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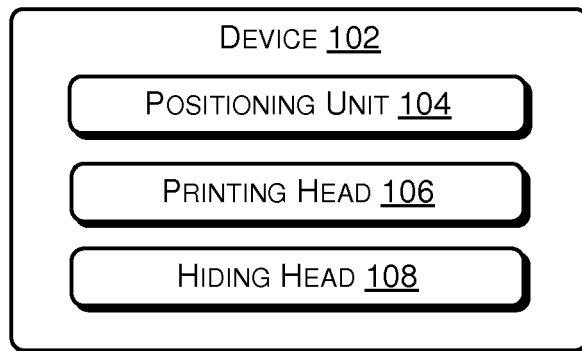
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(54) **Hiding positioning marks**

(57) A device (102) for modifying a document is disclosed. The document includes at least one positioning mark (202) pre printed on the document for printing data based on a location of the at least one positioning mark (202). The device (102) comprises a positioning unit

(104) for locating the at least one positioning mark (202) on the document. The device (102) further comprises a hiding head (108) for hiding the at least one of the positioning mark (202) printed on the document.



**Figure 1**

**EP 2 829 408 A1**

## Description

### FIELD OF INVENTION

**[0001]** The present subject matter relates to personalization of documents and, particularly but not exclusively, to modifying a document to hide positioning marks used in printing for personalization of documents.

### BACKGROUND

**[0002]** Laser printers are commonly used for printing images, text, and signatures on documents, such as identification cards, driving license cards, passports, resident permits, and voting cards, due to their high quality and high speed printing. The process of printing such information of an individual on the documents, using a laser printer, may be referred to as laser card personalization.

**[0003]** During the laser card personalization, in case of grayscale printing, certain pixels of a matrix printed on a document are selectively darkened to print an image or name on the document. Further, in case of color printing, certain pixels of a matrix of multiple colors, such as red, blue, green and sometimes white, printed on a document are selectively darkened by a laser beam to print the information of the individual. When a pixel of a particular color is darkened using the laser beam, a new color may be perceived by the human eyes.

### SUMMARY

**[0004]** This summary is provided to introduce concepts related to hiding positioning marks used in printing. This summary is not intended to identify essential features of the claimed subject matter nor is it intended for use in determining or limiting the scope of the claimed subject matter.

**[0005]** In one embodiment of the present subject matter, a device for modifying a document is disclosed. The document includes at least one positioning mark pre printed on the document for printing data based on a location of the at least one positioning mark. The device comprises a positioning unit for locating the at least one positioning mark on the document. The device further comprises a hiding head for hiding the at least one of the positioning mark printed on the document.

**[0006]** In one implementation, the printing head is the hiding head and hides the at least one of the positioning mark printed on the document.

**[0007]** In one implementation, the printing head hides the at least one positioning mark by darkening the at least one positioning mark by the laser beam based on a modified image. The modified image is the image to be printed on the document having a masking mark corresponding to each of the at least one positioning mark.

**[0008]** In another implementation, the hiding head hides the at least one positioning mark by darkening the

at least one positioning mark by the laser beam based on one or more mask images. Further, each of the one or more mask images has a masking mark corresponding to each of the at least one positioning mark.

**[0009]** In yet another implementation, the hiding head hides the at least one positioning mark by the laser beam based on vectorized data.

**[0010]** In one embodiment of the present subject matter, a method for modifying a document comprising at least one positioning mark used for printing data on the document is disclosed. The method comprises locating, by a positioning unit, the at least one positioning mark on the document. The method further comprises hiding, by a hiding head, the at least one of the positioning mark printed on the document.

**[0011]** In one embodiment of the present subject matter, a document comprising at least one positioning mark used for printing data on the document is disclosed. The data is printed on the document based on a location of the at least one positioning mark. Further, each of the at least one positioning mark is hid to prevent counterfeiting of the document

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0012]** The detailed description is described with reference to the accompanying figures. In the figures, the left-most digit(s) of a reference number identifies the figure in which the reference number first appears. The same numbers are used throughout the drawings to reference like features and components. It should be appreciated by those skilled in the art that any block diagrams herein represent conceptual views of illustrative systems embodying the principles of the present subject matter.

**[0013]** Figure 1 schematically illustrates a device for modifying a document having positioning marks used in printing, in accordance with an embodiment of the present subject matter.

**[0014]** Figure 2(a) illustrates an exemplary matrix with positioning marks, in accordance with an embodiment of the present subject matter.

**[0015]** Figure 2(b) illustrates an exemplary image to be printed on a document, in accordance with an embodiment of the present subject matter.

**[0016]** Figure 3(a) illustrates an exemplary modified image with masking marks, in accordance with an embodiment of the present subject matter.

**[0017]** Figure 3(b) illustrates an exemplary mask image with masking marks, in accordance with an embodiment of the present subject matter.

**[0018]** Figure 3(c) illustrates an exemplary vectorized data for hiding positioning marks, in accordance with an embodiment of the present subject matter.

**[0019]** Figure 4 illustrates a method for modifying a document to hide positioning marks used in printing, in accordance with an embodiment of the present subject matter.

