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(54) **TERMINAL APPARATUS, SERVER APPARATUS, DISPLAY CONTROL METHOD, AND PROGRAM**

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(57) **ABSTRACT**

Provided is a terminal apparatus including a display unit displaying an execution screen of a shared application, reflecting on a display operations performed by multiple users as operations performed on one application, where the shared application includes a function for displaying an identification object that associates each of the users with an operation result, displayed on the execution screen, reflecting the operation performed by each of the users, a function for setting, when a first user selects an identification object related to a second user and specifies a region on the screen, the specified region as a shared region that is shared by the first and second users, and a function for controlling, when the first or second user performs operation in the shared region, such that the displayed operation result reflecting the operation is not shown to users other than the first and second users.

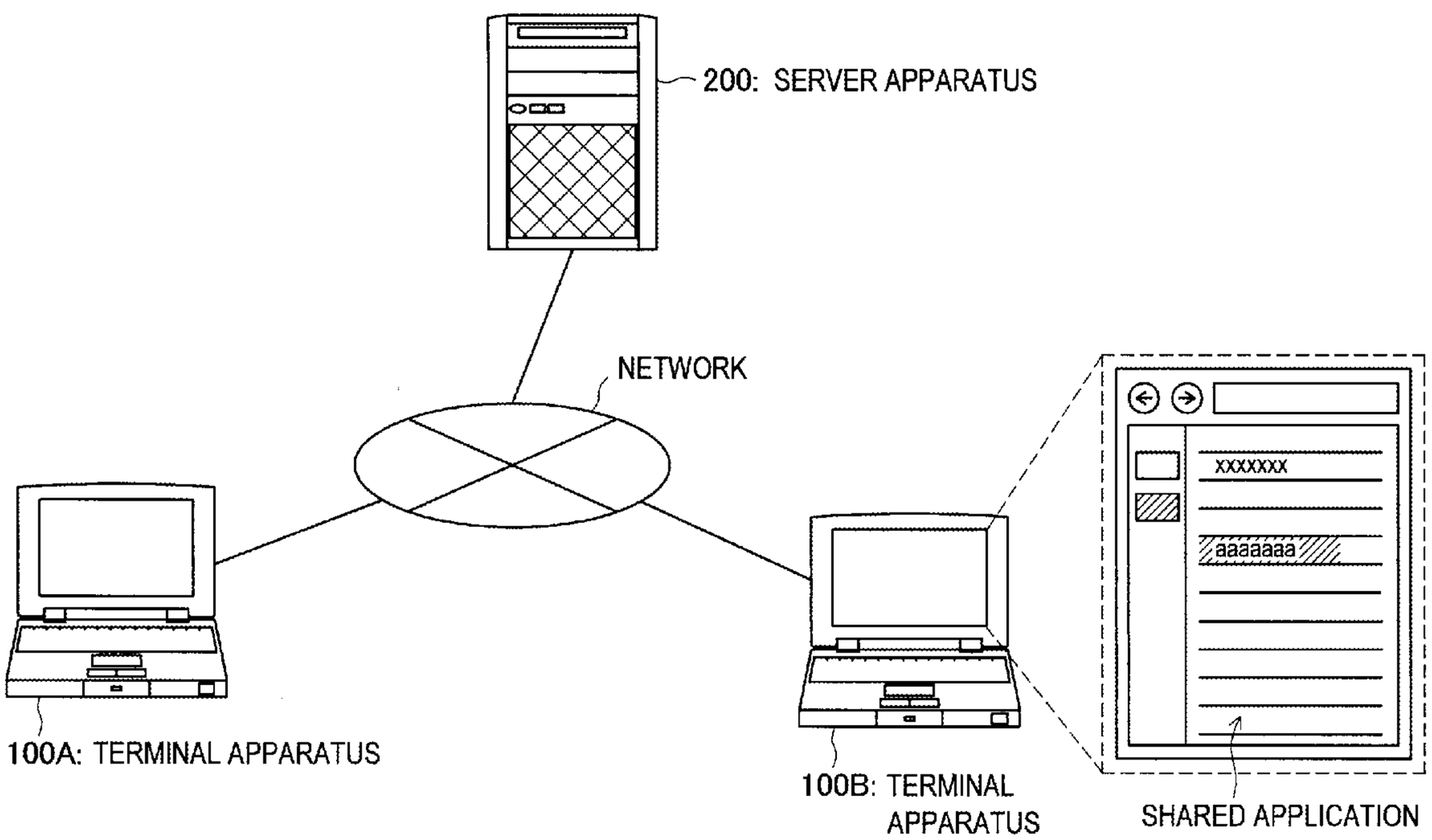


FIG.1

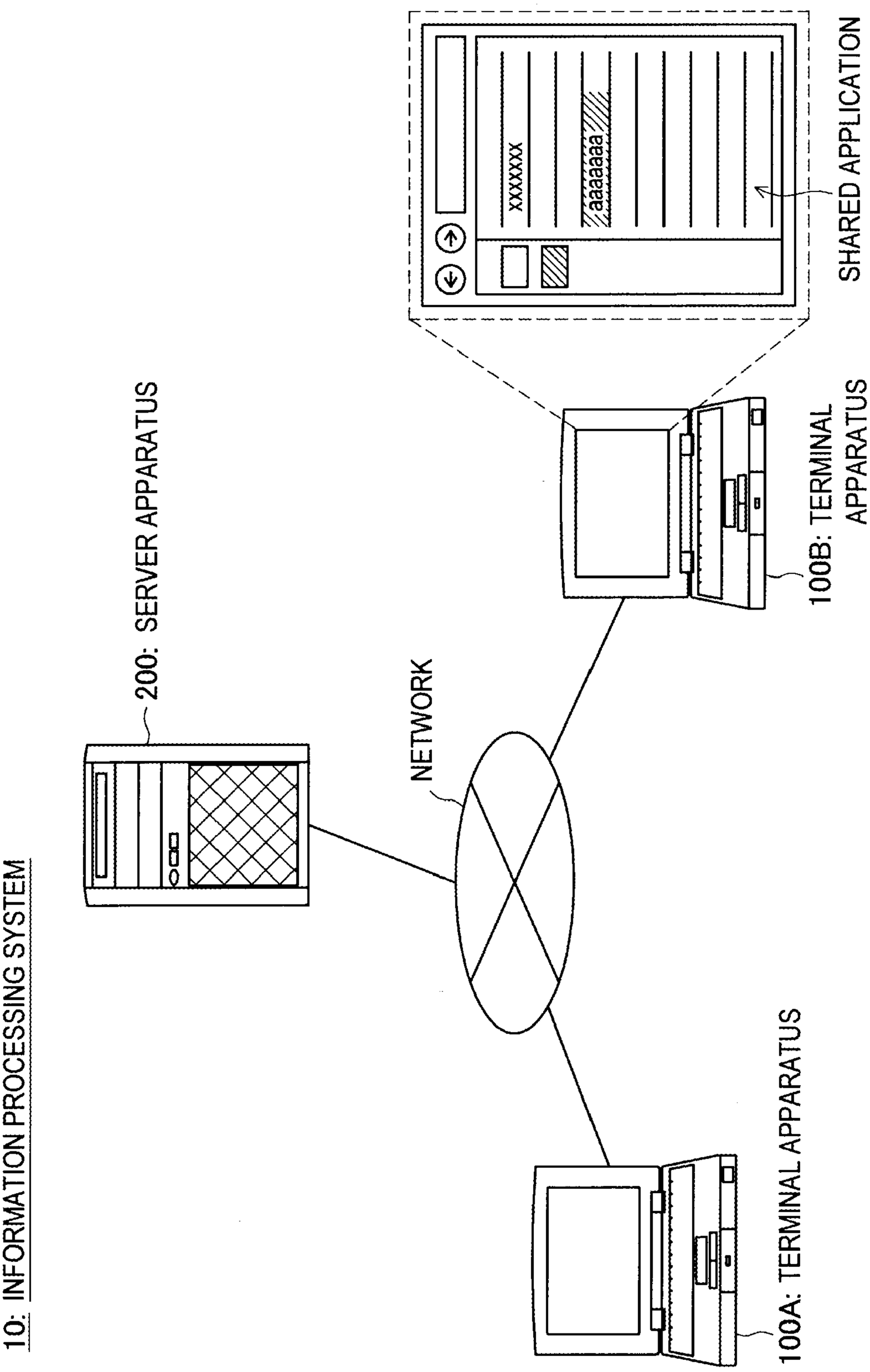

10: INFORMATION PROCESSING SYSTEM
200: SERVER APPARATUS
NETWORK
100A: TERMINAL APPARATUS
100B: TERMINAL APPARATUS
SHARED APPLICATION
xxxxxx
aaaaaaaa

FIG.2

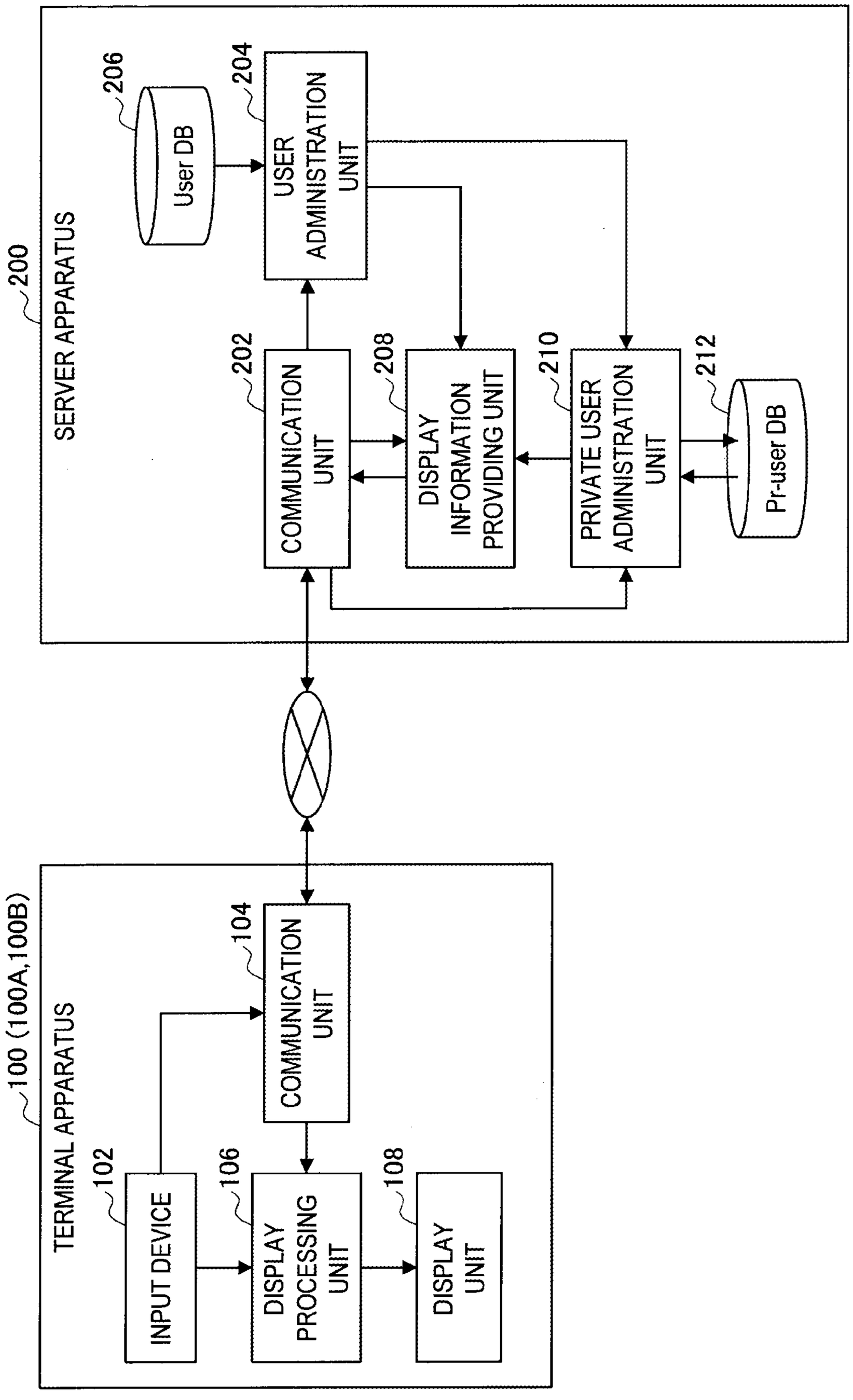

100 (100A,100B)
TERMINAL APPARATUS
INPUT DEVICE
102
COMMUNICATION UNIT
104
DISPLAY PROCESSING UNIT
106
DISPLAY UNIT
108
200
SERVER APPARATUS
COMMUNICATION UNIT
202
User DB
206
USER ADMINISTRATION UNIT
204
DISPLAY INFORMATION PROVIDING UNIT
208
PRIVATE USER ADMINISTRATION UNIT
210
Pr-user DB
212

