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Hashimoto

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(45) **Date of Patent: Aug. 19, 2025**

(54) **STORAGE MEDIUM, INFORMATION PROCESSING APPARATUS, AND INFORMATION PROCESSING METHOD THAT DISPLAY LEFT AND RIGHT PAGE REGIONS OF A DOUBLE-PAGE ALBUM SPREAD**

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(30) **Foreign Application Priority Data**

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(51) **Int. Cl.**

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G06F 3/04812	(2022.01)
G06F 3/0482	(2013.01)
G06F 3/04845	(2022.01)
G06F 40/106	(2020.01)

(52) **U.S. Cl.**

CPC ***G06F 40/166*** (2020.01); ***G06F 3/04812*** (2013.01); ***G06F 3/0482*** (2013.01); ***G06F 3/04845*** (2013.01); ***G06F 40/106*** (2020.01); *G06F 2203/04803* (2013.01)

(58) **Field of Classification Search**

CPC G06F 3/04812; G06F 3/0482; G06F 3/04845; G06F 40/166; G06F 40/106

See application file for complete search history.

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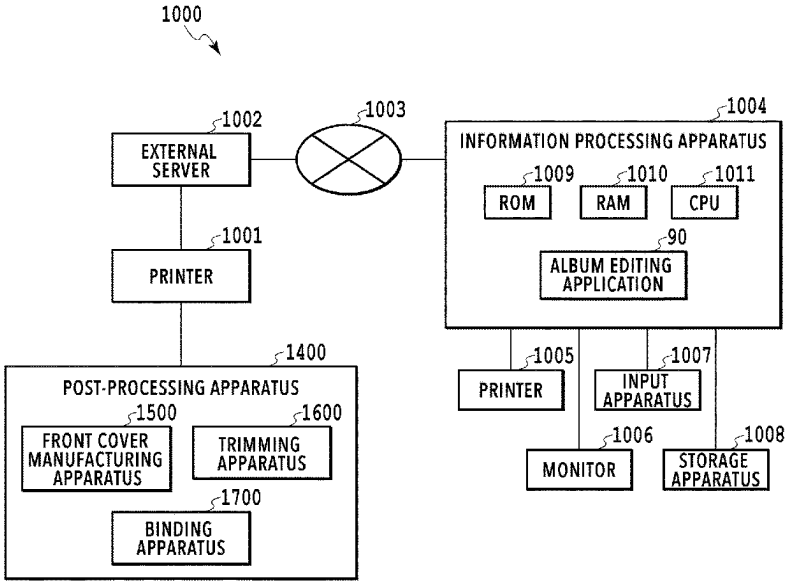
Primary Examiner — Tadesse Hailu
(74) *Attorney, Agent, or Firm* — Venable LLP

(57) **ABSTRACT**

An information processing method includes displaying a graphical user interface having a first region in which to arrange an object and a second region in which to display a list of an object that can be arranged in the first region, the first region being a region of a double-page album spread, the double-page spread region including a left page region and a right page region, and deriving a candidate region in which to arrange an object selected by a user in the first region, based on a state of arrangement of an object other than the selected object in the first region. The candidate region is displayed as a rectangular frame surrounded by a dashed line in the first region. In moving the selected object in the first region, the candidate region is switched and displayed based on a position of a cursor indicating the selected object.

14 Claims, 20 Drawing Sheets



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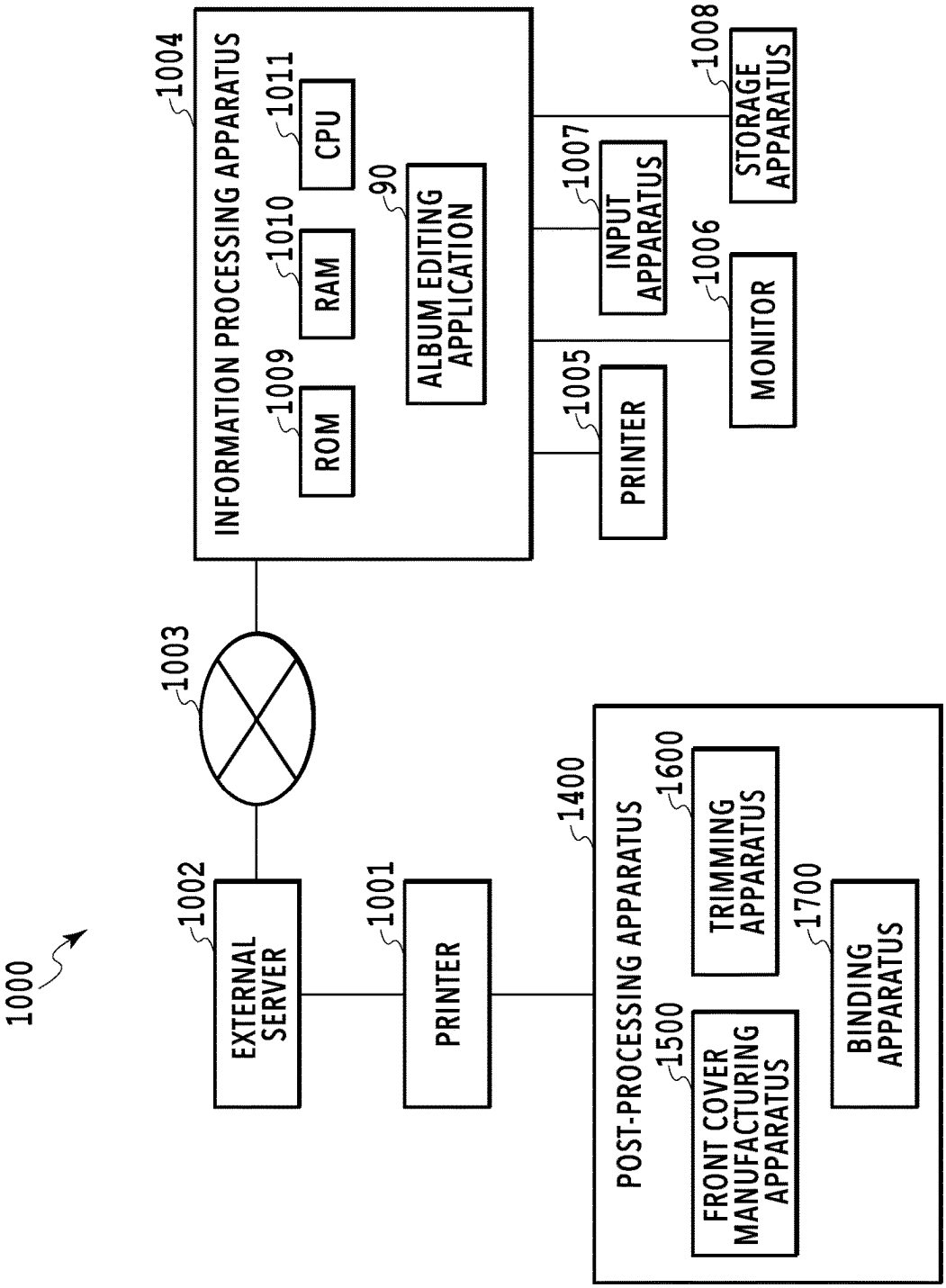

1000
EXTERNAL SERVER
1002
PRINTER
1001
1003
INFORMATION PROCESSING APPARATUS
1004
CPU
1011
RAM
1010
ROM
1009
ALBUM EDITING APPLICATION
90
PRINTER
1005
INPUT APPARATUS
1007
MONITOR
1006
STORAGE APPARATUS
1008
POST-PROCESSING APPARATUS
1400
FRONT COVER MANUFACTURING APPARATUS
1500
TRIMMING APPARATUS
1600
BINDING APPARATUS
1700

FIG.1

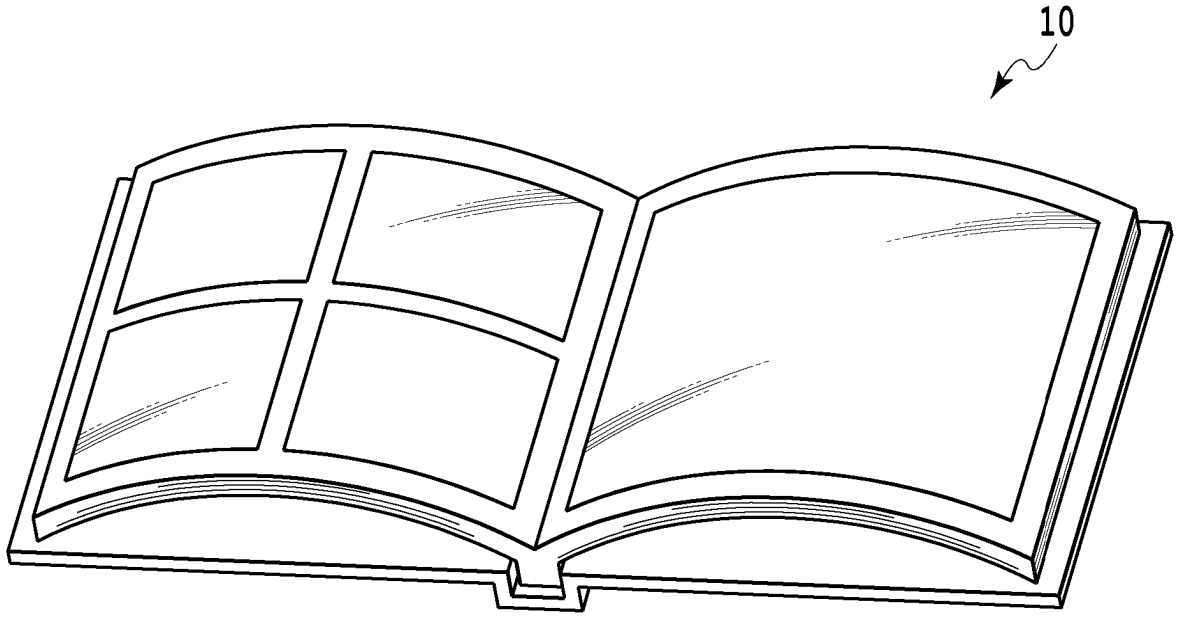


FIG.2

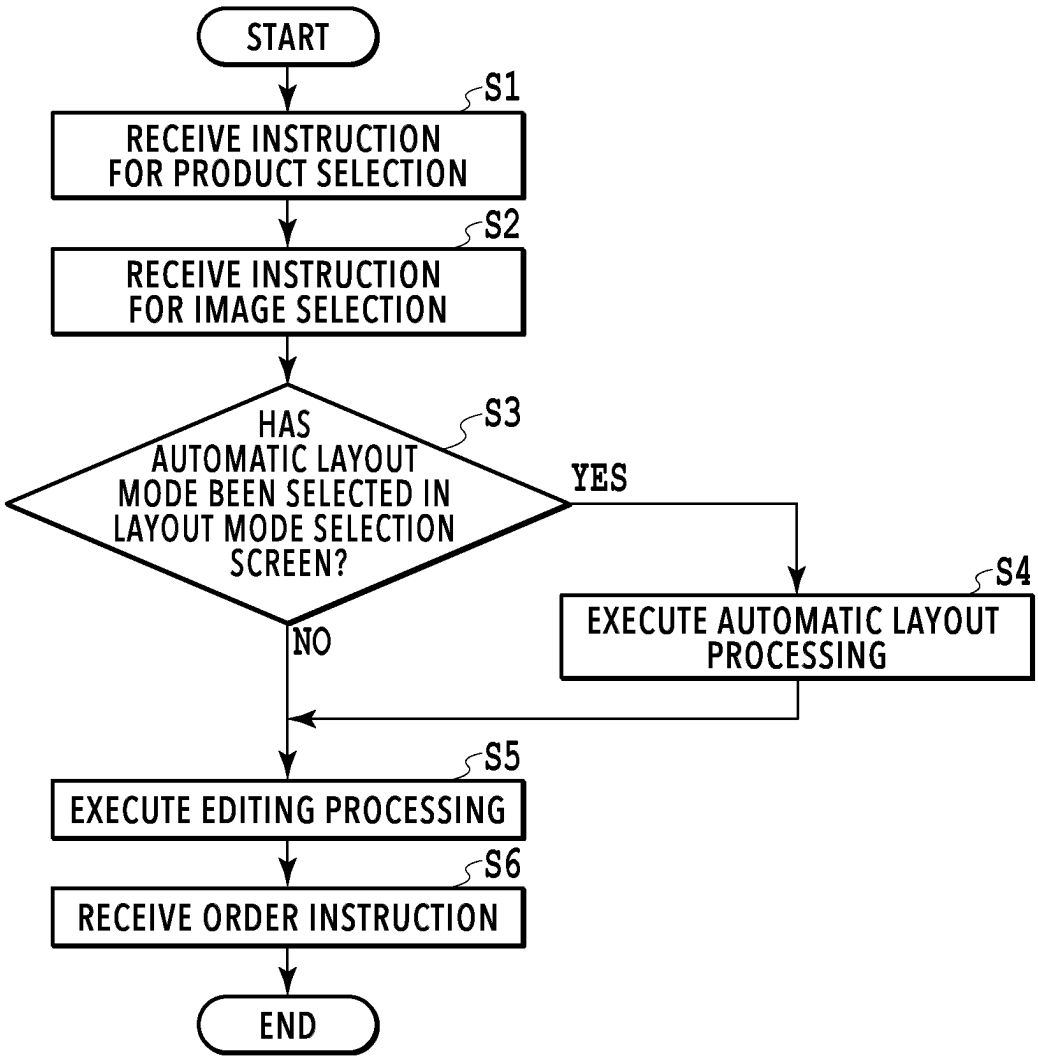

START
S1
RECEIVE INSTRUCTION FOR PRODUCT SELECTION
S2
RECEIVE INSTRUCTION FOR IMAGE SELECTION
S3
HAS AUTOMATIC LAYOUT MODE BEEN SELECTED IN LAYOUT MODE SELECTION SCREEN?
YES
NO
S4
EXECUTE AUTOMATIC LAYOUT PROCESSING
S5
EXECUTE EDITING PROCESSING
S6
RECEIVE ORDER INSTRUCTION
END

FIG.3

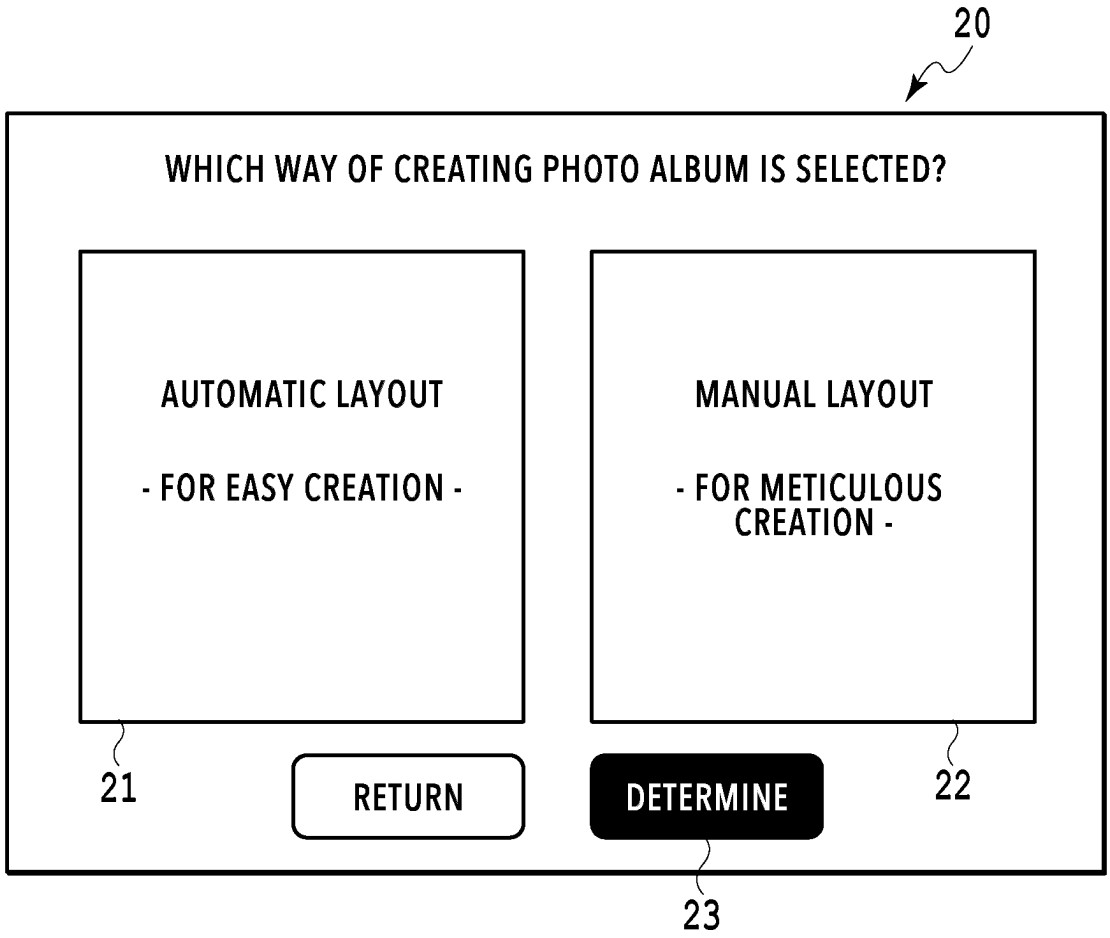

20
WHICH WAY OF CREATING PHOTO ALBUM IS SELECTED?
AUTOMATIC LAYOUT
- FOR EASY CREATION -
MANUAL LAYOUT
- FOR METICULOUS CREATION -
21
RETURN
DETERMINE
22
23