## DESCRIPTION OF EMBODIMENTS

**[0020]** Systems and methods for modifying a document to hide positioning marks used in printing are described. The systems and methods can be implemented in a variety of printing devices, such as a laser printer.

**[0021]** Typically, information, such as a color image, alphanumerical data, fingerprints, ghost images, graphical elements and signatures, are printed on a document during personalization. Examples of the document may include an identification card, a driving license card, a passport, a resident permit, and a voting card. Generally, the document may be made up of materials which act as a good base for the card personalization. In an example, the document may be of material, such as polycarbonate, polyester film (PETF), polyvinyl chloride (PVC), and similar laminated substances. Further, the document, on which the information is to be printed, has a matrix of pixels to be selectively darkened for printing of the information. In an example, the pixels are of multiple colors, such as red, blue, green, and white.

**[0022]** In an implementation, the matrix may be a dot matrix. In another implementation the matrix may be a line matrix. When the dot matrix or the line matrix is printed on the document, at least one positioning mark is also printed on the document which is used to align a printing head of a printer. The positioning marks ensure that there is no misalignment of colors on the document and the information is printed on a selected region on the document. The positioning marks may also be referred to as anchor points.

**[0023]** In an example, for printing data, such as an image or alphanumerical data of a user on the document, initially, the positioning marks are identified using a positioning unit. Thereafter, the printing head of the printer is precisely adjusted based on the positioning marks for darkening pixels of colors in the matrix. Once the positioning marks are determined, the appropriate pixels, for rendering the image or alphanumerical data onto the document, may be darkened. The relevant pixels to be darkened may be determined based on the positioning marks corresponding to the appropriate pixels. The darkening of pixels of colors results in new colors and the image or the alphanumerical data is printed on the document. In an example, in case of a dot matrix of colors, such as cyan, magenta, yellow and white, when the pixels of cyan are darkened by the laser beam, the human eyes may perceive slightly dark red color. Similarly, by darkening the pixel corresponding to other colors, desired colors are obtained which are needed for rendering the image or the alphanumerical data onto the document.

**[0024]** In an example, tolerance level for printing the data (an image and/or an alphanumerical data) on the document is approximately 5 to 50 micrometer ( $\mu\text{m}$ ). Therefore, the positioning marks play a vital role in aligning the printing head precisely so that the data is printed on the document within the tolerance level.

**[0025]** Further, the positioning marks remain on the

document even after the printing of the image or the alphanumerical data on the document. The positioning marks left on the document may allow a counterfeiter to adjust the printing head precisely to a printing position which is within the tolerance level on which the data was printed on the document. Therefore, a counterfeiter may reuse the positioning marks for modifying the image already printed on the document. For example, the counterfeiter may change the name printed on the printing or edit a picture of a person by editing one or more appearance features of the person, such as by adding a moustache, changing color of hair and printing a new image over the existing image using the positioning marks.

**[0026]** The present subject matter describes systems and methods for modifying a document to hide positioning marks used in printing. When personal data of a user, such as name, image, and identification number is to be printed on a document, at least one position mark pre printed on the document is located using a positioning unit embedded in a printer. Subsequently, a printing head of a printer is adjusted based on the at least one positioning mark for printing the user data on the document. In one implementation, each color of a matrix on the document may have the positioning mark. The printing head may be adjusted accordingly for each of the positioning marks for printing of the user data. Once the user data is printed on the document, the positioning marks may not be further needed. Thereafter, the positioning marks may be hid such that the positioning marks are not recognizable or readable by a counterfeiter. It may be understood that the hiding of the positioning marks may include obscuring, deleting, removing, erasing, covering, or masking of the positioning marks to make the positioning marks unrecognizable and unreadable to a counterfeiter.

**[0027]** In one implementation, the at least one positioning mark may be hid by adding matter on a surface of the document. For example, the means for adding matter are of the type of an injection head (ink, varnish) or a laser head (carbonization). In another implementation, the at least one positioning mark may be hid by removing matter from the surface of the document. For example, the means for removing matter are of the type of alterative means or punch means. The matter is added or removed such that the at least one positioning mark may not be further used for adjusting the printing head.

**[0028]** In one implementation, the printing head may be a laser head capable of emitting laser beam for darkening pixels of colors present on the document. More particularly, the power of the laser is from 1 to 50 W and the wavelength is about 532 nm (laser UV), 1064 nm (laser infrared) and 10640 nm (laser CO<sub>2</sub>). In one example, for hiding the positioning marks, the positioning marks are darkened using the laser beam based on a modified image. The image, which is to be printed on the document, may be modified by adding a masking mark corresponding to each of the positioning marks. Therefore, the modified image may comprise the image to be

printed on the document and the masking marks. Further, the printer may then receive the modified image for printing of the image. When the image is being printed, the positioning marks may also get darkened by the laser beam due to presence of the masking marks in the modified image.

**[0029]** In another example, the positioning marks are darkened by the laser beam based on one or more mask images. The mask images may be obtained by the printer after printing of the image on the document. The mask images may have the masking marks for hiding the positioning marks printed on the document.

