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(54) SYSTEM AND METHOD FOR PRINTING AND SCANNING A USER-COMPLETED DIGITAL STILL CAMERA IMAGE PROOF SHEET AND ORDER FORM

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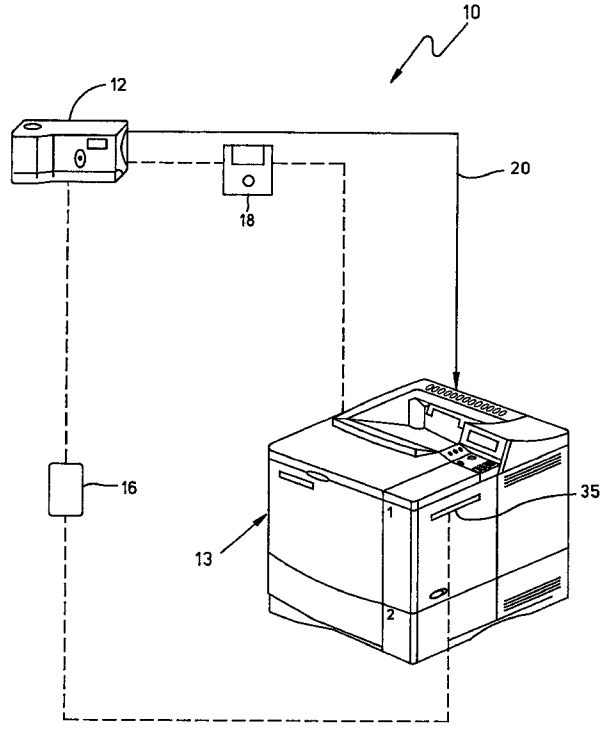
(57) **ABSTRACT**

A digital still camera is used for taking and storing digital representations of a plurality of images. A printer, such as an ink jet printer or a laser printer, is used for generating graphical representations of selected ones of the plurality of images on a preselected print media such as a paper. A flash memory card, floppy diskette, direct data link or some other data transfer scheme is used to transfer the digital representations of the plurality of images from the digital still camera to the printer. The printer includes programming for generating a combination proof sheet and order form. The combination proof sheet and order form can include an array of thumbnail images and a plurality of image selection and/or image enhancement user designation areas such as bubbles to be filled in by the user with a pencil. The printer includes a scanner and related circuitry and software for scanning the combination proof sheet and order form to detect the user designation areas completed by the user. The programming in the printer thereafter causes it to generate at least one final print sheet with the images and enhancements designated by the user on the combination proof sheet and order form. The proof sheet and order form can be used to designate the number of final prints of a selected image, the size and/or cropping of the prints, the brightness, color balance, background, borders and so forth.