FIG.4

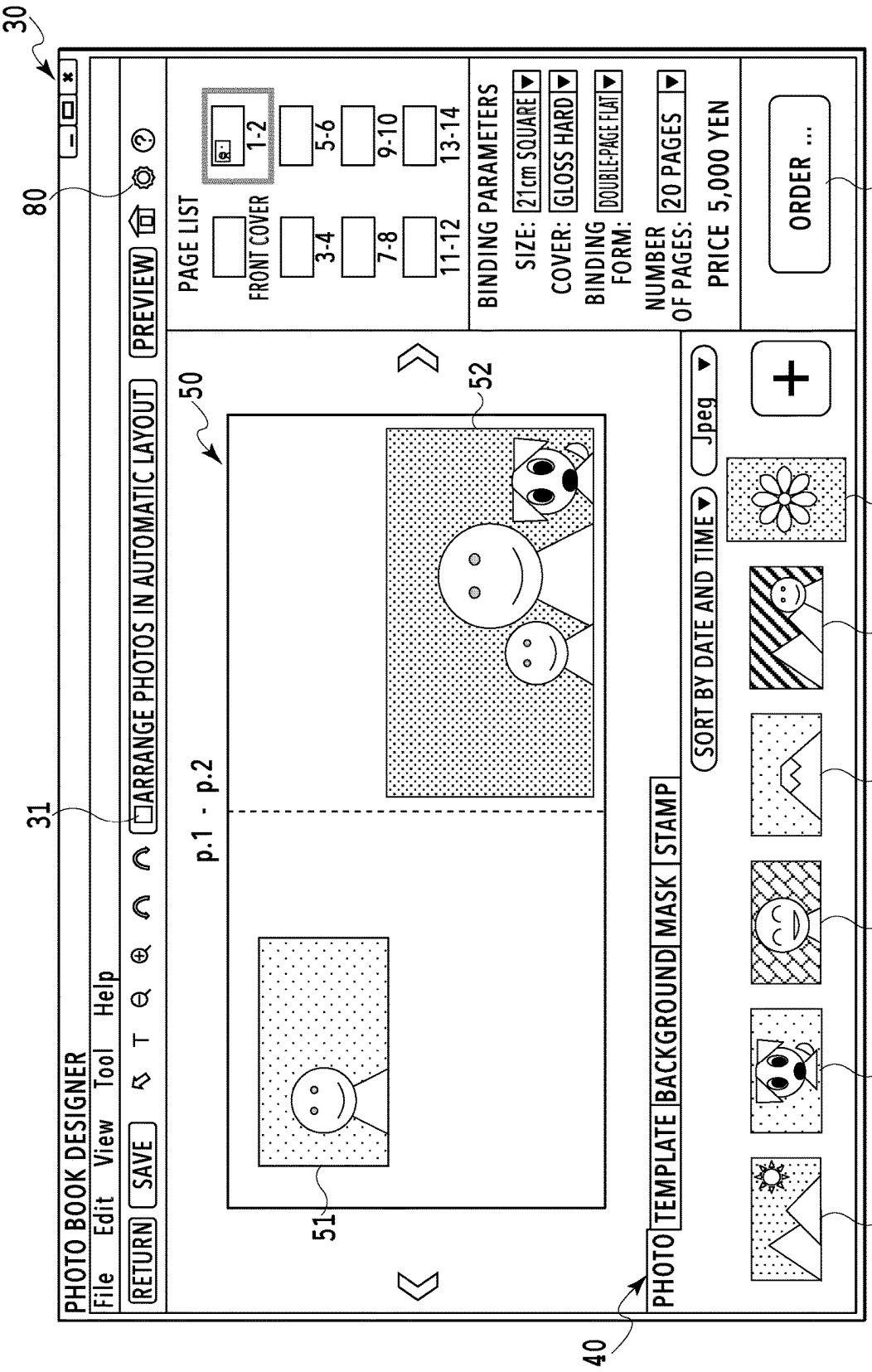

30
80
31
40
50
51
52
PHOTO BOOK DESIGNER
File Edit View Tool Help
RETURN
SAVE
ARRANGE PHOTOS IN AUTOMATIC LAYOUT
PREVIEW
p.1 - p.2
PAGE LIST
FRONT COVER
1-2
3-4
5-6
7-8
9-10
11-12
13-14
BINDING PARAMETERS
SIZE: 21cm SQUARE
COVER: GLOSS HARD
BINDING FORM: DOUBLE-PAGE FLAT
NUMBER OF PAGES: 20 PAGES
PRICE 5,000 YEN
ORDER ...
70
PHOTO
TEMPLATE
BACKGROUND
MASK
STAMP
SORT BY DATE AND TIME
Jpeg
41
42
43
44
45
46

FIG.5

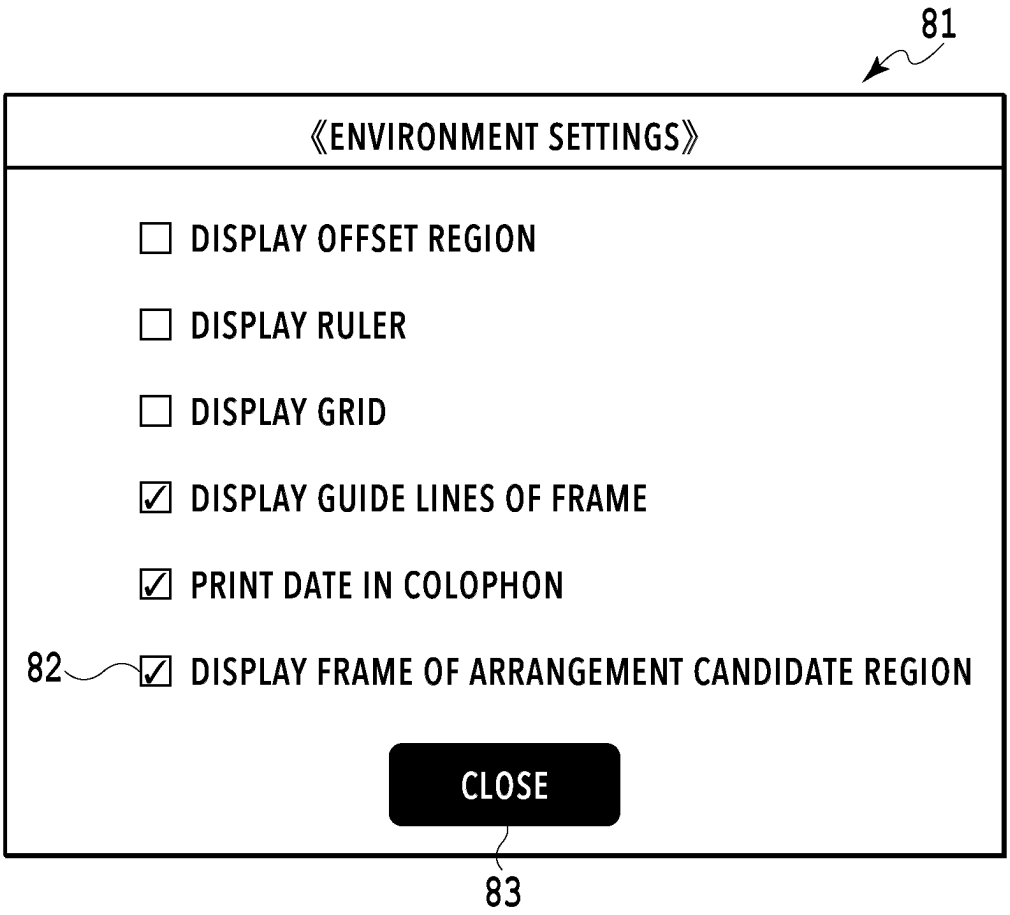

81
《ENVIRONMENT SETTINGS》
DISPLAY OFFSET REGION
DISPLAY RULER
DISPLAY GRID
DISPLAY GUIDE LINES OF FRAME
PRINT DATE IN COLOPHON
82
DISPLAY FRAME OF ARRANGEMENT CANDIDATE REGION
CLOSE
83

FIG.6

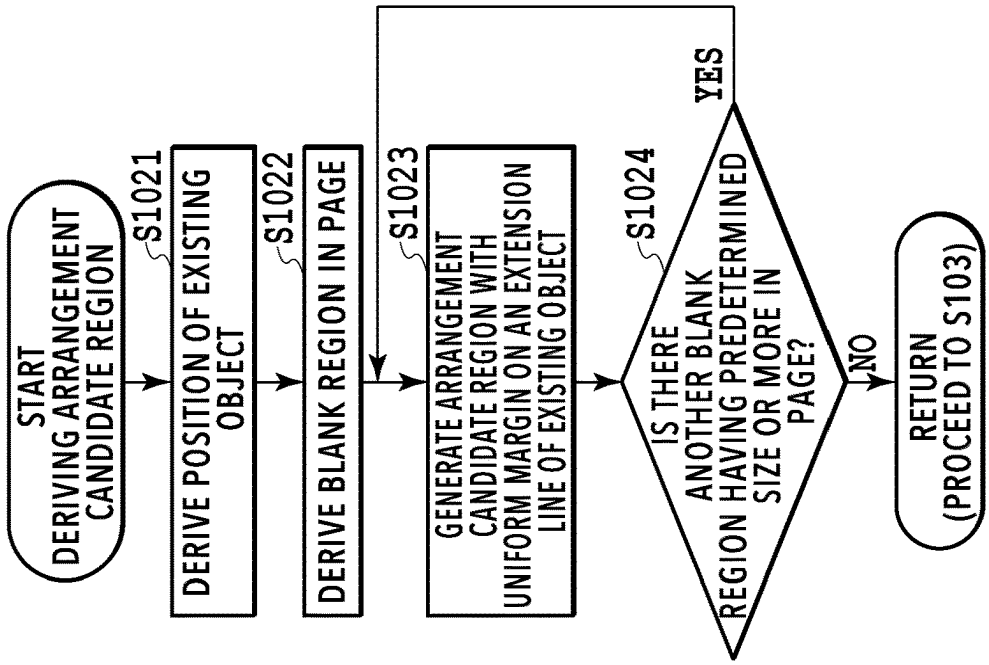

START
DERIVING ARRANGEMENT CANDIDATE REGION
S1021
DERIVE POSITION OF EXISTING OBJECT
S1022
DERIVE BLANK REGION IN PAGE
S1023
GENERATE ARRANGEMENT CANDIDATE REGION WITH UNIFORM MARGIN ON AN EXTENSION LINE OF EXISTING OBJECT
S1024
IS THERE ANOTHER BLANK REGION HAVING PREDETERMINED SIZE OR MORE IN PAGE?
YES
NO
RETURN (PROCEED TO S103)

FIG.7B

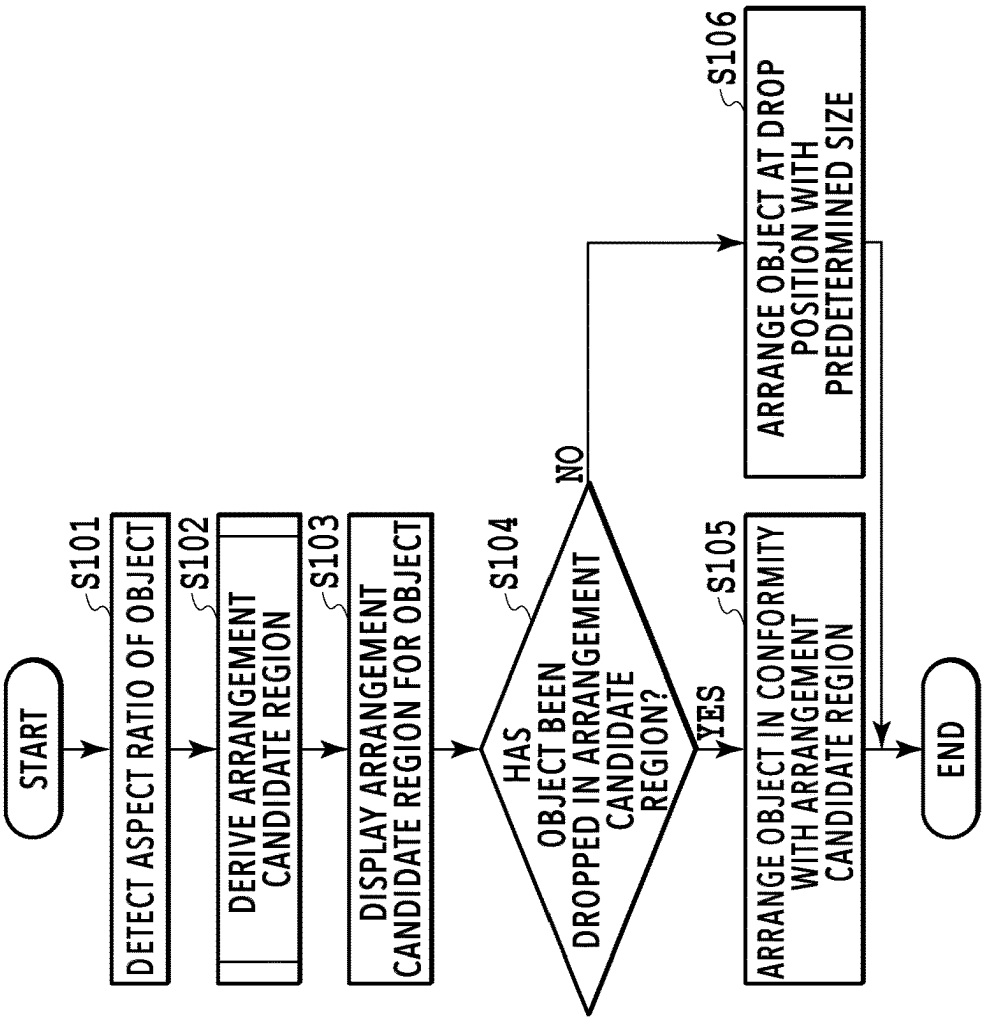

START
S101
DETECT ASPECT RATIO OF OBJECT
S102
DERIVE ARRANGEMENT CANDIDATE REGION
S103
DISPLAY ARRANGEMENT CANDIDATE REGION FOR OBJECT
S104
HAS OBJECT BEEN DROPPED IN ARRANGEMENT CANDIDATE REGION?
NO
YES
S105
ARRANGE OBJECT IN CONFORMITY WITH ARRANGEMENT CANDIDATE REGION
S106
ARRANGE OBJECT AT DROP POSITION WITH PREDETERMINED SIZE
END

FIG.7A

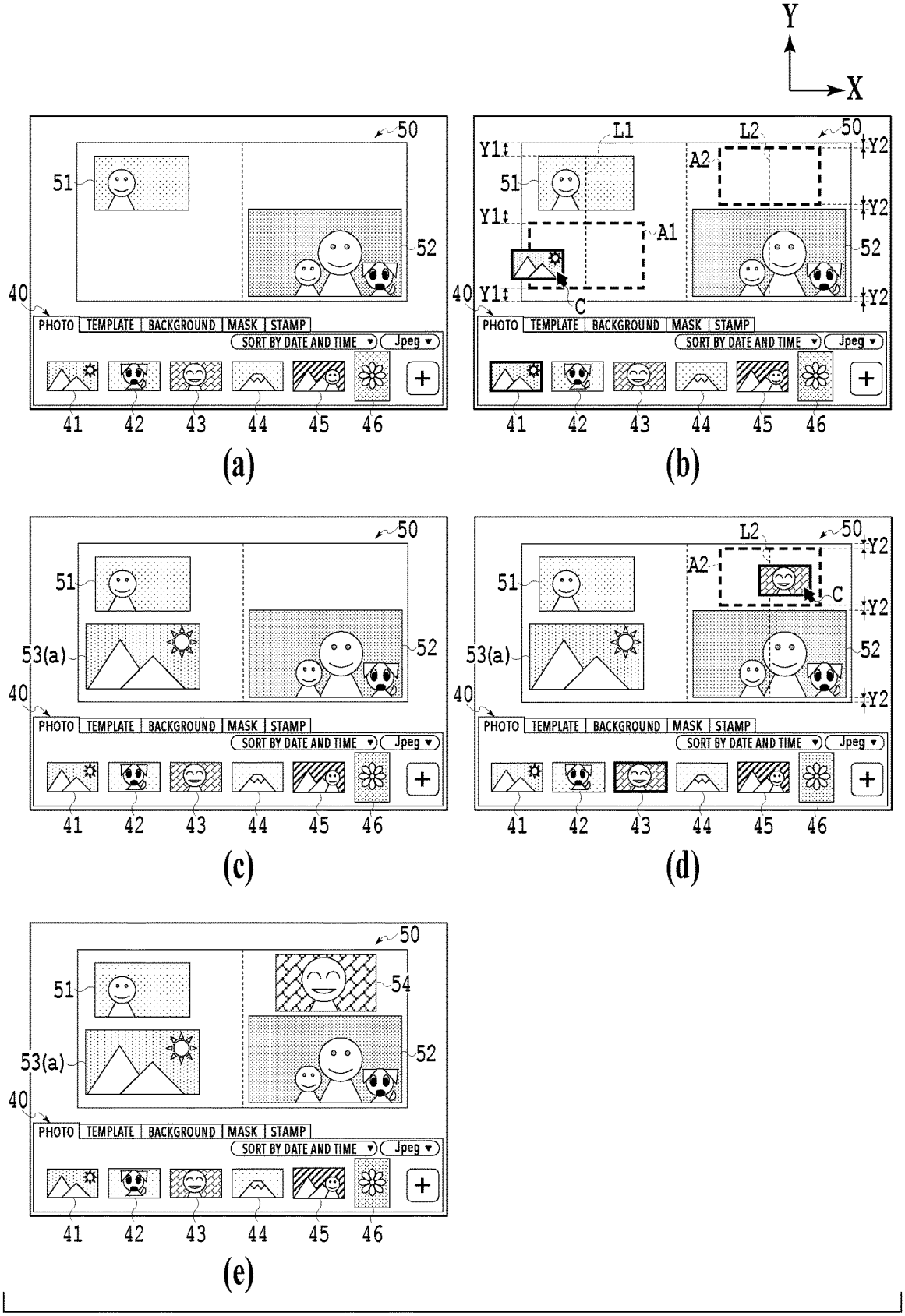

Y
X
50
51
52
40
PHOTO
TEMPLATE
BACKGROUND
MASK
STAMP
SORT BY DATE AND TIME
Jpeg
41
42
43
44
45
46
(a)
L1
L2
Y1
Y2
A1
A2
C
(b)
53(a)
(c)
(d)
54
(e)

