

IHMA PATENT NEWSLETTER

Limited circulation patent news bulletin for the Holography Industry

MARCH 2022 – 139 PATENTS

Published and granted patents

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Marie-Laure Lebreton
23 route de Chaunu - Lieudit Les Vorges
74 150 MARCELLAZ-ALBANAIS - FRANCE
Mobile: 33 6 61 19 14 24 - E-mail: mll74patents@outlook.fr

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- IHMA Patent Newsletter covers the requests for worldwide patents (WO, US, EP, FR, GB, DE, JP, CN, KR, RU...).
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- 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).
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P34666

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

US20220072892

EPFL - ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE

Inventors:

WALGER THOMAS, HERSCH ROGER D, BRUGGER JÜRGEN

Application Nber / Date:

2020US-17016414 2020-09-10

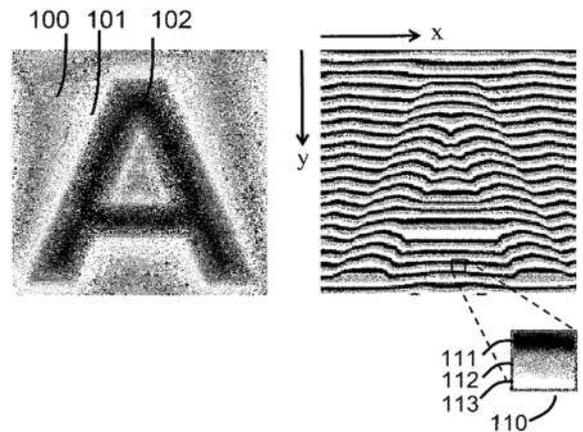
Priority Nber / Date / Country:

2020US-17016414 2020-09-10

SYNTHESIS OF MOVING AND BEATING MOIRÉ SHAPES

The present invention proposes a method for producing an authenticable moiré shape that simultaneously moves and shows a beating effect. The method relies on a combination of the 1D or the 2D moiré and the level line moiré. When tilting a compound showing such a moiré, the moiré shape moves, its intensity levels change significantly but its shape remains the same and is recognizable. Embodiments comprise a base layer made of patterned metallic tiny shapes and a revealing layer made of a 1D array of cylindrical lenslets or of a 2D array of spherical or aspherical lenslets.

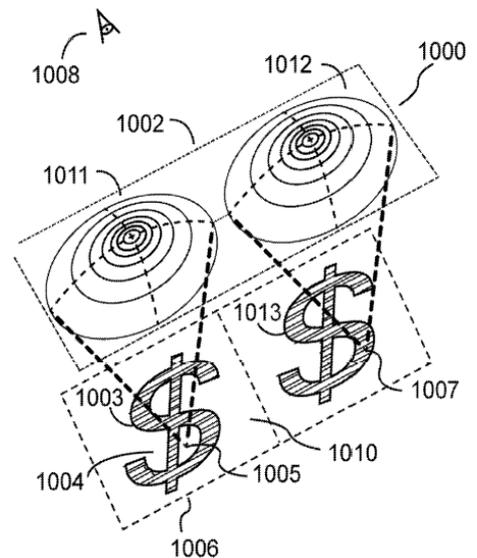
CLAIM 1. A method for producing an authenticable moir shape that simultaneously moves and shows a beating effect, the method comprising steps of: creating a height map representing a recognizable shape; creating a base elevation profile comprising an array of replicated base shapes obtained by a linear transformation of said height map; creating a modified base by performing operations comprising a modulo addition between said base elevation profile and a grating of gradients; superposing the modified base and a revealing layer formed by a grating of sampling elements; authenticating the moir shape obtained by superposition of the modified base and the revealing layer by verifying that both a movement and a beating of said moir shape are present, where the beating effect is embodied by moir shape intensities evolving according to displacements of the revealing layer's sampling locations on top of said modified base, and where despite evolving moir shape intensities, there remains a contrast at boundaries of the moving moir shape.



No equivalent

Status: Pending

No Research Report



Click on the title to return to table of contents

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

P34637

PRINTING – BANKNOTE – STRIP

WO202258042

Priority Date: 21/09/2020

GIESECKE & DEVRIENT CURRENCY TECHNOLOGY

SECURITY ELEMENT TRANSFER MATERIAL FOR TRANSFER, IN GOOD REGISTER, OF SECURITY ELEMENTS TO VALUE DOCUMENTS

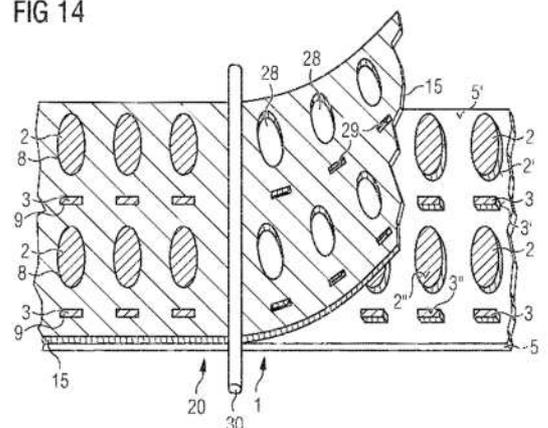
The invention relates to a security element transfer material (1) for the transfer, in good register, of security elements (2) having a layered composite structure (6) to a value document substrate (11), a method for producing the security element transfer material (1), a method for the transfer, in good register, of security elements (2) from the security element transfer material (1) to a value document substrate (11), and a value document (10) which was provided with a security element (2) using the security element transfer material (1). The security element transfer material (1) has a temporary support material (5; 50) and a plurality of security elements (2) and a plurality of register mark elements (3) which are arranged on a main area of the temporary support material (5; 50) and have a layered composite structure (7). Each register mark element (3) constitutes a register mark (4) or contains a register mark (4), and each register mark (4) is allocated to at least one security element (2). Apart from the security elements (2) and register mark elements (3), the temporary support material (5; 50) is free from layered composite material.

MATÉRIAU DE TRANSFERT D'ÉLÉMENTS DE SÉCURITÉ PERMETTANT LE TRANSFERT, DANS UN BON REGISTRE, D'ÉLÉMENTS DE SÉCURITÉ À DES DOCUMENTS DE VALEUR

L'invention concerne un matériau de transfert d'éléments de sécurité (1) permettant le transfert, dans un bon registre, d'éléments de sécurité (2) ayant une structure composite en couches (6) à un substrat de document de valeur (11), un procédé de fabrication du matériau de transfert d'éléments de sécurité (1), un procédé de transfert, dans un bon registre, d'éléments de sécurité (2) du matériau de transfert d'éléments de sécurité (1) à un substrat de document de valeur (11), et un document de valeur (10) qui a été pourvu d'un élément de sécurité (2) à l'aide du matériau de transfert d'éléments de sécurité (1). Le matériau de transfert d'éléments de sécurité (1) comprend un matériau de support temporaire (5 ; 50), une pluralité d'éléments de sécurité (2) et une pluralité d'éléments de repère de registre (3) qui sont disposés sur une zone principale du matériau de support temporaire (5 ; 50) et qui ont une structure composite en couches (7). Chaque élément de repère de registre (3) constitue un repère de registre (4) ou contient un repère de registre (4), et chaque repère de registre (4) est associé à au moins un élément de sécurité (2). Outre les éléments de sécurité (2) et les éléments de repère de registre (3), le matériau de support temporaire (5 ; 50) est exempt de matériau composite en couches.

CLAIM 1. A security element transfer material (1) for the register-true transfer of security elements (2) having a layered composite structure (6) to a value document substrate (11), comprising: a temporary carrier material (5; 50) Having a first main surface (5'); a plurality of security elements (2) having a layered composite structure (6) of a layered composite material (15) and having a first main surface (2Z) and an opposite second main surface (2"), wherein each security element is arranged on its first main surface (2Z) is releasably connected to the first major surface (5Z) of the temporary carrier material (5; 50) and wherein the second main surface (2ZZ) of each security element has adhesive properties for application to the value document substrate (11); a plurality of register mark elements (3) which have a layered composite structure (7) and which are arranged with their first main surfaces (3Z) with the first major surface (5Z) of the temporary carrier material (5; 50), wherein each register mark element (3) represents a register mark (4) or contains a register mark (4), a security element (2) or a group (16) of at least two security elements is in each case assigned to at least one register mark (4), and the temporary carrier material (5; 50) has on its first main surface (5Z) apart from the security elements (2) and the register mark elements (3), has no layer composite material.