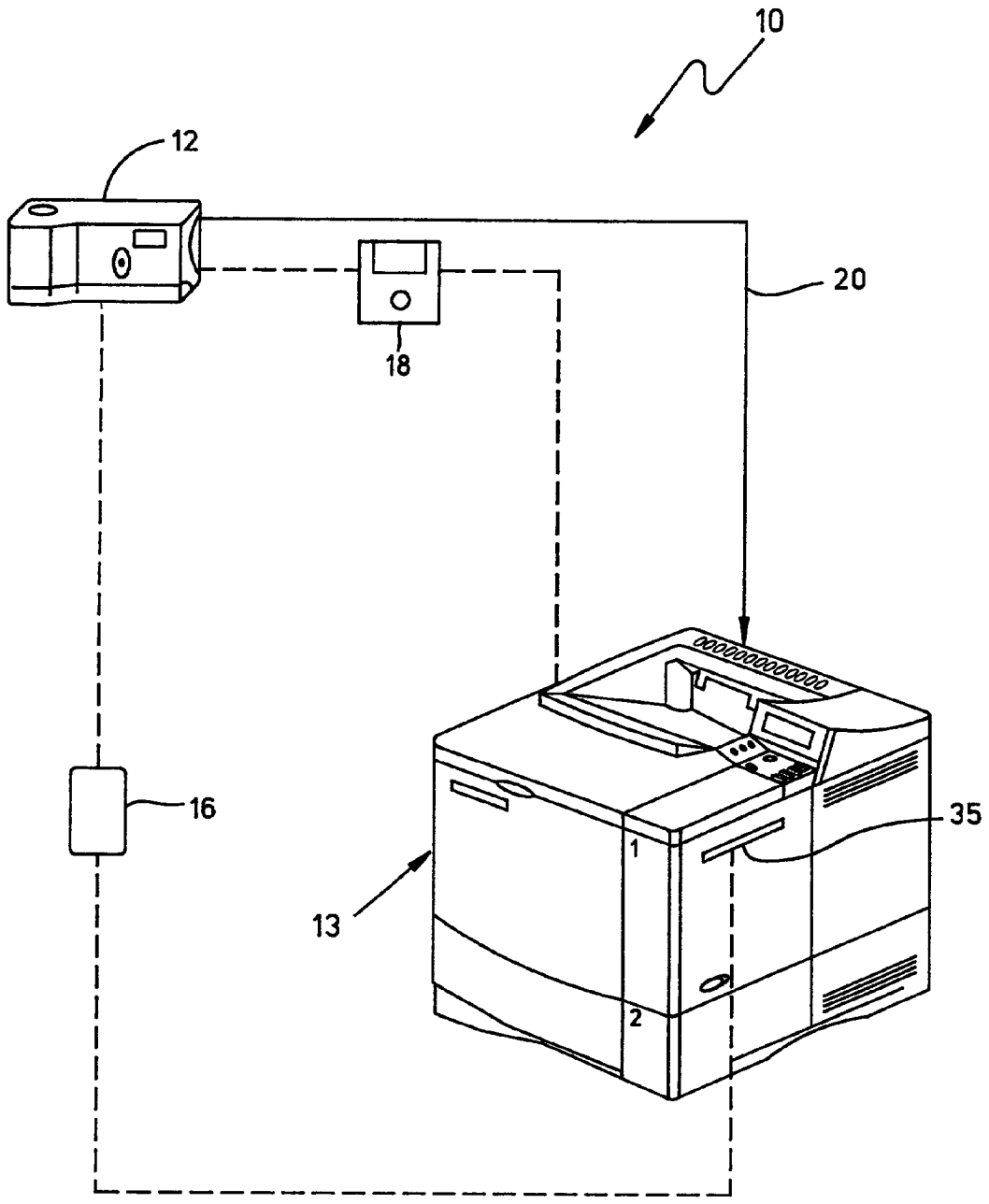


FIG. 1

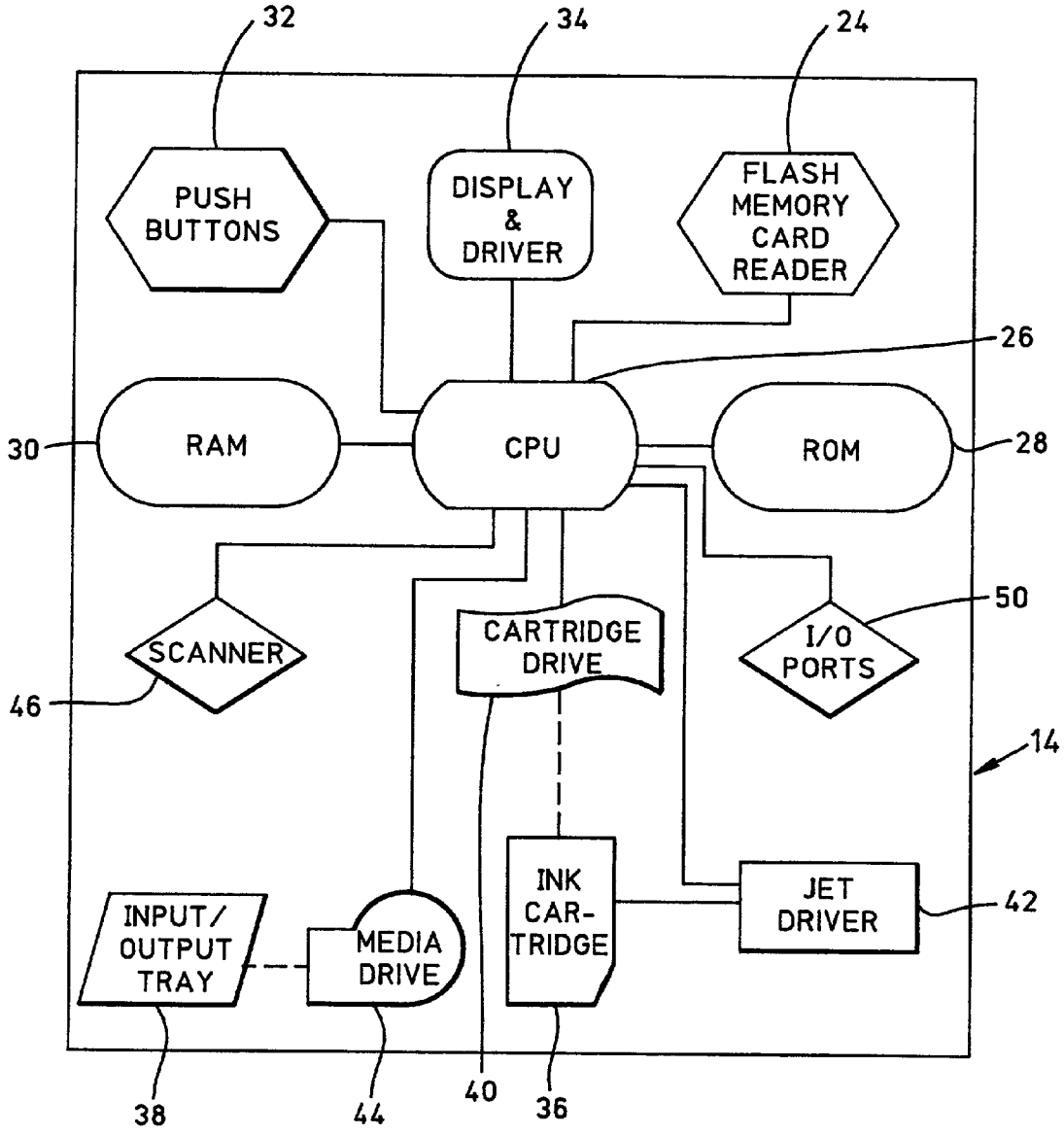

32
34
24
PUSH BUTTONS
DISPLAY & DRIVER
FLASH MEMORY CARD READER
26
30
RAM
CPU
ROM
28
SCANNER
CARTRIDGE DRIVE
I/O PORTS
50
46
14
INPUT/ OUTPUT TRAY
MEDIA DRIVE
INK CAR-TRIDGE
JET DRIVER
42
38
44
40
36

