

IHMA PATENT NEWSLETTER

Limited circulation patent news bulletin for the Holography Industry

JUNE 2022 – 131 PATENTS

Published and granted patents

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is exclusively dedicated to IHMA MEMBERS.**

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Please note that:

- IHMA Patent Newsletter covers the requests for worldwide patents (WO, US, EP, FR, GB, DE, JP, CN, KR, RU...).
- Some patents can be indexed in several categories.
- Some old patents are sometimes introduced in the databases if they have not been included in the previous update.
- The full patent information is in the tables at the end of this document (See TABLES WITH REFERENCES).
- IHMA Patent Newsletter is forwarded at the end of each month and corresponds to the patents appearing during the previous month. If at any time, you do not receive your newsletter in the usual time span, please contact us, as an electronic transmission problem is always possible.

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P35097

**SECURITY & OPTICAL EFFECTS' COLUMN
BANKNOTE – RELIEF – MICROLENS**

WO2022126270

Priority Date: 17/12/2020

BANK OF CANADA | GOVERNING COUNCIL OF THE UNIVERSITY OF TORONTO

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EHSAN

Application Nber / Date:

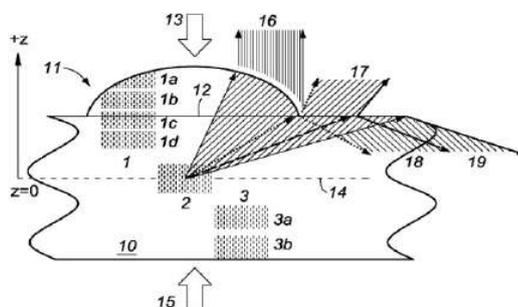
WOCA2021/051817 2021-12-16

Priority Nber / Date / Country:

US63/126,741P 2020-12-17

OPTICAL DEVICES COMPRISING MICROLENSSES AND LASER-FABRICATED PATTERNS OR OTHER STRUCTURES, THEIR MANUFACTURE AND USE

Disclosed are optical devices suitable as security devices for document authentication, which comprise at least one array of patterns such as laser-fabricated patterns, or other structures, optionally formed for example from elongate laser-modified tracks extending within a document substrate. The patterns are combined with at least one array of microlenses to cause certain optical effects. Also disclosed are the use of such devices for document authentication, and methods for their production.



DISPOSITIFS OPTIQUES COMPRENANT DES MICROLENTILLES ET DES MOTIFS FABRIQUÉS PAR LASER OU D'AUTRES STRUCTURES, LEUR FABRICATION ET LEUR UTILISATION

L'invention concerne des dispositifs optiques appropriés en tant que dispositifs de sécurité pour l'authentification de documents, qui comprennent au moins un réseau de motifs tels que des motifs fabriqués par laser, ou d'autres structures, éventuellement formées par exemple à partir de pistes allongées par laser s'étendant à l'intérieur d'un substrat de document. Les motifs sont combinés avec au moins un réseau de microlentilles pour provoquer certains effets optiques. La présente invention porte également sur l'utilisation de tels dispositifs pour l'authentification de documents et sur des procédés pour leur production.

CLAIM 1. An optical device comprising: a periodic array of microlenses; and a periodic array of distinct laser-fabricated patterns, wherein the patterns are the same or different from one another, and each pattern comprises a periodic array of continuous or non-continuous laser-modified tracks in a substrate material, such as a polymer substrate material; wherein the patterns, together with the microlenses, collectively provide an optical effect.

No equivalent

Status: Pending

Research Report:

INTERNATIONAL SEARCH REPORT		International application No. PCT/CA2021/051817
A. CLASSIFICATION OF SUBJECT MATTER		
IPC: G02B 27/00 (2006.01), B42D 25/41 (2014.01), B42D 25/328 (2014.01), B42D 25/351 (2014.01), G02B 1/04 (2006.01), G02B 3/00 (2006.01) (more IPCs on the last page)		
CPC: G02B 27/00 (2020.01), B42D 25/41 (2020.01), B42D 25/328 (2020.01), B42D 25/351 (2020.01), G02B 1/04 (2020.01), G02B 3/0006 (2020.01) (more CPCs on the last page)		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) Keywords used across the whole IPC:		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used) Questel Orbit: Security document, bank note, lens array, microlens array, fabricated pattern, pattern, microlens		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/125224 A2 (STEENBLIK, R. et al.) 23 November 2006 (23-11-2006) *Figs. 1a, 3a-e, and 8a-b; pars. 0002, 0004-0010, 0013, 0016, 0019-0020, 0026, 0068, 0076, 0135, 0206, 0278, 0369, 0384*	1-39
A	US 2010/0194091 A1 (HELM, M. et al.) 05 August 2010 (05-08-2010)	

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PATENT REFERENCE – See the table at the end of this document

P35107

OVD – BANKNOTE – CARD – PASSPORT – RELIEF – MICROLENS

WO2022112708

IDEMIA FRANCE

Priority Date: 30/11/2020

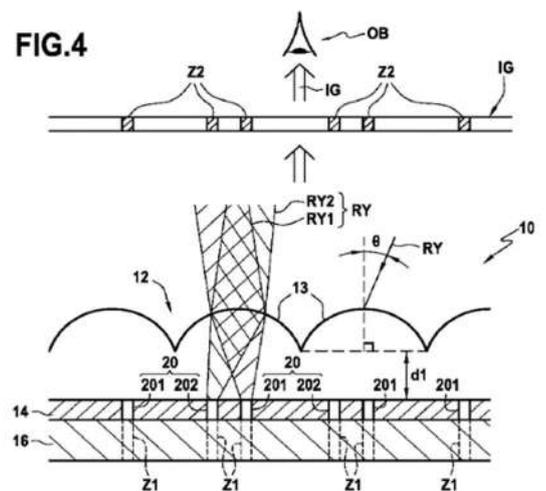
PERSONALISED IMAGE FORMED FROM A METAL LAYER AND A LENTICULAR ARRAY

The invention relates, in particular, to a security document (10) comprising: a metal layer (14) comprising an arrangement of diffractive nanostructures arranged periodically in the metal layer so as to form a diffractive holographic structure forming an arrangement of pixels each comprising a plurality of sub-pixels of distinct colours; a lenticular array (12) comprising convergent lenses (13) positioned facing the metal layer; and a support layer (16) on which the metal layer is disposed so that the metal layer (14) is sandwiched between the lenticular array (12) and the support layer (16). The metal layer comprises perforations (20) formed by focusing laser radiation (RY) through the lenticular array on the metal layer (14), the perforations comprising at least one group of perforations (RY) produced by focusing the laser radiation (RY) at a respective angle of incidence (Θ) so as to reveal a corresponding personalised image (IG) when the security document is observed at this angle of incidence.

IMAGE PERSONNALISEE FORMEE A PARTIR D'UNE COUCHE METALLIQUE ET D'UN RESEAU LENTICULAIRE

L'invention vise notamment un document sécurisé (10) comprenant : une couche métallique (14) comportant un arrangement de nanostructures diffractives disposées de façon périodique dans la couche métallique de façon à former une structure holographique diffractive formant un arrangement de pixels comportant chacun une pluralité de sous-pixels de couleurs distinctes; un réseau lenticulaire (12) comprenant des lentilles convergentes (13) positionnées en regard de la couche métallique; et une couche support (16) sur laquelle est disposée la couche métallique de sorte à ce que la couche métallique (14) soit intercalée entre le réseau lenticulaire (12) et la couche support (16). La couche métallique comprend des perforations (20) formées par focalisation d'un rayonnement laser (RY) au travers du réseau lenticulaire sur la couche métallique (14), les perforations comprenant au moins un groupe de perforations (RY) réalisées par focalisation du rayonnement laser (RY) suivant un angle d'incidence (Θ) respectif de sorte à révéler une image personnalisée (IG) correspondante lorsque le document sécurisé est observé suivant ledit angle d'incidence.

CLAIM 1. A secure Document (10) comprising: - a metal layer (14) including an array of diffractive nanostructures, the diffractive nanostructures being periodically disposed in the metal layer (14) so as to form a diffractive holographic structure; - a lenticular array (12) comprising positive lenses (13) positioned opposite the metal layer; and - a support layer (16) on which the metal layer is disposed such that said metal layer is interposed between the lenticular array and the support layer; wherein the metal layer comprises perforations (20) formed by focusing laser radiation through the lenticular array (12) onto the metal layer (14), the perforations comprising at least one group of perforations (201; 202) produced by focusing the laser radiation at a respective angle of incidence (Q) so as to reveal a corresponding personalized image (IG) when the secure document is observed at said angle of incidence, wherein the metal layer (14) comprises a holographic structure forming an array of pixels (32) each comprising a plurality of sub-pixels (34) of distinct colors, the perforations (20) revealing locally through the holographic structure shades of colour or grey level caused by underlying regions (Z1) of the support layer situated opposite the perforations, the underlying regions modifying the colorimetric contribution of the sub-pixels.



P35117

PRINTING

US20220169187

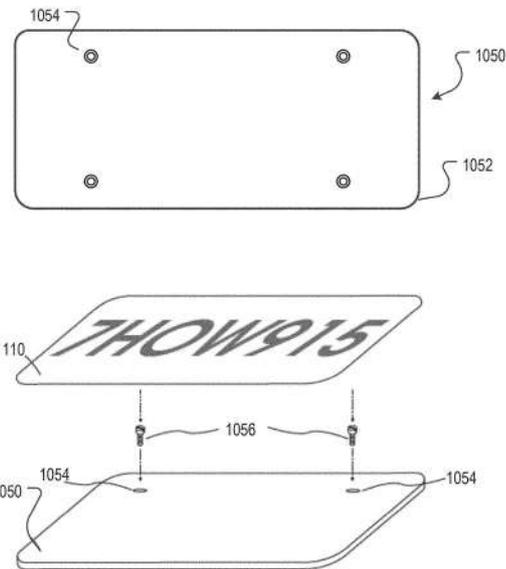
Priority Date: 01/12/2020

PAPER ADAM SCOTT | WISE MALISSA ANN

SOFT IDENTIFICATION PLATE AND METHOD THEREFOR

A license plate assembly includes a backing and a flexible license plate. The flexible license plate includes plural layers, including a licensing-information layer, in which ink is deposited in the form of alphanumeric characters on an underlying one of the plural layers, the alphanumeric characters providing license information. The flexible license plate optionally includes one or more holograms, and/or watermarks, and/or QR-codes. The flexible license plate is disposed on the backing, which extends beyond the perimeter of the flexible license plate, defining a marginal region. In some embodiments, plural indices are disposed in the marginal region to facilitate alignment of flexible license plate during installation thereof on a motor vehicle.

CLAIM 1. A license-plate assembly comprising: a flexible license plate, the flexible license plate including: (iv) a retroreflective film having a first side and a second side, the first side having a pressure-sensitive adhesive applied thereto, (v) a licensing-information layer, the licensing-information layer consisting of ink, at least some of which ink is deposited in the form of alphanumeric characters on the second side of the retroreflective film, the alphanumeric characters providing vehicle license information, and (vi) a protection layer overlying the licensing-information layer and retroreflective film, wherein the protection layer comprises a film that is optically transparent; a backing having a first side and a second side, wherein the flexible license plate is disposed on the second side of the backing, the backing extending beyond a perimeter of the flexible license plate and, in so extending, defining a marginal region; and plural indices disposed within the marginal region, the indices being symmetrically spaced about respective horizontal and vertical center points of the flexible license plate, the indices facilitating alignment of the flexible license plate during installation thereof on a motor vehicle.



P35159

PRINTING – PASSPORT – LUMINESCENCE – INFRARED

DE102020133826

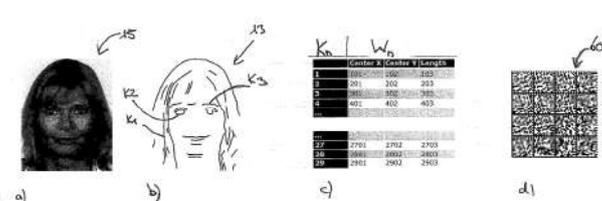
Priority Date: 16/12/2020

BUNDESDRUCKEREI

METHOD FOR PRODUCING A PRINTED IMAGE ON A DATA CARRIER FOR A SECURITY OR VALUABLE DOCUMENT

A method for producing a printed image (15) on a data carrier (20) for a security or value document (21) from the data of a digitized image (10), comprising the following steps: a) providing a data carrier (20), b) printing the digitized image (10) and providing a control mark (50) on the data carrier (20), c) reading out the printed image (15) and calculating the image-specific results (12) from the printed image (15) and/or calculating the image-specific results (12) from the data of the digitized image (10), d) determining the positions of the image-specific results (12) with respect to the control mark (50), e) storing the image-specific results (12) and their positions as a data code (60) on the data carrier (20) f) and optionally encoding the printed image (15) with the image-specific results in detectable form (13). The invention also relates to a security or valuable document (21) and to a method for verifying authenticity.

CLAIM 1. A method for producing a printed image (15) on a data carrier (20) for a security or value document (21) from the data of a digitized image (10), comprising the following steps: a) providing a data carrier (20), b) printing the digitized image (10) and providing a control mark (50) on the data carrier (20), c) reading out the printed image (15) and calculating the image-specific results (12) from the printed image (15) and/or calculating the image-specific results (12) from the data of the digitized image (10), d) determining the positions of the image-specific results (12) with respect to the control mark (50), e) storing the image-specific results (12) and their positions as a data code (60) on the data carrier (20) f) and optionally encoding the printed image (15) with the image-specific results in detectable form (13).



P35163

PRINTING

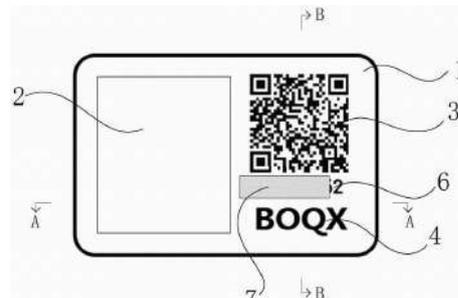
CN216793159U

Priority Date: 22/12/2021

BEIJING KAIXUN ZHAOTONG ANTI COUNTERFEITING TECHNOLOGY

VARIABLE HOLOGRAPHIC ANTI-COUNTERFEITING MARK

The application provides a variable holographic anti-counterfeiting mark, which relies on holographic anti-counterfeiting technology and database anti-counterfeiting technology, a holographic-printing image-text area, a data identity code area and a holographic digital code area are formed on the anti-counterfeiting mark, the holographic-printing image-text area is provided with random holographic-printing image-text, the data identity code area is printed with a data identity code of a product corresponding to the identification, the holographic digital code area is provided with a digital code formed by using holographic technology, so that the false proof mark can be distinguished by the holographic image-text technical points which can be identified by naked eyes, further, the validity and the relevance of the false proof mark can be verified by a system database, therefore, the authenticity of the product is identified, and a convenient, accurate and reliable anti-counterfeiting verification scheme is provided for users.



CLAIM 1. A variable holographic security device, said security device comprising: the holographic character code comprises a base material (1), wherein a holographic-printing image-text area (2), a data identity code area (3) and a holographic character code area (4) are divided on the surface of the base material (1), a random holographic-printing image-text layer (21) is arranged in the holographic-printing image-text area (2), a data identity code layer (31) of a product corresponding to the identification is printed in the data identity code area (3), a holographic character code layer (41) which is formed by using a holographic technology and has a corresponding relation with the random holographic-printing image-text layer (21) and the data identity code layer (31) is arranged in the holographic character code area (4), and the random holographic-printing image-text layer (21) and the holographic character code layer (41) can be partially overlapped.

P35164

LABEL – BRAND PROTECTION

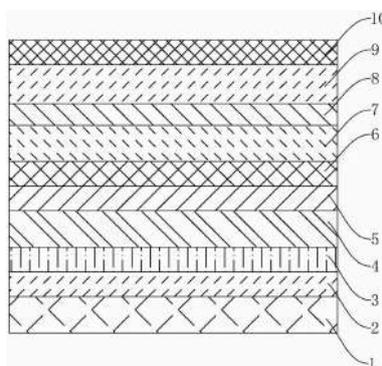
CN216772681U

Priority Date: 22/01/2022

ANHUI ZIJIANG ALUMINIUM SPRAY ENVIRONMENTAL PROT MATERIAL | SHANGHAI ZIJIANG METALLIZATION ENV PROT MAT

HIGH-FLATNESS FRONT-PASTED LASER HOLOGRAPHIC ADHESIVE STICKER LABEL

The application discloses radium-shine holographic non-setting adhesive label is just pasted to height relates to radium-shine label field, and it is including compound base paper layer, first glue layer, base film, laminating dope layer, radium-shine holographic layer, metal dielectric coating, top-coat coating, second glue layer and supplementary release layer in proper order. The application has the effect of clearly and completely displaying the holographic pattern and being beneficial to a user to clearly view the holographic pattern.



CLAIM 1. The utility model provides a high flat laser holographic non-setting adhesive label that just pastes which characterized in that: the laser holographic base paper comprises a base paper layer (1), a first glue layer (2), a base film (3), a laminating coating layer (4), a laser holographic layer (5), a metal medium coating layer (6), a surface coating layer (7), a second glue layer (8) and an auxiliary release layer which are sequentially compounded.

P35177

PRINTING – LABEL – BRAND PROTECTION – LUMINESCENCE

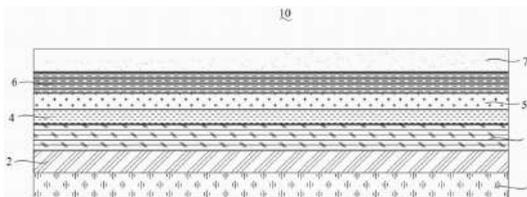
CN216697638U

SHENZHEN KUN HONG TECHNOLOGY

Priority Date: 12/11/2021

COLD-IRONING COLOR-CHANGING FILM

The utility model discloses a cold wave color-changing film, which comprises an inorganic polymer film layer, a release layer, an imaging layer, an aluminized layer and a protective layer which are sequentially stacked, wherein a corrosion-resistant layer is also arranged between the imaging layer and the release layer; the imaging layer comprises an acrylic layer and a holographic pattern layer, the holographic pattern layer is printed on the surface of the acrylic layer, which faces away from the corrosion-resistant layer, a fluorescent layer is arranged between the imaging layer and the aluminum-plated layer, and the fluorescent layer is arranged between the acrylic layer and the holographic pattern layer. The technical scheme of the utility model has the advantages of low processing cost, wide application range of base materials such as white cardboard, gold and silver cardboard, composite film cardboard, film, label heat-sensitive material and the like, capability of hot stamping lines, dots, characters, fields and the like, diversified color display, capability of perfectly reflecting the gradual change effect and strong layering.



CLAIM 1. The cold-wave color-changing film is characterized by comprising an inorganic polymer film layer, a release layer, an imaging layer, an aluminum-plated layer and a protective layer which are sequentially stacked, wherein a corrosion-resistant layer is arranged between the imaging layer and the release layer; the imaging layer comprises an acrylic layer and a holographic pattern layer, the holographic pattern layer is printed on the surface of the acrylic layer, which faces away from the corrosion-resistant layer, a fluorescent layer is arranged between the imaging layer and the aluminum-plated layer, and the fluorescent layer is arranged between the acrylic layer and the holographic pattern layer.

P35180

PRINTING

CN216683807U

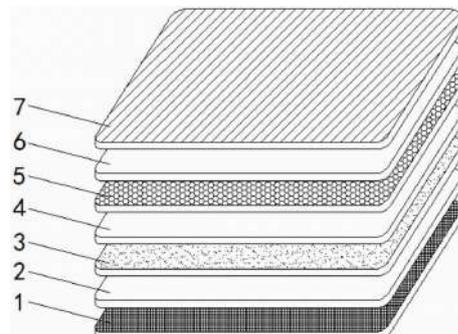
JIANGSU TAIJIA NEW MATERIAL TECHNOLOGY

Priority Date: 31/12/2021

HOLOGRAPHIC POSITIONING-BASED ANTI-COUNTERFEITING HOT STAMPING FILM

The utility model discloses an anti-counterfeiting hot stamping film based on holographic positioning, which belongs to the technical field of anti-counterfeiting hot stamping film products and comprises a substrate layer and a surface protective layer, wherein the substrate layer is positioned at the bottommost end of the anti-counterfeiting hot stamping film, the surface protective layer is positioned at the topmost end of the anti-counterfeiting hot stamping film, the upper surface of the substrate layer is provided with a UV layer, the upper surface of the UV layer is provided with a positioning layer, the upper surface of the positioning layer is provided with an anti-counterfeiting layer, the upper surface of the anti-counterfeiting layer is provided with a colloid layer, the upper surface of the colloid layer is provided with a reinforcing layer, and the upper surface of the reinforcing layer is provided with the surface protective layer. This anti-fake thermoprinting membrane based on holographic location, through setting up UV layer and colloid layer, the UV layer adopts UV photocuring technique to carry out fixed positioning to holographic information's pattern for the pattern depth of holographic information can accomplish 5um, and holographic information's the third dimension of pattern is strong, and the colloid layer remains good stickability all the time, makes anti-fake layer's life and result of use improve greatly.

CLAIM 1. The utility model provides an anti-fake thermoprinting membrane based on holographic location, includes substrate layer (1) and surface protection layer (7), its characterized in that: the anti-counterfeiting hot stamping film comprises a base material layer (1), a surface protective layer (7), a UV layer (2), an anti-counterfeiting hot stamping film, a positioning layer (3), a glue layer (5), an anti-counterfeiting layer (4), a reinforcing layer (6), a UV layer (2), a lower surface of the UV layer (3), a lower surface of the UV layer (2), a lower surface of the anti-counterfeiting layer (4), a glue layer (5), a lower surface of the glue layer (5), an upper surface of the anti-counterfeiting layer (4), and a surface protective layer (7), the lower surface of enhancement layer (6) is laminated with the upper surface of colloid layer (5) and is handled, the upper surface of enhancement layer (6) is provided with surface protection layer (7), the lower surface of surface protection layer (7) is laminated with the upper surface of enhancement layer (6) and is handled.



P35187

BRAND PROTECTION

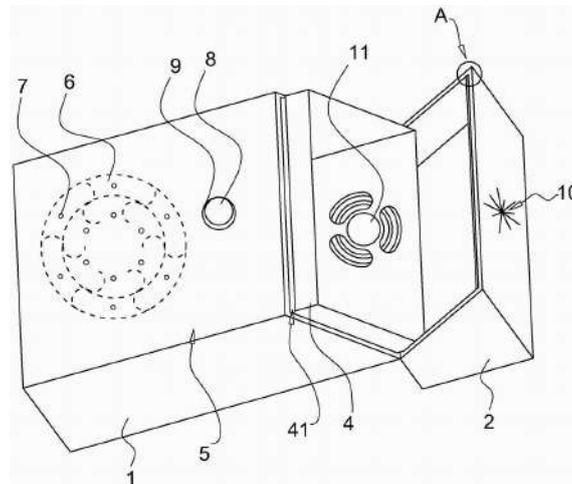
CN216611998U

Priority Date: 23/12/2021

ANHUI ZIJIANG ALUMINIUM SPRAY ENVIRONMENTAL PROT MATERIAL | SHANGHAI ZIJIANG METALLIZATION ENV PROT MAT

LASER HOLOGRAPHIC ANTI-COUNTERFEITING PACKAGING BOX

The utility model belongs to the technical field of the packing carton technique and specifically relates to a radium-shine holographic anti-fake packing carton is related to, including box body and lid, box body one end is equipped with the opening, and the lid rotates in the box body and is close to open-ended one end, and the box body surface is provided with first holographic laser layer, and first holographic laser layer forms three-dimensional holographic anti-fake mark, still is equipped with a plurality of discoloration particles that appear different colours along with the light irradiation angle difference in the first holographic laser layer, and the inboard of box body still is provided with the holographic laser layer of second that has exquisite pattern. The method and the device have the effect of improving the visual experience of the user.



CLAIM 1. The utility model provides a radium-shine holographic anti-fake packing carton, includes box body (1) and lid (2), box body (1) one end is equipped with the opening, lid (2) rotate in box body (1) is close to open-ended one end, its characterized in that: box body (1) surface is provided with first holographic laser layer (6), first holographic laser layer (6) form three-dimensional holographic anti-counterfeiting mark, still be equipped with a plurality of discolour granule (7) that appear different colours along with the light irradiation angle difference in first holographic laser layer (6), the inboard of box body (1) still is provided with second holographic laser layer (11) that have exquisite pattern.

P35188

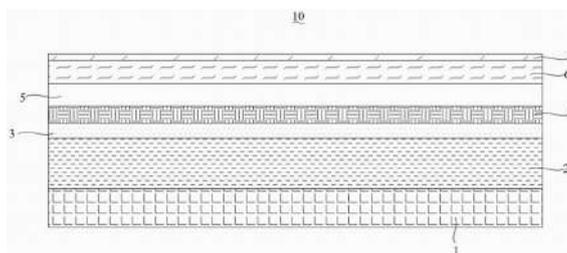
CN216610682U

Priority Date: 12/11/2021

SHENZHEN KUN HONG TECHNOLOGY

TRANSPARENT MEDIUM COLOR-CHANGING HOT STAMPING FILM

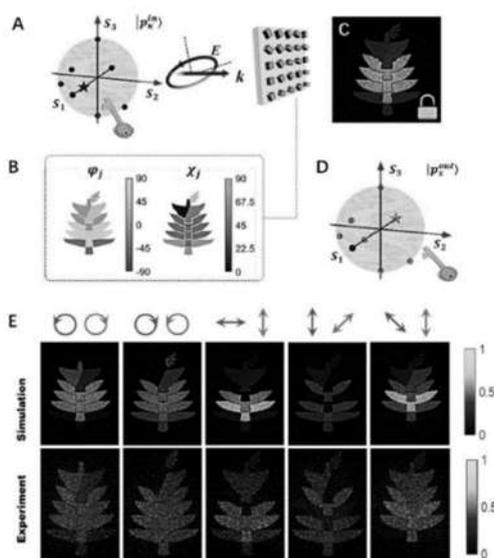
The utility model discloses a transparent medium color-changing hot stamping film which comprises an inorganic polymer film layer, a release layer, a wear-resistant layer, an imaging layer, a transparent medium layer, a protective layer and a UV (ultraviolet) glue layer which are sequentially stacked, wherein one surface of the imaging layer is provided with a holographic image micro-nano structure. The transparent medium color-changing hot stamping film adopting the technical scheme of the utility model has the advantages of high hot stamping speed, cost saving, capability of presenting colorful and gorgeous patterns or decorative patterns under illumination, and visual novelty and impact force.



CLAIM 1. The transparent medium color-changing hot stamping film is characterized by comprising an inorganic polymer film layer, a release layer, a wear-resistant layer, an imaging layer, a transparent medium layer, a protective layer and a UV (ultraviolet) adhesive layer which are sequentially stacked, wherein one surface of the imaging layer is provided with a holographic image micro-nano structure.

VECTOR PHASE SUPER-SURFACE BASED METHOD FOR CUSTOMIZING EFFICIENT POLARIZATION HOLOGRAPHIC TRANSFORMATION AND MULTIPLEXING

The invention discloses a vector phase super-surface-based method for customizing efficient polarization holographic transformation and multiplexing, and belongs to the technical field of micro-nano optics, diffraction optics and holography. The holographic correlation is established aiming at the multi-dimensional and customizable incident polarization state and emergent polarization state, so that the number of channels and the information capacity of polarization holographic records are greatly improved; the vector phase type hologram is recorded based on the sub-wavelength pixel unit, so that the conversion efficiency of the super surface is greatly improved, and the display field of view and the resolution are improved; by establishing a quantitative transformation and multiplexing model of optical information recorded by the super surface under the combined action of mutually independent incident Stokes polarization and emergent Stokes polarization, the modulation freedom degree and multiplexing dimension are further improved. The invention is not limited by the polarization multiplexing number and the polarization state, has high reproduction quality and no twin image interference, and is used in the fields of information encryption and anti-counterfeiting, optical information processing and calculation, solid state scanning and dynamic display, advanced manufacturing process, novel detection, imaging technology and the like.



CLAIM 1. The method for customizing high-efficiency polarization holographic transformation and multiplexing based on the vector phase super surface is characterized by comprising the following steps of: comprises the following steps of (a) preparing a solution, the method comprises the following steps: establishing a holographic encoding mode from an incident polarization space to an emergent polarization space for the holographic optical field multiplexed by the multi-polarization channel, and optimally obtaining the phase distribution capable of reconstructing the multi-polarization channel multiplexed hologram with high quality; step two: according to the phase distribution obtained in the step one, considering the response characteristics of the artificial atoms on the super surface, selecting a super surface material and a working waveband, designing a unit structure of the super surface, determining the geometric dimension and the arrangement mode of the artificial atoms, and further generating a super surface processing file; step three: preparing a super surface according to the super surface processing file obtained in the second step by adopting a standard micro-nano processing technology; step four: on the basis of the first step, a transformation and multiplexing model of a vector light field recorded by the super surface under different incident/emergent polarization modulation is established, and the degree of freedom and multiplexing capability of super surface modulation are further improved.

P35193

CN114637176

Priority Date: 11/03/2022

SHENZHEN SHENDA AURORA TECHNOLOGY

PREPARATION METHOD OF FRESNEL HOLOGRAM REPRODUCED BY DOUBLE-DISSIMILAR-IMAGE INCOHERENT LIGHT

The invention provides a preparation method of a Fresnel hologram reproduced by double-dissimilar incoherent light, which specifically comprises the following steps: firstly, respectively calculating interference holograms of two different object lights and off-axis obliquely incident parallel reference lights in a shorter Fresnel diffraction region; secondly, respectively calculating Fourier transform spectrograms of the two holograms; then, performing band-pass filtering processing on the first frequency spectrogram, reserving the frequency spectrum of the positive first-order diffraction reproduction image only, and performing band-pass filtering processing on the second frequency spectrogram, reserving the frequency spectrum of the negative first-order diffraction reproduction image only; and finally, adding the two filtered frequency spectrograms, and performing inverse Fourier transform calculation to obtain the double-different-image Fresnel hologram. The hologram can be reproduced by using an incoherent light source such as an LED lamp, the reproduced light is two different object images which are respectively positioned at the front side and the rear side of the hologram, and the hologram has obvious floating and sinking scene depth senses, clear imaging, novel and unique visual angle effect, easy identification and suitability for public anti-counterfeiting.

CLAIM 1. A preparation method of a Fresnel hologram reproduced by double-different-image incoherent light is characterized by comprising the following steps: s1, respectively calculating interference holograms of two different object lights and off-axis obliquely incident parallel reference lights in a Fresnel diffraction region in a set range; s2, respectively calculating Fourier transform spectrograms of the two holograms obtained in the step S1; s3, performing band-pass filtering processing on the first frequency spectrogram, reserving the frequency spectrum of the positive first-order diffraction reproduction image only, and performing band-pass filtering processing on the second frequency spectrogram, reserving the frequency spectrum of the negative first-order diffraction reproduction image only; and S4, adding the two filtered spectrograms, and performing inverse Fourier transform calculation to obtain the double dissimilar images Fresnel hologram.



P35195

PRINTING

CN114633575

Priority Date: 09/02/2022

SUZHOU TIANZHONG PRINTING

HOLOGRAPHIC ANTI-COUNTERFEITING PRINTING PAPERBOARD AND PRINTING PROCESS THEREOF

The invention discloses a holographic anti-counterfeiting printing paperboard and a printing process thereof, relating to the field of anti-counterfeiting marks and comprising a printing stock, a holographic anti-counterfeiting layer and a common printing layer; the holographic anti-counterfeiting layer is formed by coating a water-based transparent coating mixed with laser holographic film fragments on the surface of a printing stock, a plurality of holographic anti-counterfeiting marks are printed on the laser holographic film, each holographic anti-counterfeiting mark is composed of an anti-counterfeiting pattern and an anti-counterfeiting number, and the anti-counterfeiting pattern size information in the holographic anti-counterfeiting marks is different from each other; the printing process comprises the following steps: making a holographic image-text plate, making a laser holographic film, breaking the laser holographic film, coating an anti-counterfeiting layer and printing the anti-counterfeiting layer and the anti-counterfeiting film in a common way. The invention has the advantages that: the holographic anti-counterfeiting printing paperboard adopts double-layer anti-counterfeiting marks, greatly increases the imitation difficulty, effectively improves the anti-counterfeiting effect and has great market benefit.

CLAIM 1. A holographic anti-counterfeiting printing paperboard is characterized by comprising a printing stock, a holographic anti-counterfeiting layer and a common printing layer; the holographic anti-counterfeiting layer is formed by coating a water-based transparent coating mixed with laser holographic film fragments on the surface of a printing stock, a plurality of holographic anti-counterfeiting marks are printed on the laser holographic film, each holographic anti-counterfeiting mark is composed of an anti-counterfeiting pattern and an anti-counterfeiting number, and the anti-counterfeiting pattern size information of the holographic anti-counterfeiting marks is different from each other.

P35199

LABEL – BRAND PROTECTION

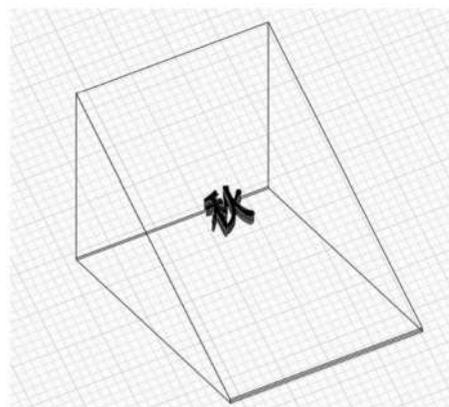
CN114627105

Priority Date: 31/03/2022

WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT

METHOD AND DEVICE FOR GENERATING EMBOSSED OPTICAL IMAGE, ELECTRONIC DEVICE AND STORAGE MEDIUM

The embodiment of the invention provides a method and a device for generating an embossed optical image, electronic equipment and a storage medium, and relates to the technical field of holographic lithography. The method comprises the step of obtaining a pixel matrix of an image to be processed. The pixel matrix comprises the pixel value of each pixel point in the image to be processed. And converting the pixel value of each pixel point in the pixel matrix into a gray value to obtain a gray image. Wherein the grayed image includes a pattern. And processing the gray value of each pixel point in the gray image and the pattern to obtain a target image. And aiming at the gray value of each pixel point of the pattern in the target image, obtaining an image with a plurality of curves. And the gray values of a plurality of pixel points on the same curve are the same. Fitting the plurality of curves to obtain the relief optical image. Therefore, the optical film prepared based on the relief optical image avoids the situation that a large area of blank appears in the central area.



CLAIM 1. A method of generating a relief optical image for use in an electronic device, the method comprising: acquiring a pixel matrix of an image to be processed; the pixel matrix comprises a pixel value of each pixel point in the image to be processed; converting the pixel value of each pixel point in the pixel matrix into a gray value to obtain a gray image; wherein the grayed image comprises a pattern; adding the gray value of each pixel point in the grayed image with a default value to obtain a sub-target image; the default value is increased in sequence in a preset direction by steps of preset multiples; carrying out migration operation on the gray value of each pixel point in the pattern to obtain a target pattern; combining the sub-target image with the target pattern to obtain the target image; aiming at the gray value of each pixel point of the pattern in the target image, obtaining an image with a plurality of curves; the gray values of a plurality of pixel points on the same curve are the same; and fitting the plurality of curves to obtain the relief optical image.

P35202

PRINTING – BRAND PROTECTION

CN114621478

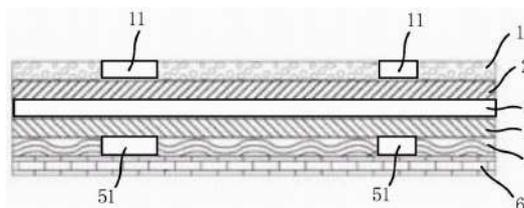
Priority Date: 09/12/2020

SHANGHAI TECHSUN PACKING MATERIALS | SHANGHAI TIANCHEN MICRO NANO TECHNOLOGY

COMPOSITE IRON FILM, PREPARATION METHOD THEREOF AND COMPOSITE IRON ADOPTING COMPOSITE IRON FILM

The invention discloses a composite iron film, a preparation method thereof and composite iron adopting the composite iron film, wherein the composite iron film comprises a printing layer, a first processing layer, a base film layer, a second processing layer, an information layer and a coating layer which are sequentially laminated, the information layer is provided with visual anti-counterfeiting information and an optical positioning mark, and the optical positioning mark is used for aligning the printing layer and the information layer. The base film layer provides a carrier for the complex iron film, the visual anti-counterfeiting information of the information layer can improve the anti-counterfeiting capacity of the complex iron film, and meanwhile, the information layer is provided with the optical positioning mark, so that the printing layer and the information layer can be accurately positioned by utilizing the optical positioning mark, and the complex iron film can have exquisite patterns. The film coating layer can improve the optical effect of the information layer and the brightness of the positioning marks, so that the positioning of the optical positioning marks is facilitated. The first treatment layer and the second treatment layer can increase the fastness of the information layer and the printing layer.

CLAIM 1. The composite iron film is characterized by comprising a printing layer, a first processing layer, a base film layer, a second processing layer, an information layer and a coating layer which are sequentially stacked, wherein the information layer is provided with visual anti-counterfeiting information and an optical positioning mark, and the optical positioning mark is used for aligning the printing layer and the information layer.



P35206

LUMINESCENCE

CN114605453

Priority Date: 23/03/2022

HUBEI YIMEITE QUANXI TECHNOLOGY

BODIPY FLUORESCENT TONER WITH AIE EFFECT AND APPLICATION THEREOF IN FLUORESCENT ANTI-COUNTERFEITING FILM

The invention provides BODIPY fluorescent toner with AIE effect and application thereof in a fluorescent anti-counterfeiting film, wherein the structure of the compound is shown as formula I: wherein, the substituent R is tetraphenyl vinyl. The fluorescent dye compound takes 2,3, 3-trimethylindole derivatives and 1, 8-naphthalimide as raw materials, and undergoes Knoevenagel condensation reaction under the action of an organic catalyst to finally generate the electron donating hexabasic fluoroboron fluorescent dye, wherein the dye is in an aggregation state. The fluorescence is obviously enhanced, and the AIE effect is achieved. And the fluorescent dye is simple and easy to obtain, and the manufacturing cost is low.



CLAIM 1. The BODIPY solid fluorescent dye compound with the AIE effect is characterized in that the structural formula of the fluorescent dye is shown as formula I, and specifically, the fluorescent dye compound is as follows: wherein, the substituent R is tetraphenyl vinyl.

P35217

PRINTING – CARD

CN114573851

Priority Date: 24/03/2022

JIANGSU HUAXIN NEW MAT

PROTECTION FILM FOR PETG CARD FOR UNIONPAY HOLOGRAPHIC LABEL HOT STAMPING AND PREPARATION METHOD THEREOF

The protection film for the PETG card for the silver-linked holographic label hot stamping comprises a PETG film, the surface of which is coated with chemical grafting modification liquid, wherein the modification liquid comprises the following components in parts by weight: 10-40 parts of aqueous acrylic resin dispersoid, 50-70 parts of water, 0.5-2 parts of coupling agent, 0.1-1 part of ammonia water and 10-40 parts of fumed silica. The preparation method comprises the following steps: weighing various raw materials according to the weight part ratio; under the stirring state, sequentially adding the aqueous acrylic resin dispersoid, the fumed silica and the coupling agent into water; adding ammonia water to adjust the pH value to 6-8, continuously stirring and standing to obtain a chemical grafting modification solution; and coating the chemical grafting modification solution on the surface of the PETG film, and drying to obtain the protective film. The method can improve the bonding strength of the chemical grafting modification liquid and the PETG substrate; the prepared protective film has good transparency, does not lose efficacy and yellowing under high temperature and high pressure, and avoids the phenomenon of bonding laminated steel plates.

CLAIM 1. The protection film for the PETG card for the silver-linked holographic label hot stamping is characterized by comprising a PETG film serving as a base material, wherein the surface of the PETG film is coated with a chemical grafting modification liquid, and the chemical grafting modification liquid comprises the following components in parts by weight: 10-40 parts of aqueous acrylic resin dispersoid, 50-70 parts of water, 0.5-2 parts of coupling agent, 0.1-1 part of ammonia water and 10-40 parts of fumed silica.

