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(54) **IMAGE-FORMING APPARATUS**

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(57) **ABSTRACT**

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An image forming apparatus capable of grouping a plurality of sheet storage units for feeding sheets of a same type in an image forming operation. The image forming apparatus includes a plurality of storage units for storing sheets and a sheet feeder operable to feed the sheets from the plurality of storage units. The apparatus also includes a grouping unit allowing a user to group the storage units based on the type of sheets. A controller controls the sheet feeder to feed sheets from the group of storage units such that when one storage unit becomes empty, the controller controls the sheet feeder to feed sheets from another storage unit of the group of storage units.

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Nov. 13, 2003 (JP) ..... 2003-384327

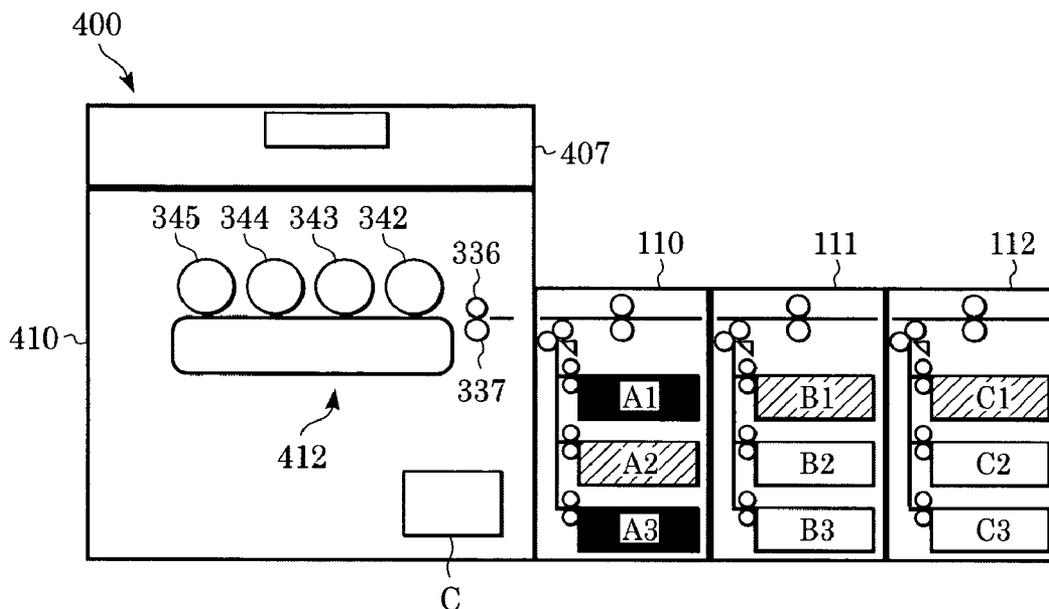


FIG. 1

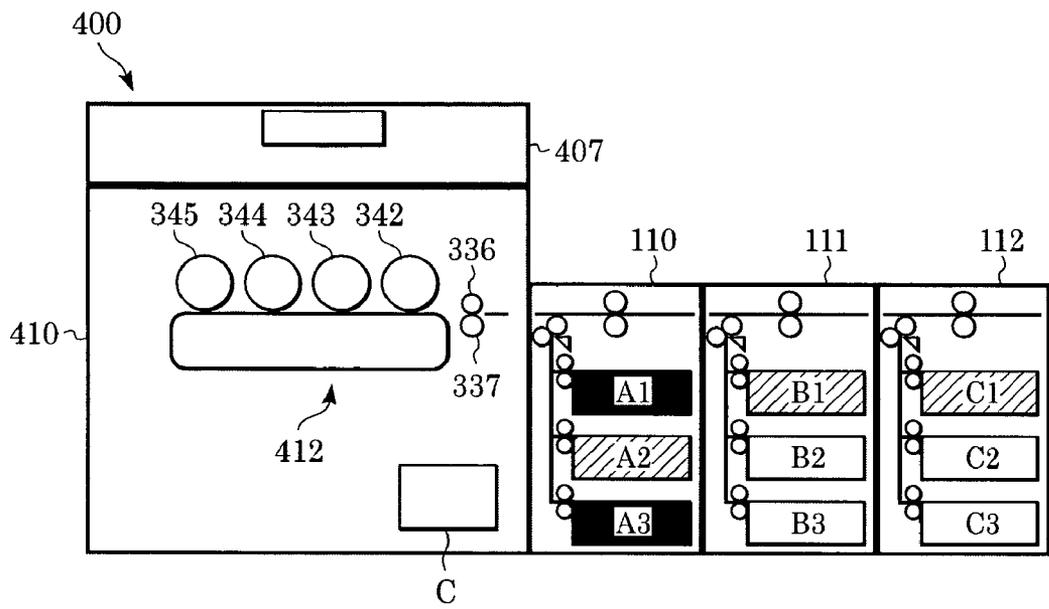


FIG. 2

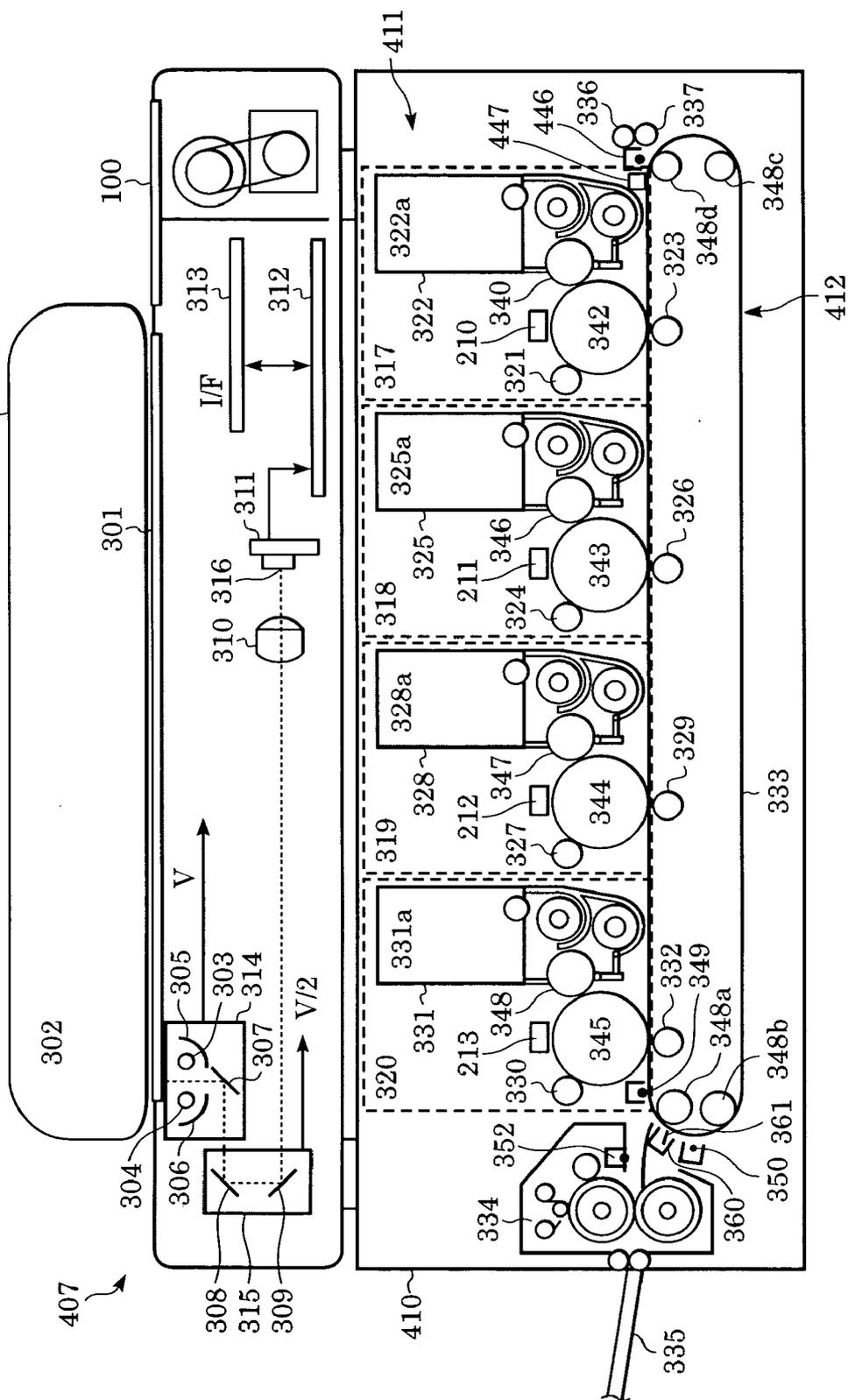


FIG. 3

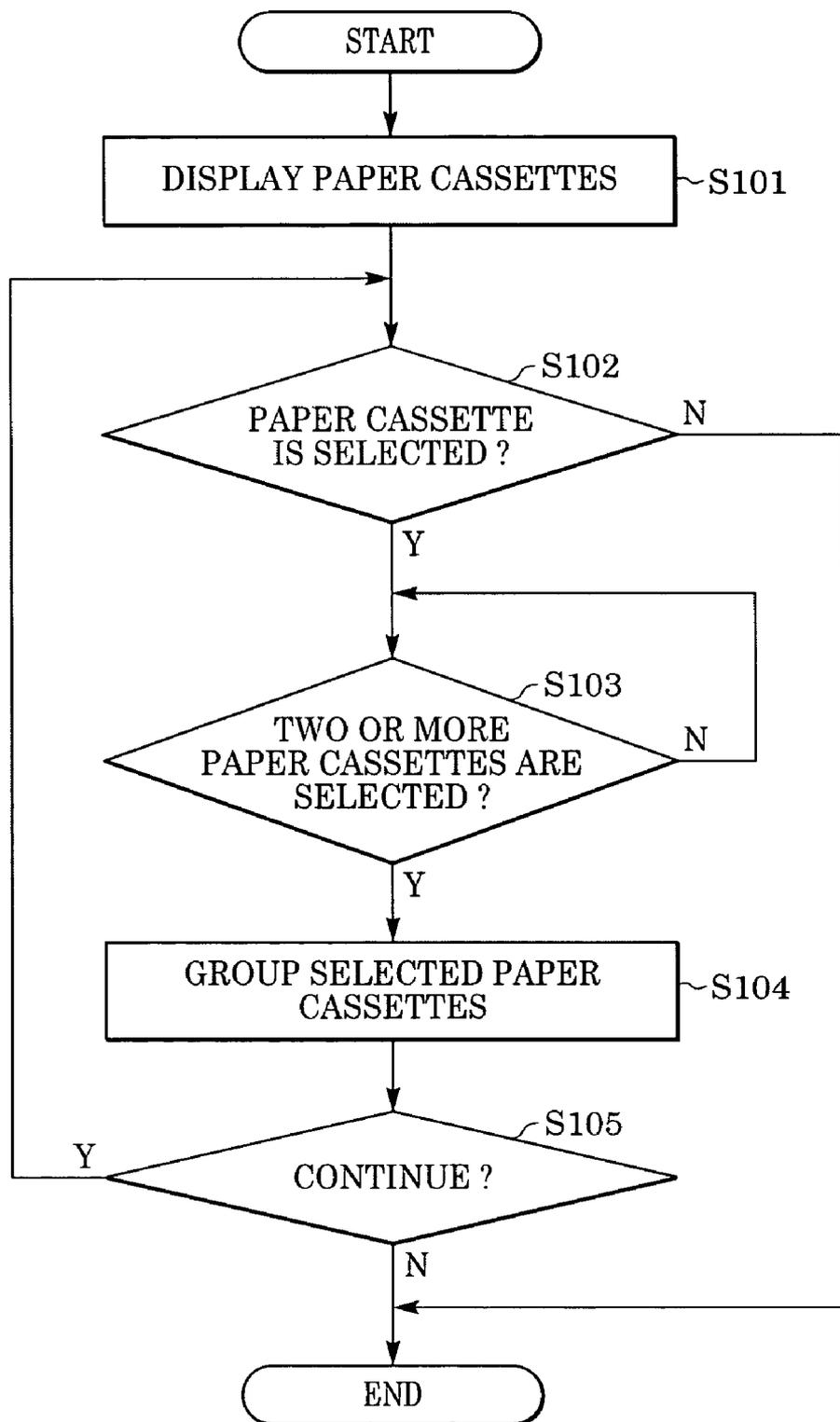


FIG. 4A

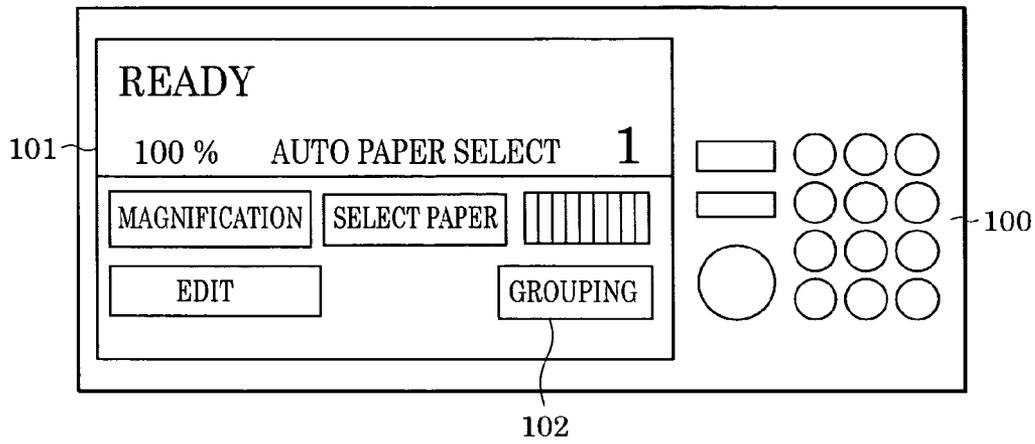


FIG. 4B

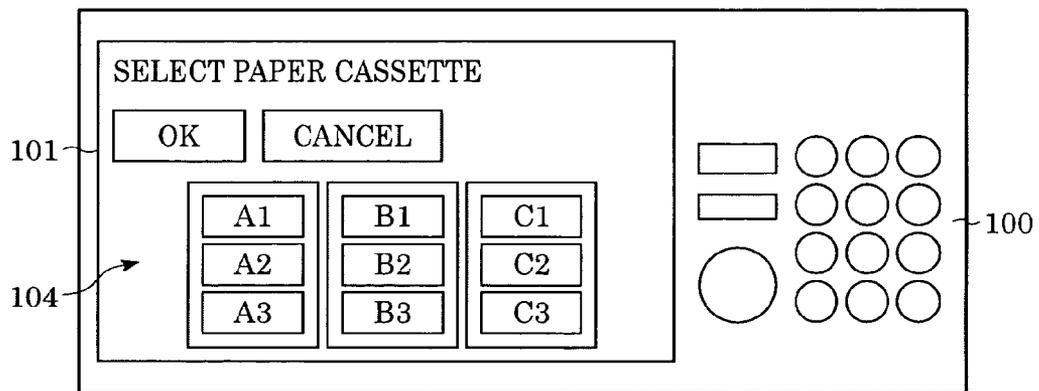


FIG. 5A

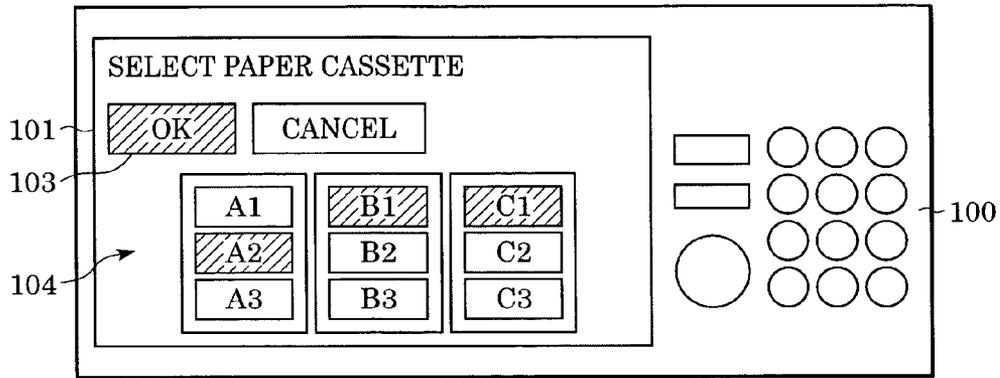


FIG. 5B

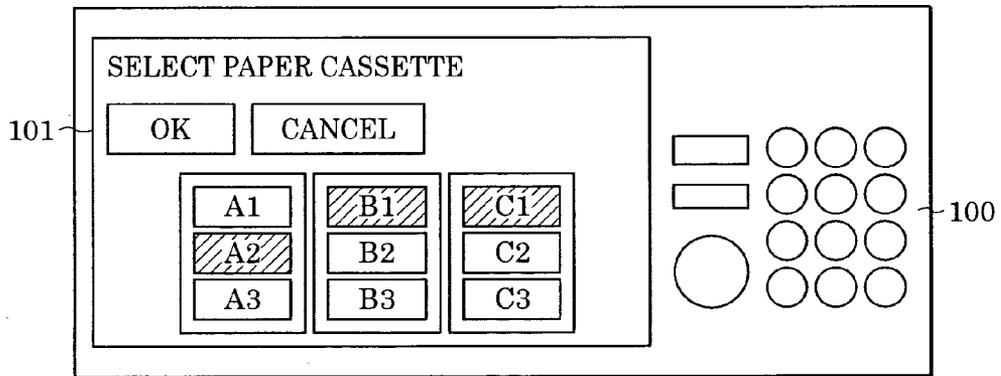


FIG. 6A