FIG. 2

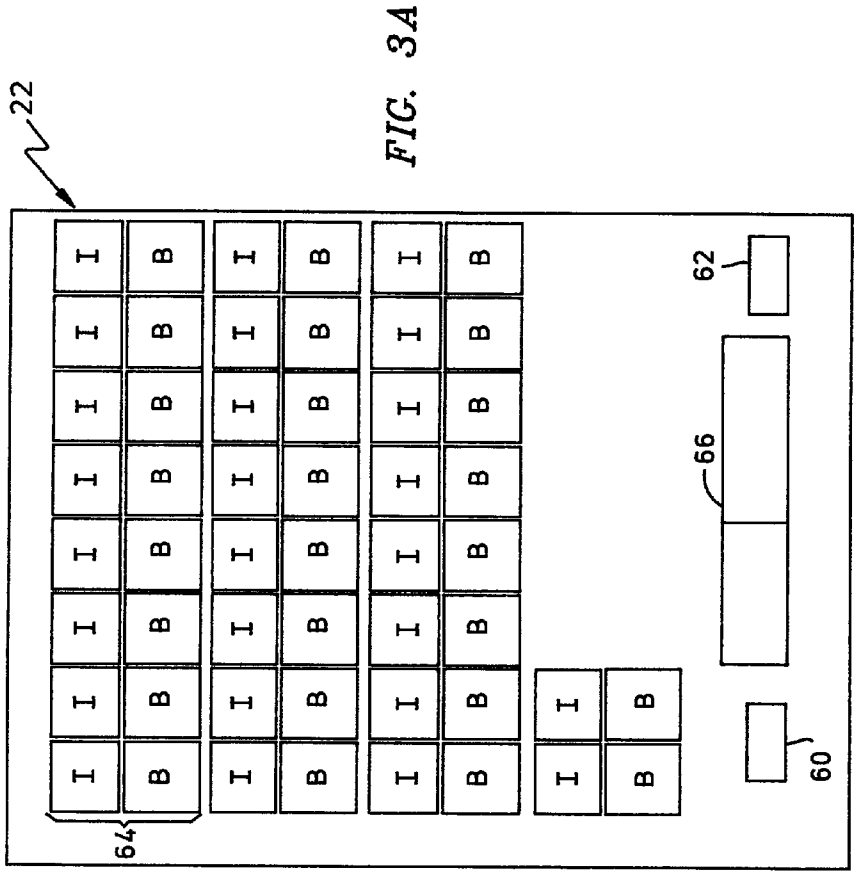


FIG. 3A

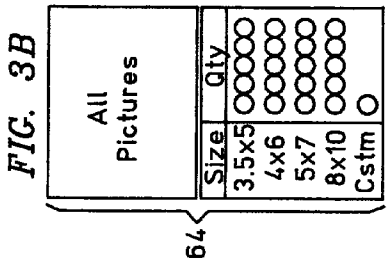


FIG. 3B

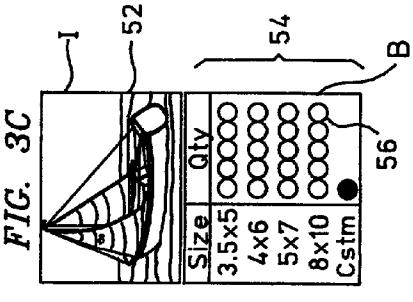


FIG. 3C

FIG. 3D

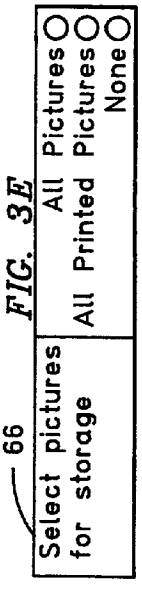


FIG. 3E

FIG. 3F

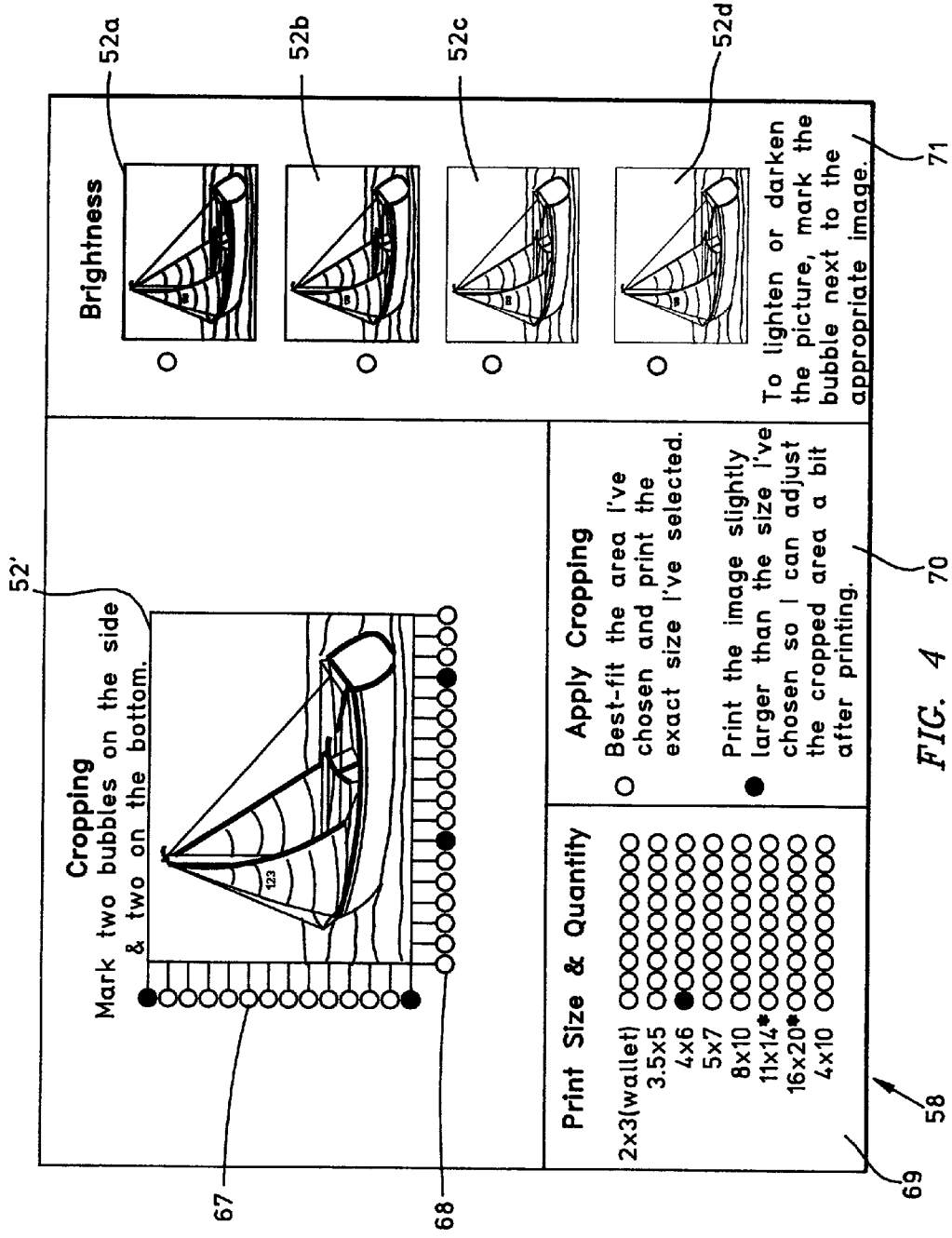

52a
52b
52c
52d
Brightness
To lighten or darken the picture, mark the bubble next to the appropriate image.
71
52'
Cropping
Mark two bubbles on the side & two on the bottom.
67
68
Apply Cropping
Best-fit the area I've chosen and print the exact size I've selected.
Print the image slightly larger than the size I've chosen so I can adjust the cropped area a bit after printing.
70
Print Size & Quantity
2x3(wallet)
3.5x5
4x6
5x7
8x10
11x14*
16x20*
4x10
58
69

