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(54) [Title] Simple Digital Camera and Image Ordering Method Using Such

(57) [Abstract]

[Problem] To provide a simple digital camera at a low cost without decreasing image quality.

[Solution] A camera body 11 is provided with a shooting lens 12, an imaging unit 20, a memory 22, and a communication unit 23. Thumbnail data of shot image data is made readable from an external connector 30 via the communication unit 23. The external connector 30 is connected to a mobile phone via a connection cord. The thumbnail data is read from the external connector 30 and displayed on a liquid-crystal display of the mobile phone. A display image of this display is observed, and order data is input. The order data is sent to an order destination by the mobile phone. Moreover, the order data is written in a storage means of a camera. A liquid-crystal display becomes unnecessary, and costs can be reduced accordingly. The image data is read from the memory 22 at the order destination. After use, a simple digital camera 10 is recycled.
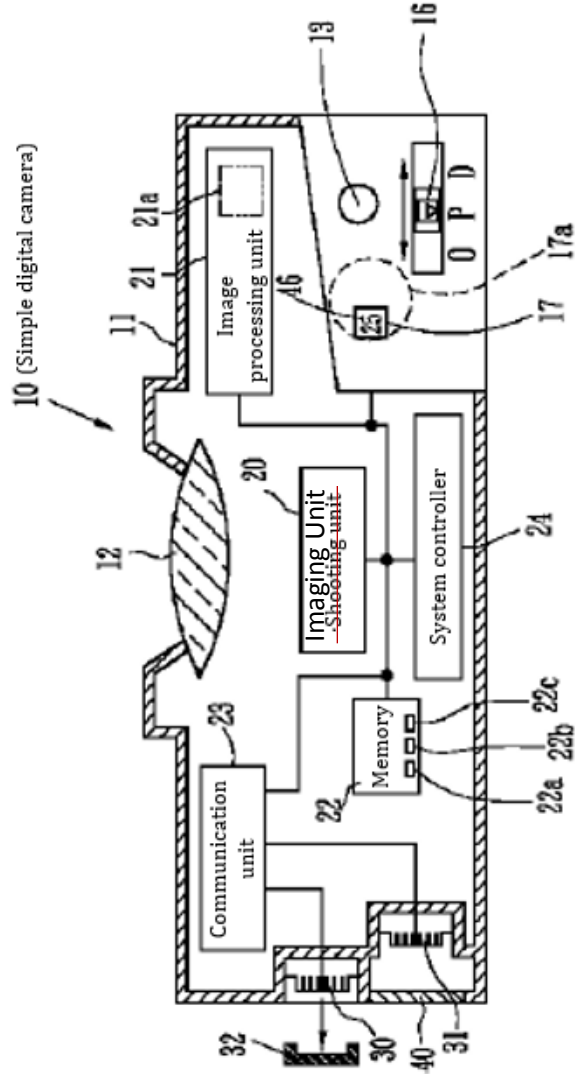
[Claims]
[Claim 1] A simple digital camera, comprising: an image imaging means; a storage means of storing image data shot by this image imaging means; and a data transfer means of transferring only thumbnail data representing a content of the image data by a first reading operation and transferring the image data by a second reading operation; wherein the first reading operation is performed by an external operation member provided to a camera main body, and the second reading operation is performed by a special operation that differs from the first reading operation.

[Claim 2] A simple digital camera, comprising: an image imaging means; a storage means of storing image data shot by this image imaging means and thumbnail data representing a content of this image data; and a data transfer means of transferring only the thumbnail data by a first reading operation and transferring the image data by a second reading operation; wherein the first reading operation is performed by an external operation member provided to a camera main body, and the second reading operation is performed by a special operation that differs from the first reading operation.

[Claim 3] The simple digital camera of claim 1 or 2, wherein the special operation is performed via an internal connector provided inside the camera main body, and a camera function is disabled by at least an act of removing a cover covering the internal connector.

[Claim 4] The simple digital camera of claim 1 or 2, wherein the special operation is performed by an operation of an internal operation member provided inside the camera main body, and the camera function is disabled by at least an act of removing a cover covering the internal operation member.

[Claim 5] The simple digital camera of any one of claims 1 to 4, wherein the storage means stores the image data encrypted, and the special operation decrypts the image data.

[Claim 6] The simple digital camera of any one of claims 1 to 5, wherein the data transfer means transfers identification data for identifying the image imaging means.