FIG.8A

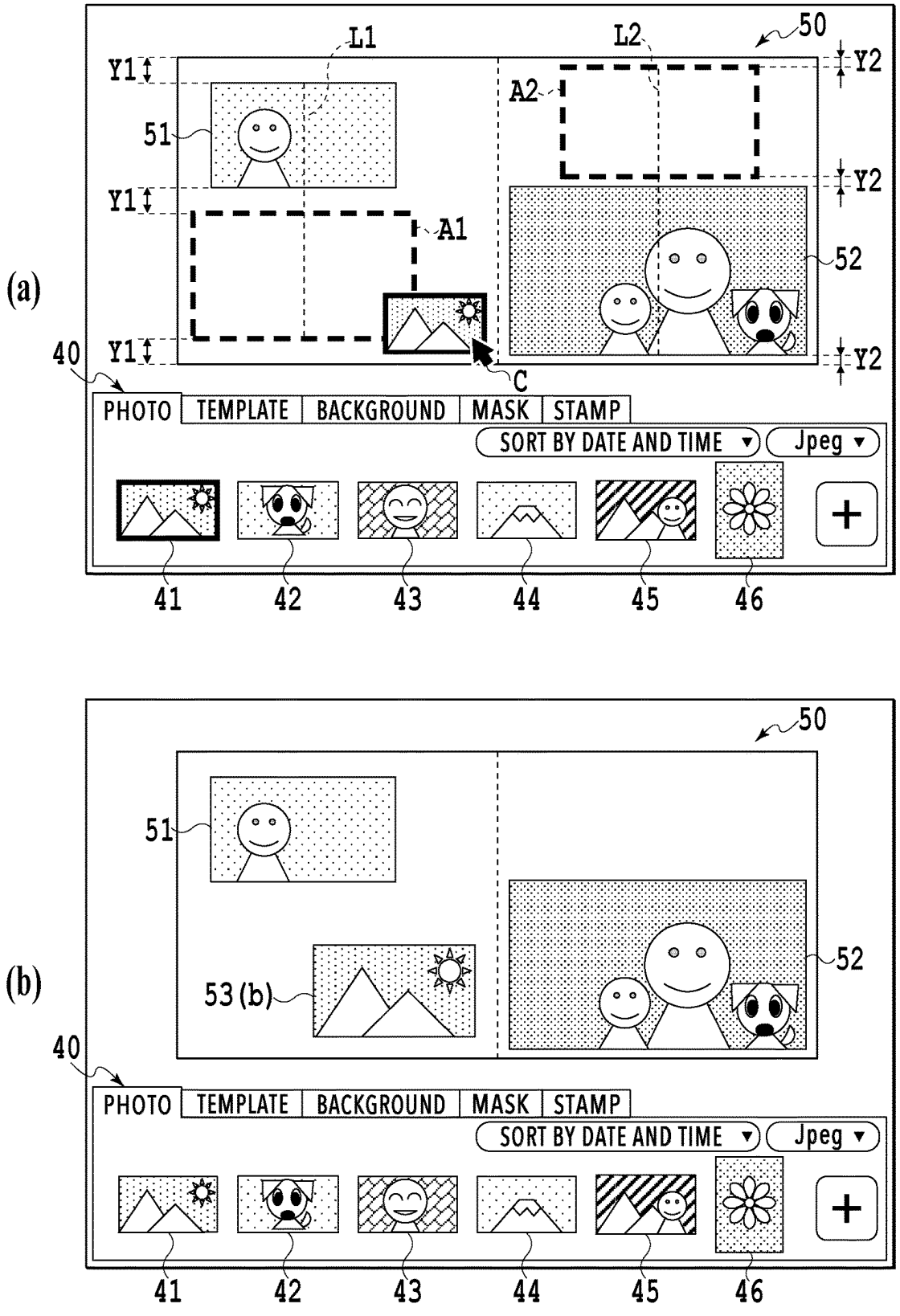

(a)
L1
L2
50
Y1
Y2
51
A2
A1
52
C
40
PHOTO
TEMPLATE
BACKGROUND
MASK
STAMP
SORT BY DATE AND TIME
Jpeg
41
42
43
44
45
46
(b)
53 (b)

FIG.8B

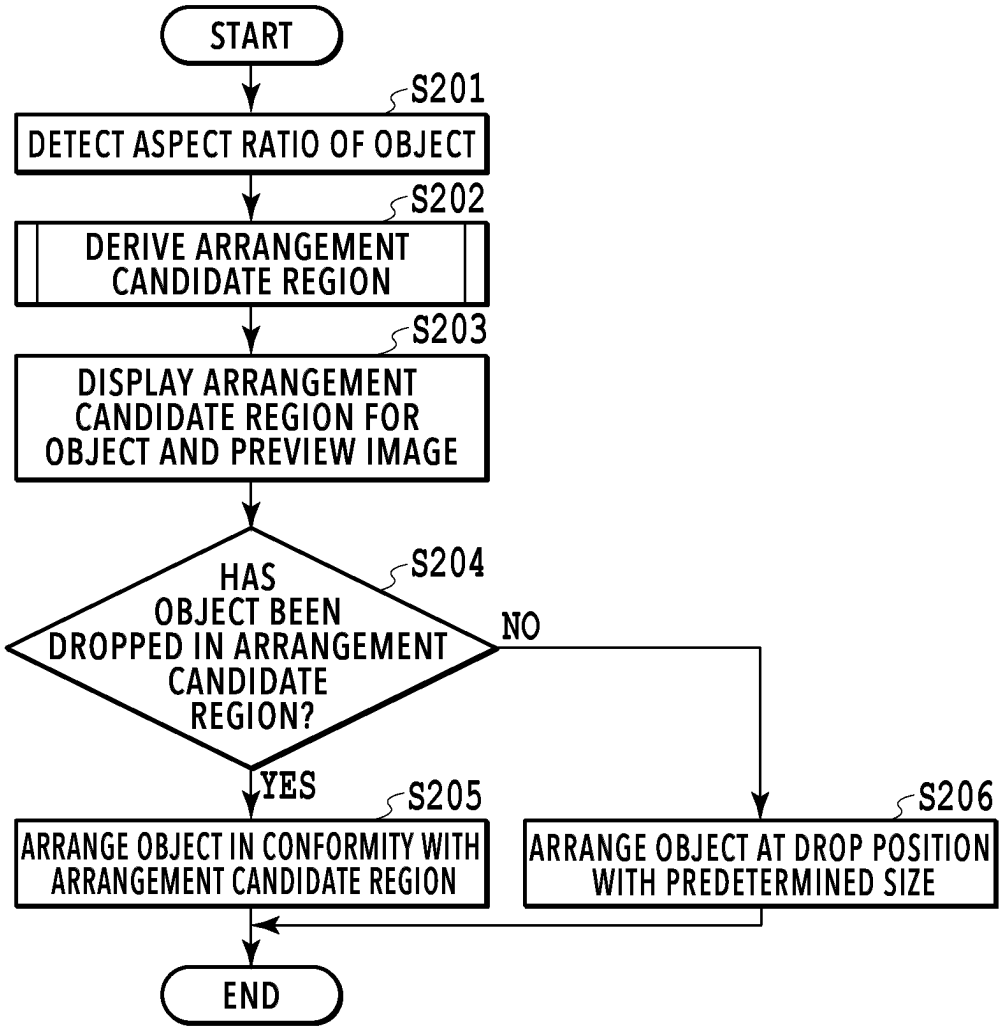

START
S201
DETECT ASPECT RATIO OF OBJECT
S202
DERIVE ARRANGEMENT CANDIDATE REGION
S203
DISPLAY ARRANGEMENT CANDIDATE REGION FOR OBJECT AND PREVIEW IMAGE
S204
HAS OBJECT BEEN DROPPED IN ARRANGEMENT CANDIDATE REGION?
NO
YES
S205
ARRANGE OBJECT IN CONFORMITY WITH ARRANGEMENT CANDIDATE REGION
S206
ARRANGE OBJECT AT DROP POSITION WITH PREDETERMINED SIZE
END

FIG.9

FIG.10A

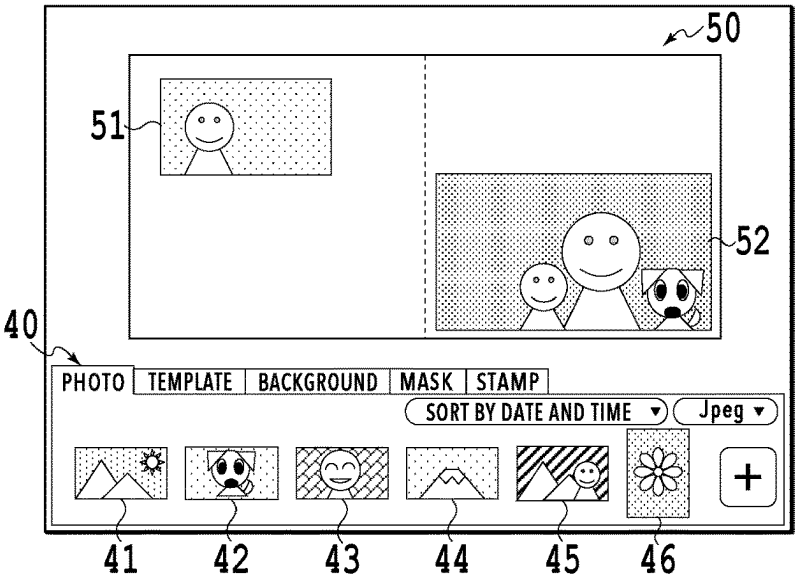


FIG.10B

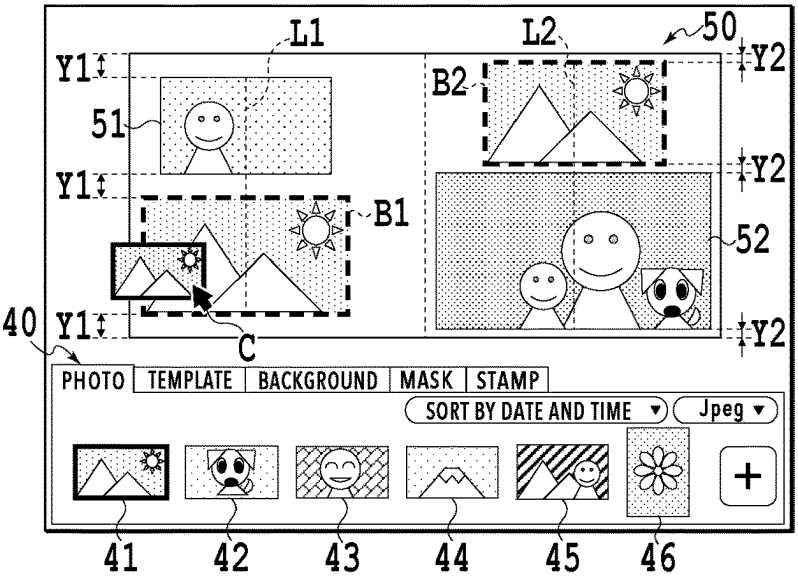
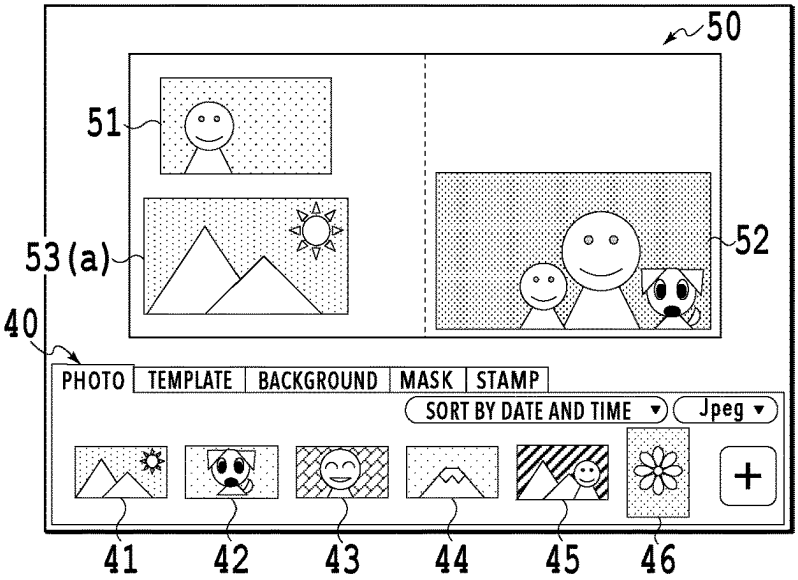