FIG. 4

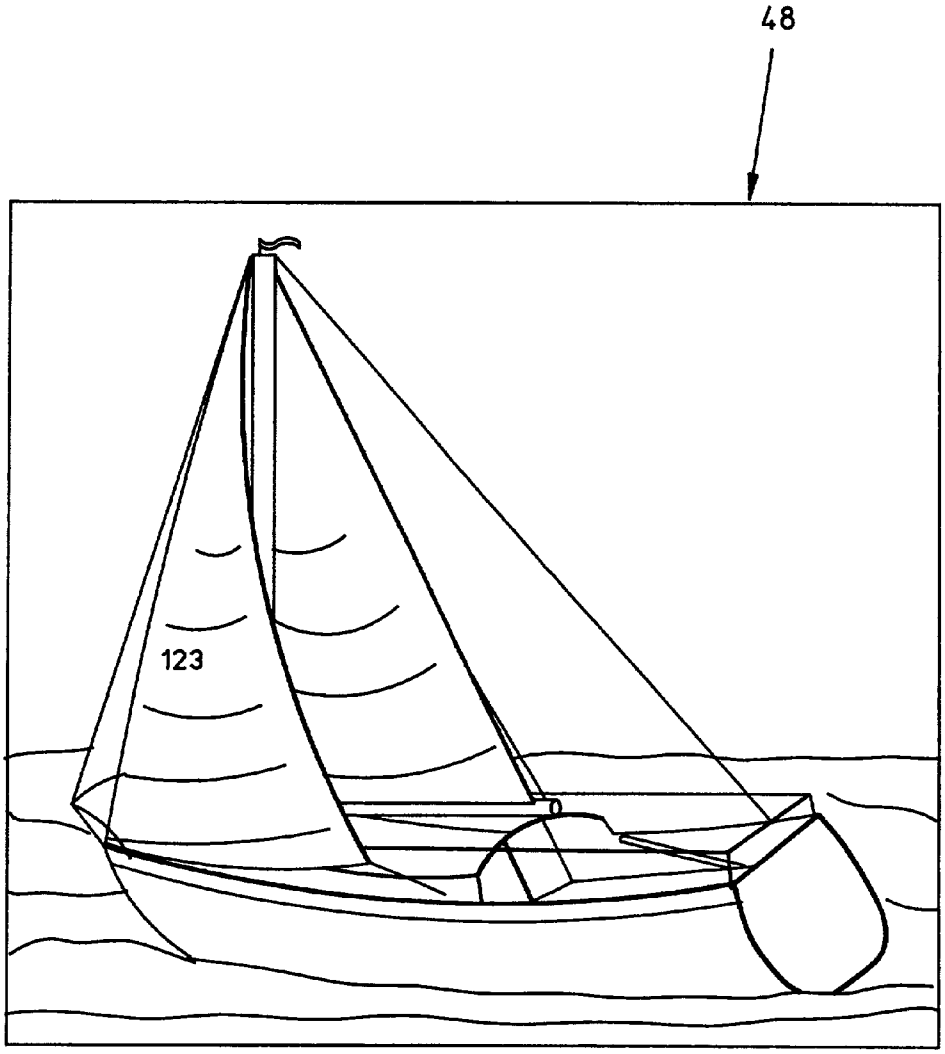
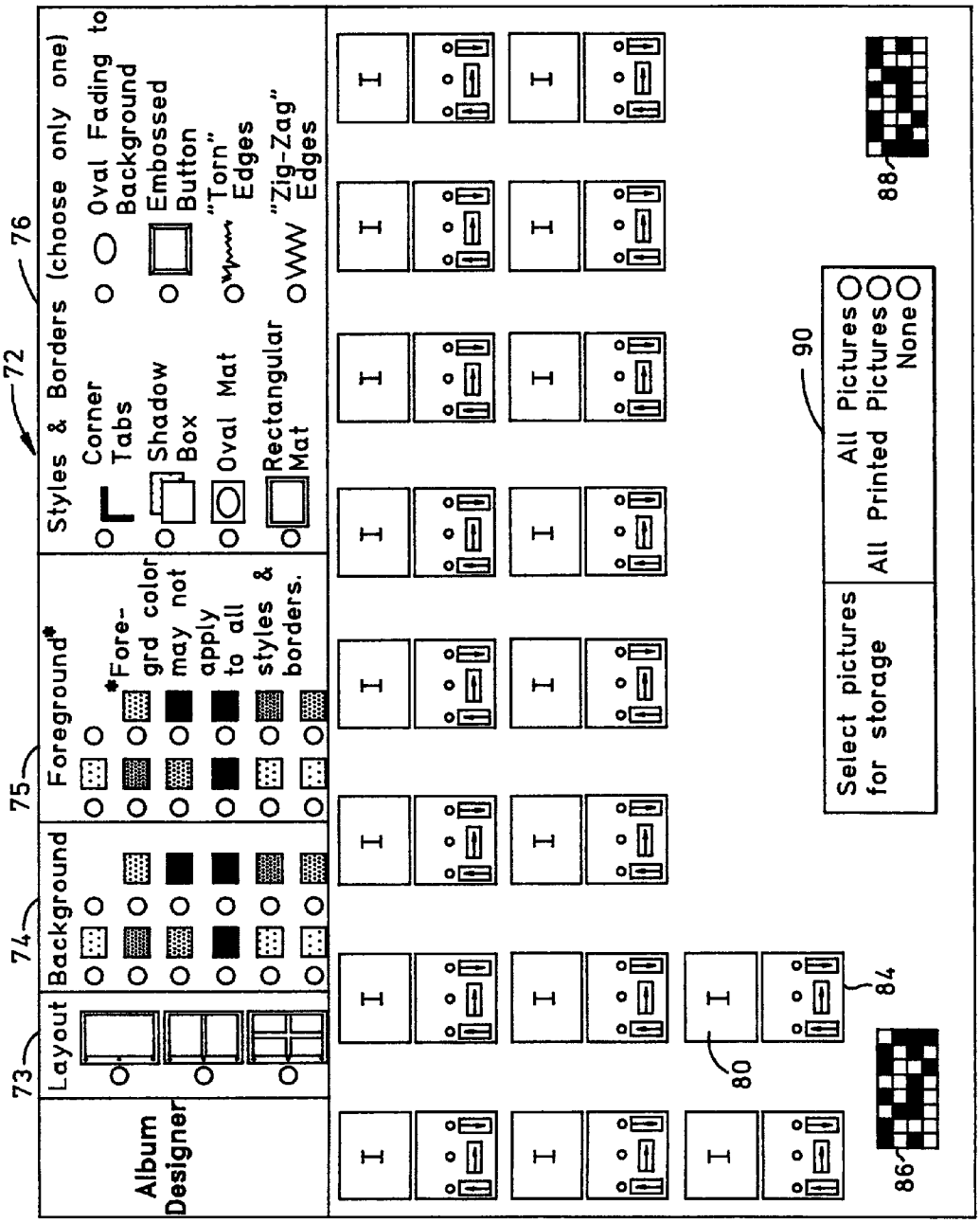


FIG. 5

FIG. 6A


Album Designer
Layout
Background
Foreground*
Styles & Borders (choose only one)
Corner Tabs
Oval Fading to Background
Shadow Box
Embossed Button
Oval Mat
"Torn" Edges
Rectangular Mat
"Zig-Zag" Edges
*Fore-grd color may not apply to all styles & borders.
Select pictures for storage
All Pictures
All Printed Pictures
None
73
74
75
76
72
80
84
86
88
90

