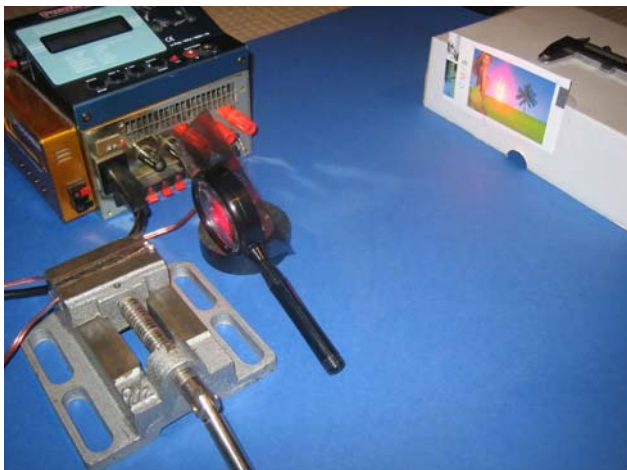
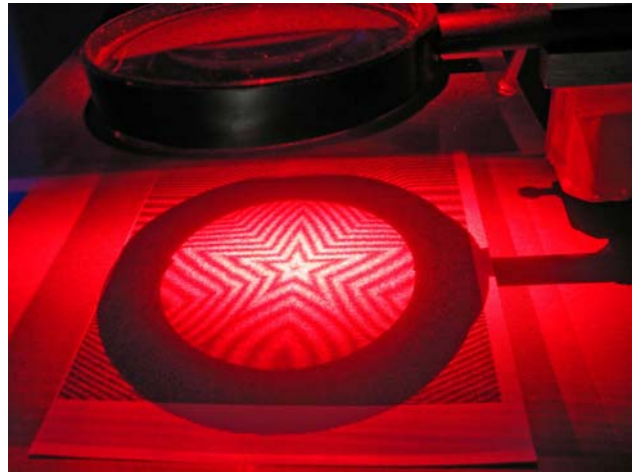
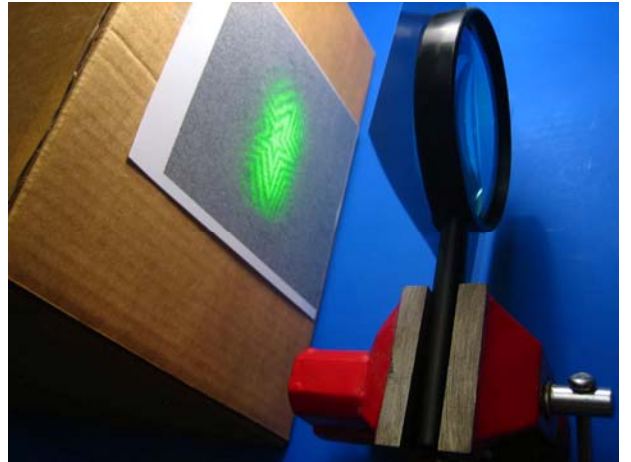


The Method of Verifying an Authenticity of Printing Production

Samples



Abstract: The invention is related to protection of printed production against counterfeit using the technologies where the original specimen includes a latent image in addition to the visible one. A revelation of the latent image or figure is based on the moiré effect and is carried out by its superposing with the control stencil. The described device enables revelation of latent images or figures using a contactless method. For revelation of the latent image, the specimen usable is placed in the lightened zone of the device.

The Method of Verifying an Authenticity of Printing Production

The sphere of technique

The invention is related to verifying an authenticity of patterns or figures that distinguish themselves for extraordinary or unusual highlights.

The prior level of technique

Technological solutions for protection of printing production against counterfeit where verification is carried out by superposing a specimen with a certain stencil. Examples of such technologies are described in patents LT4922, RU2268152, US5708717, US4586711, and US3914877. In the offered methods of superposition, tightly pressed scantlings or panels with microlenses are allowed to use. A programmed superposition of a scanned image with the stencil is allowed as well. In the patent US5396559, an apparatus enabling automatization of the process of superposing the controlling and controlled graphical structures is described. The projector enables focusing the projected image of the stencil on the surface of the specimen to be controlled. The focal length of such projector is exactly defined in the narrow range. A violation of the focal length causes both the contrast and the scale of the projected image.