FIG.3A

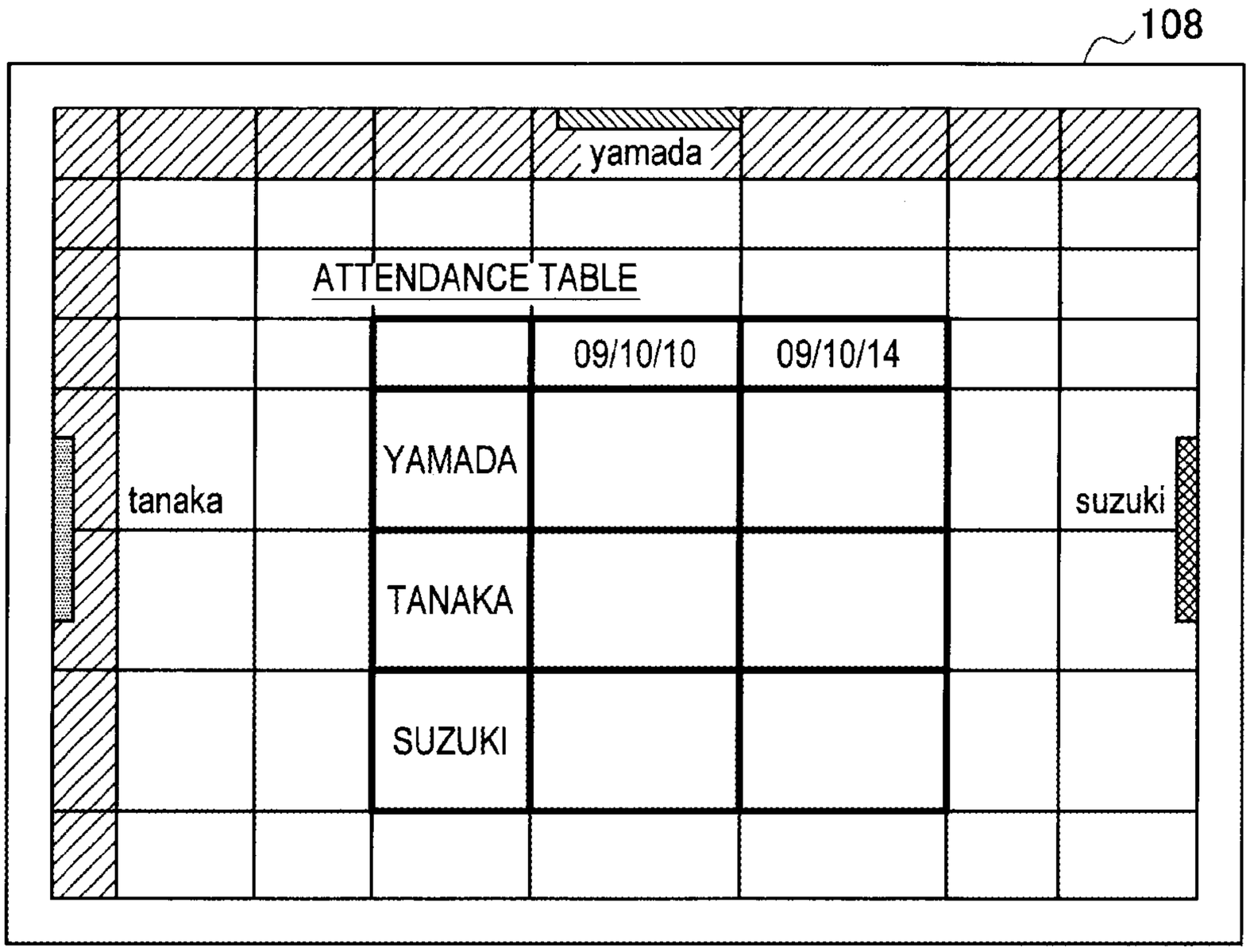

108
yamada
ATTENDANCE TABLE
09/10/10
09/10/14
YAMADA
tanaka
suzuki
TANAKA
SUZUKI

FIG.3B

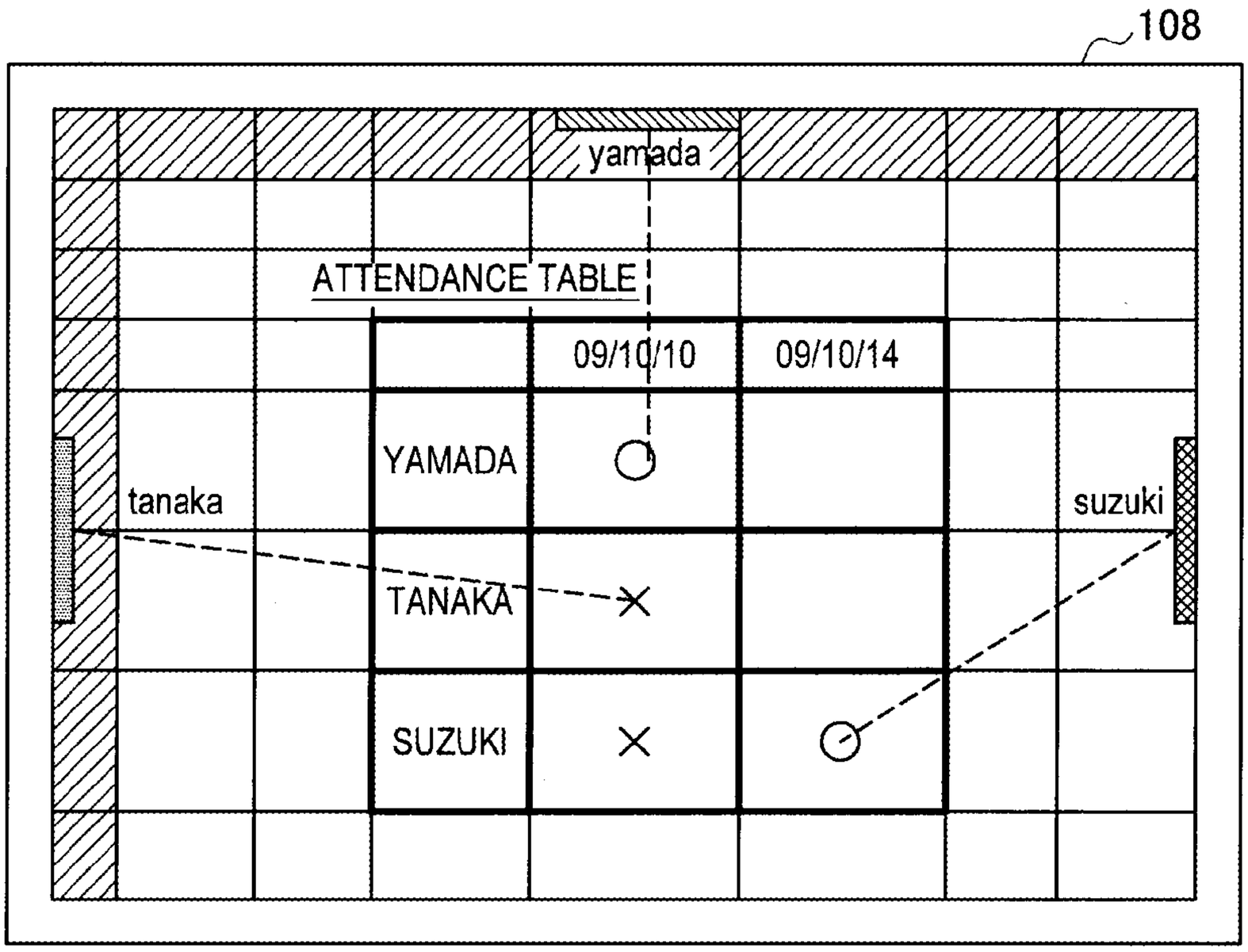

108
yamada
ATTENDANCE TABLE
09/10/10
09/10/14
YAMADA
tanaka
suzuki
TANAKA
SUZUKI

FIG.4

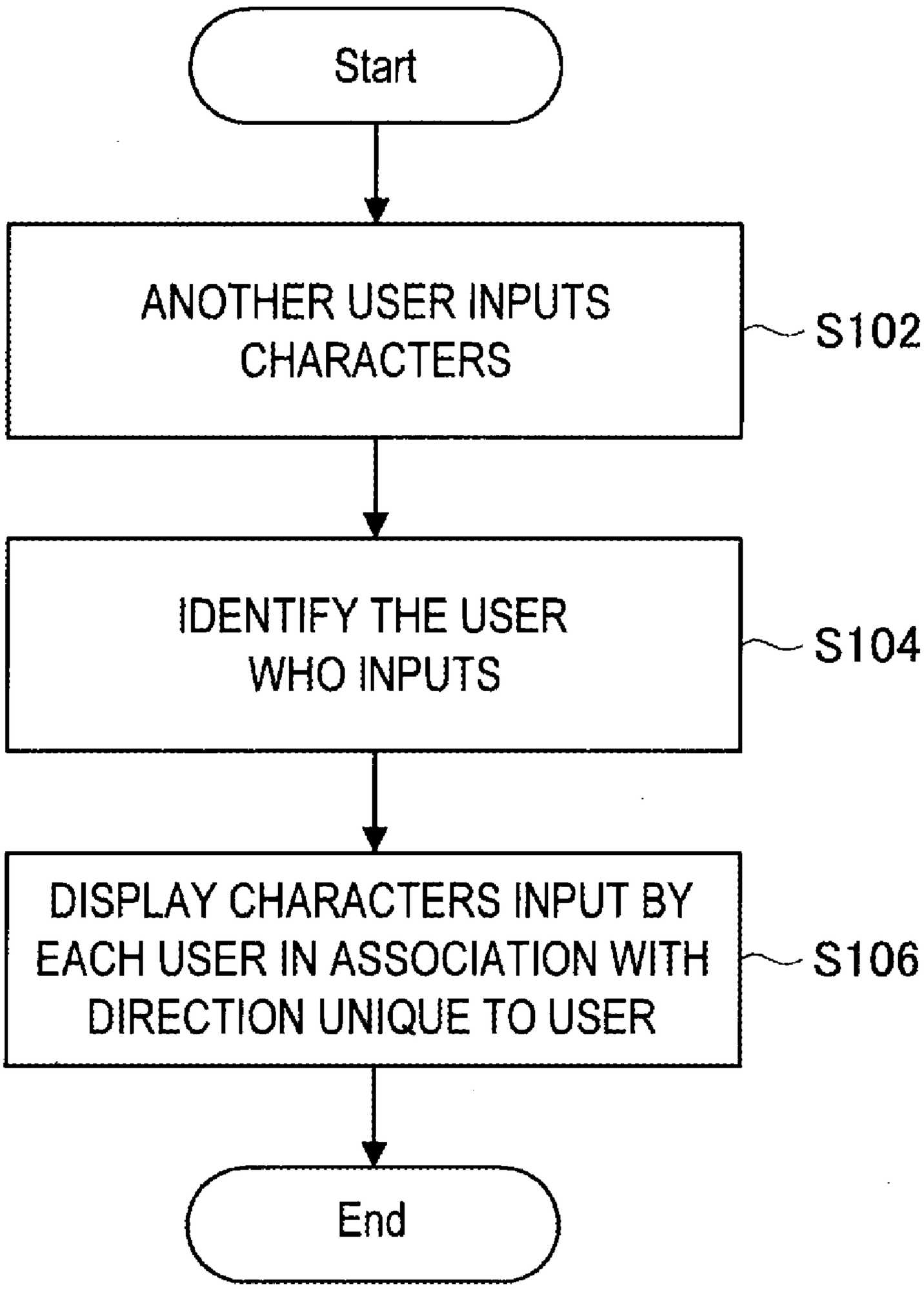

Start
ANOTHER USER INPUTS CHARACTERS
S102
IDENTIFY THE USER WHO INPUTS
S104
DISPLAY CHARACTERS INPUT BY EACH USER IN ASSOCIATION WITH DIRECTION UNIQUE TO USER
S106
End

FIG.5

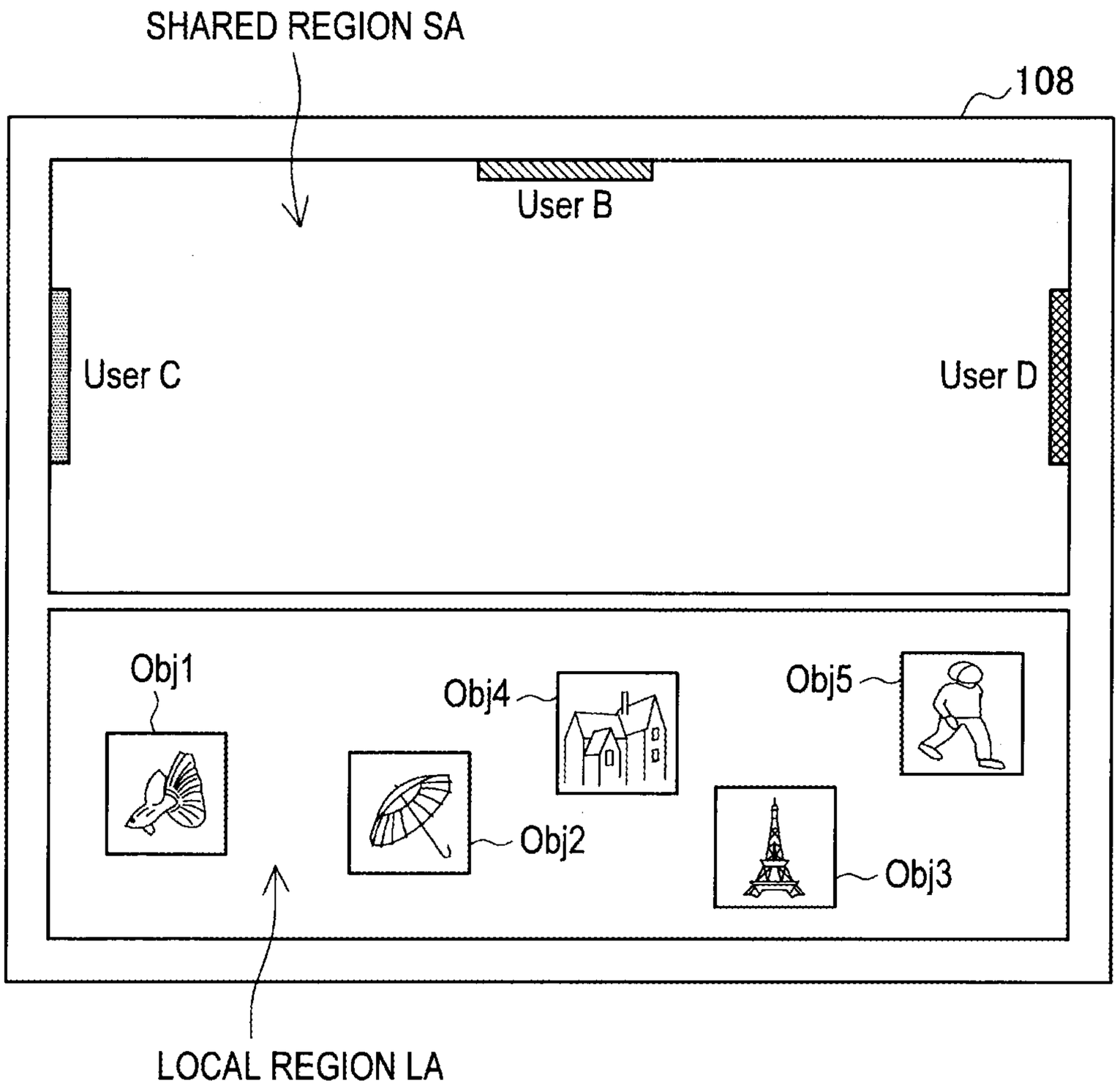

SHARED REGION SA
108
User B
User C
User D
Obj1
Obj4
Obj5
Obj2
Obj3
LOCAL REGION LA