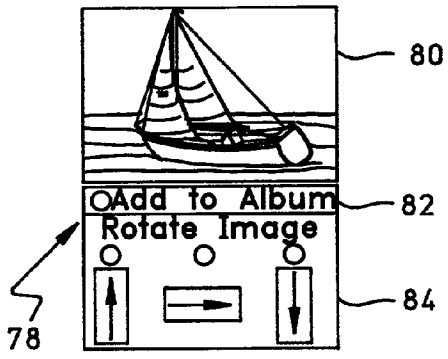

80
Add to Album
82
Rotate Image
84
78

FIG. 6B

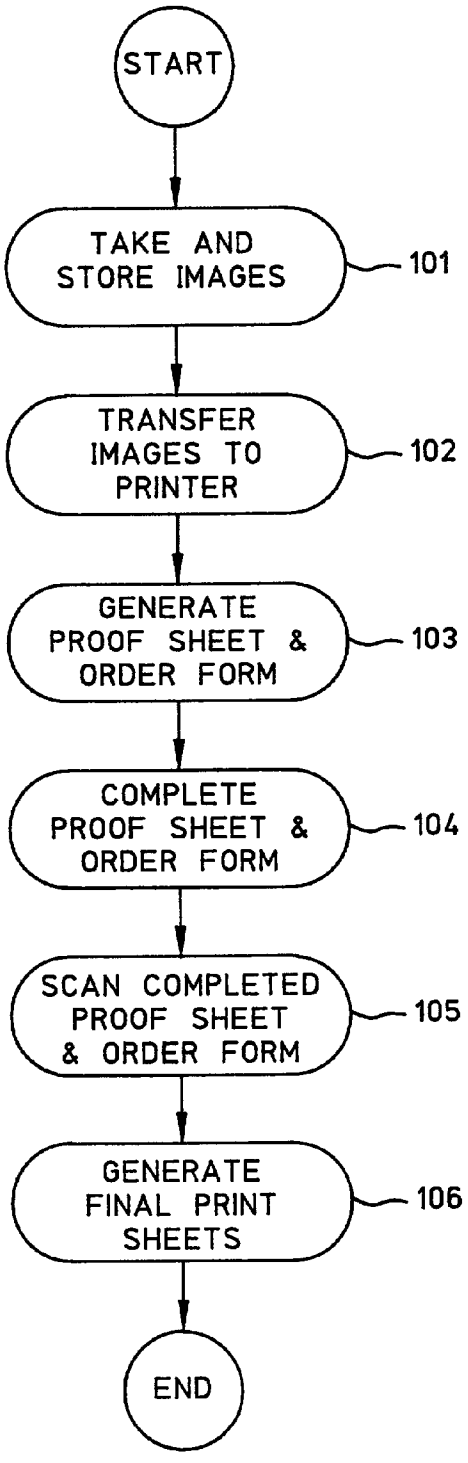

START
TAKE AND STORE IMAGES
101
TRANSFER IMAGES TO PRINTER
102
GENERATE PROOF SHEET & ORDER FORM
103
COMPLETE PROOF SHEET & ORDER FORM
104
SCAN COMPLETED PROOF SHEET & ORDER FORM
105
GENERATE FINAL PRINT SHEETS
106
END

FIG. 7

SYSTEM AND METHOD FOR PRINTING AND SCANNING A USER-COMPLETED DIGITAL STILL CAMERA IMAGE PROOF SHEET AND ORDER FORM

BACKGROUND OF THE INVENTION

[0001] The present invention relates to electronic photography, and more particularly, to a system and method for enabling a user to easily select and enhance one or more images taken by a digital still camera for printing without using a personal computer or some other complex user interface.

[0002] Digital still cameras (DSCs) are rapidly gaining popularity with consumers. They permit high resolution color images to be stored for subsequent printing by conventional inkjet and laser printers. The quality of the color prints that are produced approaches that of conventional silver halide photographic prints. More importantly, the digital images can be permanently stored on different forms of media such as compact disks (CDs), manipulated and altered in a personal computer (PC), inserted into computer graphics and word processing programs, sent to friends and relatives via e-mail, and transmitted over the Internet as part of web pages. From an environmental standpoint digital still cameras are attractive because they eliminate the need for chemical developer solutions.

[0003] Commercially available digital still cameras typically have a removable data storage media such as floppy diskette or a flash memory card onto which the digital representation of the images captured by the camera optics and charge coupled device (CCD) can be stored. These forms of media may be removed and plugged into a personal computer so that the digital representations of the images may be viewed. The personal computers may be provided with digital still camera image processing software for enhancing the color balance, contrast, borders and other characteristics of the images prior to storage, printing or transmission. Typically the image processing software that runs on the personal computer allows certain images to be selected and others discarded or ignored.

[0004] Other digital still cameras have been developed that may be coupled directly to a printer. These cameras are desirable for consumers who do not own personal computers or feel uncomfortable using such computers. The command buttons and graphical user interface (GUI) menus on such a camera's liquid crystal display (LCD) are used in accordance with a preprogrammed protocol to select the images to be printed. This type of digital still camera image selection and printing system has the advantage of not requiring a personal computer. It is normally undesirable to print all images, because some are usually poor in quality, and printing all images results in wasted time, paper and ink or laser toner. However, the user is faced with a complex and bewildering set of commands for selecting, downloading and printing images. As an alternative, the printer itself can be provided with a user interface for selecting images from a digital still camera. However this is undesirable because the printer ends up having user-unfriendly interface software. With either approach for coupling a digital still camera directly to a printer, without a PC interface, it is very tedious and cumbersome to vary the characteristics of the selected images to be printed, such as size, brightness, cropping, etc. For the sake of simplicity, such characteristics, along with others, are generally referred to herein as something that will "enhance" the original image taken by the digital still camera.

[0005] It would therefore be desirable to provide a system and method for enabling a user to easily select and enhance one or more images taken by a digital still camera for printing without using a personal computer or some other complex user interface normally required in a camera-direct-to-printer environment.

SUMMARY OF THE INVENTION

[0006] It is therefore the primary object of the present invention to provide a system for enabling a user to easily select and enhance one or more images taken by a digital still camera for printing without using a personal computer or a complex user interface normally required in a camera-direct-to-printer environment.

[0007] It is another object of the present invention to provide a method for enabling a user to easily select and enhance one or more images taken by a digital still camera for printing without using a personal computer or a complex user interface normally required in a camera-direct-to-printer environment.

[0008] Still another object of the present invention is to provide a combination proof sheet and order form including a graphical representation of at least one of a plurality of images taken by a digital still camera, the proof sheet and order form having a plurality of image selection and/or image enhancement user designation areas on the form that can be completed by a user and thereafter scanned and detected by a printer as a set of instructions that cause the printing of the chosen number of final prints in the desired quantity, size, brightness and so forth.

[0009] In accordance with the present invention a system is provided for enabling a user to select and print digitally stored images. A digital still camera is used for taking and storing digital representations of a plurality of images. A printer is used for generating graphical representations of selected ones of the plurality of images on a preselected print media. A flash memory card, floppy diskette, direct data link or some other conventional data transfer scheme is used to transfer the digital representations of the plurality of images from the digital still camera to the printer. The printer includes programming for generating a combination proof sheet and order form. The combination proof sheet and order form includes a graphical representation of at least one of the images and a plurality of user designation areas. The printer has circuitry and software for detecting the user designation areas on the form that have been completed by the user. The programming in the printer thereafter causes it to generate at least one final print sheet with the images and enhancements designated by the user on the combination proof sheet and order form.

[0010] In accordance with the present invention a method is provided for enabling a user to select and print digitally stored images. The method involves the steps of: 1) taking and storing digital still representations of a plurality of images; 2) transferring the digital still representations of the plurality of images to a printer capable of generating graphical representations of selected ones of the plurality of

images on a preselected print media; 3) generating with the printer a combination proof sheet and order form including a graphical representation of at least one of the images and a plurality of image selection and/or image enhancement user designation areas; 4) completing at least one of the user designation areas on the combination proof sheet and order form; 5) using the printer to read the combination proof sheet and order form to determine the user designation areas completed by the user; and 6)generating with the printer at least one final print sheet with the images and enhancements designated by the user on the combination proof sheet and order form.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] **FIG. 1** is a diagrammatic illustration of a system for enabling a user to select and print digitally stored images in accordance with a preferred embodiment of the present invention.

[0012] **FIG. 2** is a functional block diagram of a printer that may be used in the system of **FIG. 1**.

[0013] FIGS. **3A-3F** illustrate a combination proof sheet and order form that may be utilized with the system of **FIG. 1** to select one or more of an array of thumbnail images for final printing.

[0014] **FIG. 4** illustrates a custom proof sheet and order form that may be utilized with the system of **FIG. 1** in cropping a single image and selecting the brightness thereof for final printing.

[0015] **FIG. 5** illustrates an exemplary final print sheet with an image having the size, brightness and cropping designated by the user on the custom proof sheet and order form of **FIG. 4**.