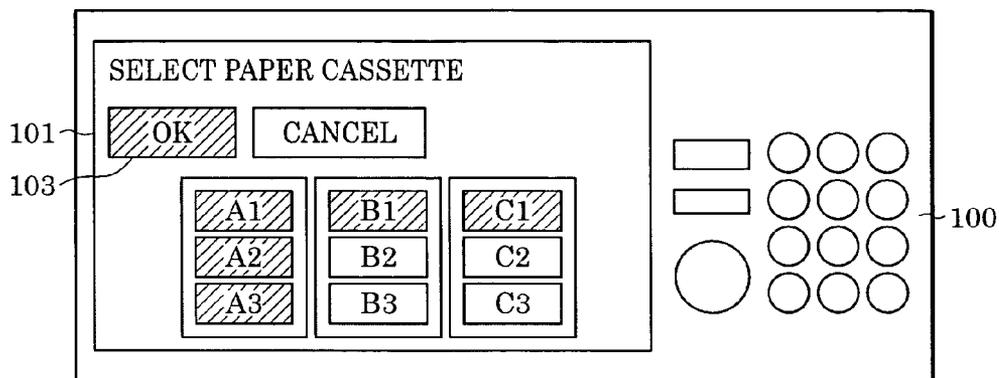


FIG. 6B

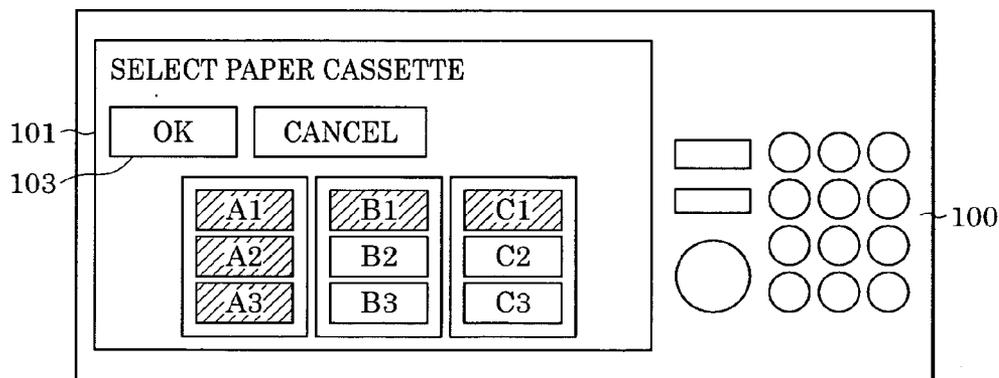


FIG. 7

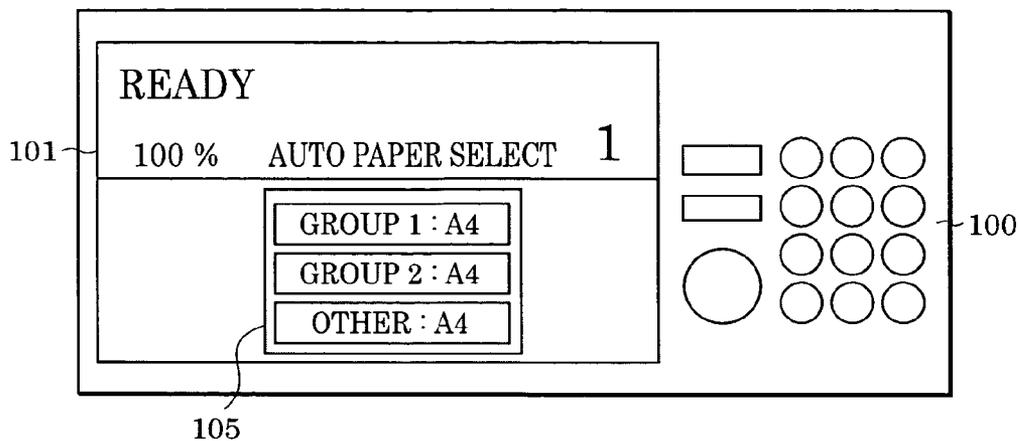


FIG. 8  
PRIOR ART

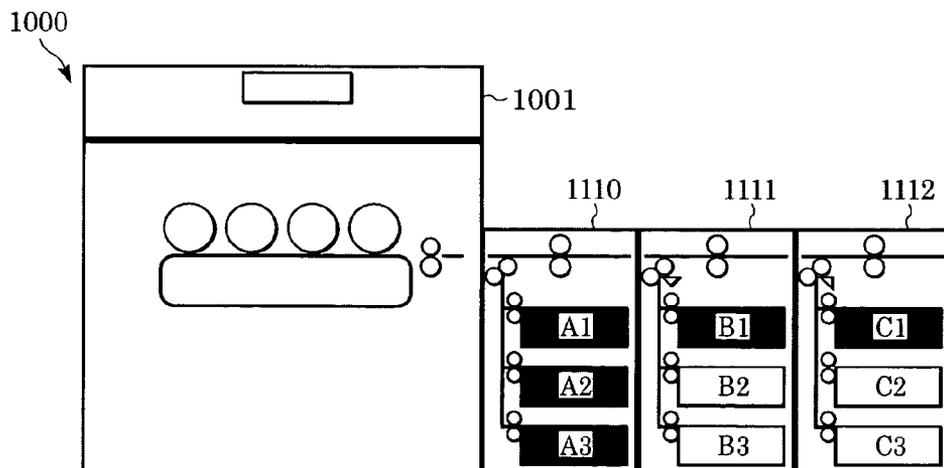
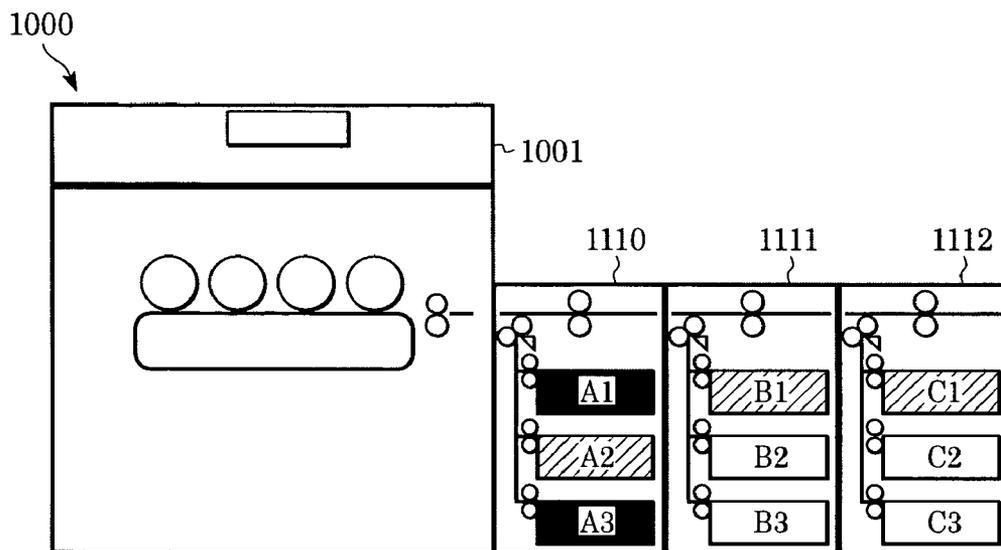


FIG. 9  
PRIOR ART



## IMAGE-FORMING APPARATUS

### CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority from Japanese Patent Application No. 2003-384327 filed Nov. 13, 2003, which is hereby incorporated by reference herein.

