFORMATION PROCESSING APPARATUS
50
TRANSMISSION MANAGEMENT SYSTEM
30
RELAY APPARATUS
10db
TRANSMISSION TERMINAL
S67-21
RELAY APPARATUS ID, DESTINATION TERMINAL IP ADDRESS
SESSION INFORMATION MANAGEMENT
S67-22
1000
STORAGE UNIT
S77
OBTAIN DESTINATION INFORMATION
OBTAIN DISPLAY DATA
S77-2
S78
DISPLAY DATA
S79
QUALITY CHANGE
S80
DISPLAY DATA
S81
DISPLAY

FIG.23

FIG.24

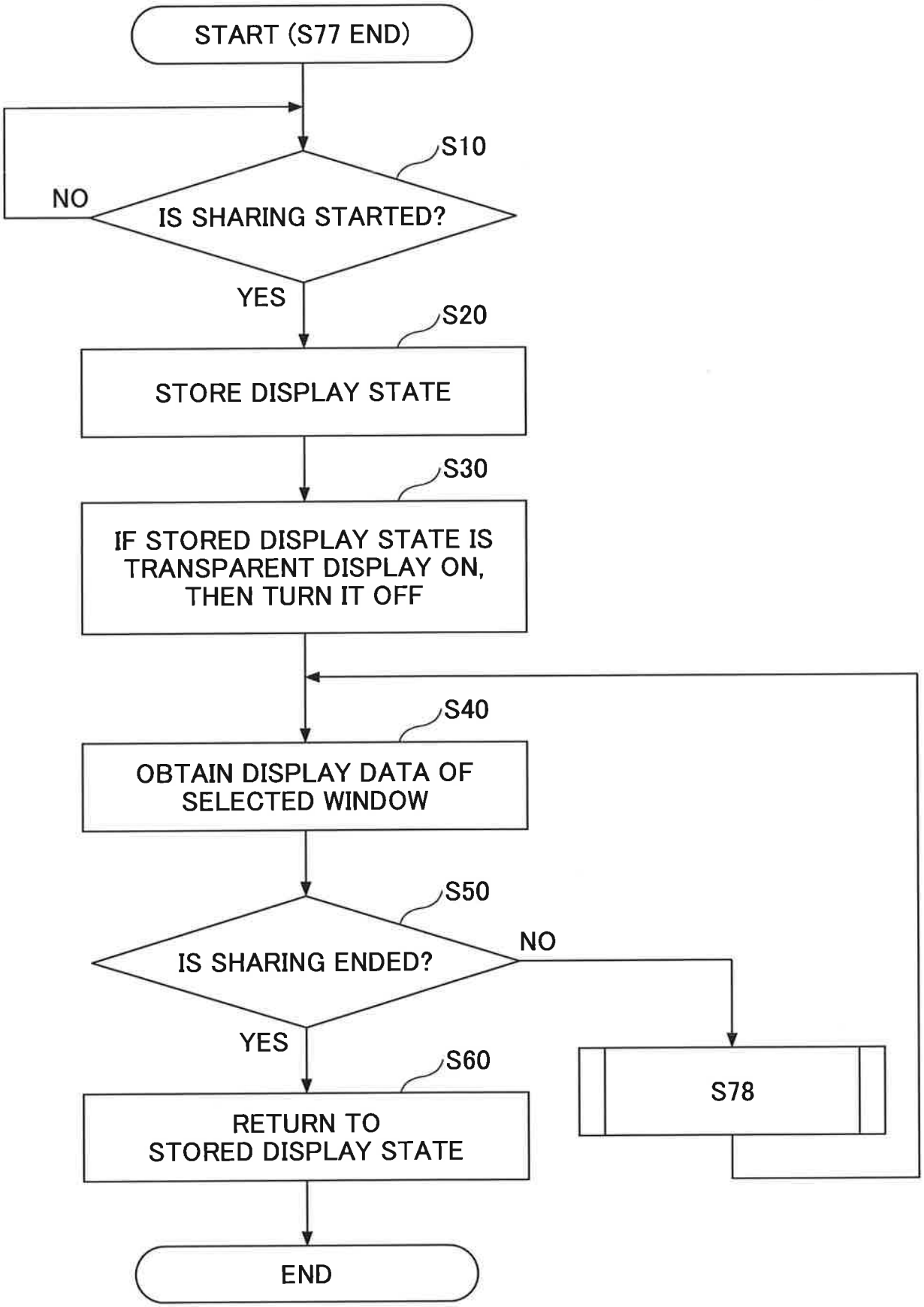
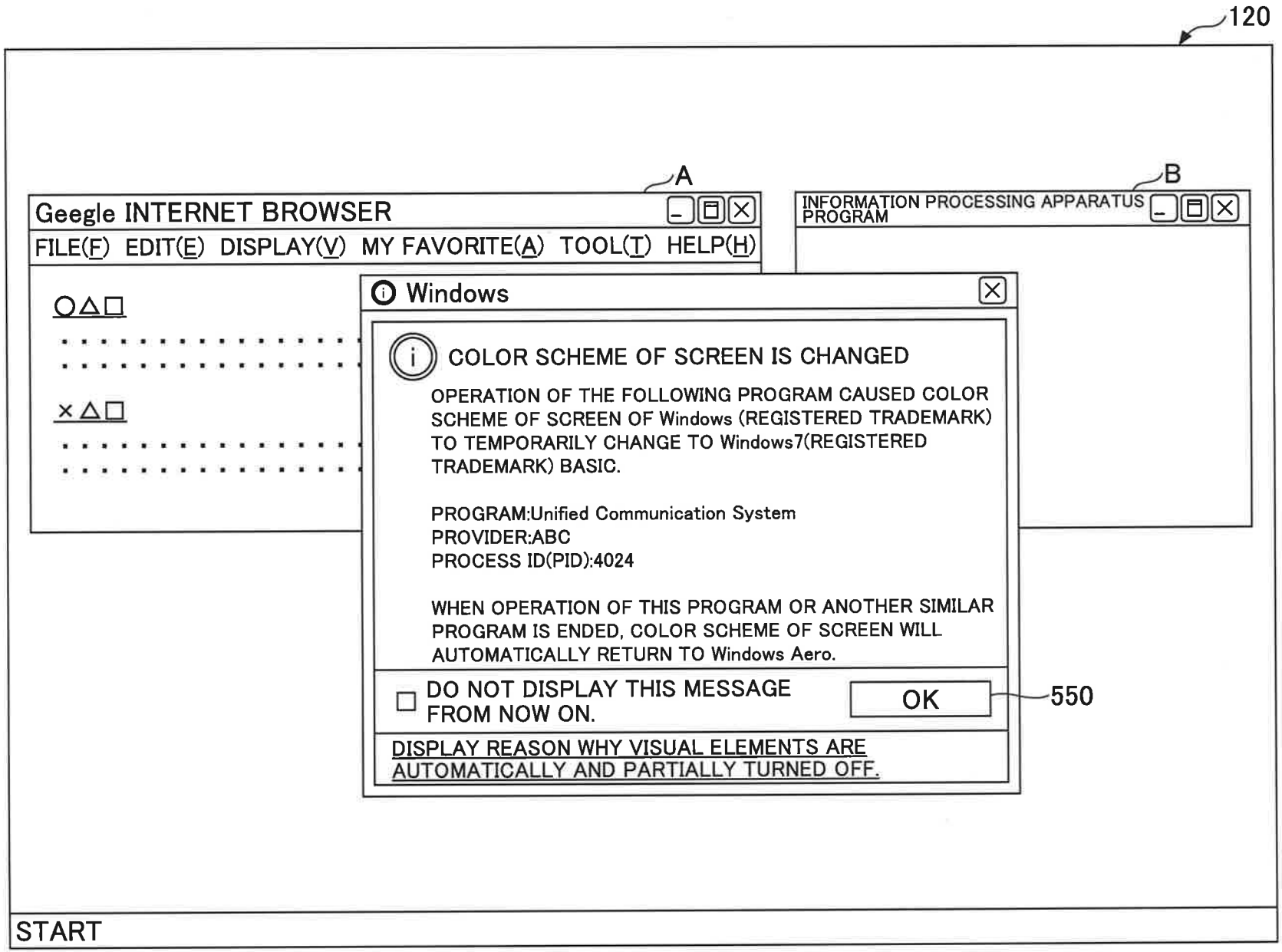