FIG.6A

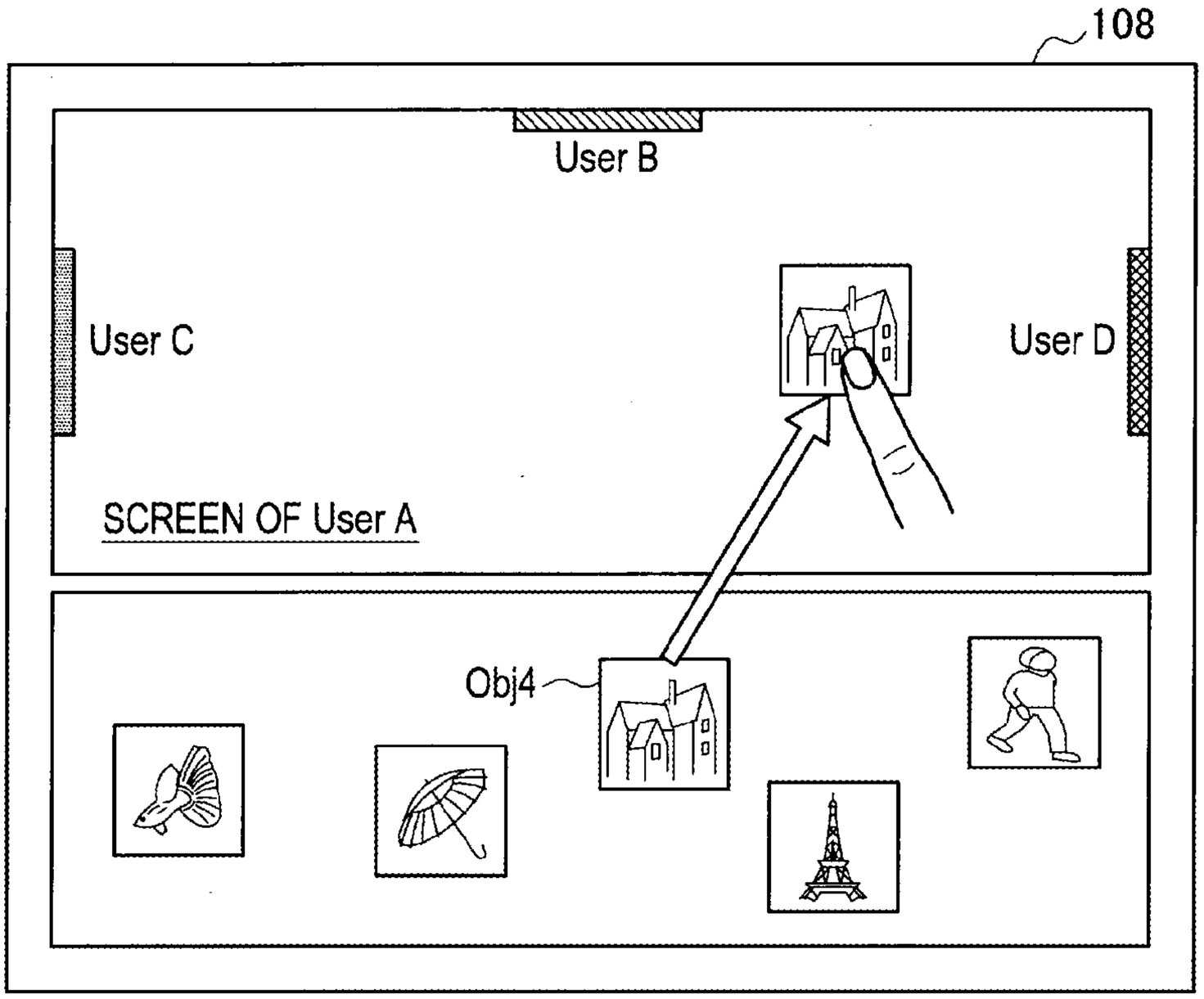

108
User B
User C
User D
SCREEN OF User A
Obj4

FIG.6B

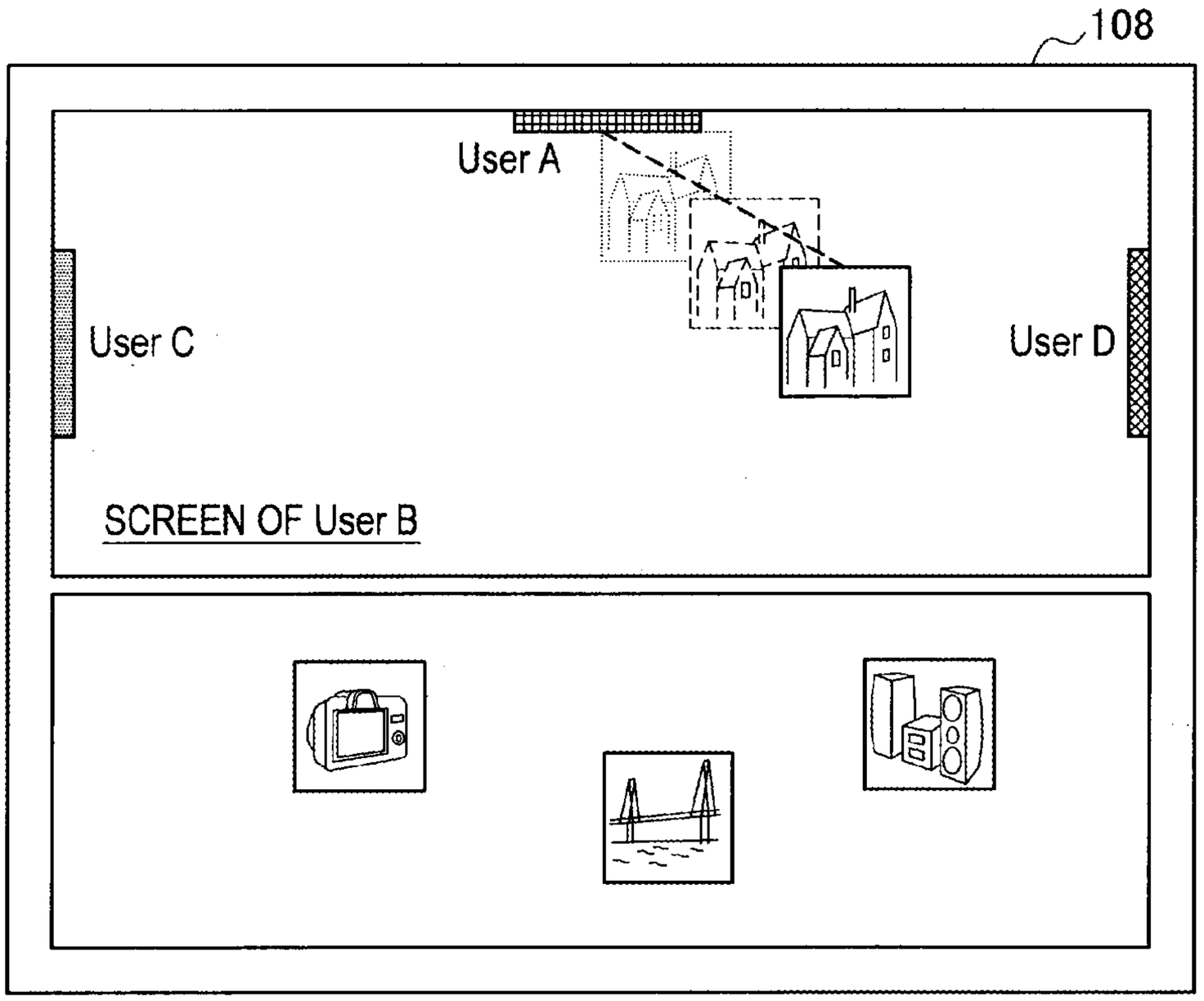

108
User A
User C
User D
SCREEN OF User B

FIG.7

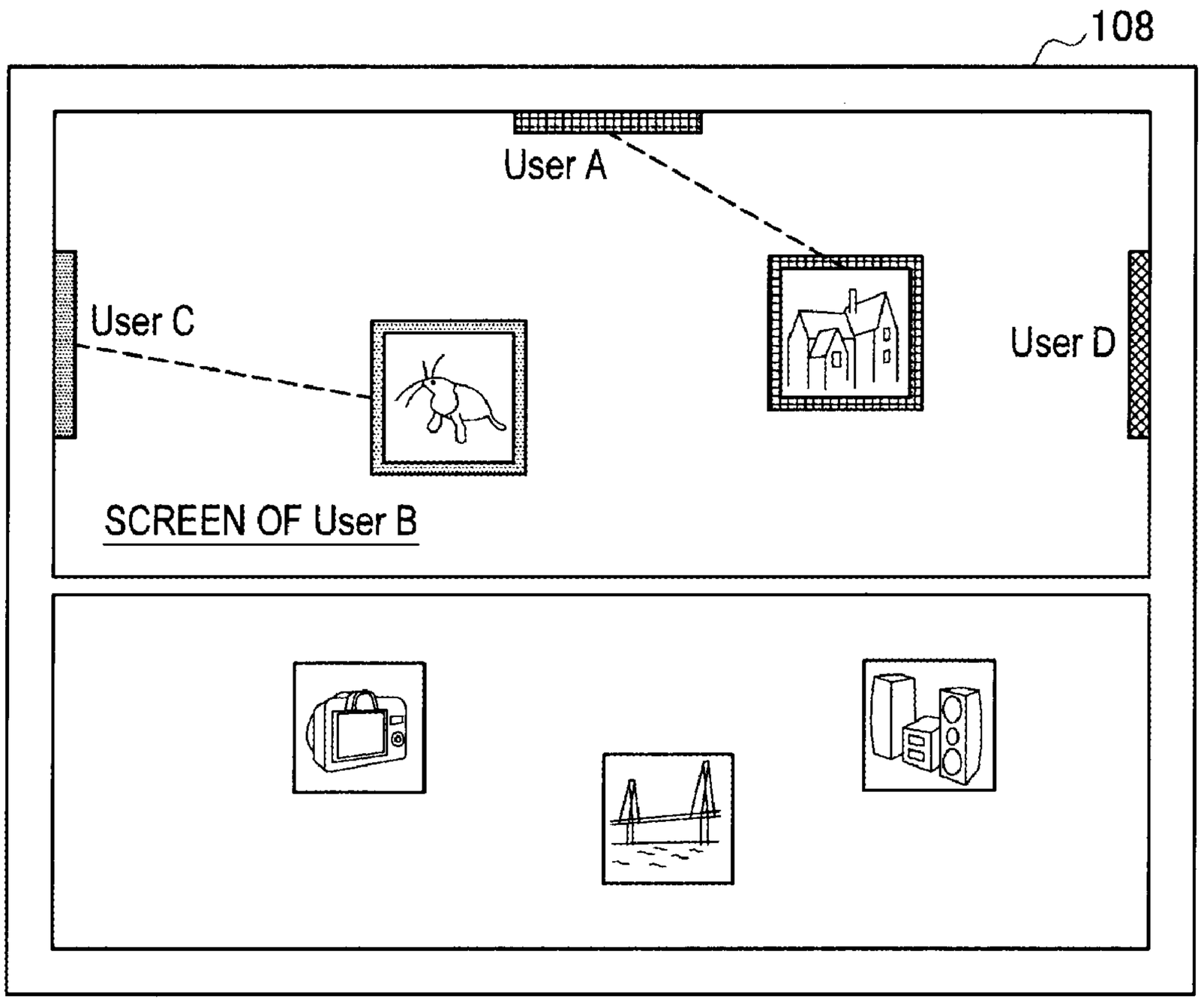


FIG.8

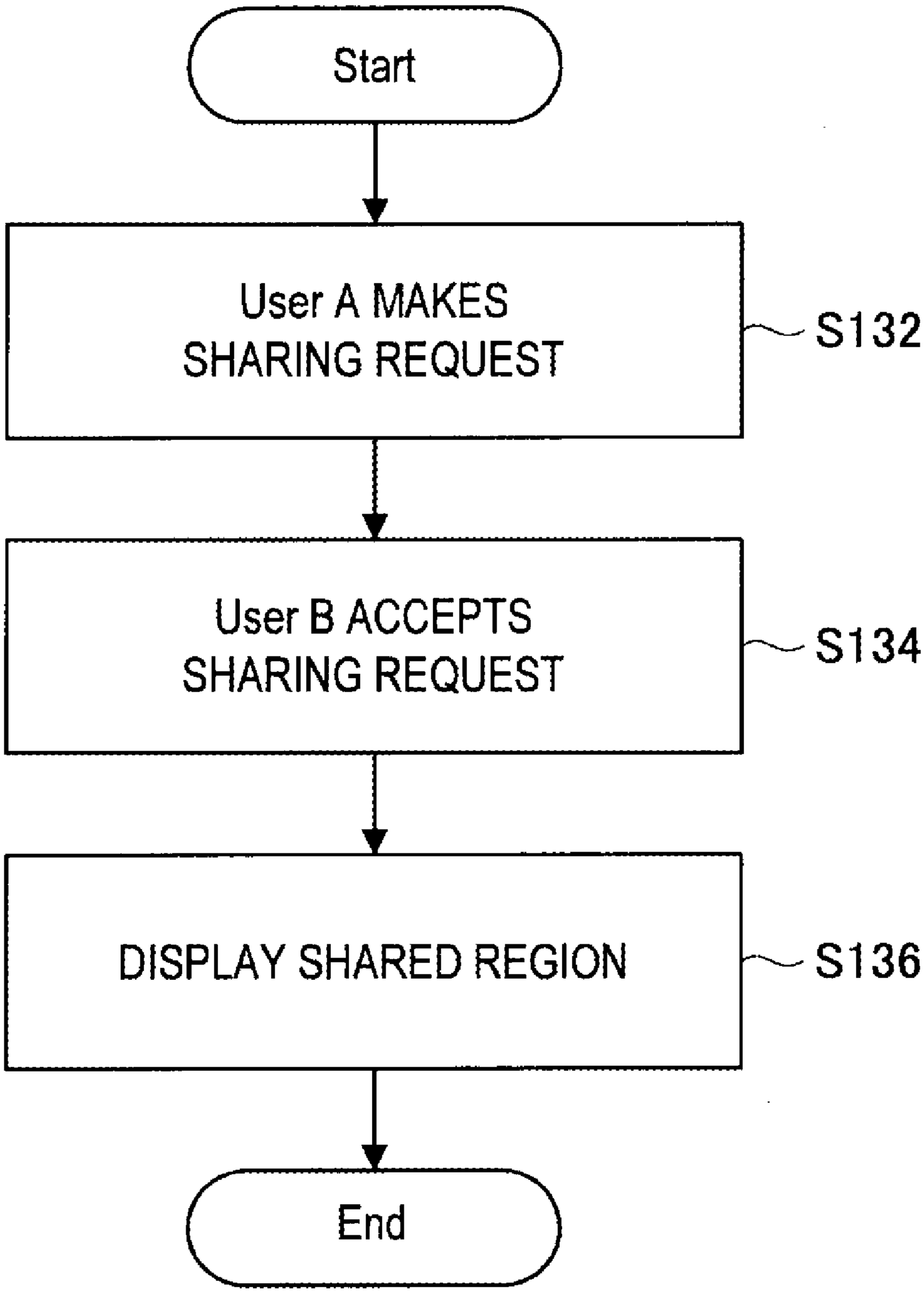

Start
User A MAKES SHARING REQUEST
S132
User B ACCEPTS SHARING REQUEST
S134
DISPLAY SHARED REGION
S136
End

FIG.9

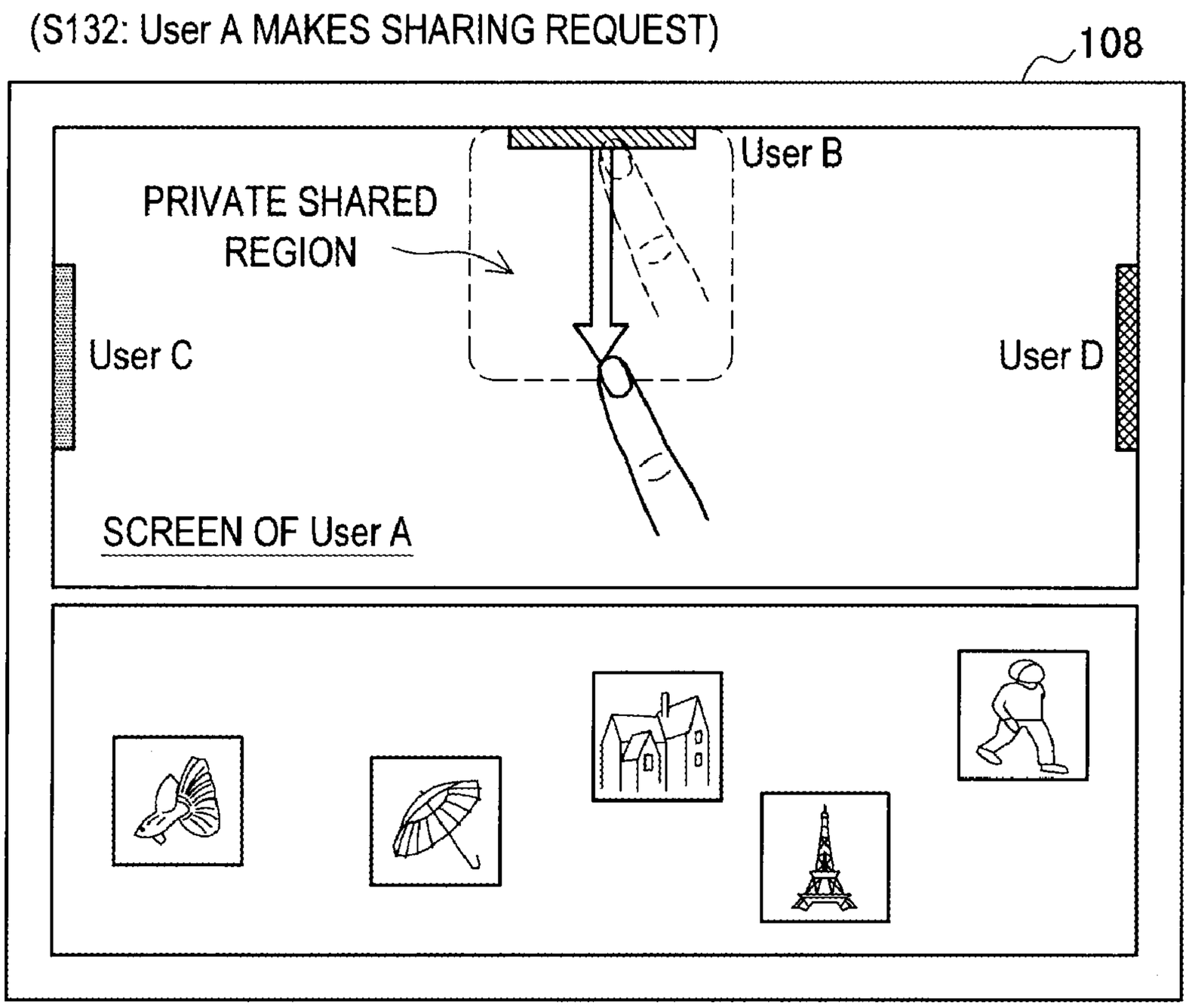

(S132: User A MAKES SHARING REQUEST)
108
PRIVATE SHARED REGION
User B
User C
User D
SCREEN OF User A

FIG.10A

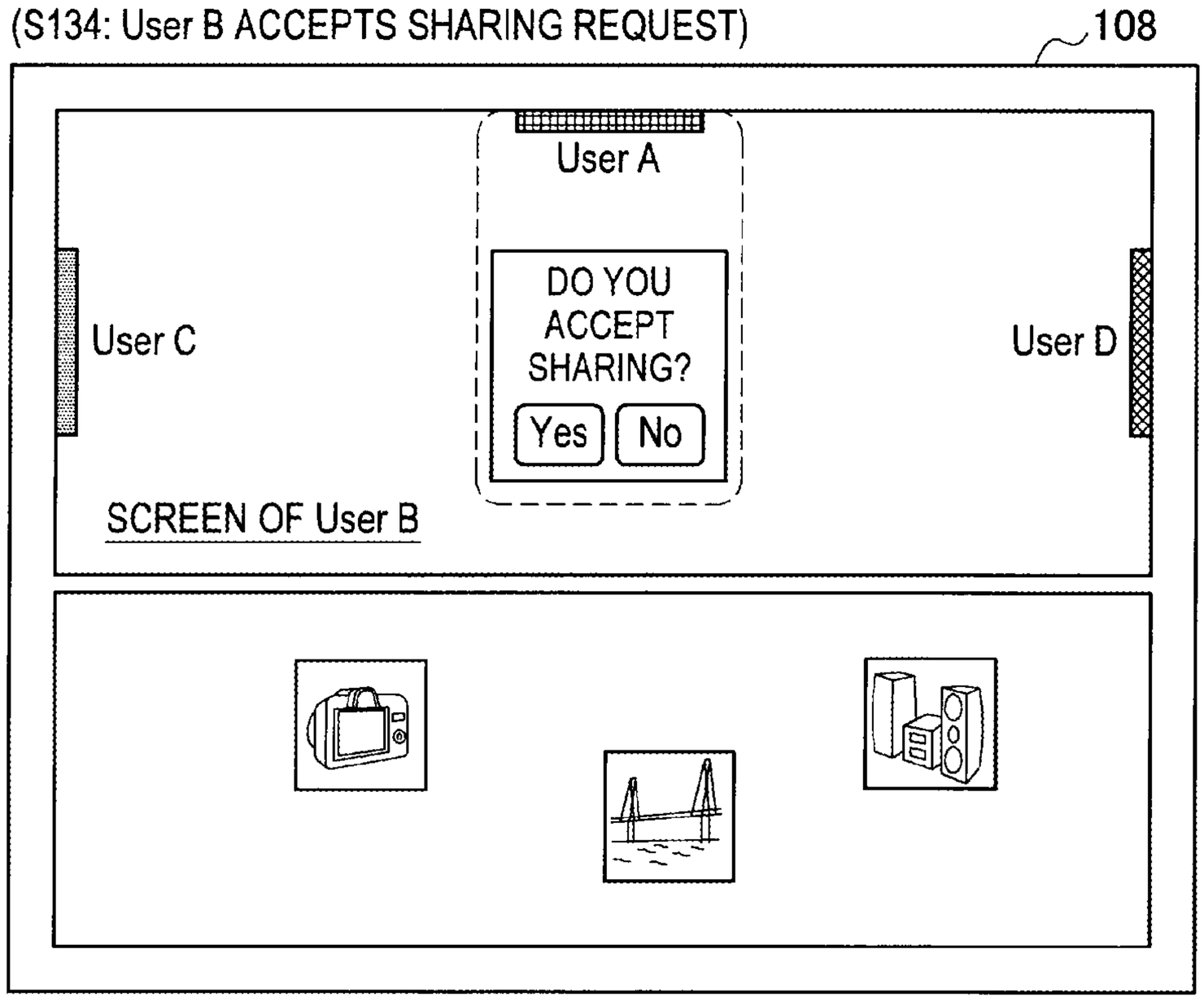


FIG.10B

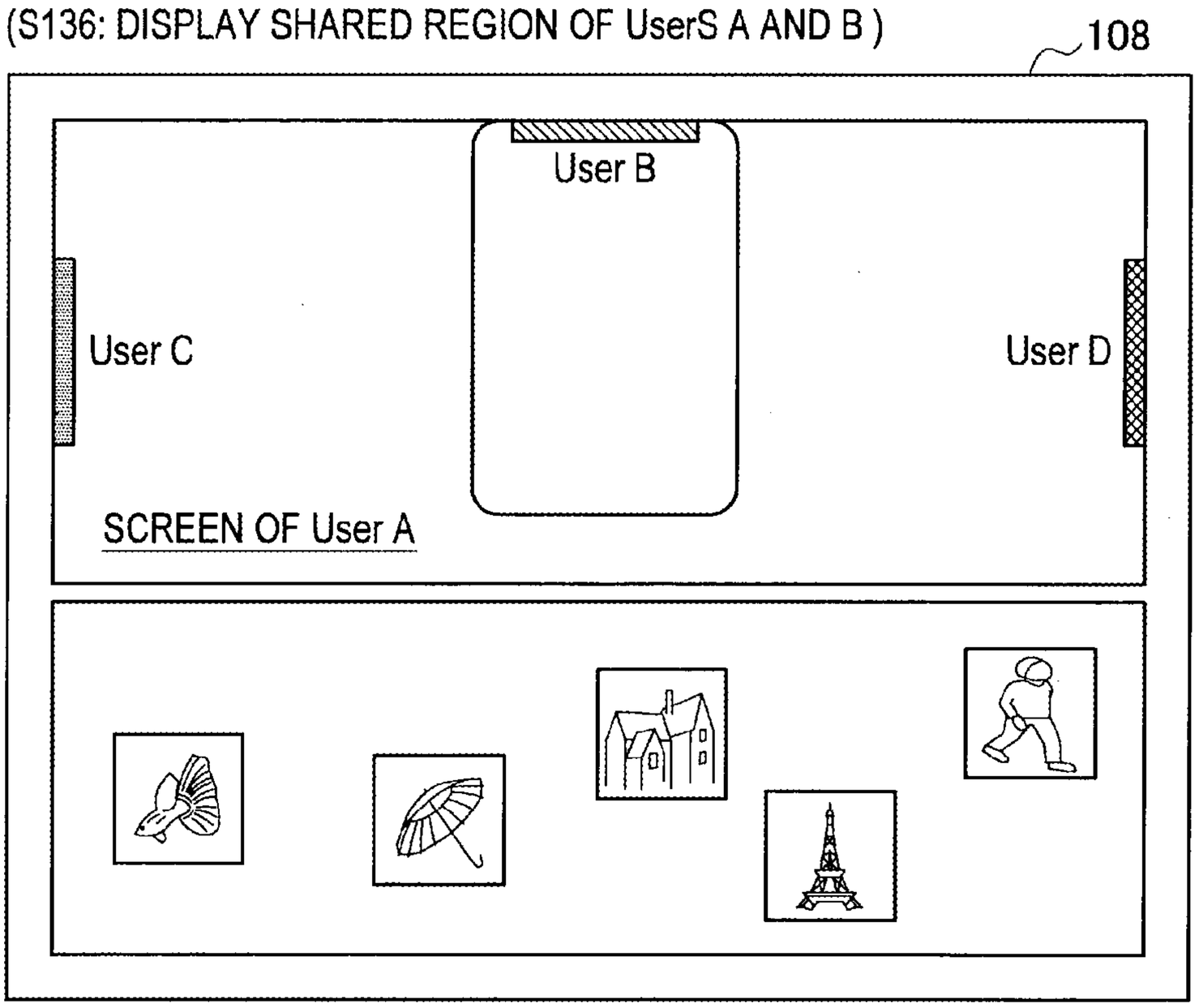


FIG.11

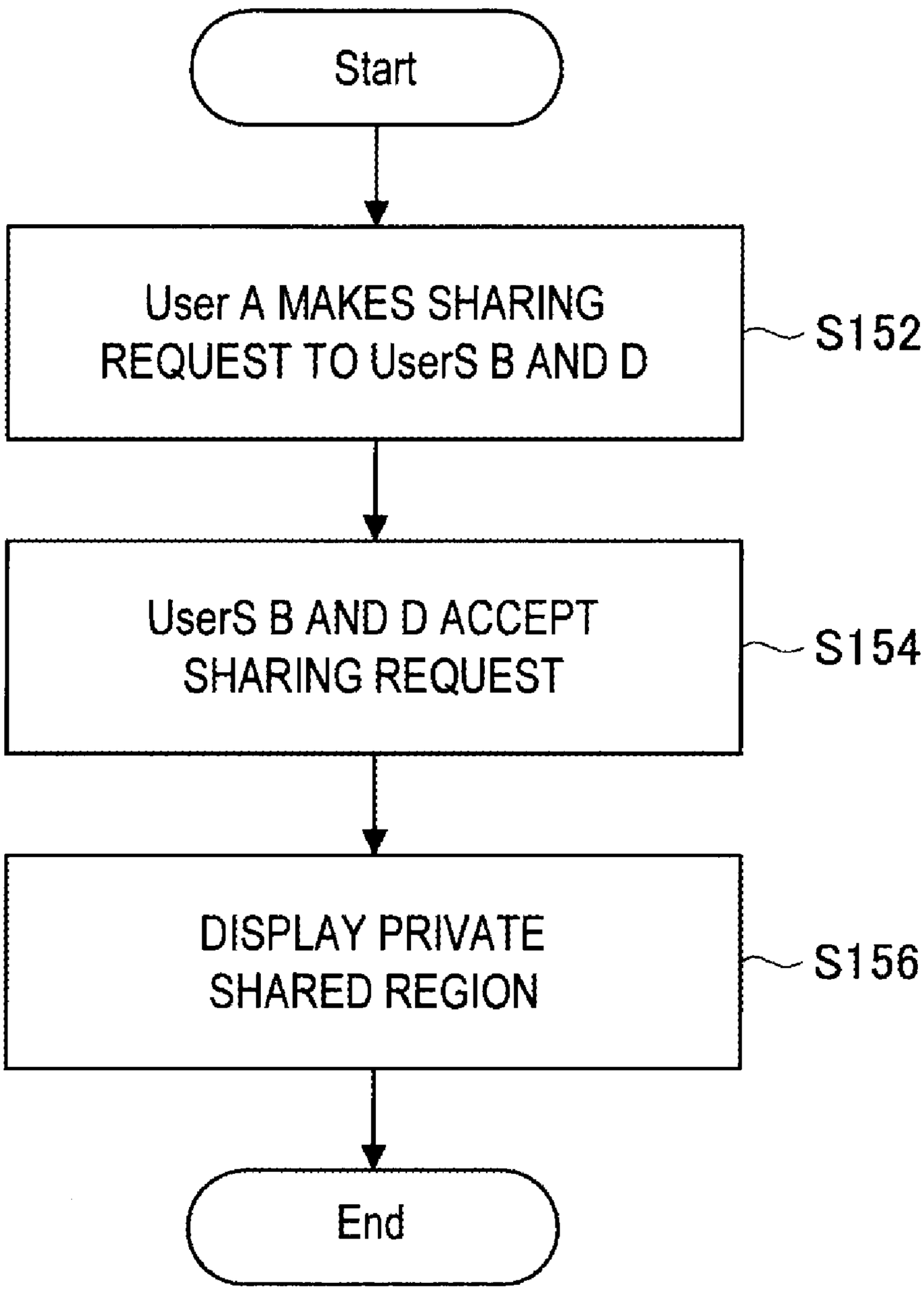

Start
User A MAKES SHARING REQUEST TO UserS B AND D
S152
UserS B AND D ACCEPT SHARING REQUEST
S154
DISPLAY PRIVATE SHARED REGION
S156
End