The goal of the invention

The goal of the invention is developing a table device for verifying an authenticity of a printed specimen. Such a device should detect inadequacies of elements of the geometrical structure of a specimen under control in respect of the stencil. In addition, a device should reveal latent images (a possibility of their formation is mentioned in the above-listed patents). Revelation of latent images should be carried out when the specimen is situated in the zone of operation of the device.

Description of the offered solution

The schematic structure of the device is presented in Fig. 1.

The items specified in Fig. 1: 1 – a spotlight source; 2 – a collimator; 3 – a slide with the image of the stencil; 4 – the plane where the controlled specimen is pressed onto; 5 – the specimen under control.

The role of a spotlight source (1) is played by a laser diode. The colour of the light radiated by the laser diode is chosen taking into account the colour of the pattern of the specimen. To ensure the best revelation, it should be of the opposite range of colours. Several LEDs of different colours can be installed – in such a case, a required colour should be effectively chosen. The role of a collimator (2) is played by a lens with the focal length that is chosen taking into account the angle of the lightened sector of the LED. The diameter of the lens predetermines the width of the zone where exploration of the specimen under control will be possible. A mirror collimator is allowed for using.

Then collinear rays penetrate through the slide (3) with the image of the stencil. The image of the stencil shown on the slide shall be reproduced in the scale of the original specimen. For producing the slide, an ordinary photographic typesetting machine is used (today the image is exposed directly to the printed form, but in this case, exposing onto a film is required). If a revelation of a latent image is required, the 50% of the surface of the photographic stencil is covered by parallel lines. The duration of formation of the lines and the angle of their tilt conform to the parameters of the raster where the image is hidden. The slide (3) can be fixed to a rotating base to facilitate fixing the angle of rotation identical in respect of the structure of the pattern of the specimen. While rays of light penetrate the slide, the effect of diffraction can appear that, in its turn, causes interference. The latter results appearance of zones free of the latent image in regular intervals while receding from the slide. The specimen under control (5) can be brought to the device in the wide range of distances from the collimator (2); however, a possible diffraction should be taken into account. The maximum distance between the collimator (2) and the specimen under control (5) is predetermined by the accuracy of matching the focal length of the collimator (2, the quality of the lens used, the area of light radiation in the laser diode (1) and the transparency of the slide (3). The required angle and distance of the specimen (5) during its checking are fixed using planes (4) for supporting the specimen.

The set task is solved by projecting the stencil onto the specimen under control with collinear rays. The described device is of a simple structure and can be used upon various environmental conditions. In addition, the sphere of application of protection technologies enabling to code non-copies latent image is wider. Earlier, for revelation of the latent image, a special optical key was tightly and accurately fixed to the surface of the specimen. Application of such method of verification is possible while working leisurely. The described device enables to reveal latent images when the specimen is placed in the zone of operation of the device. The zone of operation of the device can be sufficient for rapid verification of an authenticity.

The device can be produced in a shape of a table-lamp, a contact microscope, a pocket torch or a niche. It can include a video camera for distant reviewing or storing the images. Verification of a specimen in the range of light invisible for a human eye is possible as well.

A device in the shape of a pocket torch can be usable for rapid checking entry tickets without considerable impeding the movement of flows of people through the entrance. In such a case, non-copied deformation of the structure of the raster in accordance with the patent LT4922 should have mathematically defined deviations of vectors for considerable angles. Latent images shown by a raster with a considerable deformation of the structure based on mathematical formulas are complicated geometrical figures. Such geometrical figures are revealed independently on the accuracy of projecting the control stencil.