[0016] **FIGS. 6A and 6B** illustrate an alternate combination proof sheet and order form that may be utilized with the system of **FIG. 1** in designing and printing pages for a digital photo album.

[0017] **FIG. 7** is a flow diagram of the basic method of the method of the present invention for enabling a user to select and print digitally stored images.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0018] Referring to **FIG. 1**, in accordance with the present invention a system **10** is provided for enabling a user to select and print digitally stored images. A conventional digital still camera **12** is used for taking and storing digital representations of a plurality of images. A laser printer **13** is used for generating graphical representations of selected ones of the plurality of images on a preselected print media. A flash memory card **16**, floppy diskette **18**, direct data link **20**, wireless data link (not illustrated) or some other well known digital data transfer scheme is used to transfer the digital representations of the plurality of images from the digital still camera **12** to the laser printer **13**.

[0019] The laser printer **13** includes firmware programming for generating a combination proof sheet and order form **22** (**FIG. 3A**). As will be described later on in great detail, the combination proof sheet and order form **22** includes a graphical representation of at least one of the images and a plurality of image selection and/or image enhancement user designation areas.

[0020] It should be understood that the system of **FIG. 1** can be used with an ink jet printer instead of a laser printer. Other types of printers could be utilized such as a dot matrix printer, dye sublimation printer, or thermal printer, provided they are capable of coloration and pixel density that will produce a suitable quality image. All that is necessary is that the printer have the electro-mechanical features, circuitry and firmware required to perform the functions described hereafter.

[0021] **FIG. 2** illustrates an ink jet printer **14**, in functional block diagram form, that may be utilized in the system **10** of **FIG. 1** in place of the laser printer **13**. The ink jet printer **14** includes, for example, a reader **24** into which the flash memory card **16** may be removably inserted. Alternatively, the ink jet printer **14** could be equipped with a floppy disk drive or a wireless data transceiver. The flash memory card reader **24** is connected to a central processing unit (CPU) **26** which uses programs stored in a read only memory (ROM) **28** to download the digital representations of the images into a random access memory (RAM) **30**. Pushbuttons **32** are manually selectively depressed by the user in a protocol directed by alphanumeric prompts, icons and/or other GUI indicated on an LCD display **34** and associated driver circuitry to cause the printer **14** to generate the combination proof sheet and order form **22** (**FIG. 3A**). In **FIG. 1**, the laser printer **13** has a slot or bezel **35** which allows insertion of the flash memory card **16** into a flash memory card reader.

[0022] An ink jet cartridge **36** (**FIG. 2**) is transversely reciprocated back and forth in the ink jet printer **14** while a sheet of print media such as plain paper located in an input/output media tray **38** is longitudinally advanced through the inkjet printer **14**. An electromechanical cartridge drive mechanism **40** is controlled by the CPU **26** for moving the ink jet cartridge **36** transversely across the paper as required. The CPU **26** controls the ink jet cartridge **36** through a jet driver circuit **42**. An electromechanical media drive mechanism **44** is connected to the CPU **26** for advancing the sheet of paper longitudinally through the ink jet printer **14**.

[0023] The user manually completes selected user designation areas on the proof sheet and order form **22** (**FIG. 3A**), such as by marking thereon with a marking implement such as a pencil or a pen. This permits the user to select which images to send to final printing, image quantity, image brightness, image cropping, etc. The completed proof sheet and order form **22** is then manually re-inserted into the input/output media tray **38** (**FIG. 2**) of the ink jet printer **14**. The user then pushes one or more of the push buttons **32** on the ink jet printer **14** to cause the media drive mechanism **44** to draw the now-completed form **22** from the tray **38** back through the ink jet printer **14**. Alternatively, the printer **14** can detect the re-insertion of the order form **22** and automatically start printing the final print sheet(s).

[0024] A scanner **46** (**FIG. 2**) including circuitry and software is mounted in the ink jet printer **14**. The scanner **46** may, for example, include a high intensity illumination source (not illustrated) and an array of photo detectors (not illustrated) mounted adjacent the path of the proof sheet and order form **22** as it is conveyed longitudinally through the ink jet printer **14**. Alternatively, the scanner **46** can incor-

porate the exiting paper edge sensors that are already in some printer. Some ink jest printers have sensors for detecting the type of media and the activation energy for the ink jet pen. These sensors can be used to detect completed user designation areas. The scanner **46** is used to detect the user designation areas completed by the user on the proof sheet and order form **22**. This information is conveyed to the CPU **26** for storage in the RAM **30**. Programming stored in the ROM **28** is used by the CPU **26** to generate at least one final print sheet **48 (FIG. 5)**. As discussed hereafter in detail, the final print sheet or sheets have the images and enhancements (e.g. size, cropping, brightness, etc.) designated by the user on the combination proof sheet and order form **22**.

[**0025**] The ink jet printer **14 (FIG. 2)** is also provided with a plurality of input/output (I/O) ports **50** for connecting cables such as the direct data link **20** to the digital still camera **12 (FIG. 1)** and to a personal computer (not illustrated). The ink jet printer could have a wireless data transceiver for communicating with the digital still camera, such as an infrared based system widely used with 8 mm VCR cameras to communicate with their remote controls.

[**0026**] **FIG. 3A** is a detailed plan view of an exemplary combination proof sheet and order form **22** that may be utilized with the system **10** of **FIG. 1** to select one or more images from an array of thumbnail images such as **52 (FIG. 3 C)** for final printing. By way of example, there are twenty-five thumbnail images labeled "I" in **FIG. 3A** arranged in an array of four rows and eight columns on the form **22**. The term "thumbnail" is a term of convenience used to describe printed graphical representations of reduced size and/or quality that are sufficiently small so that an array of the same can be printed on a single sheet of paper for simultaneous viewing and evaluation by a user. The thumbnail images I are preferably printed in color, although they could be black and white. They are made up of microscopic pixels of color pigment applied in a well known manner to achieve the image definition, tone, shading, resolution and other image characteristics required. The thumbnail image **52** and the image on the final print sheet **48 (FIG. 5)** have been shown as line drawings due to the limitations imposed on permissible patent drawings.

[**0027**] It will be understood that the thumbnail images I are typically of lower quality than the final print images. The thumbnail images are displayed in an array to allow the user to quickly and easily select which of the digitally stored images transferred from the camera **12** that he or she wants to print or save in final, higher quality form.

[**0028**] The combination proof sheet and order form **22 (FIG. 3 A)** includes image selection user designation areas such as **54 (FIG. 3C)** adjacent each of the thumbnail images I. The user designation areas **54** include rows and columns of bubbles **56** that can be manually filled in by a user with a pen or a pencil. Other discrete regions could be utilized as user designation areas such as vertical stripes or slots between two adjacent vertical bars. The user designation areas could consist of discrete bounded regions in which a user could write in print or cursive form numbers, digits or symbols that could be read with optical character recognition (OCR) software. Alternatively, a user could punch out holes or apply stickers or conductive markers. Besides optical scanning, the printer could use electrical or mechanical detection of the completed user designation areas. The user designation areas **54** of the form **22** also include user readable printed indicia in the form of the column headings "Size" and "Qty" (quantity) in addition to row headings "3.5×5", "4×6", "5×7", "8×10" and "Cstm". The user designation areas are labeled "B" in **FIG. 3A**. The user can fill in one or more bubbles **56** in the user designation area B adjacent a particular thumbnail image I to "order" the desired number and size of final prints of that digitally stored image. Filling in the bubble next to "Cstm" causes the ink jet printer **14** to generate the custom proof sheet and order form **58 (FIG. 4)** for that particular thumbnail image on a single sheet of paper. The layout and use of the custom form **58** will be described in detail later on.