P35219

CN114571836

Priority Date: 21/01/2022

ZHEJIANG YAXIN PACKAGING MAT

METHOD FOR MANUFACTURING MICRO-NANO GOLD STAMPING PLATE

The invention relates to a manufacturing method of a micro-nano gold stamping plate, which comprises a PC offset plate and a reflux tank, wherein sulfamic acid electroforming solution is arranged in the reflux tank, the temperature of the sulfamic acid electroforming solution is 60-70 °C, the specific gravity agent of the density of the sulfamic acid electroforming solution is 41-42 Baume, and the manufacturing method sequentially comprises the following steps: s1, obtaining a micro-nano relief pattern vector picture draft, S2 etching positioning patterns, S3 developing treatment, S4 silver liquid spraying, S5 master mask preparation, S6 nickel ion adsorption and S7 cutting, and the method has the advantages that: because the nickel ions are adsorbed on the mother plate through the counter-current groove in the step S6 to form the micro-nano gold stamping plate, the liquid in the counter-current groove is uniform in circulation, impurity separation and small in internal stress, and the function of high-speed plate casting can be achieved, so that the manufactured micro-nano gold stamping plate has creative vector diagrams with colorful colors, can meet the requirement of mass reproduction of precise products, and the manufactured holographic laser gold stamping plate is smooth in surface and free of defects.

CLAIM 1. A manufacturing method of a micro-nano gold stamping plate is characterized by comprising the following steps: the method comprises a PC offset plate and a reflux tank, wherein an sulfamic acid electroforming solution is arranged in the reflux tank, the sulfamic acid electroforming solution comprises the following components of 420 parts by mass of nickel sulfamate and 33-36 parts by mass of boric acid, the temperature of the sulfamic acid electroforming solution is 60-70 , and the density ratio of the sulfamic acid electroforming solution is 41-42 Baume, and the method sequentially comprises the following steps: s1: acquiring a micro-nano relief pattern vector draft; s2: etching the positioning pattern of the micro-nano relief pattern vector draft obtained by S1 on the PC offset plate; s3: carrying out development treatment on the PC offset plate treated in the step S2; s4: uniformly spraying a layer of silver liquid on the PC offset plate treated by the S3, wherein the thickness of the silver liquid on the PC offset plate is 0.9-1.1 um; s5, preparing a silver plate core film from the PC offset plate processed in the step S4 through a plate making groove, and preparing a master plate from the silver plate core film; s6, placing the mother plate manufactured in the step S5 in a reverse flow tank, enabling nickel ions to be adsorbed on the mother plate to form a micro-nano gold stamping plate, wherein the placing time is not less than 72 hours, and the thickness of the micro-nano gold stamping plate is not less than 2 mm; and S7, cutting the mother plate processed in the S6 into a relief micro-nano pattern by a precision cutting machine.

P35224

PRINTING – LABEL

CN114550572

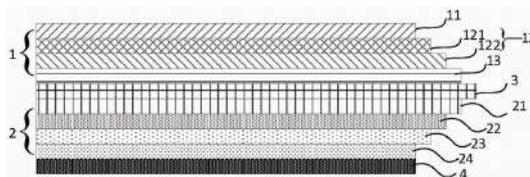
Priority Date: 24/11/2020

BEIJING PANPASS INFORMATION TECHNOLOGY

COMPOSITE ANTI-COUNTERFEITING MARK AND PREPARATION METHOD THEREOF

The application discloses compound anti-counterfeiting mark and preparation method thereof, compound anti-counterfeiting mark has two sets of lamination membrane layer groups as an organic whole, is provided with a specific anti-counterfeiting code on every membrane layer group, sets up anti-counterfeiting code on two membrane layer groups respectively and has and predetermine the relevance, especially, be provided with anti-counterfeiting fiber layer in the bottom layer membrane layer group, anti-counterfeiting fiber of random distribution in the anti-counterfeiting fiber layer with set up in anti-counterfeiting code in the bottom layer membrane layer group combines to form specific anti-counterfeiting figure, thereby the reinforcing anti-counterfeiting mark's not reproducibility. The method dispersedly distributes the anti-counterfeiting fibers in the bottom layer film group layer in a scattering mode, and applies static electricity to the anti-counterfeiting fibers in the scattering process, so that the anti-counterfeiting fibers are fully dispersed and cannot agglomerate due to the fact that the anti-counterfeiting fibers are charged with static electricity of the same polarity.

CLAIM 1. The utility model provides a compound false proof mark, a serial communication port, compound false proof mark includes top layer membrane layer group (1) and bottom layer membrane layer group (2) that laminate as an organic whole, wherein, top layer membrane layer group (1) with bottom layer membrane layer group (2) laminate as an organic whole through separating layer (3), top layer membrane layer group (1) is including laminating layer (11), holographic picture and text layer (12) and first substrate layer (13) in proper order, bottom layer membrane (2) are including laminating second substrate layer (21), substrate picture and text layer (22), bonding layer (23) and anti-fake fibre layer (24) in proper order.



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PATENT REFERENCE – See the table at the end of this document

P35090

PRINTING

WO2022131238

Priority Date: 17/12/2020

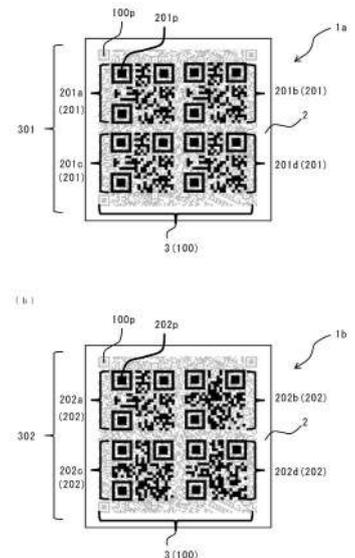
DAI NIPPON PRINTING

INFORMATION RECORDED MATERIAL, AND READING DEVICE, PROGRAM, READING METHOD, AND SYSTEM FOR INFORMATION RECORDED MATERIAL

The present invention provides: an information recorded material which can be easily read and deciphered by a commonly used reading device and which is highly insusceptible to duplication or the like; and a reading device and the like for said information recorded material. An information recorded material 1a comprises: a base material 2; a photoluminescent ink layer 3 that is formed on one surface of the base material 2 by using a photoluminescent ink; and a transparent ink layer 4 that is disposed on the one surface side and is formed from a transparent ink exhibiting different reflection-light quantities depending on the observation angle. The photoluminescent ink layer 3 forms a first pattern 100, and the transparent ink layer 4 forms a second pattern 201. The second pattern 201 comprises a plurality of partial patterns 201a, 201b, ..., and each of the partial patterns 201a, 201b, ... is a two-dimensional code, and is equipped with one or more segmented symbols 201p. The second pattern 201 contains information that can be converted into a second specified code which is a specific code, and is superimposed on at least a portion of the first pattern 100.

MATÉRIAU ENREGISTRÉ D'INFORMATIONS, ET DISPOSITIF DE LECTURE, PROGRAMME, PROCÉDÉ DE LECTURE ET SYSTÈME POUR MATÉRIAU ENREGISTRÉ D'INFORMATIONS

La présente invention concerne : un matériau enregistré d'informations qui peut être facilement lu et déchiffré par un dispositif de lecture couramment utilisé et qui est hautement insensible à la duplication ou similaire ; et un dispositif de lecture et similaire pour ledit matériau enregistré d'informations. Un matériau enregistré d'informations (1a) comprend : un matériau de base (2) ; une couche d'encre photoluminescente (3) qui est formée sur une surface du matériau de base (2) à l'aide d'une encre photoluminescente ; et une couche d'encre transparente (4) qui est disposée sur le côté de la surface et qui est formée à partir d'une encre transparente présentant différentes quantités de lumière de réflexion en fonction de l'angle d'observation. La couche d'encre photoluminescente (3) forme un premier motif (100), et la couche d'encre transparente (4) forme un second motif (201). Le second motif (201) comprend une pluralité de motifs partiels (201a, 201b, ...), et chacun des motifs partiels (201a, 201b, ...) est un code bidimensionnel, et est équipé d'un ou plusieurs symboles segmentés (201p). Le second motif (201) contient des informations qui peuvent être converties en un second code spécifié qui est un code spécifique, et est superposé sur au moins une partie du premier motif (100).



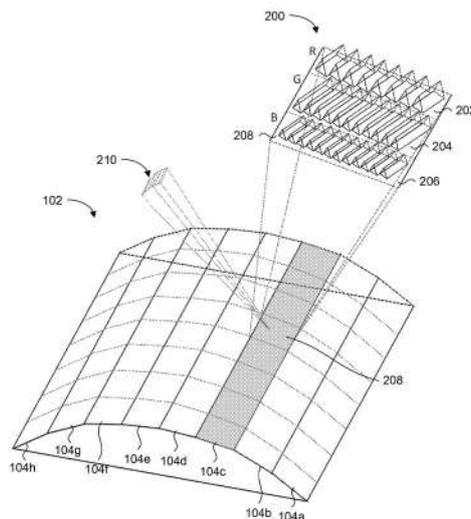
CLAIM 1. It is an information recorder that has a base material and a primary print layer formed by a photorealous ink on one side of the substrate, and a second print layer formed by a transparent ink on the other side with different reflectance depending on the viewing angle. The first print layer above forms the first pattern, the second print layer above forms the second pattern, and the second print layer above forms the second pattern, It consists of multiple subpatterns, each of which is a two-dimensional code, each with one or more cut-out symbols, and the second pattern contains information that can be converted to a specific code, a second specific code. An information recorder that is overlaid on at least part of the first pattern mentioned above.

OPTICAL DIFFRACTIVE DISPLAY

A diffractive display for displaying images displayed at a view zone, the images including a plurality of micro-pixels comprising a plurality of microfacets, each micro facet having a surface normal that is non-parallel to the surface normal of the other microfacets of the pixel and having at least one diffractive nano-structure array, each array having a viewing angle based on an angle of the surface normal of the micro-facet on which the array is provided and an azimuthal angle and a polar angle of the fundamental order of diffraction of the array and at which incident light is diffracted from the array, and wherein, for each image, each micro-pixel includes at least one array for which the viewing angle corresponds to the view zone the image, such that each image is composed of the diffracted light from at least one array from each micro-pixel.

AFFICHAGE DIFFRACTIF OPTIQUE

L'invention concerne un affichage diffractif pour afficher des images affichées au niveau d'une zone de visualisation, les images comprenant une pluralité de micropixels comprenant une pluralité de microfacettes, chaque microfacette ayant une normale de surface qui n'est pas parallèle à la normale de surface des autres microfacettes du pixel et ayant au moins un réseau de nanostructures de diffraction, chaque réseau ayant un angle de visualisation sur la base d'un angle de la normale de surface de la microfacette sur laquelle est disposé le réseau et un angle azimutal et un angle polaire de l'ordre fondamental de diffraction du réseau et à laquelle la lumière incidente est diffractée à partir du réseau, et dans lequel, pour chaque image, chaque micropixel comprenant au moins un réseau pour lequel l'angle de visualisation correspond à la zone de visualisation de l'image, de telle sorte que chaque image est composée de la lumière diffractée provenant d'au moins un réseau à partir de chaque micropixel.



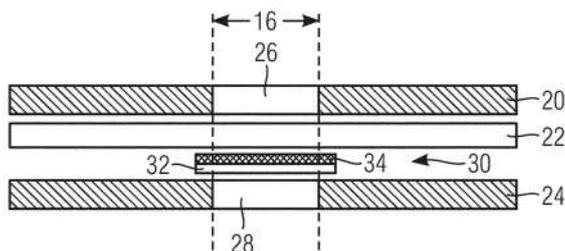
CLAIM 1. A diffractive display for displaying a plurality of images, each image displayed at a unique view zone, the diffractive display comprising: a plurality of micro-pixels, each micro-pixel comprising a plurality of micro-facets, each micro-facet of a micro-pixel having a surface normal that is non-parallel to the surface normal of the other micro-facets of the micro-pixel; each micro-facet having at least one diffractive nano-structure array; wherein each of the at least one diffractive nano-structure array has a viewing angle at which incident light is diffracted from the diffractive nano-structure array as diffracted light, the viewing angle being based on an angle of the surface normal of the micro-facet on which the diffractive nano-structure array is provided and an azimuthal angle and a polar angle of the fundamental order of diffraction of the diffractive nano-structure array, and the diffracted light having a hue and an intensity based on properties of the diffractive nanostructure array; and wherein, for each of the plurality of images, each of the plurality of micro-pixels includes at least one diffractive nano-structure array for which the viewing angle corresponds to the view zone the image, such that each of the plurality of images is composed of the diffracted light from at least one diffractive nano-structure array from each of the plurality of micro-pixels.

DATA CARRIER HAVING A COMPOSITE SUBSTRATE HAVING A SECURITY ELEMENT ARRANGED IN A SEE-THROUGH REGION

The invention relates to a data carrier (10) having a composite substrate having a security element (18) arranged in a see-through region (16), wherein the composite substrate contains two outer layers (20, 24) composed of a fiber material and an inner layer (22) composed of a transparent film arranged between the outer layers (20, 24). The outer layers (20, 24) have cutouts (26, 28) arranged one above another at least in part and thereby define a see-through region (16) in the data carrier. In the see-through region (16) of the data carrier, a security element (18) is arranged between the inner layer (22) and one of the outer layers (24), said security element completely covering the see-through region (16). Preferably, the security element, in the see-through region (16), is embodied as translucent and optionally regionally opaque, but without transparent partial regions.

SUPPORT DE DONNÉES COMPORTANT UN SUBSTRAT COMPOSITE POSSÉDANT UN ÉLÉMENT DE SÉCURITÉ DISPOSÉ DANS UNE ZONE DE VISUALISATION EN TRANSPARENCE

L'invention concerne un support de données (10) comportant un substrat composite possédant un élément de sécurité (18) disposé dans une zone de visualisation en transparence (16), le substrat composite contenant deux couches extérieures (20, 24) composées d'un matériau fibreux et une couche intérieure (22) composée d'un film transparent, disposée entre les couches extérieures (20, 24). Les couches extérieures (20, 24) comportent des découpes (26, 28) disposées au moins partiellement les unes sur les autres et définissent ainsi une zone de visualisation (16) dans le support de données. Un élément de sécurité (18) est disposé dans la zone de visualisation en transparence (16) du support de données, entre la couche intérieure (22) et une des couches extérieures (24), et recouvre entièrement la zone de visualisation en transparence (16). De préférence, l'élément de sécurité est conçu de manière à être translucide et éventuellement opaque dans certaines zones, mais sans comporter de zones partielles transparentes dans la zone de visualisation en transparence (16).



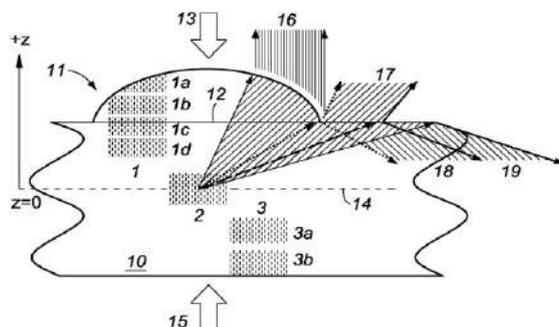
CLAIM 1. A data carrier with a composite substrate with a security element arranged in a see-through region, in which the composite substrate contains two outer layers of a fiber material and an inner layer of a transparent film arranged between the outer layers, the outer layers have gaps arranged at least partially one above the other and thereby define a see-through region in the data carrier, a security element is arranged between the inner layer and one of the outer layers in the see-through region of the data carrier, which security element completely covers the see-through region.

OPTICAL DEVICES COMPRISING MICROLENSSES AND LASER-FABRICATED PATTERNS OR OTHER STRUCTURES, THEIR MANUFACTURE AND USE

Disclosed are optical devices suitable as security devices for document authentication, which comprise at least one array of patterns such as laser-fabricated patterns, or other structures, optionally formed for example from elongate laser-modified tracks extending within a document substrate. The patterns are combined with at least one array of microlenses to cause certain optical effects. Also disclosed are the use of such devices for document authentication, and methods for their production.

DISPOSITIFS OPTIQUES COMPRENANT DES MICROLENTILLES ET DES MOTIFS FABRIQUÉS PAR LASER OU D'AUTRES STRUCTURES, LEUR FABRICATION ET LEUR UTILISATION

L'invention concerne des dispositifs optiques appropriés en tant que dispositifs de sécurité pour l'authentification de documents, qui comprennent au moins un réseau de motifs tels que des motifs fabriqués par laser, ou d'autres structures, éventuellement formées par exemple à partir de pistes allongées par laser s'étendant à l'intérieur d'un substrat de document. Les motifs sont combinés avec au moins un réseau de microlentilles pour provoquer certains effets optiques. La présente invention porte également sur l'utilisation de tels dispositifs pour l'authentification de documents et sur des procédés pour leur production.



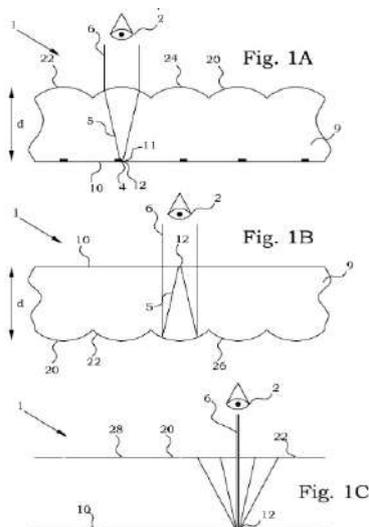
CLAIM 1. An optical device comprising: a periodic array of microlenses; and a periodic array of distinct laser-fabricated patterns, wherein the patterns are the same or different from one another, and each pattern comprises a periodic array of continuous or non-continuous laser-modified tracks in a substrate material, such as a polymer substrate material; wherein the patterns, together with the microlenses, collectively provide an optical effect.

MANUFACTURING OF SYNTHETIC IMAGES WITH CONTINUOUS ANIMATION

A method for manufacturing a synthetic image device comprises providing (S10) of a focusing element array. An image layer is arranged (S20) in a vicinity of a focal distance of focusing elements of the focusing element array, whereby a synthetic image composed of enlarged portions of the image layer becomes perceivable for a viewer. The image layer comprises an array of image cells, each being associated with a respective focusing element and wherein the array of image cells has a same symmetry and element distance as the focusing element array. The arranging comprises creation (S22) of continuous image objects within the image cells such that synthetic images to be viewed, all having contributions from one of the continuous image objects, present smooth successive non-parallax alterations upon changing a viewing direction. This creation is performed (S30) according to an array of digital image cells of a digital image layer model.

FABRICATION D'IMAGES SYNTHÉTIQUES AVEC ANIMATION CONTINUE

L'invention concerne un procédé de fabrication d'un dispositif d'images synthétiques comprenant la fourniture (S10) d'un réseau d'éléments de focalisation. Une couche d'image est disposée (S20) au voisinage d'une distance focale d'éléments de focalisation du réseau d'éléments de focalisation, moyennant quoi une image synthétique composée de portions agrandies de la couche d'image devient perceptible pour un observateur. La couche d'image comprend un réseau de cellules d'image, chacune étant associée à un élément de focalisation respectif et le réseau de cellules d'image ayant une même symétrie et une même distance entre éléments que le réseau d'éléments de focalisation. L'arrangement comprend la création (S22) d'objets d'image continus à l'intérieur des cellules d'image de sorte que des images synthétiques à visionner, toutes ayant des contributions provenant de l'un des objets d'image continus, présentent des modifications non parallaxe successives lisses lors du changement d'une direction de visionnage. Cette création est réalisée (S30) selon un réseau de cellules d'image numériques d'un modèle de couche d'image numérique.



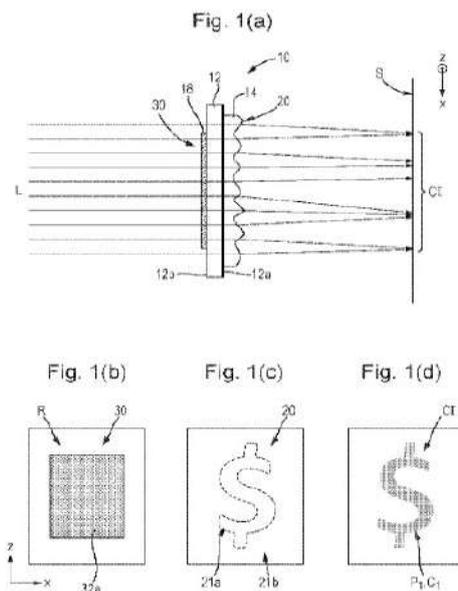
CLAIM 1. A method for manufacturing a synthetic image device, comprising the steps of: - providing (S10) a focusing element array (20); - arranging (S20) an image layer (10) in a vicinity of a focal distance (d) of focusing elements (22) of said focusing element array (20), whereby a synthetic image composed of enlarged portions of said image layer becomes perceivable for a viewer (2); wherein said image layer (10) comprises an array (7) of image cells (16), wherein each image cell (16) is associated with a respective focusing element (22) of said focusing element array (20) and wherein said array (7) of image cells (16) having a same symmetry and element distance as said focusing element array (20); said step of arranging (S20) comprises creation (S22) of continuous image objects (19) within said image cells (16) such that synthetic images to be viewed, all having contributions from one of said continuous image objects (19) in at least one of said image cells (16), present smooth successive nonparallax alterations upon changing a viewing direction (3); wherein said creation (S22) of continuous image objects (19) is performed (S30) according to an array of digital image cells (116) of a digital image layer model (101), wherein each said digital image cell (116) comprises a digital representation of a shape of said digital image cell (116) and digital descriptions of digital image objects (117, 119) within respective said digital image cell (116).

SECURITY DEVICE AND METHOD OF MANUFACTURE THEREOF

A security device is disclosed, comprising: a substrate (12); a relief structure (20) on a first side of the substrate, the relief structure being a reflective or refractive light-redirecting relief structure configured to redirect light from a light source to thereby project a caustic image; and a colour filter (30). The colour filter is configured to overlap in use at least part of the relief structure, and comprises one or more at least semitransparent materials, at least one of the materials transmitting only a subset of visible light wavelengths corresponding to a respective non-white colour. The caustic image projected by the security device exhibits one or more colour(s) when the security device is illuminated with white light.

DISPOSITIF DE SÉCURITÉ ET SON PROCÉDÉ DE FABRICATION

Un dispositif de sécurité est divulgué, comprenant : un substrat (12) ; une structure en relief (20) sur un premier côté du substrat, la structure en relief étant une structure en relief de redirection de lumière réfléchissante ou réfractrice conçue pour rediriger une lumière provenant d'une source de lumière, ce qui permet de projeter une image caustique ; et un filtre coloré (30). Le filtre coloré est conçu pour chevaucher, lors de l'utilisation, au moins une partie de la structure en relief, et comprend un ou plusieurs matériaux au moins semi-transparents, au moins l'un des matériaux transmettant uniquement un sous-ensemble de longueurs d'onde de lumière visible correspondant à une couleur non blanche respective. L'image caustique projetée par le dispositif de sécurité présente une ou plusieurs couleurs lorsque le dispositif de sécurité est éclairé à l'aide d'une lumière blanche.



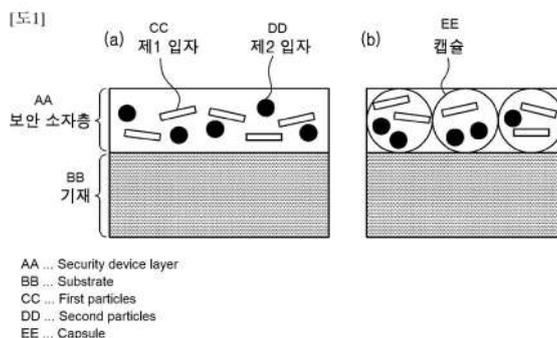
CLAIM 1. A security device, comprising: a substrate; a relief structure on a first side of the substrate, the relief structure being a reflective or refractive light-redirecting relief structure configured to redirect light from a light source to thereby project a caustic image; and a colour filter, the colour filter being configured to overlap in use at least part of the relief structure, the colour filter comprising one or more at least semitransparent materials, at least one of the materials transmitting only a subset of visible lightwavelengths corresponding to a respective non-white colour, whereby the caustic image projected by the security device exhibits one or more colour(s) when the security device is illuminated with white light.

METHOD FOR MANUFACTURING APPARATUS FOR PREVENTING FORGING AND FALSIFICATION

The present invention relates to a method for manufacturing an apparatus for preventing forging and falsification, which comprises: a dispersion step of manufacturing a dispersion liquid by dispersing, in a liquid medium, first particles of which one or more optical characteristics from among the color of reflected light, the spectrum of the reflected light, and the strength or penetration degree of the reflected light are changed in accordance with a viewing angle or the position of a light source, and second particles which are moved or reconfigured by a magnetic field being applied thereto; a capsule manufacturing step of encapsulating the dispersion liquid using a medium that transmits light; and a step of forming a security device layer by printing the capsule on a substrate, wherein the second particles move by means of application of an external magnetic field, and the first particles move by means of the movement of the second particles, such that the color, pattern, or steric effect by the first particles is reversibly changed, and the first particles and the second particles are reconfigured from the initial configuration thereof to another configuration.

PROCÉDÉ DE FABRICATION D'APPAREIL DESTINÉ À EMPÊCHER LA CONTREFAÇON ET LA FALSIFICATION

La présente invention concerne un procédé de fabrication d'un appareil destiné à empêcher la contrefaçon et la falsification, qui comprend : une étape de dispersion consistant à fabriquer un liquide de dispersion par dispersion, dans un milieu liquide, de premières particules dont une ou plusieurs caractéristiques optiques parmi la couleur de la lumière réfléchie, le spectre de la lumière réfléchie et la résistance ou le degré de pénétration de la lumière réfléchie sont modifiées en fonction d'un angle de visualisation ou de la position d'une source de lumière, et de secondes particules qui sont déplacées ou reconfigurées par un champ magnétique appliqué à ces dernières ; une étape de fabrication de capsule consistant à encapsuler le liquide de dispersion à l'aide d'un milieu qui transmet de la lumière ; et une étape de formation d'une couche de dispositif de sécurité par impression de la capsule sur un substrat, les secondes particules se déplaçant au moyen de l'application d'un champ magnétique externe, et les premières particules se déplaçant au moyen du mouvement des secondes particules, de telle sorte que la couleur, le motif ou l'effet stérique par les premières particules est changé de façon réversible, et les premières particules et les secondes particules sont reconfigurées de leur configuration initiale à une autre configuration.



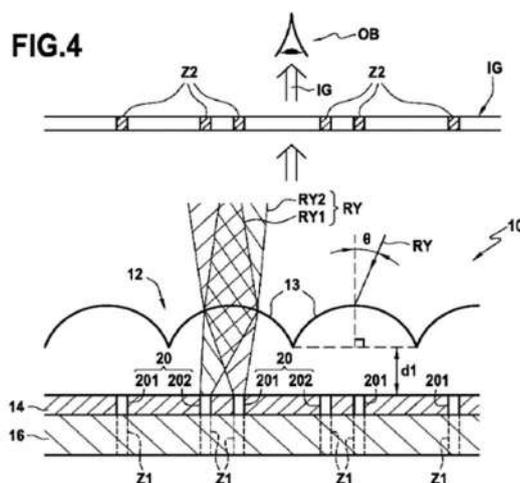
CLAIM 1. A dispersion step of preparing a dispersion by dispersing first particles in which optical properties of any one or more of Color of reflected light, Spectrum of reflected light, intensity or transmittance of reflected light are changed according to a viewing angle or a position of a light source and second particles which are rearranged by moving by application of a magnetic field in a liquid medium; A capsule preparation step of encapsulating the dispersion with a light-transmitting medium; Printing the capsules to a substrate to form a security layer; Wherein the second particles are moved by application of an external magnetic field and the movement of the second particles causes the movement of the first particles to reversibly change the colour, pattern or stereoscopic effect by the first particles to rearrange from the initial configuration of the first particles and the second particles to another configuration.

PERSONALISED IMAGE FORMED FROM A METAL LAYER AND A LENTICULAR ARRAY

The invention relates, in particular, to a security document (10) comprising: a metal layer (14) comprising an arrangement of diffractive nanostructures arranged periodically in the metal layer so as to form a diffractive holographic structure forming an arrangement of pixels each comprising a plurality of sub-pixels of distinct colours; a lenticular array (12) comprising convergent lenses (13) positioned facing the metal layer; and a support layer (16) on which the metal layer is disposed so that the metal layer (14) is sandwiched between the lenticular array (12) and the support layer (16). The metal layer comprises perforations (20) formed by focusing laser radiation (RY) through the lenticular array on the metal layer (14), the perforations comprising at least one group of perforations (RY) produced by focusing the laser radiation (RY) at a respective angle of incidence (Θ) so as to reveal a corresponding personalised image (IG) when the security document is observed at this angle of incidence.

IMAGE PERSONNALISEE FORMEE A PARTIR D'UNE COUCHE METALLIQUE ET D'UN RESEAU LENTICULAIRE

L'invention vise notamment un document sécurisé (10) comprenant : une couche métallique (14) comportant un arrangement de nanostructures diffractives disposées de façon périodique dans la couche métallique de façon à former une structure holographique diffractive formant un arrangement de pixels comportant chacun une pluralité de sous-pixels de couleurs distinctes; un réseau lenticulaire (12) comprenant des lentilles convergentes (13) positionnées en regard de la couche métallique; et une couche support (16) sur laquelle est disposée la couche métallique de sorte à ce que la couche métallique (14) soit intercalée entre le réseau lenticulaire (12) et la couche support (16). La couche métallique comprend des perforations (20) formées par focalisation d'un rayonnement laser (RY) au travers du réseau lenticulaire sur la couche métallique (14), les perforations comprenant au moins un groupe de perforations (RY) réalisées par focalisation du rayonnement laser (RY) suivant un angle d'incidence (Θ) respectif de sorte à révéler une image personnalisée (IG) correspondante lorsque le document sécurisé est observé suivant ledit angle d'incidence.



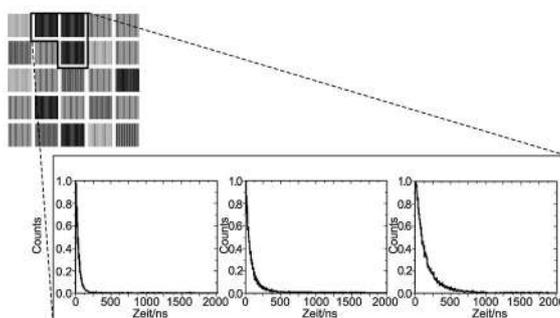
CLAIM 1. A secure Document (10) comprising: - a metal layer (14) including an array of diffractive nanostructures, the diffractive nanostructures being periodically disposed in the metal layer (14) so as to form a diffractive holographic structure; - a lenticular array (12) comprising positive lenses (13) positioned opposite the metal layer; and - a support layer (16) on which the metal layer is disposed such that said metal layer is interposed between the lenticular array and the support layer; wherein the metal layer comprises perforations (20) formed by focusing laser radiation through the lenticular array (12) onto the metal layer (14), the perforations comprising at least one group of perforations (201; 202) produced by focusing the laser radiation at a respective angle of incidence (Θ) so as to reveal a corresponding personalized image (IG) when the secure document is observed at said angle of incidence, wherein the metal layer (14) comprises a holographic structure forming an array of pixels (32) each comprising a plurality of sub-pixels (34) of distinct colors, the perforations (20) revealing locally through the holographic structure shades of colour or grey level caused by underlying regions (Z1) of the support layer situated opposite the perforations, the underlying regions modifying the colorimetric contribution of the sub-pixels.

METHOD FOR LABELLING PRODUCTS WITH AN OPTICAL SECURITY FEATURE WITH A TEMPORAL DIMENSION

The present invention is based on a method for labelling products with the aid of two or more ink formulations, each containing one or more photoluminescent dyes which, under photon excitation, emit radiation in the range of 380-3000 nm and differ by virtue of different fluorescence lifetimes, for storing information in serialization and/or track & trace systems and for document security.

PROCÉDÉ PERMETTANT DE MARQUER DES PRODUITS AYANT UNE CARACTÉRISTIQUE DE SÉCURITÉ OPTIQUE AVEC UNE DIMENSION TEMPORELLE

La présente invention est basée sur un procédé permettant de marquage de produits à l'aide d'au moins deux formulations d'encre ou plus, contenant chacune un ou plusieurs colorants photoluminescents qui, sous excitation de photons, émettent un rayonnement dans la plage de 380 à 3 000 nm et qui sont différents en raison de différentes durées de vie de fluorescence, pour stocker des informations dans des systèmes de sérialisation et/ou de suivi et de traçage et pour la sécurité de documents.



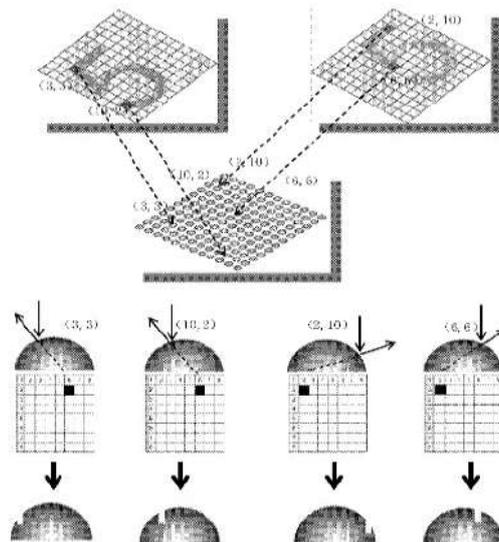
CLAIM 1. A method for marking products comprising the steps of: - Providing two or more ink formulations each comprising one or more photoluminescent dyes, preferably a Photoluminescent dye which emit radiation in the range of 380-3000 nm, preferably from 450 to 1800 nm, most preferably from 750 nm to 1100 nm, under photon excitation, wherein the ink formulations differ by different photoluminescence lifetimes of the photoluminescent dyes; Generating a multi-dimensional code for identifying a product, wherein at least one dimension, preferably two dimensions, is/are a local dimension and one dimension is a temporal dimension, based on the photoluminescence lifetimes of the photoluminescent dyes; Printing the ink formulations onto at least one area of the surface of the product in the form of said multi-dimensional code; - Irradiating the product printed with the ink formulation with photons; - detecting the radiation emitted by the irradiated product in the range from 380 to 3000 nm, preferably from 450 to 1800 nm, most preferably from 750 nm to 1100 nm, and the time profile of this radiation over a period of from 1 ns to 1 min, preferably 1 ns to 1 s, more preferably 1 ns to 1 ms, most preferably 5 ns to 100 ps.

OPTICAL ANTI-COUNTERFEITING ELEMENT AND PRODUCT

Provided are an optical anti-counterfeiting element and product. The optical anti-counterfeiting element comprises a base material (1); a reflective curved mirror array (21) located on one surface of the substrate; and a micro image-text array (22) formed on the reflective curved mirror array, wherein the micro image-text array and the reflective curved mirror array are located in the same plane and are overlapped without an interval, and after the sampling and synthesis of the micro image-text array, which has a coupling effect, with the reflective curved mirror array, a dynamic effect is formed.

ÉLÉMENT ANTICONTREFAÇON OPTIQUE ET PRODUIT

La présente invention concerne un élément anticontrefaçon optique et un produit. L'élément anticontrefaçon optique comprend un matériau de base (1) ; un réseau de miroirs incurvés réfléchissants (21) situé sur une surface du substrat ; et un microréseau image-texte (22) formé sur le réseau de miroirs incurvés réfléchissants, le microréseau image-texte et le réseau de miroirs incurvés réfléchissants étant situés dans le même plan et se chevauchant sans intervalle, et après l'échantillonnage et la synthèse du microréseau image-texte, qui présente un effet de couplage, avec le réseau de miroirs incurvés réfléchissants, un effet dynamique est formé.



CLAIM 1. An optical security element comprising: a substrate; Substrate (1); An array of reflective curved mirrors (21) on a surface of said substrate (1); A micrographic array (22) formed on said reflective curved mirror array (21), said micrographic array (22) being in the same plane as said reflective curved mirror array (21) without spaced overlap, wherein said reflective curved mirror array (21) samples said micrographic array (22) with which it has a coupling effect to form a kinetic effect.

P35120

CARD

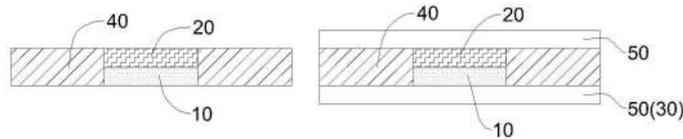
KR20220075917

Priority Date: 30/11/2020

KOREA SECURITY PRINTING & MINTING

CARD WITH SECURITY ELEMENT IDENTIFICATION FUNCTION WITH IMPROVED VISIBILITY

The card having a security element identification function with improved visibility according to the present invention has a special layer structure, so that even when a security element having a structural color is adopted, it is possible to block identification of a security element in a general card use environment, and it is possible to have excellent identification of a security element in a desired environment for identification of a security element.



CLAIM 1. A card comprising: a laminate including: a light-sensitive color-changing layer having a reversible optical characteristic in which visible light transmittance is reduced when irradiated with ultraviolet light and visible light transmittance is increased when not irradiated with ultraviolet light; and a security element layer laminated on the light-sensitive color-changing layer, the security element layer having a structural color.

P35122

LIQUID CRYSTALS

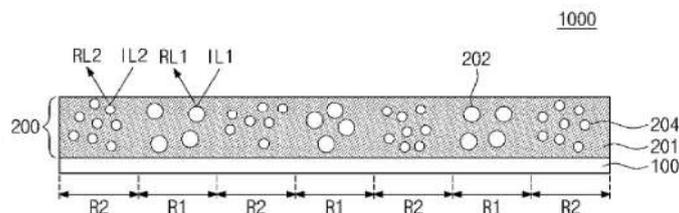
KR20220072043

Priority Date: 23/11/2020

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE

ANTI-COUNTERFEITING SHEET AND ITS MANUFACTURING METHODS

An anti-counterfeiting sheet according to the present invention includes a base sheet and a reflective layer on the base sheet. The reflective layer includes a first region having a first reflectivity with respect to external light and a second region having a second reflectivity different from the first reflectivity. First liquid crystal droplets are distributed in the first region, and second liquid crystal droplets are distributed in the second region. An average diameter of the first liquid crystal droplets is greater than an average diameter of the second liquid crystal droplets. The first liquid crystal droplets and the second liquid crystal droplets each include cholesteric liquid crystals having the same pitch.



CLAIM 1. A display device includes: a base sheet; and a reflective layer on the base sheet, wherein the reflective layer includes a first region having a first reflectivity with respect to external light and a second region having a second reflectivity different from the first reflectivity, Wherein first liquid crystal droplets are distributed in the first region and second liquid crystal droplets are distributed in the second region, Wherein an average diameter of said first liquid crystal droplets is larger than an average diameter of said second liquid crystal droplets, and wherein said first liquid crystal droplets and said second liquid crystal droplets each comprise cholesteric liquid crystals of the same pitch.

P35123

LABEL – LIQUID CRYSTALS

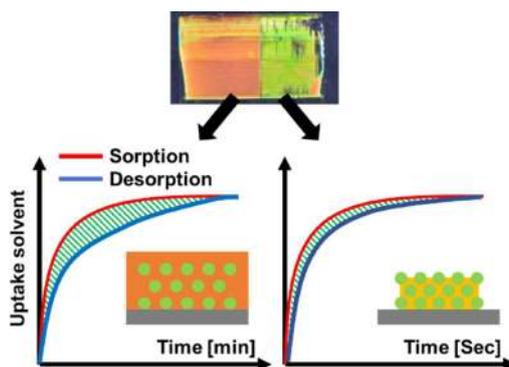
KR20220068453

Priority Date: 19/11/2020

SOGANG UNIVERSITY INDUSTRY UNIVERSITY COOPERATION FOUNDATION

IDENTIFICATION LABEL STRUCTURE USING PHOTOCRYSTAL STRUCTURE

An identification display structure using a photonic crystal composite structure includes: an optical structure including colloidal crystal structures and a target absorption layer embedded between the colloidal crystal structures and varying in volume according to an absorption amount of a specific substance; and an additional cover layer formed on the optical structure and formed to vary passage characteristics of the specific substance in at least two identification regions, When the additional cover layer is exposed to a specific substance, the characteristic that the volume change of the target absorbing layer varies per identification area can be used to express the optical difference.