**[0030]** In another implementation, the positioning marks are hid based on vectorized data. The vectorized data masks the positioning marks so that they are not visible once the image is printed on the document. The vectorized data may be a text or a geometrical shape or a pattern or a picture to hide the positioning marks. In an example, a hiding head may be used for hiding the at least one positioning mark using the one or more mask images and the vectorized data. In another example, the printing head may perform the functionalities of the hiding head and may hide the at least one positioning mark using the one or more mask images and the vectorized data.

**[0031]** Therefore, with the present subject matter, the positioning marks are no longer present on the document. The positioning marks are hidden such that they are not recognizable or readable to the counterfeiter. In absence of the positioning marks, the counterfeiter may not be able precisely adjust the printing head within the tolerance level for modifying or altering the image. With the present subject matter, the image printed on document is free from any type of alteration or modification.

**[0032]** It should be noted that the description and figures merely illustrate the principles of the present subject matter. It will thus be appreciated that those skilled in the art will be able to devise various arrangements that, although not explicitly described or shown herein, embody the principles of the present subject matter and are included within its spirit and scope.

**[0033]** The manner in which the systems and the methods for modifying a document to hide positioning marks used in printing shall be implemented has been explained in details with respect to the Figures 1-4. While aspects of described systems and methods for modifying a document to hide positioning marks used in printing can be implemented in any number of different computing systems, network environments, and/or configurations, the embodiments are described in the context of the following exemplary system(s).

**[0034]** Figure 1 schematically illustrates a device 102 for modifying a document to hide positioning marks used in printing, in accordance with an embodiment of the present subject matter. The document may include an identification card, a driving license card, a passport, a resident permit, and a voting card. Further, the document comprises a matrix of pixels which allows printing of the user data on the document. In an example, the pixels are

of multiple colors, such as red, blue, green, and white for printing of the user data in color.

**[0035]** As shown in Figure 1, the device 102 comprises a positioning unit 104, a printing head 106, and a hiding head 108. In an implementation, capabilities of the hiding head 108 may be assigned to the printing head 106. In such cases, the printing head 106 may work as the hiding head 108. In one implementation, the printing head 106 may be a laser head for printing user data on the document. In another implementation, the printing head 106 may be a galvanometric laser head.

**[0036]** In device 102, the printing head 106 is responsible for emitting a laser beam which prints the data on the document by selectively darkening certain pixels of the matrix printed on the document. Further, for positioning or adjusting the printing head 106 within a tolerance level so that there is no misalignment of colors when printed on the document and the data is printed on a desired location, the positioning unit 104 locates at least one positioning marks pre printed on the document. Thereafter, the printing head 106 may be adjusted accordingly for printing of the data based on the he location of at least one positioning marks.

**[0037]** The device 102 for hiding positioning marks used in printing has been explained in conjunction with Figures 2(a)-2(b) and Figures 3(a) to 3 (b).

**[0038]** Figure 2(a) illustrates an exemplary matrix with positioning marks, in accordance with an embodiment of the present subject matter. In one implementation, a matrix of pixels having colors, such as red, blue, green, and white may be printed on the document. Further, for the positioning of the printing head 106 to selectively darken pixels of colors, at least one positioning mark is printed on the document. As shown in Figure 2(a), four positioning marks 202-1, 202-2, 202-3, and 202-4 are printed on the corners of the matrix. The four positioning marks are collectively referred to as positioning marks 202 and individually referred to as a positioning mark 202. For the sake of clarity in understanding, the positioning mark 202-1' has been shown in Figure 2(a) after zooming in on the positioning mark 202-1. In one implementation, the at least one positioning mark 202 may be printed on the document in a predefined manner. For example, as shown in Figure 2(a), the positioning marks 202 are present in corners.

**[0039]** Figure 2(b) illustrates an exemplary image 204 to be printed on a pre printed colorized matrix on a document, in accordance with an embodiment of the present subject matter. For printing the image 204 on the document, the printing head 106 of the device 102 is adjusted based on the positioning mark corresponding to each of the color used in the matrix. Thereafter, the pixels of the colors on the document are selectively darkened to print the image 204 of the document.

**[0040]** In an implementation, for printing of the user data on the document, the positioning unit 104 may locate the at least one positioning mark 202 on a surface of the document. In an example, the positioning unit 104 may

be a camera for determining coordinates of the positioning marks 202 on the document. In another implementation, an optical camera embedded in the device 102 may be used to locate the positioning marks 202.

**[0041]** Thereafter, the positioning unit 104 may adjust the printing head 106 for printing of the data on the document based on the at least one positioning mark 202. In one implementation, the positioning unit 104 may obtain the coordinates of the positioning mark 202 corresponding to a color present in the matrix for adjusting the printing head 106.