START (S77 END)
S10
IS SHARING STARTED?
NO
YES
S20
STORE DISPLAY STATE
S30
IF STORED DISPLAY STATE IS TRANSPARENT DISPLAY ON, THEN TURN IT OFF
S40
OBTAIN DISPLAY DATA OF SELECTED WINDOW
S50
IS SHARING ENDED?
NO
YES
S60
RETURN TO STORED DISPLAY STATE
S78
END

FIG.25


120
A
B
Geegle INTERNET BROWSER
FILE(F) EDIT(E) DISPLAY(V) MY FAVORITE(A) TOOL(T) HELP(H)
INFORMATION PROCESSING APPARATUS PROGRAM
Windows
COLOR SCHEME OF SCREEN IS CHANGED
OPERATION OF THE FOLLOWING PROGRAM CAUSED COLOR SCHEME OF SCREEN OF Windows (REGISTERED TRADEMARK) TO TEMPORARILY CHANGE TO Windows7(REGISTERED TRADEMARK) BASIC.
PROGRAM:Unified Communication System
PROVIDER:ABC
PROCESS ID(PID):4024
WHEN OPERATION OF THIS PROGRAM OR ANOTHER SIMILAR PROGRAM IS ENDED, COLOR SCHEME OF SCREEN WILL AUTOMATICALLY RETURN TO Windows Aero.
DO NOT DISPLAY THIS MESSAGE FROM NOW ON.
OK
550
DISPLAY REASON WHY VISUAL ELEMENTS ARE AUTOMATICALLY AND PARTIALLY TURNED OFF.
START