[Claim 7] The simple digital camera of claim 6, wherein correction data that is any one among pixel-defect data, lens distortion and aberration data, and peripheral-dimming data is managed according to identification data, and correction is performed based on the correction data when subjecting the image data to image processing.

[Claim 8] The simple digital camera of any one of claims 1 to 7, wherein the image imaging means has an imaging capacity of no less than one million pixels, and the simple digital camera is submitted in its entirety to an order destination for printing or image reading.

[Claim 9] The simple digital camera of any one of claims 1 to 8, wherein the image imaging means, the storage means, and the data transfer means are reusable products.

[Claim 10] The simple digital camera of any one of claims 1 to 9, further comprising: a data input means of designating an image to be deleted based on observation results of a thumbnail image by the thumbnail data transferred by the first operation; and a means of deleting corresponding image data of the storage means based on deletion-designation data from this data input means.

[Claim 11] An image ordering method of using an information terminal provided with an image-display display to read the thumbnail data by the first operation from the simple digital camera of any one of claims 1 to 10 and display a thumbnail image on the image-display display and of writing order data input by observing this displayed thumbnail image in the storage means.

[Claim 12] An image ordering method of using an information terminal provided with an image-display display to read the thumbnail data by the first operation from the simple digital camera of any one of claims 1 to 10 and display a thumbnail image on the image-display display and of transferring order data input by observing this displayed thumbnail image to an order destination.

[Claim 13] The image ordering method of claim 11 or 12, wherein at the order destination, the image data is read by the second reading operation from a received simple digital camera, and printing or writing of the image data on a recording medium is performed based on this read image data.

[Claim 14] The image ordering method of any one of claims 11 to 13, wherein the information terminal is a mobile terminal, camera identification data for identifying the simple digital camera is read together with the thumbnail data by the first operation, and the camera identification data and the order data are transferred to an order destination.

[Claim 15] The image ordering method of claim 14, wherein correction data that is any one among pixel-defect data, lens distortion and aberration data, and peripheral-dimming data is stored according to camera identification data, and correction is performed using this correction data at a time of image processing when performing order processing.

[Claim 16] The image ordering method of any one of claims 11 to 15, wherein the information terminal is a mobile phone.

[Claim 17] The image ordering method of any one of claims 11 to 16, wherein at the order destination, after reading the image data by the second reading operation, this simple digital camera is sent to a reprocessing facility; the image imaging means, the storage means, and the data transfer means are inspected; and these are reused to restore the simple digital camera.

[Description]
[0001]
[Field] The present invention relates to a simple digital camera of a recyclable type used as if using a disposable camera and an image ordering method using such.
[0002]
[Background] Digital cameras are rapidly become widespread in recent years, and various types are being offered, from high-end devices in excess of four-million pixels to simple devices of about 100,000 to 300,000 pixels. These digital cameras are provided with a liquid-crystal display for confirming a shooting image, and this liquid-crystal display is used as a finder, for image reproduction, for various settings, and the like.
[0003]

[Technical Problem] Because a conventional digital camera uses the liquid-crystal display for various types of display, manufacturing costs are increased even for a simple device, making it an expensive product compared to a camera of a disposable type such as a film unit with a lens. Therefore, there is a problem where carefree shooting is not possible. Moreover, although simple devices of about 300,000 pixels omit the liquid-crystal display to decrease costs, these simple devices are still expensive and cannot be used in a carefree manner like the film unit with a lens. Moreover, these devices of about 300,000 pixels are mainly for confirming an image content on a display and have a problem where a pixel count is too low for printing out a photograph.

[0004] The present invention solves these problems and has as an object to provide a simple digital camera whereby carefree shooting can be performed as if using a disposable camera yet a high-quality print can also be obtained.

[0005]

[Solution to Problem] To achieve this object, the invention of claim 1 is provided with an image imaging means, a storage means of storing image data shot by this image imaging means, and a data transfer means of transferring only thumbnail data representing a content of the image data by a first reading operation and transferring the image data by a second reading operation, wherein the first reading operation is performed by an external operation member provided to a camera main body and the second reading operation is performed by a special operation that differs from the first reading operation. Moreover, as in the invention of claim 2, thumbnail data may be created when storing the image data instead of being created based on the image data at a time of transfer such that a thumbnail image thereof is stored together with the image data.