**[0042]** Thereafter, the hiding head 108 may hide the at least one positioning mark 202 by the laser beam after adjustment of the printing head 106. In one implementation, the printing unit 108 may selectively darken the pixels of the color using the laser beam to obtain a new color. Further, once the pixels of the color corresponding to one of the at least one positioning mark 202 are darkened, the printing unit 108 may hide the positioning mark 202, since that particular mark is no longer needed. Similarly, the printing head 106 is adjusted for the positioning mark 202 for each of the color and certain pixels of colors are selectively darkened to obtain new colors. Once the darkening of circles is performed for each of the color present in the matrix, the positioning marks 202 are hid using the laser beam. Subsequently, the user data gets printed on the document and the positioning marks 202 are hid simultaneously. In one implementation, the hiding head 108 hides each of the at least one positioning mark 202 left on the document after printing of the user data. It may be understood that the hiding of the positioning marks 202 may include deleting, removing, hiding, erasing, covering, or masking of the positioning marks 202 to make the positioning marks 202 unrecognizable and unreadable to a counterfeiter.

**[0043]** In one implementation, the printing head 106 may print the alphanumeric data on the document upon adjusting the printing head 106 based on the at least one positioning mark 202. Thereafter, the hiding head 108 may hide the at least one positioning mark 202 after printing of the data on the document.

**[0044]** In one implementation, the printing head 106 hides the at least one positioning mark 202 by darkening the at least one positioning mark 202 using the laser beam based on a modified image. Figure 3(a) illustrates an exemplary modified image with masking marks, in accordance with an embodiment of the present subject matter. As shown in Figure 3(a), there are four masking marks 302-1, 302-2, 302-3, and 302-4 collectively referred to as masking marks 302 and individually referred to as a masking mark 302. Thus, the modified image has the masking mark 302 corresponding to each of the at least one positioning mark 202. The modified image may be understood as the image 204 to be printed on the document having a masking mark corresponding to each of the at least one positioning mark 202. Further, for sake of clarity in understanding, the masking mark 302-1' has been provided in Figure 3(a) after zooming in on the

masking mark 302-1.

**[0045]** In said implementation, due presence of the masking marks 302 in the modified image, the printing head 106 darkens the positioning marks 202 by using the laser beam along with the pixels of colors that are needed to be darkened for printing the image 204 on the document. Generally, the positioning marks 202 are located inside a substrate of the document. The substrate used in the document is made of carbon particles which are laser reactive. When the laser beam falls on the substrate, the carbon particles get exposed to the laser beam and turn dark. Subsequently, the positioning marks 202 are hid due to darkening by the laser beam.

**[0046]** In another implementation, the hiding head 108 hides the at least one positioning mark 202 by darkening the at least one positioning mark 202 using the laser beam based on one or more mask images. Figure 3(b) illustrates an exemplary mask image with masking marks, in accordance with an embodiment of the present subject matter. As shown in Figure 3(b), the mask image has the masking marks 302 corresponding to each of the at least one positioning marks 202. In another example, more than one mask images may be used for hiding the positioning marks 202 in situation where the masking marks 302 are present in more than one mask images.

**[0047]** In said implementation, the printing head 106 may first print the image 204 on the document. Once the image is printed, thereafter, the hiding head 108 may obtain the one or more mask images having the masking marks 302. Further, the hiding head 108 may darken the positioning marks 202 using the laser beam based on the one or more mask images.

**[0048]** In one implementation, the hiding head 108 hides the at least one positioning mark 202 based on vectorized data. Figure 3(c) illustrates an exemplary vectorized data 304 for hiding positioning marks 202, in accordance with an embodiment of the present subject matter. In said implementation, the hiding head 108 may obtain the vectorized data 304. The vectorized data 304 may be a text or a geometrical shape or a pattern or picture, based on mathematical expressions, to represent an image. It may be understood that the vectorized data 304 is used for hiding the at least one positioning marks 202 so that the at least one positioning mark 202 is not recognizable by a counterfeiter and the vectorized data 304 should not be limited by its geometrical shape. Based on the vectorized data 304, the hiding head 108 may determine the location of the positioning marks 202. Thereafter, for hiding the positioning marks 202, the hiding head 108 may darken the positioning marks 202 using the laser beam.

**[0049]** Further, in one implementation, the hiding head 108 may add or remove matter from the surface of the document to hide the at least one of the positioning mark 202. For example, matter present on the surface of the document may be removed such that the at least one positioning marks 202 become hidden and unrecognizable to a counterfeiter. In another example, the hiding head

108 may add matter on the surface of the document such that the added matter makes the at least one positioning mark 202 hidden on the document.

**[0050]** In one implementation, the printing head 106 may perform the functionalities of the hiding head 108 and may hide the at least one positioning mark 202.

**[0051]** Further, the document is modified to hid the at least one positioning mark 202 to prevent counterfeiting of the document. The document may comprise the matrix of pixels for personalizing the document with the data. The data may be personal data of user, such as at least one of an image of the user. Although the description herein is provided with respect to the image 204 and the alphanumeric data, it may be understood that the information, such as signature, ghost images, and graphic elements may also be used instead of the image 204.

**[0052]** Therefore, with the present subject matter, the positioning marks 202, which are used for positioning of the printing head 106 during printing of the image 204 on the document, are hid once the image 204 is printed on the document. The positioning marks 202 are readable after printing of the image 204. This may help in avoiding situation where a counterfeiter may alter or modify the image 204 using the positioning marks 202 left on the document. Thus, with the present subject matter, the counterfeiter cannot modify or alter image printed on the document, which ensures additional security of the documents, such as identification cards, driving license cards, passports, resident permits, and voting cards.