FIG 14



P34657

PRINTING – BANKNOTE – CARD – THREAD – RELIEF –MICROLENS

WO202238161

BASF

Priority Date: 21/08/2020

UV-CURABLE COATINGS HAVING HIGH REFRACTIVE INDEX

The present invention relates to coating compositions, comprising i) single or mixed metal oxide nanoparticles, wherein the volume average diameter (Dv50) of the metal oxide nanoparticles is in the range of 1 to 20 nm; the nanoparticles comprise at least one volatile surface-modifying compound selected from alcohols, β -diketones, or salts thereof; carboxylic acids and β -ketoesters and mixtures thereof, wherein the total amount of volatile surface-modifying compounds is at least 5 % by weight, preferably at least 10 % by weight based on the amount of metal oxide nanoparticles, and ii) a solvent, coatings obtained therefrom and the use of the compositions for coating surface relief micro- and nanostructures (e.g. holograms), manufacturing of optical waveguides, solar panels, light outcoupling layers for display and lighting devices and anti-reflection coatings. Coatings obtained from the coating composition have a high refractive index and holograms are bright and visible from any angle, when the coating compositions are applied to them.

REVÊTEMENTS DURCISSABLES AUX UV AYANT UN INDICE DE RÉFRACTION ÉLEVÉ

La présente invention concerne des compositions de revêtement, comprenant i) des nanoparticules d'oxyde métallique simple ou mixte, le diamètre moyen en volume (Dv50) des nanoparticules d'oxyde métallique étant dans la plage de 1 à 20 nm, les nanoparticules comprenant au moins un composé de modification de surface volatil choisi parmi les alcools, les β -dicétones ou les sels de ceux-ci, les acides carboxyliques et les β -cétoesters et les mélanges de ceux-ci, la quantité totale de composés de modification de surface volatils étant d'au moins 5 % en poids, de préférence d'au moins 10 % en poids par rapport à la quantité de nanoparticules d'oxyde métallique ; et ii) un solvant. L'invention concerne également des revêtements obtenus à partir des compositions et l'utilisation des compositions pour le revêtement de microstructures et nanostructures en relief sur une surface (par exemple des hologrammes) et la fabrication de guides d'ondes optiques, de panneaux solaires, de couches de découplage de la lumière pour des dispositifs d'affichage et d'éclairage et de revêtements antireflet. Les revêtements obtenus à partir de la composition de revêtement ont un indice de réfraction élevé et les hologrammes sont brillants et visibles sous n'importe quel angle, lorsque les compositions de revêtement sont appliquées sur eux.

CLAIM 1. A coating composition, comprising i) single or mixed metal oxide nanoparticles, wherein the volume average diameter (Dv50) of the metal oxide nanoparticles is in the range of 1 to 20 nm; the nanoparticles comprise at least one volatile surface-modifying compound selected from alcohols, which are preferably selected from C1-C4alcohols; p-diketones, or salts thereof; carboxylic acids and p-ketoesters and mixtures thereof, wherein the total amount of volatile surface-modifying compounds is at least 5 % by weight, preferably at least 10 % by weight based on the amount of metal oxide nanoparticles, and ii) a solvent; with the proviso that the coating composition comprises less than 1% w/w of water and does not comprise a binder.

P34660

LABEL

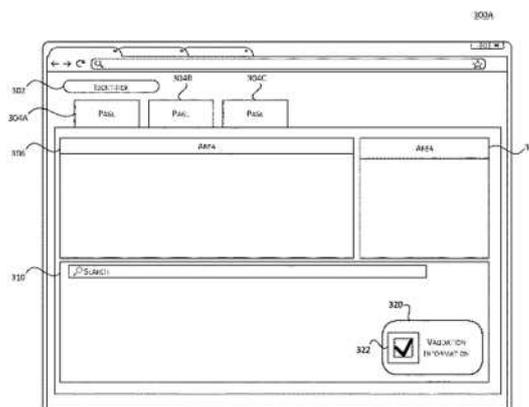
US20220092168

DIGICERT

Priority Date: 23/09/2020

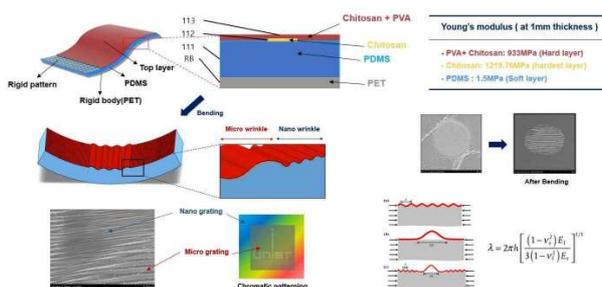
DYNAMIC SECURITY SEAL

Features are disclosed for a dynamic security seal indicating a security of an application. A computing device can receive a request to implement a dynamic security seal for an application. The computing device can validate a relationship between an entity and the application and between an image and the application. Based on validating these relationships, the computing device can generate a dynamic security seal. When implemented, the dynamic security seal may display a plurality of faces. A face of the plurality of faces may be the image. The dynamic security seal can sequentially display the plurality of faces based on various criteria.



VARIABLE HETERO SURFACE COMPOSITE, METHOD FOR MANUFACTURING THE SAME, AND FORGERY PREVENTION DEVICE USING THE SAME

The present invention relates to a variable heterogeneous surface composite. the variable heterogeneous surface composite includes: a first base substrate formed of a flexible first low hard nitrogen material; a first high hard layer formed on a first high wrinkle region of the first base substrate and formed of a first high hard nitrogen material having a Young's modulus greater than that of the first low hard nitrogen material; And a first medium hard layer formed of a first medium hard layer covering the first high hard layer from the first high wrinkle region to a first low wrinkle region adjacent to the first high wrinkle region, the first medium hard layer being formed of a first medium hard nitrogen material having a Young's modulus larger than that of the first low hard nitrogen material and smaller than that of the first high hard nitrogen material, Wherein when an external force is applied to the first medium hard layer and the first high hard layer such that wrinkles are formed in the first medium hard layer and the first high hard layer, a buckling effect is exhibited in each hard layer by different stress distributions and surface strains of each hard layer according to the difference in Young's modulus, Wherein the corrugations of the first high hard layer are formed to have a wavelength greater than the corrugations of the first medium hard layer, and wherein different structure colors caused by incident light are expressed in the first high corrugation region and the second low corrugation region in which different types of grating structures are formed by an arrangement of the corrugations, thereby forming a first image. According to the present invention, it is possible to increase the degree of freedom for preventing counterfeiting of an existing passive optical hologram counterfeit prevention device by actively hiding or making a structure color capable of forming a specific image appear more variously, thereby further increasing the degree of freedom of an optical hologram counterfeit prevention device hidden by an external stimulus.



CLAIM 1. A variably heterogeneous surface composite, comprising: a first base substrate formed of a flexible first low hard nitrogen material; a first high hard layer formed on a first high wrinkle region of the first base substrate and formed of a first high hard nitrogen material having a Young's modulus greater than that of the first low hard nitrogen material; And a first medium hard layer formed of a first medium hard layer covering the first high hard layer from the first high wrinkle region to a first low wrinkle region adjacent to the first high wrinkle region, the first medium hard layer being formed of a first medium hard nitrogen material having a Young's modulus larger than that of the first low hard nitrogen material and smaller than that of the first high hard nitrogen material, Wherein when an external force is applied to the first medium hard layer and the first high hard layer such that wrinkles are formed in the first medium hard layer and the first high hard layer, a buckling effect is exhibited in each hard layer by different stress distributions and surface strains of each hard layer according to the difference in Young's modulus, Wherein the corrugations of the first high hardness layer are formed to have a larger wavelength than the corrugations of the first medium hardness layer, and wherein different structure colors by incident light are expressed in the first high corrugation region and the second low corrugation region in which different types of grating structures are formed by the arrangement of corrugations, respectively, to form a first image.