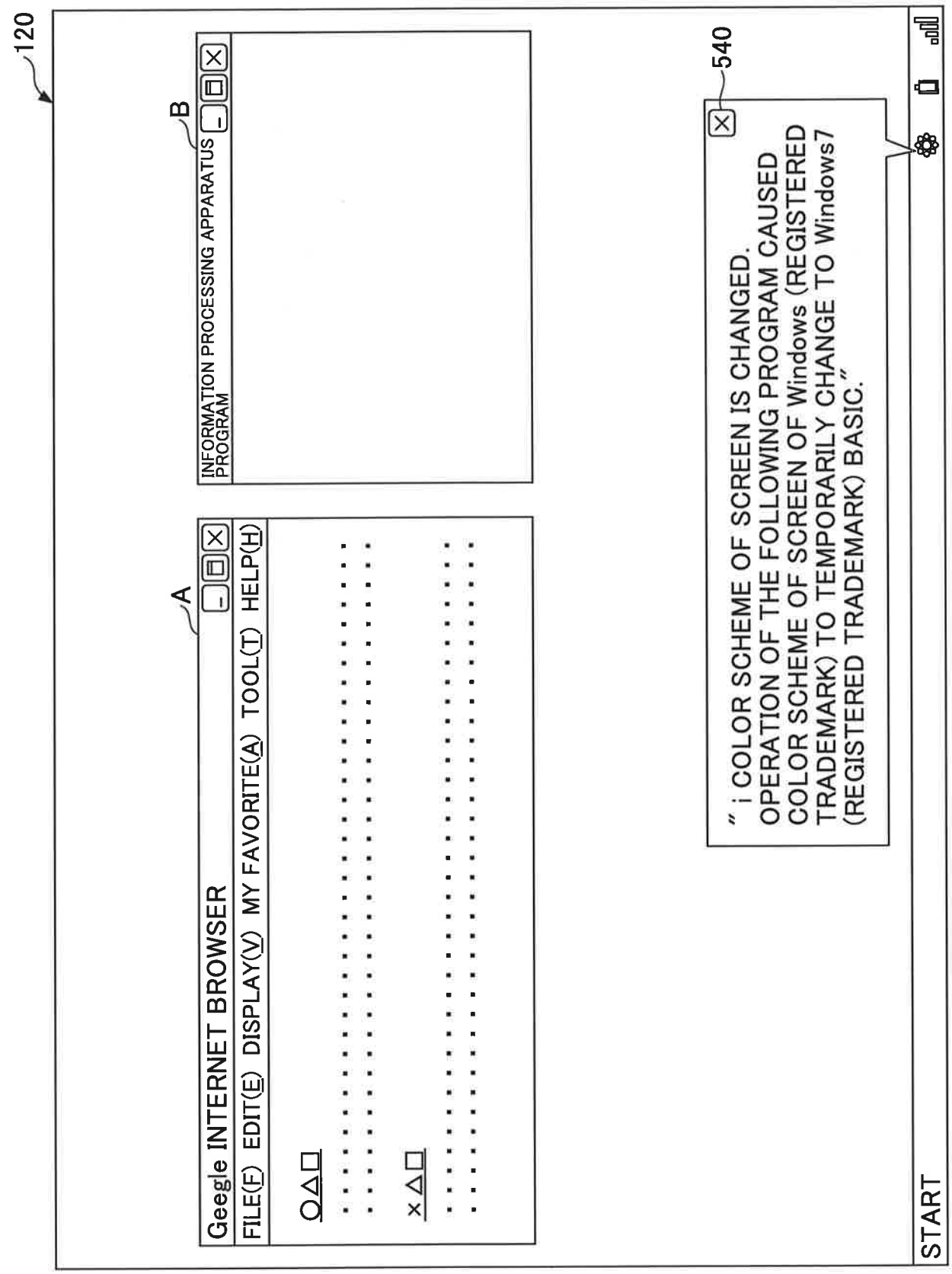

120
A
Geegle INTERNET BROWSER
FILE(F) EDIT(E) DISPLAY(V) MY FAVORITE(A) TOOL(T) HELP(H)
○△□
× △□
B
INFORMATION PROCESSING APPARATUS PROGRAM
540
" i COLOR SCHEME OF SCREEN IS CHANGED.
OPERATION OF THE FOLLOWING PROGRAM CAUSED
COLOR SCHEME OF SCREEN OF Windows (REGISTERED
TRADEMARK) TO TEMPORARILY CHANGE TO Windows7
(REGISTERED TRADEMARK) BASIC."
START