FIG.10C



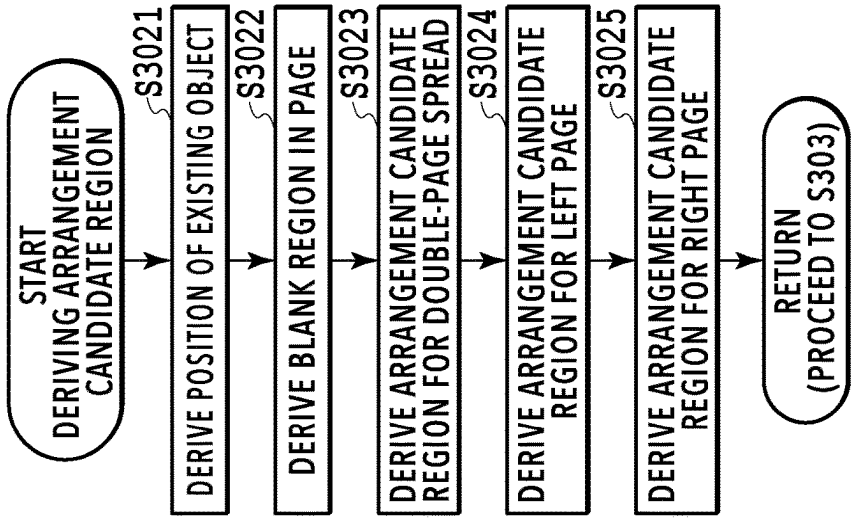


FIG.11B

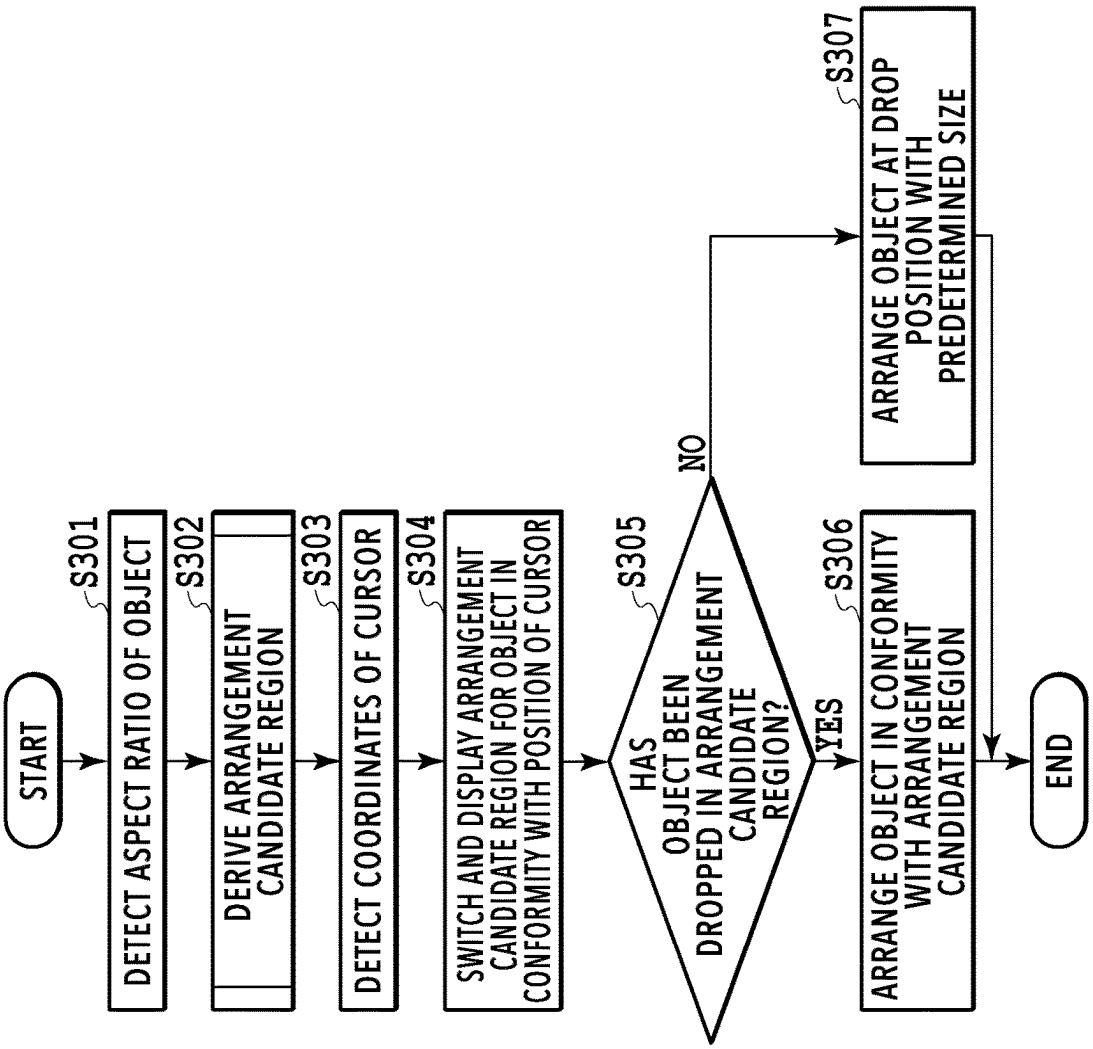
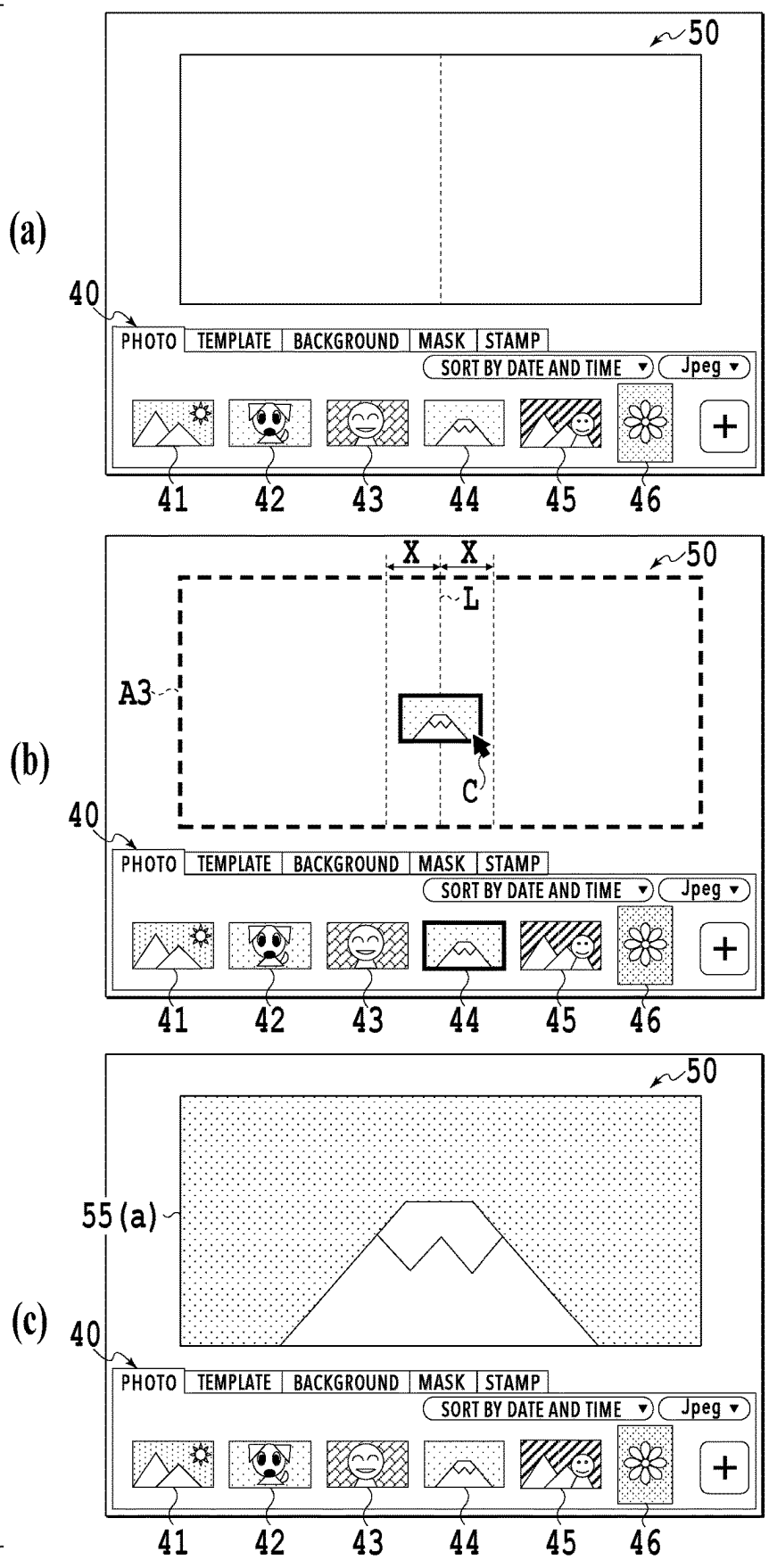


FIG.11A

FIG.12A


(a)
50
40
PHOTO
TEMPLATE
BACKGROUND
MASK
STAMP
SORT BY DATE AND TIME
Jpeg
41
42
43
44
45
46
(b)
X
X
L
A3
C
(c)
55 (a)

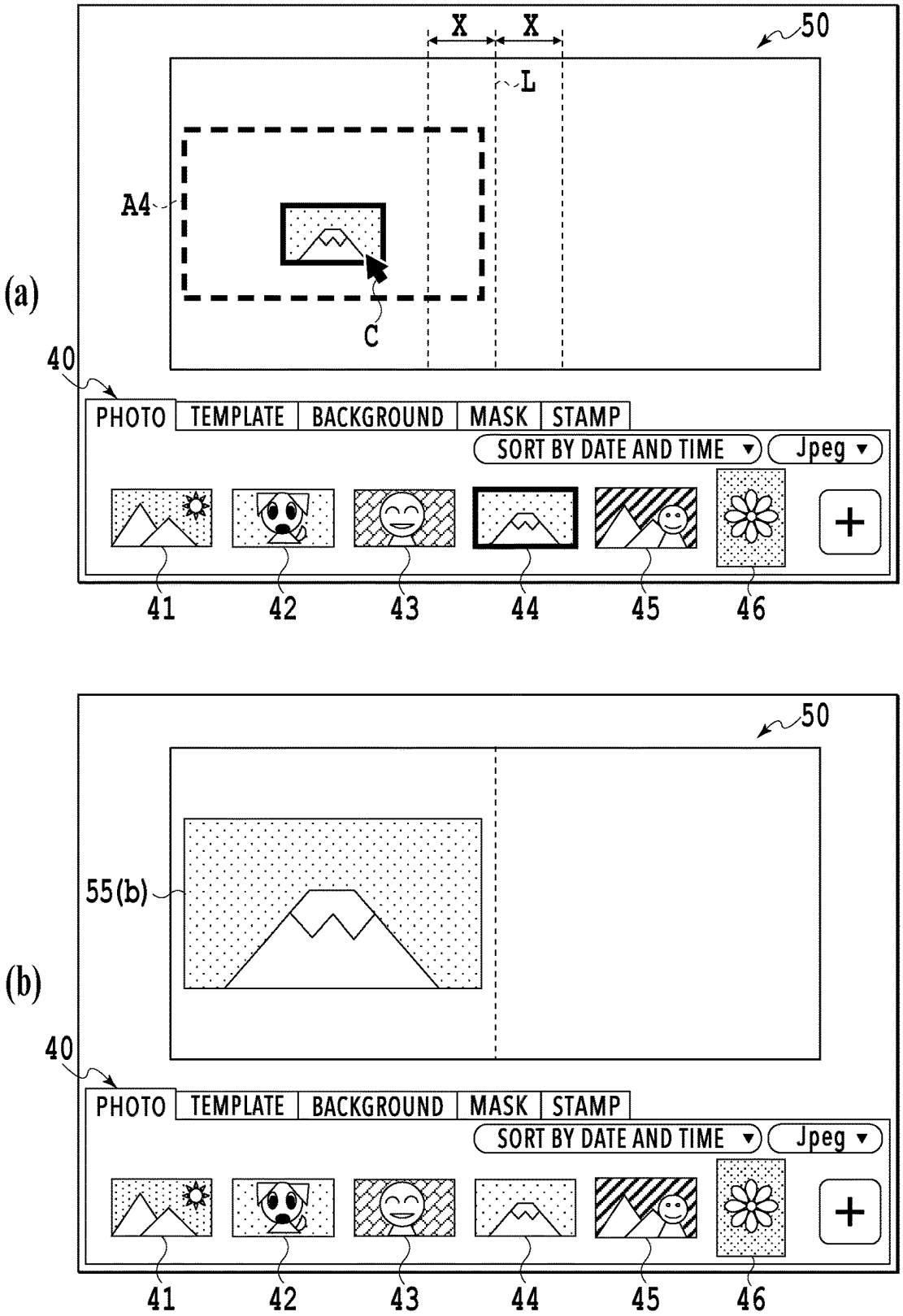

(a)
X
X
50
L
A4
C
40
PHOTO
TEMPLATE
BACKGROUND
MASK
STAMP
SORT BY DATE AND TIME
Jpeg
+
41
42
43
44
45
46
(b)
50
55(b)
40
PHOTO
TEMPLATE
BACKGROUND
MASK
STAMP
SORT BY DATE AND TIME
Jpeg
+
41
42
43
44
45
46