P34687

PRINTING

JP2022039593

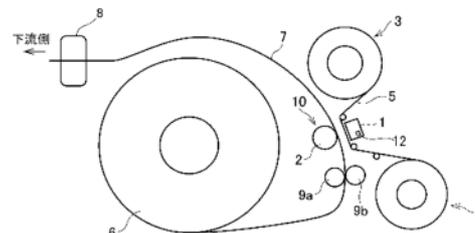
DAI NIPPON PRINTING

Priority Date: 28/08/2020

METHOD FOR PRODUCING PRINTED PRODUCT AND HEAT TRANSFER PRINTING APPARATUS

TOPIC: To transfer a protective layer by applying desired thermal energy while suppressing the temperature of a thermal head. INVENTION: a method for manufacturing a printed matter includes: sandwiching a heat transfer sheet, in which a color material layer and a protective layer are provided on a base material sheet, and an image receiving sheet, in which an receiving layer is provided on a base material, between a thermal head and a platen roll, and heating the heat transfer sheet by the thermal head; A step of transferring a color material from the heat transfer sheet to the receiving layer of the image receiving sheet to form an image; and a step of heating the heat transfer sheet by the thermal head to transfer the protective layer from the heat transfer sheet onto the image of the image receiving sheet. When the temperature of the thermal head becomes greater than or equal to a first predetermined value after the image is formed and before the transfer process of the protective layer is started, the print product preparation process is interrupted, and after a first cooling period in which the temperature of the thermal head is lowered elapses, the print product preparation process is resumed to transfer the protective layer.

CLAIM 1. Sandwiching a heat transfer sheet, in which a color material layer and a protective layer are provided on a base material sheet, and an image receiving sheet, in which an receiving layer is provided on a base material, between a thermal head and a platen roll; Forming an image by heating the heat transfer sheet by the thermal head and transferring a color material from the heat transfer sheet to the receiving layer of the image receiving sheet; and Transferring the protective layer from the heat transfer sheet onto the image of the image receiving sheet, wherein when the temperature of the thermal head becomes higher than or equal to a first predetermined value after formation of the image and before start of transfer processing of the protective layer, Interrupting the printed matter production process; resuming the printed matter production process after a first cooling period in which a temperature of the thermal head is lowered elapses; and transferring the protective layer.



P34699

PRINTING – CARD

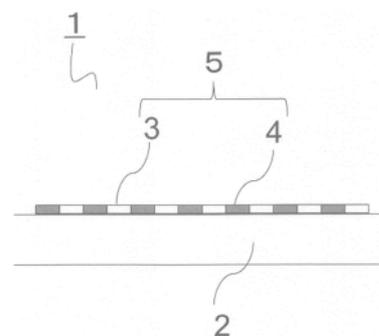
JP2022033507

TOPPAN PRINTING

Priority Date: 17/08/2020

IMAGE FORMING BODY AND METHOD FOR MANUFACTURING SAME

TOPIC: To provide an anti-counterfeiting medium having a higher anti-counterfeiting effect. INVENTION: An image forming body having a printed pattern 5 formed on at least a portion of a substrate 2, wherein the printed pattern includes a printed portion constituted by a plurality of printed lines, and at least a portion of the printed portion includes: An observation angle-independent printed line 4 made from ink containing light interference pigments that change color depending on the angle of observation; an observation angle-independent printed line 3 made from ink that does not contain light interference pigments and does not change color depending on the angle of observation; Wherein the viewing-angle-independent printing line is disposed on an upper portion of the viewing-angle-dependent printing line or a gap portion of the viewing-angle-dependent printing line disposed with a fixed gap; Wherein a line width of the observation angle-dependent printed line and the observation angle-independent printed line is 100 μm or less, and a line distance between the observation angle-dependent printed lines and between the observation angle-independent printed lines is 100 μm or less.



CLAIM 1. An image forming body having a printed pattern formed on at least a part of a substrate, wherein The printing pattern includes a printed portion constituted of a plurality of printed lines, At least a portion of a printed portion being formed of an observation angle-dependent printed line made of ink containing a light interference pigment that changes color depending on an angle of observation, and an observation angle-independent printed line made of ink that does not contain the light interference pigment and does not change color depending on the angle of observation; The observation angle-independent printed line is disposed on the observation angle-dependent printed line or on a gap portion of the observation angle-dependent printed line disposed with a fixed gap; Line widths of the observation angle-dependent printed lines and the observation angle-independent printed lines are 100 m or less; Wherein the inter-line distance between the observation angle-dependent printed lines and the observation angle-independent printed lines is 100 m or less.

P34705

PRINTING – BRAND PROTECTION

JP2022028412

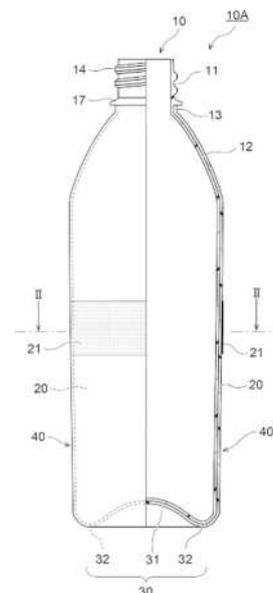
Priority Date: 03/08/2020

DAI NIPPON PRINTING

COMPOSITE CONTAINER

TOPIC: To provide a composite container by which the appearance of the composite container can be improved and design properties can be improved. INVENTION: a composite container 10 A is provided with a container body 10 and a plastic member 40 provided in close contact with the outside of the container body 10. A light modulation unit 21 that modulates the phase of incident light to reproduce the light image 102 is formed on the outer surface of the plastic member 40.

CLAIM 1. A composite container, comprising: A container body; A plastic member provided in close contact with an outer side of the container body, A light modulation unit that modulates a phase of incident light to reproduce a light image is formed on an outer surface of the plastic member.



P34706

PRINTING – BANKNOTE – HOLOGRAPHY PROCESS

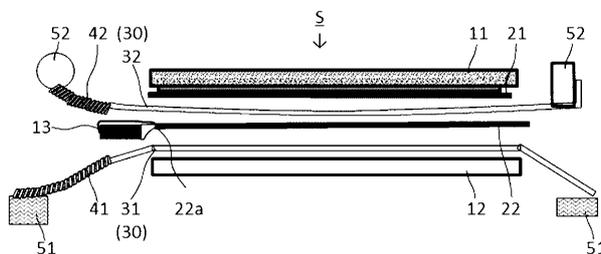
JP2022027859

Priority Date: 09/12/2021

NATIONAL PRINTING BUREAU

APPLICATION DEVICE

TOPIC: To provide an adhering device S that can reduce waving operations when moving sheets. INVENTION: An adhering device S of the present invention moves a sheet 22 having a leading end 22a carried by carrying means 13 between an engraving plate 11 and a platen 12 provided below the engraving plate so as to move in a reciprocating vertical motion in a direction of the engraving plate; An adhering device (S) for thermocompression bonding a foil material (21) to a sheet (22) by pressing a platen (12) against an engraving plate (11), is characterized by having guide means (30) between the engraving plate (11) and the platen (12) that come into contact with the sheet (22) during thermocompression bonding.



CLAIM 1. Between an engraving plate and a platen provided below the engraving plate so as to move in a reciprocating vertical motion in a direction of the engraving plate; Transferring the sheet-like sheet carrying the tips by the carrying means; The adhering device for thermocompression bonding a foil material to the sheet-like sheet by pressing the pressure plate against the engraving plate, wherein A guide means that comes into contact with the sheet sheets during the thermocompression bonding between the engraving plate and the pressure plate.

P34717

LABEL

EP3961482

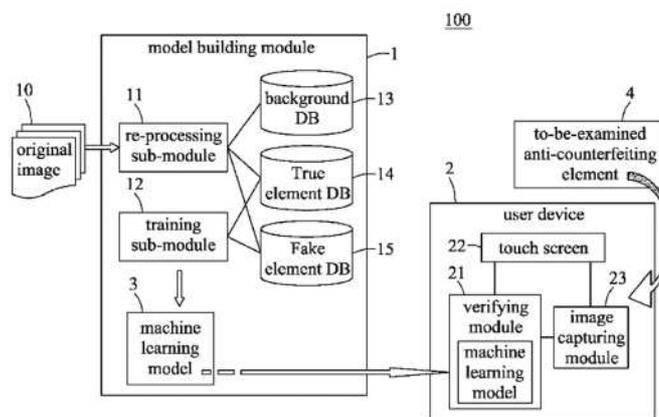
CHECK IT OUT

Priority Date: 31/08/2020

SYSTEM AND METHOD FOR VERIFYING AUTHENTICITY OF AN ANTI-COUNTERFEITING ELEMENT, AND METHOD FOR BUILDING A MACHINE LEARNING MODEL USED TO VERIFY AUTHENTICITY OF AN ANTI-COUNTERFEITING ELEMENT

A system (100) for verifying authenticity of an anti-counterfeiting element (4) includes a model building module (1) and a verifying module (21). The model building module (1) has a pre-processing sub-module (11) for receiving original images (10) of a same reference element and for making adjustments to the original images to form a plurality of true-element images. A training sub-module (12) trains a deep neural network based on the true-element images to build a machine learning model (3). The verifying module (21) obtains images of the anti-counterfeiting element (4), and inputs the images into the machine learning model (3) to determine whether the anti-counterfeiting element (4) is authentic or unauthentic.