FIG.26

FIG.27

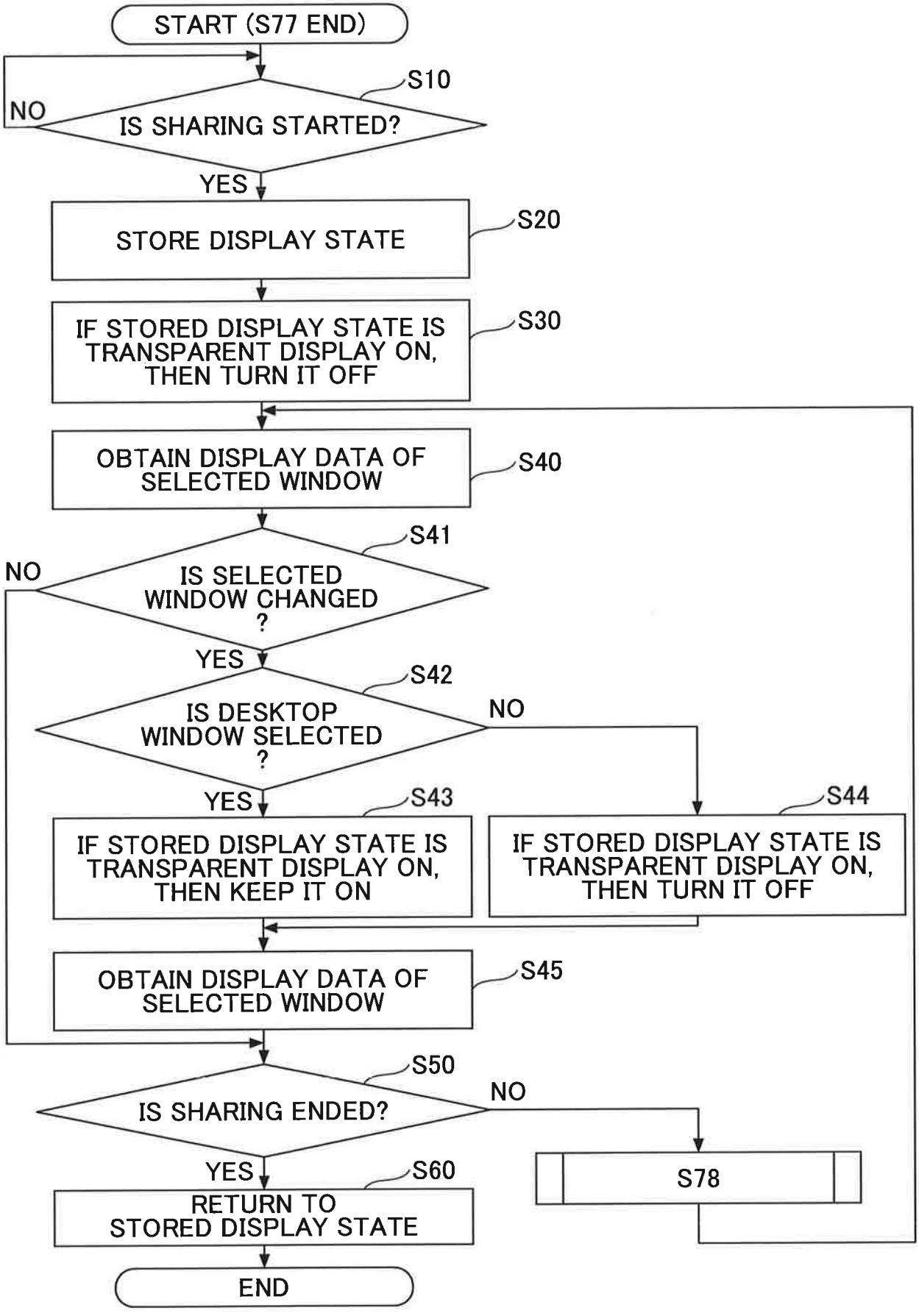

START (S77 END)
S10
NO
IS SHARING STARTED?
YES
STORE DISPLAY STATE
S20
IF STORED DISPLAY STATE IS TRANSPARENT DISPLAY ON, THEN TURN IT OFF
S30
OBTAIN DISPLAY DATA OF SELECTED WINDOW
S40
S41
NO
IS SELECTED WINDOW CHANGED ?
YES
S42
IS DESKTOP WINDOW SELECTED ?
NO
YES
S43
IF STORED DISPLAY STATE IS TRANSPARENT DISPLAY ON, THEN KEEP IT ON
S44
IF STORED DISPLAY STATE IS TRANSPARENT DISPLAY ON, THEN TURN IT OFF
OBTAIN DISPLAY DATA OF SELECTED WINDOW
S45
S50
NO
IS SHARING ENDED?
YES
S60
RETURN TO STORED DISPLAY STATE
END
S78