**[0053]** Figure 4 illustrates a method for modifying a document to hide positioning marks 202 used in printing, in accordance with an embodiment of the present subject matter. The order in which the method 400 is described is not intended to be construed as a limitation. Additionally, some of the individual blocks may be deleted from the method 400 without departing from the spirit and scope of the subject matter described herein. Furthermore, the method 400 can be implemented in any suitable hardware, software, firmware, or combination thereof. It would be understood that the method 400 can be performed by programmed devices.

**[0054]** In one example, the steps of the method 400 can be performed by programmed computers. Herein, some examples are also intended to cover program storage devices, for example, digital data storage media, which are machine or computer readable and encode machine-executable or computer-executable programs of instructions, where said instructions perform some or all of the steps of the described method 400. The program storage devices may be, for example, digital memories, magnetic storage media such as a magnetic disks and magnetic tapes, hard drives, or optically readable digital data storage media.

**[0055]** With reference to method 400 as depicted in Figure 4, as depicted in block 402, at least one positioning mark 202 is located on a surface of a document by the positioning unit 104. In one implementation, the positioning unit 104 may determine coordinates of the at least

one positioning mark 202 using a camera embedded in the device 102.

**[0056]** Further, once the at least one positioning mark 202 is located, the printing head 106 of the device 102 is adjusted to print data on the document based on the at least one positioning mark 202. In an example, the document may have positioning marks 202 corresponding to each of the colors. The positioning unit 104 may adjust the printing head 106 for each of the at least one positioning mark 202. In an example, the positioning unit 104 may first adjust the printing head 106 based on the positioning mark 202 corresponding to red color for selectively darkening the pixels of red color. Similarly, the pixels of other colors, i.e., blue and green may selectively darkened using the laser beam. In one implementation, the printing head 106 may be a laser head.

**[0057]** At block 404, the at least one positioning mark 202 printed on the document is hid by the hiding head 108. In an example, each of the at least one positioning mark 202 may be hid after printing of the data. In another example, the at least one of the positioning mark 202 may be hid before printing of the data and after adjustment of the printing head 106. In one implementation, the at least one positioning mark 202 is hid such that the printing head 106 may not be adjusted within a level of tolerance to print the data. The level of tolerance may substantially range from 5 to 50 micrometers.

**[0058]** Further, in an implementation, the hiding head 108 may hide the at least one positioning mark 202 by masking them with hiding marks. The hiding marks may represent different shapes including an unpredictable format, a not defined format, and an irregular format. In one implementation, the hiding marks may comprise at least one of an image of the country of the user, and a representation of the country of the user to hide the at least one positioning mark 202. Further, the hiding marks are located on a random location on the document so that the hiding marks can not be located on the document.

**[0059]** In one implementation, the hiding head 108 may hide the at least one positioning mark 202 present inside the matrix of pixels. In another implementation, the hiding head 108 may hide at least one positioning mark 202 present outside the matrix of pixels.

**[0060]** In one implementation, the printing head 106 may darken the at least one positioning mark 202 by the laser beam based on a modified image. The modified image includes the image 204 to be printed on the document and a masking mark 302 corresponding to each of the at least one positioning mark 202. During the printing of the image 204, once the printing head 106 is adjusted for a given positioning mark 202, the printing head 106 may darken the given positioning mark 202 using the laser beam emitted.

**[0061]** In another implementation, the hiding head 108 darkens the at least one positioning mark 202 by the laser beam based on one or more mask images. The mask image may have the masking mark 302 corresponding to each of the at least one positioning mark 202. Once

the image 204 is printed, the printing unit 108 may obtain the one or mask images having the masking marks 302 for hiding the positioning marks 202.

**[0062]** In another implementation, the hiding head 108 may hide the at least one positioning mark 202 based on vectorized data 304. The vectorized data 304 masks the positioning marks 202 so that the positioning marks 202 get hid on the document.

**[0063]** Although implementations for modifying a document to hide positioning marks used in printing have been described in language specific to structural features and/or methods, it is to be understood that the appended claims are not necessarily limited to the specific features or methods described. Rather, the specific features and methods are disclosed as examples of systems and methods for modifying a document to hide positioning marks used in printing.

**Claims**

- 1. A device (102) for modifying a document to hide at least one positioning mark (202) pre printed on the document for printing data based on a location of the at least one positioning mark (202), the device (102) comprising:
  - a positioning unit (104) for locating the at least one positioning mark (202) on the document; and
  - a hiding head (108) for hiding the at least one of the positioning mark (202) printed on the document.
- 2. The device (102) as claimed in claim 1 further comprises a printing head (106) to print the data on the document based on a location of the at least one positioning mark (202).
- 3. The device (102) as claimed in claim 2, wherein the printing head (106) is a laser head.
- 4. The device (102) as claimed in claim 2, wherein the printing head (106) is the hiding head (108), and wherein the printing head (106) hides the at least one of the positioning mark (202) printed on the document.
- 5. The device (102) as claimed in any of the preceding claims, wherein the hiding head (108) hides each of the at least one positioning mark (202).
- 6. The device (102) as claimed in any of the preceding claims, wherein the hiding head (108) adds matter on a surface of the document to hide the at least one positioning mark (202).
- 7. The device (102) as claimed in any of the preceding

claims, wherein the hiding head (108) removes matter from the surface of the document to hide the at least one positioning mark (202).