CLAIM 1. A method for building a machine learning model that is related to a reference anti-counterfeiting element for verifying authenticity of a to-be-examined anti-counterfeiting element, the method being characterized by the following steps of: receiving a plurality of original images of the reference anti-counterfeiting element; with respect to each of the original images, making different adjustments to the original image to form a plurality of true-element images, respectively, wherein the plurality of true-element images formed with respect to a same one of the original images constitute a set; inputting plural sets of the true-element images to a deep neural network, the plural sets of the true-element images corresponding respectively to the original images; and training the deep neural network based on the plural sets of the true-element images to build the machine learning model that is related to the reference anti-counterfeiting element.



P34720

BANKNOTE – CARD

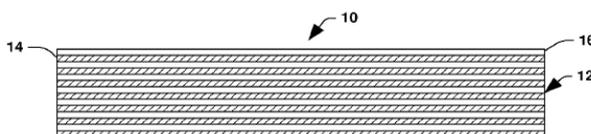
EP3939038

CASE WESTERN RESERVE UNIVERSITY

Priority Date: 09/06/2011

OPTICAL INFORMATION STORAGE MEDIUM

An optical information storage medium includes a substrate and a multilayer polymeric film. The multilayer polymeric film has a first surface and an opposite second surface that extend the length of the multilayer polymeric film. The second surface is adhered to a surface of the substrate. The multilayer polymeric film includes a plurality of coextruded alternating polymeric active data storage layers and polymeric buffer layers.



CLAIM 1. An optical information storage medium comprising a substrate and a multilayer polymeric film, the multilayer polymeric film having a first surface and an opposite second surface that extend the length of the multilayer polymeric film, the second surface being adhered to a surface of the substrate, the multilayer polymeric film including a plurality of coextruded alternating polymeric active data storage layers and polymeric buffer layers, the active data storage layers configured to undergo a permanent induced localized nonlinear or threshold change of optical properties when written by a one photon or multi-photon optical writing process, the buffer layers separating the active data storage layers with sufficient thicknesses to axially confine at least one data voxel written by the optical writing process into a single discrete active data storage layer that is readable by an optical reading device, wherein the buffer layers have an average thickness of 3 m to about 100 m.

P34735

LABEL

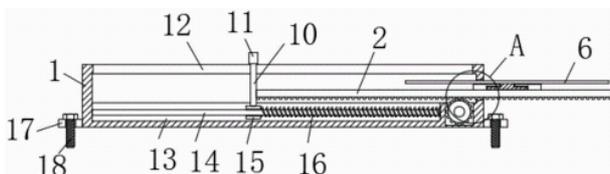
CN216014614U

Priority Date: 07/09/2021

SHENZHEN ZOLO PACKAGING TECHNOLOGY

OPTICAL VARIABLE HOLOGRAPHIC ANTI-COUNTERFEIT LABEL

The utility model discloses an optically variable holographic anti-counterfeit label, which comprises a shell and a toothed plate, wherein the upper surface of the shell is fixedly connected with a fixed seat, the upper surface of the fixed seat is rotatably connected with a T-shaped column, the top end of the T-shaped column is fixedly connected with a rotary plate, the bottom wall of the shell is provided with a groove, the inner part of the groove is rotatably connected with a rotary rod, the outer surface of the rotary rod is fixedly connected with a gear, the gear is meshed with the toothed plate, the left side surface of the toothed plate is fixedly connected with a connecting plate, the bottom wall of the shell is provided with a chute, the anti-counterfeit label after installation can be protected by the arrangement of the shell, the anti-counterfeit label is prevented from being damaged artificially, the angle of the anti-counterfeit label can be conveniently adjusted after the anti-counterfeit label is installed, thereby the anti-counterfeit label can be conveniently watched, and the anti-counterfeit label can be conveniently installed, meanwhile, the anti-counterfeiting label is convenient to replace by matching with the adjusting plate, and anti-counterfeiting efficiency is improved.



P34740

HOLOGRAPHY PROCESS

CN216001957U

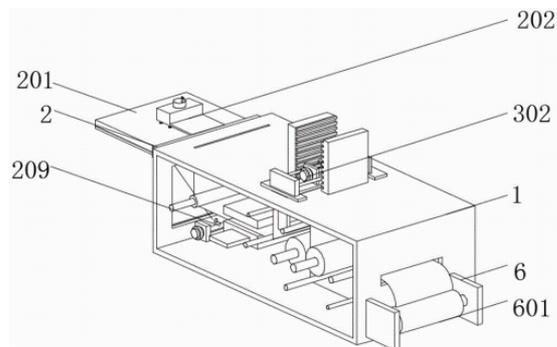
Priority Date: 17/08/2021

SUZHOU BAICONG TECHNOLOGY

LASER HOLOGRAPHIC FILM PRODUCTION EQUIPMENT WITH EYE PROTECTION FUNCTION

The utility model discloses laser holographic film production equipment with a function of protecting eyes, which comprises a box body, a fixer and a baffle plate, wherein the fixer is installed on the outer wall of the box body, a protective window is installed on the outer wall of the fixer, a fitting column is installed at the bottom of the protective window, a steel rope is installed at the bottom of the fitting column, a fitting hole is formed in the outer wall of the box body, a first motor is installed on the inner bottom wall of the box body, and a winding rod is installed at the output end of the first motor. According to the utility model, the protection window, the first motor and the sealing block are arranged, the first motor rotates to drive the winding rod to rotate, the winding rod rotates to pull the steel rope to rotate around the winding rod, so that the protection window is pulled downwards by the steel rope until the fitting column enters the fitting hole, the protection window is closed, when the protection window is lifted, the exhaust fan sucks air in the suction disc, the suction disc is enabled to suck the protection window firmly under negative pressure, and the protection window is closed, so that the laser injury to workers during the working of production equipment is avoided.

CLAIM 1. The utility model provides a holographic membrane production facility of laser with protection eyes function, includes box (1), fixer (2) and baffle (3), its characterized in that: the outer wall of the box body (1) is provided with a fixer (2); the outer wall of the fixer (2) is provided with a protection window (201), the outer wall of the box body (1) is provided with an exhaust fan (202), the top of the exhaust fan (202) is provided with a suction cup (203), the bottom of the protection window (201) is provided with a fitting column (204), the bottom of the fitting column (204) is provided with a steel rope (205), the outer wall of the box body (1) is provided with a fitting hole (206), the outer wall of the box body (1) is provided with a sealing block (207), the inner bottom wall of the box body (1) is provided with a first motor (208), the output end of the first motor (208) is provided with a winding rod (209), and one end of the steel rope (205) extends to the outer wall of the winding rod (209); spacing post (4) No. one are installed to the inner wall of box (1), knurling wheel (5) are installed to the inner wall of box (1), fixed block (6) are installed to the outer wall of box (1).



P34744

PRINTING – LABEL

CN215987838U

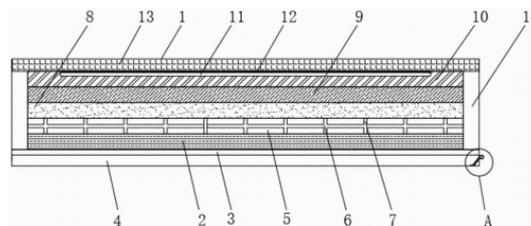
Priority Date: 30/08/2021

SHENZHEN ZOLO PACKAGING TECHNOLOGY

MULTILAYER DATA VARIABLE HOLOGRAPHIC ANTI-COUNTERFEIT LABEL

The utility model discloses a multilayer data variable holographic anti-counterfeiting label, which comprises a label main body, wherein a paper substrate is arranged in the label main body, a bonding layer is arranged at the lower end of the paper substrate, a covering layer is arranged at the lower end of the bonding layer, a gold stamping layer is arranged in the label main body, a groove is formed in the middle of the upper end of the surface of the gold stamping layer, a printing area is arranged in the groove to prevent the label main body from being influenced by water, a toughened glass layer is arranged at the upper end of the gold stamping layer, a user can conveniently adhere the label main body through the bonding layer under the action of the bonding layer, the bonding layer is conveniently protected by the user under the action of the covering layer, when the label main body is adhered by the user, the user pulls a pull buckle in the opposite direction, the pull buckle drives one end of the covering layer to move through a traction rope, so that the covering layer is separated from the bonding layer, facilitating the quick adhesion of the label body by the user.