FIG.28

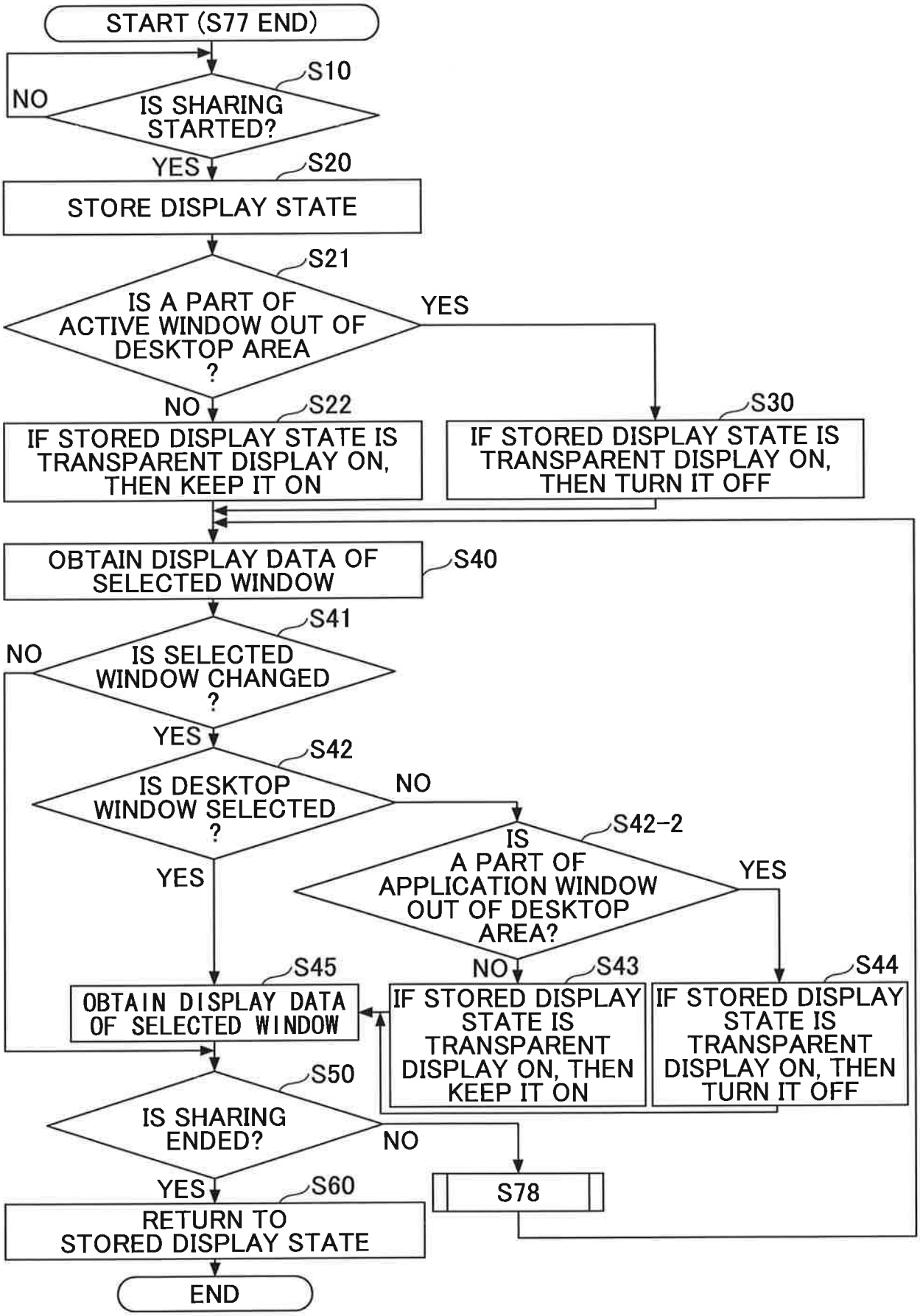

START (S77 END)
S10
IS SHARING STARTED?
NO
YES
S20
STORE DISPLAY STATE
S21
IS A PART OF ACTIVE WINDOW OUT OF DESKTOP AREA ?
YES
NO
S22
IF STORED DISPLAY STATE IS TRANSPARENT DISPLAY ON, THEN KEEP IT ON
S30
IF STORED DISPLAY STATE IS TRANSPARENT DISPLAY ON, THEN TURN IT OFF
OBTAIN DISPLAY DATA OF SELECTED WINDOW
S40
S41
IS SELECTED WINDOW CHANGED ?
NO
YES
S42
IS DESKTOP WINDOW SELECTED ?
NO
YES
S42-2
IS A PART OF APPLICATION WINDOW OUT OF DESKTOP AREA?
YES
NO
S45
OBTAIN DISPLAY DATA OF SELECTED WINDOW
S43
IF STORED DISPLAY STATE IS TRANSPARENT DISPLAY ON, THEN KEEP IT ON
S44
IF STORED DISPLAY STATE IS TRANSPARENT DISPLAY ON, THEN TURN IT OFF
S50
IS SHARING ENDED?
NO
YES
S78
S60
RETURN TO STORED DISPLAY STATE
END