[0006] Note that the special operation is preferably performed via an internal connector provided inside the camera main body and a camera function is disabled by at least an act of removing a cover covering the internal connector. In this situation, a decreased recovery rate of the simple digital camera due to inappropriate use can be avoided. Moreover, the special operation may be performed by an operation of an internal operation member provided inside the camera main body and the camera function may be disabled by at least an act of removing a cover covering the internal operation member. Moreover, the storage means may store the image data encrypted and the special operation may decrypt the image data.

[0007] Furthermore, the data transfer means preferably transfers identification data for identifying the image imaging means. By this, the image data can be readily specified. Moreover, preferably, correction data is that is any one among pixel-defect data, lens distortion and aberration data, and peripheral-dimming data is managed according to identification data and correction is performed based on the correction data when subjecting the image data to image processing. In this situation, even if shooting is performed by a simple camera mechanism, these corrections being made individually for each device enables high-resolution image data on par with that of a

high-end device to be obtained even with a low-cost device.

[0008] The image imaging means has an imaging capacity of no less than one million pixels, and the simple digital camera is submitted in its entirety to an order destination for printing or image reading. By this, the recovery rate of the simple digital camera is increased and recycling can be performed reliably. Moreover, the image imaging means, the storage means, and the data transfer means are reusable products. By this, increased manufacturing costs for the simple digital camera are suppressed and the simple digital camera can be provided at a low cost.

[0009] By being provided with a data input means of designating an image to be deleted based on observation results of a thumbnail image by the thumbnail data transferred by the first operation and a means of deleting corresponding image data of the storage means based on deletion-designation data from this data input means, an unsuccessfully shot image can be deleted even in the simple digital camera.

[0010] In the invention of claim 11, by using an information terminal provided with an image-display display to read the thumbnail data by the first operation from the simple digital camera above and display a thumbnail image on the image-display display and by writing order data input by observing this displayed thumbnail image in the storage means, individual order data becomes able to be readily input.

[0011] In the invention of claim 12, by using an information terminal provided with an image-display display to read the thumbnail data by the first operation from the simple digital camera above and display a thumbnail image on the image-display display and by transferring order data input by observing this displayed thumbnail image to an order destination, ordering can be performed readily.

[0012] With the invention of claim 13, at the order destination, the image data is read by the second reading operation from a received simple digital camera and printing or writing of the image data on a recording medium is performed based on this read image data. As such, a high-quality print or high-quality image data becomes able to be obtained. Moreover, the information terminal is a mobile terminal, identification data is read together with the thumbnail data by the first operation, and the identification data and the order data are transferred to an order destination. By this, it becomes sufficient to simply hand over the simple digital camera to the order destination, enabling ordering by a simple process such as dropping off the camera in a drop-off box.

[0013] At the order destination, after reading the image data by the second reading operation, this simple digital camera is sent to a reprocessing facility; the image imaging means, the storage means, and the data transfer means are inspected; and these are reused to restore the simple digital camera. Therefore, resources can be used effectively.

[0014]

[Description of Embodiments] FIG. 1 is a schematic view illustrating a simple digital camera of the present invention provided as a memory with a lens. This simple digital camera 10 is provided with a shooting lens 12, a

shutter button 13, a finder 14, a flash device 15 (see also FIG. 2), a mode-switching button 16, and a window 17 for displaying a number of shootable frames remaining in a camera body 11 made of plastic and is provided therein with a imaging unit 20, an image processing unit 21, a memory 22, a communication unit 23, a system controller 24, and a battery 25 (see FIG. 2).

[0015] The imaging unit 20 is provided with a CCD image sensor, a CCD driver, an amplifier, an A/D converter, and the like; it shoots a subject image via the shooting lens 12 and sends image data thereof to the image processing unit 21.

[0016] The image processing unit 21 applies image processing such as gradation conversion; color conversion; hyper-tone processing, which compresses gradations of an ultra-low-frequency luminance component of the image; and hyper-sharpness processing, which emphasizes sharpness while suppressing graininess, and stores the image data in a printing area 22a in the memory 22. Moreover, the stored image data is subjected to thinning processing to create thumbnail data, which is stored in a thumbnail area 22b in the memory 22. Note that reference sign 22c indicates an order area.