CLAIM 1. A liquid crystal display device comprising: an optical structure including colloidal crystal structures and a target absorption layer embedded between the colloidal crystal structures, the target absorption layer varying in volume according to an absorption amount of a specific substance; and a light blocking layer formed on the optical structure, And an additional cover layer formed so as to vary passage characteristics of the specific substance in at least two or more identification areas, wherein the identification display structure is used for identification by using a characteristic that a volume change of the target absorbent layer is different for each identification area when the additional cover layer is exposed to the specific substance.

P35128

NANO MECCA

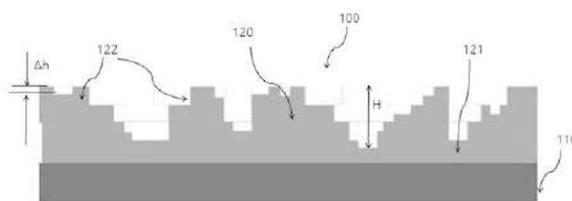
KR102403987

Priority Date: 16/03/2022

TRANSMISSION TYPE DIFFRACTIVE OPTICAL ELEMENT AND METHOD FOR MANUFACTURING THE SAME

The present invention relates to a transmission type diffractive optical element including a plurality of layers and having maximum light conversion efficiency when a minimum distance Δh between the plurality of layers in a thickness direction is a specific section, and a method of manufacturing the same.

CLAIM 1. A transmissive diffractive optical element comprising a diffraction pattern, wherein the diffraction pattern comprises a plurality of layers, a minimum spacing h in a thickness direction between the plurality of layers is 60 to 200 nm, Wherein the light conversion efficiency of the diffractive optical element has a value calculated by Equation 1 below of 63% or more and a total height h of the diffraction pattern is 800-1350 nm. (Equation 1) $(\{U_{sig}(x')\})^2$ Means Intensity of Desired Output Field, below $\{U_{in}()\}^2$ The α value means Intensity of Input Field, the α value being scaling factor-corresponding to a kind of correction values for reducing the error of the calculated Intensity of Output Field and the Desired Output Field, X' represents a position value (on the xy -plane) of a Desired Output Field, d represents a position value in an input field, and W_{sig} Means Optimization Region.)



P35129

KR102403984

Priority Date: 16/03/2022

NANO MECCA

REFLECTIVE COUNTERFEIT PREVENTION FILM AND METHOD FOR PRODUCING THE SAME

There is provided a reflection-type counterfeit prevention film including: a base; and a diffractive optical element layer disposed on the base and including a diffraction pattern, wherein the diffraction pattern includes a plurality of layers.

CLAIM 1. A diffractive optical element comprising: a base; and a reflective diffractive optical element layer located on the base, the reflective diffractive optical element layer comprising a diffraction pattern, wherein the diffraction pattern (122) comprises a plurality of layers, a minimum spacing h in a thickness direction between the plurality of layers is 15 to 50 nm, Wherein the light conversion efficiency of the diffractive optical element has a value of 63% or more calculated by Equation 1 below, and the total height h of the diffraction pattern is 180 to 330 nm. (Equation 1) ($\{U_{sig}(x')\}^2$ Means Intensity of Desired Output Field, below $\{U_{in}()\}^2$ The alpha value means Intensity of Input Field, the alpha value being scaling factor-corresponding to a kind of correction values for reducing the error of the calculated Intensity of Output Field and the Desired Output Field, X' represents a position value (on the xy-plane) of a Desired Output Field, represents a position value in an input field-d, and W_{sig} Means Optimization Region.)

P35130

KR102399615

Priority Date: 19/07/2021

NANO MECCA

DIFFRACTION OPTICAL ELEMENTS AND MANUFACTURING METHOD FOR THE SAME

The present invention relates to a diffractive optical element (Doe) comprising a plurality of pixels, wherein the size of the pixels is between 250 and 1000 nm, and to a method for manufacturing the same.

P35131

PRINTING – BANKNOTE – LUMINESCENCE

JP2022088817

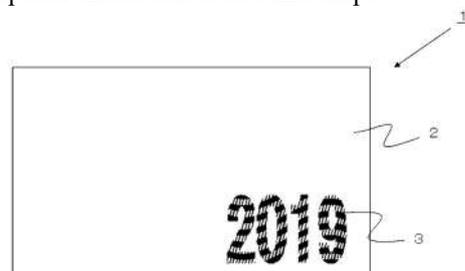
Priority Date: 03/12/2020

NATIONAL PRINTING BUREAU

FUNCTIONAL STREAK-PRINTED MATERIAL

TOPIC: In the field of valuable printed materials such as bank tickets, transit tickets, valuable tickets, identification cards, and transit tickets, the present invention provides a functional streak printed material in which a streak formed of ink that shields an effect of a functional material is laminated on a convex streak formed of ink that contains the functional material. **INVENTION:** a display device including, on at least a portion of a substrate, a functional convex streak group formed by arranging functional convex streak lines formed by a first ink having first optical characteristics with respect to a predetermined wavelength in a parallel manner; A functional streak-line printed material including a printed image formed by superimposing, on at least a part of a functional convex streak-line group, a concealing streak-line group formed by arranging concealing streak-lines formed by a second ink having a second optical characteristic that blocks or attenuates a first optical characteristic in a line shape.

CLAIM 1. A display device comprising: a functional convex streak group formed by arranging functional convex streak lines formed by a first ink having a first optical characteristic with respect to a predetermined wavelength in a parallel manner on at least a portion of a substrate; and a functional convex streak group formed by a first ink having a first optical characteristic with respect to a predetermined wavelength on at least a portion of the functional convex streak group; A printed image formed by superimposing a concealing streak group formed by arranging concealing streak lines in million lines, the concealing streak group being formed by arranging concealing streak lines formed by a second ink having a second optical characteristic that blocks or attenuates the first optical characteristic, Under visible light, a first pattern obtained by synthesizing the functional convex streak group and the concealing streak group is visually recognized, and under the predetermined wavelength, A second pattern formed by blocking or attenuating the first optical properties by the second optical properties is visually recognized, and further, only a portion of the second pattern is visually recognized in accordance with an observation angle.

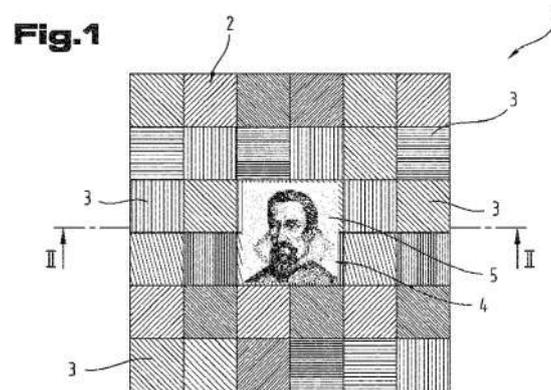


SECURITY ELEMENT WITH REFLECTIVE AND STATIC FEATURES

The invention relates to a security element (1) for securities or security papers and to a method for producing a security element (1). The security element (1) is embodied with at least one first region (2) having first structures (3), which first structures (3) reflect first information into different spatial regions, so that a movement image is produced for a viewer when a light source (8) moves accordingly and/or when an observation angle is changed. When the light source (8) is moved and/or when the observation angle is changed, the first information item is simultaneously moved. The security element (1) is embodied with at least one second region (4) having second structures (5), said second structures (5) reproducing static and/or viewing angle-independent second information.

ÉLÉMENT DE SÉCURITÉ AUX CARACTÉRISTIQUES RÉFLÉCHISSANTES ET STATIQUES

L'invention concerne un élément de sécurité (1) pour papiers de valeur ou papiers de sécurité et un procédé de fabrication d'un élément de sécurité (1). L'élément de sécurité (1) comporte au moins une première zone (2) pourvue de premières structures (3), lesquelles premières structures (3) réfléchissent une première information dans différentes zones spatiales, de sorte qu'une image cinématique est produite pour un observateur lors d'un mouvement correspondant d'une source de lumière (8) et/ou lors d'une modification d'un angle d'observation. Un mouvement de la source de lumière (8) et/ou une modification de l'angle d'observation s'accompagnent d'un mouvement de la première information. Selon l'invention, ledit élément de sécurité (1) comporte au moins une deuxième zone (4) pourvue de deuxièmes structures (5), lesquelles deuxièmes structures (5) reproduisent une deuxième information statique et/ou indépendante de l'angle de vue.



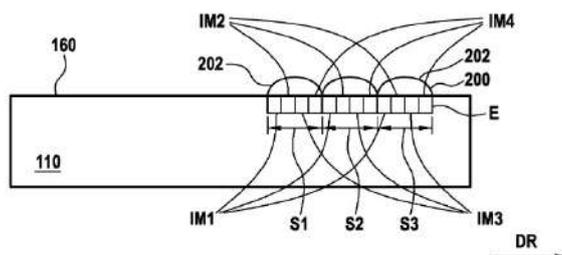
CLAIM 1. A security element (1) for papers of value or security papers, wherein the security element (1) is formed with at least one first region (2) having first structures (3), which first structures (3) reflect first information into different spatial regions, such that a movement image is produced for a viewer with a corresponding movement of a light source (8) and/or with a change in an observation angle, wherein a movement of the first information item is produced simultaneously with a movement of the light source (8) and/or a change in the observation angle, characterized in that the security element (1) is formed with at least one second region (4) having second structures (5), which second structures (5) reproduce static and/or viewing angle-independent second information.

METHOD OF MANUFACTURING A SECURITY DEVICE AND ASSOCIATED SECURITY DEVICE

The invention essentially relates to a method for manufacturing a security device, comprising the following steps: - obtaining (S310) at least a first, a second, a third and/or a fourth gray scale image from a digital color image:-- said first gray scale image comprising a plurality of pixels each having a gray level representing a first color component of the corresponding pixel of the digital color image, and-- said second grey level image comprising a plurality of pixels each having a grey level representing a second colour component of the corresponding pixel of the digital colour image, - forming (S320) said at least one first and second grey level images on a physical support of said security device.

PROCÉDÉ DE FABRICATION D'UN DISPOSITIF DE SÉCURITÉ ET DISPOSITIF DE SÉCURITÉ ASSOCIÉ

Procédé de fabrication d'un dispositif de sécurité et dispositif de sécurité associé L'invention concerne essentiellement un procédé de fabrication d'un dispositif de sécurité, comprenant les étapes suivantes : - obtention (S310) d'au moins une première, une deuxième, une troisième et/ou une quatrième images en niveaux de gris à partir d'une image numérique en couleurs : -- ladite première image en niveaux de gris comprenant une pluralité de pixels présentant chacun un niveau de gris représentant une première composante de couleur du pixel correspondant de l'image numérique en couleurs, et -- ladite deuxième image en niveaux de gris comprenant une pluralité de pixels présentant chacun un niveau de gris représentant une deuxième composante de couleur du pixel correspondant de l'image numérique en couleurs, - formation (S320) desdites au moins une première et deuxième images en niveaux de gris sur un support physique dudit dispositif de sécurité.



CLAIM 1. Method for manufacturing a security device (100), comprising the following steps: - obtaining (S300) a digital color image (400), said digital color image (400) comprising a plurality of pixels (P1-Pp), the color of each pixel (P1-Pp) being defined according to at least a first, a second and a third color component of a color space, - obtaining (S310) at least a first and a second gray level image (IM1-IMn) from said digital color image (400): - said first grayscale image (IM1) comprising a plurality of pixels each having a grayscale representing the first color component of the corresponding pixel of the digital color image (400), and - said second grey level image (IM2) comprising a plurality of pixels each having a grey level representing the second colour component of the corresponding pixel of the digital colour image (400), - forming (S320) said at least one first and second grey level images (IM1-IMn) on a physical support (110) of said security device (100).

P35154

PRINTING – CARD – PASSPORT

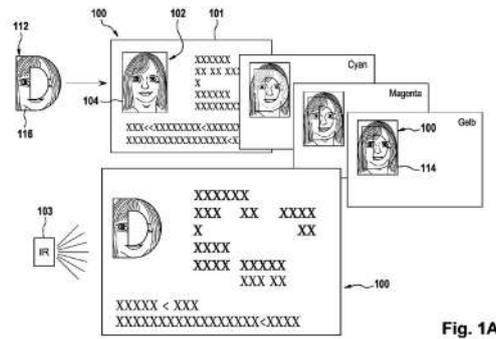
EP4005815

BUNDESDRUCKEREI

Priority Date: 26/11/2020

DOCUMENT, METHOD OF PRODUCING A DOCUMENT AND READER DEVICE FOR THE DETECTION OF AN IMPRINT

The invention relates to a document (100) having a coloured imprint (104), wherein a first part of the imprint (110) has coloured pigments (114) and in the first part of the imprint (110) the visual impression of an achromatic color is approximated by the colored pigments (114), and wherein a second part of the imprint (112) also has achromatic pigments (116) of the achromatic colour in addition to coloured pigments (114).



CLAIM 1. Document (100) having a coloured imprint (104), wherein a first part of the imprint (110) has coloured pigments (114) and, in the first part of the imprint (110), the visual impression of an achromatic colour is approximated by the coloured pigments (114), and wherein a second part of the imprint (112) also has achromatic pigments (116) of the achromatic colour in addition to coloured pigments (114).

P35167

BRAND PROTECTION

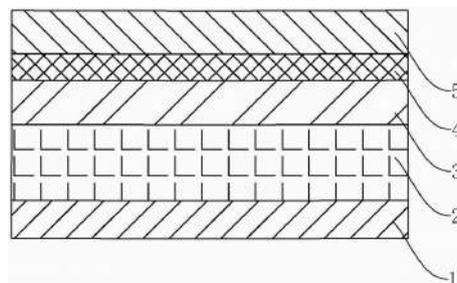
CN216765430U

ANHUI ZIJIANG ALUMINIUM SPRAY ENVIRONMENTAL PROT MATERIAL | SHANGHAI ZIJIANG METALLIZATION ENV PROT MAT

Priority Date: 22/01/2022

ACID-RESISTANT AND ALCOHOL-RESISTANT LASER ENVIRONMENT-FRIENDLY OIL-PROOF FOOD PACKAGING TRANSFER PAPER

The application discloses grease proofing food package transfer paper of acid-resistant anti-alcohol laser environmental protection relates to the food package paper field, and it includes acid-resistant anti-alcohol oil-proof coating, base paper layer and vacuum aluminum coated layer, base paper layer is located acid-resistant anti-alcohol oil-proof coating with between the vacuum aluminum coated layer. The food packaging transfer paper has the advantages that the risk that the integrity of the food packaging transfer paper is damaged can be reduced, and the good appearance of the food packaging transfer paper is kept.



CLAIM 1. The utility model provides an acidproof resistant radium-shine grease proofing food package transfer paper of environmental protection of mellow wine which characterized in that: including acidproof resistant oily coating of alcohol (1), base paper layer (2) and vacuum aluminum coated layer (4), base paper layer (2) are located acidproof resistant oily coating of alcohol (1) with between vacuum aluminum coated layer (4).

P35179

PRINTING

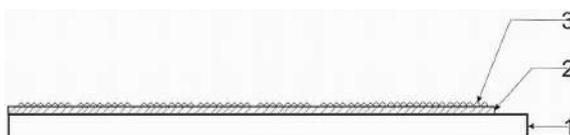
CN216683824U

Priority Date: 31/12/2021

GUIZHOU JINJIA NEW PACKAGING MATERIAL

LASER DIGITAL JET PRINTING STRUCTURE

The utility model discloses a laser digital jet printing structure which comprises a printing layer, a laser jet printing layer and a UV (ultraviolet) transparent line layer, wherein the laser jet printing layer is arranged on the printing layer, the UV transparent line layer is arranged on the laser jet printing layer, and the UV transparent line layer forms a transparent three-dimensional grid line on the surface of the laser jet printing layer. The utility model makes the surface of the printed product show mirror diffuse reflection effect by the laser spray printing layer, adopts regular sharp lines and transparent three-dimensional grid lines which are obtained by transparent UV gloss oil, forms a plurality of specifications of mesh holes on the printing plane, and makes the incident light generate physical phenomena such as reflection, refraction, interference and the like by the transparent grid layer when the sight angle changes, so that an observer can see multicolored laser effect on the surface of the printed product, thereby having better stereoscopic impression, better laser effect, finer image and text, no need of film pressure, automatic spray printing and lower manufacturing difficulty.



CLAIM 1. A laser digital jet printing structure is characterized in that: including undertaking printing layer (1), radium-shine spout seal layer (2) and UV transparent line strip layer (3), radium-shine spout seal layer (2) and set up on undertaking printing layer (1), UV transparent line strip layer (3) set up on radium-shine spout seal layer (2), and UV transparent line strip layer (3) form transparent three-dimensional grid line on radium-shine spout seal layer (2) surface.

P35191

PLASTIC BANKNOTE – CARD – RELIEF

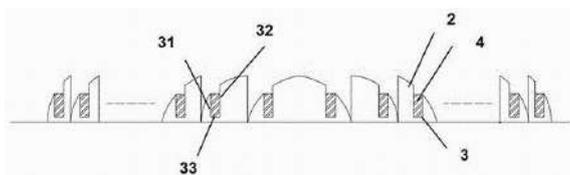
CN114639326

Priority Date: 20/05/2022

SVG TECHNOLOGY

PRECISE MICROSTRUCTURE PRESENTING THREE-DIMENSIONAL RELIEF IMAGE AND PREPARATION METHOD AND APPLICATION THEREOF

The invention discloses a precise microstructure presenting a three-dimensional relief image, and a preparation method and application thereof. The precise microstructure provided by the invention comprises: the period of the micro nano sub-structures is arranged according to a preset rule and is used for presenting a three-dimensional relief effect; the micro-nano structure is provided with at least one groove, the groove comprises at least two opposite side walls and a bottom, and ink is arranged in the groove and used for presenting a color effect. In this way, the precision microstructure can exhibit a three-dimensional relief effect and a color effect. The invention provides a preparation method of a precise microstructure, which uses less ink by methods of transfer printing solidification, ink filling and cleaning. The invention also provides another preparation method, the ink is attached to the template through the anilox roller, and the ink is filled in the grooves at the same time of transferring the micro-nano substructure, so that the method has the advantages of simpler steps, less used ink amount, low carbon and environmental protection.



CLAIM 1. A precision microstructure for rendering a relief image, comprising: the period of the micro nano sub-structures is arranged according to a preset rule and is used for presenting a three-dimensional relief effect; the micro-nano structure is provided with at least one groove, the groove comprises at least two opposite side walls and a bottom, and ink is arranged in the groove and used for presenting a color effect.

P35192

CN114639300

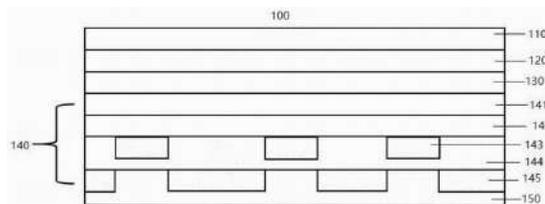
Priority Date: 02/03/2022

WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT

OPTICALLY VARIABLE ANTI-COUNTERFEITING FILM, PREPARATION METHOD THEREOF AND ANTI-COUNTERFEITING PRODUCT

The invention provides an optically variable anti-counterfeiting film, a preparation method thereof and an anti-counterfeiting product, wherein the optically variable anti-counterfeiting film comprises an optically variable layer, the optically variable layer comprises a semitransparent reflecting layer and at least two optically variable unit layers which are sequentially overlapped from top to bottom, each optically variable unit layer comprises a resin layer and a reflecting layer which are arranged from top to bottom, each reflecting layer above the lowermost optically variable unit layer consists of reflecting areas which are arranged at intervals, hollow areas are arranged between the reflecting areas, at least part of the reflecting area of each reflecting layer can penetrate through all the resin layers above the reflecting layer and is projected on the semitransparent reflecting layer, and at least one reflecting layer is provided with invisible anti-counterfeiting pictures and texts. The invention can realize the light variable effect containing the invisible anti-counterfeiting image-text in different forms in different areas, increase the imitation difficulty and improve the anti-counterfeiting performance.

CLAIM 1. The utility model provides an optical variability anti-counterfeiting film, includes the optical variability layer, its characterized in that, the optical variability layer is including the semi-transparent reflection stratum, at least two-layer optical variability unit layer that from top to bottom superpose the setting in proper order, every layer the optical variability unit layer is including the resin layer and the reflection stratum that set up from top to bottom, the lower floor every layer of optical variability unit layer top the reflection stratum all comprises the reflection zone that the interval set up, be the fretwork region between the reflection zone, every layer the at least partial reflection zone of reflection stratum all can see through all of its top the resin layer and projection in on the semi-transparent reflection stratum, at least one deck be provided with stealthy anti-counterfeiting picture and text on the reflection stratum.



P35194

PRINTING

CN114637164

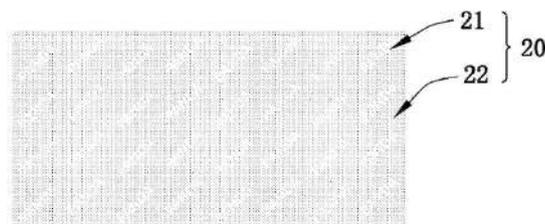
Priority Date: 15/12/2020

SVG TECHNOLOGY

METHOD FOR MANUFACTURING LATENT IMAGE ANTI-COUNTERFEITING DEVICE

The invention discloses a method for manufacturing a latent image anti-counterfeiting device, which comprises the following steps: designing an anti-counterfeiting pattern; preparing a printing roller according to the anti-counterfeiting pattern, wherein the printing roller comprises a body and a plurality of bulges arranged on the surface of the body; providing a substrate, wherein the substrate comprises a UV adhesive layer and a micro-nano structure imprinted on the UV adhesive layer; plating a layer of metal material on the surface of one side of the UV adhesive layer with the micro-nano structure to form a metal layer; transferring a layer of solution to the surface of one side of the UV adhesive layer with the micro-nano structure by using the plate roller before the step of forming the metal layer, or transferring the solution to the surface of the metal layer by using the plate roller after the step of forming the metal layer; and cleaning by using a cleaning agent to obtain the latent image anti-counterfeiting device, wherein the metal layer is provided with a plurality of hollow units. By the method, the yield is improved, and the processing method is simple; meanwhile, the micro-nano structure can be combined with the hollow unit, double anti-counterfeiting is realized, and the anti-counterfeiting effect is improved.

CLAIM 1. A method for manufacturing a latent image anti-counterfeiting device is characterized by comprising the following steps: designing an anti-counterfeiting pattern; preparing a printing roller according to the anti-counterfeiting pattern, wherein the printing roller comprises a body and a plurality of bulges arranged on the surface of the body; providing a substrate, wherein the substrate comprises a UV adhesive layer and a micro-nano structure imprinted on the UV adhesive layer; plating a layer of metal material on the surface of one side of the UV adhesive layer with the micro-nano structure to form a metal layer; transferring a layer of solution to the surface of one side of the UV adhesive layer with the micro-nano structure by using the plate roller before the step of forming the metal layer, or transferring the solution to the surface of the metal layer by using the convex surface of the plate roller after the step of forming the metal layer; and cleaning by using a cleaning agent to obtain the latent image anti-counterfeiting device, wherein the metal layer is provided with a plurality of hollow units.



P35196

PRINTING – BANKNOTE – THREAD – MAGNETISM

CN114633574

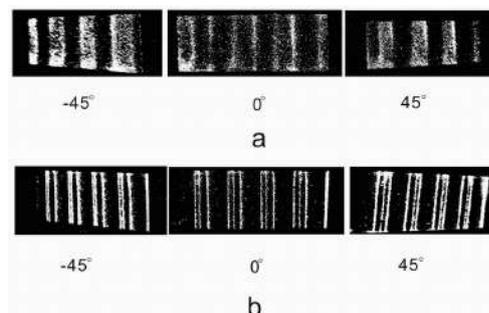
PENG LIANG

Priority Date: 24/03/2022

SAFETY LINE OR STRIP WITH DYNAMIC VISUAL THREE-DIMENSIONAL EFFECT

The present invention relates to the field of protecting value documents and value goods against counterfeiting and illegal copying. The invention relates in particular to a method for producing a security thread or stripe and an optical security element, comprising a substrate and a coating comprising pigment flakes and a transparent radiation-curable linking resin, said coating being supported by said substrate, wherein said pigment flakes comprise a magnetic or magnetizable material for magnetically aligning said pigment flakes; the coating passes through a magnetic field with a specific structure so that the pigment flakes are arranged according to a corresponding rule to form patterns and form a highly dynamic visual motion effect and stereoscopic impression.

CLAIM 1. A security thread or stripe comprising a substrate and a coating comprising pigment flakes and a transparent radiation curable linking resin, the coating being supported by the substrate, wherein the pigment flakes comprise a magnetic or magnetizable material for magnetically aligning the pigment flakes; wherein the pigment flakes are aligned to follow the curvature of the continuous wavy line to form an aligned pattern and radiation cured; the magnetic field of its wave line camber characteristic is through two sets of same two liang of adjacent homopolar magnetic poles arrange equidistant or the magnet composite module of equidistant range in opposite directions, and the front and back order is placed and is had the displacement of half interval in the magnetic pole opposite direction to the centre in upper and lower position forms the passageway, the coating passes through the middle passageway in proper order behind the magnet composite module of front and back through the radiation hardening coating, thereby obtains the pigment piece and follows the pattern of continuous wave line camber in order to form the range.



P35197

PRINTING – INK

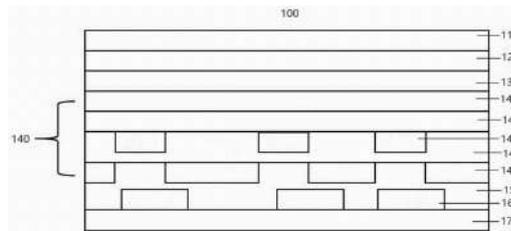
CN114633572

WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT

Priority Date: 02/03/2022

OPTICALLY VARIABLE ANTI-COUNTERFEITING SCRAPING INK, SCRAPING INK PRODUCT AND PREPARATION METHOD THEREOF

The invention provides optically variable anti-counterfeiting scraping ink, a scraping ink product and a preparation method thereof. The anti-fake ink of scraping of light variability includes the light variability layer, can scrape the gum layer, the light variability layer is including the semi-transparent reflection stratum, at least two-layer light variability unit layer that from top to bottom superpose the setting in proper order, and every layer of light variability unit layer is including the resin layer and the reflection stratum that set up from top to bottom, and every layer of reflection stratum of the light variability unit layer top of lower floor all comprises the reflection zone that the interval set up, be the fretwork region between the reflection zone, every layer of reflection stratum at least partial reflection zone all can see through all resin layers and the projection of its top on semi-transparent reflection stratum. The scraping product comprises optically variable anti-counterfeiting scraping ink, an isolation oil layer and a base material, wherein the base material is provided with an image-text area to be hidden. The ink scraping product provided by the invention can be partially scraped, and can realize different forms of light variation effects in different areas, so that the product has stronger aesthetic property and higher anti-counterfeiting performance.



CLAIM 1. The utility model provides an anti-fake scraping ink of scraping of light variability, its characterized in that includes the light change layer, can scrape the gum layer, the light change layer is including the semi-transparent reflection stratum, at least two-layer light change unit layer that from top to bottom superpose in proper order and sets up, every layer the light change unit layer includes resin layer and the reflection stratum that sets up from top to bottom, the lower floor every layer of light change unit layer top the reflection stratum all comprises the reflection area of interval setting, be the fretwork region between the reflection area, every layer the at least partial reflection area of reflection stratum all can see through all of its top the resin layer and projection in on the semi-transparent reflection stratum.

P35198

CN114633026

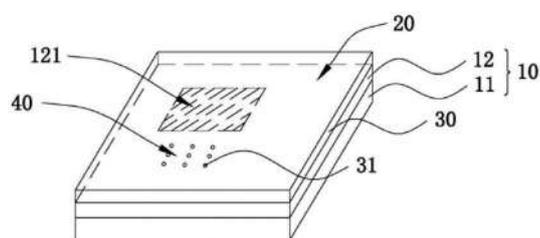
Priority Date: 15/12/2020

SVG TECHNOLOGY

ANTI-COUNTERFEITING MEMBRANE AND MANUFACTURING METHOD THEREOF

The invention discloses a method for manufacturing an anti-counterfeiting membrane, which comprises the following steps: providing a substrate, wherein the substrate comprises a base material and an information layer which is arranged on the base material and provided with a first pattern, and a micro-nano structure is arranged in the first pattern; depositing a metal layer on the surface of the information layer with the first pattern side; designing a corresponding program according to the first pattern by utilizing the PC; the PC executes the program and controls the laser to melt the metal layer according to the program, so that the metal layer hollow unit is provided with a plurality of hollow units. The invention also discloses an anti-counterfeiting membrane which is manufactured by the method. By the method, a plurality of hollowed-out units corresponding to the second pattern are obtained, so that the phenomena of incomplete stripping, edge burrs and the like during product imprinting and demolding in the prior art are avoided, the integrity of the product is greatly guaranteed, the yield is improved, the processing method is simple, and the production efficiency is high; meanwhile, the micro-nano structure can be combined with the plurality of hollow units, double anti-counterfeiting is realized, and the anti-counterfeiting effect is improved.

CLAIM 1. A method for manufacturing an anti-counterfeiting membrane is characterized by comprising the following steps: providing a substrate, wherein the substrate comprises a base material and an information layer which is arranged on the base material and provided with a micro-nano structure and a first pattern; depositing a metal layer on the surface of the information layer on the side with the first pattern; designing a program corresponding to the first pattern according to actual requirements by utilizing a PC; and the PC executes the program and controls the laser to melt the metal layer according to the program so as to enable the metal layer to be provided with a plurality of hollow units.



P35203

PRINTING – BANKNOTE – PASSPORT – THREAD – RELIEF – MAGNETISM

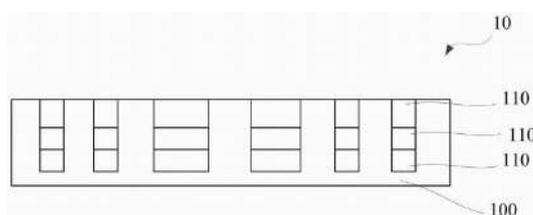
CN114619784

Priority Date: 21/01/2022

CHINA BANKNOTE PRINTING & MINTING GROUP | CHINA BANKNOTE PRINTING TECHNOLOGY RESEARCH INSTITUTE

TRANSPARENT SECURITY ELEMENT, METHOD AND DEVICE FOR PRODUCING THE SAME, SECURITY ARTICLE, STORAGE MEDIUM

The invention provides a transparent anti-counterfeiting element, a manufacturing method and equipment thereof, a safety article and a storage medium, wherein the transparent anti-counterfeiting element comprises the following components: a transparent material layer having a patterned grid relief structure comprising a plurality of grooves; the anti-counterfeiting dielectric layers are arranged in the grooves; the anti-counterfeiting medium layer comprises one of the following components: magnetic material layer, fluorescent material layer, dielectric material layer, infrared material layer. By adopting the technical scheme of the invention, fine patterns or specific anti-counterfeiting characteristic signals can be observed by using special equipment, so that the anti-counterfeiting effect and the hiding effect are improved.



CLAIM 1. A transparent security element, comprising: a transparent material layer (100), the transparent material layer (100) having a patterned grid relief structure comprising a plurality of grooves; the anti-counterfeiting dielectric layers (110), the anti-counterfeiting dielectric layers (110) are arranged in the grooves; the anti-counterfeiting medium layer (110) comprises one of the following components: magnetic material layer, fluorescent material layer, dielectric material layer, infrared material layer.

P35207

BANKNOTE – THREAD – MAGNETISM

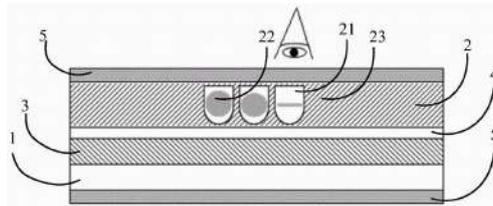
CN114604019

CHINA BANKNOTE PRINTING & MINT

Priority Date: 04/12/2020

SAFETY WIRE OR STRIP AND PREPARATION METHOD THEREOF

The embodiment of the invention provides a safety wire or strip and a preparation method thereof. The security thread or stripe comprises: a substrate; the interaction layer comprises at least one microcavity and at least one color chip arranged in the microcavity, wherein the color chip can move in the microcavity and can be reversibly oriented by an external magnetic field; the color layer has a fixed color and/or an optically variable characteristic, and the interaction layer can enable at least one part of the color layer to be displayed or hidden according to the change of an external magnetic field; the interaction layer and the color layer are respectively arranged on two opposite sides of the base material or on one side of the base material, so that the safety line or strip has the characteristics of easy identification and difficult counterfeiting.



CLAIM 1. A security thread or stripe, wherein said security thread or stripe comprises: a substrate; an interactive layer comprising at least one microcavity and at least one color chip disposed within the microcavity, the color chip being capable of movement within the microcavity and reversibly oriented by an external magnetic field; a color layer having a fixed color and/or optically variable characteristics, the interaction layer capable of causing at least a portion of the color layer to be revealed or hidden according to a change in an external magnetic field; the interaction layer and the color layer are respectively arranged on two opposite sides of the base material or on one side of the base material.

P35210

BANKNOTE – MAGNETISM

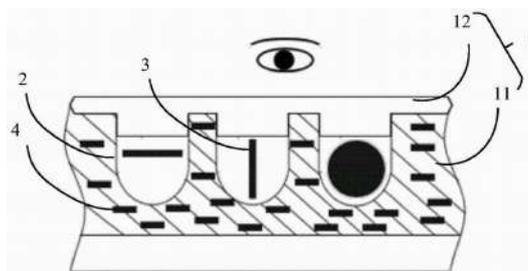
CN114590054

CHINA BANKNOTE PRINTING & MINT

Priority Date: 04/12/2020

OPTICAL ANTI-COUNTERFEITING ELEMENT AND PREPARATION METHOD THEREOF

The embodiment of the invention discloses an optical anti-counterfeiting element and a preparation method thereof. The optical security element comprises: a carrier; at least one microcavity formed inside the carrier by molding; at least one movable color chip, the movable color chip is arranged in the micro-cavity, and the movable color chip can move in the micro-cavity and can be reversibly oriented by an external magnetic field; at least one identification piece, the identification piece is fixedly arranged in the carrier. Therefore, when the movable color chip moves, the identification piece contained in the carrier can be blocked or displayed, and the effect of interactive combination of the anti-counterfeiting effect of the movable color chip and the identification piece is formed, so that the safety of the anti-counterfeiting technology is improved.



CLAIM 1. An optical security element, characterized in that it comprises: a carrier; at least one microcavity, wherein the microcavity is formed in the carrier by die pressing; at least one movable color chip disposed inside the microcavity, the movable color chip being movable within the microcavity and reversibly oriented by an external magnetic field; at least one discernment piece, the discernment piece is fixed to be set up in the inside of carrier.

P35211

BANKNOTE – MAGNETISM

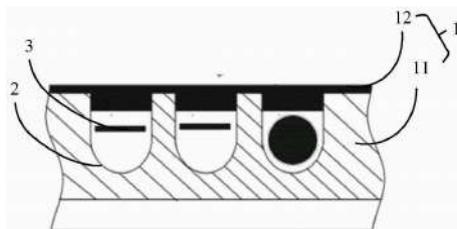
CN114590053

Priority Date: 04/12/2020

CHINA BANKNOTE PRINTING & MINT

OPTICAL ANTI-COUNTERFEITING ELEMENT AND PREPARATION METHOD THEREOF

The embodiment of the invention discloses an optical anti-counterfeiting element and a preparation method thereof. The optical security element comprises: a carrier; at least one microcavity formed inside the carrier by die pressing; the color chip is arranged inside the micro-cavity and comprises at least one magnetic layer and a non-magnetic layer, and the color chip can move in the micro-cavity and can be reversibly oriented through an external magnetic field. The invention can reversibly regulate and control the position and the arrangement of the color chips through the magnetic field, thereby obtaining the modulated optical anti-counterfeiting effect. Therefore, different optical anti-counterfeiting effects can be obtained in real time by controlling the position and the moving speed of the magnet even if the observation angle is not changed, and the anti-counterfeiting efficiency is improved.



CLAIM 1. An optical security element, characterized in that it comprises: a carrier; at least one microcavity, wherein the microcavity is formed in the carrier by die pressing; at least one color chip disposed inside the microcavity, the color chip comprising at least one magnetic layer and one non-magnetic layer, the color chip being capable of moving within the microcavity and reversibly orienting by an external magnetic field.

P35212

OVD – BANKNOTE – THREAD –RELIEF – MAGNETISM

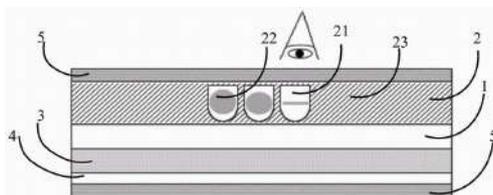
CN114590052

Priority Date: 04/12/2020

CHINA BANKNOTE PRINTING & MINT

SAFETY THREAD OR STRIP AND PREPARATION METHOD THEREOF

The invention discloses a safety line or strip and a preparation method thereof, wherein the safety line or strip comprises the following components: a substrate; the interaction layer comprises at least one microcavity and at least one color chip arranged in the microcavity, wherein the color chip can move in the microcavity and can be reversibly oriented by an external magnetic field; an optically variable layer comprising a coating and a relief structure, the alternating layer being capable of causing at least a portion of the optically variable layer to be revealed or concealed in response to a change in an external magnetic field; the interaction layer and the optical variable layer are respectively arranged on two opposite sides of the base material or arranged on one side of the base material, so that the safety line or strip has the characteristics of easy identification and difficult counterfeiting.



CLAIM 1. A security thread or stripe, wherein said security thread or stripe comprises: a substrate; an interactive layer comprising at least one microcavity and at least one color chip disposed within the microcavity, the color chip being capable of movement within the microcavity and reversibly oriented by an external magnetic field; an optically variable layer comprising a cladding layer and a relief structure, the optically variable layer having optically variable characteristics, the interactive layer being capable of causing at least a portion of the optically variable layer to be revealed or concealed in response to a change in an external magnetic field; wherein the interaction layer and the optically variable layer are respectively disposed on opposite sides of the substrate, or on one side of the substrate.

P35216

PRINTING – INFRARED – MAGNETISM

CN114574028

Priority Date: 22/02/2022

HUIZHOU HUAYANG OPTICAL TECHNOLOGY

ANTI-COUNTERFEITING PIGMENT COMPOSITION AND PREPARATION METHOD THEREOF

The application discloses an anti-counterfeiting pigment composition and a preparation method thereof. The anti-counterfeiting pigment composition comprises: the pigment with the anti-counterfeiting characteristic and the infrared reflection pigment have the following mass ratio of 10-80 percent: 20% -90%, wherein the transmittance of the infrared reflection pigment to visible light wave band is more than 90%, and the reflectance of the infrared reflection pigment to infrared wave band with interval of 780nm-1200nm is more than 85%. The anti-counterfeiting pigment composition provided by the application is a combination of a pigment with anti-counterfeiting characteristics and an infrared reflection pigment, has multiple anti-counterfeiting effects, and is good in color development and high in color uniformity.

CLAIM 1. A security pigment composition, characterized in that the security pigment composition comprises: the pigment with the anti-counterfeiting characteristic comprises a pigment with the anti-counterfeiting characteristic and an infrared reflection pigment, wherein the mass ratio of the pigment with the anti-counterfeiting characteristic is as follows: 10-80%, wherein the mass ratio of the infrared reflection pigment is as follows: 20 to 90 percent of the total weight of the mixture, the transmittance of the infrared reflection pigment to a visible light wave band is larger than 90%, and the reflectivity of the infrared reflection pigment to an infrared wave band with the interval of 780-1200 nm is larger than 85%.