FIG.29

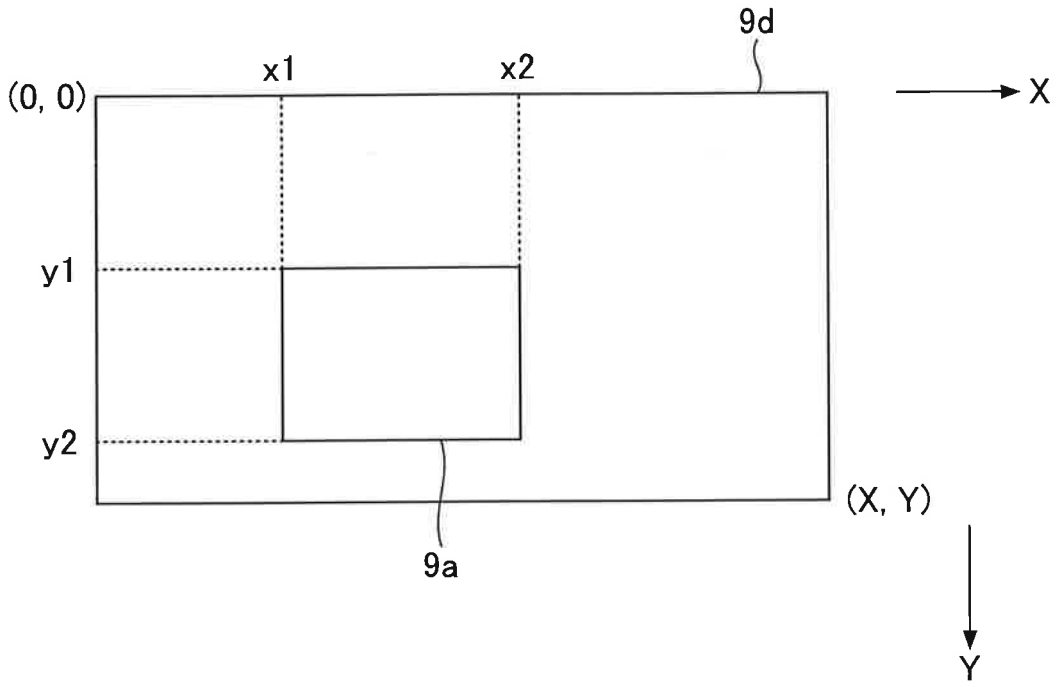


FIG.30

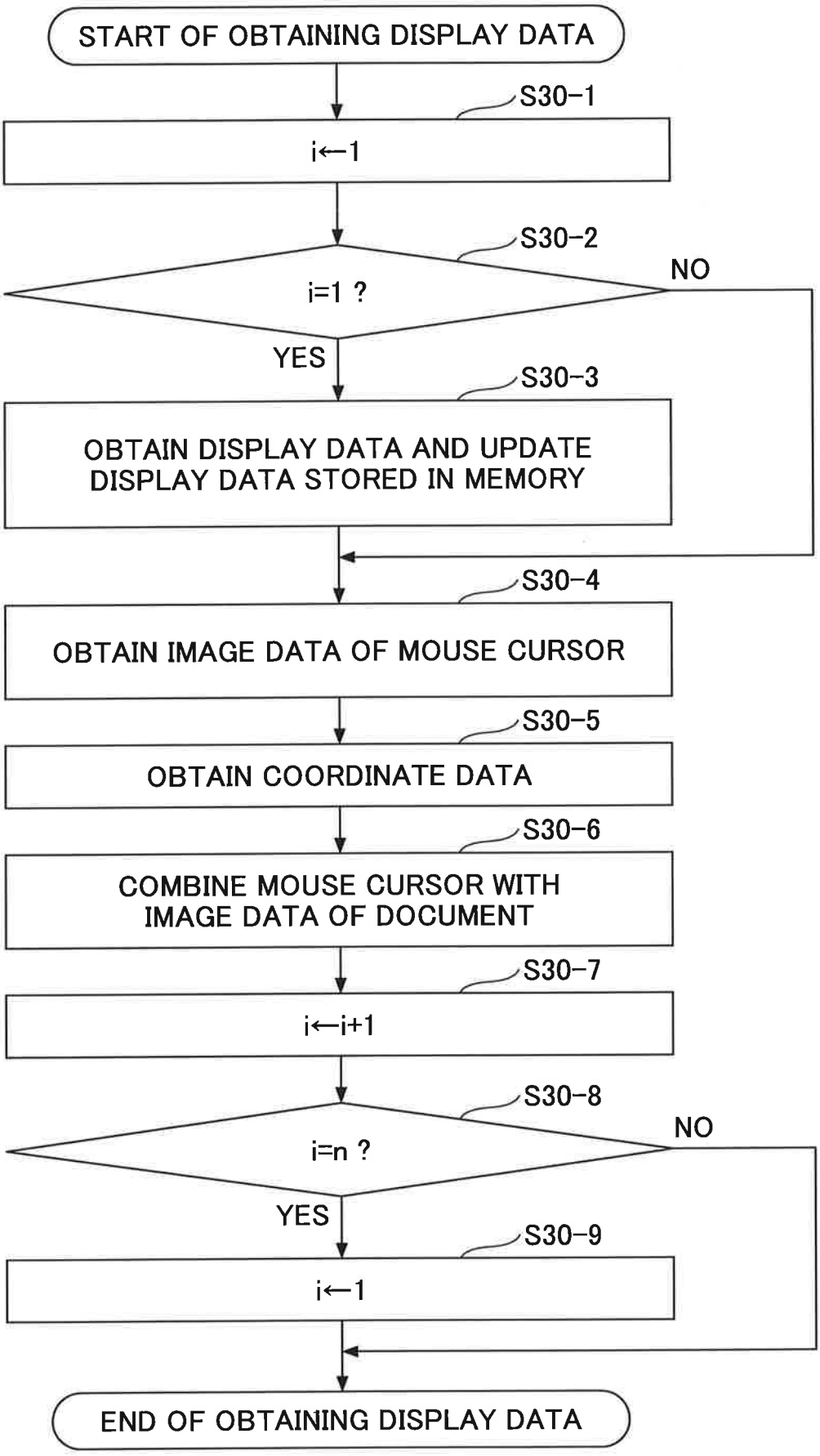

START OF OBTAINING DISPLAY DATA
S30-1
i←1
S30-2
i=1 ?
NO
YES
S30-3
OBTAIN DISPLAY DATA AND UPDATE DISPLAY DATA STORED IN MEMORY
S30-4
OBTAIN IMAGE DATA OF MOUSE CURSOR
S30-5
OBTAIN COORDINATE DATA
S30-6
COMBINE MOUSE CURSOR WITH IMAGE DATA OF DOCUMENT
S30-7
i←i+1
S30-8
i=n ?
NO
YES
S30-9
i←1
END OF OBTAINING DISPLAY DATA