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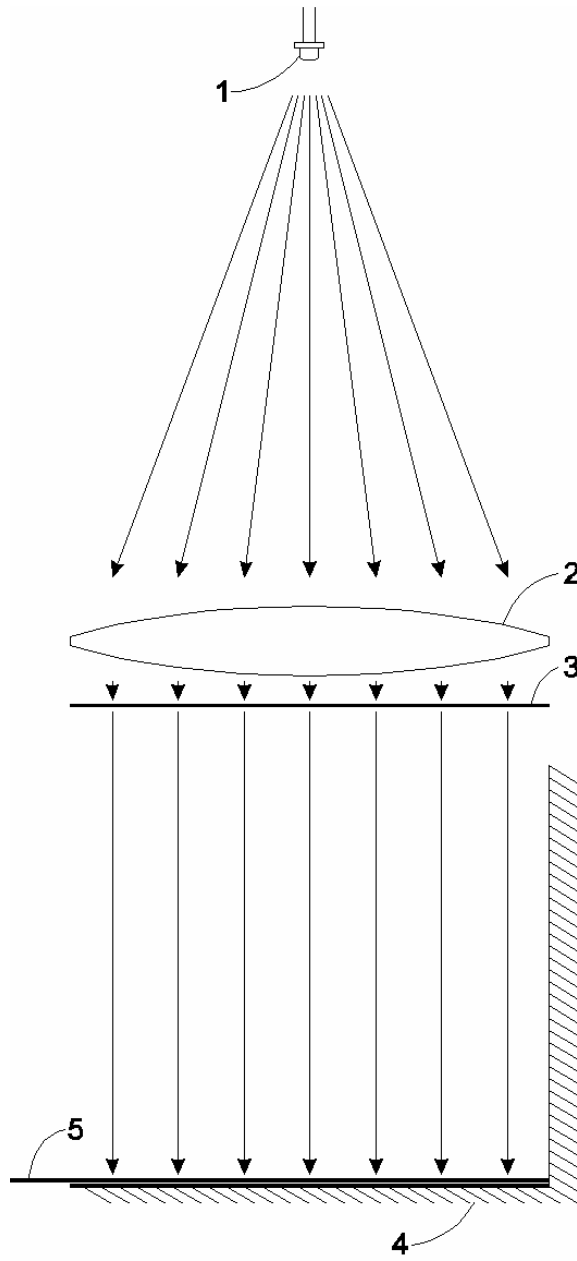


Fig. 1

Claims

(in translation)

1 The method for verifying an authenticity of printed production by superposing the images of the specimen and the stencil that distinguishes itself for using radiation through the stencil with rays of collinear light.

2 The method for verifying an authenticity of printed production according to the Paragraph 1 that distinguishes itself for a source of collinear light being a laser.

3 The method for verifying an authenticity of printed production according to the Paragraph 1 that distinguishes itself for an ability of changing the colour of the light radiated.

4 The method for verifying an authenticity of printed production according to the Paragraph 1 that distinguishes itself for an ability of fixing the control stencil on a rotating base.

5 The method for verifying an authenticity of printed production according to the Paragraph 1 that distinguishes itself for using a plane for pressing one edge of the specimen.

6 The method for verifying an authenticity of printed production according to the Paragraph 1 that distinguishes itself for using equipment of the shape of a niche for inserting the specimen.

7 The method for verifying an authenticity of printed production according to the Paragraph 1 that distinguishes itself for using equipment of the shape of a table-lamp.

8 The method for verifying an authenticity of printed production according to the Paragraph 1 that distinguishes itself for using equipment of the shape of a pocket torch.

9 The method for verifying an authenticity of printed production according to the Paragraph 1 that distinguishes itself for using a video camera.

10 The method for verifying an authenticity of printed production according to the Paragraphs 1 and 9 that distinguishes itself for operation of the source of light in the range of light invisible for human eye.

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LT 5602 B

- (54) Pavadinimas:
Būdas spausdintos produkcijos autentiškumui nustatyti
- (57) Referatas:

Išradimas yra susijęs su spausdintos produkcijos apsaugos nuo padirbinėjimo technologijomis, kuriose originaliame pavyzdyje, be matomo vaizdo, yra papildomas paslėptas vaizdas. Paslėpto vaizdo arba piešinio išryškinimas yra pagrįstas muaro efektu, sutapdinant su kontroliniu šablonu. Aprašomas prietaisas įgalina išryškinti paslėptus vaizdus ar piešinius bekontakčiu būdu. Paslėptam vaizdai išryškinti pavyzdys yra patalpinamas prietaiso apšviečiamoje zonoje.