P35226

PRINTING – BANKNOTE – CARD

CN114539892

Priority Date: 25/11/2020

CHINA BANKNOTE PRINTING & MINT

COATING COMPOSITION FOR PREPARING TRANSFER TYPE OPTICAL ANTI-COUNTERFEITING ELEMENT AND APPLICATION THEREOF, AND TRANSFER TYPE OPTICAL ANTI-COUNTERFEITING ELEMENT AND PREPARATION METHOD AND APPLICATION THEREOF

The invention relates to the field of optical anti-counterfeiting, and discloses a coating composition for preparing a transfer type optical anti-counterfeiting element and application thereof, and a transfer type optical anti-counterfeiting element and a preparation method and application thereof, wherein the composition contains a component A and a component B; the component A contains water-based resin and does not contain a curing agent which has crosslinking reaction with the base material; the component B contains an upper plating acrylic ester oligomer, an acrylic ester diluent monomer, a cross-linking agent and a photoinitiator. The coating composition provided by the invention can meet the rigorous requirements of optical anti-counterfeiting elements in the fields of bank notes, high-end identification cards and the like in various aspects such as manufacturing, UV (ultraviolet) mould pressing replication, subsequent hot stamping transfer and the like.

CLAIM 1. A coating composition for the preparation of a transfer-type optical security element, characterized in that the coating composition comprises a component a and a component B; the component A contains water-based resin and does not contain a curing agent which has crosslinking reaction with the base material; the component B contains an upper plating acrylic ester oligomer, an acrylic ester diluent monomer, a cross-linking agent and a photoinitiator; based on the total weight of the component B, the content of the upper plating acrylic ester oligomer is 25-65 wt%, the content of the acrylic ester diluent monomer is 24-40 wt%, the content of the cross-linking agent is 10-30 wt%, and the content of the photoinitiator is 1-6 wt%.

P35228

BANKNOTE – RELIEF – MICROLENS

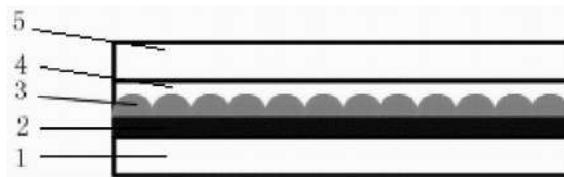
CN114537009

CHINA BANKNOTE PRINTING & MINT

Priority Date: 25/11/2020

OPTICAL ANTI-COUNTERFEITING TRANSFER FILM AND PREPARATION METHOD AND APPLICATION THEREOF

The invention relates to the field of optical anti-counterfeiting and discloses an optical anti-counterfeiting transfer film and a preparation method and application thereof. The optical anti-counterfeiting transfer film provided by the invention solves the problem of plate adhesion during UV mould pressing of fine microstructures, can adapt to UV mould pressing of various types of fine microstructures, meets the wide adaptability of UV mould pressing to fine microstructures, ensures subsequent hot stamping transfer, and is beneficial to improving the optical anti-counterfeiting effect in the fields of bank notes and identification cards.



CLAIM 1. An optical anti-counterfeiting transfer film is characterized by comprising a substrate layer, and a stripping layer, an imaging layer, a plating layer and a hot melt adhesive layer which are sequentially stacked on the substrate layer, wherein the imaging layer contains an anti-counterfeiting pattern with an optical anti-counterfeiting structure; the peeling layer is a coating formed by sequentially drying and carrying out first photocuring on a first photocuring coating system, wherein the first photocuring coating system contains a first photoinitiator and acrylate resin, and the photoinitiation wavelength of the first photoinitiator is less than 375 nm; the imaging layer is a coating formed by sequentially carrying out UV mould pressing and second photocuring on a second photocuring coating system, wherein the second photocuring coating system contains an acrylate oligomer, an acrylate diluent monomer and a second photoinitiator, and the photoinitiation wavelength of the second photoinitiator is 375nm-425 nm; and the first photocuring is performed after the second photocuring.

Click on the title to return to table of contents

PATENT REFERENCE – See the table at the end of this document

N8704

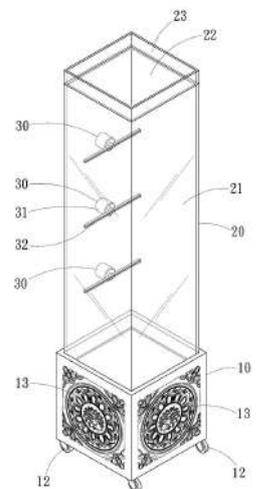
TWM627403

Priority Date: 12/01/2022

XU, JING-CHANG

MOBILE THREE-DIMENSIONAL HOLOGRAPHIC IMAGE DECORATING LIGHT BOX.

The present invention proposes a mobile three dimensional holographic image decoration light box for movably providing decoration at a mourning or religious event venue, comprising a mobile light box, a light box vertically coupled to a top surface of the mobile light box, which is a box of light-transmitting material, which forms a receiving space therein, one or more three dimensional holographic image devices having an actuator, and a light box vertically coupled to the top surface of the mobile light box. And a led lampholder incorporated in the driver, the driver being fixed in the lampholder, causing the led lampholder to emit light toward the horizontal direction of the lampholder, and causing the led lampholder to rotate by the driver, so that the light of the led lampholder can produce a 3 D image of the visual transient effect, and a controller disposed in the mobile lampholder and connected to each three-dimensional holographic image device. Thereby, the relevant 3 D photoimage decorating effect conforming to the theme of the event scene can be presented.



CLAIM 1. A mobile three-dimensional holographic image decorating light box comprising: a mobile base for movable placement on a ground or table top having a first receiving space therein, a light box formed of a light transmissive material and vertically coupled to a top surface of the mobile base and defining a second receiving space therein; And a led lamp strip coupled to a force output axis of the first driver, the first driver being fixed in a second receiving space of the lamp housing, the led lamp strip emitting light in a horizontal direction of the lamp housing and being rotated by the first driver, the light of the led lamp strip being capable of producing a three-dimensional photoimage of a visual transient effect, and a controller disposed in the first receiving space of the mobile lamp housing and connected to each of the three-dimensional holographic image devices.

N8736

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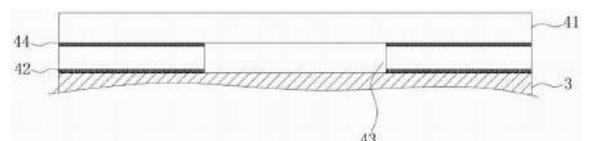
Priority Date: 03/12/2021

GUANGDONG ATESI TECHNOLOGY

MOBILE PHONE REAR COVER WITH HOLOGRAPHIC MULTICOLOR PRINTING INK

The utility model discloses a mobile phone rear cover of holographic magic color ink, which comprises a printing cover bottom layer, an electroplated layer and a transfer printing layer, wherein the electroplated layer is arranged on a surface layer of the printing cover bottom layer, and the transfer printing layer is arranged on a surface layer of the electroplated layer; the electroplated layer is provided with a colorful ink layer on the surface layer, and colorful light with various colors can be projected after the colorful ink layer receives a driving command. The utility model realizes that light rays with different colors can be projected on the back plate of the mobile phone, achieves the effect of the multicolor printing ink of the whole back cover of the mobile phone, improves the identification degree of the back plate of the mobile phone and generates attraction to users.

CLAIM 1. The mobile phone rear cover with the holographic multicolor printing ink is characterized by comprising a printing cover bottom layer, an electroplated layer and a transfer printing layer, wherein the electroplated layer is arranged on a surface layer of the printing cover bottom layer, and the transfer printing layer is arranged on a surface layer of the electroplated layer; the electroplated layer is provided with a colorful ink layer on the surface layer, and colorful light with various colors can be projected after the colorful ink layer receives a driving command.



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PATENT REFERENCE – See the table at the end of this document

N8683

WO2022131452

Priority Date: 16/12/2020

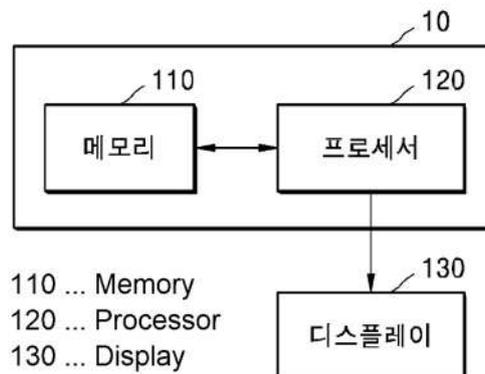
SEOUL NATIONAL UNIVERSITY R&DB FOUNDATION

METHOD AND APPARATUS FOR GENERATING HOLOGRAM CAPABLE OF MULTI-DEPTH EXPRESSION

According to some embodiments, disclosed is a method for generating a hologram capable of multi-depth expression, wherein: a neural network is trained using a plurality of virtual depth images and a target complex hologram; a plurality of depth images for a preset number of depth layers are obtained from depth data of an object; and on the basis of the trained neural network, from the obtained plurality of depth images, a complex hologram composed of a real part and an imaginary part is outputted.

PROCÉDÉ ET APPAREIL DESTINÉS À GÉNÉRER UN HOLOGRAMME PERMETTANT UNE EXPRESSION MULTI-PROFONDEUR

Selon certains modes de réalisation, est divulgué un procédé destiné à générer un hologramme permettant une expression multi-profondeur, dans lequel : un réseau neuronal est formé à l'aide d'une pluralité d'images de profondeur virtuelle et d'un hologramme complexe cible ; une pluralité d'images de profondeur pour un nombre prédéfini de couches de profondeur sont obtenues à partir de données de profondeur d'un objet ; et sur la base du réseau neuronal formé, à partir de la pluralité obtenue d'images de profondeur, un hologramme complexe composé d'une partie réelle et d'une partie imaginaire est produit.



CLAIM 1. A method of generating a hologram capable of multi-depth representation, Learning a neural network using a plurality of virtual depth images and a target complex hologram; Obtaining a plurality of depth images for a predetermined number of depth layers from depth data of an object; and Based on the learned neural network, outputting a complex hologram composed of real and imaginary parts from the obtained plurality of depth images.

N8688

WO2022124434

Priority Date: 08/12/2020

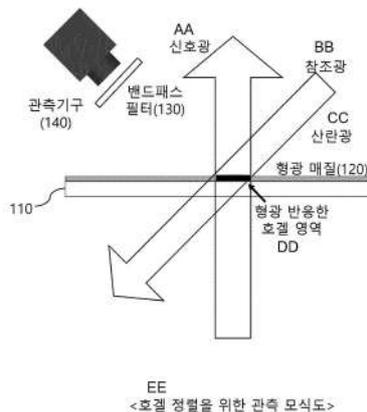
KOREA ELECTRONICS TECHNOLOGY INSTITUTE

HOGEL ALIGN DEVICE USING FLUORESCENT FILM AND WAVELENGTH FILTER

Provided is a hogel align device using a fluorescent film and a wavelength filter. In the hogel align method according to an embodiment of the present invention, a signal light and a reference light are irradiated to a hogel region in a medium to which a fluorescent medium is added, the light emitted from the fluorescent medium is filtered, and an observation image is created by photographing the filtered light. As such, it is possible to address the difficulty with fine hogel alignment caused by the issue of the hogel region being unable to be observed clearly due to scattered light/noise, etc., and eventually it is possible to print high-resolution hogels such that the quality of a printed hologram can be enhanced.

DISPOSITIF D'ALIGNEMENT D'ÉLÉMENTS HOLOGRAPHIQUES À L'AIDE D'UNE PELLICULE FLUORESCENTE ET D'UN FILTRE DE LONGUEURS D'ONDE

L'invention concerne un dispositif d'alignement d'éléments holographiques à l'aide d'une pellicule fluorescente et d'un filtre de longueurs d'onde. Selon le procédé d'alignement d'éléments holographiques selon un mode de réalisation de la présente invention, une lumière de signal et une lumière de référence sont projetées vers une zone d'éléments holographiques dans un milieu auquel est ajouté un milieu fluorescent, la lumière émise par le milieu fluorescent est filtrée, et une image d'observation est créée en photographiant la lumière filtrée. Par conséquent, il est possible de pallier la difficulté d'alignement d'éléments holographiques fins causée par le fait que la zone d'éléments holographiques ne peut être observée clairement en raison de la lumière dispersée/du bruit, etc., et il est finalement possible d'imprimer des éléments holographiques à haute résolution de sorte que la qualité d'un hologramme imprimé puisse être renforcée.



- 120 ... Fluorescent medium
- 130 ... Bandpass filter
- 140 ... Observation instrument
- AA ... Signal light
- BB ... Reference light
- CC ... Scattered light
- DD ... Hogel region exhibiting fluorescent reaction
- EE ... Schematic diagram for hogel align

CLAIM 1. Irradiating a hogel region with signal light and reference light in a medium to which a fluorescent medium is added; Filtering light emitted from the fluorescent medium; Generating a viewing image by photographing the filtered light.

N8695

WO2022114741

Priority Date: 27/11/2020

KYUNGPOOK NATIONAL UNIVERSITY INDUSTRY ACADEMIC COOPERATION FOUNDATION

HOLOGRAPHIC PRINTING SYSTEM AND HOLOGRAPHIC PRINTING METHOD USING SAME

A holographic printing system according to one embodiment of the present invention is disclosed. The system may comprise: a light source; a geometric phase holographic element having a phase delay of $\lambda/4$; and an optical member in which a wavefront is reproduced and printed through self-interference of light transmitted from the geometric phase holographic element. According to one embodiment, the light source, the geometric phase holographic element and the optical member can be arranged and provided in a line. According to one embodiment, the geometric phase holographic element and the optical member are arranged to be spaced a predetermined distance from each other, and the predetermined distance may be provided to be spaced by the distance at which the light transmitted from the geometric phase holographic element can undergo self-interference.

SYSTÈME D'IMPRESSION HOLOGRAPHIQUE ET PROCÉDÉ D'IMPRESSION HOLOGRAPHIQUE L'UTILISANT

Un mode de réalisation de la présente invention concerne un système d'impression holographique. Le système peut comprendre : une source de lumière ; un élément holographique à phase géométrique ayant un retard de phase de $\lambda/4$; et un élément optique dans lequel un front d'onde est reproduit et imprimé par auto-interférence d'une lumière transmise par l'élément holographique à phase géométrique. Selon un mode de réalisation, la source de lumière, l'élément holographique à phase géométrique et l'élément optique peuvent être agencés et disposés dans une ligne. Selon un mode de réalisation, l'élément holographique à phase géométrique et l'élément optique sont agencés de façon à être espacés l'un de l'autre par une distance prédéterminée, et la distance prédéterminée peut être établie de façon à fournir un espacement correspondant à la distance à laquelle la lumière transmise par l'élément holographique à phase géométrique peut subir de l'auto-interférence.

CLAIM 1. A light source; A geometric holographic element having a phase delay by $\lambda/4$; and And an optical element on which a wavefront is replicated and printed through self-interference of light transmitted from the geometric holographic element.

N8700

US20220178676

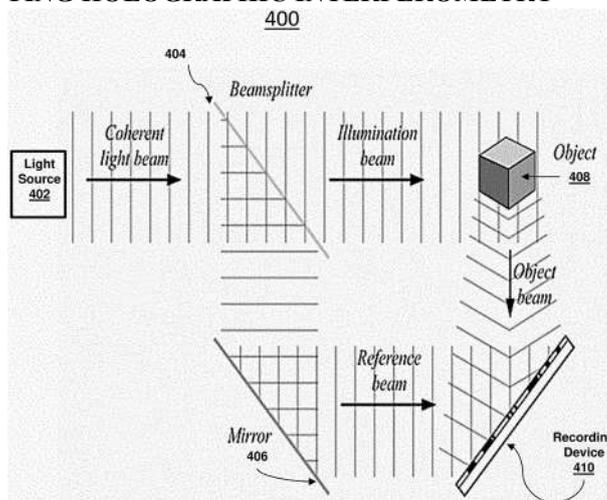
Priority Date: 08/12/2020

IBM

VISUAL QUALITY ASSESSMENT AUGMENTATION EMPLOYING HOLOGRAPHIC INTERFEROMETRY

Methods, systems and computer program products for performing visual quality assessment using holographic interferometry are provided. Aspects include obtaining a reference holographic pattern based on a reference object and obtaining a test holographic pattern based on a test object. Aspects also include creating an interference pattern by superimposing the test holographic pattern onto the reference holographic pattern. Aspects further include determining a difference between the reference object and the test object based upon the interference pattern.

CLAIM 1. A method for performing visual quality assessment using holographic interferometry comprising: obtaining, by a processor, a reference holographic pattern based on a reference object; obtaining, by the processor, a test holographic pattern based on a test object; creating, by the processor, an interference pattern by superimposing the test holographic pattern onto the reference holographic pattern; and determining, by the processor, a difference between the reference object and the test object based upon the interference pattern.



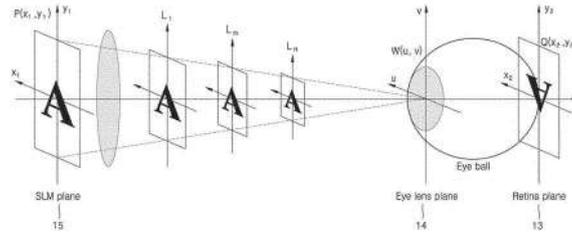
N8701

US20220171334
Priority Date: 01/12/2020

SAMSUNG ELECTRONICS

METHOD AND APPARATUS FOR GENERATING COMPUTER-GENERATED HOLOGRAM

Provided is a method of generating a computer-generated hologram (CGH), the method including obtaining complex data including amplitude data of object data and phase data of the object data corresponding to a spatial light modulator (SLM) plane by propagating the object data from an image plane to the SLM plane, encoding the complex data into encoded amplitude data, and generating a CGH based on the object data including the encoded amplitude data.



CLAIM 1. A method of generating a computer-generated hologram (CGH), the method comprising: obtaining complex data including amplitude data of object data and phase data of the object data corresponding to a spatial light modulator (SLM) plane by propagating the object data from an image plane to the SLM plane; encoding the complex data into encoded amplitude data; and generating a CGH based on the object data including the encoded amplitude data.

N8707

KR20220082326
Priority Date: 10/12/2020

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH
INSTITUTE

DEEP LEARNING NETWORK TRAINING APPARATUS AND METHOD FOR GENERATING PHASE HOLOGRAMS

Deep learning network training apparatus and methods for generating phase holograms may be disclosed. The deep learning network training apparatus includes a wide field forward propagation unit configured to propagate an input image to generate a first complex hologram, a complex hologram image generation unit configured to generate a real value image and an imaginary value image using the first complex hologram, A deep learning based phase transformation unit configured to generate a phase hologram for the real-valued image and the imaginary value image through a deep learning network, a wide field reverse propagation unit configured to generate a second complex hologram by reverse propagation of the phase hologram, and a residual image calculation unit configured to calculate a residual image by comparing the input image with the second complex hologram. The deep learning based phase transform unit may update a weight of the deep learning network using the residual image.

CLAIM 1. An image processing apparatus comprising: a wide field forward propagation unit configured to propagate an input image to generate a first complex hologram, a complex hologram image generation unit configured to generate a real value image and an imaginary value image using the first complex hologram, a deep learning based phase conversion unit configured to generate a phase hologram for the real value image and the imaginary value image through a deep learning network, A wide field backpropagation unit configured to generate a second complex hologram by backpropagating the phase hologram, and a residual image calculation unit configured to calculate a residual image by comparing the input image with the second complex hologram, wherein the deep learning based phase transformation unit updates a weight of the deep learning network using the residual image.

N8708

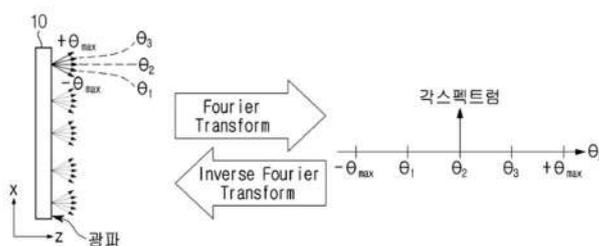
KR20220080667

Priority Date: 07/12/2020

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE

METHOD FOR NUMERICAL PROPAGATION OF HOLOGRAPHIC IMAGE AND APPARATUS FOR IMPLEMENTING THE SAME

Provided are a method of numerically propagating a hologram image and an apparatus for implementing the same. The numerical propagation method of a hologram image includes dividing an input plane into divided regions, setting a band limit of the divided regions for a divided region having an input value, Calculating a light wave of a split propagation plane for a split area having the input value based on the band limit, and calculating a light wave of a propagation plane for the input plane by accumulating the light wave of the split propagation plane.



CLAIM 1. A method of manufacturing an optical device, comprising: dividing an input plane into a divided region; setting a band limitation of the divided region with respect to a divided region having an input value; calculating an optical wave of a divided propagation plane with respect to the divided region having the input value based on the band limitation; And accumulating light waves of the split propagation plane to generate light waves of the propagation plane relative to the input plane.

N8714

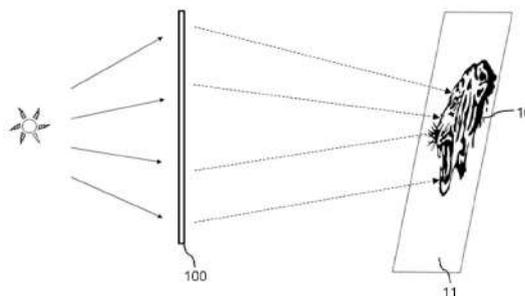
KR20220077046

Priority Date: 01/12/2020

KOREA UNIVERSITY INDUSTRIAL & ACADEMIC COLLABORATION FOUNDATION

HOLOGRAHPIC OPTICAL ELEMENT FOR GENERATING COMPUTER-SYNTHEZIZED HOLOGRAPHIC CAUSTIC IMAGE AND MANUFACTURING METHOD AND APPARATUS THEREOF

Various embodiments relate to a holographic optical element for generating a computer-synthesized holographic plastic image, and a method and apparatus for manufacturing the same, wherein the holographic optical element forms a film and a two-dimensional arrangement in the film, At least one target image is manufactured to include a plurality of hogels recorded thereon, wherein the hogels may generate a holographic custom image for the target image on an image plane spaced a predetermined distance from the film based on incident light.



CLAIM 1. A holographic optical element for generating holographic curstick images, comprising: a film; and a plurality of hogels in a two-dimensional arrangement in the film, wherein at least one target image is recorded, Wherein the hogels generate holographic cursive images for the target image at an image plane spaced a predetermined distance from the film based on incident light.

N8719

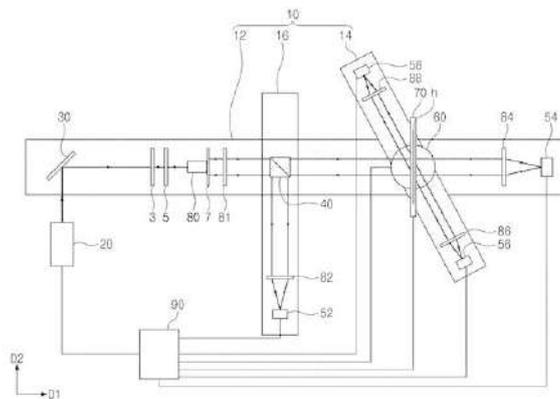
KR20220072704

Priority Date: 25/11/2020

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH
INSTITUTE

DIFFRACTION EFFICIENCY MEASURING DEVICE FOR HOLOGRAPHIC OPTICAL ELEMENT

An apparatus for measuring diffraction efficiency of a holographic optical element includes: a first guide frame; a transmitted light detector provided at one end of the first guide frame; a second guide frame disposed on the first guide frame and adjacent to the transmitted light detector; A third guide frame (16) provided at a center of the first guide frame in a second direction (D2) orthogonal to the first direction (D1); an incident light detector (52) provided at one end of the third guide frame (16); a transmitted diffracted light detector (56) provided at one end of the second guide frame (14) and configured to detect diffracted light of the transmission holographic optical element; A reflected diffracted light detector (58) provided at the other end of the second guide frame (14) and sensing diffracted light of the reflective holographic optical element; a rotation module (60) provided at the center of the second guide frame (14); A biaxial movable mount part 70 including a left and right movable mount part 71 installed on the rotation module part 60 and an up-and down movable mount part 72 installed on the left and right movable mount part 71 to move the holographic optical element mount 73 in the up-and down direction; And an integration control unit (90) for controlling operations of the light source unit (20), the rotation module unit (60) and the biaxial movable mount unit (70) and analyzing signals sensed by the incident light detector (52), the transmitted light detector (54), the transmitted diffracted light detector (56) and the reflected diffracted light detector (58).



CLAIM 1. A display device comprising: a first guide frame (12); a transmitted light detector (54) disposed at one end of the first guide frame (12); a second guide frame (14) disposed on the first guide frame (12) and adjacent to the transmitted light detector (54); a third guide frame (16) disposed at the center of the first guide frame in a second direction (D2) orthogonal to a first direction (D1); An incident light detector provided at one end of the third guide frame; a transmitted diffracted light detector provided at one end of the second guide frame and sensing diffracted light of the transmissive holographic optical element; a reflected diffracted light detector provided at the other end of the second guide frame and sensing diffracted light of the reflective holographic optical element; A rotation module (60) installed at the center of the second guide frame (14); a biaxial movable mount (70) including a left and right movable mount (71) installed on the rotation module (60) and an up and down movable mount (72) installed on the left and right movable mount (71) to move the holographic optical element mount (73) in the up and down direction; And an integration control unit (90) for controlling operations of the light source unit (20), the rotation module unit (60) and the bi-axially movable mount unit (70) and analyzing signals sensed by the incident light detector (52), the transmitted light detector (54), the transmitted diffracted light detector (56) and the reflected diffracted light detector (58).

N8720

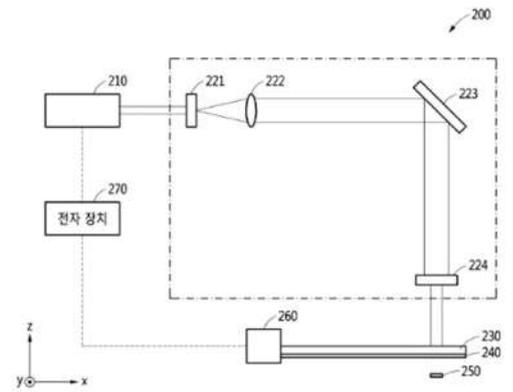
KR20220072687
Priority Date: 25/11/2020

GUMI ELECTRONICS & INFORMATION TECHNOLOGY RESEARCH
INSTITUTE

METHOD AND APPARATUS FOR PRODUCING HOLOGRAPHIC OPTICAL ELEMENTS

In order to generate a holographic optical element having a large area, first light is generated by adjusting a size and a shape of a cross-sectional area of light irradiated from a light source to correspond to a master holographic optical element, second light is generated by irradiating the master holographic optical element with the first light, A holographic pattern generated by interference between the second light and the first light is recorded in a first partial region of the holographic optical element, a partial region of the holographic optical element corresponding to a position of the master holographic optical element is changed from the first partial region to the second partial region, and a holographic pattern generated by interference between the second light and the first light is recorded in the second partial region.

CLAIM 1. A method of generating a holographic optical element, performed by an electronic system, includes generating first light by adjusting a size and shape of a cross-sectional area of light emitted from a light source to correspond to a master holographic optical element; Generating a second light by irradiating the master holographic optical element with the first light, wherein a position of the master holographic optical element of the electronic system is fixed; Writing a holographic pattern generated by interference of the second light and the first light into a first partial region of a holographic optical element; changing a partial region of the holographic optical element corresponding to the location of the master holographic optical element from the first partial region to a second partial region; And recording the holographic pattern generated by interference of the second light and the first light into the second partial region.



N8721

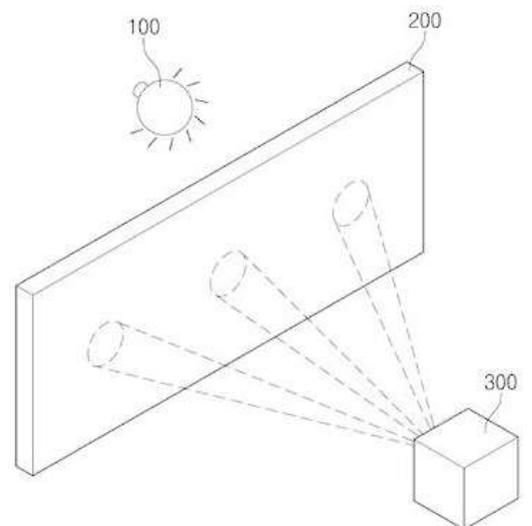
KR20220071093
Priority Date: 23/11/2020

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH
INSTITUTE

METHOD FOR GENERATING DIGITAL HOLOGRAM

The present disclosure relates to a method for generating a digital hologram, and more particularly, to a method for generating a digital hologram of an apparatus for generating a digital hologram according to an embodiment of the present disclosure, comprises the steps of: extracting a three-dimensional model from a three-dimensional object; and generating a final hologram image based on the three-dimensional model, The generating of the final hologram image includes converting the input data into each spectrum using a machine-learning-based transform module, performing a product operation of each spectrum and a propagation kernel, and inversely transforming a result of the product operation using the machine-learning-based transform module.

CLAIM 1. A method for generating a digital hologram of an apparatus for generating a digital hologram, the method comprising: extracting a three-dimensional model from a three-dimensional object; and generating a final hologram image based on the three-dimensional model, wherein generating the final hologram image comprises: Transforming the input data into each spectrum using a machine-learning-based transformation module; performing a product operation of each spectrum and a propagation kernel; and inversely transforming a result of the product operation using the machine-learning-based transformation module.



N8730

JP2022080792

Priority Date: 18/11/2020

KDDI

COMPUTER COMPOSITE HOLOGRAM GENERATION APPARATUS, METHOD, AND PROGRAM

TOPIC: To enable high-speed generation of CGH videos with low memory consumption. INVENTION: 3 D point cloud data to be used for calculation of CGH is input to a point cloud input section 101. The input 3 D point cloud is classified (clustered) into several sets (clusters) by point cloud clustering unit 102. The correspondence relationship determination unit 103 determines a correspondence relationship for each point for each cluster associated with adjacent or preceding and following frames. The calculation method determination unit 104 determines the calculation method of the light wave propagation for the current frame to be either a "reuse" method or a "normal calculation" method for each cluster, based on the correspondence relationship. The light wave propagation calculating unit 105 calculates the object light wave propagation of the current frame with the determined calculation method. The interference calculating unit 106 calculates interference between the calculation result of the object light wave propagation and the reference light, and calculates interference fringes. The CGH output unit 107 outputs CGH.

CLAIM 1. An apparatus for calculating light wave propagation for each point in an 3 D point cloud to obtain an object light wave distribution on a hologram surface, and calculating interference with a reference light wave to generate a video of a computerized hologram, the apparatus comprising: means for clustering the points in the 3 D point cloud for each frame; means for determining a correspondence relationship between the points belonging to the clusters corresponding to each other between the frames before and after the frames; Means for determining, on a cluster-by-cluster basis, a method for calculating an object light wave distribution of a current frame on the basis of the correspondence relationship, one of a method for reusing a calculation result of the object light wave distribution of a previous frame and a method for normal calculation without reusing the calculation result; A unit for calculating an object light wave distribution of a current frame for each cluster by the determined calculation method.

N8732

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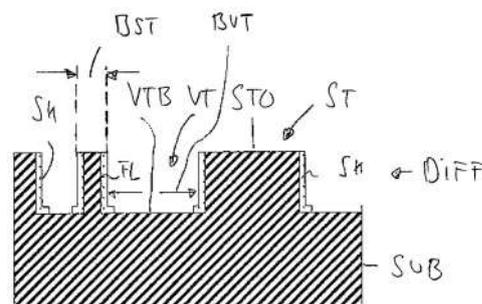
Priority Date: 27/05/2021

CARL ZEISS SMT

METHOD FOR PRODUCING A DIFFRACTIVE OPTICAL ELEMENT AND DIFFRACTIVE OPTICAL ELEMENT

The invention relates to a method for producing a diffractive optical element (DOE), in particular in the form of a computer-generated hologram. according to said method, a diffractive structure (DIFF) is produced on a surface of a substrate (SUB), said structure comprising a plurality of raised webs (ST) and recesses (VT) between the webs. Structure-width correction layers (SK) are produced on the flanks (FL) of the raised webs (ST) in order to increase the effective width (BST) of the raised webs (ST) relative to the width (BVT) of the depressions (VT). As a result, an adaptation of an actual width ratio to a desired width ratio between webs and depressions can be achieved.

CLAIM 1. Method for producing a diffractive optical element (DOE), in particular a computer-generated hologram (CGH), for use in an interferometric measuring device (100) for interferometrically measuring a shape of a surface (112) of a test object (110), wherein a diffractive structure (DIFF) is generated on a surface of a substrate, which has a multiplicity of raised ridges (ST) and depressions (VT) between the ridges, comprising the following steps: - providing the substrate (SUB) for the diffractive optical element (DOE); - coating a surface (SUB-O) of the substrate with masking layer material to produce a masking layer (MA); - coating the masking layer (MA) with photoresist to produce a photoresist layer (FL); - selectively exposing the photoresist layer (FL) by means of an electron beam in order to produce an exposure structure which corresponds to the diffractive structure and has exposed regions next to unexposed regions; - developing the exposed photoresist layer (FL) in order to selectively expose regions of the masking layer (MA) by removing exposed or unexposed regions; - transferring the structure formed by the developed photoresist layer (FL) into the masking layer (MA) by a first selective etching step in order to remove exposed regions of the masking layer in order to produce a laterally structured masking layer (MA); - transferring the lateral structure of the masking layer (MA) into the underlying substrate (SUB) by a second selective etching step in order to produce depressions (VT) of the diffractive structure (DIFF); - removing masking layer residues in order to expose the end-side surfaces (ST_O) of the raised webs (ST); characterized by : - producing structure-width correction layers (SK) on flanks (FL) of the raised webs (ST) in order to increase the effective width (BST) of the raised webs (ST) relative to the width (BVT) of the depressions (VT) in order to match an actual width ratio to a desired width ratio.



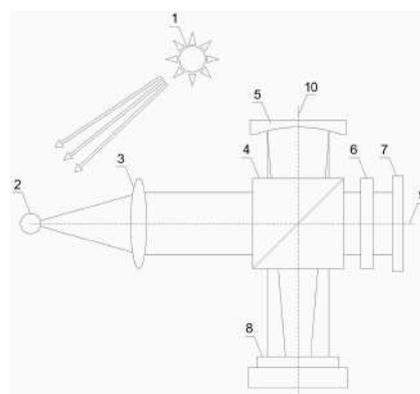
N8735

CN216718912U
Priority Date: 06/01/2022

AUNION TECHNOLOGY

INCOHERENT DIGITAL HOLOGRAPHIC IMAGING SYSTEM BASED ON BIT PHOTO ARRAY

The utility model discloses a non-coherent digital holographic imaging system based on a bit photo array, and belongs to the technical field of non-coherent digital holographic imaging. The device comprises a sample to be detected, an incidence lens, a beam splitter, a spherical reflector, a phase picture array, a plane reflector and an area array camera, wherein the sample to be detected emits incoherent light; the sample to be detected, the incident lens, the beam splitter, the phase picture array and the plane mirror are sequentially arranged along a first axis; the spherical reflector, the beam splitter and the area array camera are sequentially arranged along a second axis, and the second axis is intersected and perpendicular to the first axis at the position of the beam splitter. The method has the advantages that incident light is divided into two beams through the beam splitter, spherical phase distribution modulation and phase shift modulation are respectively carried out, finally the combined beams enter the area array camera to form a holographic interference pattern and be collected, image data collected at a single time are directly collected, the processing method is simple, the imaging speed is high, and the method can be used for holographic imaging of dynamic objects.



CLAIM 1. A non-coherent digital holographic imaging system based on a phase photo array comprises a sample (2) to be detected, an incidence lens (3), a beam splitter (4), a spherical reflector (5), a phase photo array (6), a plane reflector (7) and an area array camera (8), wherein the sample is used for emitting non-coherent light; the sample to be detected (2), the incident lens (3), the beam splitter (4), the phase picture array (6) and the plane reflector (7) are sequentially arranged along a first axis (9); the spherical reflector (5), the beam splitter (4) and the area-array camera (8) are sequentially arranged along a second axis (10), and the second axis (10) is intersected and perpendicular to the first axis (9) at the position of the beam splitter (4).

N8741

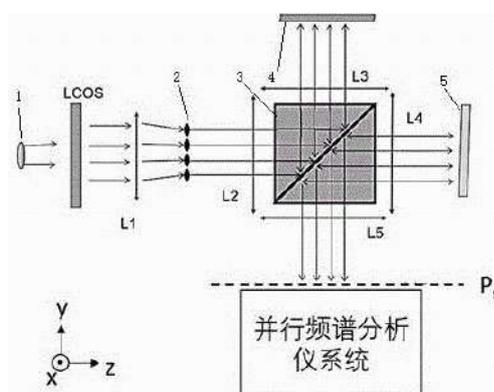
CN114646613
Priority Date: 19/05/2022

CAMBRIDGE UNIVERSITY NANJING CENTRE OF TECHNOLOGY & INNOVATION

HOLOGRAPHIC DOT MATRIX COHERENT IMAGING METHOD AND SYSTEM

A holographic dot matrix coherent imaging method and system, add spatial light modulator and lens on OCT light source, namely incident beam light path, the hologram with beam splitting effect of spatial light modulator display, the incident beam passes spatial light modulator and lens, form a line of facula dot matrix; OCT optical correlation tomography is carried out by adopting the improved OCT light source. The spatial light modulator is a liquid crystal spatial light modulator LCOS or MEMS spatial light modulator; the line of light spot dot matrix generated by the LCOS is divided into two parts by the beam splitter, one part is irradiated to the reference arm light path, and the other part is irradiated to the sample to be detected to form a sample arm light path; the lattice beams reflected by the reference arm light path and the sample are interfered on the back focal plane of a lens to form an imaging plane after being combined by the beam splitter again.

CLAIM 1. A holographic lattice coherent imaging method is characterized in that a spatial light modulator and a lens are added on an OCT light source, namely an incident beam light path, a hologram with a beam splitting effect is displayed on the spatial light modulator, and an incident beam passes through the spatial light modulator and a first lens (L1) to form a line of light spot lattices; carrying out OCT optical correlation tomography by adopting the OCT light source; the spatial light modulator is a liquid crystal spatial light modulator LCOS or MEMS spatial light modulator; the line of light spot lattices generated by the LCOS is divided into two parts by the beam splitter, one part is irradiated to the reference arm light path, and the other part is irradiated to the sample to be detected to form a sample arm light path; the lattice beams reflected by the reference arm light path and the sample are interfered with each other in the back focal plane of one lens to form an imaging plane after being combined by the beam splitter.



N8746

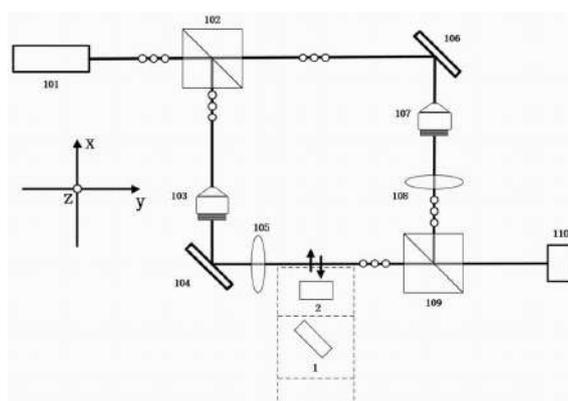
CN114593671

Priority Date: 25/01/2022

SOUTH CHINA NORMAL UNIVERSITY

IMPLANTED COAXIAL AND OFF-AXIS DIGITAL HOLOGRAPHIC SWITCHING DEVICE BASED ON PARALLEL FLAT PLATE

The embodiment of the invention provides an implanted coaxial and off-axis digital holographic switching device based on a parallel flat plate, wherein a compensation parallel flat plate is inserted into a reference light path by sliding or rotating the coaxial and off-axis switching device, the positions of an object reference light curvature center and an object light curvature center relative to a CCD (charge coupled device) are adjusted to be consistent, the object light and the reference light are interfered after being combined, and an interference pattern acquired on a CCD (charge coupled device) image sensor has no stripe or less than one stripe; when the off-axis digital holographic system is used, the compensation parallel plate of the reference light path is taken down, the switching parallel plate is inserted, the curvature center of the reference light passes through the switching parallel plate and is translated in the non-optical axis direction, a certain distance exists between the reference light and the curvature center of the object light, the object light and the reference light are interfered after being combined, and the CCD image sensor acquires a carrier frequency straight stripe interference pattern; when the coaxial digital holographic system is used, the switching parallel flat plate in the reference light path is taken down, and the CCD image sensor acquires a circular fringe interference pattern.