- 8. The device (102) as claimed in claim 2, wherein the printing head (106) prints the data on a matrix of pixels by adjusting itself based on the at least one positioning mark (202) with a level tolerance substantially ranging from 5 to 50 microns.
- 9. The device (102) as claimed in the preceding claims, wherein the at least one positioning mark (202) is printed on the document in a predefined pattern.
- 10. The device (102) as claimed in claim 3, wherein the printing head (106) hides at least one positioning mark (202) by darkening the at least one positioning mark (202) using a laser beam based on a modified image, and wherein the modified image is the image (204) to be printed on the document having a masking mark (302) corresponding to each of the at least one positioning mark (202).
- 11. The device (102) as claimed in any of the preceding claims, wherein the hiding head (108) hides the at least one positioning mark (202) by darkening the at least one positioning mark (202) using a laser beam based on one or more mask images, and wherein each of the one more mask images has a masking mark (302) corresponding to each of the at least one positioning mark (202).
- 12. A method for modifying a document to hide at least one positioning mark (202) used for printing data on the document based on a location of the at least one positioning mark (202), the method comprising:
  - locating, by a positioning unit (104), the at least one positioning mark (202) on the document; and
  - hiding, by a hiding head (108), the at least one of the positioning mark (202) printed on the document.
- 13. The method as claimed in claim 12 further comprising printing, by a printing head (106), data on the document based on a location of the at least one positioning mark (202).
- 14. The method as claimed in claim 13, wherein the hiding head (108) hides the at least one positioning mark (202) such that the printing head (106) can not be adjusted within the level of tolerance to print the data.
- 15. The method as claimed in any of the preceding claims 12 to 14, wherein the hiding head (108) hides the at least one positioning mark (202) by masking the at least one positioning mark (202) with hiding

marks.

- 16.** The method as claimed in claim 15, wherein the hiding marks are represented by different shapes including an unpredictable format, a not defined format, and an irregular format. 5
- 17.** The method as claimed in claim 15, wherein the hiding marks are located on the document so that the positioning marks can not be located on the document. 10
- 18.** The method as claimed in the claim 12, wherein the at least one of the positioning mark (202) is hid after printing the data on the document. 15
- 19.** The method as claimed in the claim 12, wherein the at least one of the positioning mark (202) is hid before printing the data and after adjustment of the printing head (106). 20
- 20.** The method as claimed in claims 12 and 13, wherein the printing head (106) prints the data on a matrix of pixels by adjusting itself based on the at least one positioning mark (202) and wherein the hiding head (108) hides at least one positioning mark (202) inside the matrix of pixels. 25
- 21.** The method as claimed in claims 12 and 13, wherein the printing head (106) prints the data on a matrix of pixels by adjusting itself based on the at least one positioning mark (202) and wherein the hiding head (108) hides at least one positioning mark (202) outside the matrix of pixels. 30
- 22.** The method as claimed in claim 12, wherein the hiding further comprises darkening the at least one positioning mark (202) by the laser beam based on a modified image, and wherein the modified image is a image (204) to be printed on the document having a masking mark (302) corresponding to each of the at least one positioning mark (202). 35
- 23.** The method as claimed in claim 12, wherein the hiding further comprises darkening the at least one positioning mark (202) by the laser beam based on one or more mask images, and wherein each of the one or more mask images has a masking mark (302) corresponding to each of the at least one positioning mark (202). 40
- 24.** A document comprising initially at least one positioning mark (202) used for printing data on the document based on a location of the at least one positioning mark (202), wherein each of the at least one positioning mark (202) is hidden to prevent counterfeiting of the document. 45
- 25.** The document as claimed in claim 24, wherein the document further comprises a matrix of pixels for personalizing the document with data and the at least one of the positioning mark (202) is hidden on the document. 50
- 26.** The document as claimed in claim 25, wherein the data is personal and comprises at least one of an image of the user. 55