CLAIM 1. A multilayer data variable holographic antifalsification label, comprising a label body (1), characterized in that: the inside of label main part (1) is provided with paper substrate (2), the lower extreme of paper substrate (2) is provided with bond line (3), the lower extreme of bond line (3) is provided with overburden (4), the inside of label main part (1) is provided with gold stamping layer (10), gold stamping layer (10) upper end in surface intermediate position department sets up fluted (11), the inside of recess (11) is provided with the printing area, waterproof layer (12) have been laid to the upper end of recess (11), avoid influencing label main part (1) with water and use, the upper end of gold stamping layer (10) is provided with toughened glass layer (13), has strengthened the hardness of label main part (1), when avoiding laying label main part (1) simultaneously, causes label main part (1) fold, influences user's use.



P34754

PRINTING

CN215850388U

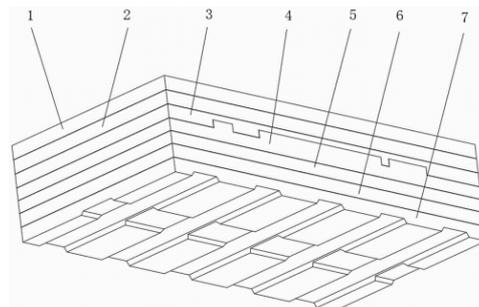
Priority Date: 18/03/2021

HUBEI GEDIAN DEVELOPMENT REGION CHENGUANG INDUSTRIAL

HOLOGRAPHIC COMPREHENSIVE ANTI-COUNTERFEITING HOT STAMPING FOIL

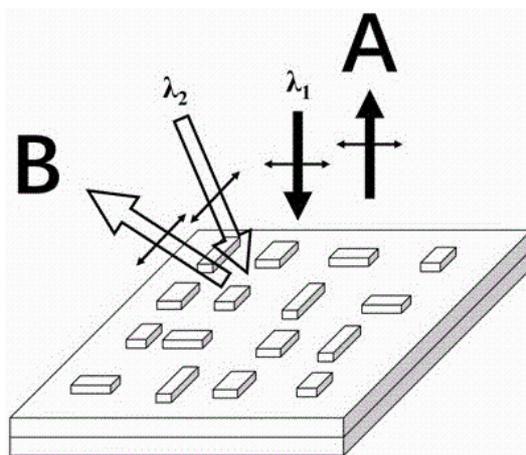
The utility model provides a holographic comprehensive anti-counterfeiting hot stamping foil, which relates to the technical field of hot stamping foils and comprises a substrate layer, wherein a hydrophobic oil-phobic layer is fixedly connected to the top of the substrate layer, a holographic anti-counterfeiting information layer is fixedly connected to the bottom of the substrate layer, a hollowed-out information layer is fixedly connected to the bottom of the holographic anti-counterfeiting information layer, a release layer is fixedly connected to the bottom of the hollowed-out information layer, bulges are arranged on the hollowed-out information layer, the holographic anti-counterfeiting information layer and the hollowed-out information layer are overprinted mutually to form anti-counterfeiting information with a three-dimensional effect, the process difficulty and the reliability of the anti-counterfeiting effect are improved, the hydrophobic oil-phobic layer of a functional perfluoropolyether (PFPE) polymer is arranged on the top of the substrate layer, the dirt caused by long-time use is avoided, the problem of scratching in long-time use is avoided, the durability is improved, an air drainage groove is arranged at the bottom of a back adhesive layer, when the air drainage groove is used for laminating, the air at the bottom can be discharged through the air drainage groove, and the laminating efficiency is improved.

CLAIM 1. The utility model provides a holographic comprehensive anti-fake thermoprinting foil, includes substrate layer (2), its characterized in that: the top fixedly connected with of substrate layer (2) is hydrophobic to dredge oil layer (1), the holographic anti-fake information layer of bottom fixedly connected with (3) of substrate layer (2), the bottom fixedly connected with fretwork information layer (4) of holographic anti-fake information layer (3), the bottom fixedly connected with of fretwork information layer (4) is from type layer (5), from the dumb light effect layer of bottom fixedly connected with (6) on type layer (5), the bottom fixedly connected with gum layer (7) of dumb light effect layer (6).



INFORMATION ENCRYPTION METHOD BASED ON CIRCUITOUS PHASE AND RESONANCE PHASE HYBRID NANOSTRUCTURE SURFACE

The invention provides an information encryption method based on a circuitous phase and resonance phase hybrid nanostructure surface, which comprises the following steps: step one, selecting a target image and acquiring phase distribution of the target image; designing a super-structure surface unit structure; constructing a resonance phase gradient, and screening a unit structure group at the working wavelength λ_1 ; step four, screening the unit structure with -1 order diffraction only at the working wavelength λ_2 in the unit structure group obtained in the step three; step five, optimizing the space between adjacent units and constructing a circuitous phase; sixthly, designing a super-structure surface hologram; and seventhly, the electromagnetic waves are incident to the surface of the super-structure at different incident wavelengths, polarization and incident angles, different target images are obtained in different emergent directions, and encryption of optical information is achieved. The invention respectively introduces the resonance phase and the circuitous phase under different wavelengths, polarizations and incident angles, thereby improving the safety of the optical information encryption technology based on the ultrastructural surface.



CLAIM 1. An information encryption method based on a detour phase and resonance phase hybrid meta-structure surface is characterized by comprising the following steps: the method comprises the following steps: selecting a target image and acquiring the phase distribution of the target image; step two: designing a unit structure of the super-structure surface, enabling the super-structure surface to realize -1-order diffraction in a wide wave band range, and determining the optimal structure thickness of the unit structure and the optimal incident angle of electromagnetic waves; step three: constructing a $0-2\pi$ resonance phase gradient, and screening out the resonance phase gradient at the working wavelength λ_1 Unit structure groups corresponding to different reflection resonance phases under the condition of vertical incidence; step four: re-screening each unit structure group to ensure that the surface of the super-structure is at the working wavelength λ_2 Only -1 order diffraction in the case of normal and oblique incidence Light, and constructing the screened unit structures into unit sets; step five: optimizing the distance between adjacent unit structures, so that the sum of a resonance phase and a circuitous phase carried by -1-order diffracted light covers the range of $0-2\pi$; step six: acquiring the arrangement mode of each unit structure in the unit set and the interval arrangement mode of adjacent unit structures based on the phase distribution of the target image, and realizing the holographic design of the surface of the super-structure; step seven: electromagnetic waves are incident to the surface of the super-structure at a selected working wavelength, a selected polarization direction and a selected incident angle, different target images are obtained in different emergent directions of the surface of the super-structure, and therefore optical information hiding and encryption with multiple keys are achieved.

P34757

PRINTING – BRAND PROTECTION

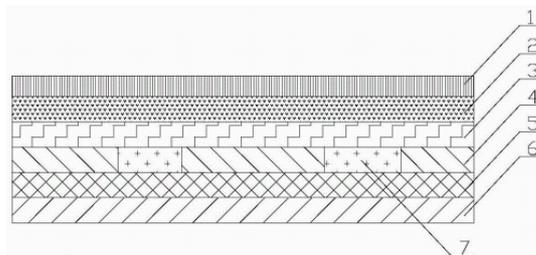
CN114203017

Priority Date: 13/12/2021

SHANDONG TAIBAO PACKAGING PRODUCT

HIDDEN HOLLOW ALUMINUM-PLATED PATTERN HOLOGRAPHIC ANTI-COUNTERFEITING FILM AND MANUFACTURING METHOD THEREOF

The invention particularly relates to a hidden hollow aluminized pattern holographic anti-counterfeiting film and a manufacturing method thereof. The anti-counterfeiting film is characterized by comprising the following components from top to bottom in sequence: the holographic printing ink comprises a base film layer, an imprinting coating, a holographic information layer, a first aluminum plating layer, an aluminum layer connection coating and a second aluminum plating layer, wherein the first aluminum plating layer is a hollowed aluminum plating anti-counterfeiting pattern layer, and a shielding layer is arranged at the hollowed part of the first aluminum plating layer. The manufacturing method comprises the following steps: coating an impression coating on the base film layer, and drying; imprinting a holographic information pattern on the imprinting coating to form a holographic information layer; printing a shielding layer on the holographic information layer, drying and then aluminizing to form a first aluminized layer; coating an aluminum layer connection coating on the first aluminum layer in a full-page manner, and drying; and fully aluminizing the aluminum layer connection coating to form a second aluminized layer. The invention has the advantages of good anti-counterfeiting performance, stable quality and convenient identification.