CLAIM 1. An implanted coaxial and off-axis digital holographic switching device based on a parallel flat plate is characterized by comprising an implanted interference-free digital holographic system and a coaxial and off-axis switching device; the implanted interference-free digital holographic system is used for splitting laser into object light and reference light and respectively transmitting the object light and the reference light to a first non-polarizing beam splitter prism, and a CCD image sensor is arranged on one side of the first non-polarizing beam splitter prism; the off-axis and on-axis switching device comprises a compensation parallel flat plate, a switching parallel flat plate and a switching device, wherein the compensation parallel flat plate is used for being inserted into the optical path of the reference light in an initial state, the distance between the curvature center of the reference light and the curvature center of the object light relative to the CCD image sensor is adjusted to be equal, and the object light and the reference light are subjected to interference after being combined at the first non-polarization beam splitter prism; the switching device is used for taking out the compensation parallel plate from the optical path of the reference light in a switching state, and controlling the switching parallel plate to be inserted into or pulled out of the optical path of the reference light so as to switch to an off-axis digital holographic system or an on-axis digital holographic system.

N8747

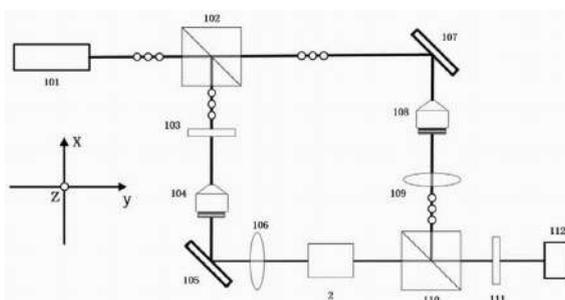
CN114593670

Priority Date: 25/01/2022

SOUTH CHINA NORMAL UNIVERSITY

IMPLANTED COAXIAL AND OFF-AXIS DIGITAL HOLOGRAPHIC SWITCHING DEVICE BASED ON ROCHON PRISM

The embodiment of the invention provides an implanted coaxial and off-axis digital holographic switching device based on a Rochon prism, wherein a half-wave plate and the Rochon prism are inserted into a reference light path through sliding or rotating a switching part in a designed same/off-axis switching device, p polarization and s polarization of reference light are switched by adjusting an included angle between a slow axis of the half-wave plate and a p polarization direction, and meanwhile, the propagation direction of s polarization light can be adjusted through the Rochon lens, so that switching between a coaxial digital holographic system and an off-axis digital holographic system is finally realized, the coaxial digital holographic system or the off-axis digital holographic system can be selected according to actual measurement requirements, the advantages of the coaxial digital holographic system and the off-axis digital holographic system are integrated, other components of the system do not need to be adjusted, and the operation is simple and fast.



CLAIM 1. An implanted coaxial and off-axis digital holographic switching device based on a Rochon prism is characterized by comprising an implanted interference-free digital holographic system and a coaxial and off-axis switching device; the implantable interference-free digital holographic system is used for splitting laser into object light and reference light and respectively transmitting the object light and the reference light to a first non-polarizing beam splitter prism, and a polarizing plate and a CCD image sensor are arranged on one side of the first non-polarizing beam splitter prism; the off-axis and on-axis switching device comprises a half-wave plate, a Rochon prism and a switching device; the switching device is used for inserting the half-wave plate and the Rochon lens into the light path of the reference light, and the object light and the reference light are enabled to be deflected or not deflected in the propagation direction before being combined at the first non-polarizing beam splitting prism by adjusting the included angle between the slow axis of the half-wave plate and the p-polarization direction or pulling out or inserting the Rochon lens, so that the off-axis digital holographic system/the coaxial digital holographic system is obtained.

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PATENT REFERENCE – See the table at the end of this document

N8711

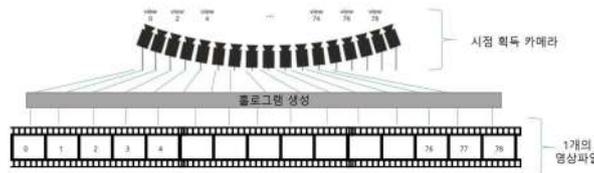
KR20220077449

Priority Date: 02/12/2020

KOREA ELECTRONICS TECHNOLOGY INSTITUTE

METHOD FOR GENERATING HOLOGRAPHIC PRINTED CONTENT USING STREAMING METHOD

A method of generating holographic printing content using a streaming method is provided. The holographic content generating method includes acquiring images photographed at a plurality of time points, generating holograms from the acquired images, and recording the generated holograms in a single file. Accordingly, the holographic printing content is generated using one streamable file, so that a loading time for holographic printing is shortened and editing of all viewpoint images in the one file can be performed, thereby improving the efficiency of editing work such as color profile and scaling.



CLAIM 1. A holographic content generating method, comprising: acquiring images taken at a plurality of time points; generating holograms from the acquired images; and recording the generated holograms in a file.

N8712

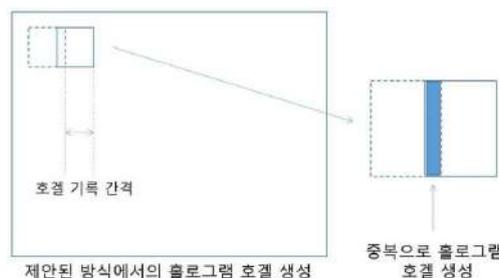
KR20220077344

Priority Date: 02/12/2020

KOREA ELECTRONICS TECHNOLOGY INSTITUTE

HOLOGRAM PRINTING METHOD AND APPARATUS USING OVERLAPPING

Provided are a hologram printing method and apparatus using overlapping. The hologram printing method includes generating a hologram fringe pattern, dividing the hologram fringe pattern into hogel units, rearranging the divided hogels to overlap each other by a predetermined interval, and recording the rearranged hogels in a hologram medium. Through hologram printing using overlapping, an inter-hogel void space is minimized by minimizing an area that is not diffracted by reducing the inter-hogel void space as much as possible, thereby improving image quality of hologram printing results.



CLAIM 1. A hologram printing method, comprising: generating a hologram fringe pattern; dividing the hologram fringe pattern into hogel units; rearranging the divided hogels to overlap each other by a predetermined interval; and recording the rearranged hogels in a hologram medium.

N8737

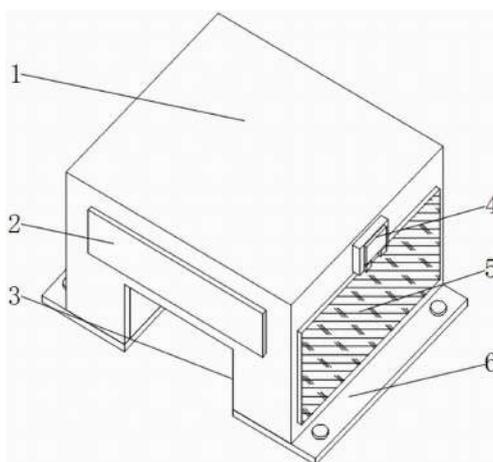
CN216658256U

Priority Date: 10/11/2021

SHANDONG YIGAO PRINTING

ADJUSTABLE DIE CUTTING MECHANISM FOR HOLOGRAPHIC GOLD STAMPING DIE CUTTING MACHINE

The utility model discloses an adjustable die cutting mechanism for a holographic gold stamping die cutting machine, which comprises a protective box, a motor and a protective shell, wherein the motor is arranged on two sides in the protective box, a screw rod is arranged between one end of the motor and the protective box, a fixed plate is arranged between a guide post and the screw rod, an electric guide rail is arranged on the surface of the inner side of the fixed plate, an auxiliary roller is arranged between the electric guide rails, a first push rod is arranged between the fixed plates at the top of the auxiliary roller, the protective shell is arranged at the bottom of the first push rod, a second push rod is arranged on the surface of the top of the protective shell on the outer side of the first push rod, and a die cutting knife group is arranged in the protective shell at the bottom of the second push rod. The die-cutting machine is provided with a series of structures, so that the position of the die-cutting mechanism can be automatically adjusted according to the needs of workers in the using process of the die-cutting machine, the die-cutting machine is convenient for the workers to use, the die-cutting machine can protect a die-cutting knife group when the die-cutting machine is not used, and the practicability is improved.



CLAIM 1. The utility model provides a die cutting mechanism with adjustable holographic gilding cutting machine, includes protective housing (1), motor (8) and protecting crust (10), its characterized in that: the automatic cutting machine is characterized in that motors (8) are installed on two sides of the inside of the protection box (1), screw rods (7) are installed between one ends of the motors (8) and the protection box (1), guide columns (16) are installed on two sides of the inside of the protection box (1) at the bottom of the motors (8), fixing plates (9) are installed between the guide columns (16) and the screw rods (7), electric guide rails (11) are installed on the inner sides of the fixing plates (9), auxiliary rollers (12) are installed between the electric guide rails (11), first push rods (14) are installed between the fixing plates (9) at the tops of the auxiliary rollers (12), protection shells (10) are installed at the bottoms of the first push rods (14), second push rods (15) are installed on the surfaces of the tops of the protection shells (10) at the outer sides of the first push rods (14), and die cutting knife sets (17) are installed inside the protection shells (10) at the bottoms of the second push rods (15), and cleaning sponges (19) are arranged on the surfaces of the two ends inside the protective shell (10) at the bottom of the die-cutting knife group (17).

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PATENT REFERENCE – See the table at the end of this document

N8685

WO2022124536

Priority Date: 08/12/2020

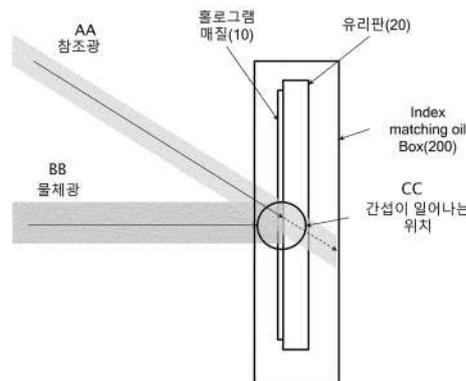
KOREA ELECTRONICS TECHNOLOGY INSTITUTE

METHOD FOR PRINTING HOLOGRAM WITHOUT DISTORTION BY INTERFERENCE PATTERN GENERATED BY INTERNAL REFLECTION

Provided is a method for printing a hologram without distortion by an interference pattern generated by internal reflection. A holographic printing method according to an embodiment of the present invention comprises: generating a holographic fringe pattern; and recording the generated holographic fringe pattern in a holographic material attached to a glass plate, wherein the thickness of the glass plate is such that, when reference light incident on the holographic material to record the holographic fringe pattern is reflected from the rear surface of the glass plate, the reference light passes through a position deviated from a recording area of the holographic material. Accordingly, noise is reduced by preventing the occurrence of an interference pattern other than the original interference pattern of the object light/reference light.

PROCÉDÉ D'IMPRESSION D'HOLOGRAMME SANS DISTORSION AU MOYEN D'UN MOTIF D'INTERFÉRENCE GÉNÉRÉ PAR RÉFLEXION INTERNE

L'invention concerne un procédé permettant d'imprimer un hologramme sans distorsion au moyen d'un motif d'interférence généré par réflexion interne. Selon un mode de réalisation de la présente invention, un procédé d'impression holographique consiste à : générer un motif de frange holographique ; et enregistrer le motif de frange holographique généré dans un matériau holographique fixé à une plaque de verre, l'épaisseur de la plaque de verre étant telle que, lorsque la lumière de référence incidente sur le matériau holographique pour enregistrer le motif de frange holographique est réfléchié par la surface arrière de la plaque de verre, la lumière de référence passe par une position déviée d'une zone d'enregistrement du matériau holographique. Par conséquent, le bruit est réduit en empêchant l'apparition d'un motif d'interférence autre que le motif d'interférence d'origine de la lumière d'objet/de référence.



- 10 ... Holographic material
- 20 ... Glass plate
- 200 ... Index matching oil box
- AA ... Reference light
- BB ... Object light
- CC ... Position where interference occurs

CLAIM 1. Generating a holographic fringe pattern; Recording the generated holographic fringe pattern on a hologram medium attached to a glass plate, The thickness of the glass plate is: The thickness being such that the reference light incident on the hologram medium for recording the holographic fringe pattern passes through a position outside the recording area of the hologram medium when reflected from the rear surface of the glass plate.

N8687

WO2022124437

Priority Date: 08/12/2020

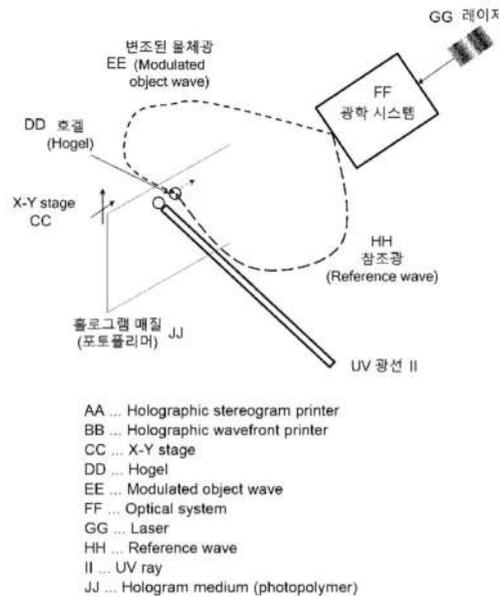
KOREA ELECTRONICS TECHNOLOGY INSTITUTE

HOLOGRAPHIC PRINTING METHOD IN WHICH CURING IS PERFORMED IN UNITS OF HOGELS

Provided is a holographic printing method in which curing is performed in units of hogels. In the holographic printing method according to an embodiment of the present invention, a holographic fringe pattern is produced, and the holographic fringe pattern is recorded in units of hogels on a hologram medium and cured in units of hogels on the hologram medium. Accordingly, a UV curing process is performed in units of hogels simultaneously with recording of a hologram, and thus in the case of a hologram recording method using a photopolymer, the present invention can prevent noise or quality degradation which may occur due to vibrations or the ambient environment when a hologram is recorded and, in particular, the present invention is useful even when a hologram is recorded over a long time.

PROCÉDÉ D'IMPRESSIION HOLOGRAPHIQUE DANS LEQUEL LE DURCISSEMENT EST EFFECTUÉ DANS DES UNITÉS D'HOGELS

L'invention concerne un procédé d'impression holographique dans lequel le durcissement est effectué dans des unités d'hogels. Dans le procédé d'impression holographique selon un mode de réalisation de la présente invention, un diagramme de franges holographique est produit, et le diagramme de franges holographique est enregistré dans des unités d'hogels sur un support d'hologramme et durci dans des unités d'hogels sur le support d'hologramme. Par conséquent, un processus de durcissement par UV est effectué dans des unités d'hogels simultanément avec l'enregistrement d'un hologramme, et donc dans le cas d'un procédé d'enregistrement d'hologramme à l'aide d'un photopolymère, la présente invention peut empêcher le bruit ou la dégradation de qualité qui peuvent se produire à cause de vibrations ou de l'environnement ambiant lorsqu'un hologramme est enregistré et, en particulier, la présente invention est utile même lorsqu'un hologramme est enregistré sur une longue période.



CLAIM 1. Generating a holographic fringe pattern; Recording a holographic fringe pattern in hogel units in a holographic medium; A holographic printing method comprising curing a holographic medium in a hogel unit.

N8692

WO2022118997

Priority Date: 02/12/2020

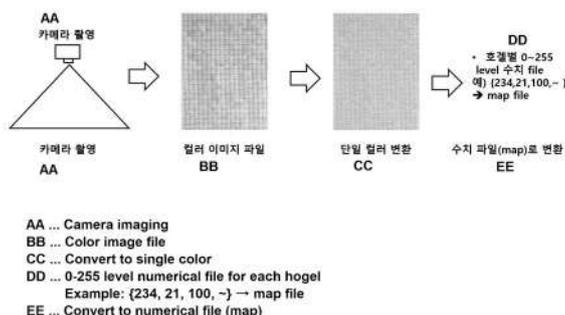
KOREA ELECTRONICS TECHNOLOGY INSTITUTE

COLOR HOLOGRAM PRINTING METHOD AND DEVICE USING HOLOGRAM MEDIUM LIGHT EFFICIENCY MAP

Provided are a color hologram printing method and device using a hologram medium light efficiency map. In the hologram printing method according to an embodiment of the present invention, a laser is radiated on a hologram medium, an image of a light diffracted in the hologram medium is obtained, a light efficiency map of the hologram medium is created by means of the obtained image, and hogels are recorded in the hologram medium with reference to the created light efficiency maps of the hologram medium. Therefore, uniformity of the brightness and color of a hologram printing result can be enhanced by adjusting the intensity of the laser for each wavelength for each hogel during the hologram printing, by means of light efficiency measurements of each hogel area.

PROCÉDÉ ET DISPOSITIF D'IMPRESSON D'HOLOGRAMME DE COULEUR UTILISANT UNE CARTE D'EFFICACITÉ LUMINEUSE DE SUPPORT D'HOLOGRAMME

L'invention concerne un procédé et un dispositif d'impression d'hologramme de couleur utilisant une carte d'efficacité lumineuse de support d'hologramme. Dans le procédé d'impression d'hologramme selon un mode de réalisation de la présente invention, un laser est irradié sur un support d'hologramme, une image d'une lumière diffractée dans le support d'hologramme est obtenue, une carte d'efficacité lumineuse du support d'hologramme est créée au moyen de l'image obtenue, et des éléments holographiques sont enregistrés dans le support d'hologramme en référence aux cartes d'efficacité lumineuse créées du support d'hologramme. Par conséquent, l'uniformité de la luminosité et de la couleur d'un résultat d'impression d'hologramme peut être améliorée par réglage de l'intensité du laser pour chaque longueur d'onde pour chaque élément holographique pendant l'impression d'hologramme, au moyen de mesures d'efficacité lumineuse de chaque zone d'élément holographique.



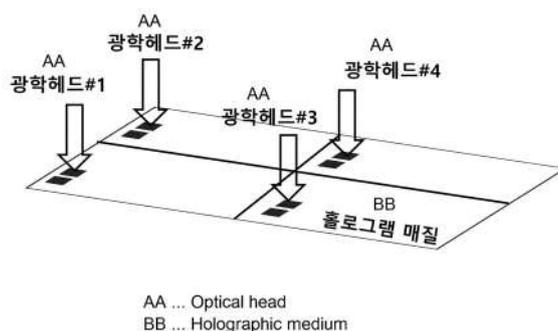
CLAIM 1. Irradiating a holographic medium with a laser; Obtaining an image by photographing light diffracted from a holographic medium; Generating a light efficiency map of the hologram medium from the acquired image; And recording hogels on the hologram medium by referring to the light efficiency maps of the generated hologram medium.

HOLOGRAPHIC PRINTING DEVICE AND METHOD USING MULTIPLE OPTICAL HEADS

Provided are a holographic printing device and method using multiple optical heads. The holographic printing device according to an embodiment of the present invention comprises: a fringe pattern generation unit which generates a holographic fringe pattern, and segments the generated fringe pattern into hogels; a multiplexing unit which groups the hogels, segmented by the fringe pattern generation unit, according to area; and a plurality of optical heads which respectively receive the grouped hogels and record the respective hogels in the corresponding areas of a holographic medium. Accordingly, several hogels can be recorded on the holographic medium at a time using the multiple optical heads, thus reducing holographic printing time so that even large screen holograms can be printed at high speed.

DISPOSITIF ET PROCÉDÉ D'IMPRESSIION HOLOGRAPHIQUE UTILISANT DE MULTIPLES TÊTES OPTIQUES

L'invention concerne un dispositif et un procédé d'impression holographique utilisant de multiples têtes optiques. Le dispositif d'impression holographique selon un mode de réalisation de la présente invention comprend : une unité de génération de motif de frange qui génère un motif de frange holographique et segmente le motif de frange généré en éléments holographiques ; une unité de multiplexage qui regroupe les éléments holographiques, segmentés par l'unité de génération de motif de frange, selon la zone ; et une pluralité de têtes optiques qui reçoivent respectivement les éléments holographiques groupés et enregistrent les éléments holographiques respectifs dans les zones correspondantes d'un support holographique. En conséquence, plusieurs éléments holographiques peuvent être enregistrés sur le support holographique à la fois à l'aide des multiples têtes optiques, ce qui réduit ainsi le temps d'impression holographique de sorte que même de grands hologrammes d'écran puissent être imprimés à grande vitesse.



CLAIM 1. A display apparatus comprising: a fringe pattern generation unit configured to generate a hologram fringe pattern and divide the generated fringe pattern in units of hogel; A multiplexing unit configured to group hogels divided by the fringe pattern generation unit according to an area; And a plurality of optical heads receiving the grouped hogels, respectively, and recording the grouped hogels in a corresponding area of the hologram medium.

N8694

WO2022118995

Priority Date: 02/12/2020

KOREA ELECTRONICS TECHNOLOGY INSTITUTE

METHOD AND APPARATUS FOR HOLOGRAM PRINTING USING MASK

Disclosed are a method and an apparatus for hologram printing using a mask. According to an embodiment of the present invention, a hologram printing method comprises: generating a hologram fringe pattern; dividing the hologram fringe pattern in units of hogels; generating divided hogels; masking a part of the generated hogels; and recording the masked hogels in a hologram medium. Therefore, the present invention can prevent, by using a mask, an empty space from being generated between hogels during hologram printing, thereby effectively increasing a fill factor and eventually improving the image quality of the hologram.

PROCÉDÉ ET APPAREIL D'IMPRESSON D'HOLOGRAMME À L'AIDE D'UN MASQUE

L'invention concerne un procédé et un appareil permettant d'imprimer un hologramme à l'aide d'un masque. Selon un mode de réalisation de la présente invention, un procédé d'impression d'hologramme consiste à : générer un motif de frange d'hologramme ; diviser le motif de frange d'hologramme en unités de hogels ; générer des hogels divisés ; masquer une partie des hogels générés ; et enregistrer les hogels masqués dans un support d'hologramme. Par conséquent, la présente invention peut empêcher, à l'aide d'un masque, qu'un espace vide ne soit généré entre des hogels pendant l'impression d'hologrammes, ce qui permet d'augmenter efficacement un facteur de remplissage et, à terme, d'améliorer la qualité d'image de l'hologramme.

CLAIM 1. Generating a hologram fringe pattern; Dividing a hologram fringe pattern into hogel units; Creating a split hogel; Masking a portion of the resulting hogel; A hologram printing method, comprising: recording a masked hogel in a hologram medium.

N8715

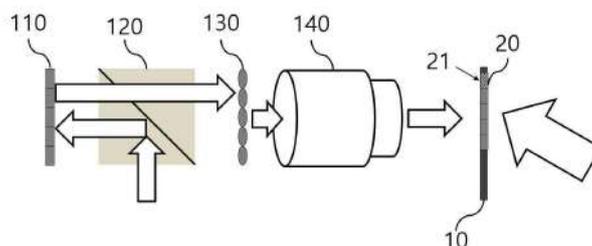
KR20220075862

Priority Date: 30/11/2020

WONKWANG UNIVERSITY INDUSTRY ACADEMIC COOPERATION
FOUNDATION

HOLOGRAM PRINTING SYSTEM BASED ON MICROLENS ARRAY

A hologram printing system based on a microlens array is provided. The hologram printing system includes: a beam splitter; and a reflective spatial light modulator (SLM) for displaying a hologram pattern including unit holograms and reflecting the hologram pattern when light separated by the beam splitter is incident thereon. Accordingly, as the physical size of a unit hologram decreases in the hologram printing system, it is possible to reproduce hologram content having a high viewing angle. In addition, since a plurality of unit holograms are simultaneously recorded compared to an existing hologram printing system, holography printing time can be greatly reduced.



CLAIM 1. A hologram printing system, comprising: a beam splitter; and a reflective spatial light modulator (SLM) for displaying hologram patterns composed of unit holograms and reflecting the hologram patterns when light separated by the beam splitter is incident thereon.

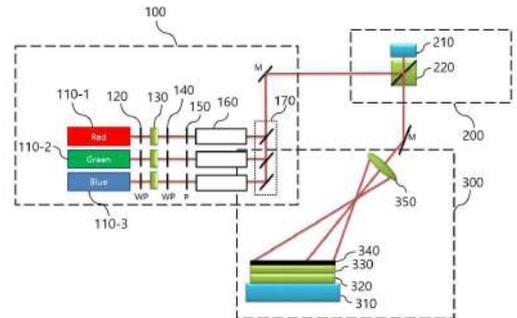
N8716

KR20220075855
Priority Date: 30/11/2020

WONKWANG UNIVERSITY INDUSTRY ACADEMIC COOPERATION
FOUNDATION

HOLOGRAM COPYING METHOD AND DEVICE

Methods and apparatus for copying large quantities of analog holograms or holographic optical elements fabricated using holographic films are provided. The hologram replication system includes: a light source unit configured to adjust a light amount of RGB light sources emitted through respective light paths and combine RGB colors using the adjusted light amount; a light modulator configured to adjust a light amount distribution of the RGB color-combined light; And a light incident unit configured to copy a hologram recorded on a master holographic optical element (hoe) to a second hoe using the light emitted through the light modulation unit. Accordingly, the amount of light of the rrgb can be adjusted by using an acoustic light modulator for the laser for each color of RGB, thereby adjusting the color distribution of the copy. In addition, by using the spatial light modulator, uniformity of the amount of light incident on the hologram recording surface is improved, and thus the similarity with respect to the hologram original can be increased by copying with uniform intensity in the entire area of the hologram recording surface.



CLAIM 1. A light source unit configured to adjust a light amount of RGB light sources emitted through each of the light paths and combine RGB colors using the adjusted light amount; a light modulation unit configured to adjust a light amount distribution of the RGB colors combined light; And a light incidence unit configured to copy a hologram recorded on a master holographic optical element (hoe) to a second hoe by using the light emitted through the light modulation unit.

N8725

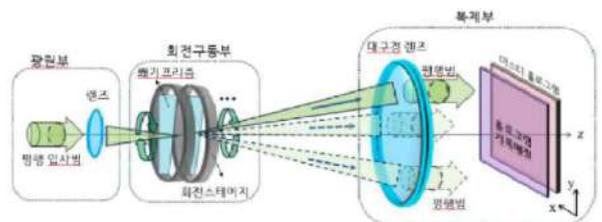
KR20220068375
Priority Date: 19/11/2020

HOLOLAB

TWO-DIMENSIONAL SCAN-TYPE HOLOGRAM REPLICATION METHOD AND SYSTEM

The present invention relates to a method and system for replicating a two-dimensional scanning hologram, comprising: a light source unit for generating a parallel beam having a small width to be incident on a rotation driving unit; a rotation unit including a plurality of wedge prisms and rotation stages for rotating the wedge prisms so as to irradiate the incident beam to a plurality of points on a replicating unit space; The present invention relates to a method for replicating holograms of a two-dimensional scanning method using a wedge prism, and a replicating unit composed of a radiator including a master hologram, a coating body on which a replicating plate hologram is to be formed, and a replicating unit composed of a large-diameter lens, wherein a parallel beam having a small width to be incident on a rotation driving unit is generated from a light source unit, And replicates in a replica when an incident beam is irradiated to a plurality of points on a replica space in the replica, wherein a beam scanning direction for a coated object can be beam scanned not only to a plurality of points on a straight line but also to a plurality of points on a curved line by using rotation of a wedge prism, In order to increase the uniformity of the exposure energy, the beam scanning direction of the coated object can be beam scanned not only at different points on a straight line but also at different points on a curved line, or a continuous curved path, by using rotation of the wedge prism, so that spatially uniform energy exposure can be performed.

CLAIM 1. A display apparatus comprising: a light source unit that generates a parallel beam having a small width to be incident on a rotation driving unit; a rotation unit that includes a plurality of wedge prisms and rotation stages that rotate the wedge prisms so as to irradiate the incident beam to a plurality of points on a replica unit space; A method and system for replicating holograms of a two-dimensional scanning system, comprising a replicating unit including a radiator including a master hologram and a coated body on which a replicating plate hologram is to be formed, and a large-diameter lens.



N8733

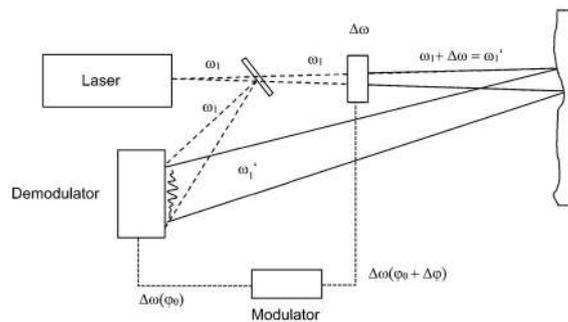
DE102021132521
Priority Date: 16/12/2020

IFM ELECTRONIC | PMDTECHNOLOGIES

ARRANGEMENT FOR RECORDING SHORT-TERM HOLOGRAMS

Arrangement for recording short-term holograms of moving objects using heterodyne technology, comprising a) a laser system which emits coherent light at a first frequency (ω_1); b) a beam splitter which generates the coherent light pulse for object illumination and a second reference light pulse which is frequency-shifted by a difference frequency ($\Delta\omega > \delta\omega$); c) with a first beam path in which the reference light pulse ($\omega_1 + \Delta\omega$) is formed as a planar wave obliquely at an angle of incidence (α_{LO}) incident on a sensor measured against the optical axis; d) a second optical path for illuminating an object with the coherent light pulse of first frequency; e) a spatial frequency filter system for providing light beams backscattered from the object with a maximum angle α_{max} where $\alpha_{max} < \alpha_{LO}$ hit the image sensor.

CLAIM 1. Arrangement for recording short-term holograms of moving objects using heterodyne technology, comprising a) a laser system which emits coherent light at a first frequency (ω_1); b) a beam splitter which generates the coherent light pulse for object illumination and a second reference light pulse which is frequency-shifted by a difference frequency ($\Delta\omega > \delta\omega$); c) with a first beam path in which the reference light pulse ($\omega_1 + \Delta\omega$) is formed as a planar wave obliquely at an angle of incidence (α_{LO}) incident on a sensor measured against the optical axis; d) a second optical path for illuminating an object with the coherent light pulse of first frequency; e) a spatial frequency filter system for providing light beams backscattered from the object with a maximum angle α_{max} where $\alpha_{max} < \alpha_{LO}$ hit the image sensor.



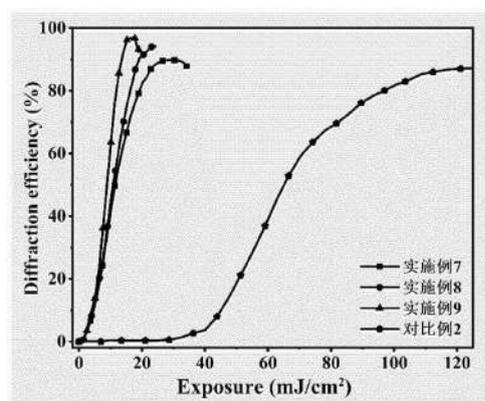
N8744

CN114621180
Priority Date: 24/01/2022

TECHNICAL INSTITUTE OF PHYSICS & CHEMISTRY – CHINESE ACADEMY OF SCIENCES

THIOPHENE STRUCTURE-CONTAINING (METHYL) ACRYLATE MONOMER AND PREPARATION METHOD AND APPLICATION THEREOF

The invention discloses a (methyl) acrylate monomer containing a thiophene structure, and a preparation method and application thereof. The (methyl) acrylate monomer containing the thiophene structure has no crystallization tendency, low viscosity, higher polymerization speed and migration speed in the substrate resin, simple synthesis method of the monomer, high yield, low cost and easy realization of mass production. The holographic recording medium using the monomer has diffraction efficiency of more than 80%, sensitivity of more than 0.1cm/mJ and Bragg selective angle of less than 1 degree, and can realize broadband response of 400-650 nm. The monomer can obviously reduce the system viscosity, and is easy to prepare holographic recording media with any volume and shape; the operation is simple, and the cost is low; the prepared holographic recording medium has stable performance, can be stored for a long time under the condition of keeping out of the sun, can realize high-quality storage and reproduction of information after exposure, and has good application potential in the fields of high-density optical storage and holographic optical elements.



CLAIM 1. A (methyl) acrylate monomer containing a thiophene structure is characterized in that the structural general formula is shown as any one of the following formulas: wherein R₁ represents hydrogen, C₁~C₁₀Alkyl radical, C₁~C₁₀Alkoxy radical, C₁~C₁₀Alkylthio, Br or A₁,A₂,A₃,A₄,A₅Each independently represents hydrogen, C₁~C₁₀Alkyl radical, C₁~C₁₀Alkylthio or C₁~C₁₀An alkoxy group; R₂ represents methyl or hydrogen.

N8748

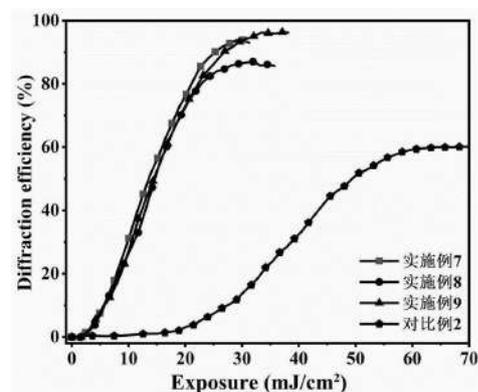
CN114591218

Priority Date: 24/01/2022

TECHNICAL INSTITUTE OF PHYSICS & CHEMISTRY – CHINESE ACADEMY OF SCIENCES

(METHYL) ACRYLATE MONOMER CONTAINING CARBAZOLE STRUCTURE AND PREPARATION METHOD AND APPLICATION THEREOF

The invention discloses a (methyl) acrylate monomer containing a carbazole structure, and a preparation method and application thereof. The carbazole-containing (methyl) acrylate monomer has high refractive index, and can be used as an information recording component to be mixed with base resins such as epoxy resin-amine and the like to prepare a holographic recording medium. The (methyl) acrylate monomer containing the carbazole structure has no crystallization tendency, low viscosity, higher polymerization speed and migration speed in the base resin, simple synthesis method of the monomer, high yield, low cost and easy realization of mass production. The holographic recording medium using the monomer has diffraction efficiency of more than 80%, sensitivity of more than 0.1cm/mJ and Bragg selective angle of less than 1 degree, and can realize broadband response of 400-650 nm. The prepared holographic recording medium has good stability, can be stored for a long time under the condition of keeping out of the sun, has stable performance, has long storage period after exposure and stable recorded information, can be used for preparing high-density optical storage and holographic optical elements, and has good application potential.



CLAIM 1. A (methyl) acrylate monomer containing a carbazole structure is characterized in that the structural general formula is shown as G1 or G2: wherein R is 1,R2Each independently represents hydrogen, C1~C10Alkyl radical, C1~C10Alkoxy, Br or A1,A2,A3,A4,A5Each independently represents hydrogen, C1~C10Alkyl radical, C1~C10Alkylthio or C1~C10An alkoxy group; R3represents methyl or hydrogen.

N8750

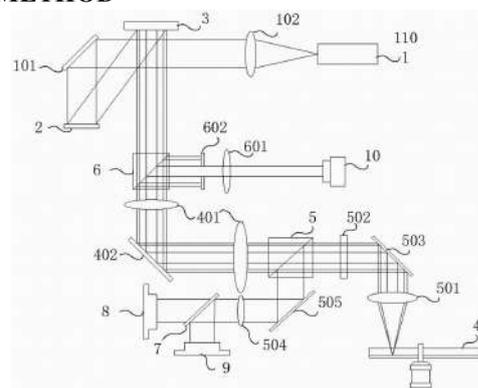
CN114582375

Priority Date: 01/03/2022

REN YUHONG

HOLOGRAPHIC STORAGE DEVICE AND HOLOGRAPHIC STORAGE METHOD

The application discloses a holographic storage device and a holographic storage method, wherein a transmission light path of a laser beam emitted by a laser of the holographic storage device is sequentially provided with a dispersion optical device, a spatial light modulator and a holographic storage medium; the dispersion optical device is used for deflecting the laser beam by a preset angle in advance when the wavelength of the laser beam emitted by the laser source changes, and compensating the deflection angle of the laser beam caused by the dispersion of the spatial light modulator; the laser beam projected to the spatial light modulator can be deflected by a preset angle in advance to compensate the angular deflection of emergent light of the spatial light modulator, so that the emergent light direction of the spatial light modulator is unchanged, the light beam propagation direction is stabilized, the adjustment burden of the device is reduced, and the cost is reduced; the device can be free from the limitation of the wavelength variation of the laser beam of the light source, and the offset can be adjusted without additionally adding a mechanism, so that the number of devices of the device is reduced, the structure of the device is simplified, and the volume and the occupied space of the device are reduced; the storage density can be improved, and the aim of stably storing high-density data is fulfilled.



CLAIM 1. The holographic storage device comprises a laser light source and is characterized in that a transmission light path of a laser beam emitted by the laser light source is sequentially provided with a dispersion optical device, a spatial light modulator and a holographic storage medium; the dispersion optical device is used for deflecting the laser beam by a preset angle in advance when the wavelength of the laser beam emitted by the laser light source changes, and compensating the deflection angle of the laser beam caused by the dispersion of the spatial light modulator.

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PATENT REFERENCE – See the table at the end of this document

N8686

WO2022124446

Priority Date: 09/12/2020

**KWANGWOON UNIVERSITY INDUSTRY ACADEMIC
COLLABORATION FOUNDATION**

FLOATING HOLOGRAM SYSTEM USING HOLOGRAPHIC OPTICAL ELEMENT

A floating hologram system is disclosed. The floating hologram system comprises: a diffuser on which a projection image is formed, and diffusing a formed image; and a holographic optical element on which a diffused image from the diffuser is incident, generating a virtual image floating at a position spaced apart by a predetermined distance, and having convex lens characteristics, wherein a distance between the diffuser and the holographic optical element is determined on the basis of a focal length of the holographic optical element and a distance from the holographic optical element to the virtual image.

SYSTÈME D'HOLOGRAMME FLOTTANT UTILISANT UN ÉLÉMENT OPTIQUE HOLOGRAPHIQUE

L'invention concerne un système d'hologramme flottant. Le système d'hologramme flottant comprend : un diffuseur sur lequel une image de projection est formée et qui diffuse une image formée ; et un élément optique holographique sur lequel une image diffusée provenant du diffuseur est incidente, qui génère une image virtuelle flottant à une position espacée par une distance prédéterminée, et qui présente des caractéristiques de lentille convexe, une distance entre le diffuseur et l'élément optique holographique étant déterminée sur la base d'une distance focale de l'élément optique holographique et d'une distance entre l'élément optique holographique et l'image virtuelle.

CLAIM 1. A floating hologram system comprising: A diffuser in which the projection image is imaged by the light rays emitted from the image emitter and diffuses the imaged image; and And a holographic optical element on which the diffused image from the diffuser is incident, the holographic optical element generating a virtual image plotted at locations spaced apart by a predetermined distance, the holographic optical element having convex lens properties, Wherein the distance between the diffuser and the holographic optical element is determined based on the focal length of the holographic optical element and the distance from the holographic optical element to the virtual image.

N8696

WO2022114342

Priority Date: 30/11/2020

HOLOLAB

METHOD AND SYSTEM FOR PRODUCING HOLOGRAM FOR HIGH-SPEED DIGITAL SCREEN

The present invention relates to a method for producing a hologram for a high-speed digital screen, the method characterized by additionally using a vacuum suction device in order to uniformly record screen hogels, which constitute a hologram, at a high speed, in producing the digital hologram. Also, the present invention relates to a hologram system, for a high-speed digital screen, having: a light source part having a laser light source; a moving recording unit having a high-speed XY moving stage on which a recording medium is mounted, and for recording a hologram; an object beam unit comprising a spatial filter, a lens and a spatial light modulator through which passes one beam from among two beams which are split from a beam irradiated from the light source unit; a reference beam unit having a spatial filter and a lens through which one of the beams, split from the beam irradiated from the light source unit, passes and forms into a parallel beam; a vacuum suction unit positioned between the object beam unit and recording medium, and maintaining a fixed distance and attenuating vibration by vacuum suctioning the recording medium by means of a vacuum suction device; and a control unit for controlling the spatial light modulator, vacuum suction unit and moving recording unit. Therefore, the present invention can stably produce hogels for a screen by additionally using the vacuum suction device so as to minimize the impact of the vibration caused by the XY moving stage during the production of hologram hogels for a digital screen, and can greatly reduce the overall hologram recording time by reducing or eliminating the stage stabilization time.