### BACKGROUND OF THE INVENTION

#### [0002] 1. Field of the Invention

[0003] The present invention relates to image-forming apparatuses, and more specifically relates to an image-forming apparatus including a main body and a sheet-feeding device attached to the main body, the sheet-feeding device containing a plurality of sheet storage units for storing sheets.

#### [0004] 2. Description of the Related Art

[0005] Recently, the print-on-demand (POD) market has been growing fast. Accordingly, it is necessary to increase the capacity of sheet-storing sections of the image-forming apparatuses to be fed to image-forming sections. In order to increase the capacities of the sheet-storing sections, PCT Japanese Translation Patent Publication No. 2001-506212 discloses an image-forming apparatus including a main body and a sheet-feeding device attached to the main body, the sheet-feeding device containing a plurality of paper cassettes which functions as sheet storage units.

[0006] In such a known image-forming apparatus including the sheet-feeding device, if one of the paper cassettes becomes empty while a job is being processed, an automatic cassette changer starts feeding the sheets from another paper cassette, as described in Japanese Patent Laid-Open No. 5-92831, depending on two types of information: size information of the sheets stored in the paper cassettes and information regarding the kind of the sheets, such as normal paper, recycled paper, cardboard paper, and overhead projector (OHP) sheets (hereafter called material information).

[0007] For example, with reference to FIG. 8, an image-forming apparatus 1000 includes a main body 1001 and three sheet-feeding devices 1110 to 1112 containing paper cassettes A1 to A3, B1 to B3, and C1 to C3, respectively. The paper cassettes A1 to A3, B1, and C1 store sheets of A4-size normal paper, and the remaining paper cassettes store sheets of A4-size recycled paper. In this case, it is recognized that the sheets stored in the paper cassettes A1 to A3, B1, and C1 are identical with respect to the size information and the material information.

[0008] When, for example, a job that requires a large amount of A4-size normal paper is processed, the sheets (normal paper) are first fed from the paper cassette A1, which is nearest to the main body 1001 of the image-forming apparatus 1000. Then, when the paper cassette A1 becomes empty, an automatic cassette changer starts feeding the sheets from the paper cassette A2. Then, when the paper cassette A2 also becomes empty, the automatic cassette changer starts feeding the sheets from the paper cassette A3. In this manner, the paper cassette from which the sheets are fed is changed successively.

[0009] On the other hand, in the POD market, a user may bring various kinds of normal paper in addition to normal

paper designated by the manufacturer of the image-forming apparatus. The sheets of normal paper brought in by the user can be arbitrarily stored in any of the paper cassettes A1 to A3, B1 to B3, and C1 to C3. For example, as shown in FIG. 9, the sheets of normal paper brought in by the user are stored in the paper cassettes A2, B1, and C1.

[0010] However, in the known image-forming apparatus which includes the sheet-feeding device and which distinguishes the normal paper and the recycled paper from each other on the basis of the material information, the normal paper designated by the manufacturer and the normal paper brought in by the user are determined as identical. In other words, the normal paper brought in by the user and stored in the paper cassettes A2, B1, and C1 cannot be distinguished from the normal paper designated by the manufacturer on the basis of the material information.

[0011] Therefore, if the automatic cassette changer successively feeds the sheets from the paper cassettes A1, A2, and A3, in that order while a single job is being processed, an image will be formed on different kinds of sheets (normal paper designated by the manufacturer and normal paper brought in by the user) and the quality of the obtained products will vary.

### SUMMARY OF THE INVENTION

[0012] The present invention is directed to an image-forming apparatus capable of forming an image on the same kind of sheets even when a plurality of kinds of sheets are stored in different sheet storage units.

[0013] In one aspect of the present invention, an image-forming apparatus includes a plurality of storage units for storing sheets and a sheet feeder operable to feed the sheets from the plurality of storage units. The image-forming apparatus also includes a controller operable to group the plurality of storage units into a group of storage units and controls the sheet feeder to selectively feed the sheets from the group of storage units. In an image forming operation of the apparatus, when one of the sheet storage units in a group becomes empty, the sheets are fed from another one of the sheet storage units in the group. According to another aspect of the present invention, an image forming apparatus includes a main body; a plurality of sheet cassettes configured to store the sheets; and at least one sheet deck connected in series to the main body and housing the plurality of sheet cassettes, the sheet deck operable to feed the sheets from the sheet cassettes, wherein the plurality of sheet cassettes are classified into at least one group of sheet cassettes, and responsive to one of the sheet cassettes in the group of sheet cassettes being empty, the sheet deck feeds the sheets from another one of the sheet cassettes in the group of sheet cassettes.

[0014] According to yet another aspect of the present invention, a method for feeding sheets in an image forming apparatus includes providing a plurality of cassettes configured to store the sheets; grouping the plurality of cassettes into a group of cassettes; and feeding the sheets from one of the cassettes in the group of cassettes, and when the one of the cassettes is empty, feeding from another one of the cassettes in the group of cassettes.

[0015] Further features and advantages of the present invention will become apparent from the following description of the preferred embodiments with reference to the attached drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

[0016] FIG. 1 is a schematic diagram showing a printer as an example of an image-forming apparatus including sheet decks according to one embodiment of the present invention.

[0017] FIG. 2 is a schematic diagram showing the main body of the printer shown in FIG. 1.

[0018] FIG. 3 is a flowchart showing a process of grouping paper cassettes in the printer in accordance with one embodiment of the present invention.

[0019] FIGS. 4A and 4B are diagrams showing screens displayed on a display of an operating unit provided on the main body of the printer shown in FIG. 1.

[0020] FIGS. 5A and 5B are diagrams showing other screens displayed on the display of the operating unit shown in FIG. 1.

[0021] FIGS. 6A and 6B are diagrams showing other screens displayed on the display of the operating unit shown in FIG. 1.

[0022] FIG. 7 is a diagram showing another screen displayed on the display of the operating unit shown in FIG. 1.