[**0029**] Referring again to **FIG. 3**A, the combination proof sheet and order form **22** further includes a first identity marker **60** and a second identity marker **62**. Each of these identity markers may take the form of a checkerboard grid as shown in **FIGS. 3D and 3F**. Each identity marker **60** and **62** has a unique pattern that is associated with the set of digital images that have been used to generate the proof sheet and order form **22**. The markers **60** and **62** thus identify the contents of, for example, the flash memory card **16**. When the completed form **22** is re-inserted into the ink jet printer **14**, the identity markers **60** and **62** are scanned and compared to a code associated with the set of digital images currently stored in the printer **14** and/or flash memory card **16** residing therein. If there is no match, the user is warned via message on the display **34**. This prevents the system from printing images and/or user designated enhancements from a reinserted form that do not correspond to the digital images currently available to the printer.

[**0030**] An "All Pictures" user designation area **64 (FIGS. 3A and 3B)** is printed on the upper left corner of the form **22**. It has no thumbnail image but has the Size and Qty indicia and associated bubbles to allow the user to order that all portrayed thumbnail images I be printed in particular sizes and quantities. Finally, the combination proof sheet and order form **22** also includes a "Select pictures for storage" user designation area **66 (FIGS. 3A and 3E)** with associated indicia and bubbles. This feature allows the user to designate that all images, all images designated for final printing, or no images are to be permanently stored in the memory of the ink jet printer **14** or in a PC connected to the ink jet printer **14**, or in some other permanent fashion.

[**0031**] The ink jet printer **14** could have a cache memory larger than that normally found in the camera **12** but smaller than the RAM memory of a PC connected to the ink jet printer **14**. The ink jet printer **14** could be programmed to store the images transferred from the camera **12** and after reading the completed order form **22**, transfer selected images to the PC for permanent stroage when the printer detects that the PC has powered up. This empties the RAM **30** of the ink jet printer **14** for receiving new images.

[**0032**] **FIG. 4** is a plan view of the custom proof sheet and order form **58** that may be utilized with the system of **FIG. 1** in cropping a single image and selecting the brightness thereof for final printing. Print size, print quantity and picture brightness may also be selected via the custom order form **58**. The custom order form **58** includes a substantially enlarged version **52'** of the thumbnail corresponding image on the form **22** whose "custom" bubble **56** was previously filled in. Again the image **52'** has been shown diagrammati-

cally in **FIG. 4** due to the limitations on the permissible form of patent drawings. In reality, the image **52'** would be a graphical image printed on the form **58** via a complex pattern of tiny pixels. A series of equally spaced bubbles **67** and a series of equally spaced bubbles **68** along the left vertical and bottom horizontal side edges, respectively, of the enlarged image **52'** may be filled in by the user to crop the image **52'**. In **FIG. 4** two of the bubbles **67** and two of the bubbles **68** have been filled in or darkened to give an example of the manner in which a user would designate cropping, which is one form of image enhancement described herein. The indicia or notation "Cropping—Mark two bubbles on the side & two on the bottom" appears above the enlarged thumbnail image **52'** on the custom form **58**.

[**0033**] The custom proof sheet and order form **58 (FIG. 4)** further includes a "Print Size & Quantity" user designation area **69** similar to the user designation area **54** of the form **22** except that the former includes additional print sizes such as "2×3 (wallet)", "11×14", "16×20" and "4×10". In addition, the custom proof sheet and order form **58** also includes a user designation area **70** labeled "Apply Cropping". By filling in the appropriate bubble, this feature enables the user to best-fit the designated cropping to the selected print size. Such a feature is necessary because the rectangular proportions of the cropping selected by the user in filling in selected ones of the bubbles **67** and **68** along the borders of the enlarged thumbnail image **52'** may not match the rectangular proportions of the print size selected with the user designation area **69**. Alternatively, this feature enables the user to specify that the final print of the selected image should be larger than the print size selected so that further cropping can take place on the next printing or the user can simply use scissors to cut a print down to the desired size.

[**0034**] The custom proof sheet and order form **58 (FIG. 4)** further includes a "Brightness" user designation area **71** on the right hand side thereof This area includes four thumbnail images **52***a*, **52***b*, **52***c* and **52***d* with progressively less brightness in the actual graphic printing of these images. The user fills in the bubble adjacent one of the four thumbnail images **52***a*, **52***b*, **52***c* or **52***d* to select the level of brightness desired in the final print using the different brightness levels depicted. Brightness is another form of image enhancement referred to herein.

[**0035**] **FIG. 6A** is a plan view of an alternate proof sheet and order form **72** that may be utilized with the system of **FIG. 1** in designing and printing pages for a digital photo album. The album form **72** is preferably printed on a single sheet of paper in response to the pressing of one or more of the push buttons **32** on the ink jet printer **14** or by filling in a bubble on one of the forms **22** or **58**. The album form **72** includes user designation areas **73** for image "Layout", **74** for "Background", **75** for "Foreground" and **76** for "Styles & Borders". Each of these user designation areas presents relevant choice options, each having an adjacent bubble that can be filled in or completed to designate a choice. The choices available and their purposes are evident from **FIG. 6A** and need not be further described. The album form **72** further includes plurality of thumbnail images such as **80 (FIG. 6B)** each having adjacent "Add to album" and "Rotate Image" designation options **82** and **84** for the corresponding thumbnail image. Again, due to the restrictions on patent drawings, the thumbnail images I cannot be shown in their true color graphical form in **FIGS. 6A and 6B**. The images are shown as boxes labeled I in **FIG. 6A** and as a line drawing in **FIG. 6B**. It will be understood that in **FIG. 6A** each thumbnail image I is shown with its adjacent user designation area below the same that permits the user to add the image to the album and rotate the same. Identity markers **86** and **88 (FIG. 6A)** on the album form **72** serve the same function as the identity markers **60** and **62 (FIG. 3A)** of the form **22**. A "Select pictures for storage" user designation area **90 (FIG. 6A)** on the album form **72** permits the user to select, by filling in the appropriate bubble, "All pictures", "All printed pictures" or "none" for permanent storage.

[**0036**] It will be apparent to those skilled in the art that other forms of image enhancement could be selected on the forms **22**, **58** and **72** such as color balance. In addition, if date information has been stored when each image was taken, the user could designate on an order form that the final print is to include a superimposed picture date. Many other possibilities and combinations for image selection and/or image enhancement will occur to those skilled in the art and need not be specifically described herein.