PROCÉDÉ ET SYSTÈME DE PRODUCTION D'HOLOGRAMME POUR ÉCRAN NUMÉRIQUE À GRANDE VITESSE

La présente invention concerne un procédé de production d'un hologramme pour un écran numérique à grande vitesse, le procédé étant caractérisé en ce qu'il utilise en outre un dispositif d'aspiration sous vide afin d'enregistrer uniformément des hogels d'écran, qui constituent un hologramme, à grande vitesse, dans la production de l'hologramme numérique. La présente invention concerne également un système d'hologramme, pour un écran numérique à grande vitesse, comprenant : une partie source de lumière ayant une source de lumière laser ; une unité d'enregistrement mobile ayant un étage de déplacement XY à grande vitesse sur lequel un support d'enregistrement est monté, et permettant d'enregistrer un hologramme ; une unité de faisceau d'objet comprenant un filtre spatial, une lentille et un modulateur spatial de lumière à travers lequel passe un faisceau parmi deux faisceaux qui sont divisés à partir d'un faisceau irradié par l'unité de source de lumière ; une unité de faisceau de référence ayant un filtre spatial et une lentille à travers laquelle l'un des faisceaux, séparé du faisceau irradié par l'unité de source de lumière, passe et se transforme en un faisceau parallèle ; une unité d'aspiration sous vide positionnée entre l'unité de faisceau d'objet et le support d'enregistrement, et maintenant une distance fixe et atténuant les vibrations par aspiration sous vide du support d'enregistrement au moyen d'un dispositif d'aspiration sous vide ; et une unité de commande permettant de commander le modulateur spatial de lumière, l'unité d'aspiration sous vide et l'unité d'enregistrement mobile. Par conséquent, la présente invention peut produire de manière stable des hogels pour un écran à l'aide, en outre, du dispositif d'aspiration sous vide de façon à réduire au minimum l'impact de la vibration provoquée par l'étage de déplacement XY pendant la production d'hogels d'hologramme pour un écran numérique, et peut réduire considérablement le temps d'enregistrement d'hologramme global en réduisant ou en éliminant le temps de stabilisation d'étage.

CLAIM 1. A method of manufacturing a hologram for a high-speed digital screen, wherein a vacuum sucker is additionally used to uniformly record a screen hogel constituting the hologram at a high speed.

N8697

US20220197371

Priority Date: 18/12/2020

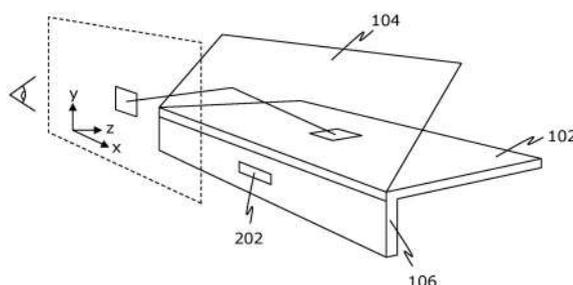
SA INCUBATOR LLC

INTERACTIVE DISPLAY SYSTEM AND METHOD FOR INTERACTIVELY PRESENTING HOLOGRAPHIC IMAGE

Disclosed is an interactive display system. The interactive display system comprises image source(s), a holographic optical element that is capable of converting images into holographic images, a frame designed to accommodate the holographic optical element therein, sensor(s) and a processor operably coupled to the image source(s) and the sensor(s). The processor is configured to: obtain sensor data generated by the sensor(s), wherein the sensor data is indicative of an input. Moreover, process the sensor data to determine the input; generate an image, based on the input; and control the image source(s) to display the image, wherein light rays emanating from the image source(s) are reflected by the holographic optical element to provide a holographic image in air, and wherein the holographic image represents virtual object(s).

SYSTÈME D'AFFICHAGE INTERACTIF ET PROCÉDÉ DE PRÉSENTATION INTERACTIVE D'UNE IMAGE HOLOGRAPHIQUE

Un système d'affichage interactif est divulgué. Le système d'affichage interactif comprend une ou plusieurs sources d'images, un élément optique holographique qui est capable de convertir des images en images holographiques, un cadre conçu pour recevoir l'élément optique holographique à l'intérieur de celui-ci, un ou plusieurs capteurs et un processeur couplé de manière fonctionnelle auxdites sources d'images et auxdits capteurs. Le processeur est conçu pour obtenir des données de capteur générées par lesdits capteurs, les données de capteur étant indicatives d'une entrée. Il est également conçu pour traiter les données de capteur pour déterminer l'entrée; générer une image sur la base de l'entrée; et commander la ou les sources d'images pour afficher l'image, des rayons lumineux émanant desdites sources d'images étant réfléchis par l'élément optique holographique pour fournir une image holographique dans les airs, et l'image holographique représentant un ou plusieurs objets virtuels.



CLAIM 1. An interactive display system comprising: at least one image source; a holographic optical element that is capable of converting images into holographic images; a frame designed to accommodate the holographic optical element therein, wherein the frame, in use, arranges the holographic optical element at a first distance from the at least one image source and obliquely with respect to the at least one image source; at least one sensor; and a processor operably coupled to the at least one image source and the at least one sensor, wherein the processor is configured to: obtain sensor data generated by the at least one sensor, wherein the sensor data is indicative of an input; process the sensor data to determine the input; generate an image, based on the input; and control the at least one image source to display the image, wherein upon displaying, light rays emanating from the at least one image source are reflected by the holographic optical element when passing through the holographic optical element, to provide a holographic image in air, and wherein the holographic image represents at least one virtual object.

N8698

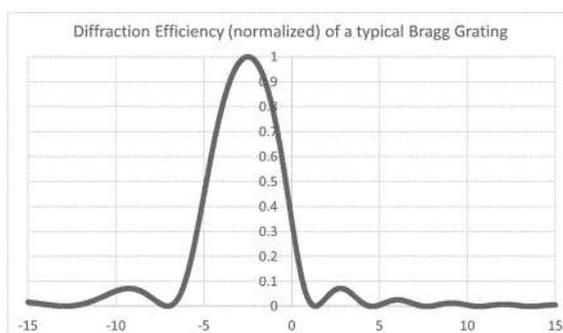
US20220187765

Priority Date: 15/12/2020

EARDG PHOTONICS

VOLUME HOLOGRAPHIC OPTICAL ELEMENTS WITH EXPANDED ANGULAR ACCEPTANCE

The present invention features VHOEs with expanded acceptance angle ranges as well as various systems and methods for fabricating VHOEs with expanded acceptance angle ranges. The VHOE with expanded acceptance angle range may include two or more individual Bragg gratings. In preferred embodiments, the two or more individual Bragg gratings have the same diffraction geometry but with shifted Bragg conditions. Having the same diffraction geometry means when light is incident on the VHOE including two or more individual Bragg gratings, the diffracted light from each of the Bragg gratings is co-linear or overlapping with the diffracted light from the other Bragg gratings. The Bragg condition for each of the Bragg gratings are shifted with respect to each neighboring Bragg grating by an amount up to the acceptance angle range of each individual Bragg grating.



CLAIM 1. A volume holographic optical element (VHOE) with expanded angular range, the VHOE comprising: a. a first Bragg grating having a first diffraction geometry and a first Bragg condition; and b. a second Bragg grating having a second diffraction geometry and a second Bragg condition; wherein the first diffraction geometry is substantially identical to the second diffraction geometry, and wherein the second Bragg condition is shifted with respect to the first Bragg condition by an offset angle.

N8702

US20220171189

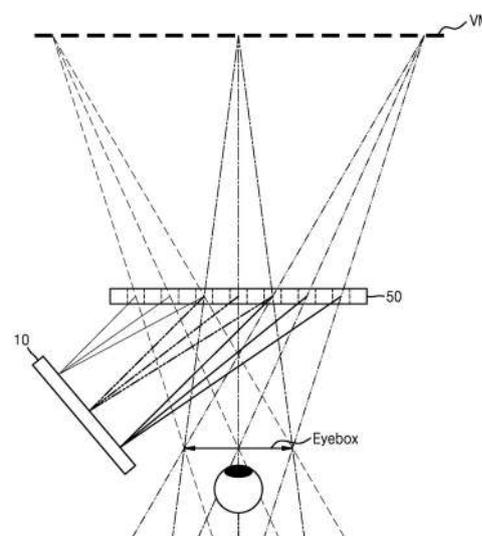
Priority Date: 02/12/2020

SAMSUNG ELECTRONICS

HOLOGRAPHIC LENS AND APPARATUS INCLUDING THE SAME

A holographic lens and a display apparatus using the same as a combiner, the holographic lens including a phase profile obtained through an optimization process for each position to form an imaging optical system for forming a virtual image of lights emitted from a plurality of areas.

CLAIM 1. A holographic lens comprising: a plurality of positions configured to form an imaging optical system that images lights emitted from a plurality of areas of a light emitting device on a corresponding plurality of virtual image points; and a phase profile obtained through an optimization process for each position of the plurality of positions.



N8703

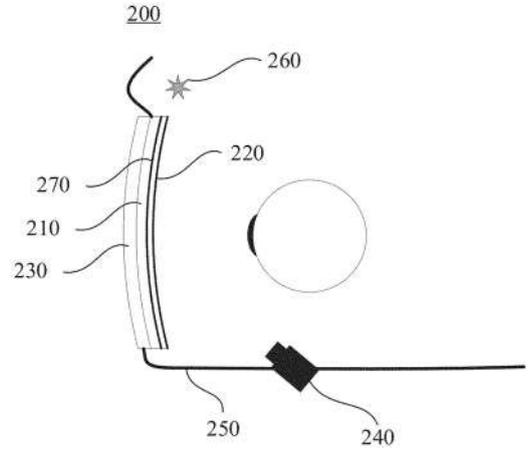
US11366260
Priority Date: 20/05/2019

FACEBOOK TECHNOLOGIES

OPTICAL SYSTEM WITH POLARIZATION VOLUME HOLOGRAM

An optical system includes an optical lens, a polarization volume hologram (PVH) layer arranged over the optical lens, and an IR absorbing structure arranged between the optical lens and the PVH layer. The PVH layer being configured to reflect infrared (IR) light. The IR absorbing structure includes a quarter-wave plate (QWP) arranged between the optical lens and the PVH layer and a linear absorptive polarizer arranged between the QWP and the optical lens. The linear absorptive polarizer is configured to absorb IR light.

CLAIM 1. An optical system comprising: a display screen; an optical lens; a polarization volume hologram (PVH) layer configured to reflect an infrared (IR) light, wherein the display screen and the PVH layer are disposed at opposite sides of the optical lens; and an IR absorbing structure arranged between the optical lens and the PVH layer, the IR absorbing structure including: a quarter-wave plate (QWP) arranged between the optical lens and the PVH layer; and a linear absorptive polarizer arranged between the QWP and the optical lens, the linear absorptive polarizer being configured to absorb the IR light.



N8706

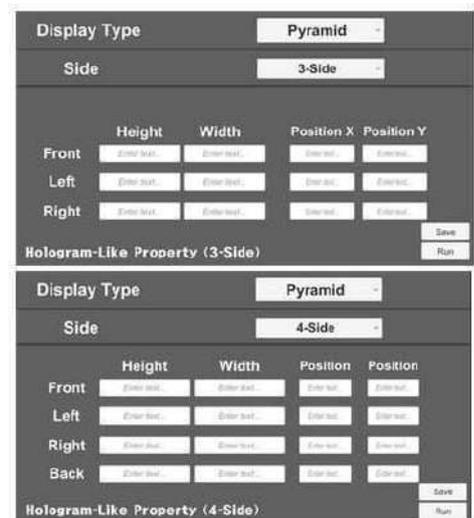
KR20220082427
Priority Date: 10/12/2020

WONKWANG UNIVERSITY INDUSTRY ACADEMIC COOPERATION
FOUNDATION

METHOD AND APPARATUS FOR AUTOMATICALLY VISUALIZING CONTENT BETWEEN HETEROGENEOUS QUASI-HOLOGRAM SYSTEMS

The present invention relates to a method and an apparatus for automatically visualizing contents between different types of pseudohologram systems, and the method according to the present invention includes a display type, a reflection mirror surface, Receiving pseudotruncation system attribute information including height and width information of each reflective mirror, converting content according to the pseudotruncation system attribute information, and outputting the converted content to the pseudotruncation system to project the converted content. According to the present invention, even if the same content is executed in different types of pseudohologram systems, it is possible to naturally visualize the content between heterogeneous pseudohologram systems. Therefore, the content producer has an advantage that only the content need not produce the content without considering the configuration of the pseudotruncation system.

CLAIM 1. A method of automatically visualizing contents between pseudohologram systems including one or more reflective mirrors, the method including receiving attribute information of a pseudohologram system including display type, number of reflective mirrors, height and width information of each reflective mirror of the pseudohologram system, Converting the content according to the pseudotruncation system attribute information, converting the content according to the pseudotruncation system attribute information, and outputting and projecting the converted content to the pseudotruncation system.



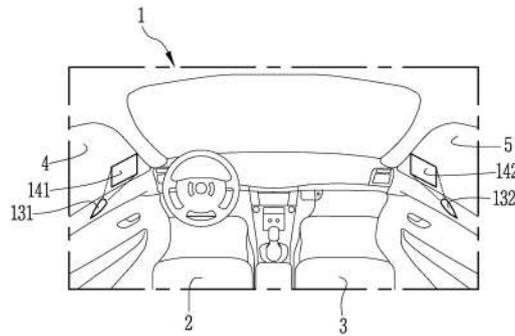
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KR20220080514
Priority Date: 07/12/2020

KOREA ELECTRONICS TECHNOLOGY INSTITUTE

HOLOGRAPHIC SIDEMIRROR

According to one embodiment of the present invention, there is provided a camera configured to photograph a rear of a vehicle, a film provided in left and right windows of the vehicle, a projector provided in the vehicle and configured to scan light to the film to generate a hologram, And a controller configured to provide an image photographed by the camera to the projector, wherein the holographic side mirror may provide a driver with both a left or right view of the vehicle as well as a rear view of the vehicle.



CLAIM 1. A holographic side mirror, comprising: a camera configured to photograph a rear of a vehicle; a film provided on left and right windows of the vehicle; a projector provided on the vehicle and configured to scan light on the film to generate a hologram; and a controller configured to provide an image photographed by the camera to the projector.

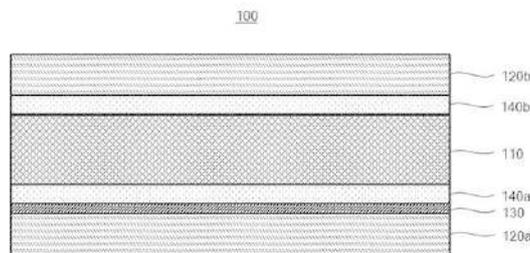
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KR20220077264
Priority Date: 01/12/2020

HEESUNG ELECTRONICS

HOLOGRAPHIC OPTICAL DEVICE AND HEAD-UP DISPLAY DEVICE INCLUDING THE SAME

A holographic optical device is provided. A holographic optical device includes a photopolymer layer including an interference pattern generated by interference between reference light and object light reflected from a target object, a first protective layer disposed below the photopolymer layer and having a first refractive index, a second protective layer disposed above the photopolymer layer, And having a second refractive index less than the first refractive index; and a first adhesive layer disposed between the photopolymer layer and the optical matching layer to adhere to the optical matching layer, the first adhesive layer having a third refractive index less than the first refractive index and greater than the second refractive index.



CLAIM 1. A photopolymer layer including an interference pattern generated by interference between reference light and object light reflected from a target object, a first protective layer disposed below the photopolymer layer and having a first refractive index, a second protective layer disposed above the photopolymer layer, an optical matching layer having a second refractive index smaller than the first refractive index; and a first adhesive layer disposed between the photopolymer layer and the optical matching layer to adhere to the optical matching layer, the first adhesive layer having a third refractive index smaller than the first refractive index and larger than the second refractive index.

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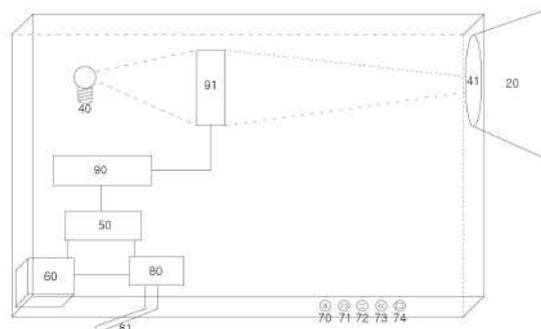
Priority Date: 25/11/2020

KIM, MIN JUN

SMARTPHONE HOLOGRAM PROJECTOR

The present invention relates to a smartphone hologram projector that can be written to give a sensation that can be generated in addition to a fractional sense by sterically outputting an imaging medium viewed planar in a smartphone and experiencing a more viable sense.

CLAIM 1. A mobile phone hologram apparatus using light interference, comprising: a memory card reader for reading out image transmission of a mobile phone; a mirroring device for reading out a screen wirelessly; a projector for outputting a transmitted screen; A smartphone hologram apparatus using light interference, comprising: an image processor for modifying a size of an image to fit a lens; a main system for performing main control of the apparatus; a panel for suspending an output image in hologram stereoscopic space; and a smart phone hologram apparatus using light interference.



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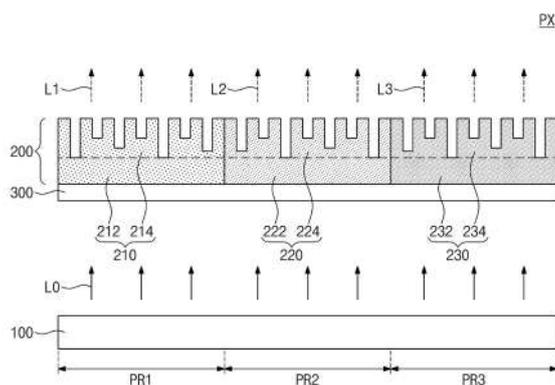
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Priority Date: 25/11/2020

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE

HOLOGRAM DISPLAY DEVICE AND METHOD OF FORMING THE SAME

A hologram reproduction apparatus includes: a backlight unit; and a display panel modulating light provided by the backlight unit and including a plurality of pixel regions, wherein each of the pixel regions includes a first interference pattern, a second interference pattern, and a third interference pattern disposed adjacent to each other, wherein each of the second interference pattern and the third interference pattern comprises a base portion and a pattern portion formed on the base portion, wherein the base portion and the pattern portion are integrally provided, The second interference pattern and the third interference pattern selectively transmit light having different wavelengths, and the first interference pattern, the second interference pattern, and the third interference pattern are formed of the same material.



CLAIM 1. A display device comprising: a backlight unit; and a display panel modulating light provided by the backlight unit and including a plurality of pixel regions, wherein each of the pixel regions includes a first interference pattern, a second interference pattern, and a third interference pattern disposed adjacent to each other, wherein each of the first, second and third interference patterns comprises a base portion and a pattern portion formed on the base portion, wherein the base part and the pattern part are integrally provided, wherein the first interference pattern, the second interference pattern, and the third interference pattern selectively transmit light having different wavelengths, and wherein the first interference pattern, the second interference pattern, and the third interference pattern are formed of the same material.

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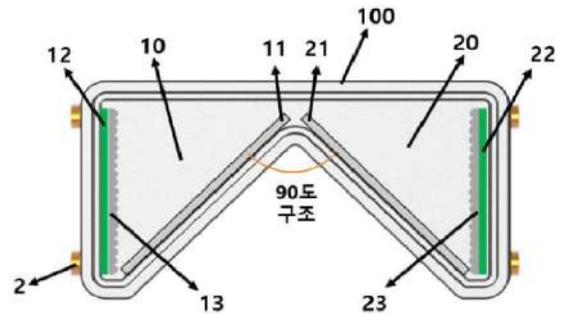
KR20220069509

Priority Date: 20/11/2020

QMIIX

DIRECT VIEW FLOATING HOLOGRAM SYSTEM BASED ON ULTRA-MULTI-VIEW THREE-DIMENSIONAL DISPLAY

The present invention relates to a direct-view floating hologram system based on an ultra-multi-view three-dimensional display. the direct-view three-dimensional display system includes left and right ultra-multi-view three-dimensional display panels inside a case (100) in which the ultra-multi-view three-dimensional display and the floating hologram system are embedded, Left and right special optical mirror plates (11, 21) are provided corresponding to each of right ultra-multi-view three-dimensional display panels, so that the left and right special optical mirror plates (11, Floating holographic image images with three-dimensional depth are presented on the right special optical mirror plate (11, 21), the invention relates to left, There is an excellent effect of optimizing the three-dimensional floating hologram content viewing range by a simple structure of the calibration and direct-view structure of both three-dimensional contents by the right special optical mirror plate to obtain a clear ultra-multi-view three-dimensional floating hologram. In addition, it is possible to provide a user with a more realistic three-dimensional floating hologram content and an image, have a new concept of direct view structure, may have a quality greater than or equal to an existing three-dimensional image because of a wide viewing angle, and may have directionality such as landscape, portrait format, and the like as one product, and thus there is an excellent effect of freely and intuitive presentation of the content.



CLAIM 1. Inside a case (100) in which a hologram system is housed, left and right ultra-multi-view three-dimensional display panels (12, 22) and left and right special optical mirror plates (11, 22) to correspond to the left and right ultra-multi-view three-dimensional display panels, 21) Is provided on the left and right special optical mirror plates (11, 21), and a three-dimensional floating hologram image appears on the left and right special optical mirror plates (11, 21).

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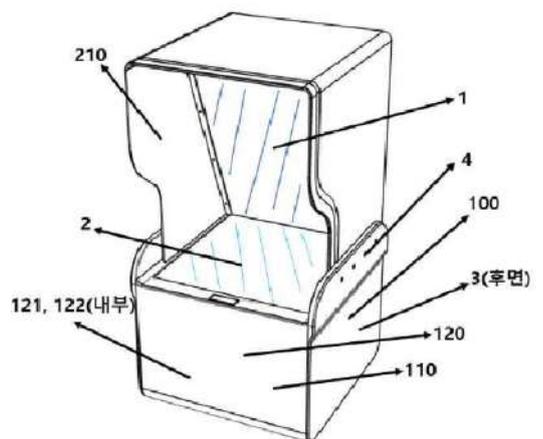
KR20220069507

Priority Date: 20/11/2020

QMIIX

TRANSMISSIVE FLOATING HOLOGRAM SYSTEM BASED ON ULTRA-MULTI-VIEW THREE-DIMENSIONAL DISPLAY

The present invention relates to a transmission type floating hologram system based on ultra-multi-view three-dimensional (3 D) display. a display unit 120 is installed on an upper portion of a lower table 110 of a case 100 in which the hologram system is embedded, and a hologram image of an object is displayed on the display unit 120. the present invention can provide a user with more realistic contents and images, A product optimized for display and acceleration due to high transmission type structure and transparency, which can be used in a tabletop format to provide diversity, which does not require special glasses because it is possible to provide high resolution three-dimensional floating hologram images of large depth, It is possible to observe three-dimensional floating hologram content having accurate depth sensations, and perform interactions realized by a user together with resolution of an image.



CLAIM 1. A transmission type floating hologram system based on ultra-multi-view three-dimensional display, characterized in that a display unit (120) is provided on an upper portion of a lower table (110) of a case (100) in which a hologram system is embedded, and a three-dimensional floating hologram image of an object appears on an ultra-multi-view three-dimensional display panel (121) of the display unit (120).

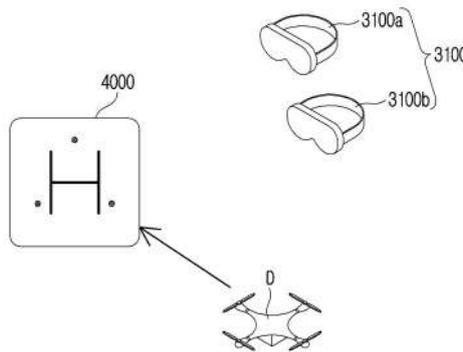
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KR20220067061
Priority Date: 17/11/2020

WIBTEL

APPARATUS FOR ASSISTING ABSOLUTE POSITION RECOGNITION OF HOLOGRAPHIC LENS

The present invention relates to an apparatus for assisting in recognizing absolute positions of hololenses, which determines absolute positions reference to positions of users of a plurality of hololenses in application of augmented reality, and is capable of synchronizing movements according to elements such as directionality and the like. the apparatus includes an upper plate portion 4100 which is tiltable forward and backward, left and right, and includes a center point portion 4110 and a triangle coordinate portion 4120, A sensing unit 4300 configured to measure an inclination of the upper plate unit, and an adjusting unit 4200 configured to adjust an inclination of the upper plate unit according to a sensing value of the sensing unit and a simulated movement of a virtual cardrone.



CLAIM 1. A display device recognizable by a hologram that displays an image of a virtual cardrone, comprising: an upper plate portion 4100 that is tiltable forward and backward, left and right, and includes a center point portion 4110 and a triangle coordinate portion 4120; a sensing portion 4300 that measures inclination of the upper plate portion; An adjustment device (4200) configured to adjust an inclination of an upper plate unit according to a sensing value of the sensing unit and a simulated movement of the virtual cardrone, wherein the upper plate unit functions as a reference display recognized from a plurality of hololenses to synchronize a position and an orientation of the virtual cardrone.

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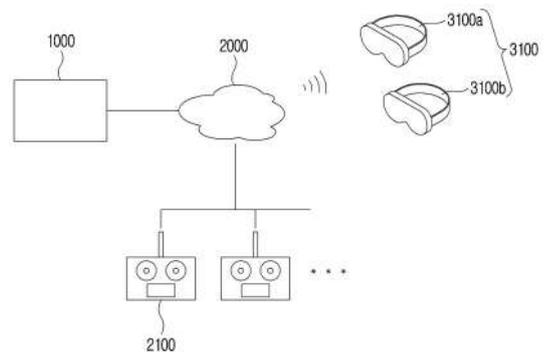
KR20220067057
Priority Date: 17/11/2020

WIBTEL

DRONE HOLOGRAM DISPLAY SYSTEM FOR INTERLOCKING MANIPULATOR SIGNAL

The present invention relates to a drone hologram display system in which a plurality of display devices are interlocked to display drone holograms. the drone hologram display system includes a simulation controller for generating a virtual drone of augmented reality and performing a virtual driving operation in a set space, One or more manipulator units connected to the simulation controller through a relay unit to input a control command of a driving operation for the virtual cardron, and a hologram lens to visualize the driving operation of the simulation controller.

CLAIM 1. An apparatus comprising: a simulation control unit (1000) for generating a virtual cardrone (D) of augmented reality and performing a virtual driving operation in a set space; one or more steering units (2100) connected to the simulation control unit through a relay unit to input a control command of the driving operation for the virtual cardrone; and a plurality of holographic lenses (3100) for visualizing the driving operation of the simulation control unit, Wherein the holographic lens is composed of an alternating-tube holographic lens and a trainer holographic lens, and the simulation control unit cooperates with a manipulator signal to display a virtualized drone in synchronization with a position and an orientation of the alternating-tube holographic lens.



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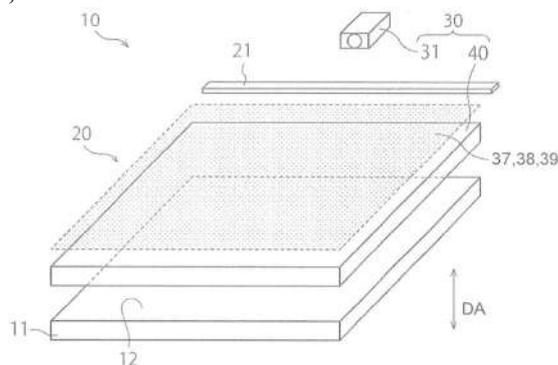
JP2022082465

Priority Date: 20/11/2020

DAI NIPPON PRINTING

AERIAL INPUT DEVICE, AERIAL INPUT AND DISPLAY DEVICE, AND HOLOGRAM SHEET

TOPIC: To easily provide an aerial input device in an existing display device that allows a user to recognize a position detectable by a non-contact position detection sensor. INVENTION: An aerial input device 20 includes a light source 31, a hologram sheet 40, and a position detection sensor 21. The hologram sheet 40 forms an image being recorded by the light from the light source 31 at an imaging position 38. The position detection sensor 21 has sensitivity at a position corresponding to the imaging position 38. The position 21 s at which the position detecting sensor 21 has sensitivity is separated from the hologram sheet 40. The light source 31 is located on the same side as the imagery position 38 with respect to the hologram sheet 40. A distance D1 between the imaging position 38 and the hologram sheet 40 is 10 mm or greater.



CLAIM 1. A recording device comprising: a light source; a hologram sheet configured to form an image being recorded by light from the light source at an image formation position; and a position detection sensor having sensitivity at a position corresponding to the image formation position, wherein the position at which the position detection sensor has sensitivity includes: The light source is separated from the hologram sheet, the light source is located on the same side as the imaging position with respect to the hologram sheet, and a distance between the imaging position and the hologram sheet is 10 mm or greater.

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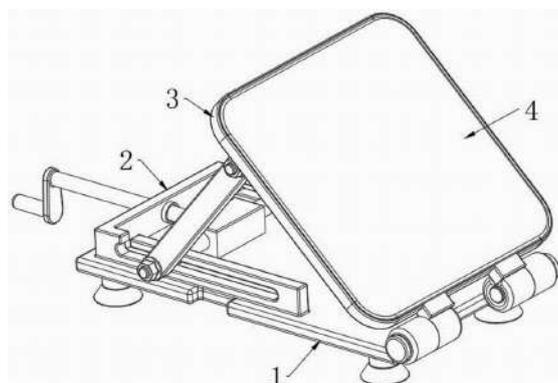
Priority Date: 10/01/2022

SHENZHEN MEIYUJINGJIE PHOTOELECTRIC TECHNOLOGY

HOLOGRAPHIC WAVEGUIDE LENS DISPLAY DEVICE

The utility model belongs to the technical field of holographic waveguide lenses, and particularly relates to a holographic waveguide lens display device which comprises a base, wherein a mounting plate is rotatably mounted on the base, a holographic waveguide lens body is detachably nested on the mounting plate, an adjusting assembly for adjusting an included angle between the base and the adjusting assembly is connected between the base and the adjusting assembly, the adjusting assembly comprises a mounting frame fixedly mounted at the top of the base, a first round rod is slidably mounted on the mounting frame, two supporting arms are rotatably sleeved on the first round rod, the tops of the two supporting arms are hinged with the mounting plate, and a screw rod is connected to the mounting frame in a threaded manner. According to the utility model, the display angle of the holographic waveguide lens body can be easily adjusted through the adjusting component, and meanwhile, the angle position between the base and the mounting plate can be locked through the adjusting component, so that the position of the mounting plate is not easy to change, and the holographic waveguide lens body is well protected.

CLAIM 1. A holographic waveguide lens display device comprising a base (1), characterized in that: rotate on base (1) and install mounting panel (3), detachable nested has holographic waveguide lens body (4) on mounting panel (3), be connected with between base (1) and adjusting part (2) of contained angle between adjusting base (1) and adjusting part (2), adjusting part (2) include mounting bracket (21) at fixed mounting base (1) top, slidable mounting has round bar (23) on mounting bracket (21), the cover is equipped with two support arms (24) to rotating on round bar (23), and the top of two support arms (24) all articulates with mounting panel (3) together, threaded connection has screw rod (25) on mounting bracket (21), screw rod (25) run through mounting bracket (21) and rotate with round bar (23) and link together.



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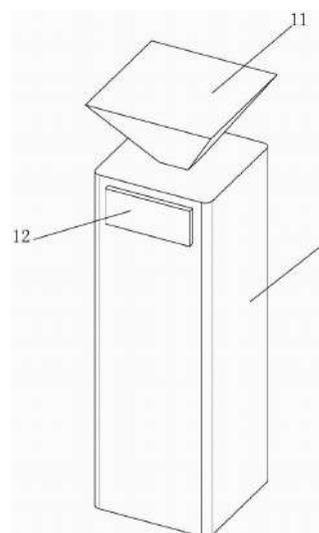
CN216623716U

Priority Date: 03/08/2021

QINGDAO ZHIYUAN DECORATION EXHIBITION

3D DISPLAY DEVICE OF HOLOGRAPHIC PROJECTION EXHIBITION ROOM

The utility model belongs to the technical field of 3D display equipment, and particularly relates to a 3D display device of a holographic projection exhibition hall, which comprises a placing seat; the top end of the placing seat is provided with a projection cabinet which is quadrangular; an operation screen is fixedly connected to the side wall of the placing seat; the bottom end of the placing seat is provided with a first groove; an electric telescopic rod is fixedly connected to the bottom of the first groove, and a pressing block is fixedly connected to the top end of the electric telescopic rod; the bottom end of the pressing block is fixedly connected with a group of universal wheels; the utility model provides a 3D display device of a holographic projection exhibition hall, which aims to solve the problems that when the 3D display device is placed in the exhibition hall, due to the fact that the device is heavy, rollers need to be arranged at the bottom end of the display device, the display device can be conveniently moved and placed, but the rollers are prone to sliding, the device is not stable enough, and the display effect of the display device is affected.



CLAIM 1. A 3D display device of a holographic projection exhibition hall is characterized by comprising a placing seat (1); the top end of the placing seat (1) is provided with a projection cabinet (11), and the projection cabinet (11) is quadrangular; an operation screen (12) is fixedly connected to the side wall of the placing seat (1); the bottom end of the placing seat (1) is provided with a first groove (13); an electric telescopic rod (14) is fixedly connected to the bottom of the first groove (13), and a pressing block (15) is fixedly connected to the top end of the electric telescopic rod (14); the bottom end of the pressing block (15) is fixedly connected with a group of universal wheels (16).

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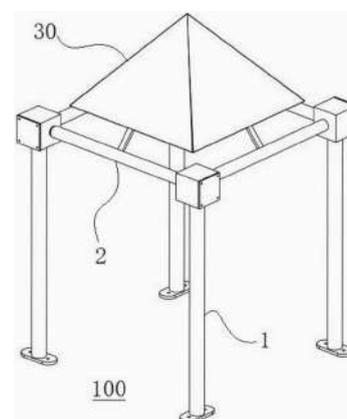
Priority Date: 19/11/2021

SUQIAN COLLEGE

HOLOGRAPHIC PROJECTION SYSTEM CAPABLE OF SWITCHING PROJECTION SCREEN FORMS

The utility model discloses a holographic projection system capable of switching the form of a projection screen, which comprises a form-switchable projection screen device, wherein the form-switchable projection screen device comprises a support, a turnover mechanism and sub-projection screens, the sub-projection screens are arranged on the support through the turnover mechanism, the four sub-projection screens are combined into a pyramid-shaped holographic projection screen, the holographic projection screen comprises a regular pyramid-shaped holographic projection screen and an inverted pyramid-shaped holographic projection screen, and the sub-projection screens are driven to turn through the turnover mechanism so that the holographic projection screen can be switched between two display forms of the regular pyramid-shaped holographic projection screen and the inverted pyramid-shaped holographic projection screen. The holographic projection system capable of switching the form of the projection screen can switch the form of the projection screen according to display requirements, and the application range is widened.

CLAIM 1. A holographic projection system switchable between projection screen configurations, comprising: the holographic projection screen device comprises a form-switchable projection screen device (100), wherein the form-switchable projection screen device (100) comprises a support (1), a turnover mechanism (2) and sub-projection screens (3), the sub-projection screens (3) are arranged on the support (1) through the turnover mechanism (2), four sub-projection screens (3) are combined into a pyramid-shaped holographic projection screen (30), the holographic projection screen (30) comprises a regular pyramid-shaped holographic projection screen (30a) and an inverted pyramid-shaped holographic projection screen (30b), and the sub-projection screens (3) are driven to turn over through the turnover mechanism (2) so that the holographic projection screen (30) can be switched between two display forms, namely the regular pyramid-shaped holographic projection screen (30a) and the inverted pyramid-shaped holographic projection screen (30b).



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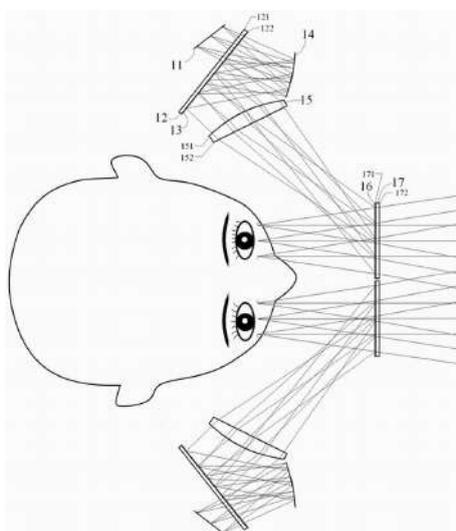
CN114647088

Priority Date: 22/03/2022

ZHEJIANG UNIVERSITY

FREE-FORM SURFACE-FREE BODY HOLOGRAPHIC VISUAL OPTICAL IMAGING DEVICE AND NEAR-TO-EYE DISPLAY SYSTEM THEREOF

The invention relates to a free-form surface-free body holographic visual optical imaging device, which is formed by combining two visual optical imaging devices in mirror symmetry, wherein each visual optical imaging device comprises 1 lens, 2 glass flat plates, 1 reflector, 2 free body holographic elements and 1 image micro-display, and an image light signal emitted by the image display passes through an optical system and is finally reflected by the free body holographic optical elements to enter human eyes. The free-body holographic element breaks through the traditional catadioptric law, large-angle unconventional catadioptric can be realized, the controlled free-form surface wavefront is adopted for exposure, the traditional spherical wave and plane wave exposure preparation method is broken through, the aberration correction capability of the holographic optical element is greatly improved, the volume and the weight of the system are obviously reduced, and the two pieces of body holographic elements are matched with each other to correct chromatic aberration to realize full-color display. Meanwhile, light rays in the transmission direction can also be transmitted into human eyes, and ultrathin and light binocular near-to-eye display is achieved.



CLAIM 1. A free-form surface-free volume holographic visual optical imaging device is characterized by comprising a first optical lens (15), a first glass flat plate (12), a second glass flat plate (17), a reflector (14), a first volume holographic optical element (13), a second volume holographic optical element (16) and an image display (11); image signal light emitted by the image display (11) sequentially passes through the first glass flat plate (12) and the first holographic optical element (13), is reflected to the first holographic optical element (13) through the reflector (14), then is reflected to the first optical lens (15) through the first holographic optical element (13), is transmitted to the second holographic optical element (16) through the first optical lens (15), is finally reflected to human eyes through the second holographic optical element (16), and on the other hand, ambient light enters the human eyes after being transmitted through the second glass flat plate (17) and the second holographic optical element (16).

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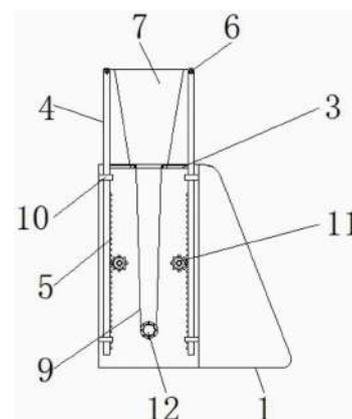
Priority Date: 18/12/2020

NANJING FANHAN INTELLIGENT TECHNOLOGY RESEARCH
INSTITUTE

HOLOGRAPHIC PROJECTION EQUIPMENT FOR VISUAL TRANSMISSION

The invention relates to the field of holographic projection related equipment for visual transmission, in particular to holographic projection equipment for visual transmission, which comprises vehicle-mounted image equipment, wherein a holographic screen is mounted at the top of the vehicle-mounted image equipment, grooves are formed in the periphery of the holographic screen, the grooves are formed in the vehicle-mounted image equipment, a support frame is wrapped on the outer side of the vehicle-mounted image equipment, a rack is fixed on one side of the support frame, a rotating shaft is mounted at one end, far away from the rack, of the support frame, a side plate is mounted in the middle of the support frame, and a movable plate is mounted at one end of the rotating shaft. The vehicle-mounted image equipment is different from the traditional vehicle-mounted image equipment in that double-screen equipment is adopted for the first time, the holographic screen is arranged at the top of the vehicle-mounted image equipment, the holographic screen can convert the influence into a three-dimensional image to be displayed in a vehicle, the holographic screen can be randomly replaced as a decoration, or a navigation route is put in by using the holographic screen, so that the vehicle-mounted image equipment is more three-dimensional, easier to understand and clearer.