[0023] FIG. 8 is a schematic diagram showing a known image-forming apparatus including sheet decks.

[0024] FIG. 9 is a diagram showing an example of a manner in which sheets are stored in the known image-forming apparatus.

## DESCRIPTION OF THE EMBODIMENT

[0025] An embodiment of the present invention will be described in detail below with reference to the accompanying drawings.

[0026] FIG. 1 is a schematic diagram showing a printer as an example of an image-forming apparatus including sheet-feeding devices according to one embodiment of the present invention.

[0027] With reference to FIG. 1, a printer 400 includes a main body 410, a scanner 407 placed on the main body 410, and a plurality of (three in the present embodiment) sheet decks 110 to 112 attached to the main body 410 and serving as sheet-feeding devices. The sheet decks 110 to 112 are connected to each other in series.

[0028] As shown in FIG. 2, the scanner 407 for reading an original document (not shown) includes carriages 314 and 315. The carriage 314 carries light sources 303 and 304, such as halogen lamps and fluorescent lamps, for illuminating the original document, umbrella reflectors 305 and 306 for converging the light from the light sources 303 and 304 onto the original document, and a mirror 307. The carriage 315 carries mirrors 308 and 309. The original document is placed on a document table glass 301 by a document feeder (DF) 302. When an image of the original document is read, the carriage 314 is moved in the direction shown by the arrow at a velocity V while light is emitted from the light sources 303 and 304. The carriage 315 is also moved in the direction shown by the arrow at a velocity V/2, so that the entire area of the original document is scanned.

[0029] The light scanning the original document is reflected by the mirrors 307 to 309, passes through a lens 310, and forms an image on a CCD 316. Then, the image of the original document is read out by the CCD 316, converted into an electrical signal by an image-processing unit 312, and is transmitted to exposure devices, which will be described below.

[0030] In FIG. 2, reference numeral 100 denotes an operating unit provided on the top surface of the printer's main body 410, reference numeral 311 denotes a substrate on which the CCD 316 is mounted, and reference numeral 313 denotes an interface (I/F) for communicating with another image-processing unit (IPU) or the like. Although the document feeder (DF) 302 is provided in the present embodiment, a mirror face plate may also be provided in place of the document feeder 302.

[0031] The printer's main body 410 includes an image-forming section 411 where an image is formed on a sheet, a sheet-conveying device 412 for conveying the sheet fed from one of the sheet decks 110 to 112 to the image-forming section 411, and a fixing device 334 for fixing the image formed on the sheet.

[0032] The image-forming section 411 includes image-forming units 317 to 320. The image-forming units 317 to 320 respectively include photosensitive drums 342 to 345 which function as image carriers for yellow, magenta, cyan and black toner images; charging devices 321, 324, 327, and 330 for uniformly charging the surfaces of the respective photosensitive drums; exposure devices 210 to 213 provided with LED arrays for irradiating the respective photosensitive drums with laser beams on the basis of image information in order to form electrostatic latent images on the respective photosensitive drums; and developing devices 322, 325, 328, and 331 for developing the electrostatic latent images with toner as toner images.

[0033] The developing devices 322, 325, 328, and 331 respectively include toner storage reservoirs 322a, 325a, 328a, and 331a containing black, cyan, magenta, and yellow toners and sleeves 345 to 348 which are in contact with the surfaces of the respective photosensitive drums. The sleeves 340, 346, 347 and 348 are rotated by driving devices (not shown) while a developing bias voltage is applied by developing-bias power supplies (not shown), and thereby the electrostatic latent images are developed.

[0034] In addition, transfer rollers 323, 326, 329, and 332 are disposed inside a transfer conveyor belt 333, which functions as an endless sheet-conveying member for conveying the sheet, such that the transfer conveyor belt 333 is nipped between the four photosensitive drums 342 to 345 and their respective transfer rollers 323, 326, 329, and 332.

[0035] The transfer rollers 323, 326, 329, and 332 are connected to transfer-bias power supplies (not shown), and a transfer bias is applied to the sheet from the transfer rollers 323, 326, 329, and 332 via the transfer conveyor belt 333. Then, when the transfer bias is applied to the sheet which is being conveyed by the transfer conveyor belt 333 while the sheet is in contact with the photosensitive drums 342 to 345, the toner images of four colors on the photosensitive drums 342 to 345 are successively transferred onto the sheet. Accordingly, a multi-color image is formed on the sheet.

[0036] The sheet-conveying device 412 includes a driving roller 348a, driven rollers 348b to 348d, and the transfer

conveyor belt **333** which is stretched around the rollers **348a** to **348d** such that it faces the photosensitive drums **342** to **345**. The sheet-conveying device **412** functions as a sheet carrier. The sheet electrostatically adheres to the outer peripheral surface of the transfer conveyor belt **333** which faces the photosensitive drums **342** to **345**. The transfer conveyor belt **333** is rotated by the driving roller **348a** so as to bring the sheet into contact with the photosensitive drums **342** to **345**. Accordingly, the sheet, which is electrostatically adhered to the rotating transfer conveyor belt **333**, is conveyed to transfer positions corresponding to the photosensitive drums **342** to **345**. The toner images on the photosensitive drums **342** to **345** are transferred onto the sheet.

[0037] The sheet is charged by an adhesion charging device **446** as the sheet passes between the adhesion charging device **446** and the driven roller **348d**, and accordingly the sheet adheres to the transfer conveyor belt **333**. In addition, a front-end detection sensor **447** detects the front end of the sheet on the transfer conveyor belt **333**, and a detection signal obtained from the front-end detection sensor **447** is transmitted to the scanner **407** and is used as a sub-scanning synchronization signal when a YMCK electrical signal (video signal) is transmitted to the image-forming section **411** (that is, to the exposure devices **210** to **213** in the image-forming section **411**) from the scanner **407**. In addition, a separation charging device **350** is used for preventing degradation of the image due to a separation discharge when the sheet is separated from the transfer conveyor belt **333**.

[0038] As shown in FIG. 1, the sheet decks **110** to **112**, which function as the sheet-feeding devices, include paper cassettes **A1** to **A3**, **B1** to **B3**, and **C1** to **C3**, respectively, for storing sheets. In the present embodiment, the sheet decks **110** to **112** have an identical structure, and are detachably connected to each other. Accordingly, sheets can be arbitrarily stored in any of the paper cassettes **A1** to **A3**, **B1** to **B3**, and **C1** to **C3**. An operation of feeding the sheets from the paper cassettes **A1** to **A3**, **B1** to **B3**, and **C1** to **C3** in the sheet decks **110** to **112**, respectively, is adequately controlled by a controller **C**.