FIG.31

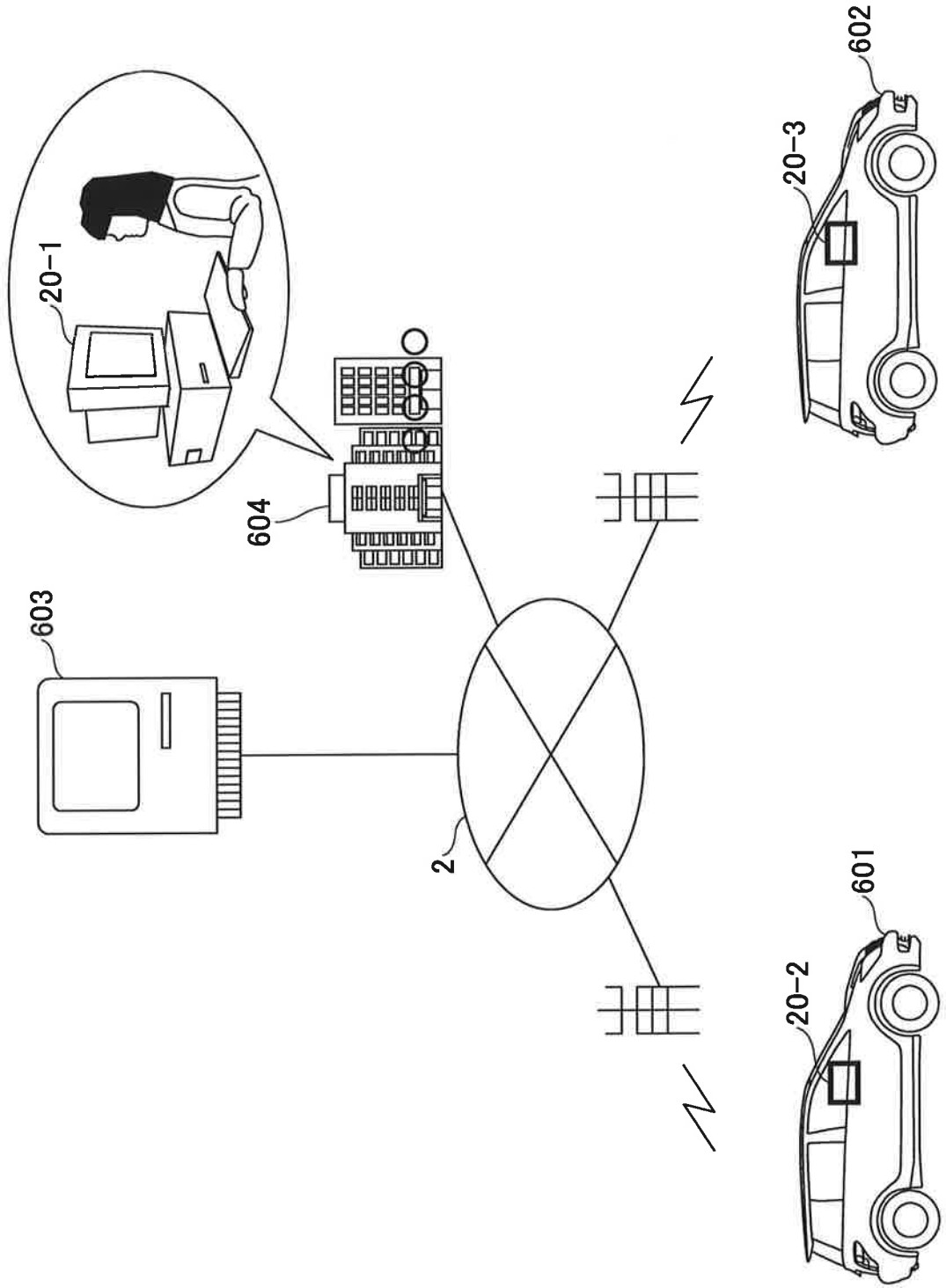
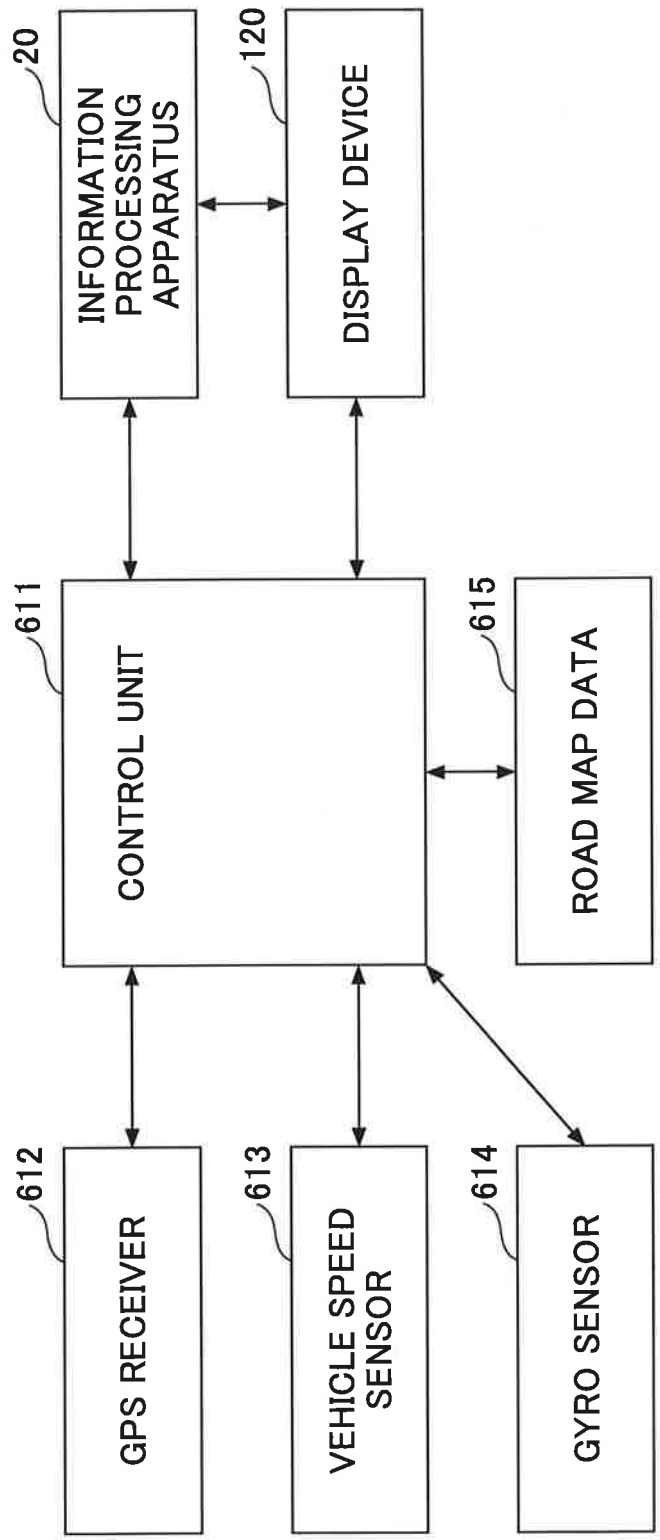


FIG.32


20
INFORMATION PROCESSING APPARATUS
120
DISPLAY DEVICE
611
CONTROL UNIT
615
ROAD MAP DATA
612
GPS RECEIVER
613
VEHICLE SPEED SENSOR
614
GYRO SENSOR