FIG.12A

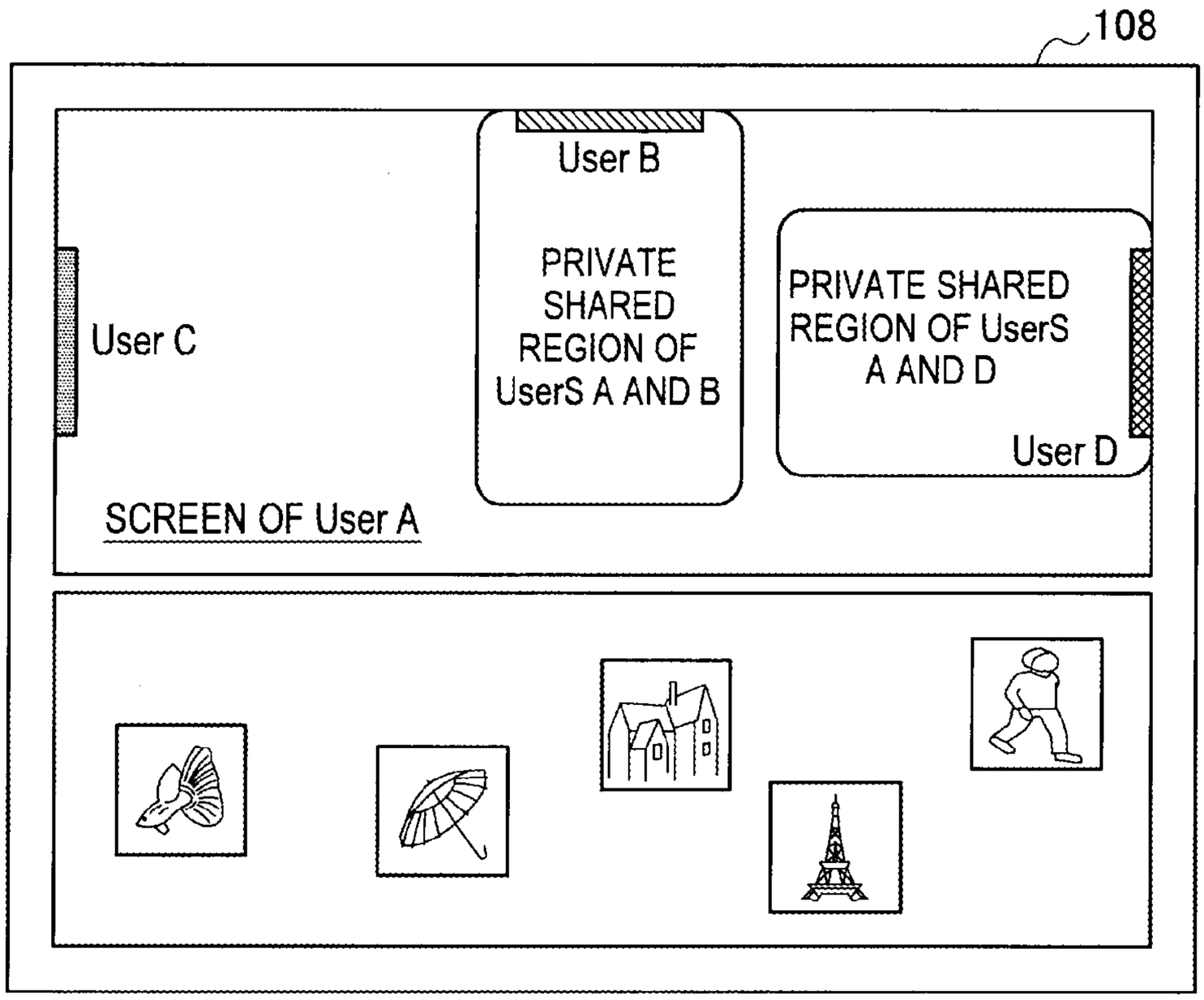


FIG.12B

(S152: User A MAKES PRIVATE SHARING REQUEST)

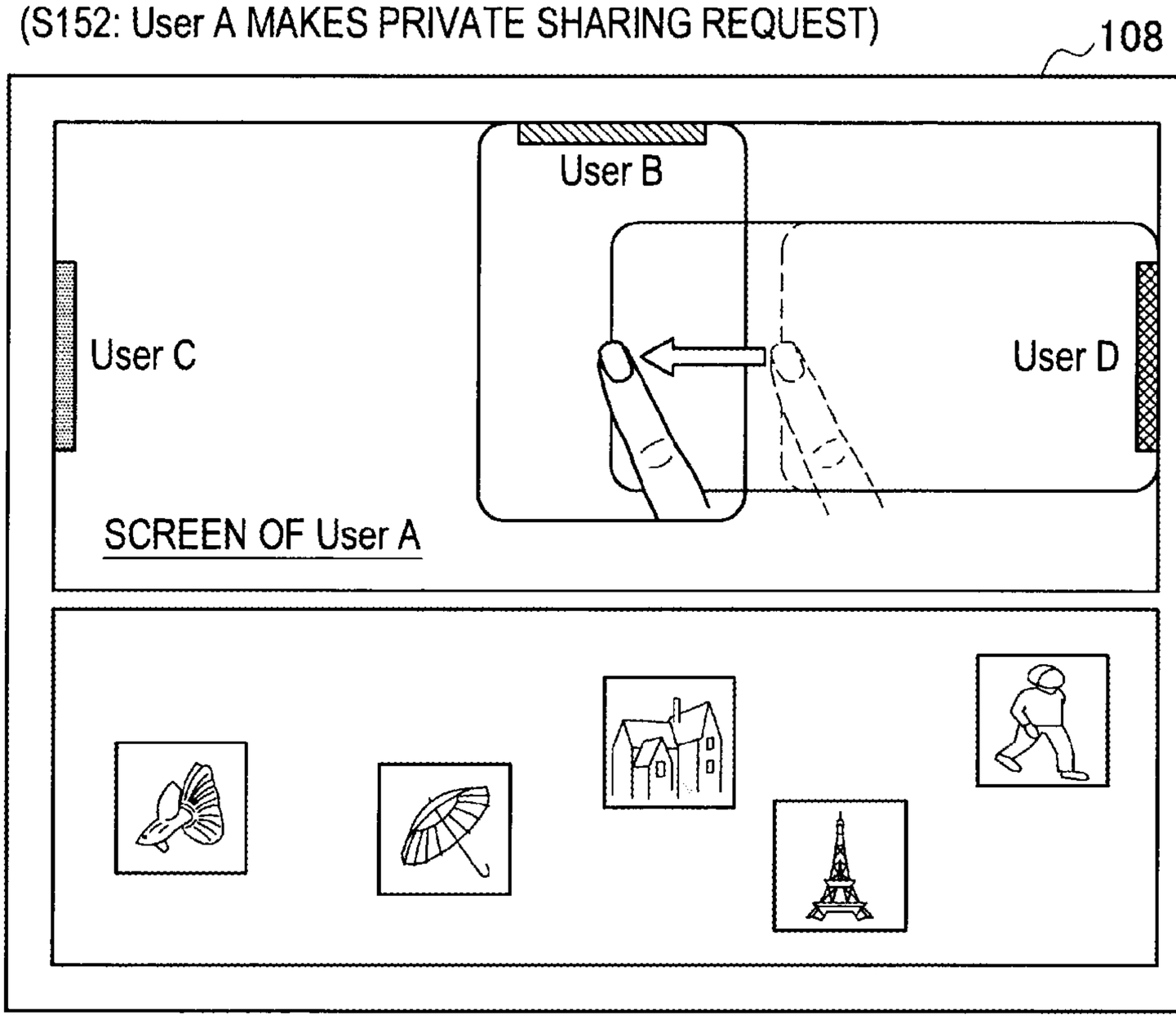


FIG.12C

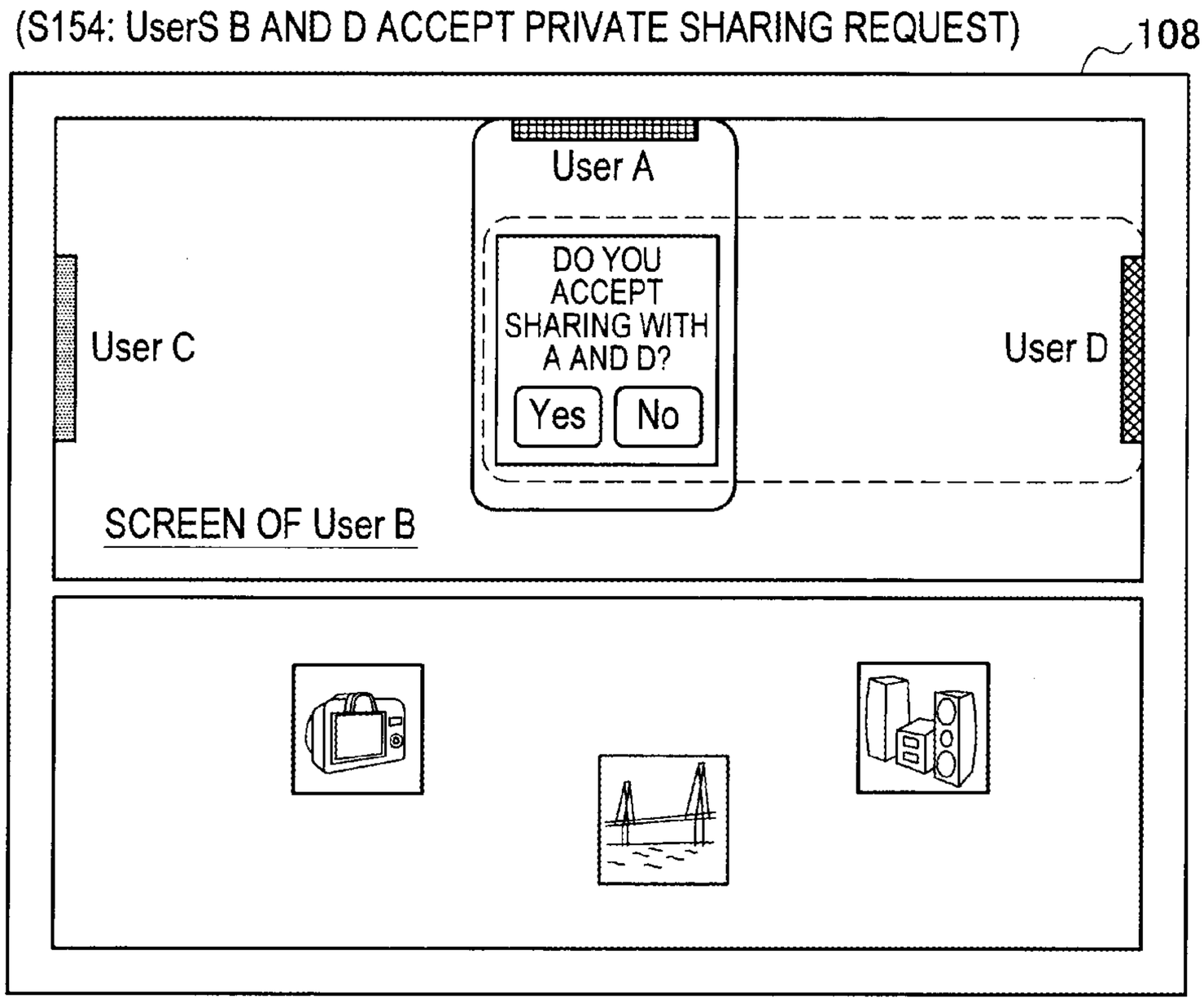


FIG.12D

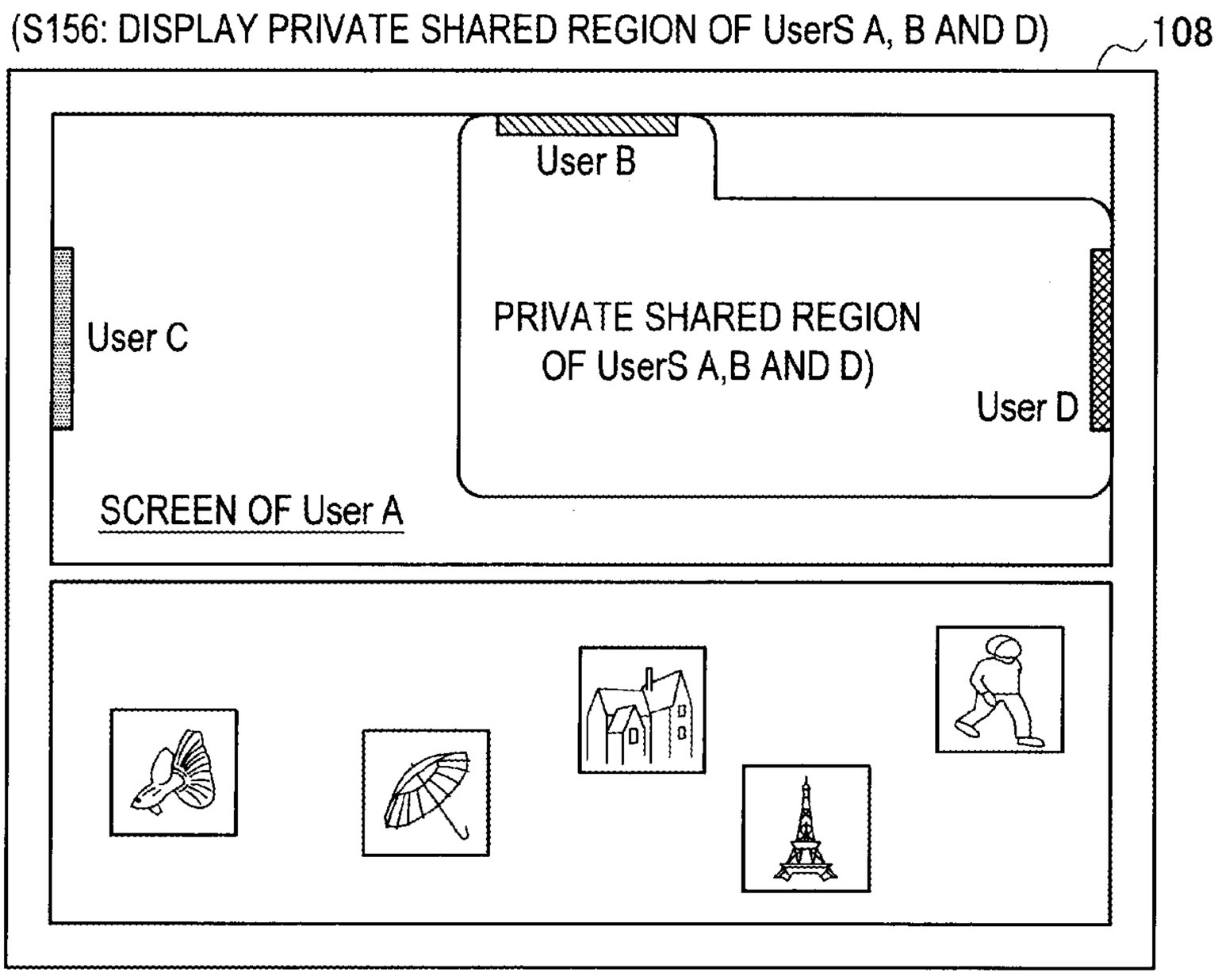


FIG.13

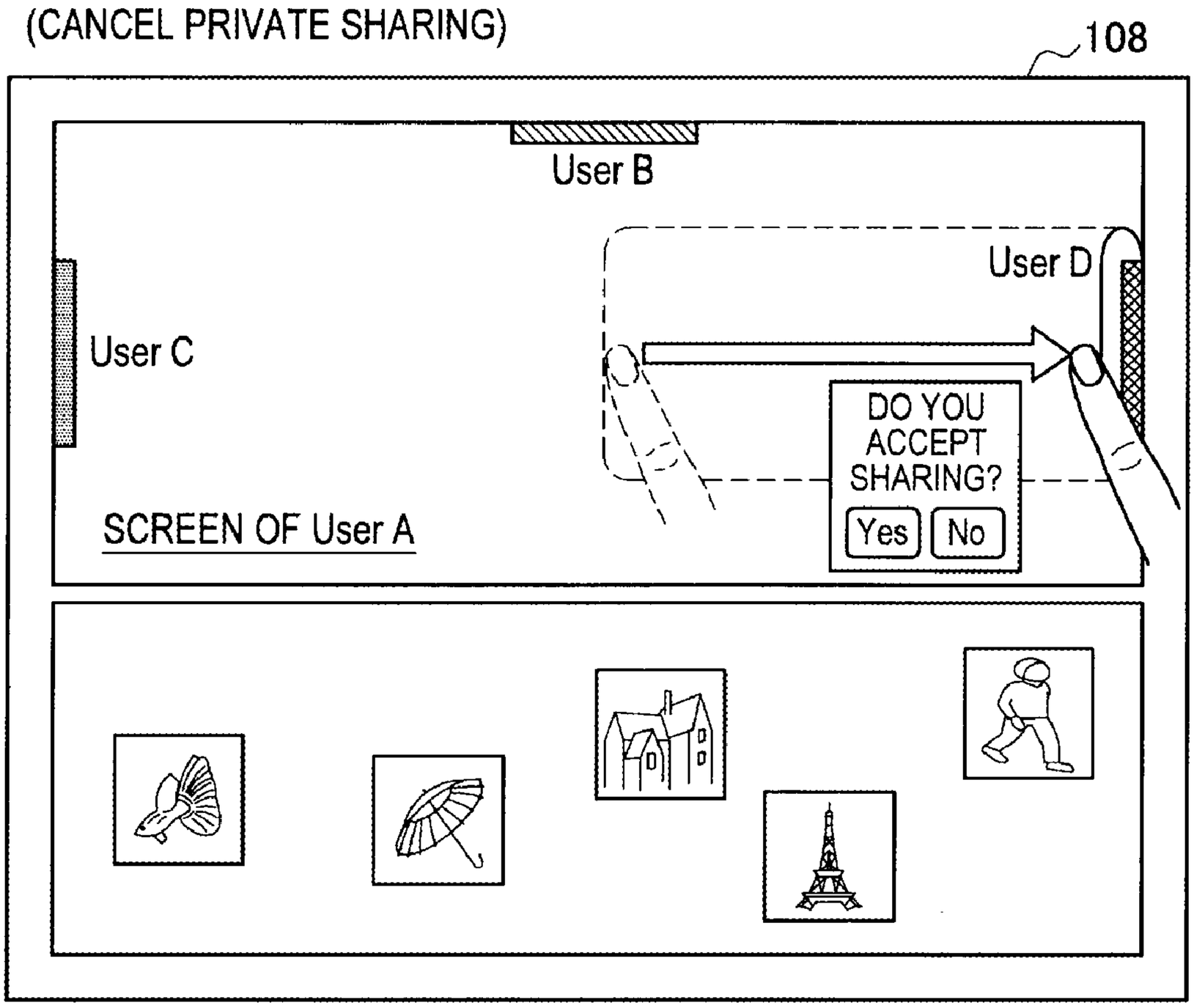

(CANCEL PRIVATE SHARING)
108
User B
User C
User D
DO YOU ACCEPT SHARING?
Yes
No
SCREEN OF User A