CLAIM 1. Holographic projection equipment for visual communication, including on-vehicle image equipment (1), its characterized in that: the top of the vehicle-mounted image equipment (1) is provided with a holographic screen (2), the periphery of the holographic screen (2) is provided with a groove (3), wherein, the groove (3) is formed in the vehicle-mounted image equipment (1), the outer side of the vehicle-mounted image equipment (1) is wrapped by a support frame (4), a rack (5) is fixed on one side of the support frame (4), a rotating shaft (6) is installed at one end, far away from the rack (5), of the support frame (4), a side plate (7) is installed at one end, close to the rotating shaft (6), of the support frame (4), a movable plate (8) is installed at one end of the rotating shaft (6), and a connecting wire (9) is fixed on the inner side of the bottom of the movable plate (8); install buckle (10) between support frame (4) and on-vehicle image equipment (1), buckle (10) parcel is in the support frame (4) outside, electronic gear (11) are installed to rack (5) one side of support frame (4), electronic spooler (12) are installed to the one end of connecting wire (9), electronic spooler (12) are all installed in on-vehicle image equipment (1) side with electronic gear (11).



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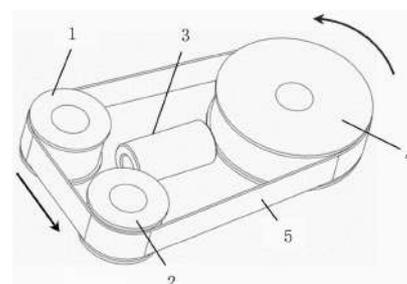
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Priority Date: 18/03/2022

JIAXING ZHONGGUANG PHOTOELECTRIC TECHNOLOGY

DYNAMIC HOLOGRAPHIC PROJECTION DEVICE ADOPTING CRAWLER-TYPE FLEXIBLE DIFFRACTION PLATE

The invention discloses a dynamic holographic projection device adopting a crawler-type flexible diffraction plate, which comprises a crawler-type flexible diffraction plate, a laser, a driving wheel driven by a motor and a driving wheel mechanism consisting of one or more driven wheels. The invention makes the diffraction piece move in front of the laser, can realize the multi-frame animation effect, and simultaneously avoids the rotation and inclination of the projection graph caused by the rotation of the disk type dynamic projection device, so that the motor and the laser do not need special control, and the control system of the whole device can be greatly simplified.



CLAIM 1. A dynamic holographic projection device adopting a crawler-type flexible diffraction plate is characterized by comprising one or more driven wheels, a laser, a driving wheel and the crawler-type flexible diffraction plate; the driving wheel and the driven wheel are arranged to form a driving wheel mechanism, the crawler-type flexible diffraction sheet is sleeved outside the driving wheel mechanism in a surrounding manner, and can rotate around the driving wheel mechanism under the driving of the driving wheel mechanism; the driving wheel is connected with the driving device; the laser is arranged in the transmission wheel mechanism, the light emitting direction of the laser corresponds to a gap between the driving wheel and the driven wheel or between the driven wheel and the driven wheel, and laser emitted by the laser can irradiate the crawler-type flexible diffraction sheet.

N8751

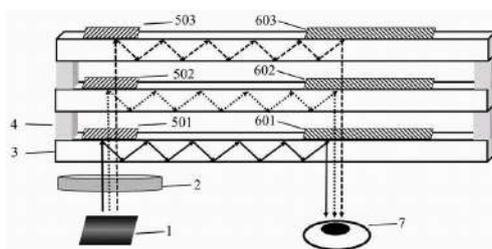
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Priority Date: 27/01/2022

SOUTHEAST UNIVERSITY

LARGE-VIEW-FIELD HIGH-BRIGHTNESS HOLOGRAPHIC WAVEGUIDE SYSTEM BASED ON MULTILAYER GRATING AND PREPARATION METHOD THEREOF

The invention discloses a large-view-field high-brightness holographic waveguide system based on multilayer body grating and a preparation method thereof, wherein the system comprises a microimage source (1), a collimation system (2) and a waveguide unit, and the waveguide unit comprises a multilayer waveguide medium (3) and a grating composite structure; the grating in the composite structure comprises an in-coupling grating and an out-coupling grating which are respectively positioned at the same side of the multilayer waveguide medium and have a certain distance; the collimation system and the microimage source are arranged on the same side of the waveguide unit; two layers of waveguide media in the multilayer waveguide media are supported by a spacer (4); the incident angles under different fields of view are diffracted in a mode of cascading composite structures consisting of waveguide media and gratings, the composite structures are independent from each other and diffract the incident angles in a certain range, and the maximization of diffraction efficiency is realized; the LED display screen has the advantages of ultra-large view field, high brightness, structural expandability and the like.



CLAIM 1. A large-field-of-view high-brightness holographic waveguide system based on volume grating is characterized in that the system comprises a microimage source (1), a collimation system (2) and a waveguide unit, wherein the waveguide unit comprises a multilayer waveguide medium (3) and a grating composite structure; the grating in the grating composite structure comprises an in-coupling grating and an out-coupling grating which are respectively positioned at the same side of the multilayer waveguide medium (3) and have a certain distance; the collimation system (2) and the microimage source (1) are arranged on the same side of the waveguide unit; two layers of waveguide media in the multilayer waveguide media (3) are supported by a spacer (4); the light signal emitted by the micro-image source (1) is collimated by the collimating system (2) and then enters the in-coupling grating of the waveguide unit, and is diffracted, totally reflected and diffracted in the waveguide unit and then is transmitted to the eyes of people through the out-coupling grating.

N8753

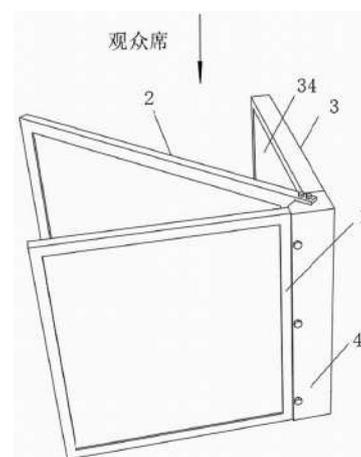
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Priority Date: 09/03/2022

BEIJING DITING SHIJIE CULTURE TECHNOLOGY

HOLOGRAPHIC IMAGING STRUCTURE

The invention provides a holographic imaging structure, and relates to the technical field of holographic imaging. The holographic imaging structure comprises a display component, a medium component and a reflection structure component, wherein the display component is used for displaying a foreground image; medium subassembly, reflection configuration subassembly set gradually and are close to spectator's one side at the display module, one side of display module, medium subassembly and reflection configuration subassembly is hugged closely each other or is close to, and the opposite side is kept away from each other and is formed certain contained angle, and the reflection configuration subassembly is as forming the space virtual image, and the medium subassembly is as the inside light that sends of reflection configuration subassembly. Through the foreground image that display screen itself shows, combine the virtual image that the display screen rear formed, can form obvious depth and feel, let the people can ignore the display screen in the front of the eye on the visual sensation to demonstrate bore hole 3D's stereoscopic image display effect, this design has avoided need to do the sunken condition in the past, and use cost is lower.



N8754

CN114554167

Priority Date: 21/02/2022

CHONGQING UNIVERSITY

INTELLIGENT HOLOGRAPHIC PROJECTION SYSTEM BASED ON BIG DATA

The invention discloses an intelligent holographic projection system based on big data, which belongs to the field of big data and is used for solving the problems that the holographic projection technology can not set matched projection parameters according to user use data and can not intelligently adjust the projection parameters of holographic projection in combination with environment; the projection setting module extracts projection habit data in a user projection packet, and sets the holographic projection system according to the projection habit data; the intelligent opening and closing module is used for intelligently controlling the opening and closing time of the holographic projection system; the environment allocation module is used for allocating the working environment of the holographic projection system, and the method and the device are convenient for setting matched projection parameters according to the user use data and intelligently adjusting the projection parameters of the holographic projection by combining the environment data.

N8755

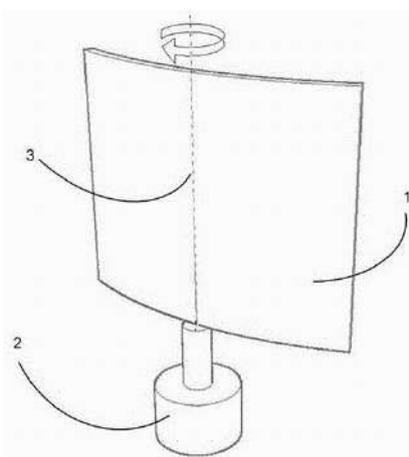
CN114545654

Priority Date: 18/11/2020

LIU FENGHUA

WARP ROTATING SLICING HOLOGRAPHIC DISPLAY TECHNOLOGY

The invention discloses a warp rotating slice holographic display technology, which comprises the following steps: the device comprises a screen, a rotating unit and a program control system. The screen is vertically arranged, and the vertical center line of the screen is superposed with the axis of the rotating unit. The three-dimensional digital model to be displayed is rotationally cut into a plurality of slices according to the meridian direction by a computer program control system. And the program control system automatically calculates the section two-dimensional images of all the slices, controls the rotation speed of the screen by a program, and transmits the longitude section two-dimensional images to the screen for real-time display at corresponding positions in the rotation process. Because a large number of sectional graphs at different angles are mixed with residual images, a three-dimensional image of a displayed object is presented. The invention has the advantages that: the structure is very simple, the cost is low, any input stereo image can be displayed in three dimensions by combining computer programming, different image angles can be observed in 360 degrees, and no display effect difference exists between the left and the right.



CLAIM 1. The holographic display technology of the meridian rotating slice is characterized by comprising a screen (1), a rotating unit (2) and a program control system: the screen (1) is erected on the rotating unit (2), and the screen center line (3) is superposed with the axis of the rotating unit (2); the rotation speed of the screen (1) is controlled by a program control system; the program control system controls to automatically generate two-dimensional graphs on different meridian sections and display the two-dimensional graphs on the screen (1), and continuously updates section patterns corresponding to the positions along with the change of the rotating positions until a circle is completed.

[Click on the title to return to table of contents](#)

PATENT REFERENCE – See the table at the end of this document

N8690

WO2022123065

HOLTRA

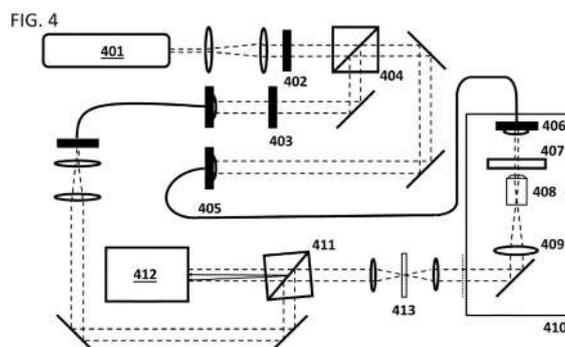
Priority Date: 11/12/2020

METHOD AND ARRANGEMENT FOR HOLOGRAPHIC NANOPARTICLE TRACKING ANALYSIS (H-NTA) IN A DIGITAL HOLOGRAPHIC MICROSCOPE

The invention relates to a digital holographic microscope, DHM. The DHM comprises a coherent light source (401, 501) for illuminating a sample in a sample holder in a first image plane (101,201,407, 507). The DHM further comprises a detector, e.g. a camera (412, 512), arranged to record images of the sample in the sample holder. The DHM further comprises a first beam splitter (404, 511) for dividing the base light beam from the coherent light source (401, 501) into at least a first divided beam and a second divided beam and a light beam guiding system for guiding a light beam to the sample and reunite the first and second divided beam upstream the detector. The DHM further comprises a light reducing arrangement for reducing the intensity of the light in the first divided beam. The light reducing arrangement includes a first lens (102) for collimating the light in the first divided beam scattered by a particle (106) comprised in the sample and a spatial filter (108, 206, 413) arranged at or in the vicinity of the focal plane (103, 203) of said first lens (102) in order to reduce the intensity of the focused light passing through the sample located in the first image plane (101, 201, 307, 407). By this arrangement, the majority of unscattered light passing through the sample is filtered off and the majority of the light scattered by a particle (106) in the sample is guided via a light guiding system to reunite with the reference beam.

PROCÉDÉ ET AGENCEMENT POUR L'ANALYSE DE SUIVI DE NANOPARTICULES HOLOGRAPHIQUES (H-NTA) DANS UN MICROSCOPE HOLOGRAPHIQUE NUMÉRIQUE

L'invention concerne un microscope holographique numérique (DHM). Le DHM comprend une source de lumière cohérente (401, 501) servant à éclairer un échantillon dans un porte-échantillon dans un premier plan d'image (101, 201, 407, 507). Le DHM comprend en outre un détecteur, par exemple une caméra (412, 512), agencé de façon à enregistrer des images de l'échantillon dans le porte-échantillon. Le DHM comprend en outre un premier diviseur de faisceau (404, 511) servant à diviser le faisceau de lumière de base provenant de la source de lumière cohérente (401, 501) en au moins un premier faisceau divisé et un second faisceau divisé, et un système de guidage de faisceau lumineux servant à guider un faisceau lumineux vers l'échantillon et à réunir les premier et second faisceaux divisés en amont du détecteur. Le DHM comprend en outre un agencement de réduction de lumière servant à réduire l'intensité de la lumière dans le premier faisceau divisé. L'agencement de réduction de lumière comprend une première lentille (102) servant à collimater la lumière dans le premier faisceau divisé diffusé par une particule (106) comprise dans l'échantillon et un filtre spatial (108, 206, 413) disposé au niveau ou à proximité du plan focal (103, 203) de ladite première lentille (102) afin de réduire l'intensité de la lumière focalisée traversant l'échantillon situé dans le premier plan d'image (101, 201, 307, 407). Grâce à cet agencement, la majorité de la lumière non diffusée traversant l'échantillon est filtrée et la majorité de la lumière diffusée par une particule (106) dans l'échantillon est guidée par l'intermédiaire d'un système de guidage de lumière pour rejoindre le faisceau de référence.



N8691

WO2022119521

Priority Date: 02/12/2020

YILDIZ TEKNİK UNIVERSITESI

ELECTRO-HOLOGRAPHIC MICROSCOPE SYSTEM CAPABLE OF DISTINGUISHING CELLS AND MICROORGANISMS BASED ON THE LIGHT TRANSMITTANCE

The present invention provides a phase shift-based interferometric microscope apparatus (100). Said apparatus comprises a digital camera (2), a beam source (21), and a beam splitter (22) that splits a beam (B) emitted from the beam source (21) into two parts, a main beam (B1) and an equivalent phase-shifted reference beam (BR). The apparatus (100) also comprises a chamber (1) for placing a sample therein, which is configured to allow the main beam (B1) to pass through the sample in a first direction (+z/-z); at least a pair of electrodes (11) disposed mutually opposite to each other on either side of the chamber (1), which are configured to expose the sample to an electric field; and a beam combiner (30) suitably configured and positioned to guide the main beam (B1) to the digital camera (2) after it has passed through the chamber (1), and to guide the reference beam (BR) to the digital camera (2) after having been passed therethrough so as to travel coincident with the main beam (B1). The apparatus (100) shall be used to calculate the change in light transmission caused by different electric field intensities to be applied through the electrode pair (11) thereon.

SYSTÈME DE MICROSCOPE ÉLECTRO-HOLOGRAPHIQUE CAPABLE DE DISTINGUER DES CELLULES ET DES MICRO-ORGANISMES SUR LA BASE DE LA TRANSMITTANCE DE LUMIÈRE

La présente invention concerne un appareil de type microscope interférométrique basé sur un décalage de phase (100). Ledit appareil comprend une caméra numérique (2), une source de faisceau (21), et un diviseur de faisceau (22) qui divise un faisceau (B), émis par la source de faisceau (21), en deux parties, un faisceau principal (B1) et un faisceau de référence (BR) à décalage de phase équivalent. L'appareil (100) comprend également une chambre (1) pour placer un échantillon à l'intérieur de celle-ci, qui est configurée pour permettre au faisceau principal (B1) de traverser l'échantillon dans une première direction (+z/-z); au moins une paire d'électrodes (11) disposées mutuellement opposées l'une à l'autre de chaque côté de la chambre (1), qui sont configurées pour exposer l'échantillon à un champ électrique; et un combineur de faisceaux (30) configuré et positionné de façon appropriée pour guider le faisceau principal (B1) vers la caméra numérique (2) après que le faisceau a traversé la chambre (1), et pour guider le faisceau de référence (BR) vers la caméra numérique (2) une fois qu'il l'a traversé de façon à se qu'il déplace en coïncidence avec le faisceau principal (B1). L'appareil (100) doit être utilisé pour calculer le changement de transmission de lumière provoqué par différentes intensités de champ électrique à appliquer par la paire d'électrodes (11) sur celui-ci.

CLAIM 1. A phase shift-based interferometric microscope apparatus (100), comprising; a digital camera (2); a beam source (21); a beam splitter (22) that splits a beam (B) emitted from the beam source (21) into two parts, a main beam (B1) and an equivalent phase-shifted reference beam (BR); a chamber (1) for placing a sample therein, which is configured to allow the main beam (B1) to pass through the sample in a first direction (+z/-z); at least a pair of electrodes (11) disposed mutually opposite to each other on either side of the chamber (1), which are configured to expose the sample to an electric field; and a beam combiner (30) suitably configured and positioned to guide the main beam (B1) to the digital camera (2) after it has passed through the chamber (1), and to guide the reference beam (BR) to the digital camera (2) after having been passed therethrough so as to travel coincident with the main beam (B1).

N8710

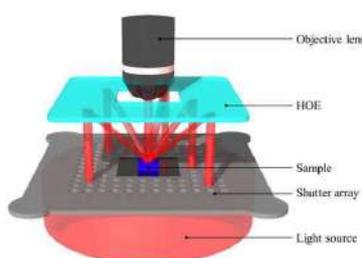
KR20220077627

Priority Date: 02/12/2020

HICS

TICOGRAPHIC HOLOGRAPHIC MICROSCOPY

A tychographic holographic microscopy technique is disclosed.



N8724

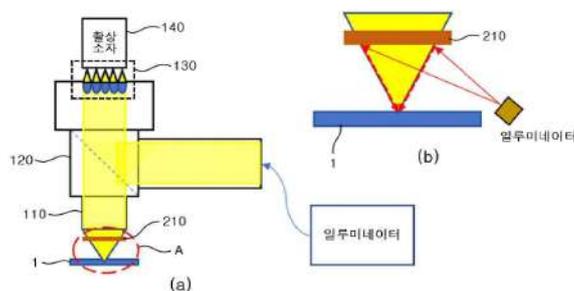
KR20220069253
Priority Date: 20/11/2020

CHUNGBUK NATIONAL UNIVERSITY INDUSTRY ACADEMIC
COOPERATION FOUNDATION

LIGHTING METER SYSTEM FOR INTEGRATED IMAGE MICROSCOPY

Disclosed herein is an illumination system system for an integrated image microscope. the illumination system includes an objective lens for enlarging an image of a sample by a predetermined magnification, a beam splitter for splitting a beam incident through an optical fiber and allowing reflected light to be incident on the objective lens, A microlens array configured to generate an integrated image of a sample, an imaging device configured to capture an image passing through the microlens array, and a hologram optical device disposed between the objective lens and the sample and configured to irradiate the sample with a light source transmitted through the objective lens. According to the present invention, an illumination system system for an integrated image microscope using a holographic optical element is proposed, thereby remarkably improving the amount of light.

CLAIM 1. An imaging apparatus comprising: an objective lens for enlarging an image of a sample by a set magnification; a beam splitter for splitting a beam incident through an optical fiber so that reflected light is incident on the objective lens; a beam splitter for splitting the beam incident on the optical fiber so that reflected light is incident on the objective lens, an illumination system system for an integrated image microscope, comprising: a microlens array for generating an integrated image of a sample; an image pickup device for photographing an image passing through the microlens array; and a hologram optical device located between the objective lens and the sample and configured to irradiate the sample with a light source transmitted through the objective lens.



N8743

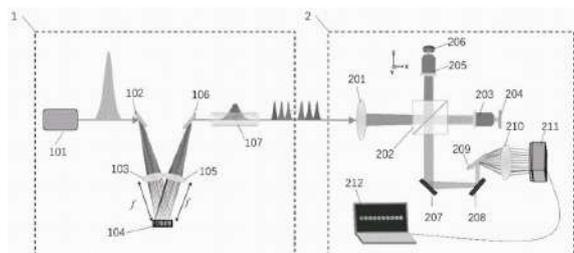
CN114624981
Priority Date: 17/02/2022

NANJING NORMAL UNIVERSITY

ULTRAFAST HOLOGRAPHIC MICROSCOPIC IMAGING METHOD AND SYSTEM BASED ON TIME BROADENING

The invention discloses an ultrafast holographic microscopic imaging method based on time broadening and a system thereof, wherein the system comprises: the ultra-short pulse sequence generating module is used for generating a multi-wavelength chirp pulse sequence for illumination; the holographic imaging spectrometer is used for generating a spatially discrete multi-wavelength off-axis hologram sequence according to the multi-wavelength chirped pulse sequence; a hologram reconstruction module for reconstructing the sequence of multi-wavelength off-axis holograms to obtain a sequence of quantitative optical thicknesses of the sample. The invention reconstructs a multi-wavelength hologram sequence generated by a holographic imaging spectrometer to obtain a phase sequence, and then obtains a quantitative sample optical thickness sequence by taking the wavelength of each sub-pulse of the multi-wavelength chirped pulse sequence as a standard, thereby realizing three-dimensional space imaging with ultra-short time resolution and ultra-fast imaging speed under the condition of single exposure, solving the problem that the existing method can only obtain two-dimensional space information of a detection target, and greatly improving the imaging effect.

CLAIM 1. An ultrafast holographic microscopic imaging system based on time broadening, comprising: the ultra-short pulse sequence generating module is used for generating a multi-wavelength chirp pulse sequence for illumination; the holographic imaging spectrometer is used for generating a spatially discrete multi-wavelength off-axis hologram sequence according to the multi-wavelength chirped pulse sequence; a hologram reconstruction module for reconstructing the sequence of multi-wavelength off-axis holograms to obtain a sequence of quantitative optical thicknesses of the sample.



N8752

CN114577124

Priority Date: 09/03/2022

CHANGZHOU INSTITUTE OF MECHATRONIC TECHNOLOGY

CORRESPONDING PHASE RESTORATION METHOD OF DUAL-WAVELENGTH COAXIAL FOUR-STEP PHASE SHIFT DIGITAL HOLOGRAM

The invention relates to the technical field of image processing, in particular to a corresponding phase reduction method of dual-wavelength coaxial four-step phase shift digital holography, which comprises the steps of extracting phase information of a second wavelength by utilizing a phase shift technology and subtraction operation and combining trigonometric function characteristics based on four dual-wavelength coaxial phase shift holograms with positive and negative 2π specific phase shifts; then, carrying out Fourier forward transformation, frequency filtering and Fourier inverse transformation on the hologram, and directly extracting a direct current item to restore phase information of a first wavelength; finally, subtracting the wrapped phase images of each wavelength, and solving an equivalent wavelength phase image in a certain scale range so as to solve the microscopic morphology or thickness of the phase object. The invention can fully utilize the space bandwidth of the CCD and increase the stability and accuracy of phase imaging; based on four dual-wavelength coaxial phase shift holograms, the phase reduction processing efficiency can be improved.

CLAIM 1. A corresponding phase reduction method of dual-wavelength coaxial four-step phase shift digital holography is characterized by comprising the following steps: s1, collecting four dual-wavelength coaxial phase shift holograms; s2, for separating wavelength λ_1 and λ_2 The two-wavelength interference information is combined by a $\pm 2\pi$ phase shift technology and subtraction operation, and after x and y space coordinates are omitted, a dual-wavelength coaxial hologram without a background intensity item is calculated; s3, calculating the wavelength only including the wavelength λ_2 Extracting the wavelength λ_1 from the hologram λ_2 Wrapped phase diagram of S4 obtaining the wavelength λ_1 from the dual-wavelength coaxial phase shift hologram λ_2 The phase image of (a); separate out the wavelength λ_2 Interference information of (a); s5, extracting the direct current term a and obtaining the wavelength λ_1 Extracting a direct current term a by using a frequency filtering function method in a frequency domain; s6, extracting wavelength λ_1 Wrapped phase diagram of And S7, solving the equivalent wavelength phase, and solving the thickness or three-dimensional microscopic morphology of the phase object.

N8757

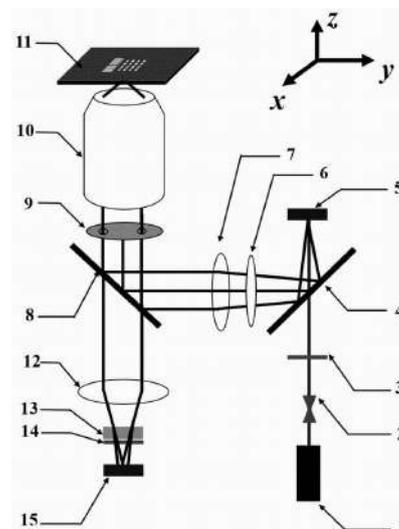
CN114544552

Priority Date: 16/11/2021

NORTHWESTERN POLYTECHNICAL UNIVERSITY

METHOD FOR IMPROVING SURFACE PLASMA RESONANCE HOLOGRAPHIC MICROSCOPY IMAGE QUALITY

The invention discloses a method for improving the imaging quality of Surface Plasma Resonance Holographic Microscopy (SPRHM). The method comprises the steps of generating two parallel light symmetric excitation Surface Plasmon Resonance (SPR) by using a spatial light modulator, recording a composite hologram generated by four-beam interference by using a polarization-angle multiplexing technology, performing discrete Fourier transform on the hologram by using a computer to obtain a frequency spectrum image of the hologram, performing frequency-selective reconstruction to obtain an SPR intensity image with improved image quality, simultaneously obtaining two single-beam illumination SPR phase images by the frequency-selective reconstruction, and synthesizing the two phase images by using a weighted average filtering algorithm to finally obtain the SPR phase image with improved image quality. Compared with the traditional SPRHM, the disclosed method can effectively improve the signal-to-noise ratio of the image and improve the image quality of the SPR intensity and phase image.



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PATENT REFERENCE – See the table at the end of this document

N8684

WO2022124705

Priority Date: 11/12/2020

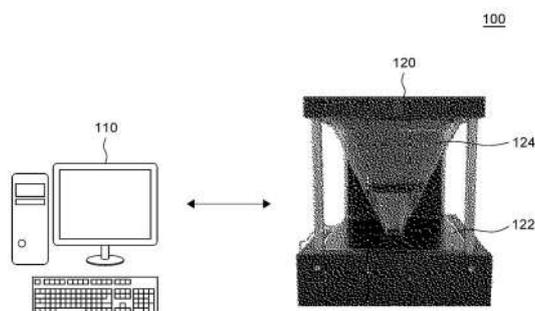
**GACHON UNIVERSITY OF INDUSTRY ACADEMIC COOPERATION
FOUNDATION | GIL MEDICAL FOUNDATION**

APPARATUS AND METHOD FOR PROVIDING MEDICAL IMAGE-BASED HOLOGRAM

Provided are an apparatus and a method for providing a medical image-based hologram according to an embodiment of the present invention. The apparatus is configured to: obtain a medical image generated by capturing a target site of an examinee; obtain a target site and suspected lesion site prediction result data from the medical image by using an artificial neural network model trained to predict a target site and a suspected lesion site suspected of a lesion in the target site on the basis of the obtained medical image; generate a three-dimensional image representing the target site and the suspected lesion site on the basis of the result data; generate a hologram image used for generating a hologram by using the generated three-dimensional image; and provide the generated hologram image to a hologram device so that the hologram device generates a hologram.

APPAREIL ET PROCÉDÉ POUR FOURNIR UN HOLOGRAMME BASÉ SUR UNE IMAGE MÉDICALE

La présente invention concerne, selon un mode de réalisation, un appareil et un procédé qui permettent de fournir un hologramme basé sur une image médicale. L'appareil est configuré pour : obtenir une image médicale générée par la capture d'un site cible d'un patient ; obtenir des données de résultat de prédiction de site cible et de site de lésion suspecté à partir de l'image médicale à l'aide d'un modèle de réseau neuronal artificiel entraîné à prédire un site cible et un site de lésion suspecté d'une lésion dans le site cible sur la base de l'image médicale obtenue ; générer une image tridimensionnelle représentant le site cible et le site de lésion suspecté sur la base des données de résultat ; générer une image holographique utilisée pour générer un hologramme à l'aide de l'image tridimensionnelle générée ; et fournir l'image holographique générée à un dispositif holographique de sorte que le dispositif holographique génère un hologramme.



CLAIM 1. A communication unit configured to transmit and receive data; and A control unit configured to connect with the communication unit, Wherein the control unit is configured to: Acquire a medical image obtained by photographing a target portion of a subject through the communication unit, Obtain data resulting from predicting the target site and the suspected lesion area from the medical image using an artificial neural network model learned to predict the target site and a suspected lesion area suspected of lesions in the target site based on the obtained medical image, Generate a three-dimensional image indicating the target portion and the suspected lesion area based on the resultant data, Generate an image for a hologram used to generate a hologram using the generated three-dimensional image; And provide the generated image for hologram to the hologram device such that the hologram device generates the hologram.

N8689

WO2022124433

Priority Date: 08/12/2020

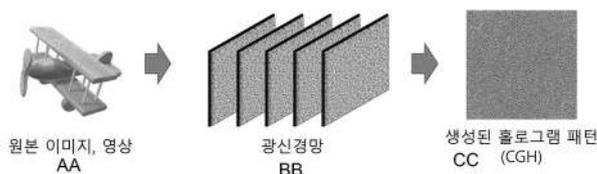
KOREA ELECTRONICS TECHNOLOGY INSTITUTE

DEVICE FOR GENERATING HOLOGRAMS IN REAL TIME USING OPTICAL NEURAL NETWORK

Provided is a device for generating holograms in real time using an optical neural network. A hologram generation method according to an embodiment of the present invention generates a hologram fringe pattern by using an optical neural network, and generates a hologram video from the generated hologram fringe pattern by using an optical element. Accordingly, the speed of the hologram fringe pattern can be improved by replacing existing numerical calculations with physical light propagation, and weight reduction/miniaturization/modularization of holographic display modules is facilitated by replacing existing calculation devices with the optical neural network.

DISPOSITIF DE GÉNÉRATION D'HOLOGRAMMES EN TEMPS RÉEL À L'AIDE D'UN RÉSEAU NEURONAL OPTIQUE

L'invention concerne un dispositif permettant de générer des hologrammes en temps réel à l'aide d'un réseau neuronal optique. Selon un mode de réalisation de la présente invention, un procédé de génération d'hologramme génère un motif de frange d'hologramme à l'aide d'un réseau neuronal optique, puis génère une vidéo d'hologramme à partir du motif de frange d'hologramme généré à l'aide d'un élément optique. Par conséquent, la vitesse du motif de frange d'hologramme peut être améliorée en remplaçant des calculs numériques existants par une propagation de lumière physique, et la réduction/miniaturisation/modularisation de poids des modules d'affichage holographique est facilitée en remplaçant les dispositifs de calcul existants par le réseau neuronal optique.



AA ... Original image, video
BB ... Optical neural network
CC ... Generated hologram pattern (CGH)

CLAIM 1. Generating a hologram fringe pattern using an optical neural network; and A hologram generation method, comprising: generating a hologram image from a hologram fringe pattern generated by using an optical element.

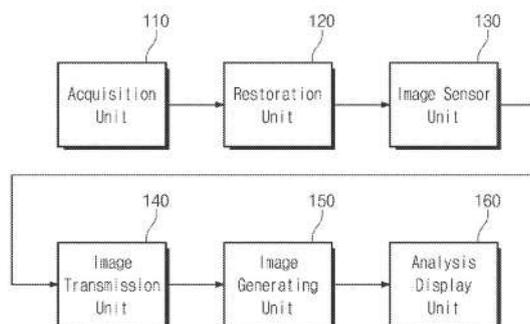
N8699

US20220179359
Priority Date: 08/12/2020

ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE |
MVTECH

APPARATUS FOR ANALYZING DEPTH OF HOLOGRAPHIC IMAGE AND ANALYZING METHOD THEREOF

Disclosed is an apparatus of analyzing a depth of a holographic image according to the present disclosure, which includes an acquisition unit that acquires a hologram, a restoration unit that restores a three-dimensional holographic image by irradiating the hologram with a light source, an image sensing unit that senses a depth information image of the restored holographic image, and an analysis display unit that analyzes a depth quality of the holographic image, based on the sensed depth information image, and the image sensing unit uses a lensless type of photosensor.



CLAIM 1. An apparatus of analyzing a depth of a holographic image comprising: an acquisition unit configured to acquire a hologram; a restoration unit configured to restore a three-dimensional holographic image by irradiating the hologram with a light source; an image sensing unit configured to sense a depth information image of the restored holographic image; and an analysis display unit configured to analyze a depth quality of the holographic image, based on the sensed depth information image, and wherein the image sensing unit uses a lensless type of photosensor.

N8705

RU-211189
Priority Date: 01/02/2022

NAUCHNO PROIZVODSTVENNOE OBEDINENIE GOSUDARSTVENNYJ
INSTITUT PRIKLADNOJ OPTIKI

HOLOGRAPHIC DEVICE FOR MONITORING THE FORM OF ASPHERICAL OPTICAL SURFACES

A useful model can be used to control the form of aspherical optical surfaces (FRA) of both monolithic and composite aspherical mirrors and lenses. The holographic device contains a laser light source, a light beam extender, a light blower to divide the light beams into the measuring and support channels, and a combination of the light beams of the measuring and support channels and the direction of the image recording and processing channel. The support channel contains a flat mirror, and the measuring channel contains the center synthesized hologram of the hologram (OSSE) with the working surface of the coaxial ring diffraction structure and the lens forming a monochromatic point source located on the optical axis at a specified distance from the top of the control of the FRA. The GSSE is a hologram reflector, a reflector with a central hole, with the coaxial ring diffraction structure of the OSSSE implemented from the recovery condition by the hologram of the diffracted retro-reflective beam, identical to the congruence of the light beams reflected from the control of the FRA when it illuminates its monochromatum a point source of light. Technical result: Increase the sensitivity of the control of the FRA form by two-fold reflection from the AOP-controlled beam in the measuring channel, excluding the GSE distortion of the type of interference and shadow paintings. 5 p. m., 9 il.

CLAIM 1. The holographic device for the control of the shape of the aspherical optical surfaces, containing a laser light source, an extender of the beam, a light blower to divide the light beams into the measuring and support channels, and the coupling of the light beams of the measuring and support channels and the direction of the transmission and processing of the image, with the support channel containing a flat mirror and the measuring channel containing the center synthesized golds The photometric optical element (OSSSE) with the working surface of the coaxial ring diffraction structure and the lens forming a monochromatic point source located on the optical axis at a specified distance from the top of the controlled aspherical optical surface, distinguishing the GSSE from a hologram reflecting autocollimation A center with a central hole, with the current radius of the Soose ring diffraction structure is calculated according to condition

N8728

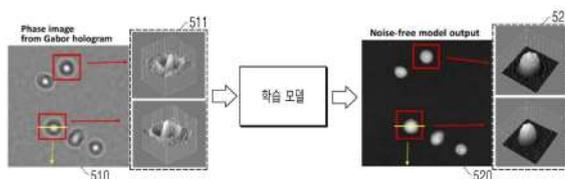
KR102410380

Priority Date: 08/04/2021

DAEGU GYEONGBUK INSTITUTE OF SCIENCE & TECHNOLOGY

APPARATUS AND METHOD FOR RECOVERING NOISE-FREE PHASE IMAGES FROM GABOR HOLOGRAMS BASED ON DEEP LEARNING

A phase image generation method of a computing device according to an embodiment of the present disclosure is a phase image generation method for performing at least a portion of each step by a processor, A method of processing a Garbor hologram, comprising: receiving a Garbor hologram; and inputting a first phase image recovered from the Garbor hologram into a learning model based on Machine Learning to generate a second phase image from which noise has been removed, The learning model may include a generative model learned based on a conditional generative adversarial network (cGAN) using as a label a phase image recovered from an off-axis digital hologram and denoised from the off-axis digital hologram.



CLAIM 1. A method of generating a phase image by a processor of a computing device performing at least part of each step, the method comprising: receiving a Garbor hologram; And generating a second phase image from which noise is removed by inputting a first phase image reconstructed from the Gabor hologram into a machine-learning-based learning model, Wherein the learning model comprises a generative model learned based on a conditional generative adversarial network (cGAN) using, as a label, a phase image recovered from an off-axis digital hologram and denoised from the off-axis digital hologram.

N8731

EP4012617

Priority Date: 11/12/2020

UPONOR

FLUID QUALITY MONITORING

It is an objective to provide a fluid quality measurement device. According to an embodiment, a fluid quality measurement device is configured to: obtain a plurality of holograms, wherein each hologram in the plurality of holograms represents a microscopic object in a fluid sample; produce a latent space representation of each hologram using a trained autoencoder neural network; assign each hologram in the plurality of holograms to a class based on the latent space representation of the hologram; and produce a fluid sample fingerprint based on the assignment of the plurality of holograms into the plurality of classes.

SURVEILLANCE DE QUALITÉ DE FLUIDE

L'invention vise à fournir un dispositif de mesure de qualité de fluide. Selon un mode de réalisation, un dispositif de mesure de qualité de fluide est conçu pour : obtenir une pluralité d'hologrammes, chaque hologramme dans la pluralité d'hologrammes représentant un objet microscopique dans un échantillon de fluide; produire une représentation d'espace latent de chaque hologramme à l'aide d'un réseau neuronal autoencodeur entraîné; signer chaque hologramme dans la pluralité d'hologrammes à une classe sur la base de la représentation d'espace latent de l'hologramme; et produire une empreinte d'échantillon de fluide sur la base de l'attribution de la pluralité de hologrammes dans la pluralité de classes.

CLAIM 1. A fluid quality measurement device (100), comprising: at least one processor (101); and at least one memory (102) including computer program code; the at least one memory (102) and the computer program code configured to, with the at least one processor (101), cause the fluid quality measurement device (100) to: obtain a plurality of holograms (204), wherein each hologram in the plurality of holograms (204) represents a microscopic object (303) in a fluid sample (304); produce a latent space representation (701) of each hologram in the plurality of holograms (204) using a trained autoencoder neural network (601); assign each hologram in the plurality of holograms (204) to a class in a plurality of classes (1000) based on the latent space representation of the hologram, wherein each class in the plurality of classes (1000) corresponds to a partition (703) of the latent space (700); and produce a fluid sample fingerprint (205) based on the assignment of the plurality of holograms (204) into the plurality of classes (1000), wherein the fluid sample fingerprint (205) comprises an indication of a concentration of microscopic objects (303) in the fluid sample (304) for each class in the plurality of classes (1000).

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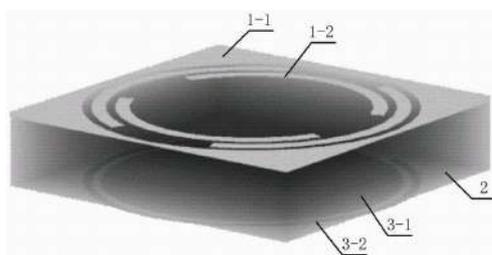
CN114583466

Priority Date: 29/03/2022

QIQIHAR UNIVERSITY

SINGLE-LAYER CODING SUPER-SURFACE UNIT FOR FOUR-CHANNEL HOLOGRAPHIC IMAGING

A single-layer coding super-surface unit for four-channel holographic imaging relates to the technical field of electromagnetic structures. The invention aims to solve the problems that the existing super-surface has high complexity, wastes electromagnetic resources, can only realize double functions and is not beneficial to the function diversification development of electromagnetic equipment. The invention relates to a single-layer coding super-surface unit for four-channel holographic imaging, which comprises a top layer, a dielectric layer and a bottom layer which are sequentially stacked, wherein the top layer is a rectangular metal sheet with a circular hole at the center, two split ring resonators which are concentrically nested with the circular hole are arranged in the circular hole, the bottom layer comprises a circular metal sheet and a C-shaped metal ring, the circular metal sheet is positioned in the C-shaped metal ring and is concentrically arranged with the C-shaped metal ring, and the circle center of the circular metal sheet in the bottom layer is opposite to the circle center of the circular hole in the top layer. The invention realizes the electromagnetic reconstruction of four different images in the same coding super surface, and is suitable for multi-channel information processing and multifunctional imaging systems.