CLAIM 1. The hidden hollow aluminized pattern holographic anti-counterfeiting film is characterized by sequentially comprising the following components from top to bottom: the holographic printing ink comprises a base film layer, an imprinting coating, a holographic information layer, a first aluminum plating layer, an aluminum layer connection coating and a second aluminum plating layer, wherein the first aluminum plating layer is a hollowed aluminum plating anti-counterfeiting pattern layer, and a shielding layer is arranged at the hollowed part of the first aluminum plating layer.

P34762

CARD

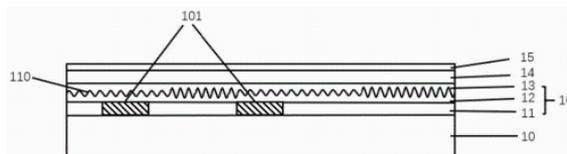
CN114179549

Priority Date: 15/12/2021

TRAFFIC MANAGEMENT RESEARCH INSTITUTE OF MINISTRY OF PUBLIC SECURITY

ANTI-FAKE CERTIFICATE CARD WITH ANTI-FAKE MARK AND ITS MAKING PROCESS

The invention relates to the technical field of anti-counterfeiting certificate cards, and particularly discloses an anti-counterfeiting certificate card with an anti-counterfeiting mark, wherein the anti-counterfeiting certificate card comprises: the anti-counterfeiting information layer comprises a holographic anti-counterfeiting structure layer and a filter layer which are sequentially arranged on the certificate card substrate; the identification card substrate is used for providing a base; the holographic anti-counterfeiting structure layer by layer is used for forming personalized information with anti-counterfeiting marks on the substrate; the filter layer is used for forming a tampering mark with changed color when the personalized information is irradiated by laser. The invention also discloses a method for manufacturing the anti-counterfeiting certificate card with the anti-counterfeiting mark. The anti-counterfeiting certificate card with the anti-counterfeiting mark effectively reduces the possibility of tampering and counterfeiting of the certificate card, and improves the safety of the certificate card.



CLAIM 1. A anti-counterfeiting certificate card with an anti-counterfeiting mark is characterized by comprising: the anti-counterfeiting information layer comprises a holographic anti-counterfeiting structure layer and a filter layer which are sequentially arranged on the certificate card substrate; the identification card substrate is used for providing a base; the holographic anti-counterfeiting structure layer by layer is used for forming personalized information with anti-counterfeiting marks on the substrate; the filter layer is used for forming a tampering mark with changed color when the personalized information is irradiated by laser.

P34763

LIQUID CRYSTAL

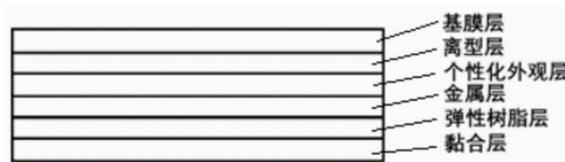
CN114179543

SHENZHEN SHENDA AURORA TECHNOLOGY

Priority Date: 25/11/2021

HOLOGRAPHIC SELF-REPAIRING GRAPHENE LIQUID CRYSTAL MODIFIED POLYURETHANE DECORATIVE FILM AND PREPARATION METHOD AND APPLICATION THEREOF

The invention provides a holographic self-repairing graphene liquid crystal modified polyurethane decorative film, which belongs to the technical field of decorative film manufacturing, is a multilayer composite structure and comprises a base film layer, a release layer, a personalized appearance layer, a metal layer, an elastic resin layer and an adhesive layer which are sequentially stacked; the personalized appearance layer is prepared by coating self-repairing graphene liquid crystal modified polyurethane coating, the coating thickness is 0.5-5 μm , and a texture structure is copied by a mould pressing machine in a mould pressing manner; the self-repairing graphene liquid crystal modified polyurethane coating is composed of a graphene liquid crystal containing DA bonds, a polyurethane resin containing DA bonds, an auxiliary agent, a toner and a solvent. The invention also provides a preparation method and application of the holographic self-repairing graphene liquid crystal modified polyurethane decorative film. The holographic self-repairing graphene liquid crystal modified polyurethane decorative film disclosed by the invention has an anti-counterfeiting effect and a self-repairing effect while giving consideration to both a personalized special appearance effect and excellent physical and chemical mechanical properties.



CLAIM 1. A holographic self-repairing graphene liquid crystal modified polyurethane decorative film is of a multilayer composite structure and is characterized by comprising a base film layer, a release layer, a personalized appearance layer, a metal layer, an elastic resin layer and an adhesive layer which are sequentially stacked; the personalized appearance layer is prepared by coating self-repairing graphene liquid crystal modified polyurethane coating, the coating thickness is 0.5-5 μm , and a texture structure is copied by a mould pressing machine in a mould pressing manner; the self-repairing graphene liquid crystal modified polyurethane coating comprises 5-15 wt% of graphene liquid crystal containing DA bonds, 30-70 wt% of polyurethane resin containing DA bonds, 1-5 wt% of an auxiliary agent, 0.2-1 wt% of a toner and 30-60 wt% of a solvent.

P34765

PRINTING – CARD

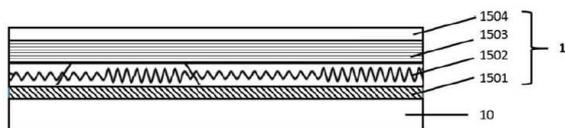
CN114179541

TRAFFIC MANAGEMENT RESEARCH INSTITUTE OF MINISTRY OF PUBLIC SECURITY

Priority Date: 15/12/2021

CERTIFICATE CARD ENDORSEMENT METHOD

The invention relates to the technical field of certificate card endorsements, and particularly discloses a certificate card endorsement method, which comprises the following steps: manufacturing an anti-counterfeiting color band, wherein the anti-counterfeiting color band comprises a color area, a black area and an anti-counterfeiting mark area, and the color area, the black area and the anti-counterfeiting mark area are sequentially connected; preparing a card to be signed and annotated, a printing head, an anti-counterfeiting ribbon, a transfer printing film, a printing roller and a heating roller; sequentially superposing the anti-counterfeiting color band on the transfer printing film according to the sequence of the color area, the black area and the anti-counterfeiting mark area; after the anti-counterfeiting color ribbon is superposed on the transfer printing film, transferring the transfer printing film to the upper side of the heating roller; the heating roller, the transfer printing film superposed with the anti-counterfeiting color ribbon and the card to be endorsed are pressed, wherein the information of the anti-counterfeiting color ribbon superposed on the transfer printing film can be separated and hot-pressed on the surface of the card to be endorsed when the heating roller, the transfer printing film and the card to be endorsed rotate synchronously. The certificate card endorsement method provided by the invention can reduce the manufacturing cost of the certificate card.



P34766

PRINTING – BANKNOTE – LUMINESCENCE

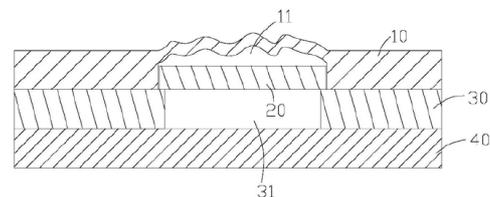
CN114176293

Priority Date: 12/01/2022

SHENZHEN CHAMPION UNION STICKER PRODUCTS

MANUFACTURING PROCESS OF LUMINOUS COMMEMORATIVE BANK NOTE AND LUMINOUS COMMEMORATIVE BANK NOTE

The invention provides a manufacturing process of a luminous commemorative banknote and the luminous commemorative banknote, which comprises the following steps: striking a convex solid pattern on the light-transmitting layer A, forming a receiving groove in the striking region, disposing a light-emitting component in the receiving groove, the light-emitting component emitting light to illuminate the solid pattern, wherein the light-emitting component comprises a light-emitting body and a solar panel, one surface of the sheet is attached to



one surface of the euphotic layer A with the receiving groove, and a through hole is formed at the receiving groove, light passes through the through hole and irradiates the solar panel, the solar panel absorbs the light energy of the light and enables the luminous body to emit light, the euphotic layer B is attached to the other surface of the sheet, and the solar panel absorbs light energy and converts the light energy into electric energy to supply the electric energy to the luminous body for emitting light, so that the manufactured commemorative paper money not only has exquisite three-dimensional patterns, but also can lighten the three-dimensional patterns in an environment with poor external light through the light-emitting component, and the ornamental value and the collection value of the commemorative paper money are greatly improved.