FIG.14

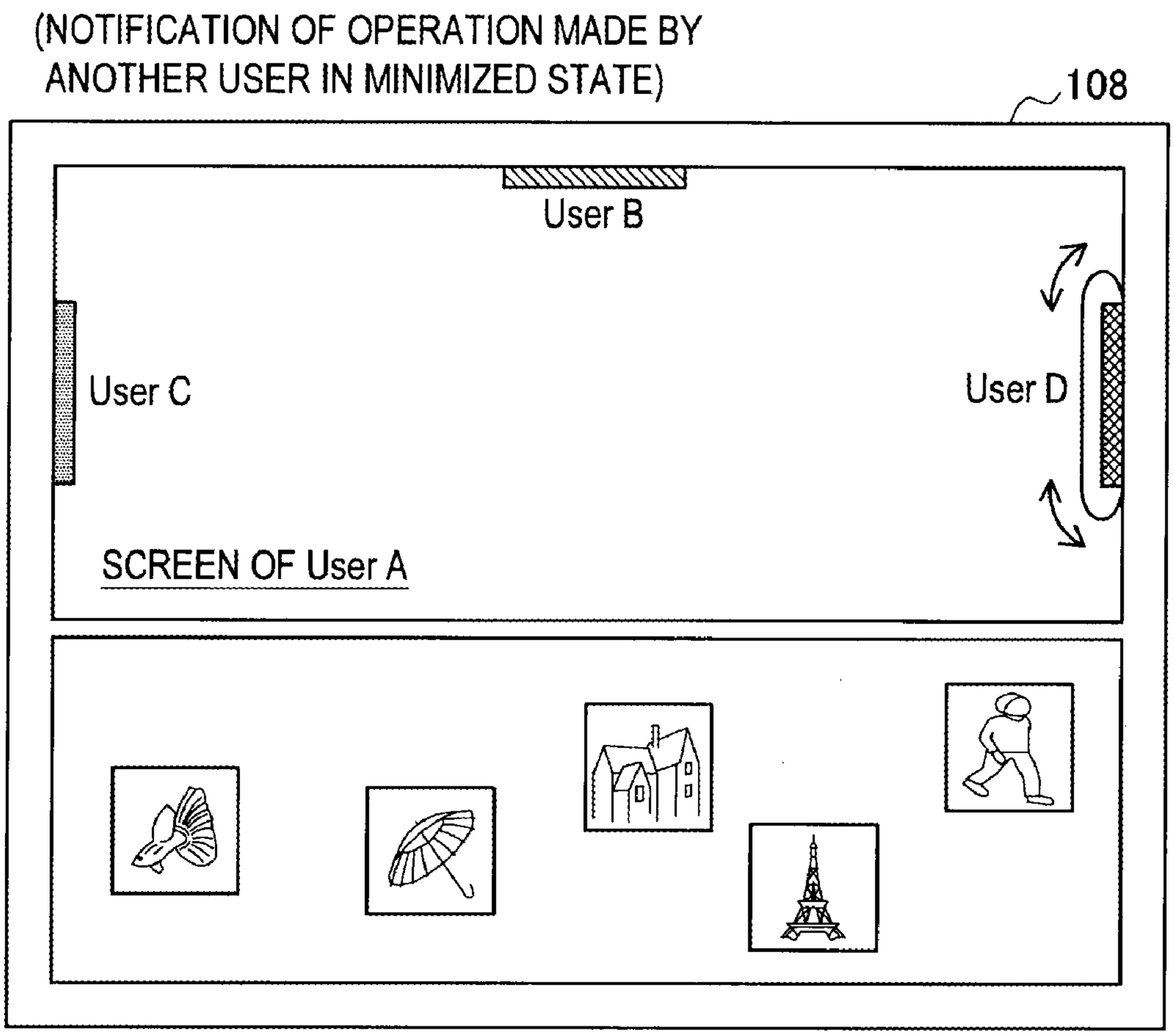

(NOTIFICATION OF OPERATION MADE BY ANOTHER USER IN MINIMIZED STATE)
108
User B
User C
User D
SCREEN OF User A

FIG.15

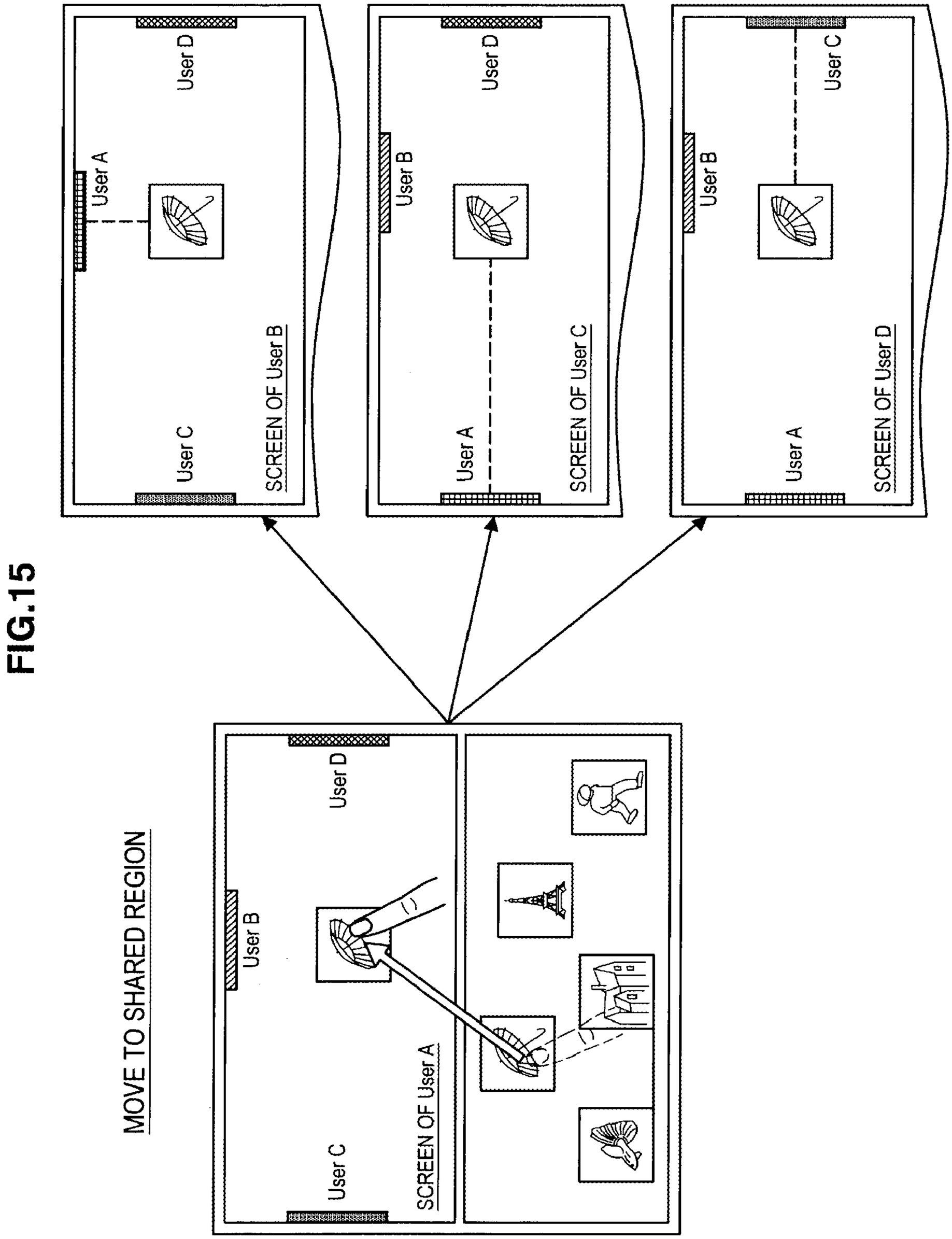

User D
User A
User C
SCREEN OF User B
User D
User B
User A
SCREEN OF User C
User C
User B
User A
SCREEN OF User D
MOVE TO SHARED REGION
User D
User B
User C
SCREEN OF User A

FIG.16

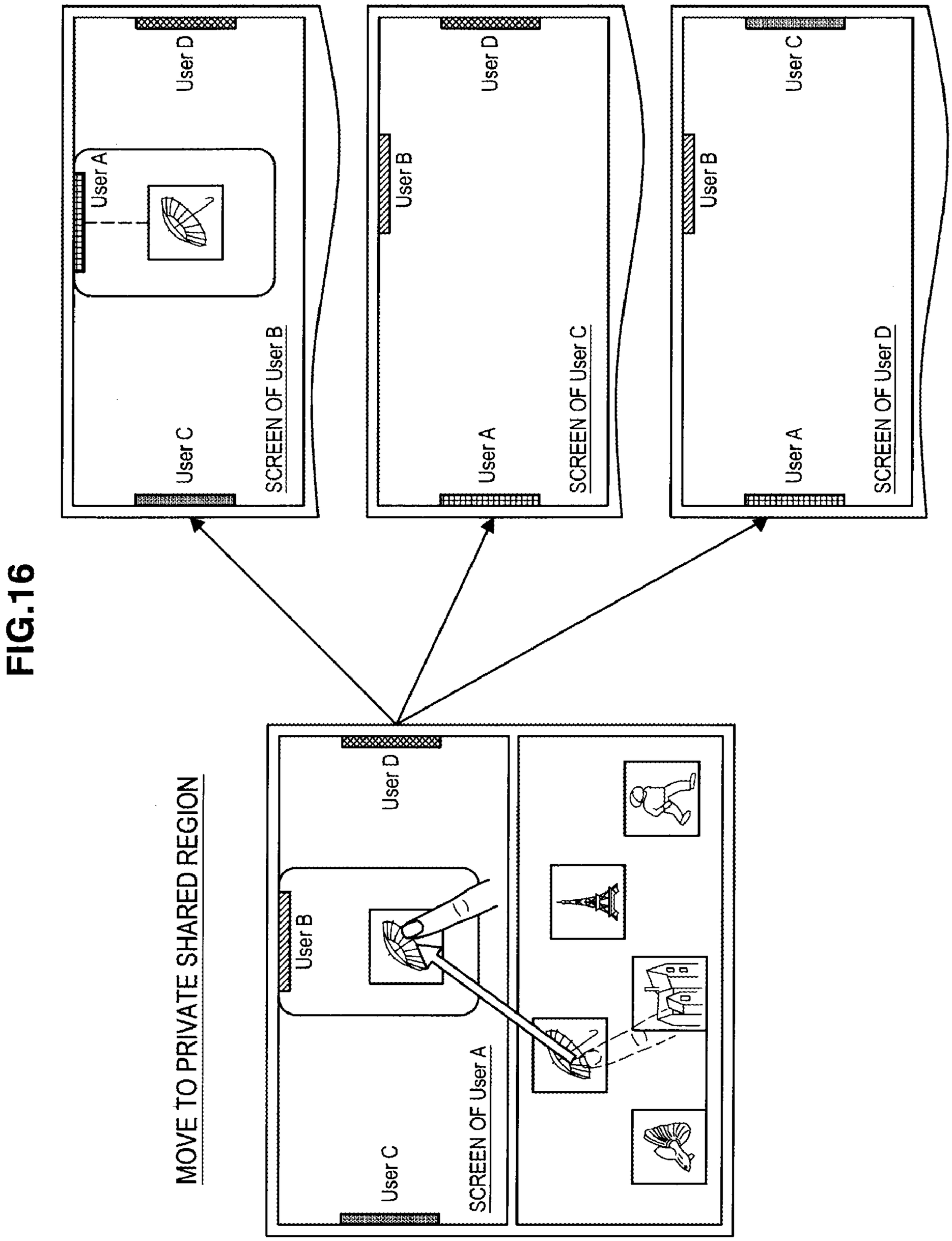

User D
User A
User C
SCREEN OF User B
User D
User B
User A
SCREEN OF User C
User C
User B
User A
SCREEN OF User D
MOVE TO PRIVATE SHARED REGION
User D
User B
User C
SCREEN OF User A

FIG.17

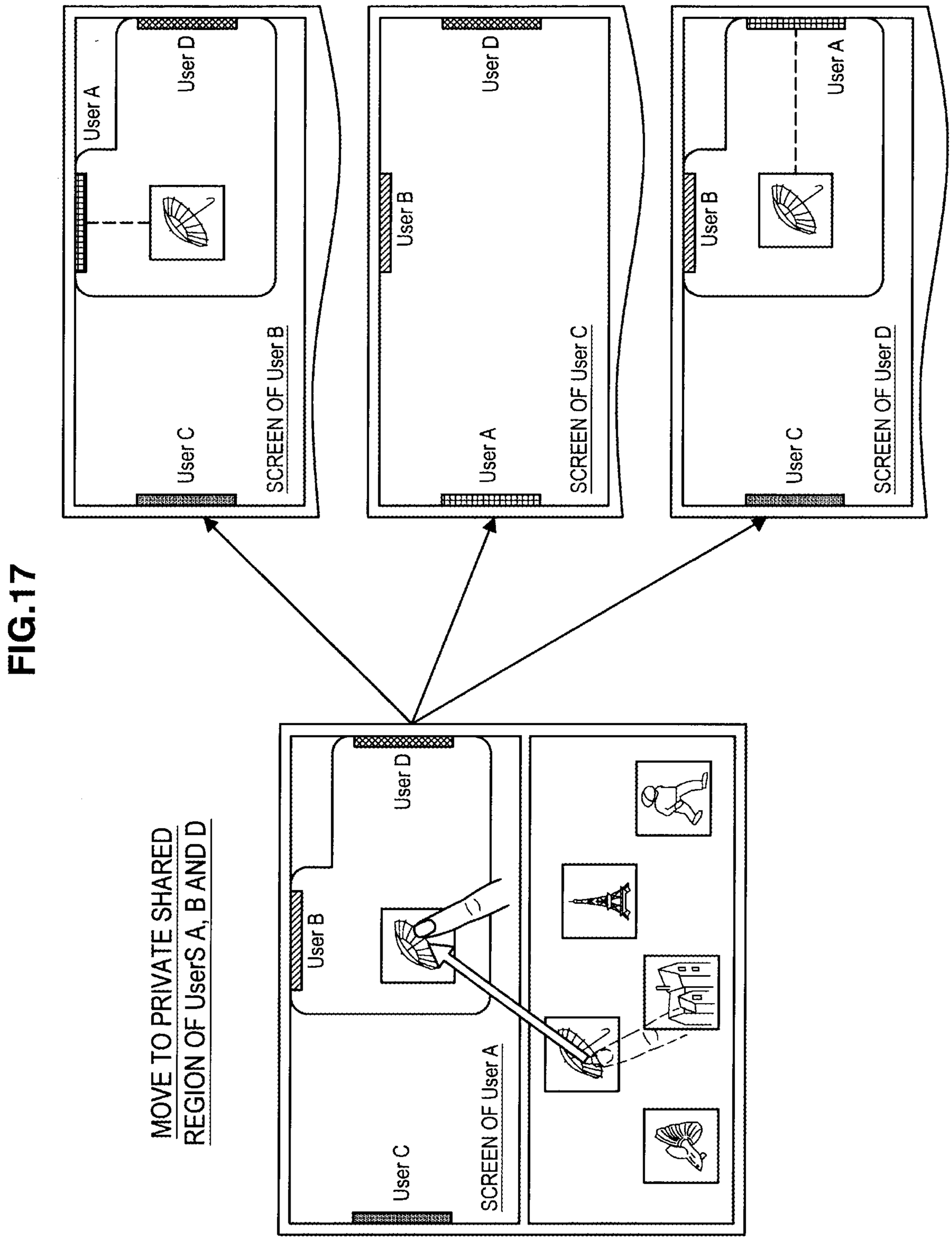

User A
User D
User C
SCREEN OF User B
User D
User B
User A
SCREEN OF User C
User A
User B
User C
SCREEN OF User D
MOVE TO PRIVATE SHARED REGION OF UserS A, B AND D
User D
User B
User C
SCREEN OF User A