[**0037**] In accordance with the present invention a method is also provided for enabling a user to select and print digitally stored images. Referring to **FIG. 7**, the method involves the following steps. The first step involves taking and storing digital still representations of a plurality of images. The second step **102** of the method involves transferring the digital still representations of the plurality of images to a printer capable of generating graphical representations of selected ones of the plurality of images on a preselected print media. The third step **103** of the method involves generating with the printer a combination proof sheet and order form including a graphical representation of at least one of the images and a plurality of image selection and/or image enhancement user designation areas. The fourth step **104** of the method involves completing at least one of the user designation areas on the combination proof sheet and order form. The fifth step **105** of the method involves using the printer to read the combination proof sheet and order form to determine the user designation areas completed by the user. The sixth and final step **106** of the method involves generating with the printer at least one final print sheet with the images and enhancements designated by the user on the combination proof sheet and order form.

[**0038**] **FIG. 7** illustrates only a very top level view of our method. It will be understood that there are a wide range of subroutines and options that can be followed in selecting and printing digitally stored images. For example, the combination proof sheet and order form **22** of **FIG. 3** could first be printed, completed, re-inserted into the ink jet printer **14** and scanned. The printer could then print a half dozen custom forms **58 (FIG. 4)** which could then be completed and fed through the ink jet printer **14** in succession with final print images being printed in succession as ordered. Thereafter, the album form **72 (FIG. 6)** could be completed and scanned.

[**0039**] Our invention thus provides a system and method for enabling a DSC user to quickly and easily decide what images to print, what size to print them in, and the number of prints of each image that are to be printed. The order form technique that we have developed is greatly advantageous in that it eliminates the need for the user to connect the DSC to a PC, while at the same time eliminating the need for a

complicated and expensive GUI on the printer. Many DSC users are well familiar with filling out forms that include brief word instructions and bubbles for making selections in other aspects of every day life such as standardized test taking, survey responses, mail order catalog forms and the like. Our invention has the advantage of minimizing the amount of paper, ink and toner that would otherwise be consumed in prior camera-direct-to-printer systems which typically require all images to be printed. Our invention further has the added benefit of allowing sophisticated color photographic prints to be "ordered" quickly and easily, while at the same time being environmentally friendly by eliminating the use of developers and other chemicals associated with conventional silver halide photography.

[0040] While we have described preferred embodiments of our system and method for enabling a user to select and print digitally stored images, it will be apparent to those skilled in the art that our invention can be modified in both arrangement and detail. For example, as already eluded to, the layout, content, and functionality of the order forms can be greatly varied. Our order forms could also be used with the developing of traditional silver-halide film images, allowing user completion via facsimile or e-mail transmissions. Therefore, the protection afforded our invention should only be limited in accordance with the scope of the following claims.

We claim:

1. A system for enabling a user to select and print digitally stored images, comprising:

a digital still camera for taking and storing digital representations of a plurality of images;

a printer for generating graphical representations of selected ones of the plurality of images on a preselected print media;

means for transferring the digital representations of the plurality of images from the digital still camera to the printer; and

the printer including means for generating a combination proof sheet and order form including a graphical representation of at least one of the images and a plurality of user designation areas, means for detecting the user designation areas on the combination proof sheet and order form completed by the user, and means for generating at least one final print sheet in accordance with the user designation areas completed by the user on the combination proof sheet and order form.

2. The system of claim 1 wherein the printer is selected from the group consistng of a laser printer, an ink jet printer, a dot matrix printer, a dye sublimation printer and a thermal printer.

3. The system of claim 1 wherein the combination proof sheet and order form includes an array of thumbnail images.

4. The system of claim 1 wherein the combination proof sheet and order form includes user designation areas to be completed by the user in the form of locations to be marked by the user with a marking implement.

5. The system of claim 4 wherein the means for detecting the user designation areas completed by the user includes an optical scanner for detecting locations on the combination proof sheet and order form that have been marked by the user with the marking implement.

6. The system of claim 3 wherein the combination proof sheet and order form includes a plurality of user designation areas adjacent each of the thumbnail images for designating enhancements selected from the group consisting of image size and image quantity.

7. The system according to claim 1 wherein the user designation areas are selected from the group consisting of image selection, image cropping, print size, print quantity and image brightness.

8. The system according to claim 1 wherein the means for transferring the digital representations of the plurality of images from the digital still camera to the printer is selected from the group consisting of a flash memory card, a floppy diskette, a direct data link and a wireless data link.

9. The system according to claim 1 wherein the printer further includes means for generating a custom proof sheet and order form having at least one graphically represented image and user designation areas along two adjacent side edges of the image to permit the user to indicate cropping of the image.

10. The system according to claim 1 wherein the printer further includes means for generating an album form including user designation areas for selecting from a plurality of different image borders.

11. A method for enabling a user to select and print digitally stored images, comprising the steps of:

taking and storing digital still representations of a plurality of images;

transferring the digital still representations of the plurality of images to a printer capable of generating graphical representations of selected ones of the plurality of images on a preselected print media;

generating with the printer a combination proof sheet and order form including a graphical representation of at least one of the images and a plurality of image selection and/or image enhancement user designation areas;

completing at least one of the user designation areas on the combination proof sheet and order form;

re-inserting the completed proof sheet and order form back into the printer and using the printer to read the combination proof sheet and order form to determine the user designation areas completed by the user; and

generating with the printer at least one final print sheet with the images and enhancements designated by the user on the combination proof sheet and order form.

12. The method of claim 11 and further comprising the steps of generating an identity marker on the combination proof sheet and order form uniquely associated with the digital representations of the plurality of images and using the printer to read the identity marker and confirm a match with the digital representations, before generating at least one final print sheet.

13. The method of claim 11 wherein the combination proof sheet and order form includes an array of thumbnail images.

14. The method of claim 11 wherein the combination proof sheet and order form includes user designation areas completed by the user in the form of locations that are marked by the user with a marking implement.

15. The method of claim 14 wherein the user designation areas completed by the user are read with an optical scanner for detecting locations on the combination proof sheet and order form that have been marked by the user with the marking implement.

16. The method of claim 13 wherein the combination proof sheet and order form includes a plurality of user designation areas adjacent each of the thumbnail images selected from the group consisting of image size and image quantity.

17. The method according to claim 11 wherein the user designation areas are selected from the group consisting of cropping, print size, print quantity and brightness.

18. The method according to claim 11 and further comprising the step of generating at least one custom proof sheet and order form with user designation areas for cropping a selected image.

19. The method according to claim 11 wherein the user designation areas comprise bounded regions to be marked by a user with a marking implement.

20. A combination proof sheet and order form for use with a printer in selecting and printing digitally stored images, comprising:

a single sheet of print media having printed thereon an array of graphical representations of a plurality of digitally stored images and a plurality of user designation areas adjacent each of the images of the array to be completed by a user in the form of discrete locations to be filled in by the user with a marking implement for subsequent scanning and detection in generating final print sheets in accordance with the user designation areas completed by the user, the user designation areas adjacent each of the images of the array selected from the group consisting of image selection, image size and image quantity.

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