CLAIM 1. The manufacturing process of the luminous commemorative bank note is characterized by comprising the following steps of: striking a convex solid pattern on the euphotic layer A, and forming a receiving groove in the striking area; arranging a light-emitting component in the accommodating groove, wherein the light-emitting component emits light to lighten the three-dimensional pattern; wherein the light emitting assembly comprises a light emitter and a solar panel; one surface of the sheet is attached to one surface, provided with the accommodating groove, of the light-transmitting layer A, a through hole is formed in the accommodating groove, light passes through the through hole and irradiates the solar panel, and the solar panel absorbs light energy of the light and enables the light-emitting body to emit light; the light-transmitting layer B is bonded to the other surface of the sheet.

P34767

PRINTING – LABEL

CN114170888

Priority Date: 07/12/2021

SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP

DOUBLE-CODE DOUBLE-LAYER HOLOGRAPHIC LASER ANTI-TRANSFER UTILIZATION LABEL CAPABLE OF BEING COLLECTED AT HIGH SPEED AND PREPARATION METHOD THEREOF

The invention provides a double-code double-layer holographic laser transfer-preventing utilization label capable of being collected at high speed, which sequentially comprises a first substrate layer, a holographic laser information surface layer, a two-dimensional code layer, a white ink layer, a first adhesive layer, a first aluminum-plated layer, a second substrate layer, an uncovering adhesive layer, a verification information layer, a second aluminum-plated layer, a holographic laser information sublayer, a non-dry bottom adhesive layer and a release layer from top to bottom; uncovering the removable holographic surface layer of the label above the adhesive layer and the anti-transfer holographic sublayer below the adhesive layer; the label is affixed to the surface of the item and/or its packaging by a non-drying primer layer. After the holographic laser information surface layer is uncovered, the bottom rate of the anti-transfer holographic sublayer can be ensured to be more than 99.5%, the delamination is complete, the sublayer is complete and lossless, and the transfer cannot be complete through a conventional method, so that the label cannot be completely transferred and reused. The detection level of the two-dimensional code is more than B level, and the two-dimensional code can be collected and identified at high speed.

CLAIM 1. A double-code double-layer holographic laser transfer-preventing utilization label capable of being collected at high speed sequentially comprises a first substrate layer, a holographic laser information surface layer, a two-dimensional code layer, a white ink layer, a first adhesive layer, a first aluminum-plated layer, a second substrate layer, an uncovering adhesive layer, a verification information layer, a second aluminum-plated layer, a holographic laser information sub-layer, a non-dry bottom adhesive layer and a release layer from top to bottom; the first substrate layer, the holographic laser information surface layer, the two-dimensional code layer, the white ink layer, the first adhesive layer, the first aluminum-plated layer, the second substrate layer and the uncovering adhesive layer form an uncoverable holographic surface layer of the label; the verification information layer, the second aluminum-plated layer, the holographic laser information sublayer and the non-dry bottom adhesive layer form an anti-transfer holographic sublayer of the label; the label is affixed to the surface of the item and/or its packaging by a non-drying primer layer.

P34768

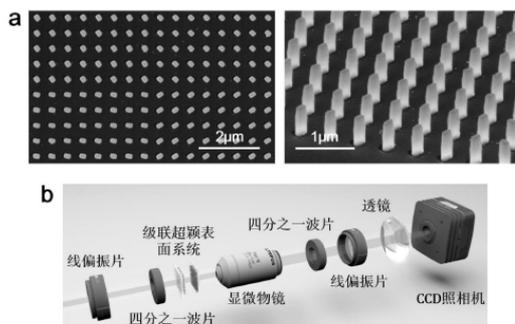
CN114167706

Priority Date: 06/12/2021

BEIJING UNIVERSITY OF TECHNOLOGY

ROTARY MULTIPLEXING METHOD BASED ON CASCADE METASURFACE HOLOGRAPHY

The invention relates to a rotary multiplexing method based on cascade metasurface holography, and belongs to the technical field of micro-nano optics, holographic display and channel multiplexing application. The method uses an iterative gradient descent optimization algorithm to obtain the phase distribution of two metamaterial surface holograms participating in cascade connection, and the phase distribution is coded on different glass substrates by amorphous silicon nanorod antennas through the processes of deposition, photoetching, stripping, etching and the like. When the method is used for holographic encryption, only two single-layer metasurface holograms are stacked according to the correct relative in-plane rotation angle, the encrypted information can be read, and the method can be applied to the fields of information security, encryption, anti-counterfeiting and the like needing to hide confidential data. Furthermore, the holographic reconstruction of the rotationally multiplexed cascaded metasurface system can be encoded over discrete and equidistant angular spatial positions, which makes it potential for use as an optical protractor.



CLAIM 1. The rotary multiplexing method based on the cascade metasurface holography is characterized in that: the method comprises the following steps: obtaining the phase distribution of two metasurface holograms A and B forming the rotating multiplexing cascade metasurface system by using an iterative gradient descent optimization algorithm; the two metasurface holograms A and B respectively correspond to a reproduction image which is independent of each other; when two metasurface holograms are stacked at a preset distance, a plurality of brand new reproduced images can be reproduced according to different relative in-plane rotation angles.

P34776

PRINTING – BRAND PROTECTION

CN114150526

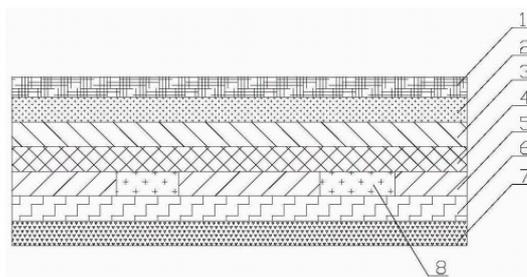
Priority Date: 13/12/2021

SHANDONG TAIBAO PACKAGING PRODUCT

HIDDEN HOLLOW-OUT ALUMINIZED PATTERN HOLOGRAPHIC ANTI-COUNTERFEITING TRANSFER PAPER AND MANUFACTURING METHOD THEREOF

The invention relates to a hidden hollow aluminized pattern holographic anti-counterfeiting transfer paper and a manufacturing method thereof, wherein the transfer paper is characterized by comprising the following components in sequence from top to bottom: the transfer printing paper comprises a copper plate paper layer, a transfer glue layer, a second aluminum plating layer, an aluminum layer connection coating, a first aluminum plating layer, a holographic information layer and an impression transfer coating, wherein the first aluminum plating layer is a hollowed aluminum plating anti-counterfeiting pattern layer, and a shielding layer is arranged at the hollowed part of the first aluminum plating layer. The manufacturing method comprises the following steps: coating an impression transfer coating on the base film layer, and drying; embossing a holographic information layer on the embossed transfer coating; printing a hollowed shielding layer on the holographic information layer, drying, and then aluminizing to form a first aluminized layer; coating an aluminum layer connection coating on the first aluminum layer in a full-page manner, and drying; fully aluminizing the aluminum layer connection coating to form a second aluminized layer; and coating a transfer glue layer on the layer structure film, compounding the layer structure film with the copperplate paper layer, and removing the film to obtain the transfer paper. The invention has the advantages of good anti-counterfeiting performance, stable quality and convenient identification.

CLAIM 1. The hidden hollowed aluminized pattern holographic anti-counterfeiting transfer paper is characterized in that the hidden hollowed aluminized pattern holographic anti-counterfeiting transfer paper sequentially comprises the following components from top to bottom: the transfer printing paper comprises a copper plate paper layer, a transfer glue layer, a second aluminum plating layer, an aluminum layer connection coating, a first aluminum plating layer, a holographic information layer and an impression transfer coating, wherein the first aluminum plating layer is a hollowed aluminum plating anti-counterfeiting pattern layer, and a shielding layer is arranged at the hollowed part of the first aluminum plating layer.