[0039] Although three sheet decks are connected in the present embodiment, the number of sheet decks may be increased or reduced. In addition, the order in which the sheet decks are connected may also be changed. In FIG. 2, reference numerals **336** and **337** denote registration rollers used for conveying the sheet fed from one of the sheet decks **110** to **112** in synchronization with an image-forming operation.

[0040] Next, the image-forming operation performed in the printer **400** having the above-described structure will be described below.

[0041] First, in the scanner **407**, the carriages **314** and **315** are moved in the directions shown by the arrows while light is emitted from the light sources **303** and **304**, so that the entire area of the original document is scanned. The light scanning the original document is reflected by the mirrors **307** to **309**, passes through the lens **310**, and forms an image on the CCD **316**. Then, the image of the original document is read out by the CCD **316**, converted into the YMCK electrical signal by the image-processing unit **312**, and is transmitted to the exposure devices **210** to **213**.

[0042] The YMCK image signal generated in the image-processing unit **312** is transmitted to the exposure devices

**210** to **213** at predetermined times by adjusting the differences between distances from the front-end detection sensor **447** to the image-forming units **317** to **320** by a delay process based on the front-end detection signal obtained from the front-end detection sensor **447**.

[0043] Then, the surfaces of the photosensitive drums **342** to **345** are uniformly charged by the charging devices **321**, **324**, **327**, and **330**, respectively, and are scanned by laser beams emitted from the exposure devices **210** to **213**, respectively, in accordance with the image information at predetermined times corresponding to the detection signal obtained from the front-end detection sensor **447**. Accordingly, latent images are formed on the surfaces of the photosensitive drums, and these latent images are developed by the developing devices **322**, **325**, **328**, and **331**, so that yellow, magenta, cyan, and black toner images are formed on the surfaces of the respective photosensitive drums.

[0044] In addition, in parallel to the operation of forming the toner images, a sheet is fed from one of the paper cassettes **A1** to **A3**, **B1** to **B3**, and **C1** to **C3**, and is conveyed by the registration rollers **336** and **337** in synchronization with the image-forming operation. Then, the sheet is charged by the adhesion charging device **446** so that it adheres to the transfer conveyor belt **333**. The sheet is conveyed to the transfer positions, where the transfer conveyor belt **333** is pressed against the photosensitive drums **342** to **345**, by the transfer conveyor belt **333**.

[0045] When the sheet is conveyed to the transfer positions, the toner images of the respective colors formed on the photosensitive drums **342** to **345** are successively transferred onto the sheet by the transfer rollers **323**, **326**, **329**, and **332** disposed at the transfer positions and receiving voltages of a polarity opposite to that of the toner. Then, a charge/discharge device **349** removes the electrostatic charge from the sheet on which the toner images of four colors are superimposed. The sheet is separated from the transfer conveyor belt **333**. The sheet is charged by a pre-fix charging device **352** in order to increase the adhesion force of the toner and thereby prevent degradation of the image, and is then conveyed to the fixing device **334**.

[0046] The fixing device **334** heats and pressurizes the sheet so that the un-fixed toner image is fixed on the sheet as a full-color image. Then, the sheet on which the toner image is fixed as a full-color image is outputted and placed on an output tray **335**. The toner remaining on the photosensitive drums after the transfer process is collected into a cleaner device **360** by a cleaner blade **361**.

[0047] As described above, in the POD market, sheets of normal paper brought in by a user may be stored in one or more of the paper cassettes **A1** to **A3**, **B1** to **B3**, and **C1** to **C3**, in addition to the sheets of normal paper designated by the manufacturer of the printer. In such a case, if one of the paper cassettes becomes empty and an automatic cassette changer starts feeding the sheets from another paper cassette, there is a risk that the image will be formed on different kinds of sheets and the quality of the obtained products will vary.

[0048] Therefore, in the present embodiment, the user can group some of the paper cassettes **A1** to **A3**, **B1** to **B3**, and **C1** to **C3** together, so that even when different kinds of sheets are stored in the paper cassettes **A1** to **A3**, **B1** to **B3**,

and C1 to C3, the same kind of sheets are fed to the image-forming section 411 and the image is formed on the same kind of sheets.

[0049] Next, an operation of grouping the paper cassettes A1 to A3, B1 to B3, and C1 to C3 will be described below with reference to the flowchart shown in FIG. 3.

[0050] When, for example, sheets of normal paper designated by the manufacturer and sheets of normal paper brought in by the user are stored in the paper cassettes as A4-size sheets, the controller C displays a grouping key 102 on a display 101 of an operating unit 100, as shown in FIG. 4A, for the operation of grouping the paper cassettes A1 to A3, B1 to B3, and C1 to C3.

[0051] Next, when the user presses the grouping key 102, the paper cassettes A1 to A3, B1 to B3, and C1 to C3 are displayed as shown in FIG. 4B (Step 101). In addition, a message prompting the user to select some of the paper cassettes A1 to A3, B1 to B3, and C1 to C3 is also displayed. Then, in response to this message, the user selects some of the paper cassettes A1 to A3, B1 to B3, and C1 to C3 by pressing selection keys 104 corresponding to the paper cassettes A1 to A3, B1 to B3, and C1 to C3.

[0052] For example, when the sheets of A4-size normal paper brought in by the user are stored in the paper cassettes A2, B1, and C1, as shown in FIG. 1, the user selects the paper cassettes A2, B1, and C1 by pressing the selection keys 104 corresponding to the paper cassettes A2, B1, and C1, as shown in FIG. 5A. Then, when the selecting step is finished, the user presses an OK key 103. If grouping is not performed, for example, if none of the selection keys 104 nor the OK key 103 is pressed for a predetermined period of time, the process ends and a normal job is started.

[0053] In the present embodiment, at least two paper cassettes are grouped together. Therefore, when a first paper cassette is selected as one of the paper cassettes to be grouped together (that is, when the result of Step 102 is Y), it is determined whether or not a second paper cassette is selected (Step 103).