FIG.12B

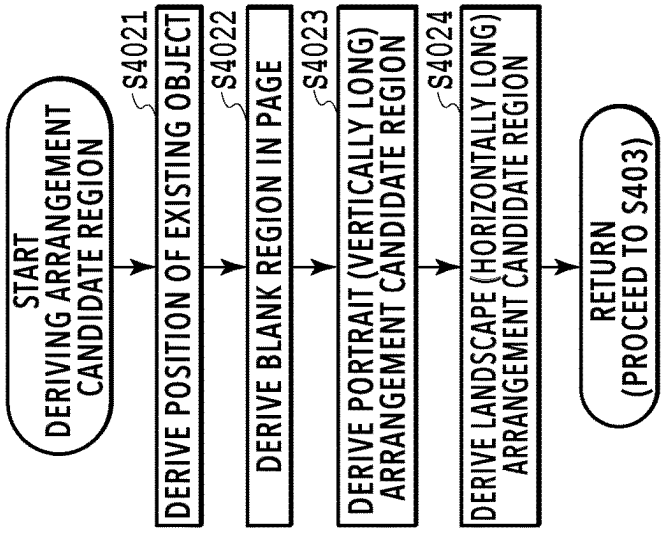


FIG.13B

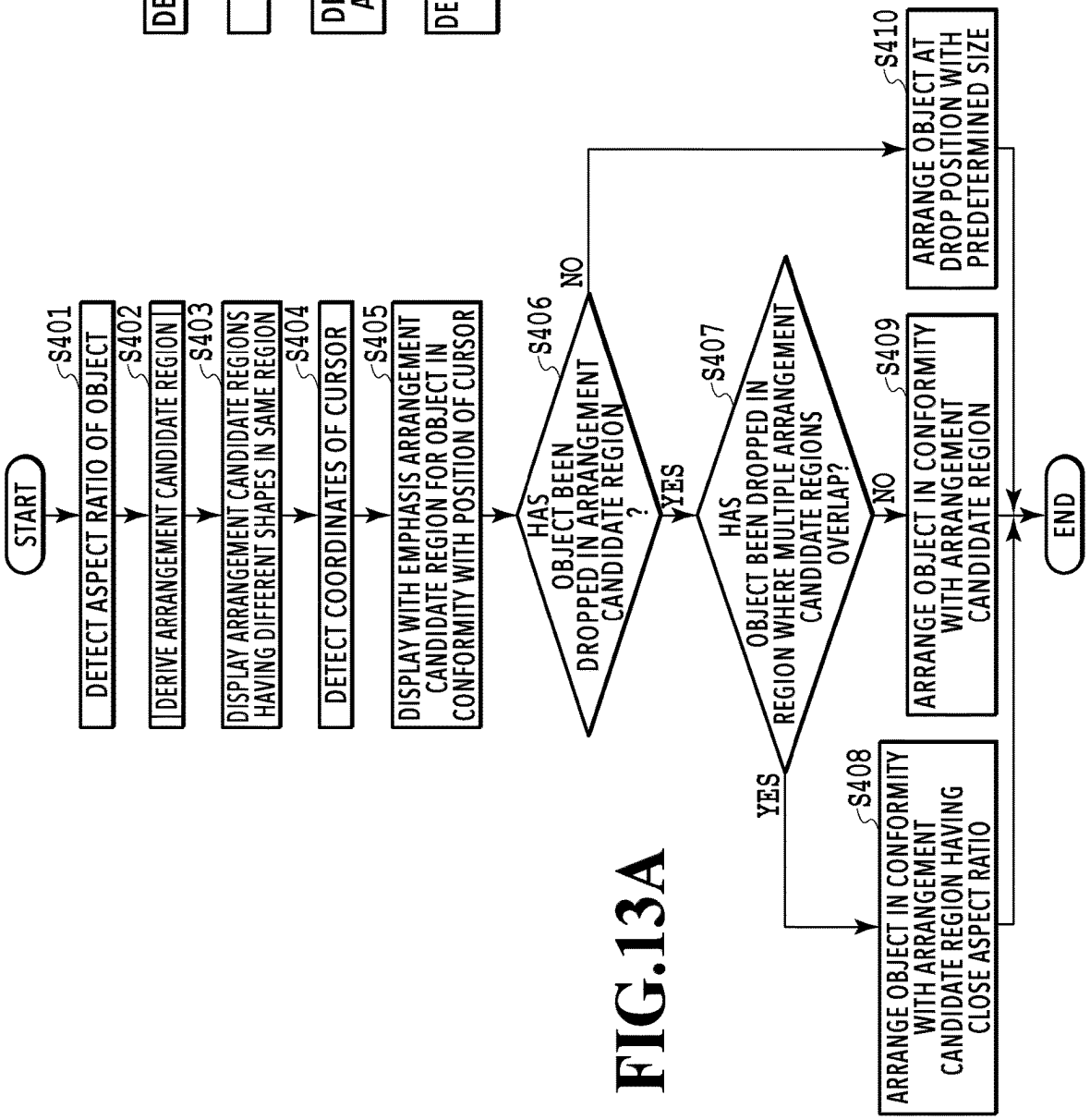


FIG.13A

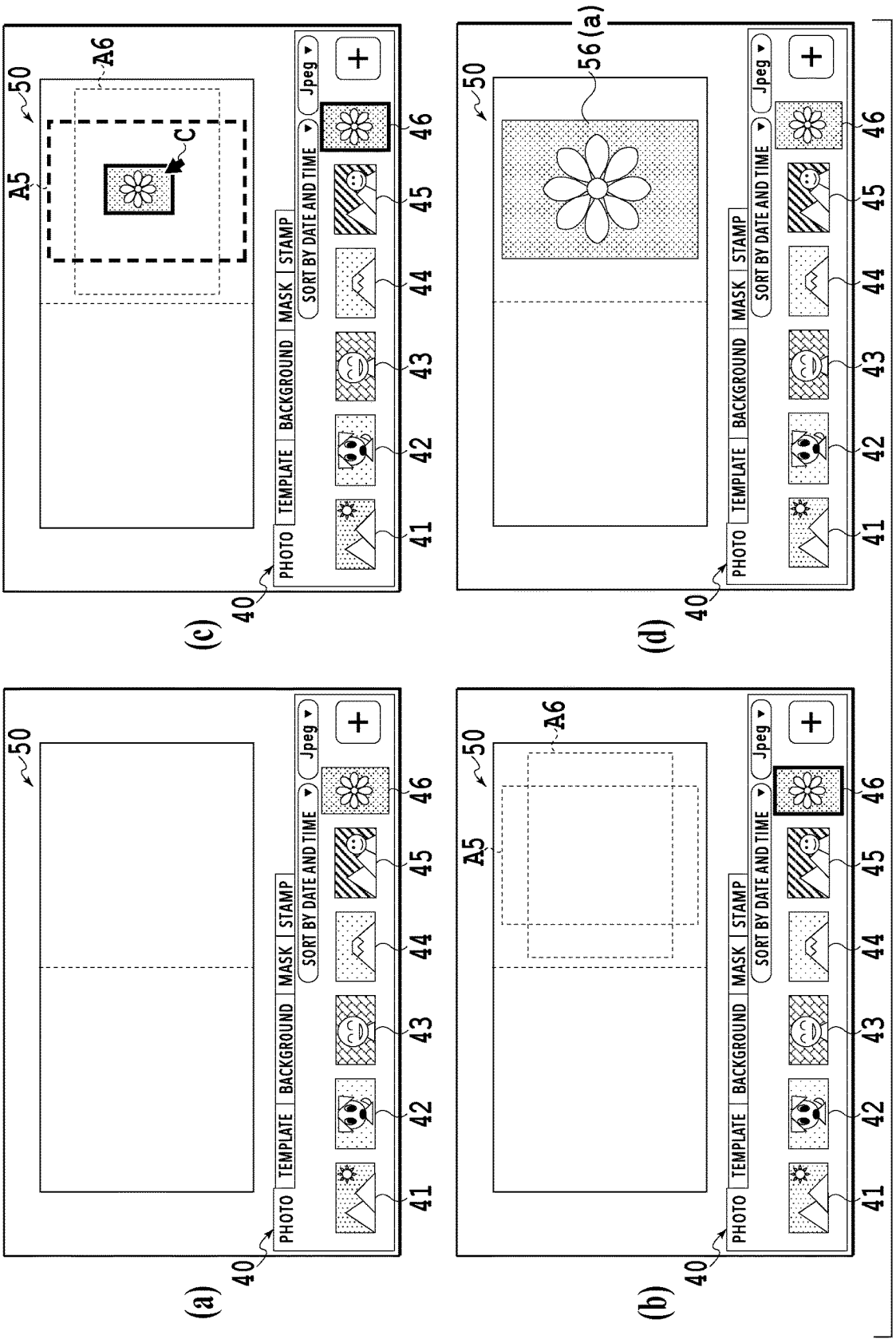

(a)
(b)
(c)
(d)
40
50
A5
A6
C
56 (a)
PHOTO
TEMPLATE
BACKGROUND
MASK
STAMP
SORT BY DATE AND TIME
Jpeg
41
42
43
44
45
46

FIG.14A

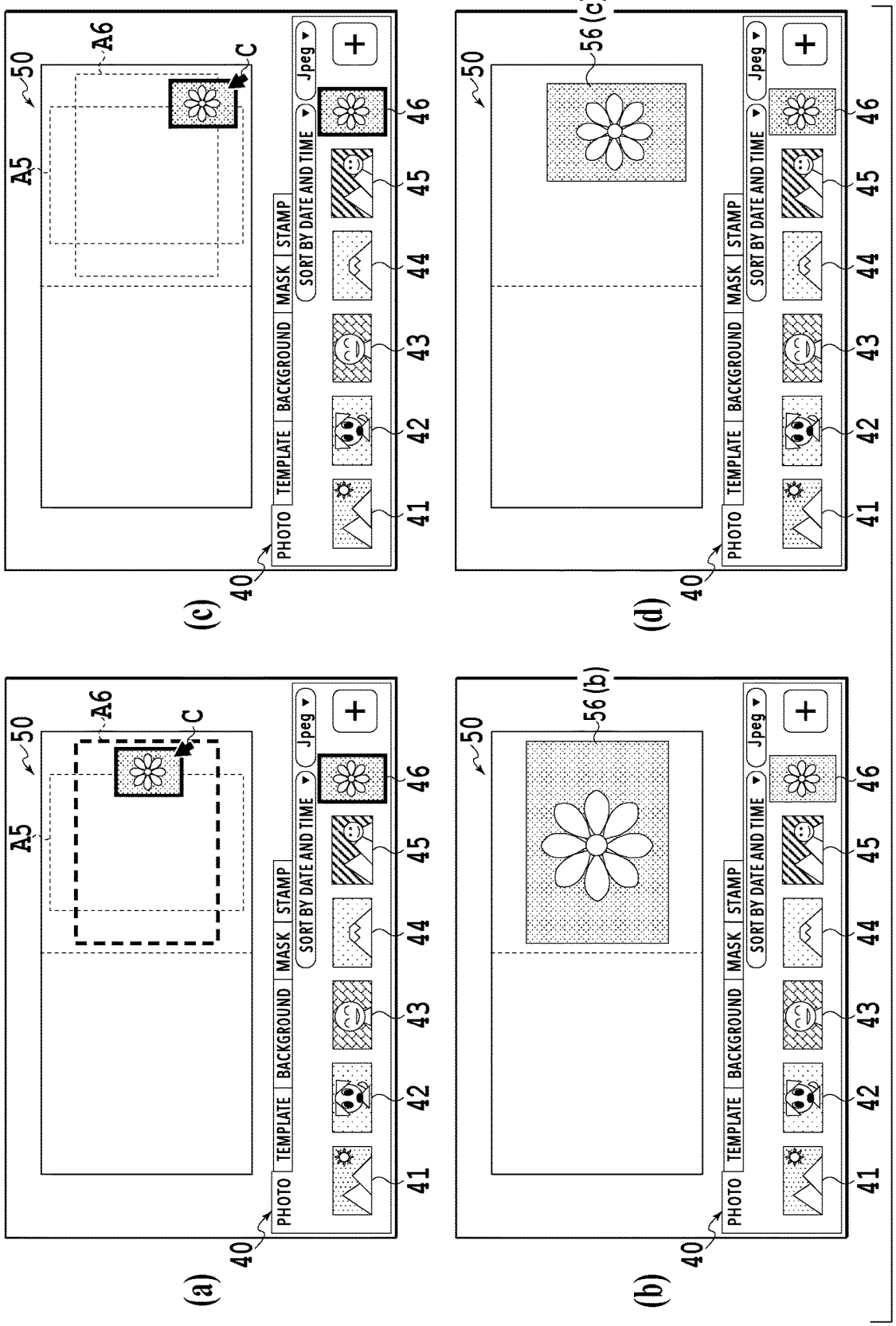

(a)
(b)
(c)
(d)
40
50
A5
A6
C
56 (b)
56 (c)
PHOTO
TEMPLATE
BACKGROUND
MASK
STAMP
SORT BY DATE AND TIME
Jpeg
41
42
43
44
45
46

FIG.14B

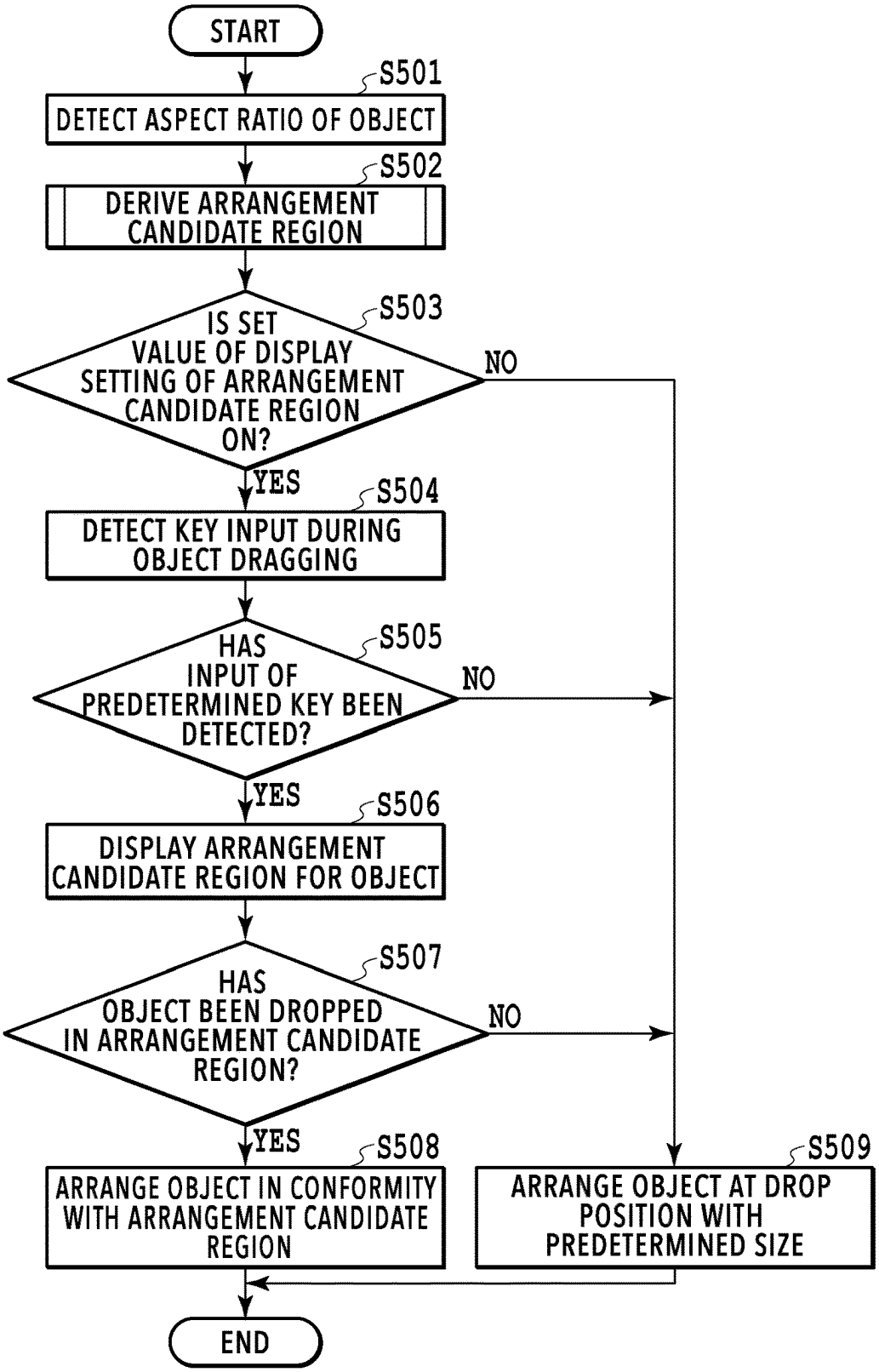
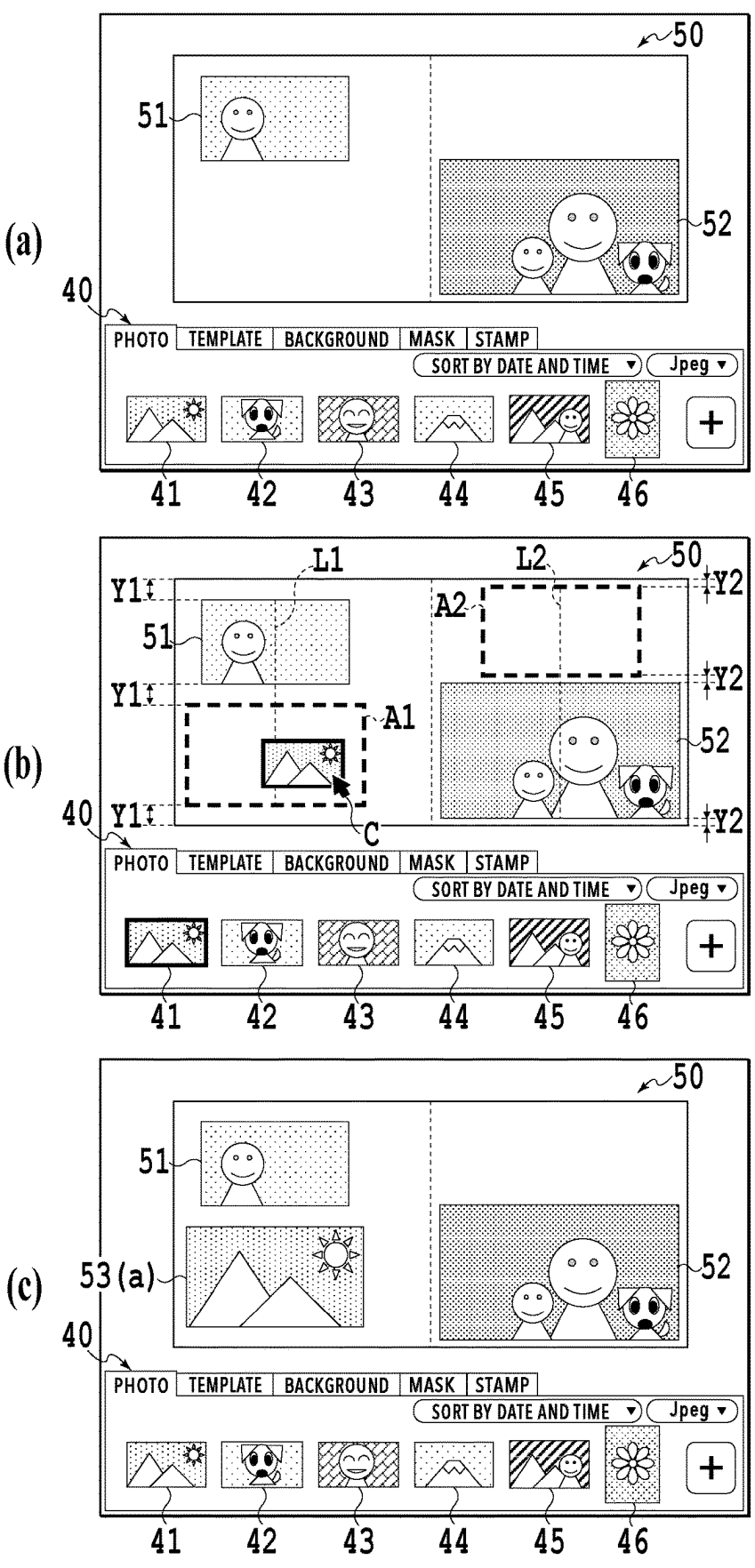

START
S501
DETECT ASPECT RATIO OF OBJECT
S502
DERIVE ARRANGEMENT CANDIDATE REGION
S503
IS SET VALUE OF DISPLAY SETTING OF ARRANGEMENT CANDIDATE REGION ON?
NO
YES
S504
DETECT KEY INPUT DURING OBJECT DRAGGING
S505
HAS INPUT OF PREDETERMINED KEY BEEN DETECTED?
NO
YES
S506
DISPLAY ARRANGEMENT CANDIDATE REGION FOR OBJECT
S507
HAS OBJECT BEEN DROPPED IN ARRANGEMENT CANDIDATE REGION?
NO
YES
S508
ARRANGE OBJECT IN CONFORMITY WITH ARRANGEMENT CANDIDATE REGION
S509
ARRANGE OBJECT AT DROP POSITION WITH PREDETERMINED SIZE
END

FIG.15

FIG.16A


(a)
50
51
52
40
PHOTO
TEMPLATE
BACKGROUND
MASK
STAMP
SORT BY DATE AND TIME
Jpeg
41
42
43
44
45
46
(b)
L1
L2
50
Y1
Y2
A2
A1
C
(c)
53 (a)

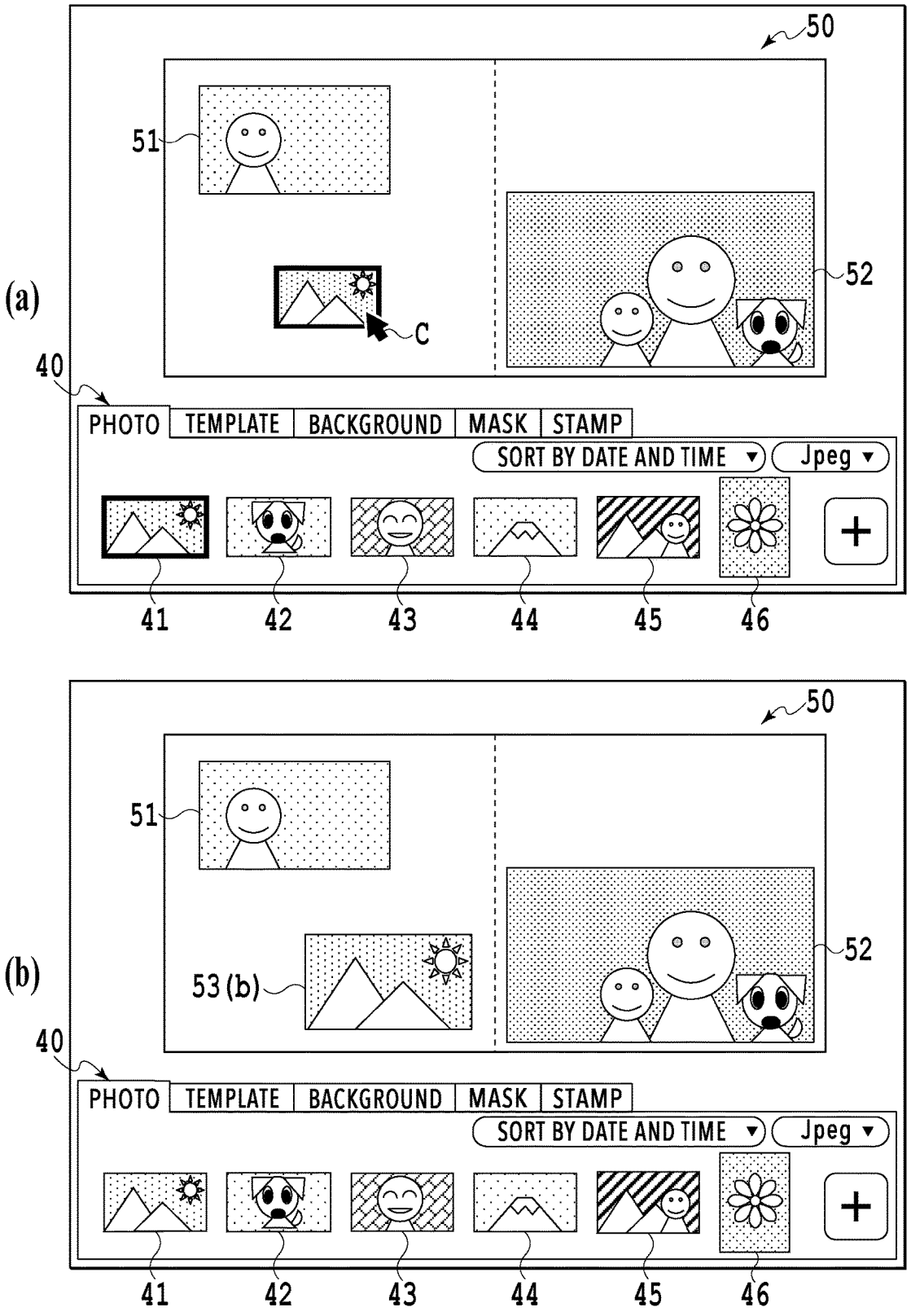

(a)
50
51
52
C
40
PHOTO
TEMPLATE
BACKGROUND
MASK
STAMP
SORT BY DATE AND TIME
Jpeg
41
42
43
44
45
46
(b)
50
51
52
53 (b)
40
PHOTO
TEMPLATE
BACKGROUND
MASK
STAMP
SORT BY DATE AND TIME
Jpeg
41
42
43
44
45
46

FIG.16B

STORAGE MEDIUM, INFORMATION PROCESSING APPARATUS, AND INFORMATION PROCESSING METHOD THAT DISPLAY LEFT AND RIGHT PAGE REGIONS OF A DOUBLE-PAGE ALBUM SPREAD

BACKGROUND

Cross-Reference to Priority Application

This application claims the benefit of Japanese Patent Application No. 2022-154022, filed Sep. 27, 2022, which is hereby incorporated by reference herein in its entirety.