FIG.18

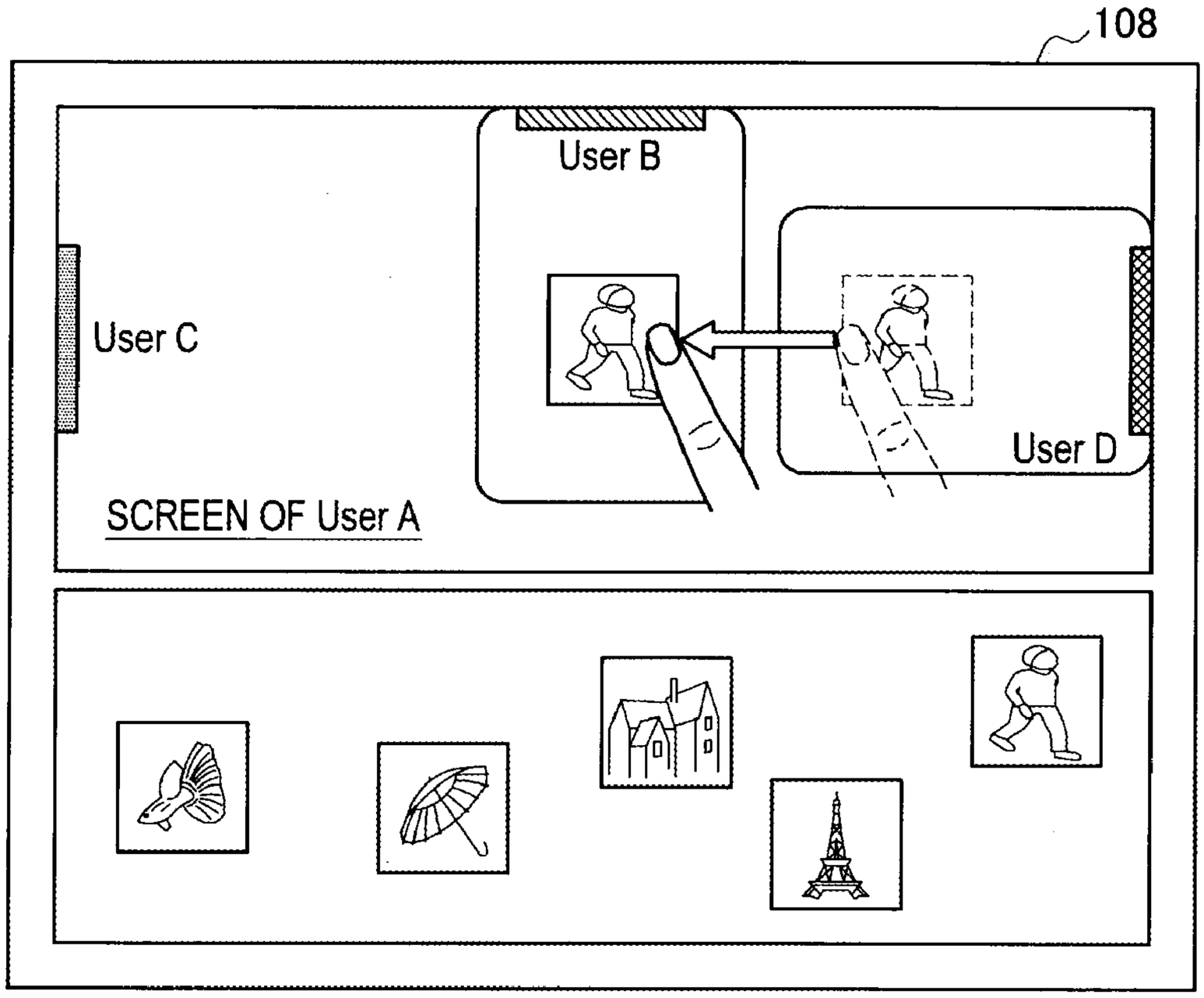


FIG.19A

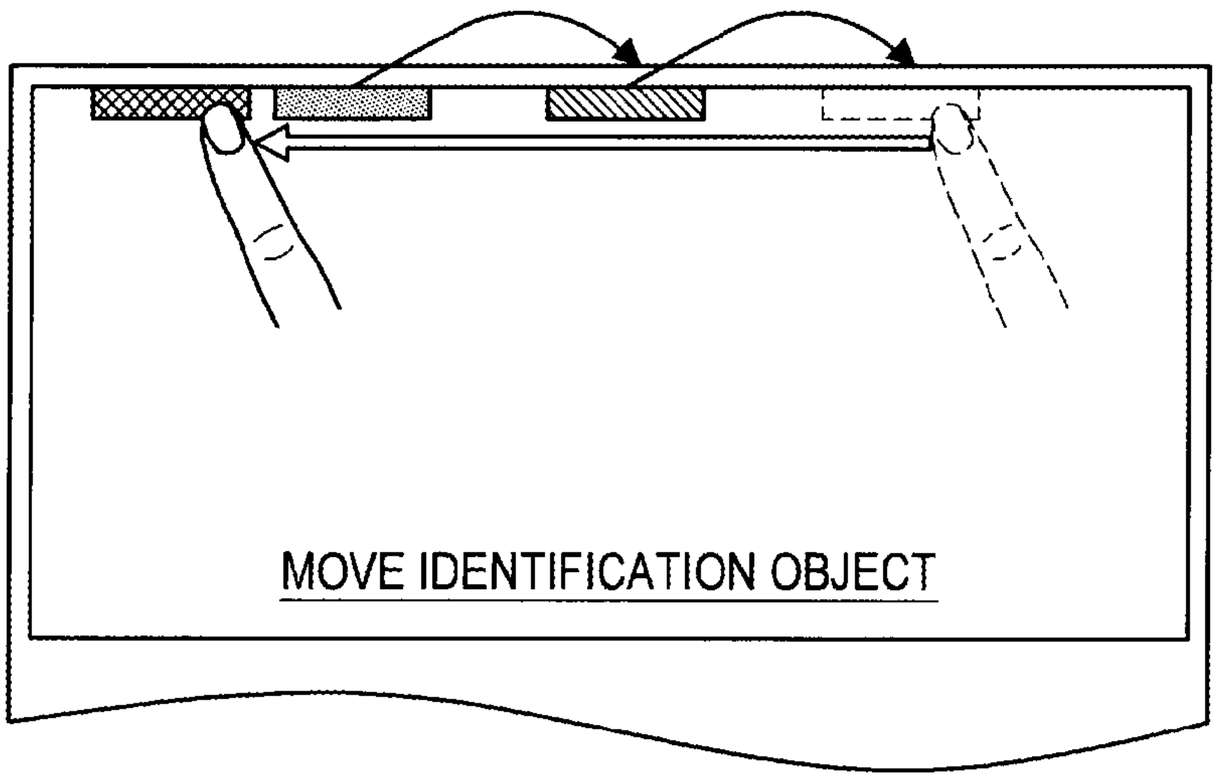


FIG.19B

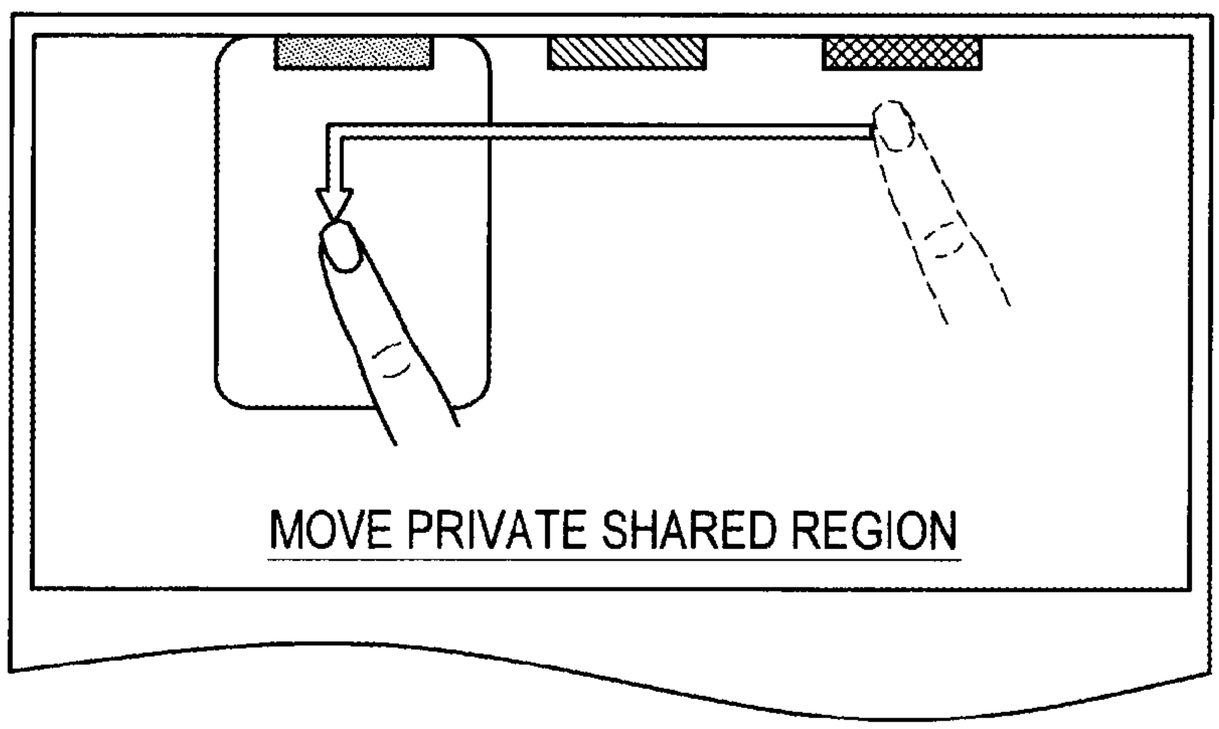


FIG.19C

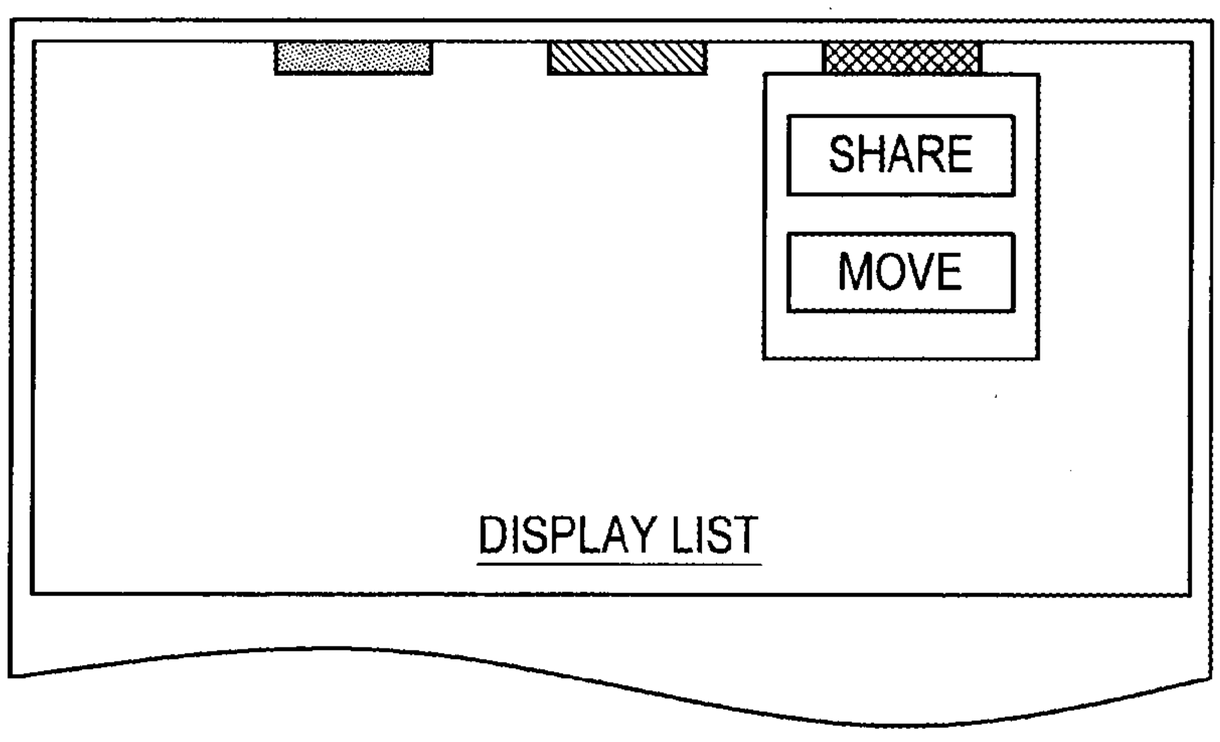
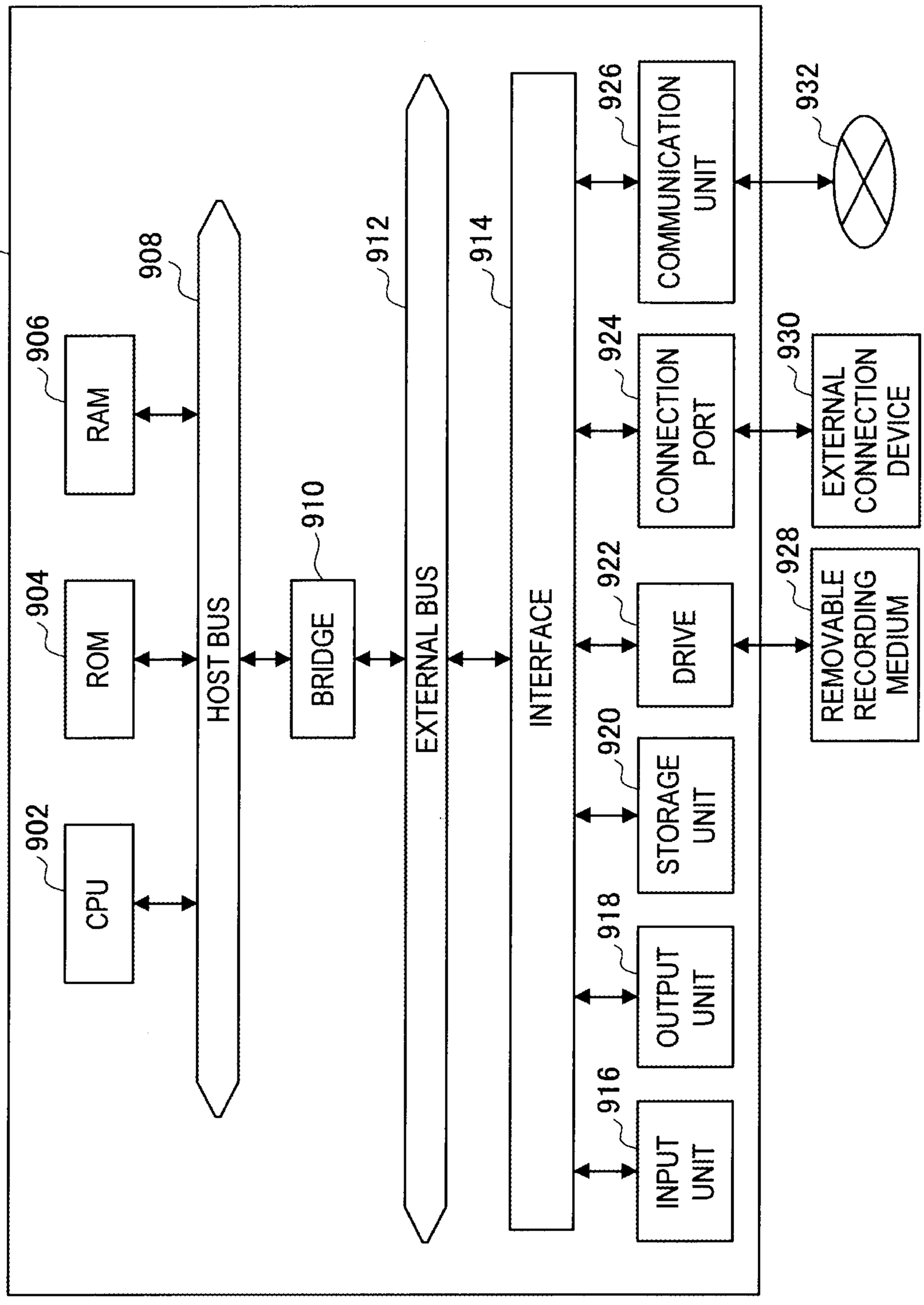


FIG.20


100,200
902
CPU
904
ROM
906
RAM
908
912
914
916
INPUT UNIT
918
OUTPUT UNIT
920
STORAGE UNIT
922
DRIVE
924
CONNECTION PORT
926
COMMUNICATION UNIT
928
REMOVABLE RECORDING MEDIUM
930
EXTERNAL CONNECTION DEVICE
932
HOST BUS
BRIDGE
910
EXTERNAL BUS
INTERFACE

TERMINAL APPARATUS, SERVER APPARATUS, DISPLAY CONTROL METHOD, AND PROGRAM

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a terminal apparatus, a server apparatus, a display control method, and a program.

[0003] 2. Description of the Related Art

[0004] With rapid advancement in information processing technology and communication technology, multiple users can share an application executed by a server apparatus on a network, and the multiple users can simultaneously perform operation with the same application in cooperation with each other. Examples of applications that can be shared by multiple users include text editor applications, drawing editor applications, and image sharing applications. In addition, there are network game applications and chat applications, which are similar to the above applications. The above applications are the same in that multiple users can perform operation with the same application by using multiple terminal apparatuses connected via a network. Japanese Patent Application Laid-Open No. 2006-31359 discloses a technique for realizing a virtual whiteboard onto which multiple users can draw figures and write characters.

SUMMARY OF THE INVENTION

[0005] However, when multiple users use the same application, it is necessary to have means for identifying who an operation result displayed on the application belongs to. For example, Japanese Patent Application Laid-Open No. 2006-31359 discloses a method for displaying operation results per user in different colors, which are displayed in the application. Further, Japanese Patent Application Laid-Open No. 2006-31359 discloses a method for displaying the users' operation tools in different shapes in the application. However, these methods are based on the premise that the respective users know correspondence relationship between the respective users and the colors and the correspondence relationship between the respective users and the operation tools. Further, the virtual whiteboard described in Japanese Patent Application Laid-Open No. 2006-31359 displays the operation results of all the users. Therefore, it is difficult to select users, to whom operation results are disclosed, according to the contents of the operation results. In a case where the technique disclosed in Japanese Patent Application Laid-Open No. 2006-31359 is applied, it is necessary to reset users who participate in operation on the virtual whiteboard in order to restrict the disclosure of the operation results as mentioned above.

[0006] In light of the foregoing, it is desirable to provide a novel and improved terminal apparatus, server apparatus, display control method, and program, which make it possible to recognize easily who an operation result displayed in an application shared by a plurality of users belongs to, and to restrict disclosure-member of operation results with easy operation.

[0007] According to an embodiment of the present invention, there is provided a terminal apparatus including a shared application display unit for displaying on a screen an execution screen of a shared application, reflecting on a display operations performed by a plurality of users via a plurality of terminal apparatuses connected to a network as operations performed on one application, where the shared application includes an identification object display function for displaying an identification object that associates each of the users with an operation result, displayed on the execution screen, reflecting the operation performed by each of the users, a shared region setting function for setting, when a first user selects an identification object related to a second user and specifies a region on the screen, the specified region as a shared region that is shared by the first and second users, and a display control function for controlling, when the first or second user performs operation in the shared region set by the shared region setting function, such that the displayed operation result reflecting the operation is not shown to users other than the first and second users.

[0008] When the first user selects the identification object related to the second user and specifies a first region on the screen, and the first user selects an identification object related to a third user and specifies a second region on the screen, and the shared region setting function sets a first shared region that is shared by the first and second users and a second shared region that is shared by the first and third users, and the first user enlarges or moves the first shared region so that the first and second shared regions overlap with each other, the shared region setting function may set the overlapping portion of the first and second shared regions as a shared region that is shared by the first user, the second user, and the third user.

[0009] The identification object display function may display a line connecting between the operation result and the identification object and may visualize by the line correspondence relationship between the operation result and each of the users.

[0010] The shared application may be an application for sharing content. When the content is put in a shared state by the second user, the display control function may display a display object representing the content in the shared state at a display position of the identification object related to the second user, and may move the display object from the display position as a starting point.

[0011] When a size of the shared region is smaller than a size of the display object representing the content in the shared state, the display control function may periodically move or deform the identification object related to the second user, or may periodically change a color of the identification object.

[0012] The identification object may be displayed in a predetermined region located on the screen in a direction that is set for each of the users.

[0013] The terminal apparatus may further include a shared application execution unit for executing the shared application. The shared application display unit may display an execution result by the shared application execution unit on the screen.

[0014] According to another embodiment of the present invention, there is provided a server apparatus including an information providing unit for providing information for displaying an execution screen of a shared application to a plurality of terminal apparatuses, the shared application reflecting on a display operations performed by a plurality of users via the plurality of terminal apparatuses connected to a network as operations performed on one application, where the shared application includes an identification object display function for displaying an identification object that associates

each of the users with an operation result, displayed on the execution screen, reflecting the operation performed by each of the users, a shared region setting function for setting, when a first user selects an identification object related to a second user and specifies a region on the screen, the specified region as a shared region that is shared by the first and second users, and a display control function for controlling, when the first or second user performs operation in the shared region set by the shared region setting function, such that the displayed operation result reflecting the operation is not shown to users other than the first and second users.

[0015] According to another embodiment of the present invention, there is provided a display control method by setting sharing, including the steps of setting, in a state where an execution screen of a shared application is displayed on a screen, the shared application reflecting on a display operations performed by a plurality of users via a plurality of terminal apparatuses connected to a network as operations performed on one application, and an identification object is displayed that associates each of the users with an operation result, displayed on the execution screen, reflecting the operations performed by each of the users, and when a first user selects an identification object related to a second user and specifies a region on the screen, the specified region as a shared region that is shared by the first and second users; and controlling, when the first or second user performs operation in the shared region set at the shared region setting step, such that the displayed operation result reflecting the operation is not shown to users other than the first and second users.

[0016] According to another embodiment of the present invention, there is provided a program for causing a computer to realize a function for reflecting on a display operations performed by a plurality of users via a plurality of terminal apparatuses connected to a network as operations performed on one application, an identification object display function for displaying an identification object that associates each of the users with an operation result, displayed on the execution screen, reflecting the operation performed by each of the users, a shared region setting function for setting, when a first user selects an identification object related to a second user and specifies a region on the screen, the specified region as a shared region that is shared by the first and second users, and a display control function for controlling, when the first or second user performs operation in the shared region set by the shared region setting function, such that the displayed operation result reflecting the operation is not shown to users other than the first and second users.

[0017] According to another embodiment of the present invention, there is provided a computer-readable recoding medium having the program recorded thereon.

[0018] As described above, according to the present invention, it becomes possible to recognize easily who an operation result displayed in an application shared by a plurality of users belongs to, and to restrict disclosure-member of operation results with easy operation.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] FIG. **1** is an explanatory diagram showing an example of a system configuration of an information processing apparatus according to an embodiment of the present invention;

[0020] FIG. **2** is an explanatory diagram showing an example of a functional configuration of a terminal apparatus and a server apparatus according to the embodiment;

[0021] FIG. **3**A is an explanatory diagram showing an example of a display structure of a shared application according to the embodiment;

[0022] FIG. **3**B is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0023] FIG. **4** is an explanatory diagram showing processing flow according to a display method of the embodiment;

[0024] FIG. **5** is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0025] FIG. **6**A is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0026] FIG. **6**B is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0027] FIG. **7** is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0028] FIG. **8** is an explanatory diagram showing processing flow according to the display method of the embodiment;

[0029] FIG. **9** is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0030] FIG. **10**A is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0031] FIG. **10**B is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0032] FIG. **11** is an explanatory diagram showing processing flow according to the display method of the embodiment;

[0033] FIG. **12**A is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0034] FIG. **12**B is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0035] FIG. **12**C is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0036] FIG. **12**D is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0037] FIG. **13** is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0038] FIG. **14** is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0039] FIG. **15** is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0040] FIG. **16** is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0041] FIG. **17** is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0042] FIG. **18** is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0043] FIG. **19**A is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0044] FIG. **19**B is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment;

[0045] FIG. **19**C is an explanatory diagram showing an example of the display structure of the shared application according to the embodiment; and

[0046] FIG. **20** is an explanatory diagram showing a hardware configuration example of the information processing apparatus that is capable of realizing the function of the terminal apparatus and the server apparatus according to the embodiment.

DETAILED DESCRIPTION OF THE EMBODIMENT(S)

[0047] Hereinafter, preferred embodiments of the present invention will be described in detail with reference to the appended drawings. Note that, in this specification and the appended drawings, structural elements that have substantially the same function and structure are denoted with the same reference numerals, and repeated explanation of these structural elements is omitted.

[Flow of Explanation]

[0048] Now, the flow of explanation about an embodiment of the present invention described below will be briefly mentioned.

[0049] First, a system configuration of an information processing system **10** according to the present embodiment will be described with reference to FIG. **1**. Subsequently, a terminal apparatus **100** and a server apparatus **200** in the information processing system **10** will be described in terms of functional configuration with reference to FIG. **2**.

[0050] Subsequently, a display structure of a shared application according to the present embodiment and a correspondence between users and directions will be described with reference to FIG. **3**A and FIG. **3**B. In this explanation, an application example of a display method according to the present embodiment to a spreadsheet application will be described. In addition, a flow of processing for realizing display structures shown in FIG. **3**A and FIG. **3**B will be described with reference to FIG. **4**. Subsequently, application of the display method according to the present embodiment to an image sharing application will be described with reference to FIG. **5**, FIG. **6**A, FIG. **6**B, and FIG. **7**.

[0051] Subsequently, a restriction method (for two parties) of a sharing region according to the present embodiment will be described with reference to FIG. **8**, FIG. **9**, FIG. **10**A, and FIG. **10**B. In this explanation, a method for restricting sharing of content to two parties will be exemplified. Subsequently, a restriction method (for multiple parties) of a sharing region according to the present embodiment will be described with reference to FIG. **11**, FIG. **12**A, FIG. **12**B, FIG. **12**C, and FIG. **12**D. In this explanation, a method for restricting sharing of content to some of three or more users will be described as an example.

[0052] Subsequently, operation for moving content to a shared region (all parties, two parties, multiple parties) will be described with reference to FIG. **15**, FIG. **16**, and FIG. **17**. Further, operation for moving content between shared regions will be described with reference to FIG. **18**. Subsequently, operation for moving an identification object that is displayed to associate a user with a direction will be described with reference to FIG. **19**A, FIG. **19**B, FIG. **19**C.

[0053] Subsequently, an example of hardware configuration of an information processing apparatus that is capable of realizing the functions of the terminal apparatus and the server apparatus according to the present embodiment will be described with reference to FIG. **20**. At the last, technical concepts of the embodiment will be summarized, and advantageous effects obtained from the technical concepts will be briefly described.