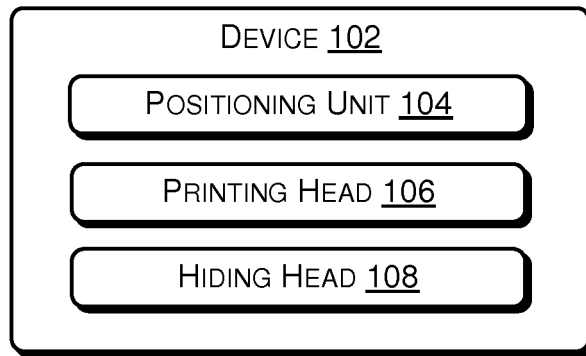


Figure 1

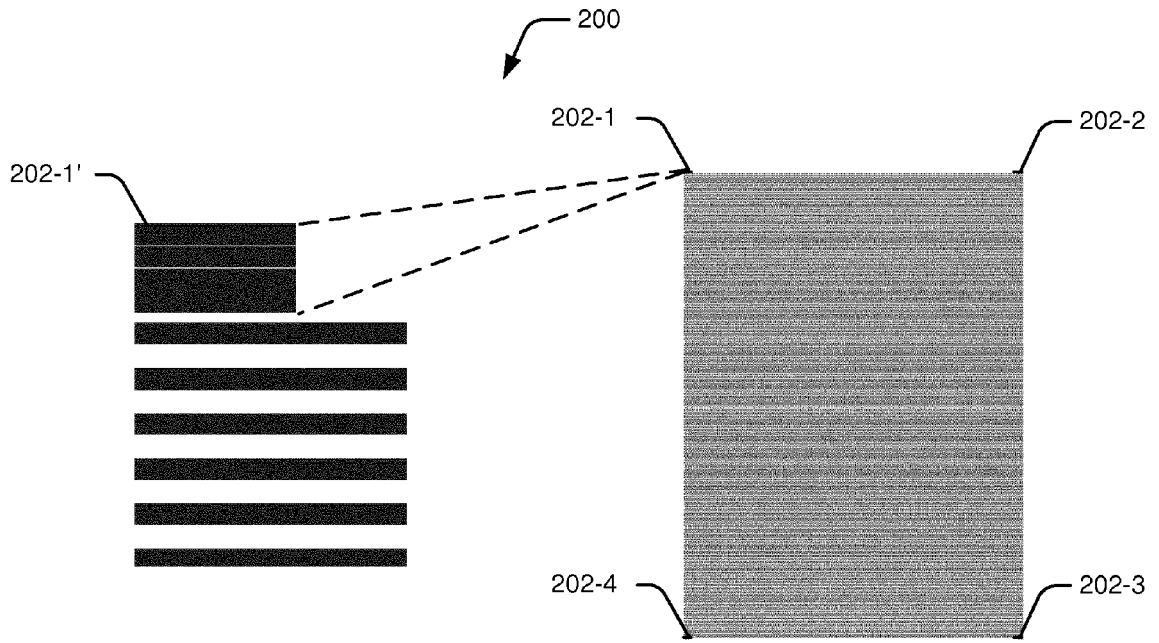


Figure 2(a)

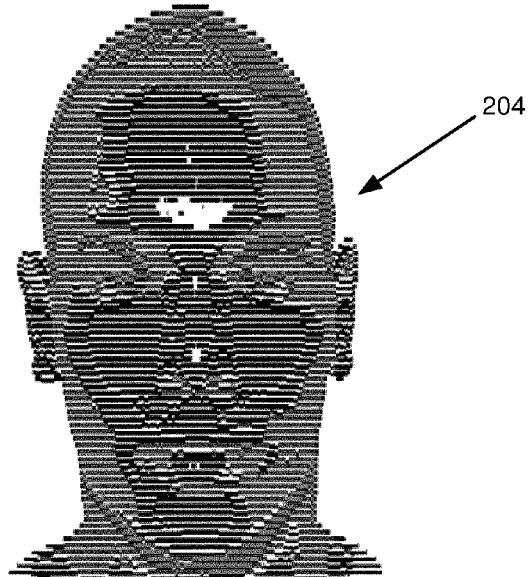


Figure 2(b)