Field

The present disclosure relates to a technique for arranging and designing an object such as an image or a text.

Description of the Related Art

In layout software for arranging and designing objects such as images and texts, a technique for implementing automatic layout of objects to generate a layout image has been known. Japanese Patent Laid-Open No. 2021-27555 discloses a function of evaluating templates used for a layout and generating a layout image having a high aesthetic property in a case of implementing such automatic layout. This allows the user to easily achieve a layout having a high aesthetic property.

On the other hand, in a case of adding or deleting an object to or from a layout image generated in this way, objects in a page are rearranged based on a new template, to generate a new layout image. That is, while automatic layout allows the user to easily achieve a layout, there is a case when the layout during editing is changed irrespective of the user's intention when a new object is added or an existing object is deleted.

In view of this, Japanese Patent Laid-Open No. 2018-55533 discloses a technique of arranging an additional object in a blank region in a page without changing an existing layout when the object is added. According to Japanese Patent Laid-Open No. 2018-55533, an existing layout can be prevented from being changed when an object is added.

SUMMARY

However, in Japanese Patent Laid-Open No. 2018-55533, the user cannot arrange an additional object in conformity with the state of arrangement of objects other than the additional object with one operation. That is, in the case of arranging an object in a desired portion within a page, it is necessary for the user to once arrange the object at any position, and, thereafter, move the arranged object or adjust the sizes, which is burdensome for the user.

In view of the above-described problem, an object of the present disclosure is to improve convenience in a case when a user is conducting a layout operation.

An embodiment of the present invention is a non-transitory computer readable storage medium storing a program that causes a computer to execute an information processing method comprising a first displaying step of displaying a graphical user interface having a first region in which to arrange an object and a second region in which to display a list of an object that can be arranged in the first region, and

a deriving step of deriving a candidate region in which to arrange an object selected by a user in the first region, based on a state of arrangement of an object other than the selected object in the first region.

Further features of the present invention will become apparent from the following description of exemplary embodiments with reference to the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram showing a configuration of a printing system;

FIG. **2** is a diagram showing a created album;

FIG. **3** is a flowchart of processing executed by an album editing application;

FIG. **4** is a diagram showing a layout mode selection screen;

FIG. **5** is a diagram showing an editing screen;

FIG. **6** is a diagram showing an environment setting screen;

FIG. **7**A and FIG. **7**B are flowcharts of processing of adding an object;

FIG. **8**A and FIG. **8**B are diagrams showing the editing screen;

FIG. **9** is a flowchart of processing of adding an object;

FIG. **10**A, FIG. **10**B, and FIG. **10**C are diagrams showing an editing screen;

FIG. **11**A and FIG. **11**B are flowcharts of processing of adding an object;

FIG. **12**A and FIG. **12**B are diagrams showing the editing screen;

FIG. **13**A and FIG. **13**B are flowcharts of processing of adding an object;

FIG. **14**A and FIG. **14**B are diagrams showing the editing screen;

FIG. **15** is a flowchart of processing of adding an object; and

FIG. **16**A and FIG. **16**B are diagrams showing an editing screen.

DESCRIPTION OF THE EMBODIMENTS

Hereafter, embodiments of the present disclosure will be described with reference to the attached drawings. Note that the idea of the present disclosure can be applied to layout software in general such as a photo layout application, a photo album editing application, a poster production application, and presentation preparation software. In the following embodiments, a photo album editing application will be described as an example.

First Embodiment

<Information Processing Apparatus>

FIG. **1** is a block diagram showing an example of a hardware configuration of a printing system **1000** in the present embodiment. First, a configuration of an information processing apparatus **1004** will be described. A program of an album editing application **90** (a program of an object layout) is stored in a ROM **1009** of the information processing apparatus **1004**. The album editing application **90** is capable of creating album data for creating an album **10** (called a photo album, a photo book, or the like) as shown in FIG. **2**, based on inputted image data. Note that, although the present embodiment is described with a printed product as the album **10**, the printed product is not limited to an

album. The present embodiment can be applied to layout software in general, which outputs not only the album **10**, but any printed products.

The information processing apparatus **1004** is capable of outputting album data as print data to a printer **1005** and uploading album data to an external server **1002**. Note that the print data may be the album data itself, or the print data may contain the album data and other data, or the print data may be created based on the album data. The information processing apparatus **1004** includes the ROM **1009**, a RAM **1010**, and a CPU **1011**. In addition, to the information processing apparatus **1004**, the printer **1005**, a monitor **1006**, an input apparatus **1007**, and a storage apparatus **1008** are connected. In addition, the information processing apparatus **1004** includes an input and output interface (not shown) for connection with a network **1003**. Note that the album data contains a plurality of pieces of double-page spread data. In addition, in each double-page spread data of a plurality of double-page spreads, one or a plurality of pieces of image data are arranged.

The CPU **1011** is a central processing unit, and executes an operating system program (here after, abbreviated as the OS) stored in the storage apparatus **1008**, the ROM **1009**, or the RAM **1010** to control the entire information processing apparatus **1004** (display control, and the like). In addition, the CPU **1011** executes programs stored in the ROM **1009** or the RAM **1010** to execute each function of the information processing apparatus **1004**. In the ROM **1009**, each program is stored. The RAM **1010** is a random access memory, and is used as a work memory of the CPU **1011**. In addition, in the case when the RAM **1010** is a non-volatile RAM, each program is stored in the RAM **1010**.

The information processing apparatus **1004** is capable of communicating with an external server **1002** via the network **1003**. The external server **1002** includes an input and output interface (not shown) for connection with a printer **1001**, and is capable of communicating with the printer **1001** via the input and output interface.

Album data created in the information processing apparatus **1004** is uploaded to the external server **1002** via the network **1003**. The external server **1002** transmits print data based on the uploaded album data to the printer **1001**. For example, the external server **1002** receives orders for creation of albums, manages orders for creation of albums, and creates print data based on album data and instructs the printer **1001** to make prints. The user uploads album data created by using the information processing apparatus **1004** to the external server **1002** and conducts a necessary procedure for purchase of an album. In the case when these operations of the user are properly conducted, the external server **1002** transmits print data based on the album data to the printer **1001**. Thereafter, a printed product printed by the printer **1001** is bound by a post-processing apparatus **1400**. In a binding step, the printed product is divided into a page of a front cover (referred to as a front cover page) and pages other than the front cover, and the front cover page is formed by a front cover manufacturing apparatus **1500** folding end portions of the page against thick paper. In addition, the pages other than the front cover are trimmed by a trimming apparatus **1600** for the purpose of aligning the end portions. Thereafter, the front cover page and the pages other than the front cover are bound by a binding apparatus **1700** into an album **10** as shown in FIG. **2**, which is delivered to the user.

The printer **1005** executes printing based on the print data containing album data created in the information processing apparatus **1004**. The printed product printed in the printer **1005** may be bound by the user. The monitor **1006** is a display apparatus for displaying image information outputted by the information processing apparatus **1004**. The input apparatus **1007** is an input apparatus such as a keyboard or a pointing device for conducting input to the information processing apparatus **1004**. Depending on the form, the input apparatus is integrated with a monitor, and there is also a touch panel with which input is conducted by directly touching a monitor. The storage apparatus **1008** is a storage apparatus such as an HDD or an SSD for storing image data, templates, and the like. Note that the configuration shown in FIG. **1** is only illustrative, and another configuration may be employed. For example, a configuration in which the information processing apparatus **1004** includes the monitor **1006**, the input apparatus **1007**, and the storage apparatus **1008** may be employed.

<Album Editing Application>

Next, processing of the album editing application of the present embodiment will be described with reference to FIGS. **3** to **6**.

Once the user activates the album editing application **90**, the processing of FIG. **3** starts. Note that each step of FIG. **3** is executed by the CPU **1011** reading a program involved in the processing of the flowchart from a memory.

First, in step S**1**, the CPU **1011** receives an instruction for product selection made by the user, and sets the size of the album, the type of a cover, the binding form, the number of pages of the entire album, the type of paper, and the like. Here after, "step S-" is abbreviated as "S-".

In S**2**, the CPU **1011** receives an instruction for image selection made by the user. Once the user selects a desired folder, a list screen of image data stored in the selected folder. In the case when the user has selected image data via this screen, the CPU **1011** executes processing of S**2**.

In S**3**, the CPU **1011** determine whether an automatic layout mode has been selected as a layout mode in response to the operation of the user in a layout mode selection screen **20** of FIG. **4**. If the result of the determination in this step is true, that is, if pressing of a determination button **23** is detected after pressing of an automatic layout button **21** of FIG. **4**, the processing proceeds to S**4**. On the other hand, if the result of the determination in this step is false, that is, if pressing of the determination button **23** is detected after pressing of a manual layout button **22** of FIG. **4**, the processing proceeds to S**5**.

If the result of determination in S**3** is true (that is, if the automatic layout mode is selected), in S**4**, the CPU **1011** executes automatic layout processing. Specifically, the CPU **1011** first evaluates the image data indicated by the instruction for image selection received in S**2**, and scores each piece of the image data. Then, image data to be arranged in album data is selected based on the score assigned to each piece of the image data. The CPU **1011** lays out the selected image data in a double-page spread region **50** (see FIG. **5**). The double-page spread region **50** is an arrangement region for arranging objects (images in the present example), and is also an editing region for the user to edit the objects arranged in this arrangement region. Note that, in the automatic layout processing, the processing to determine a double-page spread in which image data is arranged and the processing to determine the size of image data to be arranged are automatically conducted. In addition, if the automatic layout mode is selected (YES in S**3**), the CPU **1011** lays out all the image data indicated by the instruction for image selection received in S**2** in any double-page spread.

If the result of the determination in S**3** is false (that is, if the manual layout mode is selected), the user conducts the selection of image data to be arranged in album data, the

determination of a double-page spread in which the image data is to be arranged, and the determination of the size of the image data. For example, if the manual layout mode is selected (NO in S3), among the image data indicated by the instruction for image selection received in S2, only images selected by the user in editing processing (S5), which will be described later, are laid out in a double-page spread.

Once the determination processing on whether the automatic layout mode has been selected (S3) or the automatic layout processing (S4) ends, in S5, the CPU **1011** executes the editing processing in accordance with the operation of the user. In the case of executing the editing processing via the automatic layout processing (S4), the CPU **1011** displays an editing screen **30** (see FIG. **5**) containing a double-page spread in which the image data has been laid out. On the other hand, in the case of executing the editing processing without via the automatic layout processing (S4), the CPU **1011** displays the editing screen **30**. Note that, in the case when the editing processing without via the automatic layout processing (S4) is executed and the editing screen **30** is first displayed, no image data has been arranged in the double-page spread region **50**. In addition, the editing screen **30** is provided by the album editing application **90**.

The editing screen **30** has a check box **31** for switching the layout mode, an order button **70**, and an environment setting button **80**. In addition, the editing screen **30** has an image selection region **40**. The check box **31** receives selection of which of the automatic layout and the manual layout is conducted.

In the image selection region **40**, a list of objects that can be arranged in the double-page spread region **50** is displayed. In the graphical user interface shown in FIG. **5**, images **41** to **46** are displayed in the image selection region **40** as an image data group indicated by the instruction for image selection received in the aforementioned S2. In addition, the editing screen **30** has the double-page spread region **50** for an album. Upon detecting a drag and drop operation from the image data in the image selection region **40** to the double-page spread region **50** by the user, the CPU **1011** arranges and displays the image data subjected to the detected drag and drop operation in the double-page spread region **50**. Note that FIG. **5** shows a result of the user arranging the image **51** and the image **52** in the double-page spread region **50** of the editing screen **30** in an initial state.

In addition, the album editing application **90** has an environment setting function with which the user can switch the display in conducting the editing work in accordance with the user's preference. The environment setting button **80** is used by the user to switch the display in conducting the editing work in accordance with the user's preference. Upon receiving the pressing of the environment setting button **80**, the CPU **1011** displays an environment setting screen **81** shown in FIG. **6** in place of the editing screen **30** (or together with the editing screen **30**). Each check box of the environment setting screen **81** receives selection by the user. In addition, in the case when the user presses a closing button **83** after setting via the environment setting screen **81**, the CPU **1011** receives the user input, and deletes the displayed environment setting screen **81** and transitions to the state where input can be made via the editing screen **30**. Note that items that can be switched in the environment setting screen **81** are not limited to six items shown in FIG. **6**, and the items can be changed in accordance with the type of an application.

After the end of the album editing, the user presses the order button **70**. Thereafter, in S6, the CPU **1011** receives the order instruction of the user, and completes the series of processing. The outline of the processing of the album editing application is as described above.

<Display Control on Arrangement Candidate Regions for Additional Object in Accordance with Layout Condition>

Subsequently, a display control in accordance with a layout condition of candidates for a region (referred to as arrangement candidate regions) for arranging an additional object, which is a characteristic of the present embodiment, will be described using FIG. **7**A and FIG. **7**B, as well as FIG. **8**A and FIG. **8**B. In the present embodiment, in the case when the user adds the image data in the image selection region **40** to the double-page spread region **50** through drag and drop, arrangement candidate regions are derived and displayed in the double-page spread region **50**. Note that FIG. **7**A and FIG. **7**B are flowcharts showing the processing of the present embodiment, and FIG. **8**A and FIG. **8**B each shows editing screens of the present embodiment.

In the present embodiment, as shown in (a) of FIG. **8**A, as an example of an editing operation conducted in the double-page spread region **50** of an album, a case when an image is selected and added from the image selection region **40** in the state where the image **51** and the image **52** are arranged in the double-page spread region **50** of the album will be described. Note that the technical idea of the present embodiment is not limited to only the case when an image is added from the image selection region **40**, but may be applied, for example, to the case where an image present in the double-page spread region **50** is moved within the same region.

In the case when an instruction by the user regarding addition of an image from the image selection region **40** to the double-page spread region **50** is detected, image addition processing of FIG. **7**A is started.

In S**101**, the CPU **1011** detects an aspect ratio of an object to be added. In the present embodiment, an aspect ratio of an image to be added from the image selection region **40** is detected. For example, in the case when the image **41** is added as shown in (b) of FIG. **8**A, the aspect ratio of the image **41** is detected.

Subsequently, in S**102**, the CPU **1011** derives an arrangement candidate region corresponding to the object to be added, as a partial region within a predetermined region range. In the present embodiment, an arrangement candidate region for the image **41** in the double-page spread region **50** of the album is derived (the position and size of the arrangement candidate region for the image **41** are determined). An example of a specific deriving method will be described using the flowchart shown in FIG. **7**B and the editing screen shown in (b) of FIG. **8**A.

In S**1021**, in the case when there is an existing object which has already been arranged, the CPU **1011** derives the position of the existing object. In the present embodiment, position information on the respective image regions of the image **51** and the image **52** present in the double-page spread region **50** is obtained.

Next, in S**1022**, the CPU **1011** derives a blank region in which no existing object has been arranged as a partial region within the predetermined region range. In the present embodiment, a blank region in the double-page spread region **50** is derived.

Subsequently, in S**1023**, the CPU **1011** derives an arrangement candidate region that has the same center line as the center line of an existing object in the horizontal direction (the X direction) and has upper and lower margins uniform with the margins of the existing object. Specifically, in the present embodiment, an arrangement candidate region **A1** that has uniform upper and lower margin widths **Y1** is

derived on an extension line of the center line L1 of the image **51**. Note that, in the present example, the arrangement candidate region means a slot frame.