[0017] The communication unit 23 performs data sending by being connected to an external information terminal or data reader via an external connector 30 and an internal connector 31. The external connector 30 is exposed to the outside by removing a cap 32 made of rubber and is connected to, for example, a mobile phone 36 via a connection cable 35 such as that illustrated in FIG. 2. Moreover, the internal connector 31 is disposed in the camera body 11; as illustrated in FIG. 4, the internal connector 31 is made able to connect to a data reader 42 by opening a lid 40 when the camera is submitted to a camera store, a DP receiving store, or the like (simply "receiving store" hereinbelow) for ordering a print or ordering image-data reading and is normally not exposed to the outside.

[0018] Furthermore, as illustrated in FIG. 3, by opening the lid 40, the internal connector 31 is exposed to the outside; it is made able to connect to the data reader 42, which is on a receiving-store side, via a connection terminal 41 such as that illustrated in FIG. 4. As illustrated in FIG. 3, an interlocking lever 44 is rotatably installed via an installation shaft 44a to a rear face of the lid 40 via a bracket 43. The interlocking lever 44 is provided between the shutter button 13 and a release switch 45; it swings due to the shutter button 13 being pressed, and the release switch 45 is turned on by this swinging. This interlocking lever 44 is maintained in a state where the shutter button 13 is lifted upward by a coil spring 47.

[0019] The lid 40 is formed integrally with the camera body 11 by a thin portion 40a; the lid 40 is opened and broken off from the thin portion 40a by being pried open using a tool such as a screwdriver with a dull tip. Moreover, by the lid 40 being removed from the camera body 11, the interlocking lever 44 is broken off from the installation shaft 44a thereof; a subsequent shooting operation becomes impossible, and the camera no longer functions as a digital camera.

[0020] As illustrated in FIG. 1, the mode-switching button 16 switches between a shooting mode (P), an image

confirmation communication mode (D), and an order-data writing mode (O) but is normally set to the shooting mode. In the shooting mode, shooting is performed by pressing the shutter button 13. The image confirmation communication mode is selected after shooting is ended or the like; as illustrated in FIG. 2, of images stored in the memory 22, only the thumbnail data is read by the external information terminal—for example, the mobile phone 36—enabling a content of the shot image to be confirmed. Order data is input by various keys 36b of the mobile phone 36 while confirming the content of this shot image and is temporarily stored in a memory of the mobile phone 36. The order-data writing mode is selected after selecting the image confirmation communication mode. In this mode, the order data temporarily stored in the memory of the mobile phone 36 is written in the order area 22c of the memory 22 of the simple digital camera 10. Note that an information terminal 37 other than the mobile phone 36 may also be used, such as a personal computer, a palmtop (a pocket-sized device adopting a touch-screen interface), or a handheld personal computer (a small device adopting a keyboard interface) provided with a communication function of a modem or the like.

[0021] A number 46, indicating the number of shootable frames remaining, of a display plate 17a is displayed in the window 17 for displaying the number of shootable frames remaining. In the present embodiment, due to a storage capacity of the memory 22, image data of twenty-five frames can be stored. Because of this, the number 46, which ranges from "25" to "0," is recorded on the plate 17a for displaying the number of shootable frames remaining; the plate 17a for displaying the number of shootable frames remaining is rotated intermittently one number at a time by an intermittent rotation mechanism that is not illustrated to display the number of remaining frames. Note that this number of shootable frames remaining is not limited to twenty-five and may be an appropriate number of frames. Moreover, instead of representing the number of remaining frames, a number of shot frames may be displayed. Moreover, instead of mechanical display of the number of frames, the number of frames may be displayed using a liquid-crystal numeric display or the like.

[0022] An application for performing data communication of a thumbnail image, display of a thumbnail image, and print ordering of a thumbnail image is installed on the mobile phone 36, and browsing processing and ordering processing of a thumbnail image 48 (see FIGS. 2, 5) are performed using this application. This application is provided by a printing server or the like run by a printing provider that is a large-scale photo lab or the like and is downloadable. When this application is installed, a user registration mode is automatically entered into, and after an address, a phone number, a payment withdrawal method and a withdrawal source, a sending destination of a product such as a CDROM recorded with the image data or a printed photograph, and the like are registered, a user password and a user ID are given.

[0023] In a situation of image-browsing and ordering, as illustrated in FIG. 2, the simple digital camera 10 and the mobile phone 36 are connected via the connection cable 35 and next, an image-browsing and ordering mode is

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