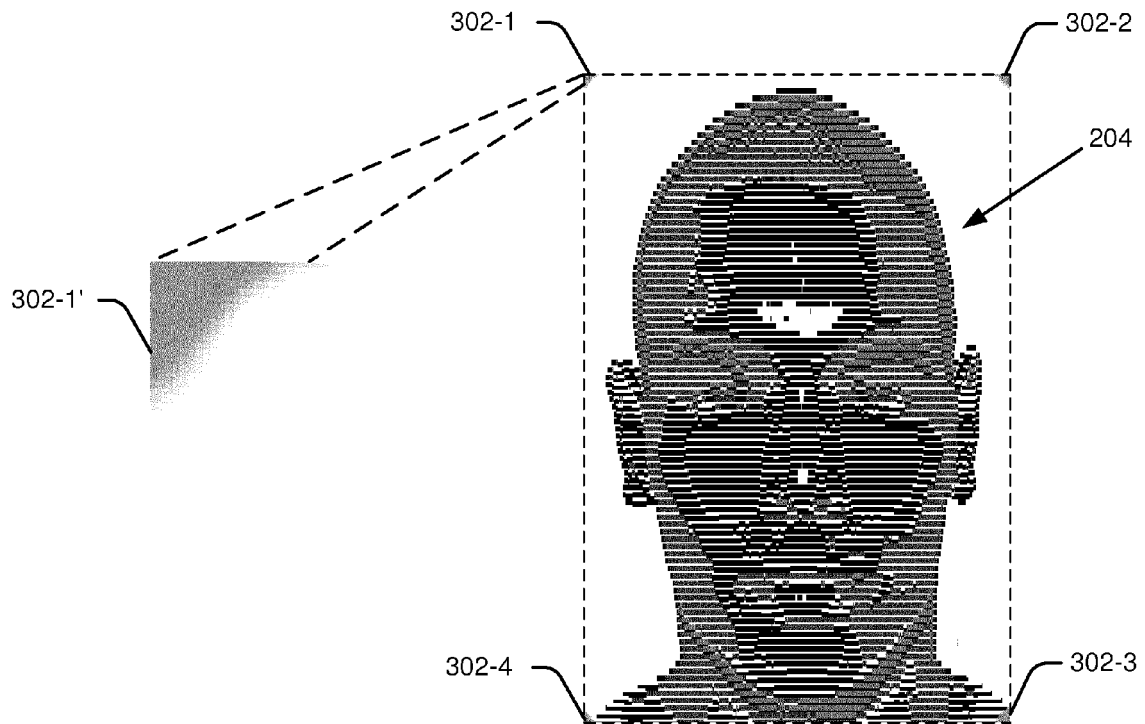


Figure 3(a)

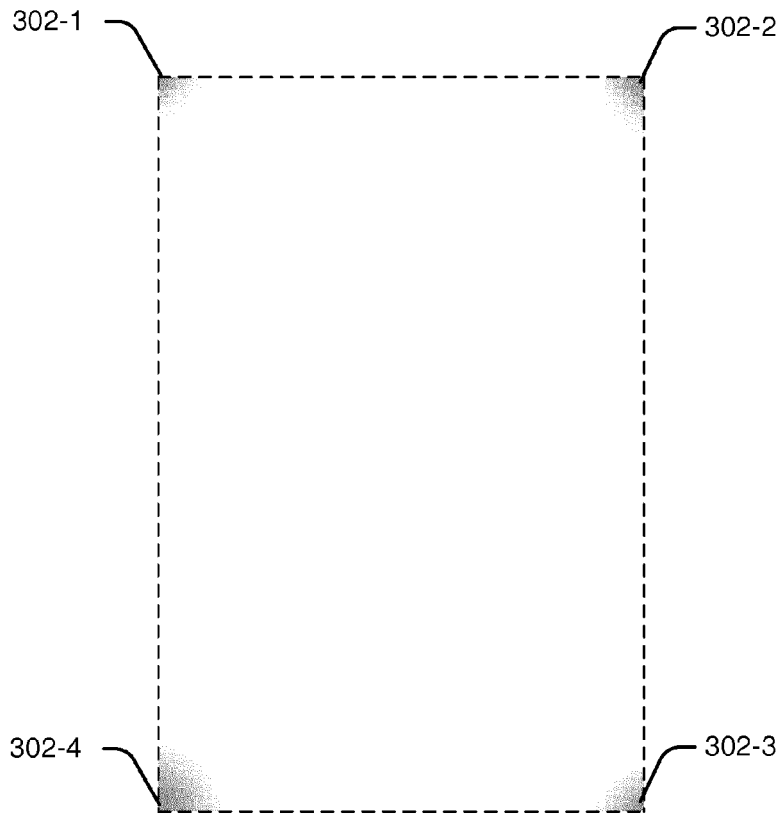


Figure 3(b)

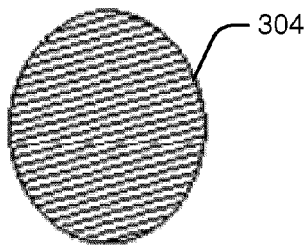


Figure 3(c)

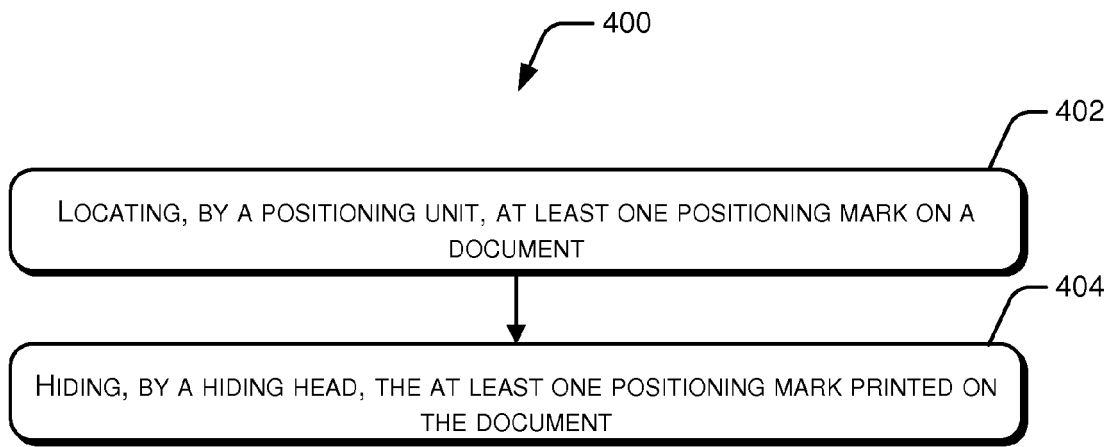


Figure 4



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Application Number  
EP 13 17 8095

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3	Place of search	Date of completion of the search	Examiner
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P : intermediate document		& : member of the same patent family, corresponding document	

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