Moreover, in S**1024**, the CPU **1011** determines whether there is another blank region that can be an arrangement candidate region (that is, that has a predetermined size or more). If the result of the determination in this step is true, the CPU **1011** executes the processing of S**1023** again. Note that, in the present embodiment, specifically, as shown in (b) of FIG. **8**A, the CPU **1011** derives an arrangement candidate region A**2** that has uniform upper and lower margin widths Y**2** on an extension line of the center line L**2** of the image **52** in S**1023**.

On the other hand, if the result of the determination in S**1024** is false, the CPU **1011** ends the processing of S**102** and proceeds to S**103**. Note that the determination on whether there is a blank region is conducted, for example, by using predetermined thresholds for blank regions. As the thresholds for blank regions a combination of thresholds for the length (width) in the horizontal direction (the X direction) and the length (height) in the vertical direction (the Y direction) can be considered, and, as an example, such thresholds are set like a width of 30 mm× a height of 30 mm.

In S**103**, the CPU **1011** displays the arrangement candidate region derived in S**102**. In the present embodiment, the CPU **1011** displays the arrangement candidate region A**1** and the arrangement candidate region A**2** for the image **41**. Note that, although in the present embodiment, the arrangement candidate regions are indicated by dotted lines, the display method is not limited to this, and another display method, such as a dashed dotted line, may be employed.

Subsequently, in S**104**, the CPU **1011** determines whether the image **41** has been dropped in the arrangement candidate region A**1** or the arrangement candidate region A**2**. Note that, in the present embodiment, the coordinates of the cursor C are used as a reference for determining the drop position. That is, in the case when the image **41** is dropped in the state where the cursor C is present within the range of the arrangement candidate region A**1** or the arrangement candidate region A**2**, the result of the determination in this step becomes true.

If the result of the determination in S**104** is true, in S**105**, the CPU **1011** arranges the image **41**, which is the object to be added, in conformity with the arrangement candidate region A**1** or the arrangement candidate region A**2**. For example, as in (b) of FIG. **8**A, in the case when dropping processing into the arrangement candidate region A**1** is detected in the state where the cursor C is on the arrangement candidate region A**1**, the image **41** is arranged as indicated by an image **53**(*a*) in (c) of FIG. **8**A.

On the other hand, if the result of the determination in S**104** is false, the CPU **1011** proceeds to S**106**. In the case when the image **41** has not been dropped in the arrangement candidate region A**1** or the arrangement candidate region A**2**, in S**106**, the CPU **1011** arranges the image **41** at any position at the time of dropping in accordance with a predetermined size that is set in advance. As an example, the predetermined size is set as a size that has a width of 100 mm and a fixed aspect ratio. Specifically, as shown in (a) of FIG. **8**B, in the case when dropping processing of the image **41** is detected in the state where the cursor C is present outside the arrangement candidate region A**1** or the arrangement candidate region A**2**, the CPU **1011** arranges the image **41** at any position, as indicated by an image **53**(*b*) in (b) of FIG. **8**B. The any position mentioned herein is a position including at least the position at which the cursor C was present. In this way, the user can arrange an image in accordance with a derive arrangement candidate region, or can arrange an image at any position.

Once the processing of adding an image is completed, the processing of the flowchart of FIG. **7**A ends. The flow of the series of the processing of the present embodiment is as described above.

Note that, in the case when a continuous instruction of adding an image to the double-page spread region **50** is detected, the processing of FIG. **7**A is executed again. In this event, the CPU **1011** derives an arrangement candidate region in the double-page spread region **50** again, in accordance with the processing of the flowchart of FIG. **7**A. For example, in the case when an image **43** is added as shown in (d) of FIG. **8**A, the CPU **1011** displays the arrangement candidate region A**2**, and, in the case when dropping processing to the arrangement candidate region A**2** is detected, the image **43** is arranged as indicated by an image **54** shown in (e) of FIG. **8**A.

Note that, in the present embodiment, the configuration in which an arrangement candidate region is derived or displayed at the time of adding an image is described as an example, the configuration is not limited to this. For example, an arrangement candidate region may have been derived in advance based on an aspect ratio of each object in the image selection region **40**. Then, in response to selection of any of the objects in the image selection region **40**, the arrangement candidate region derived based on the aspect ratio of the selected object may be displayed.

Advantageous Effects of the Present Embodiment

As described above, in the present embodiment, a blank region is derived based on the arrangement of existing objects, which have already arranged within a predetermined region range, and an arrangement candidate region for an object to be added is displayed. In addition, the arrangement of the new object is conducted in accordance with a drag operation to the arrangement candidate region. This makes it possible to efficiently achieve a layout having high aesthetic property in which the centers and upper and lower margins of images have been aligned in accordance with the state of arrangement of objects, and to improve the convenience for the user at the time of editing work.

Second Embodiment

Hereafter, a second embodiment will be described. In the present embodiment, a display form of an arrangement candidate region is different from the first embodiment. Specifically, while a rectangular frame surrounded by a dashed line is displayed as the arrangement candidate region in the first embodiment (see (b) of FIG. **8**A), a preview image is also displayed in a frame in an arrangement candidate region in the present embodiment. Note that, in the following description, the same configurations as those in the aforementioned embodiment are denoted by the same reference signs and the same names, and a description thereof will be omitted as appropriate.

<Display Control on Arrangement Candidate Regions for Additional Object in Accordance with Layout Condition>

Hereafter, a display control on an arrangement candidate region in the present embodiment will be described using FIG. **9** and FIG. **10**A, FIG. **10**B, and FIG. **10**C. FIG. **9** is a flowchart showing processing of the present embodiment, and FIG. **10**A, FIG. **10**B, and FIG. **10**C show an editing screen of the present embodiment. Note that, each step of

FIG. **9** is executed by the CPU **1011** reading and processing a program involved in the processing of the flowchart from a memory. In addition, a series of processing of the album editing application **90** is the same as that of the first embodiment (see FIG. **3**), and, thus, the detailed description thereof will be omitted.

In the present embodiment, as shown in FIG. **10**A, as an example of addition of an object, a case when an image is selected and added from the image selection region **40** in the state where the image **51** and the image **52** are arranged in the double-page spread region **50** of the album will be described.

In a case when an instruction by the user regarding addition of an image from the image selection region **40** to the double-page spread region **50** is detected, image addition processing of FIG. **9** is started.

In S**201**, the CPU **1011** detects an aspect ratio of an object to be added. In the present embodiment, an aspect ratio of an image to be added from the image selection region **40** is detected. For example, in the case when the image **41** is added as shown in FIG. **10**B, the aspect ratio of the image **41** is detected.

Subsequently, in S**202**, the CPU **1011** derives an arrangement candidate region corresponding to the object to be added, as a partial region within a predetermined region range. In the present embodiment, an arrangement candidate region for the image **41** in the double-page spread region **50** of the album is derived. Since the specific deriving method has already been described in the first embodiment, the detailed description thereof will be omitted.

In S**203**, the CPU **1011** displays the arrangement candidate region derived in S**202**. In the present embodiment, the CPU **1011** displays an arrangement candidate region B**1** and an arrangement candidate region B**2** for the image **41**. In addition, in the present embodiment, the CPU **1011** displays a preview image of the image **41** during the drag operation in the arrangement candidate region B**1** and the arrangement candidate region B**2**. This allows the user to determine the arrangement while checking the preview image after the arrangement in the case of adding the image.

Subsequently, in S**204**, the CPU **1011** determines whether the image **41** has been dropped in the arrangement candidate region B**1** or the arrangement candidate region B**2**. Note that, in the present embodiment, the coordinates of the cursor C are used as a reference for determining the drop position.

If the result of the determination in S**204** is true, in S**205**, the CPU **1011** arranges the image **41**, which is the object to be added, in conformity with the arrangement candidate region B**1** or the arrangement candidate region B**2**. For example, as in FIG. **10**B, in the case when dropping processing into the arrangement candidate region B**1** is detected in the state where the cursor C is on the arrangement candidate region B**1**, the image **41** is arranged as indicated by an image **53**(*a*) in FIG. **10**C.

On the other hand, if the result of the determination in S**204** is false, the CPU **1011** proceeds to S**206**. In the case when the image **41** has not been dropped in the arrangement candidate region B**1** or the arrangement candidate region B**2**, in S**206**, the CPU **1011** arranges the image **41** at any position at the time of dropping in accordance with a predetermined size that is set in advance. Since this processing is the same as the processing of S**106** in the first embodiment, the detailed description thereof will be omitted.

Once the processing of adding an image is completed, the processing of the flowchart of FIG. **9** ends. The flow of the series of the processing of the present embodiment is as described above. Note that, since the processing in the case where a continuous instruction of adding an image to the double-page spread region **50** is detected is the same as in the first embodiment, the detailed description thereof will be omitted.

Advantageous Effects of the Present Embodiment

As described above, in the present embodiment, a blank region is derived based on the arrangement of existing objects, which have already arranged within a predetermined region range, and an arrangement candidate region for an object to be added is displayed. In addition, a preview image of an object to be added is displayed together with the arrangement candidate region. This makes it possible to arrange an image, checking the preview image, while efficiently achieving a layout having high aesthetic property in which the centers and upper and lower margins of images have been aligned in accordance with the state of arrangement of objects, and to improve the convenience for the user at the time of editing work.

Third Embodiment

Hereafter, a third embodiment will be described. The present embodiment is such that an arrangement candidate region is changed in accordance with the position of a cursor, in contrast to the first embodiment.

<Display Control on Arrangement Candidate Regions for Additional Object in Accordance with Layout Condition>

Hereafter, a display control on an arrangement candidate region in the present embodiment will be described using FIG. **11**A and FIG. **11**B, as well as FIG. **12**A and FIG. **12**B. FIG. **11**A and FIG. **11**B are flowcharts showing the processing of the present embodiment, and FIG. **12**A and FIG. **12**B each shows editing screens of the present embodiment. Note that, each step of FIG. **11**A and FIG. **11**B is executed by the CPU **1011** reading and processing a program involved in the processing of the flowchart from a memory. In addition, a series of processing of the album editing application **90** is the same as that of the first embodiment (see FIG. **3**), and thus the detailed description thereof will be omitted.

In the present embodiment, as shown in (a) of FIG. **12**A, as an example of addition of an object, a case when an image is selected and added from the image selection region **40** in the state where no image is arranged in the double-page spread region **50** of the album will be described. Note that the technical idea of the present embodiment is not limited to the state where no image is arranged in the double-page spread region **50**, but may be applied to the state where an image is arranged, as in the first embodiment or the second embodiment.

In the case when an instruction by the user regarding addition of an image from the image selection region **40** to the double-page spread region **50** is detected, image addition processing of FIG. **11**A is started.

In S**301**, the CPU **1011** detects an aspect ratio of an object to be added. In the present embodiment, an aspect ratio of an image to be added from the image selection region **40** is detected. For example, in the case when the image **44** is added as shown in (b) of FIG. **12**A, the aspect ratio of the image **44** is detected.

Subsequently, in S**302**, the CPU **1011** derives an arrangement candidate region corresponding to the object to be added, as a partial region within a predetermined region range. In the present embodiment, an arrangement candidate

region for the image **44** in the double-page spread region **50** of the album is derived. An example of a specific deriving method will be described using FIG. **11**B as well as the editing screens of FIG. **12**A and FIG. **12**B.

In S**3021**, in the case when there is an existing object which have already been arranged, the CPU **1011** derives the position of the existing object. In the present embodiment, the position of an image region for an image present in the double-page spread region **50** is derived. Note that, since there is no image as an existing object in the editing screen of (a) of FIG. **12**A, there is no position information on an image obtained in this step.

Next, in S**3022**, the CPU **1011** derives a blank region in which no existing object has been arranged as a partial region within the predetermined region range. In the present embodiment, a blank region in the double-page spread region **50** is derived.

Subsequently, in S**3023**, the CPU **1011** derives an arrangement candidate region A**3** expanding across the double-page spread as shown in (b) of FIG. **12**A. Specifically, information for displaying a slot frame of a double-page spread is generated.

Next, in S**3024**, the CPU **1011** derives an arrangement candidate region A**4** corresponding to the left page as shown in (a) of FIG. **12**B. Specifically, information for displaying a slot frame of the left page is generated.

Moreover, in S**3025**, the CPU **1011** derives an arrangement candidate region (not shown) corresponding to the right page, and ends the processing of deriving an arrangement candidate region. Specifically, information for displaying a slot frame of the right page is generated. After this step, the CPU **1011** proceeds to S**303**.

In S**303**, the CPU **1011** detects coordinates as position information on the cursor C operated by the user to add an image.

In S**304**, the CPU **1011** switches and displays an arrangement candidate region in conformity with the position of the cursor. Specifically, as shown in (b) of FIG. **12**A, in the case when it is determined that the cursor C is present within a range of a predetermined distance (supposed to be X mm) symmetrically from the center line L of the double-page spread region **50** based on the coordinates of the cursor C, the CPU **1011** displays the arrangement candidate region A**3** expanding across the double-page spread. Note that X may be set as desired, and, for example, it is supposed that X=50 mm. In addition, as shown in (a) of FIG. **12**B, in the case when it is determined that the cursor C is present within a range of X mm or more away to the left from the center line L of the double-page spread region **50** based on the coordinates of the cursor C, the CPU **1011** displays the arrangement candidate region A**4** for arrangement on the left page. Moreover, in the case when it is determined that the cursor C is present within a range of X mm or more away to the right from the center line L of the double-page spread region **50** based on the coordinates of the cursor C, the CPU **1011** displays an arrangement candidate region for arrangement on the right page.

Subsequently, in S**305**, the CPU **1011** determines whether the image has been dropped in the arrangement candidate region. Note that, in the present embodiment, the coordinates of the cursor C are used as a reference for determining the drop position.

If the result of the determination in S**305** is true, in S**306**, the CPU **1011** arranges the image, which is the object to be added, in conformity with the arrangement candidate region. For example, as shown in (b) of FIG. **12**A, in the case when the dropping processing is detected in the state where the cursor C is placed within the range of X mm symmetrically from the center line L of the double-page spread region **50**, the image is arranged as indicated by an image **55**(*a*) in (c) of FIG. **12**A in conformity with the arrangement candidate region A**3**. In addition, as shown in (a) of FIG. **12**B, in the case when the dropping processing is detected in the state where the cursor C is X mm or more away to the left from the center line L of the double-page spread region **50**, the image is arranged as indicated by an image **55**(*b*) in (b) of FIG. **12**B in conformity with the arrangement candidate region A**4**. That is, the displayed arrangement candidate region and the arrangement of an image at the time of dropping are switched in accordance with the coordinates of the cursor C at the time of adding an image.

On the other hand, if the result of the determination in S**305** is false, the CPU **1011** proceeds to S**307**. In the case when the image has not been dropped in the arrangement candidate region, in S**307**, the CPU **1011** arranges the image at any position at the time of dropping in accordance with a predetermined size that is set in advance. Since this processing is the same as the processing of S**106** in the first embodiment, the detailed description thereof will be omitted.

Once the processing of adding an image is completed, the processing of the flowchart of FIG. **11**A ends. The flow of the series of the processing of the present embodiment is as described above.

Advantageous Effects of the Present Embodiment

As described above, in the present embodiment, the arrangement candidate region is switched and displayed, or the arrangement of an image at the time of dropping is switched based on the coordinates of the cursor C at the time of adding an image. This makes it possible to efficiently achieve a layout having high aesthetic property in accordance with a simple operation at the time of adding an image, and to improve the convenience for the user at the time of editing work.

Fourth Embodiment

Hereafter, a fourth embodiment will be described. In the third embodiment, one arrangement candidate region with respect to specific one region is derived and displayed. In contrast, in the present embodiment, a plurality of arrangement candidate regions with respect to the same region are derived and displayed, and the display of the arrangement candidate regions is switched in accordance with the position of the cursor and the aspect ratio of an image.

<Display Control on Arrangement Candidate Regions for Additional Object in Accordance with Layout Condition>

Hereafter, a display control on an arrangement candidate region in the present embodiment will be described using FIG. **13**A and FIG. **13**B as well as FIG. **14**A and FIG. **14**B. FIG. **13**A and FIG. **13**B are flowcharts showing the processing of the present embodiment, and FIG. **14**A and FIG. **14**B each shows editing screens of the present embodiment. Note that, each step of FIG. **13**A and FIG. **13**B is executed by the CPU **1011** reading and processing a program involved in the processing of the flowchart from a memory. In addition, a series of processing of the album editing application **90** is the same as that of the first embodiment (see FIG. **3**), and, thus, the detailed description thereof will be omitted.

In the present embodiment, as shown in (a) of FIG. **14**A, as an example of addition of an object, a case when an image

is added from the image selection region **40** in the state where no image is arranged in the double-page spread region **50** of the album will be described. Note that the present embodiment is not limited to the state where no image is arranged in the double-page spread region **50**, but may be applied to the state where an image is arranged as in the first embodiment or the second embodiment.

In the case when an instruction by the user regarding addition of an image from the image selection region **40** to the double-page spread region **50** is detected, image addition processing of FIG. **13**A is started.

In S**401**, the CPU **1011** detects an aspect ratio of an object to be added. In the present embodiment, an aspect ratio of an image to be added from the image selection region **40** is detected. For example, in the case when the image **46** is added as shown in (b) of FIG. **14**A, the aspect ratio of the image **46** is detected.

Subsequently, in S**402**, the CPU **1011** derives an arrangement candidate region for arranging the object to be added, as a partial region within a predetermined region range. In the present embodiment, an arrangement candidate region for the image **46** in the double-page spread region **50** of the album is derived. An example of a specific deriving method will be described using FIG. **13**B and the editing screen of (b) of FIG. **14**A.