CLAIM 1. A single-layer coding super-surface unit for four-channel holographic imaging comprises a top layer, a dielectric layer (2) and a bottom layer which are sequentially stacked, the top layer is a rectangular metal sheet (1-1) with a round hole at the center, two split ring resonators (1-2) which are concentrically nested with the round hole are arranged in the round hole, the bottom layer comprises a circular metal sheet (3-1) and a C-shaped metal ring (3-2), the circular metal sheet (3-1) is positioned in the C-shaped metal ring (3-2) and the circular metal sheet and the C-shaped metal ring are concentrically arranged, the circle center of the circular metal sheet (3-1) in the bottom layer is opposite to the circle center of the circular hole in the top layer.

N8756

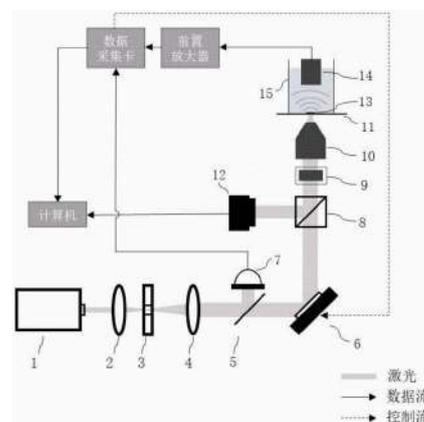
CN114544776

Priority Date: 15/02/2022

NANJING UNIVERSITY

SUPER-RESOLUTION ULTRASONIC HOLOGRAPHIC GHOST IMAGING DEVICE BASED ON PHOTOACOUSTIC WAVE AND IMAGING METHOD THEREOF

The invention discloses a super-resolution ultrasonic holographic ghost imaging device based on photoacoustic wave and an imaging method thereof, the device comprises a collimated light source, a filtering beam expanding light path, a spatial light modulator, a projection imaging light path, a photoacoustic converter, a water tank which is positioned above the photoacoustic converter, presses a sample and is blocked by a film, and an acoustic wave detection acquisition system, wherein the collimated light source emits parallel light, the diameter of the parallel light is amplified through the filtering beam expanding light path and spatial filtering is carried out, the light beam with the spatial coding is modulated into a light beam with the spatial coding through a spatial light modulator, the light beam with the spatial coding irradiates a photoacoustic conversion body through a projection imaging light path to generate sound waves with corresponding intensity distribution, the sound waves change in amplitude and phase after passing through a sample, then enter a water tank through a film to continue to propagate and be received, and a hologram of which the transmissivity and the phase of the sound waves change after passing through the sample is reconstructed by a sound wave detection and collection system. The invention can image the ultrasonic hologram of the sample so as to comprehensively understand the structural information of the sample, such as the components, the appearance and the like.



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HOLOGRAMS - 18 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P35107	WO	2022112708	02/06/2022	IDEMIA FRANCE	FR	30/11/2020	FR202000012409	WO2022112708 FR3116761	PERSONALISED IMAGE FORMED FROM A METAL LAYER AND A LENTICULAR ARRAY	OVD - Microlens
P35117	US	20220169187	02/06/2022	PAPER ADAM SCOTT WISE MALISSA ANN	US	01/12/2020	US2020063120121	US20220169187	SOFT IDENTIFICATION PLATE AND METHOD THEREFOR	
P35159	DE	102020133826	23/06/2022	BUNDESDRUCKEREI	DE	16/12/2020	DE202010133826	DE102020133826	METHOD FOR PRODUCING A PRINTED IMAGE ON A DATA CARRIER FOR A SECURITY OR VALUABLE DOCUMENT	Passport
P35163	CN	216793159	21/06/2022	BEIJING KAIKUN ZHAOTONG ANTI COUNTERFEITING TECHNOLOGY	CN	22/12/2021	CN2021003253604	CN216793159U	VARIABLE HOLOGRAPHIC ANTI-COUNTERFEITING MARK	
P35164	CN	216772681	17/06/2022	ANHUI ZIJIANG ALUMINIUM SPRAY ENVIRONMENTAL PROT MATERIAL SHANGHAI ZIJIANG METALLIZATION ENV PROT MAT	CN	22/01/2022	CN2022000179794	CN216772681U	HIGH-FLATNESS FRONT-PASTED LASER HOLOGRAPHIC ADHESIVE STICKER LABEL	
P35177	CN	216697638	07/06/2022	SHENZHEN KUN HONG TECHNOLOGY	CN	12/11/2021	CN2021002778151	CN216697638U	COLD-IRONING COLOR-CHANGING FILM	
P35180	CN	216683807	07/06/2022	JIANGSU TAIJIA NEW MATERIAL TECHNOLOGY	CN	31/12/2021	CN2021003412814	CN216683807U	HOLOGRAPHIC POSITIONING-BASED ANTI-COUNTERFEITING HOT STAMPING FILM	
P35187	CN	216611998	27/05/2022	ANHUI ZIJIANG ALUMINIUM SPRAY ENVIRONMENTAL PROT MATERIAL SHANGHAI ZIJIANG METALLIZATION ENV PROT MAT	CN	23/12/2021	CN2021003272298	CN216611998U	LASER HOLOGRAPHIC ANTI-COUNTERFEITING PACKAGING BOX	
P35188	CN	216610682	27/05/2022	SHENZHEN KUN HONG TECHNOLOGY	CN	12/11/2021	CN2021002798268	CN216610682U	TRANSPARENT MEDIUM COLOR-CHANGING HOT STAMPING FILM	
P35190	CN	114647173	21/06/2022	BEIJING UNIVERSITY OF TECHNOLOGY	CN	28/01/2022	CN2022000106043	CN114647173	VECTOR PHASE SUPER-SURFACE BASED METHOD FOR CUSTOMIZING EFFICIENT POLARIZATION HOLOGRAPHIC TRANSFORMATION AND MULTIPLEXING	
P35193	CN	114637176	17/06/2022	SHENZHEN SHENDA AURORA TECHNOLOGY	CN	11/03/2022	CN2022000241699	CN114637176	PREPARATION METHOD OF FRESNEL HOLOGRAM REPRODUCED BY DOUBLE-DISSIMILAR-IMAGE INCOHERENT LIGHT	
P35195	CN	114633575	17/06/2022	SUZHOU TIANZHONG PRINTING	CN	09/02/2022	CN2022000121835	CN114633575	HOLOGRAPHIC ANTI-COUNTERFEITING PRINTING PAPERBOARD AND PRINTING PROCESS THEREOF	
P35199	CN	114627105	14/06/2022	WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT	CN	31/03/2022	CN2022000344012	CN114627105	METHOD AND DEVICE FOR GENERATING EMBOSSED OPTICAL IMAGE, ELECTRONIC DEVICE AND STORAGE MEDIUM	
P35202	CN	114621478	14/06/2022	SHANGHAI TECHSUN PACKING MATERIALS SHANGHAI TIANCHEN MICRO NANO TECHNOLOGY	CN	09/12/2020	CN2020001448424	CN114621478	COMPOSITE IRON FILM, PREPARATION METHOD THEREOF AND COMPOSITE IRON ADOPTING COMPOSITE IRON FILM	
P35206	CN	114605453	10/06/2022	HUBEI YIMEITE QUANXI TECHNOLOGY	CN	23/03/2022	CN2022000289015	CN114605453	BODIPLY FLUORESCENT TONER WITH AIE EFFECT AND APPLICATION THEREOF IN FLUORESCENT ANTI-COUNTERFEITING FILM	
P35217	CN	114573851	03/06/2022	JIANGSU HUAXIN NEW MAT	CN	24/03/2022	CN2022000294295	CN114573851	PROTECTION FILM FOR PETG CARD FOR UNIONPAY HOLOGRAPHIC LABEL HOT STAMPING AND PREPARATION METHOD THEREOF	
P35219	CN	114571836	03/06/2022	ZHEJIANG YAXIN PACKAGING MAT	CN	21/01/2022	CN2022000069344	CN114571836	METHOD FOR MANUFACTURING MICRO-NANO GOLD STAMPING PLATE	
P35224	CN	114550572	27/05/2022	BEIJING PANPASS INFORMATION TECHNOLOGY	CN	24/11/2020	CN2020001328153	CN114550572	COMPOSITE ANTI-COUNTERFEITING MARK AND PREPARATION METHOD THEREOF	

VARIOUS OPTICAL EFFECTS - 39 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P35090	WO	2022131238	23/06/2022	DAI NIPPON PRINTING	JP	17/12/2020	JP2020000209318	WO2022131238	INFORMATION RECORDED MATERIAL, AND READING DEVICE, PROGRAM, READING METHOD, AND SYSTEM FOR INFORMATION RECORDED MATERIAL	
P35092	WO	2022130346	23/06/2022	NANOTECH SECURITY	US	18/12/2020	US2020063127638	WO2022130346	OPTICAL DIFFRACTIVE DISPLAY	

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VARIOUS OPTICAL EFFECTS - 39 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P35095	WO	2022128152	23/06/2022	GIESECKE & DEVRIENT CURRENCY TECHNOLOGY	DE	17/12/2020	DE202010007728	WO2022128152 DE102020007728	DATA CARRIER HAVING A COMPOSITE SUBSTRATE HAVING A SECURITY ELEMENT ARRANGED IN A SEE-THROUGH REGION	
P35097	WO	2022126270	23/06/2022	BANK OF CANADA GOVERNING COUNCIL OF THE UNIVERSITY OF TORONTO	US	17/12/2020	US2020063126741	WO2022126270	OPTICAL DEVICES COMPRISING MICROLENSSES AND LASER-FABRICATED PATTERNS OR OTHER STRUCTURES, THEIR MANUFACTURE AND USE	Micro lens
P35098	WO	2022124975	16/06/2022	ROLLING OPTICS INNOVATION	SE	11/12/2020	SE2020000051448	WO2022124975	MANUFACTURING OF SYNTHETIC IMAGES WITH CONTINUOUS ANIMATION	Micro lens
P35100	WO	2022123241	16/06/2022	DE LA RUE INTERNATIONAL	GB	09/12/2020	GB2020000019383	WO2022123241 GB202019383 GB202117708	SECURITY DEVICE AND METHOD OF MANUFACTURE THEREOF	Micro lens
P35106	WO	2022114295	02/06/2022	NANO BRICK	WO	27/11/2020	WO2020170000121	WO2022114295	METHOD FOR MANUFACTURING APPARATUS FOR PREVENTING FORGING AND FALSIFICATION	
P35107	WO	2022112708	02/06/2022	IDEMIA FRANCE	FR	30/11/2020	FR2020000012409	WO2022112708 FR3116761	PERSONALISED IMAGE FORMED FROM A METAL LAYER AND A LENTICULAR ARRAY	Hologram - Micro lens
P35109	WO	2022112209	02/06/2022	FRAUNHOFER	DE	26/11/2020	DE202010131382	WO2022112209 DE102020131382	METHOD FOR LABELLING PRODUCTS WITH AN OPTICAL SECURITY FEATURE WITH A TEMPORAL DIMENSION	
P35110	WO	2022110878	02/06/2022	CHINA BANKNOTE PRINTING & MINT ZHONGCHAO SPECIAL SECURITY TECHNOLOGY	CN	24/11/2020	CN2020001332152	WO2022110878 CN114537015	OPTICAL ANTI-COUNTERFEITING ELEMENT AND PRODUCT	Micro lens
P35115	US	20220172013	02/06/2022	THALES DIS	US	27/11/2020	US2020017105721	US20220172013 WO2022112263	DATA CARRIER WITH TAMPER-INDICATION	
P35120	KR	20220075917	08/06/2022	KOREA SECURITY PRINTING & MINTING	KR	30/11/2020	KR2020000164535	KR20220075917	CARD WITH SECURITY ELEMENT IDENTIFICATION FUNCTION WITH IMPROVED VISIBILITY	
P35122	KR	20220072043	02/06/2022	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	23/11/2020	KR2020000158188	KR20220072043	FORGERY PREVENTION SHEET AND METHOD FOR PRODUCING THE SAME	
P35123	KR	20220068453	26/05/2022	SOGANG UNIVERSITY INDUSTRY UNIVERSITY COOPERATION FOUNDATION	KR	19/11/2020	KR2020000155246	KR20220068453	IDENTIFICATION LABEL STRUCTURE USING PHOTOCRYSTAL STRUCTURE	
P35128	KR	102403987	31/05/2022	NANO MECCA	KR	16/03/2022	KR2022000032799	KR102403987	TRANSMISSION TYPE DIFFRACTIVE OPTICAL ELEMENT AND METHOD FOR MANUFACTURING THE SAME	
P35129	KR	102403984	31/05/2022	NANO MECCA	KR	16/03/2022	KR2022000032798	KR102403984	REFLECTIVE COUNTERFEIT PREVENTION FILM AND METHOD FOR PRODUCING THE SAME	
P35130	KR	102399615	17/05/2022	NANO MECCA	KR	19/07/2021	KR2021000094501	KR102399615	DIFFRACTION OPTICAL ELEMENTS AND MANUFACTURING METHOD FOR THE SAME	
P35131	JP	2022088817	15/06/2022	NATIONAL PRINTING BUREAU	JP	03/12/2020	JP2020000200873	JP2022088817	FUNCTIONAL STREAK-PRINTED MATERIAL	
P35133	JP	2022087364	13/06/2022	NATIONAL PRINTING BUREAU	JP	01/12/2020	JP2020000199251	JP2022087364	ANTI-COUNTERFEITING MEDIA	
P35146	EP	4015231	22/06/2022	HUECK FOLIEN	EP	18/12/2020	EP2020000215526	EP4015231	SECURITY ELEMENT WITH AN OPTICAL EFFECT LAYER	
P35147	EP	4015230	22/06/2022	HUECK FOLIEN	EP	18/12/2020	EP2020000215525	EP4015230 WO2022129207	SECURITY ELEMENT WITH REFLECTIVE AND STATIC FEATURES	
P35149	EP	4015228	22/06/2022	IDEMIA FRANCE	FR	27/11/2020	FR2020000012277	FR3116759 EP4015228	METHOD OF MANUFACTURING A SECURITY DEVICE AND ASSOCIATED SECURITY DEVICE	Micro lens
P35154	EP	4005815	01/06/2022	BUNDESDRUCKEREI	DE	26/11/2020	DE202010131420	EP4005815 DE102020131420	DOCUMENT, METHOD OF PRODUCING A DOCUMENT AND READER DEVICE FOR THE DETECTION OF AN IMPRINT	Passport
P35167	CN	216765430	17/06/2022	ANHUI ZIJIANG ALUMINIUM SPRAY ENVIRONMENTAL PROT MATERIAL SHANGHAI ZIJIANG METALLIZATION ENV PROT MAT	CN	22/01/2022	CN2022000179622	CN216765430U	ACID-RESISTANT AND ALCOHOL-RESISTANT LASER ENVIRONMENT-FRIENDLY OIL-PROOF FOOD PACKAGING TRANSFER PAPER	
P35179	CN	216683824	07/06/2022	GUIZHOU JINJIA NEW PACKAGING MATERIAL	CN	31/12/2021	CN2021003422687	CN216683824U	LASER DIGITAL JET PRINTING STRUCTURE	

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VARIOUS OPTICAL EFFECTS - 39 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P35191	CN	114639326	17/06/2022	SVG TECHNOLOGY	CN	20/05/2022	CN2022000548852	CN114639326	PRECISE MICROSTRUCTURE PRESENTING THREE-DIMENSIONAL RELIEF IMAGE AND PREPARATION METHOD AND APPLICATION THEREOF	
P35192	CN	114639300	17/06/2022	WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT	CN	02/03/2022	CN2022000200746	CN114639300	OPTICALLY VARIABLE ANTI-COUNTERFEITING FILM, PREPARATION METHOD THEREOF AND ANTI-COUNTERFEITING PRODUCT	
P35194	CN	114637164	17/06/2022	SVG TECHNOLOGY	CN	15/12/2020	CN2020001476862	CN114637164	METHOD FOR MANUFACTURING LATENT IMAGE ANTI-COUNTERFEITING DEVICE	
P35196	CN	114633574	17/06/2022	PENG LIANG	CN	24/03/2022	CN2022000294742	CN114633574	SAFETY LINE OR STRIP WITH DYNAMIC VISUAL THREE-DIMENSIONAL EFFECT	
P35197	CN	114633572	17/06/2022	WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT	CN	02/03/2022	CN2022000200750	CN114633572	OPTICALLY VARIABLE ANTI-COUNTERFEITING SCRAPING INK, SCRAPING INK PRODUCT AND PREPARATION METHOD THEREOF	
P35198	CN	114633026	17/06/2022	SVG TECHNOLOGY	CN	15/12/2020	CN2020001476848	CN114633026	ANTI-COUNTERFEITING MEMBRANE AND MANUFACTURING METHOD THEREOF	
P35203	CN	114619784	14/06/2022	CHINA BANKNOTE PRINTING & MINTING GROUP CHINA BANKNOTE PRINTING TECHNOLOGY RESEARCH INSTITUTE	CN	21/01/2022	CN2022000073944	CN114619784	TRANSPARENT SECURITY ELEMENT, METHOD AND DEVICE FOR PRODUCING THE SAME, SECURITY ARTICLE, STORAGE MEDIUM	Passport
P35207	CN	114604019	10/06/2022	CHINA BANKNOTE PRINTING & MINT	CN	04/12/2020	CN2020001409921	CN114604019	SAFETY WIRE OR STRIP AND PREPARATION METHOD THEREOF	
P35210	CN	114590054	07/06/2022	CHINA BANKNOTE PRINTING & MINT	CN	04/12/2020	CN2020001414330	CN114590054	OPTICAL ANTI-COUNTERFEITING ELEMENT AND PREPARATION METHOD THEREOF	
P35211	CN	114590053	07/06/2022	CHINA BANKNOTE PRINTING & MINT	CN	04/12/2020	CN2020001413431	CN114590053	OPTICAL ANTI-COUNTERFEITING ELEMENT AND PREPARATION METHOD THEREOF	
P35212	CN	114590052	07/06/2022	CHINA BANKNOTE PRINTING & MINT	CN	04/12/2020	CN2020001407300	CN114590052	SAFETY THREAD OR STRIP AND PREPARATION METHOD THEREOF	
P35216	CN	114574028	03/06/2022	HUIZHOU HUAYANG OPTICAL TECHNOLOGY	CN	22/02/2022	CN2022000163181	CN114574028	ANTI-COUNTERFEITING PIGMENT COMPOSITION AND PREPARATION METHOD THEREOF	
P35226	CN	114539892	27/05/2022	CHINA BANKNOTE PRINTING & MINT	CN	25/11/2020	CN2020001338373	CN114539892	COATING COMPOSITION FOR PREPARING TRANSFER TYPE OPTICAL ANTI-COUNTERFEITING ELEMENT AND APPLICATION THEREOF, AND TRANSFER TYPE OPTICAL ANTI-COUNTERFEITING ELEMENT AND PREPARATION METHOD AND APPLICATION THEREOF	
P35228	CN	114537009	27/05/2022	CHINA BANKNOTE PRINTING & MINT	CN	25/11/2020	CN2020001342913	CN114537009	OPTICAL ANTI-COUNTERFEITING TRANSFER FILM AND PREPARATION METHOD AND APPLICATION THEREOF	

NON SECURITY HOLOGRAMS - 75 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N8683	WO	2022131452	23/06/2022	SEOUL NATIONAL UNIVERSITY R&DB FOUNDATION	KR	16/12/2020	KR2020000176605	WO2022131452	METHOD AND APPARATUS FOR GENERATING HOLOGRAM CAPABLE OF MULTI-DEPTH EXPRESSION	
N8684	WO	2022124705	16/06/2022	GACHON UNIVERSITY OF INDUSTRY ACADEMIC COOPERATION FOUNDATION GIL MEDICAL FOUNDATION	KR	11/12/2020	KR2020000173764	WO2022124705 KR20220083477	APPARATUS AND METHOD FOR PROVIDING MEDICAL IMAGE-BASED HOLOGRAM	
N8685	WO	2022124536	16/06/2022	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	08/12/2020	KR2020000170290	WO2022124536 KR20220080960	METHOD FOR PRINTING HOLOGRAM WITHOUT DISTORTION BY INTERFERENCE PATTERN GENERATED BY INTERNAL REFLECTION	
N8686	WO	2022124446	16/06/2022	KWANGWOON UNIVERSITY INDUSTRY ACADEMIC COLLABORATION FOUNDATION	KR	09/12/2020	KR2020000171264	WO2022124446 KR20220081601	FLOATING HOLOGRAM SYSTEM USING HOLOGRAPHIC OPTICAL ELEMENT	
N8687	WO	2022124437	16/06/2022	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	08/12/2020	KR2020000170017	WO2022124437 KR20220080830	HOLOGRAPHIC PRINTING METHOD IN WHICH CURING IS PERFORMED IN UNITS OF HOGELS	

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NON SECURITY HOLOGRAMS - 75 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N8688	WO	2022124434	16/06/2022	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	08/12/2020	KR2020000170010	WO2022124434 KR20220080826	HOGEL ALIGN DEVICE USING FLUORESCENT FILM AND WAVELENGTH FILTER	
N8689	WO	2022124433	16/06/2022	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	08/12/2020	KR2020000170007	WO2022124433 KR20220080825	DEVICE FOR GENERATING HOLOGRAMS IN REAL TIME USING OPTICAL NEURAL NETWORK	
N8690	WO	2022123065	16/06/2022	HOLTRA	SE	11/12/2020	SE2020000051450	WO2022123064 WO2022123065	METHOD AND ARRANGEMENT FOR HOLOGRAPHIC NANOPARTICLE TRACKING ANALYSIS (H-NTA) IN A DIGITAL HOLOGRAPHIC MICROSCOPE	
N8691	WO	2022119521	09/06/2022	YILDIZ TEKNİK UNIVERSİTESİ	TR	02/12/2020	TR202000019536	WO2022119521	ELECTRO-HOLOGRAPHIC MICROSCOPE SYSTEM CAPABLE OF DISTINGUISHING CELLS AND MICROORGANISMS BASED ON THE LIGHT TRANSMITTANCE	
N8692	WO	2022118997	09/06/2022	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	02/12/2020	KR2020000166175	WO2022118997 KR20220077346	COLOR HOLOGRAM PRINTING METHOD AND DEVICE USING HOLOGRAM MEDIUM LIGHT EFFICIENCY MAP	
N8693	WO	2022118996	09/06/2022	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	02/12/2020	KR2020000166174	WO2022118996 KR20220077345	HOLOGRAPHIC PRINTING DEVICE AND METHOD USING MULTIPLE OPTICAL HEADS	
N8694	WO	2022118995	09/06/2022	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	02/12/2020	KR2020000166170	WO2022118995 KR20220077342	METHOD AND APPARATUS FOR HOLOGRAM PRINTING USING MASK	
N8695	WO	2022114741	02/06/2022	KYUNGPOOK NATIONAL UNIVERSITY INDUSTRY ACADEMIC COOPERATION FOUNDATION	KR	27/11/2020	KR2020000162916	WO2022114741 KR20220075116	HOLOGRAPHIC PRINTING SYSTEM AND HOLOGRAPHIC PRINTING METHOD USING SAME	
N8696	WO	2022114342	02/06/2022	HOLOLAB	KR	30/11/2020	KR2020000163567	WO2022114342 KR20220075475	METHOD AND SYSTEM FOR PRODUCING HOLOGRAM FOR HIGH-SPEED DIGITAL SCREEN	
N8697	US	20220197371	23/06/2022	SA INCUBATOR LLC	US	18/12/2020	US2020063127225	US20220197371 WO2022133207	INTERACTIVE DISPLAY SYSTEM AND METHOD FOR INTERACTIVELY PRESENTING HOLOGRAPHIC IMAGE	
N8698	US	20220187765	16/06/2022	EARDG PHOTONICS	US	15/12/2020	US2020017122160	US20220187765	VOLUME HOLOGRAPHIC OPTICAL ELEMENTS WITH EXPANDED ANGULAR ACCEPTANCE	
N8699	US	20220179359	09/06/2022	ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE MVTECH	KR	08/12/2020	KR2020000170783	US20220179359	APPARATUS FOR ANALYZING DEPTH OF HOLOGRAPHIC IMAGE AND ANALYZING METHOD THEREOF	
N8700	US	20220178676	09/06/2022	IBM	US	08/12/2020	US2020017114548	US20220178676 GB202116847 DE102021128928 CN114625529	VISUAL QUALITY ASSESSMENT AUGMENTATION EMPLOYING HOLOGRAPHIC INTERFEROMETRY	
N8701	US	20220171334	02/06/2022	SAMSUNG ELECTRONICS	KR	01/12/2020	KR2020000165947	US20220171334 KR20220076946	METHOD AND APPARATUS FOR GENERATING COMPUTER-GENERATED HOLOGRAM	
N8702	US	20220171189	02/06/2022	SAMSUNG ELECTRONICS	KR	02/12/2020	KR2020000166941	US20220171189 KR20220077725	HOLOGRAPHIC LENS AND APPARATUS INCLUDING THE SAME	
N8703	US	11366260	21/06/2022	FACEBOOK TECHNOLOGIES	US	20/05/2019	US2019016417334	US11366260	OPTICAL SYSTEM WITH POLARIZATION VOLUME HOLOGRAM	
N8704	TW	627403	21/05/2022	XU, JING-CHANG	TW	12/01/2022	TW2022000200404	TWM627403	MOBILE THREE-DIMENSIONAL HOLOGRAPHIC IMAGE DECORATING LIGHT BOX.	
N8705	RU	211189	25/05/2022	NAUCHNO PROIZVODSTVENNOE OBDINENIE GOSUDARSTVENNYJ INSTITUT PRIKLADNOJ OPTIKI	RU	01/02/2022	RU2022000102428	RU-211189	HOLOGRAPHIC DEVICE FOR MONITORING THE FORM OF ASPHERICAL OPTICAL SURFACES	
N8706	KR	20220082427	17/06/2022	WONKWANG UNIVERSITY INDUSTRY ACADEMIC COOPERATION FOUNDATION	KR	10/12/2020	KR2020000172324	KR20220082427	METHOD AND APPARATUS FOR AUTOMATICALLY VISUALIZING CONTENT BETWEEN HETEROGENEOUS QUASI-HOLOGRAM SYSTEMS	
N8707	KR	20220082326	17/06/2022	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	10/12/2020	KR2020000172121	KR20220082326	DEEP LEARNING NETWORK TRAINING APPARATUS AND METHOD FOR GENERATING PHASE HOLOGRAMS	
N8708	KR	20220080667	14/06/2022	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	07/12/2020	KR2020000169196	KR20220080667	METHOD FOR NUMERICAL PROPAGATION OF HOLOGRAPHIC IMAGE AND APPARATUS FOR IMPLEMENTING THE SAME	
N8709	KR	20220080514	14/06/2022	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	07/12/2020	KR2020000169714	KR20220080514	HOLOGRAPHIC SIDEMIRROR	
N8710	KR	20220077627	09/06/2022	HICS	KR	02/12/2020	KR2020000166753	KR20220077627	TICOGRAPHIC HOLOGRAPHIC MICROSCOPY	

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N8711	KR	20220077449	09/06/2022	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	02/12/2020	KR2020000166402	KR20220077449	METHOD FOR GENERATING HOLOGRAPHIC PRINTED CONTENT USING STREAMING METHOD	
N8712	KR	20220077344	09/06/2022	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	02/12/2020	KR2020000166172	KR20220077344	HOLOGRAM PRINTING METHOD AND APPARATUS USING OVERLAPPING	
N8713	KR	20220077264	09/06/2022	HEESUNG ELECTRONICS	KR	01/12/2020	KR2020000165376	KR20220077264	HOLOGRAPHIC OPTICAL DEVICE AND HEAD-UP DISPLAY DEVICE INCLUDING THE SAME	
N8714	KR	20220077046	08/06/2022	KOREA UNIVERSITY INDUSTRIAL & ACADEMIC COLLABORATION FOUNDATION	KR	01/12/2020	KR2020000165355	KR20220077046	HOLOGRAPHIC OPTICAL ELEMENT FOR GENERATING COMPUTER-SYNTHESIZED HOLOGRAPHIC CAUSTIC IMAGE AND MANUFACTURING METHOD AND APPARATUS THEREOF	
N8715	KR	20220075862	08/06/2022	WONKWANG UNIVERSITY INDUSTRY ACADEMIC COOPERATION FOUNDATION	KR	30/11/2020	KR2020000164419	KR20220075862	HOLOGRAM PRINTING SYSTEM BASED ON MICROLENS ARRAY	
N8716	KR	20220075855	08/06/2022	WONKWANG UNIVERSITY INDUSTRY ACADEMIC COOPERATION FOUNDATION	KR	30/11/2020	KR2020000164399	KR20220075855	HOLOGRAM COPYING METHOD AND DEVICE	
N8717	KR	20220072964	03/06/2022	KIM, MIN JUN	KR	25/11/2020	KR2020000160554	KR20220072964	SMARTPHONE HOLOGRAM PROJECTOR	
N8718	KR	20220072706	02/06/2022	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	25/11/2020	KR2020000159902	KR20220072706	HOLOGRAM DISPLAY DEVICE AND METHOD OF FORMING THE SAME	
N8719	KR	20220072704	02/06/2022	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	25/11/2020	KR2020000159942	KR20220072704	DIFFRACTION EFFICIENCY MEASURING DEVICE FOR HOLOGRAPHIC OPTICAL ELEMENT	
N8720	KR	20220072687	02/06/2022	GUMI ELECTRONICS & INFORMATION TECHNOLOGY RESEARCH INSTITUTE	KR	25/11/2020	KR2020000160042	KR20220072687	METHOD AND APPARATUS FOR PRODUCING HOLOGRAPHIC OPTICAL ELEMENTS	
N8721	KR	20220071093	31/05/2022	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	23/11/2020	KR2020000158163	KR20220071093	METHOD FOR GENERATING DIGITAL HOLOGRAM	
N8722	KR	20220069509	27/05/2022	QMHX	KR	20/11/2020	KR2020000156702	KR20220069509	DIRECT VIEW FLOATING HOLOGRAM SYSTEM BASED ON ULTRA-MULTI-VIEW THREE-DIMENSIONAL DISPLAY	
N8723	KR	20220069507	27/05/2022	QMHX	KR	20/11/2020	KR2020000156695	KR20220069507	TRANSMISSIVE FLOATING HOLOGRAM SYSTEM BASED ON ULTRA-MULTI-VIEW THREE-DIMENSIONAL DISPLAY	
N8724	KR	20220069253	27/05/2022	CHUNGBUK NATIONAL UNIVERSITY INDUSTRY ACADEMIC COOPERATION FOUNDATION	KR	20/11/2020	KR2020000156191	KR20220069253	LIGHTING METER SYSTEM FOR INTEGRATED IMAGE MICROSCOPY	
N8725	KR	20220068375	26/05/2022	HOLOLAB	KR	19/11/2020	KR2020000155097	KR20220068375	TWO-DIMENSIONAL SCAN-TYPE HOLOGRAM REPLICATION METHOD AND SYSTEM	
N8726	KR	20220067061	24/05/2022	WIBTEL	KR	17/11/2020	KR2020000153331	KR20220067061	APPARATUS FOR ASSISTING ABSOLUTE POSITION RECOGNITION OF HOLOGRAPHIC LENS	
N8727	KR	20220067057	24/05/2022	WIBTEL	KR	17/11/2020	KR2020000153327	KR20220067057	DRONE HOLOGRAM DISPLAY SYSTEM FOR INTERLOCKING MANIPULATOR SIGNAL	
N8728	KR	102410380	16/06/2022	DAEGU GYEONGBUK INSTITUTE OF SCIENCE & TECHNOLOGY	KR	08/04/2021	KR2021000046021	KR102410380	APPARATUS AND METHOD FOR RECOVERING NOISE-FREE PHASE IMAGES FROM GABOR HOLOGRAMS BASED ON DEEP LEARNING	
N8729	JP	2022082465	01/06/2022	DAI NIPPON PRINTING	JP	20/11/2020	JP2020000193782	JP2022082465	AERIAL INPUT DEVICE, AERIAL INPUT AND DISPLAY DEVICE, AND HOLOGRAM SHEET	
N8730	JP	2022080792	30/05/2022	KDDI	JP	18/11/2020	JP2020000192088	JP2022080792	COMPUTER COMPOSITE HOLOGRAM GENERATION APPARATUS, METHOD, AND PROGRAM	
N8731	EP	4012617	15/06/2022	UPONOR	EP	11/12/2020	EP2020000213369	EP4012617 WO2022123121	FLUID QUALITY MONITORING	
N8732	DE	102021205391	02/06/2022	CARL ZEISS SMT	DE	27/05/2021	DE202110205391	DE102021205391	METHOD FOR PRODUCING A DIFFRACTIVE OPTICAL ELEMENT AND DIFFRACTIVE OPTICAL ELEMENT	
N8733	DE	102021132521	23/06/2022	IFM ELECTRONIC PMDTECHNOLOGIES	DE	16/12/2020	DE202010133824	DE102021132521	ARRANGEMENT FOR RECORDING SHORT-TERM HOLOGRAMS	

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N8734	CN	216748290	14/06/2022	SHENZHEN MEIYUJINGJIE PHOTOELECTRIC TECHNOLOGY	CN	10/01/2022	CN2022000047372	CN216748290U	HOLOGRAPHIC WAVEGUIDE LENS DISPLAY DEVICE	
N8735	CN	216718912	10/06/2022	AUNION TECHNOLOGY	CN	06/01/2022	CN2022000024924	CN216718912U	INCOHERENT DIGITAL HOLOGRAPHIC IMAGING SYSTEM BASED ON BIT PHOTO ARRAY	
N8736	CN	216673052	03/06/2022	GUANGDONG ATESI TECHNOLOGY	CN	03/12/2021	CN2021003030934	CN216673052U	MOBILE PHONE REAR COVER WITH HOLOGRAPHIC MULTICOLOR PRINTING INK	
N8737	CN	216658256	03/06/2022	SHANDONG YIGAO PRINTING	CN	10/11/2021	CN2021002742915	CN216658256U	ADJUSTABLE DIE CUTTING MECHANISM FOR HOLOGRAPHIC GOLD STAMPING DIE CUTTING MACHINE	
N8738	CN	216623716	27/05/2022	QINGDAO ZHIYUAN DECORATION EXHIBITION	CN	03/08/2021	CN2021001798126	CN216623716U	3D DISPLAY DEVICE OF HOLOGRAPHIC PROJECTION EXHIBITION ROOM	
N8739	CN	216622946	27/05/2022	SUQIAN COLLEGE	CN	19/11/2021	CN2021002863270	CN216622946U	HOLOGRAPHIC PROJECTION SYSTEM CAPABLE OF SWITCHING PROJECTION SCREEN FORMS	
N8740	CN	114647088	21/06/2022	ZHEJIANG UNIVERSITY	CN	22/03/2022	CN2022000294637	CN114647088	FREE-FORM SURFACE-FREE BODY HOLOGRAPHIC VISUAL OPTICAL IMAGING DEVICE AND NEAR-TO-EYE DISPLAY SYSTEM THEREOF	
N8741	CN	114646613	21/06/2022	CAMBRIDGE UNIVERSITY NANJING CENTRE OF TECHNOLOGY & INNOVATION	CN	19/05/2022	CN2022000541282	CN114646613	HOLOGRAPHIC DOT MATRIX COHERENT IMAGING METHOD AND SYSTEM	
N8742	CN	114643937	21/06/2022	NANJING FANHAN INTELLIGENT TECHNOLOGY RESEARCH INSTITUTE	CN	18/12/2020	CN2020001511851	CN114643937	HOLOGRAPHIC PROJECTION EQUIPMENT FOR VISUAL TRANSMISSION	
N8743	CN	114624981	14/06/2022	NANJING NORMAL UNIVERSITY	CN	17/02/2022	CN2022000146510	CN114624981	ULTRAFAST HOLOGRAPHIC MICROSCOPIC IMAGING METHOD AND SYSTEM BASED ON TIME BROADENING	
N8744	CN	114621180	14/06/2022	TECHNICAL INSTITUTE OF PHYSICS & CHEMISTRY - CHINESE ACADEMY OF SCIENCES	CN	24/01/2022	CN2022000077188	CN114621180	THIOPHENE STRUCTURE-CONTAINING (METHYL) ACRYLATE MONOMER AND PREPARATION METHOD AND APPLICATION THEREOF	
N8745	CN	114609879	10/06/2022	JIAXING ZHONGGUANG PHOTOELECTRIC TECHNOLOGY	CN	18/03/2022	CN2022000271046	CN114609879	DYNAMIC HOLOGRAPHIC PROJECTION DEVICE ADOPTING CRAWLER-TYPE FLEXIBLE DIFFRACTION PLATE	
N8746	CN	114593671	07/06/2022	SOUTH CHINA NORMAL UNIVERSITY	CN	25/01/2022	CN2022000088396	CN114593671	IMPLANTED COAXIAL AND OFF-AXIS DIGITAL HOLOGRAPHIC SWITCHING DEVICE BASED ON PARALLEL FLAT PLATE	
N8747	CN	114593670	07/06/2022	SOUTH CHINA NORMAL UNIVERSITY	CN	25/01/2022	CN2022000088389	CN114593670	IMPLANTED COAXIAL AND OFF-AXIS DIGITAL HOLOGRAPHIC SWITCHING DEVICE BASED ON ROCHON PRISM	
N8748	CN	114591218	07/06/2022	TECHNICAL INSTITUTE OF PHYSICS & CHEMISTRY - CHINESE ACADEMY OF SCIENCES	CN	24/01/2022	CN2022000077411	CN114591218	(METHYL) ACRYLATE MONOMER CONTAINING CARBAZOLE STRUCTURE AND PREPARATION METHOD AND APPLICATION THEREOF	
N8749	CN	114583466	03/06/2022	QIQIHAR UNIVERSITY	CN	29/03/2022	CN2022000317493	CN114583466	SINGLE-LAYER CODING SUPER-SURFACE UNIT FOR FOUR-CHANNEL HOLOGRAPHIC IMAGING	
N8750	CN	114582375	03/06/2022	REN YUHONG	CN	01/03/2022	CN2022000192670	CN114582375	HOLOGRAPHIC STORAGE DEVICE AND HOLOGRAPHIC STORAGE METHOD	
N8751	CN	114578561	03/06/2022	SOUTHEAST UNIVERSITY	CN	27/01/2022	CN2022000099676	CN114578561	LARGE-VIEW-FIELD HIGH-BRIGHTNESS HOLOGRAPHIC WAVEGUIDE SYSTEM BASED ON MULTILAYER GRATING AND PREPARATION METHOD THEREOF	
N8752	CN	114577124	03/06/2022	CHANGZHOU INSTITUTE OF MECHATRONIC TECHNOLOGY	CN	09/03/2022	CN2022000229886	CN114577124	CORRESPONDING PHASE RESTORATION METHOD OF DUAL-WAVELENGTH COAXIAL FOUR-STEP PHASE SHIFT DIGITAL HOLOGRAM	
N8753	CN	114563937	31/05/2022	BEIJING DITING SHIJIE CULTURE TECHNOLOGY	CN	09/03/2022	CN2022000221064	CN114563937	HOLOGRAPHIC IMAGING STRUCTURE	
N8754	CN	114554167	27/05/2022	CHONGQING UNIVERSITY	CN	21/02/2022	CN2022000158381	CN114554167	INTELLIGENT HOLOGRAPHIC PROJECTION SYSTEM BASED ON BIG DATA	
N8755	CN	114545654	27/05/2022	LIU FENGHUA	CN	18/11/2020	CN2020001295929	CN114545654	WARP ROTATING SLICING HOLOGRAPHIC DISPLAY TECHNOLOGY	
N8756	CN	114544776	27/05/2022	NANJING UNIVERSITY	CN	15/02/2022	CN2022000137170	CN114544776	SUPER-RESOLUTION ULTRASONIC HOLOGRAPHIC GHOST IMAGING DEVICE BASED ON PHOTOACOUSTIC WAVE AND IMAGING METHOD THEREOF	
N8757	CN	114544552	27/05/2022	NORTHWESTERN POLYTECHNICAL UNIVERSITY	CN	16/11/2021	CN2021001356780	CN114544552	METHOD FOR IMPROVING SURFACE PLASMA RESONANCE HOLOGRAPHIC MICROSCOPY IMAGE QUALITY	