(Explanation Items)

1: Embodiment

[0054] 1-1: System Configuration

[0055] 1-2: Functional Configuration

[0056] 1-3: Correspondence Between Users and Directions

[0057] 1-3-1: Example of display structure (Application Example to Spreadsheet Application)

[0058] 1-3-2: Processing Flow

[0059] 1-3-3: Example of display structure (Application Example to Image Sharing Application)

[0060] 1-4: Regarding Private Sharing

[0061] 1-4-1: Method for Setting Private Sharing by Two Parties

[0062] 1-4-2: Method for Setting Private Sharing by Multiple Parties

[0063] 1-4-3: Moving Content to Shared Region

[0064] 1-5: Operation of Identification Object

[0065] 1-6: Hardware Configuration

2: Conclusion

1: EMBODIMENT

[0066] An embodiment of the present invention will be described. The present embodiment relates to a display method which allows users participating in operation of the shared application and operation results of the respective users displayed in a shared application to be easily identified. The present embodiment also relates to a method for restricting display of operation results to a specific user in the shared application. In particular, in the present embodiment, a configuration of a user interface is suggested which makes it possible to manage, with easy operation, content sharing permission given to a limited number of users in a sharing application for sharing content such as images and music.

[1-1: System Configuration]

[0067] First, the system configuration of the information processing system **10** according to the present embodiment will be described with reference to FIG. **1**. FIG. **1** is an explanatory diagram illustrating the system configuration of the information processing system **10** according to the present embodiment.

[0068] As shown in FIG. **1**, the information processing system **10** mainly includes terminal apparatuses **100**A, **100**B and a server apparatus **200**. The terminal apparatuses **100**A, **100**B have substantially the same functional configuration with respect to the technical features of the present embodiment. Accordingly, in the below explanation, the terminal apparatuses **100**A, **100**B may be simply referred to as terminal apparatus **100**. In FIG. **1**, two terminal apparatuses **100**A,

100B are described as examples. Alternatively, the information processing system **10** may include three or more terminal apparatuses **100**.

[0069] As shown in FIG. **1**, the terminal apparatuses **100**A, **100**B are connected to the server apparatus **200** via a network. However, this network may be a wide area network such as the Internet, or may be a local network such as LAN (Local Area Network). The terminal apparatuses **100**A, **100**B are information processing terminals capable of displaying execution screens of a shared application.

[0070] Examples of shared applications include text editor applications, spreadsheet applications, content sharing applications (for example, a sharing application for sharing images, music, texts, and other data). Any one of the terminal apparatuses **100**A, **100**B and the server apparatus **200** can execute the above shared applications.

[0071] For example, in the case of a Web-based sharing application, the server apparatus **200** executes the shared application, and transmits only execution screens and operation results thereof to the terminal apparatuses **100**A, **100**B. The execution screens and the operation results transmitted from the server apparatus **200** are displayed on Web browsers of the terminal apparatuses **100**A, **100**B. The contents of operations input by each user with the terminal apparatuses **100**A, **100**B are transmitted to the server apparatus **200**, and the contents of operations are reflected as the operation results in the execution screen of the shared application. It should be noted that even in the case of the Web-based sharing application, some of the processes of operation performed by the shared application are executed by the terminal apparatuses **100**A, **100**B.

[0072] Alternatively, the operations performed with the shared application may be shared by executing the shared application on the respective terminal apparatuses **100**A, **100**B, and exchanging the contents of the operations performed by the respective users on the terminal apparatuses **100**A, **100**B with each other. With this method, the application can be shared by only the terminal apparatuses **100**A, **100**B without the server apparatus **200**. For example, when a user operates the terminal apparatus **100**A, the content of the operation is transmitted to the terminal apparatus **100**B. Thereupon, the terminal apparatus **100**B generates an execution result of the shared application related to the content of the operation, and the generated operation result is displayed on a screen. Thus, the application can be shared without the server apparatus **200** by causing the terminal apparatus **100**A, **100**B to execute the above processing with each other.

[0073] In the below explanation, the functions of the shared application achieved with the server apparatus **200** will be described for the sake of convenience of explanation. When the shared application is used, it is necessary to have means for identifying which user the operation result displayed in the shared application belongs to. For example, as shown in FIG. **1**, a method for displaying operation results, displayed on the shared application, per user in different colors may be considered. However, even when the operation results are displayed per user in different colors, each user needs to remember which user is related to which color. Thus, it is very cumbersome for the users as the number of users increases.

[0074] To solve the above issues, auxiliary information including correspondences between colors and user names may be displayed on an execution screen of a shared application in order to show the correspondences between the users and the colors on the screen. However, when the auxiliary information is displayed, the work region allocated on the execution screen of the shared application is reduced. In addition, the operational efficiency is reduced, if a user references the auxiliary information on every occasion. Due to the above reasons, even if the auxiliary information is displayed, a method is desired which allows the users to more reliably recognize the respective users and the operation results of the respective users with the minimum auxiliary information. For this issue, the inventors of the present application have devised a display method for easily identifying operation results and respective users by associating the respective users with "directions".

[0075] The display method according to the present embodiment will be hereinafter described in detail.

[1-2: Functional Configuration]

[0076] First, the functional configuration of the terminal apparatus **100** and the server apparatus **200** that is capable of realizing the display method according to the present embodiment will be described with reference to FIG. **2**. FIG. **2** is an explanatory diagram illustrating an example of functional configuration of the terminal apparatus **100** and the server apparatus **200** according to the present embodiment.

(Terminal Apparatus **100**)

[0077] First, the functional configuration of the terminal apparatus **100** will be described.

[0078] As shown in FIG. **2**, the terminal apparatus **100** mainly includes an input device **102**, a communication unit **104**, a display processing unit **106**, and a display unit **108**. Examples of the input device **102** include a keyboard, a mouse, a trackball, a ten keypad, a touch panel, a touch pad, a jog dial, and various kinds of buttons. However, in the below explanation, the input device **102** is assumed to be a touch panel. The display unit **108** is a display device such as LCD, OELD, and PDP, for example.

[0079] When a user operates the input device **102**, a signal indicating operation contents (hereinafter referred to as operation signal) is given to the communication unit **104** and the display processing unit **106**. For example, when a user performs operation on a shared application, the operation signal input from the input device **102** to the communication unit **104** is transmitted by the communication unit **104** to the server apparatus **200** via a network. At this occasion, not only the operation signal but also information for identifying the user of the terminal apparatus **100** (hereinafter referred to as user information) are transmitted to the server apparatus **200**. The user information may be a user ID by which individual users can be identified in the shared application, or may be address information or device information (for example, an IP address or a MAC address) by which individual terminal apparatus **100** can be identified.

[0080] When the operation signal is input from the input device **102** to the display processing unit **106**, the display processing unit **106** controls operation of the shared application according to the operation signal. For example, in a case where a user inputs characters on a shared application for editing characters, the display processing unit **106** causes the display unit **108** to display characters on the execution screen of the shared application according to the operation signal indicating the character input operation. In the case of a Web-based shared application, the display processing unit **106** starts a Web browser and causes the display unit **108** to

display a start screen. Further, the display processing unit **106** displays the execution screen of the shared application on the Web browser.

[0081] When operation is performed on the shared application by another terminal apparatus **100**, operation signal of another user to the terminal apparatus **100** is transmitted via the server apparatus **200**, and the operation signal is received by the communication unit **104**. At this occasion, the communication unit **104** receives not only the operation signal but also user information of such other user related to the operation signal. Then, the operation signal and the user information of such other user received by the communication unit **104** are given to the display processing unit **106**. When the operation signal and the user information of such other user are given to the display processing unit **106**, the display processing unit **106** displays operation results on the execution screen of the shared application according to the operation signal of such other user. Further, the display processing unit **106** displays an identification object of such other user identified by the received user information.

[0082] Then, correspondence between the identification object and the operation results of such other user is clearly shown by the display processing unit **106** on the execution screen of the shared application. The configuration of the identification object and the method for displaying the correspondence will be described later in detail using specific examples. As described above, the operation contents of a self-user and another user are reflected in the shared application displayed on the display unit **108**.

(Server Apparatus **200**)

[0083] Subsequently, the functional configuration of the server apparatus **200** will be described.

[0084] As shown in FIG. **2**, the server apparatus **200** mainly includes a communication unit **202**, a user administration unit **204**, a user database **206**, a display information providing unit **208**, a private user administration unit **210**, and a private user database **212**.

[0085] When a user performs operation on a shared application, an operation signal is transmitted from the terminal apparatus **100** to the server apparatus **200**. The operation signal transmitted from the terminal apparatus **100** is received by the communication unit **202**. At this occasion, the communication unit **202** receives not only the operation signal but also the user information of the terminal apparatus **100**. The user information received by the communication unit **202** is given to the user administration unit **204**. Further, the operation signal received by the communication unit **202** is given to the display information providing unit **208** and the private user administration unit **204**.

[0086] When the user administration unit **204** receives the user information, the user administration unit **204** identifies the user based on the received user information. At this occasion, the user administration unit **204** references the user database **206**, and determines whether the received user information is the user information of the registered user who can use the shared application. When the received user information is determined not to be the user information of the registered user, the user administration unit **204** transmits error information to a sender of the user information via the communication unit **202**. On the other hand, when the user information is determined to be the user information of the registered user, the user administration unit **204** transmits the user ID corresponding to the received user information to the display information providing unit **208** and the private user administration unit **210**.

[0087] As described above, the display information providing unit **208** receives the operation signal and the user ID. When the display information providing unit **208** receives the operation signal and the user ID, the display information providing unit **208** inputs information indicating a display method of an identification object related to the received user ID (hereinafter referred to as display information), the operation signal, and the user ID to the communication unit **202**. When the communication unit **202** receives the display information, the operation signal, and the user ID, the communication unit **202** transmits the display information, the operation signal, and the user ID, which have been received, to a terminal apparatus **100** of another user that is different from the sender of the operation signal. Besides, the method for displaying the identification object indicated by the display information will be described later in detail using specific examples.

[0088] The information processing system **10** according to the present embodiment has a function of restricting display of operation results to only a limited number of users (hereinafter referred to as private sharing user), instead of allowing the operation results to be shared by all the users who can use the shared application. This function is realized by the private user administration unit **210**. As described above, the private user administration unit **210** receives an operation signal from the communication unit **202**. When the private user administration unit **210** receives the operation signal, the private user administration unit **210** determines whether the contents of the received operation signal are directed to the private sharing users.

[0089] When the operation is determined not to be directed to the private sharing users, the private user administration unit **210** notifies the display information providing unit **208** that the operation is not directed to the private sharing users. On the other hand, when the operation is determined to be directed to the private sharing users, the private user administration unit **210** references the private user database **212**, and identifies a group of the private sharing users to which the user having the user ID input from the user administration unit **204** belongs. The private user database **212** stores set groups of private sharing users and users IDs of users who belong to the group, in such a manner that the group and the corresponding user ID are associated with each other. Accordingly, the private user administration unit **210** reads all the user IDs (hereinafter referred to as the private sharing user IDs) belonging to the identified group, and inputs the obtained private sharing user IDs to the display information providing unit **208**.

[0090] When the display information providing unit **208** receives the private sharing user IDs, the display information providing unit **208** inputs not only the display information, the operation signals, and the user IDs but also the private sharing user IDs to the communication unit **202**, thus limiting the destination to the terminal apparatus **100** of the user related to the private sharing user ID. With such a configuration, when a user wants to disclose operation results made in the shared application to only a limited number of users, it is possible to restrict the users to which the operation results are disclosed. A method for setting private sharing users and a method for disclosing operation results to the private sharing users will be described later in detail using specific examples.

[0091] The functional configuration of the terminal apparatus **100** and the server apparatus **200** included in the information processing system **10** according to the present embodiment has been described above. In the above explanation, a function of each constituent element which operates when a user operation is performed on a shared application has been mainly described. In the below explanation, operation of shared application displayed on the display unit **108** of the terminal apparatus **100** and a method for displaying an identification object will be described in detail. Further, a method for setting private sharing users will be described in detail. These methods are realized by the display processing unit **106** arranged on the terminal apparatus **100**, and by the display information providing unit **208** and the private user administration unit **210** arranged on the server apparatus **200**.

[1-3: Correspondence Between Users and Directions]

[0092] A method for displaying an identification object, which associates results of operations made in the shared application with respective users, i.e., operators, will be hereinafter described with reference to FIG. **3**A to FIG. **7**. The display method described here is characterized by associating users with "directions".

(1-3-1: Example of Display Structure (Application Example to Spreadsheet Application))

[0093] First, FIG. **3**A and FIG. **3**B are referenced. FIG. **3**A and FIG. **3**B show an example of operation of a spreadsheet application shared by multiple users (self-user, Yamada, Tanaka, Suzuki). Herein, the self-user means the user using the terminal apparatus **100** whose display unit **108** displays the execution screens of the shared application as shown in FIG. **3**A and FIG. **3**B.

[0094] In the example shown in FIG. **3**A, as identification objects, bars representing the respective users are shown on the upper side (Yamada), the left side (Tanaka), the right side (Suzuki) of the shared application. The user names of the respective users are displayed in proximity to the respective bars. Further, a user-specific color (in these figures, different hatching patterns) is added to each bar. As described above, in the shared application according to the present embodiment, the respective users are associated with the "directions", i.e., up, left, and right. When operations are performed by the respective users in a state where such identification objects are displayed, correspondence relationships between the identification objects and the operation results are clearly indicated as shown in FIG. **3**B.

[0095] In the example of FIG. **3**B, the users has filled in the table with "O" and "x". When these operations are performed, the operation results and the identification objects are connected by lines, so that the correspondence relationships between the operation results and the identification objects are clearly shown. As described above, the identification objects are associated with the directions specific to the respective users. Accordingly, the operator can be easily identified by recognizing the direction in which the line extends from the operation result. Alternatively, the line may be set in such a manner that the line becomes invisible as soon as the operation is completed. Further, operation results and corresponding identification objects may be displayed in a same color.

[0096] An example of method for displaying the identification objects according to the present embodiment has been described above. The above line is also an example of an identification object.

(1-3-2: Processing Flow)

[0097] Next, a processing flow for realizing display structures exemplified in FIG. **3**A and FIG. **3**B will be described with reference to FIG. **4**. FIG. **4** is an explanatory diagram illustrating the processing flow for realizing the display structures exemplified in FIG. **3**A and FIG. **3**B.

[0098] First, characters are input by another user (step S**102**). For example, characters are input on the terminal apparatus **100** of such other user, and an operation signal indicating the character input is transmitted to the terminal apparatus **100** of the self-user via the server apparatus **200**. Further, the user ID of such other user, i.e., operator, is transmitted from the server apparatus **200** to the terminal apparatus **100** of the self-user. Subsequently, the user who performs input operation is identified (step S**104**). For example, the user who performs input operation is identified based on the user ID transmitted from the server apparatus **200** to the terminal apparatus **100** of the self-user. Subsequently, the terminal apparatus **100** displays character input by each user (operation results) by associating the character input by each user with a direction specific to each user (step S**106**). At this occasion, the terminal apparatus **100** causes the display unit **108** to display not only identification objects but also lines connecting between the identification objects and the operation results.

[0099] The processing flow of the method for displaying identification objects according to the present embodiment has been described above. The processing body of each of the above steps may be changed as necessary.

(1-3-3: Example of Display Structure (Application Example to Image Sharing Application))

[0100] Subsequently, an example of image sharing application to which the method for displaying the identification objects according to the present embodiment is applied will be described with reference to FIG. **5**, FIG. **6**A, FIG. **6**B, and FIG. **7**.

[0101] First, FIG. **5** is referenced. FIG. **5** illustrates an example of display structure of an image sharing application. The execution screen of this image sharing application is divided into a shared region SA and a local region LA. The shared region SA is a region where image data are provided for sharing. On the other hand, non-shared image data are displayed in the local region LA. For example, when a display object of image data (for example, a reduced image or a thumbnail) in the local region LA is moved to the shared region SA, the image data related to the moved display object is shared by the users who share the image sharing application.

[0102] In the example of FIG. **5**, the user A (self-user) and the users B, C, D share the image sharing application, and accordingly, the users A, B, C, D share image data. Such sharing operation is performed as shown in FIG. **6**A. The execution screen of the image sharing application shown in FIG. **6**A is that of the terminal apparatus **100** of the user A. For example, when sharing image data related to a display object Obj**4**, the user A drags the display object Obj**4** in the local

region LA to the shared region SA. When this drag operation is completed, this image data is shared by the users A, B, C, and D.

[0103] In the sharing state, for example, as shown in FIG. **6**B, the image data provided by the user A for sharing is displayed in the shared region SA of the image sharing application displayed on the screen of the terminal apparatus **100** operated by the user B. At this occasion, the image data is initially displayed at the position of the identification object of the user A displayed in the image sharing application. Then, the image data displayed at the position of the identification object is moved to the position of the image data moved by the user A. Further, the identification object of the user A and the display object representing the image data are connected by a line, which indicates the correspondence relationship therebetween.

[0104] With such display structure, the user B can easily recognize the correspondence relationship between the user A and the operation result. Further, the display object representing the image data is shown not only to the user B but also to the users C, D. Accordingly, the users C, D can also easily identify the operation performed by the user A. When multiple users provide image data for sharing, display objects of multiple image data are respectively displayed at positions of corresponding identification objects, and are respectively moved to appropriate positions, as shown in FIG. **7**. In the example of FIG. **7**, the image data provided by the users A, C for sharing are displayed at the positions of the identification objects of the users A, C, and are respectively moved to appropriate positions.

[0105] In the case of the image sharing application, a frame having the same color as the identification object may be displayed on the display object of each shared image data. With this configuration, it becomes possible to identify easily a user who holds image data in the local region LA. Alternatively, the color of the line may be the same as the color of the identification object.

[0106] The application example to image sharing application has been described above. As described above, the correspondence relationships between image data and identification objects displayed in the directions specific to the respective users are clearly shown. Therefore, another user can easily identify a user who holds shared image data in the local region LA. Further, by moving image data provided for sharing from the position of an identification object, it becomes possible to recognize easily timing at which sharing operation of image data is performed and a user who performed the sharing operation. As a result, users are less likely to feel awkward at an abruptly appearing display object of the image data shared by an unknown user.

[0107] In the explanation, the image sharing application has been described as an example. Alternatively, the above-described configuration may be applied to other shared applications, by associating display objects with contents such as music data and text data instead of image data. It should be noted that such variations are also included in the technical scope of the present embodiment.

[1-4: Regarding Private Sharing]

[0108] In the above explanation, the contents are shared by all the users who share and use the shared application. However, some pieces of content are desired to be shared by only a limited number of the users (private sharing users). In some case, the private sharing users are desired to be changed per content. In such case, it is extremely cumbersome to start the shared application all over again or to change the sharing setting of the private sharing users on every such occasion. To solve such issues, the inventors of the present invention have devised a method for setting/changing the private sharing users with easy operation and a user interface for facilitating the setting/changing operation. This method and the user interface will be hereinafter described.

(1-4-1: Method for Setting Private Sharing by Two Parties)

[0109] First, a method for setting private sharing by two parties (the users A, B) will be described with reference to FIG. **8**, FIG. **9**, FIG. **10**A, and FIG. **10**B. The private sharing referred to herein does not mean sharing of content (or display of operation results) by all the users who participate in a shared application, but means sharing of content (or display of operation results) by a limited number of users.

[0110] The setting operation for the private sharing by the users A, B is realized, for example, by operation including three steps as shown in FIG. **8**. First, the user A makes a sharing request (step S**132**). For example, as shown in FIG. **9**, the sharing request in step S**132** is made by dragging the identification object of a user, who is to be designated as a private sharing user, to the inside of the shared region SA. In the example of FIG. **9**, a sharing request for private sharing is given from the user A to the user B. When this drag operation is performed, the private sharing request is notified from the terminal apparatus **100** of the user A to the terminal apparatus **100** of the user B.

[0111] When the private sharing request is notified, a display object for selecting whether to accept or reject the sharing request is displayed in the shared application displayed in the terminal apparatus **100** of the user B as shown in FIG. **10**A. At this occasion, in the shared application displayed in the terminal apparatus **100** of the user B, the display object and the private shared region are displayed in association of the identification object of the user A. At this occasion, when the user B accepts the sharing request (step S**134**), the display of the private shared region is determined as shown in FIG. **10**B (step S**136**).