In S**4021**, in the case when there is an existing object which has already been arranged, the CPU **1011** derives position information on the existing object. In the present embodiment, the position of an image region for an image present in the double-page spread region **50** is derived. Note that, since there is no image as an existing object in the editing screen of (b) of FIG. **14**A, there is no position information on an image obtained in this step.

Next, in S**4022**, the CPU **1011** derives a blank region in which no existing object has been arranged as a partial region within the predetermined region range. In the present embodiment, a blank region in the double-page spread region **50** is derived.

Subsequently, in S**4023**, the CPU **1011** derives a portrait (vertically long) arrangement candidate region A**5** as shown in (b) of FIG. **14**A.

Next, in S**4024**, the CPU **1011** derives a landscape (horizontally long) arrangement candidate region A**6** as shown in (b) of FIG. **14**A, and ends the processing of deriving an arrangement candidate region. After this step, the CPU **1011** proceeds to S**403**.

In S**403**, the CPU **1011** displays the arrangement candidate region A**5** and the arrangement candidate region A**6** in the same region (the right page) as a plurality of arrangement candidate regions having different shapes.

In S**404**, the CPU **1011** detects coordinates as position information on the cursor C operated by the user to add an image.

In S**405**, the CPU **1011** displays, with emphasis, an arrangement candidate region in conformity with the position of the cursor. Specifically, as shown in (c) of FIG. **14**A, in the case when it is determined that the cursor C is present within a range of the portrait (vertically long) arrangement candidate region A**5** based on the coordinates of the cursor C, the CPU **1011** displays with emphasis the portrait (vertically long) arrangement candidate region A**5**. On the other hand, as shown in (a) of FIG. **14**B, in the case when it is determined that the cursor C is present within a range of the landscape (horizontally long) arrangement candidate region A**6** based on the coordinates of the cursor C, the CPU **1011** displays with emphasis the landscape (horizontally long) arrangement candidate region A**6**. Note that, although, in the present embodiment, the display with emphasis is made using the thickness of the frame line of the arrangement candidate region, the method for the display with emphasis is not limited to this, and another method may be employed.

Subsequently, in S**406**, the CPU **1011** determines whether the image has been dropped in the arrangement candidate region. Note that, in the present embodiment, the coordinates of the cursor C are used as a reference for determining the drop position.

If the result of the determination in S**406** is true, in S**407**, the CPU **1011** determines whether the image has been dropped in a region where a plurality of arrangement candidate regions overlap. The region where a plurality of arrangement candidate regions overlap is, for example, a region near the center where the arrangement candidate region A**5** and the arrangement candidate region A**6** overlap in (b) of FIG. **14**A.

If the result of the determination in S**407** is true, in S**408**, the CPU **1011** arranges the image in conformity with an arrangement candidate region having an aspect ratio close to that of the image to be added. For example, as shown in (c) of FIG. **14**A, in the case when a vertically long image **46** has been dropped in the region where the arrangement candidate region A**5** and the arrangement candidate region A**6** overlap, the CPU **1011** arranges the image **46** as indicated by an image **56**(*a*) shown in (d) of FIG. **14**A in conformity with the vertically long arrangement candidate region A**5**. That is, an appropriate arrangement candidate region is selected in accordance with the aspect ratio of the image to be added.

On the other hand, if the result of the determination in S**407** is false, the CPU **1011** proceeds to S**409**. In the case when an image has not been dropped in a region where a plurality of arrangement candidate regions overlap, that is, in the case when an image has been dropped in specific one arrangement candidate region, in S**409**, the CPU **1011** arranges the image in conformity with the arrangement candidate region. For example, as shown in (a) of FIG. **14**B, in the case when dropping processing is detected in the state where the cursor C is on the arrangement candidate region A**6**, the CPU **1011** arranges the image as indicated by an image **56**(*b*) in (b) of FIG. **14**B in conformity with the arrangement candidate region A**6**. Note that, in the present embodiment, since the aspect ratio of the image **46** and the aspect ratio of the arrangement candidate region A**6** are different, the image **46** is trimmed and arranged.

If the result of the determination in S**406** is false, the CPU **1011** proceeds to S**410**. In the case when the image has not been dropped in the arrangement candidate region, in S**410**, the CPU **1011** arranges the image at any position at the time of dropping in accordance with a predetermined size that is set in advance. For example, as shown in (c) of FIG. **14**B, in the case when dropping processing of the image **46** is detected in the state when the cursor C is present outside the arrangement candidate region A**5** or the arrangement candidate region A**6**, the CPU **1011** arranges the image **46** at any position, as indicated by an image **56**(*c*) in (d) of FIG. **14**B. In this case, the aspect ratio of the image is maintained.

Once the processing of adding an image is completed, the processing of the flowchart of FIG. **13**A ends. The flow of the series of the processing of the present embodiment is as described above.

Advantageous Effects of the Present Embodiment

As described above, in the present embodiment, a plurality of arrangement candidate regions with respect to the same region are displayed, and the arrangement candidate

regions to be displayed and the arrangement of the image at the time of dropping are switched in accordance with the position of the cursor and the aspect ratio of the image. This makes it possible to efficiently achieve a layout having high aesthetic property in accordance with the selection from a plurality of candidates at the time of adding an image and the aspect ratio of the image, and to improve the convenience for the user at the time of editing work.

Fifth Embodiment

Hereafter, a fifth embodiment will be described. The present embodiment has, in advance, setting information for switching display and non-display on an arrangement candidate region described in the aforementioned embodiments.

<Display Control on Arrangement Candidate Regions for Additional Object in Accordance with Layout Condition>

Hereafter, a display control on an arrangement candidate region in the present embodiment will be described using FIG. **15** as well as FIG. **16**A and FIG. **16**B. FIG. **15** is a flowchart showing the processing of the present embodiment, and FIG. **16**A and FIG. **16**B each shows editing screens of the present embodiment. Note that each step of FIG. **15** is executed by the CPU **1011** reading and processing a program involved in the processing of the flowchart from a memory. In addition, a series of processing of the album editing application **90** is the same as that of the first embodiment (see FIG. **3**), and, thus, the detailed description thereof will be omitted.

As shown in (a) of FIG. **16**A, in the case when an instruction by the user regarding addition of an image from the image selection region **40** to the double-page spread region **50** is detected, image addition processing of FIG. **15** is started.

In S**501**, the CPU **1011** detects an aspect ratio of an object to be added. In the present embodiment, an aspect ratio of an image to be added from the image selection region **40** is detected.

Subsequently, in S**502**, the CPU **1011** derives an arrangement candidate region for arranging the object to be added, as a partial region within a predetermined region range. In the present embodiment, an arrangement candidate region for the image to be added in the double-page spread region **50** of the album is derived. Since the specific deriving method has already been described in the aforementioned embodiment, the detailed description thereof will be omitted.

In S**503**, the CPU **1011** determines whether a set value of display setting of an arrangement candidate region is ON. Specifically, the CPU **1011** determines whether a check box **82** for displaying an arrangement candidate region is ON in the environment setting screen **81** as shown in FIG. **6**, which can be set in advance. If the result of the determination in this step is true, the CPU **1011** proceeds to S**504**.

In S**504**, the CPU **1011** detects whether any key has been pressed during drag for adding an image.

Subsequently, in S**505**, the CPU **1011** determines whether a predetermined key for switching the display of an arrangement candidate region has been pressed based on the result of the detection in S**504**. As the predetermined key, the Ctrl key, or the like, of the input apparatus **1007** is assigned, for example.

If the result of the determination in S**505** is true, in S**506**, the CPU **1011** displays an arrangement candidate region A**1** and an arrangement candidate region A**2** for the image **41** as shown in (b) of FIG. **16**A.

After S**506**, in S**507**, the CPU **1011** determines whether the image **41** has been dropped in the arrangement candidate region A**1** or the arrangement candidate region A**2**. Note that, in the present embodiment, the coordinates of the cursor C are used as a reference for determining the drop position.

If the result of the determination in S**507** is true, in S**508**, the CPU **1011** arranges, in the arrangement candidate region A**1** or the arrangement candidate region A**2**, the image **41**, which has been resized in conformity with the size of the arrangement candidate region. For example, as shown in (b) of FIG. **16**A, in the case when dropping processing into the arrangement candidate region A**1** is detected in the state where the cursor C is on the arrangement candidate region A**1**, the image **41** is arranged as indicated by an image **53**(*a*) in (c) of FIG. **16**A.

On the other hand, if the result of the determination in S**507** is false, the CPU **1011** proceeds to S**509**. In the case when the image **41** has not been dropped in the arrangement candidate region A**1** or the arrangement candidate region A**2**, in S**509**, the CPU **1011** arranges the image at any position at the time of dropping in accordance with a predetermined size that is set in advance. Since the processing in this step has already been described in the first embodiment, the detailed description thereof will be omitted.

In addition, if the result of the determination in S**505** is false, the CPU **1011** proceeds to S**509**. That is, in the case when the predetermined key for switching the display of an arrangement candidate region has not been pressed during drag for adding an image, the CPU **1011** does not display an arrangement candidate region. For example, as shown in (a) of FIG. **16**B, an arrangement candidate region is not displayed while the image **41** is being moved. In addition, at the time of dropping into the double-page spread region **50**, as an image **53**(*b*) shown in (b) of FIG. **16**B, the image is arranged at any position at the time of dropping in accordance with the predetermined size set in advance. In this way, display or non-display of an arrangement candidate region can be switched based on whether or not the predetermined key has been pressed together during drag for adding an image.

In addition, if the result of the determination on whether the set value of display setting of an arrangement candidate region in S**503** is false, the CPU **1011** proceeds to S**509**. That is, in the case where the display of an arrangement candidate region is unnecessary, the function of displaying an arrangement candidate region is not used, and an image can be arranged at any position.

Once the processing of adding an image is completed, the processing of the flowchart of FIG. **15** ends. The flow of the series of the processing of the present embodiment is as described above.

Advantageous Effects of the Present Embodiment

As described above, in the present embodiment, display and non-display of an arrangement candidate region are switched by the display setting of an arrangement candidate region or pressing the predetermined key. This makes it possible to efficiently achieve a layout having high aesthetic property by utilizing an arrangement candidate region only when necessary, and to improve the convenience for the user at the time of editing work.

Other Embodiments

The album editing application **90** may have some or all functions of the functions of the aforementioned five embodiments.

In addition, although the aforementioned embodiments have been described as being executed by using the album editing application **90**, an application to which the idea of the present disclosure can be applied is not limited to an album editing application. For example, the idea of the present disclosure can be applied to layout software in general such as a layout editing application, a poster production application, and presentation preparation software that newly arrange object data.

Embodiment(s) of the present disclosure can also be realized by a computer of a system or an apparatus that reads out and executes computer executable instructions (e.g., one or more programs) recorded on a storage medium (which may also be referred to more fully as a 'non-transitory computer-readable storage medium') to perform the functions of one or more of the above-described embodiment(s) and/or that includes one or more circuits (e.g., an application specific integrated circuit (ASIC)) for performing the functions of one or more of the above-described embodiment(s), and by a method performed by the computer of the system or apparatus by, for example, reading out and executing the computer executable instructions from the storage medium to perform the functions of one or more of the above-described embodiment(s) and/or controlling the one or more circuits to perform the functions of one or more of the above-described embodiment(s). The computer may comprise one or more processors (e.g., a central processing unit (CPU), or a micro processing unit (MPU)) and may include a network of separate computers or separate processors to read out and to execute the computer executable instructions. The computer executable instructions may be provided to the computer, for example, from a network or the storage medium. The storage medium may include, for example, one or more of a hard disk, a random-access memory (RAM), a read only memory (ROM), a storage of distributed computing systems, an optical disk (such as a compact disc (CD), a digital versatile disc (DVD), or a Blu-ray Disc (BD)™), a flash memory device, a memory card, and the like.

The present disclosure makes it possible to improve convenience in a case where a user is conducting a layout operation.

While the present invention has been described with reference to exemplary embodiments, it is to be understood that the invention is not limited to the disclosed exemplary embodiments. The scope of the following claims is to be accorded the broadest interpretation so as to encompass all such modifications and equivalent structures and functions.

What is claimed is:

1. A non-transitory computer readable storage medium storing a program that causes a computer to execute an information processing method comprising:

a displaying step of displaying a graphical user interface having a first region in which to arrange an object and a second region in which to display a list of an object that can be arranged in the first region, wherein the first region is a region of a double-page spread of an album, the region of the double-page spread including a region of a left page and a region of a right page; and

a deriving step of deriving a candidate region in which to arrange an object selected by a user in the first region, based on a state of arrangement of an object other than the selected object in the first region,

wherein the candidate region is displayed as a rectangular frame surrounded by a dashed line in the first region,

in a case of moving the selected object in the first region, the candidate region is switched and displayed based on a position of a cursor indicating the selected object,

in a case when the cursor is present within a range of a predetermined distance from a center line of the region of the double-page spread, a first candidate region corresponding to the double-page spread is displayed in the first region,

in a case when the cursor is present not within the range of the predetermined distance from the center line of the region of the double-page spread, but within the region of the left page, a second candidate region corresponding to the left page is displayed in the first region, and

in a case when the cursor is present not within the range of the predetermined distance from the center line of the region of the double-page spread, but within the region of the right page, a third candidate region corresponding to the right page is displayed in the first region.

2. The storage medium according to claim **1**, wherein the selected object is an object selected from the second region, and

the information processing method further comprises a second displaying step of displaying the candidate region derived in the deriving step in the first region.

3. The storage medium according to claim **1**, wherein the candidate region is derived in a case when the user has conducted an editing operation in the first region.

4. The storage medium according to claim **3**, wherein the editing operation is addition of a new object from the second region, or movement of an existing object that has been selected from the second region and already arranged in the first region.

5. The storage medium according to claim **4**, wherein the selected object is arranged while being resized in conformity with the candidate region when being dropped into the candidate region.

6. The storage medium according to claim **4**, wherein, in a case when the selected object is dropped in a state when a cursor is present outside the candidate region, the selected object is arranged at any position containing at least a position of the cursor.

7. The storage medium according to claim **4**, wherein, in deriving the candidate region, in a case when the existing object is present, a center line of the derived candidate region complies with a center line of the existing object, and a margin width of the derived candidate region is uniform with a margin width of the existing object.

8. The storage medium according to claim **1**, wherein a plurality of candidate regions is derived as the candidate region, and the plurality of candidate regions is displayed in the first region.

9. The storage medium according to claim **1**, wherein a preview of an object during a drag operation is displayed together in the candidate region, the object being the selected object.

10. The storage medium according to claim **8**, wherein, in a case when the plurality of candidate regions is displayed in the first region, the selected object is arranged in one of the candidate regions based on a position of a cursor at the time of dropping.

11. The storage medium according to claim **10**, wherein, in a case when there are a plurality of the candidate regions corresponding to the position of the cursor at the time of dropping, the selected object is arranged in a candidate

region having an aspect ratio close to that of the selected object among the plurality of candidate regions.

12. The storage medium according to claim **1**, wherein whether or not to display the candidate region derived in the deriving step in the first region can be set.

13. An image processing apparatus comprising:

a display control unit that displays a graphical user interface having a first region in which to arrange an object and a second region in which to display a list of an object that can be arranged in the first region, wherein the first region is a region of a double-page spread of an album, the region of the double-page spread including a region of a left page and a region of a right page; and

a deriving unit that derives a candidate region in which to arrange an object selected by a user in the first region, based on a state of arrangement of an object other than the selected object in the first region,

wherein the candidate region is displayed as a rectangular frame surrounded by a dashed line in the first region,

in a case of moving the selected object in the first region, the candidate region is switched and displayed based on a position of a cursor indicating the selected object,

in a case when the cursor is present within a range of a predetermined distance from a center line of the region of the double-page spread, a first candidate region corresponding to the double-page spread is displayed in the first region,

in a case when the cursor is present not within the range of the predetermined distance from the center line of the region of the double-page spread, but within the region of the left page, a second candidate region corresponding to the left page is displayed in the first region, and

in a case when the cursor is present not within the range of the predetermined distance from the center line of the region of the double-page spread, but within the region of the right page, a third candidate region corresponding to the right page is displayed in the first region.

14. An information processing method comprising:

a displaying step of displaying a graphical user interface having a first region in which to arrange an object and a second region in which to display a list of an object that can be arranged in the first region, wherein the first region is a region of a double-page spread of an album, the region of the double-page spread including a region of a left page and a region of a right page; and

a deriving step of deriving a candidate region in which to arrange an object selected by a user in the first region, based on a state of arrangement of an object other than the selected object in the first region,

wherein the candidate region is displayed as a rectangular frame surrounded by a dashed line in the first region,

in a case of moving the selected object in the first region, the candidate region is switched and displayed based on a position of a cursor indicating the selected object,

in a case when the cursor is present within a range of a predetermined distance from a center line of the region of the double-page spread, a first candidate region corresponding to the double-page spread is displayed in the first region,

in a case when the cursor is present not within the range of the predetermined distance from the center line of the region of the double-page spread, but within the region of the left page, a second candidate region corresponding to the left page is displayed in the first region, and

in a case when the cursor is present not within the range of the predetermined distance from the center line of the region of the double-page spread, but within the region of the right page, a third candidate region corresponding to the right page is displayed in the first region.

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