[0054] Then, when the paper cassettes A2, B1, and C1 are selected using the corresponding selection keys 104, that is, when at least two paper cassettes are selected (when the result of Step 103 is Y), the user presses the OK key 103. Accordingly, the selected paper cassettes A2, B1, and C1 are grouped together (Step 104). FIG. 5B shows the state in which the selected paper cassettes are grouped together.

[0055] Then, if the grouping operation is to be continued, the process returns to Step 102 from Step 105, and the above-described steps are repeated. For example, when the sheets of A4-size normal paper designated by the manufacturer are stored in the paper cassettes A1 and A3, as shown in FIG. 1, the user selects the paper cassettes A1 and A3, as shown in FIG. 6A, and presses the OK key 103. In such a case, two groups are set as shown in FIG. 6B.

[0056] Then, when, for example, the two groups are set as described above, the paper cassettes A2, B1, and C1 are displayed as group 1, the paper cassettes A1 and A3 are displayed as group 2, and the remaining paper cassettes are displayed as other, as shown in FIG. 7. When a cancel key shown in FIGS. 6A and 6B is selected, the display 101 returns to that shown in FIG. 4A.

[0057] Thus, the paper cassettes are classified (grouped) in accordance with the kind of sheets stored therein. Accordingly, if group 1 or group 2 is selected using group-selection keys 105 before starting a job, even when one of the paper cassettes becomes empty while the job is being processed, the auto cassette changer can start feeding the sheets from another paper cassette which belongs to the same group (the paper cassettes A2, B1, and C1 when group 1 is selected). As a result, the same kind of sheets is continuously fed to the printer's main body 410.

[0058] As described above, some of the paper cassettes A1 to A3, B1 to B3, and C1 to C3 are classified into a group, and when one of the paper cassettes of this group becomes empty, the sheets are fed to the printer's main body 410 from another one of the paper cassettes of this group. Accordingly, the image is formed on the same kind of sheets, and the products of constant quality are obtained. Once the grouping operation is performed, it is not necessary to perform the grouping operation again as long as the same kind of sheets is stored in the paper cassettes which are grouped together.

[0059] Although the sheets of normal paper brought in by the user and arbitrarily stored in the paper cassettes A1 to A3, B1 to B3, and C1 to C3 have the same size (A4-size) according to the above-described embodiment, the present invention is not limited to this, and may also be applied to the case in which sheets of different sizes, such as A4 and A3, and the same material are arbitrarily stored in the paper cassettes. For example, even when sheets of A4-size normal paper and A3-size normal paper are brought in by the user and arbitrarily stored in the paper cassettes arbitrarily and a job using both the A4-size and A3-size sheets is processed, products of constant quality can be obtained by grouping the paper cassettes A1 to A3, B1 to B3, and C1 to C3 in accordance with the kind of the sheets.

[0060] In the above-described embodiment, the display 101 for displaying the paper cassettes A1 to A3, B1 to B3, and C1 to C3, the grouping key 102, the OK key 103, etc., is disposed on the operating unit 100 which is provided on the printer's main body 410. However, the present invention is not limited to this, and the display may also be shown on a screen of a personal computer which is connected to the printer via a network controller (not shown).

[0061] While the present invention has been described with reference to what are presently considered to be the embodiments, it is to be understood that the invention is not limited to the disclosed embodiments. On the contrary, the invention is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims. 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. An image-forming apparatus operable to form images on sheets in an image forming operation, comprising:

- a plurality of storage units configured to store the sheets;
- a sheet feeder operable to feed the sheets from the plurality of storage units;
- a controller operable to group the plurality of storage units into a group of storage units and controlling the sheet

feeder to selectively feed the sheets from the group of storage units in the image forming operation.

2. The image-forming apparatus according to claim 1, wherein the controller groups the plurality of storage units in accordance with a sheet type.

3. The image-forming apparatus according to claim 1, wherein the controller comprises a selecting unit operable to select a storage unit from the plurality of storage units to be classified into the group of storage units.

4. The image-forming apparatus according to claim 3, wherein the selecting unit is configured to select at least two storage units to be classified into the group of storage units.

5. The image-forming apparatus according to claim 3, wherein the controller is configured to group the plurality of storage units into at least two groups of storage units.

6. The image-forming apparatus according to claim 3, wherein the selecting unit includes a selection key facilitating selecting the storage unit to be classified into the group of storage units.

7. The image-forming apparatus according to claim 6, further comprising a main body including an operating unit, wherein the selecting key is provided on the operating unit.

8. The image-forming apparatus according to claim 1, further comprising a main body, wherein the sheet feeder is detachably attached to the main body, and wherein the plurality of storage units are housed in the sheet feeder.

9. The image-forming apparatus according to claim 8, wherein the sheet feeder includes a plurality of sheet feeders connected in series to the main body.

10. An image-forming apparatus operable to form images on sheets, comprising:

a main body;

a plurality of sheet cassettes configured to store the sheets; and

at least one sheet deck connected in series to the main body and housing the plurality of sheet cassettes, the sheet deck operable to feed the sheets from the sheet cassettes,

wherein the plurality of sheet cassettes are classified into at least one group of sheet cassettes, and responsive to one of the sheet cassettes in the group of sheet cassettes being empty, the sheet deck feeds the sheets from another one of the sheet cassettes in the group of sheet cassettes.

11. The image-forming apparatus according to claim 10, wherein the plurality of sheet cassettes is classified into the group of sheet cassettes in accordance with a kind of sheets stored by the sheet cassettes.

12. The image-forming apparatus according to claim 11, wherein the kind of sheets includes a size of the sheets.

13. The image-forming apparatus according to claim 10, further comprising a selecting unit operable to select the sheet cassette to be classified into the group of sheet cassettes.

14. A method for feeding sheets in an image forming apparatus comprising:

providing a plurality of cassettes configured to store the sheets;

grouping the plurality of cassettes into a group of cassettes; and

feeding the sheets from one of the cassettes in the group of cassettes, and when the one of the cassettes is empty, feeding from another one of the cassettes in the group of cassettes.

15. The method according to claim 14, wherein the grouping step includes grouping the plurality of cassettes in accordance with a type of sheets stored in the cassette.

16. The method according to claim 14, wherein the grouping step includes grouping at least two cassettes in the group of cassettes.

17. The method according to claim 14, wherein the grouping step includes grouping the plurality of cassettes into at least two groups of cassettes.

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