[0112] When the above private shared region is set, the results of the operation performed in the private shared region are shown to only the private sharing users. For example, when the user A moves a display object of a piece of content to the private shared region in the example of FIG. **10**B, the terminal apparatuses **100** of the users C, D do not display the display object of the piece of content. In such manner, by setting the private shared region, it becomes possible to share the content only between the private sharing users. Thus, by applying the configuration of the present embodiment, it becomes possible to restrict, with easy operation, users by whom data are shared.

(1-4-2: Method for Setting Private Sharing by Multiple Parties)

[0113] In the above-described method for setting a private shared region, the private sharing by two parties is set. Hereinafter, the method for setting private sharing by three or more users (for example, the users A, B, D) will be described with reference to FIG. **11** and FIG. **12**A to FIG. **12**D.

[0114] The setting operation for the private sharing by the users A, B, D is realized, for example, by operation including three steps as shown in FIG. **11**. However, as shown in FIG.

12A, the private shared region of the users A, B and the private shared region of the users A, D are assumed to be already set. First, the user A makes a sharing request to the users B, D (step S**152**). As shown in FIG. **12**B, the sharing request of step S**152** is made by, for example, enlarging or moving the private shared region of the users A, D such that the private shared region of the users A, D are overlaid on the private shared region of the users A, B.

[0115] When the private regions thus overlap with each other, the terminal apparatus **100** of the user A notifies the terminal apparatuses **100** of the users B, D of the private sharing request. Then, permission for the private sharing by the three parties, i.e., the users A, B, D, is requested as shown in FIG. **12**C. At this occasion, in the shared application displayed on the terminal apparatus **100** of the user B, the display object for requesting the permission for the private sharing is displayed in association with the identification object related to the users A, D. The shared application displayed on the terminal apparatus **100** of the user D also displays the display object in the same manner.

[0116] When the permission for the private sharing by the users B, D is obtained at this occasion (step S**154**), the private shared region of the users A, B, D are set and displayed in the shared application as shown in FIG. **12**D (step S**156**). In the example of FIG. **12**D, all of the private shared region of the two parties, i.e., the users A, B, and the private shared region of the two parties, i.e., the users A, D, are set as the private shared region of the three parties, i.e., the users A, B, D. Alternatively, a portion of the private shared region of the two parties, i.e., the users A, B, and a portion of the private shared region of the two parties, i.e., the users A, D, may be preserved, and only the overlapping portion may be set as the private shared region of the three parties, i.e., the users A, B, D.

[0117] With the above configuration, it becomes possible to set the private shared region with intuitive operation. Besides, setting information of a private shared region is stored in the private user database **212** of the server apparatus **200**.

(Release of Private Setting)

[0118] The private sharing is released by reducing the private shared region toward the proximity the identification object as shown in FIG. **13**. As shown in FIG. **13**, when the private shared region is reduced to a predetermined size, a display object is shown to prompt the user to release the private sharing. When the release of the private sharing is accepted, the private sharing is released, and the private shared region disappears from the screen. In the example of FIG. **13**, the private sharing by the users A, D is released by the user A. In this case, the terminal apparatus **100** of the user A notifies the terminal apparatus **100** of the user D that the private sharing is released. Then, a message indicating that the private sharing is released is displayed on the screen of the terminal apparatus **100** of the user D, and the private shared region disappears from the screen. Further, information indicating the private sharing by the users A, D, which is stored in the private user database **212** of the server apparatus **200**, is erased from the private user database **212** of the server apparatus **200**. Likewise, the private sharing by three or more parties is also released.

(Notification of Operation Performed by Another User in Reduced State)

[0119] As described above, the private shared region can be enlarged or reduced. However, when the size of the reduced private shared region is smaller than a display object of a piece of content, the private shared region may not show operation performed by another user. To solve this issue, as shown in FIG. **14**, the private shared region or the identification object are configured to vibrate when another user performs operation in the small private shared region in a case where the private sharing region is small. With the above configuration, it becomes possible to recognize timing at which another user performs operation, regardless of the size of the private shared region. Instead of vibration, the following processing may be performed: periodical change of the color, periodical change of the shape, and automatic enlargement.

(1-4-3: Moving Content to Shared Region)

[0120] The method for setting a private shared region has been described above. Here, moving operation of content to a shared region, a two-party private shared region, and a multiple-party private shared region will be specifically described with reference to FIG. **15** to FIG. **18**.

(Movement to Shared Region)

[0121] First, FIG. **15** is referenced. FIG. **15** illustrates a content moving operation performed on a shared region SA in order to have a content shared by all the sharing users of the shared application. In the example shown in FIG. **15**, the user A performs moving operation of a display object of a piece of content to the shared region SA. In this example, the users B, C, D participate in the shared use of the shared application. In this case, when the user A drags the display object of the pieces of content to the shared region SA, the display object of the piece of content is shown in the shared region SA for each of the users B, C, D. At this occasion, the display object in the shared region SA for each of the users B, C, D is displayed in such a manner that the display object is associated with the identification object of the user A by a line.

(Movement to Two-Party Private Shared Region)

[0122] Subsequently, FIG. **16** is referenced. FIG. **16** illustrates operation performed by the user A to move a display object of a piece of content to the private shared region of the users A, B. As shown in FIG. **16**, when the display object of the piece of content is dragged to the private shared region of the users A, B, in the terminal apparatus **100** of the user B, the display object is displayed in the private shared region set in the shared application. However, in the terminal apparatuses **100** of the users C, D, the display object is not displayed in the shared region SA of the shared application. Thus, contents can be selectively disclosed by setting the private shared region.

(Movement to Multiple-Party Private Shared Region)

[0123] Subsequently, FIG. **17** is referenced. FIG. **17** illustrates operation performed by the user A to move a display object of a piece of content to the private shared region of the users A, B, D. As shown in FIG. **17**, when the display object of the piece of content is dragged to the private shared region of the users A, B, D, in the terminal apparatuses **100** of the users B, D, the display object is displayed in the private shared region set in the shared application. However, in the terminal apparatus **100** of the user C, the display object is not displayed

in the shared region SA of the shared application. Thus, contents can be selectively disclosed by setting the private shared region.

(Movement Between Private Shared Regions)

[0124] Next, FIG. **18** is referenced. FIG. **18** illustrates operation performed by the user A to move a display object of a piece of content from the private shared region of the users A, D to the private shared region of the users A, B. While the display object is shown in the private shared region of the users A, D, in the terminal apparatus **100** of the user D, the display object is displayed in the private shared region of the shared application.

[0125] However, when the display object is moved to the private shared region of the users A, B, in the terminal apparatus **100** of the user D, the display object displayed in the private shared region of the shared application disappears. Alternatively, the display object may continue to be displayed, and the content may be copied. Such configuration may be realized according to a setting made by a user. On the other hand, in the terminal apparatus **100** of the user B, the display object is displayed in the private shared region of the shared application. As described above, the display object of the content can be moved between the private shared regions.

[0126] The private sharing has been described above. As described above, it becomes possible to set the private sharing with intuitive and easy operation. Further, the following operations can also be realized with intuitive and easy operation: sharing content between private sharing users, changing the scope of the private sharing, and releasing the private sharing.

[1-5: Operation of Identification Object]

[0127] Next, operation performed on an identification object will be described with reference to FIG. **19**A to FIG. **19**C. FIG. **19**A illustrates an example of moving operation of an identification object. FIG. **19**B illustrates an example of moving operation of a private shared region. FIG. **19**C illustrates a list of operations performed with respect to an identification object.

[0128] As described above, an identification object is preferably displayed at a position specific to each user. However, a user may desire to change the order in which identification objects are sorted or change a display position. Accordingly, for a user who desires to change the order of arrangement or the display position, the order or the position may be changed by dragging an identification object as shown in FIG. **19**A. Preferably, after the identification object is moved, the display positions are automatically adjusted with the order of arrangement being preserved as shown in FIG. **19**A, so that the user can easily recognize the identification objects.

[0129] In some cases, the private sharing user is desired to be changed. In this case, two steps including a releasing step and a setting step are needed to release an already-set private sharing and reset a new private sharing. Accordingly, as shown in FIG. **19**B, by moving the existing private shared region, i.e., by moving the existing private shared region to the position of the identification object of a user with whom the private sharing is to be newly made, the private sharing can be made with the new user. Besides, as shown in FIG. **19**B, the change of the private sharing may be fixed by moving the private shared position downward at the position of the identification object with whom the private sharing is to be newly made. With the above-described configuration, the setting of the private sharing can be changed with one step operation.

[0130] In case where both of the moving operation and the private sharing operation can be activated as operation on an identification object, a list may be displayed as shown in FIG. **19**C to allow a user to select which of the operations is to be performed, when the user touches the identification object. Since the list is thus displayed, the user can reliably perform a desired operation.

[0131] The operation performed on the identification object has been described above.

[1-6: Hardware Configuration Example]

[0132] Next, a hardware configuration example of a terminal apparatus **100**, a server apparatus **200** will be described with reference to FIG. **20**.

[0133] The functions of the respective structural elements included in the terminal apparatus **100** and in the server apparatus **200** described above, respectively can be realized, for example, by using the hardware configuration of an information processing apparatus shown in FIG. **20**. That is, the function of each structural element is realized by controlling the hardware shown in FIG. **20** by using a computer program. Beside, the hardware in any form may be used, and it may be a personal computer, a mobile information terminal such as a mobile phone, a PHS or a PDA, a game machine, or various types of information appliances. Moreover, the PHS is an abbreviation for Personal Handy-phone System. Also, the PDA is an abbreviation for Personal Digital Assistant.

[0134] As shown in FIG. **20**, this hardware mainly includes a CPU **902**, a ROM **904**, a RAM **906**, a host bus **908**, and a bridge **910**. Furthermore, this hardware includes an external bus **912**, an interface **914**, an input unit **916**, an output unit **918**, a storage unit **920**, a drive **922**, a connection port **924**, and a communication unit **926**. Moreover, the CPU is an abbreviation for Central Processing Unit. Also, the ROM is an abbreviation for Read Only Memory. Furthermore, the RAM is an abbreviation for Random Access Memory.

[0135] The CPU **902** functions as an arithmetic processing unit or a control unit, for example, and controls an entire operation or a part of the operation of each structural element based on various programs recorded on the ROM **904**, the RAM **906**, the storage unit **920**, or a removal recording medium **928**. The ROM **904** is means for storing, for example, a program to be loaded on the CPU **902** or data or the like used in an arithmetic operation. The RAM **906** temporarily or perpetually stores, for example, a program to be loaded on the CPU **902** or various parameters or the like arbitrarily changed in execution of the program.

[0136] These structural elements are connected to each other via, for example, the host bus **908** capable of performing high-speed data transmission. For its part, the host bus **908** is connected via the bridge **910** to the external bus **912** whose data transmission rate is relatively low, for example. Furthermore, the input unit **916** is, for example, a mouse, a keyboard, a touch panel, a button, a switch, or a lever. Also, the input unit **916** may be a remote control that can transmit control signals on infrared rays or other radio waves.

[0137] The output unit **918** is, for example, a display device such as a CRT, an LCD, a PDP or an ELD, an audio output device such as a speaker or headphones, a printer, a mobile phone, or a facsimile, that can visually or auditorily notify a user of acquired information. Moreover, the CRT is an abbre-

viation for Cathode Ray Tube. The LCD is an abbreviation for Liquid Crystal Display. The PDP is an abbreviation for Plasma Display Panel. Also, the ELD is an abbreviation for Electro-Luminescence Display.

[0138] The storage unit **920** is a device for storing various data. The storage unit **920** is, for example, a magnetic storage device such as a hard disk drive (HDD), a semiconductor storage device, an optical storage device, or a magneto-optical storage device. The HDD is an abbreviation for Hard Disk Drive.

[0139] The drive **922** is a device that reads information recorded on the removal recording medium **928** such as a magnetic disk, an optical disk, a magneto-optical disk, or a semiconductor memory, or writes information in the removal recording medium **928**. The removal recording medium **928** is, for example, a DVD medium, a Blu-ray medium, an HD-DVD medium, various types of semiconductor storage media, or the like. As a matter of course, the removal recording medium **928** may be, for example, an IC card on which a non-contact IC chip is mounted, or an electronic device. The IC is an abbreviation for Integrated Circuit.

[0140] The connection port **924** is a port such as an USB port, an IEEE1394 port, a SCSI, an RS-232C port, or a port to which an externally connected device **930** such as an optical audio terminal is connected. The externally connected device **930** is, for example, a printer, a mobile music player, a digital camera, a digital video camera, or an IC recorder. Moreover, the USB is an abbreviation for Universal Serial Bus. Also, the SCSI is an abbreviation for Small Computer System Interface.

[0141] The communication unit **926** is a communication device to be connected to a network **932**, and is, for example, a communication card for a wired or wireless LAN, Bluetooth (registered trademark), or WUSB, an optical communication router, an ADSL router, or a modem for each type of communication. The network **932** connected to the communication unit **926** includes a wired or wireless network, which is, for example, the Internet, a home-use LAN, infrared communication, visible light communication, broadcasting, or satellite communication. Moreover, the LAN is an abbreviation for Local Area Network. Also, the WUSB is an abbreviation for Wireless USB. Furthermore, the ADSL is an abbreviation for Asymmetric Digital Subscriber Line.

2: CONCLUSION

[0142] At the last, the technical contents according to the embodiment of the present invention will be briefly summarized. The technical contents described here can be applied to various kinds of information processing apparatuses such as a PC, a portable telephone, a portable game machine, a portable information terminal, a home information appliance, and a car navigation system.

[0143] The functional configuration of the above apparatus can be expressed as follows. The terminal apparatus has a shared application display unit for displaying an execution screen of a shared application on a screen. In the shared application, operations performed by multiple users via multiple terminal apparatuses connected to a network are reflected on the display as operation performed on one application. Thus, the terminal apparatus has a function of presenting the execution screen of the shared application to the users. The shared application referred to herein is a type of an application that reflects inputs given by other users with multiple terminal apparatuses connected via the network. For example, the spreadsheet application, the image sharing application, and other content sharing applications are examples of the shared application.

[0144] The shared application includes an identification object display function for displaying an identification object that associates each of the users with an operation result, displayed on the execution screen, reflecting the operations performed by each of the users, a shared region setting function for setting, when a first user selects an identification object related to a second user and specifies a region on the screen, the specified region as a shared region that is shared by the first and second users, and a display control function for controlling, when the first or second user performs operation in the shared region set by the shared region setting function, such that the displayed operations result reflecting the operation is not shown to users other than the first and second users. As described above, the shared application has the function for displaying the identification object and the function for setting the private shared region. Therefore, the user who uses the shared application can manage, with intuitive and easy operation, users whose operation results are displayed.

(Remarks)

[0145] The display processing unit **106** is an example of a shared application display unit. Further, the function which is realized by executing the shared application by the display processing unit **106** or the display information is an example of a identification object display function. Further, the function which is realized by executing the shared application by the display processing unit **106**, the display information providing unit **208**, the user administration unit **204**, and the private user administration unit **210** is an example of a shared region setting function. Further, the function which is realized by executing the shared application by the display processing unit **106**, the display information providing unit **208**, the private user administration unit **210**, and the communication unit **202** is an example of a display control function. Furthermore, the display processing unit **106** is an example of a shared application execution unit. The display information providing unit **208** is an example of an information providing unit.

[0146] It should be understood by those skilled in the art that various modifications, combinations, sub-combinations and alterations may occur depending on design requirements and other factors insofar as they are within the scope of the appended claims or the equivalents thereof.

[0147] In the above explanation about the embodiment, the information processing system **10** including the terminal apparatuses **100**A, **100**B and the server apparatus **200** has been described. However, the functions of the server apparatus **200** may be performed by any one or both of the terminal apparatuses **100**A, **100**B, and the information processing system **10** may be constituted by only the terminal apparatuses **100**A, **100**B. In this case, the terminal apparatuses **100**A, **100**B may be connected via ad hoc connection to a network cable or a wireless network. There may be three or more terminal apparatuses **100**. Further, the information processing system **10** may include different types of terminal apparatuses **100**. There may be a plurality of server apparatuses **200**.

[0148] The present application contains subject matter related to that disclosed in Japanese Priority Patent Applica-

tion JP 2009-222392 filed in the Japan Patent Office on Sep. 28, 2009, the entire content of which is hereby incorporated by reference.

What is claimed is:

1. A terminal apparatus comprising a shared application display unit for displaying on a screen an execution screen of a shared application, reflecting on a display operations performed by a plurality of users via a plurality of terminal apparatuses connected to a network as operations performed on one application,

wherein the shared application includes

an identification object display function for displaying an identification object that associates each of the users with an operation result, displayed on the execution screen, reflecting the operation performed by each of the users,

a shared region setting function for setting, when a first user selects an identification object related to a second user and specifies a region on the screen, the specified region as a shared region that is shared by the first and second users, and

a display control function for controlling, when the first or second user performs operation in the shared region set by the shared region setting function, such that the displayed operation result reflecting the operation is not shown to users other than the first and second users.

2. The terminal apparatus according to claim **1**,

wherein, when the first user selects the identification object related to the second user and specifies a first region on the screen, and the first user selects an identification object related to a third user and specifies a second region on the screen, and the shared region setting function sets a first shared region that is shared by the first and second users and a second shared region that is shared by the first and third users, and the first user enlarges or moves the first shared region so that the first and second shared regions overlap with each other,

the shared region setting function sets the overlapping portion of the first and second shared regions as a shared region that is shared by the first user, the second user, and the third user.

3. The terminal apparatus according to claim **2**,

wherein the identification object display function displays a line connecting between the operation result and the identification object and visualizes by the line correspondence relationship between the operation result and each of the users.

4. The terminal apparatus according to claim **3**,

wherein the shared application is an application for sharing content, and

wherein, when the content is put in a shared state by the second user, the display control function displays a display object representing the content in the shared state at a display position of the identification object related to the second user, and moves the display object from the display position as a starting point.

5. The terminal apparatus according to claim **4**,

wherein, when a size of the shared region is smaller than a size of the display object representing the content in the shared state, the display control function periodically moves or deforms the identification object related to the second user, or periodically changes a color of the identification object.

6. The terminal apparatus according to claim **1**,

wherein the identification object is displayed in a predetermined region located on the screen in a direction that is set for each of the users.

7. The terminal apparatus according to claim **1**, further comprising a shared application execution unit for executing the shared application,

wherein the shared application display unit displays an execution result by the shared application execution unit on the screen.

8. A server apparatus comprising an information providing unit for providing information for displaying an execution screen of a shared application to a plurality of terminal apparatuses, the shared application reflecting on a display operations performed by a plurality of users via the plurality of terminal apparatuses connected to a network as operations performed on one application,

wherein the shared application includes

an identification object display function for displaying an identification object that associates each of the users with an operation result, displayed on the execution screen, reflecting the operation performed by each of the users,

a shared region setting function for setting, when a first user selects an identification object related to a second user and specifies a region on the screen, the specified region as a shared region that is shared by the first and second users, and

a display control function for controlling, when the first or second user performs operation in the shared region set by the shared region setting function, such that the displayed operation result reflecting the operation is not shown to users other than the first and second users.

9. A display control method by setting sharing, comprising the steps of:

setting, in a state where an execution screen of a shared application is displayed on a screen, the shared application reflecting on a display operations performed by a plurality of users via a plurality of terminal apparatuses connected to a network as operations performed on one application, and an identification object is displayed that associates each of the users with an operation result, displayed on the execution screen, reflecting the operations performed by each of the users, and when a first user selects an identification object related to a second user and specifies a region on the screen, the specified region as a shared region that is shared by the first and second users; and

controlling, when the first or second user performs operation in the shared region set at the shared region setting step, such that the displayed operation result reflecting the operation is not shown to users other than the first and second users.

10. A program for causing a computer to realize:

a function for reflecting on a display operations performed by a plurality of users via a plurality of terminal apparatuses connected to a network as operations performed on one application;

an identification object display function for displaying an identification object that associates each of the users with an operation result, displayed on the execution

screen, reflecting the operation performed by each of the users;

a shared region setting function for setting, when a first user selects an identification object related to a second user and specifies a region on the screen, the specified region as a shared region that is shared by the first and second users; and

a display control function for controlling, when the first or second user performs operation in the shared region set by the shared region setting function, such that the displayed operation result reflecting the operation is not shown to users other than the first and second users.

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