P34779

PRINTING – LABEL – BRAND PROTECTION

CN114148110

Priority Date: 02/12/2021

SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP

HIGH-TEMPERATURE-RESISTANT HOLOGRAPHIC INFORMATION ELECTROCHEMICAL ALUMINUM MATERIAL FOR CLOTH COVER HOT STAMPING AND PREPARATION METHOD AND APPLICATION THEREOF

The invention provides a high-temperature-resistant holographic information electrochemical aluminum material for cloth cover hot stamping, which comprises a base material layer, a release layer, a holographic imaging layer, an information digital layer, an aluminum coating layer and a back adhesive layer which are combined and laminated from top to bottom; the holographic imaging layer and the information digital layer have hot stamping resistance, laser holography and informatization anti-counterfeiting functions; the holographic imaging layer is formed by a mixed coating of polyacrylate and fluorine-containing resin with the mass ratio of 100:8-20 under the conditions of 160-220 °C, 0.1-1.0MPa and double hard rollers through single-mold pressing, and a nickel plate is adopted during mold pressing. The electrochemical aluminum material has the triple effects of high temperature resistance, laser holographic anti-counterfeiting and informatization anti-counterfeiting; the high-speed thermoprinting can be realized, the thermoprinting pattern is clear, the reflection brightness is high, and the detail of the observed holographic image is clear and bright; the hot stamping is firm, the bottom is not exposed, no image and text are generated, and the anti-friction, bending and stretching effects are realized; is not easy to be completely and perfectly taken off and recycled. The cloth cover of the alumite material is thermoprinted, and the information digital layer is not easy to damage after washing.

P34784

BRAND PROTECTION

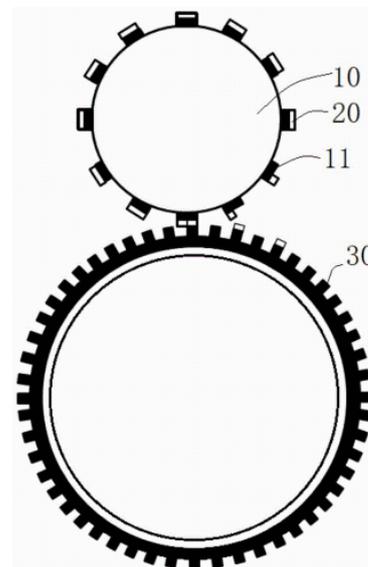
CN114132062

Priority Date: 03/09/2020

SVG TECHNOLOGY

MICRO-NANO LATENT IMAGE ANTI-COUNTERFEITING DEVICE, PREPARATION METHOD THEREOF AND PRINTING ROLLER

The invention discloses a micro-nano latent image anti-counterfeiting device, a preparation method thereof and a printing roller, wherein the micro-nano latent image anti-counterfeiting device comprises the following steps: forming a target pattern by dot-matrix arrangement design, and manufacturing a plate roller matched with the target pattern, wherein the plate roller is provided with bulges which are adapted to the target pattern; coating a shielding material layer on the raised surface, transferring the shielding material layer to a structure layer to be plated through a roller coated with the shielding material layer on the surface, and forming a transfer shielding layer on the structure layer to be plated, wherein the shape and position distribution of the transfer shielding layer on the structure layer to be plated is consistent with the target pattern; and forming a coating on the surface of the structural layer to be plated, wherein the shape and position distribution of the coating on the structural layer to be plated is complementary with that of the transfer printing shielding layer. The preparation method of the invention realizes the small-size and high-precision patterning of the metal layer of the packaging material, and has better aesthetic effect and anti-counterfeiting function.



CLAIM 1. A preparation method of a micro-nano latent image anti-counterfeiting device is characterized by comprising the following steps: manufacturing a plate roller (10) matched with a target pattern, wherein the plate roller (10) is provided with bulges (11), and the pattern formed on the plate roller (10) by the bulges (11) is adaptive to the target pattern; coating a shielding material layer (20) on the surface of the protrusion (11), transferring the shielding material layer (20) onto a structure layer to be plated (30) through a plate roller (10) coated with the shielding material layer (20) on the surface, forming a transfer shielding layer (21) on the structure layer to be plated (30), wherein the shape and position distribution of the transfer shielding layer (21) on the structure layer to be plated (30) is consistent with the target pattern; and forming a coating on the surface of the structure layer (30) to be coated, wherein the shape and position distribution of the coating on the structure layer (30) to be coated is complementary with the transfer printing shielding layer (21).

P34785

LABEL

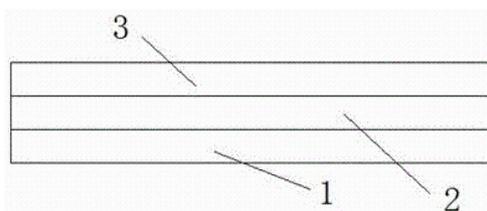
CN114120799

Priority Date: 07/12/2021

SHENZHEN YONGFENGJI TECHNOLOGY

HOLOGRAPHIC ANTI-COUNTERFEITING LABEL PASTING FILM WITH INVISIBLE EFFECT AND MANUFACTURING METHOD THEREOF

The invention provides a holographic anti-counterfeiting label adhesive film with invisible effect and a manufacturing method thereof, wherein the adhesive film comprises a bottom layer, an information layer and a protective layer; the bottom layer is made of polyethylene glycol terephthalate; the anti-counterfeiting information layer comprises an invisible code attached to the bottom layer, the invisible code is an invisible set image formed by discrete dot matrixes, and the set image is reflected by laser to form a readable optical signal; the protective layer covers the anti-counterfeiting information layer and is used for preventing the anti-counterfeiting information layer from being damaged. The manufacturing method comprises the following steps: manufacturing a membrane with at least one surface having a laser holographic effect, wherein the membrane comprises a bottom layer and a bearing layer, and the bottom layer is made of polyethylene glycol terephthalate material; forming through holes of a discrete dot matrix on a bearing layer according to the invisible codes through a graphic process, wherein the discrete dot matrix forms a set image; filling invisible materials into the through hole, and flattening the through hole to form an anti-counterfeiting information layer with an invisible set image on the bearing layer; and forming a protective layer on the surface of the anti-counterfeiting information layer by a deposition process.



CLAIM 1. A holographic anti-counterfeiting label adhesive film with invisible effect is characterized by comprising a bottom layer, an information layer and a protective layer; wherein the bottom layer is made of polyethylene terephthalate; the anti-counterfeiting information layer comprises an invisible code attached to a bottom layer, the invisible code is an invisible set image formed by discrete dot matrixes, and the set image forms a readable optical signal through laser reflection; the protective layer covers outside the anti-counterfeiting information layer and is used for preventing the anti-counterfeiting information layer from being damaged.

P34792

CN114106680

Priority Date: 06/01/2022

HENGFENG MATERIAL TECHNOLOGY ZHEJIANG

MOLD-PRESSING TYPE RELEASE COATING FOR HOT STAMPING AND APPLICATION PROCESS THEREOF

The invention belongs to the technical field of heat transfer, and particularly relates to a release coating for moldable hot stamping and an application process thereof, which are characterized by comprising the following components in parts by weight: 10-15 parts of polyester TPU, 10-15 parts of polyvinyl acetate, 2-6 parts of unsaturated polyester resin, 2-5 parts of alkyd resin, 0.5-2.5 parts of high-density polyethylene wax powder, 1-3 parts of fumed silica powder, 0-3 parts of dye and 50-100 parts of diluent. The invention has the advantages that the component formula, the coating process and the holographic molding process are innovated, so that the application coating has the hot stamping transfer performance and the molding performance, the production process of the holographic laser hot stamping material is simplified, and the invention has the characteristics of high hot stamping precision, low molding temperature and good holographic laser effect.

CLAIM 1. The release coating for the moldable hot stamping is characterized by comprising the following components in parts by weight: 10-15 parts of polyester TPU, 10-15 parts of polyvinyl acetate, 2-6 parts of unsaturated polyester resin, 2-5 parts of alkyd resin, 0.5-2.5 parts of high-density polyethylene wax powder, 1-3 parts of fumed silica powder, 0-3 parts of dye and 50-100 parts of diluent; the softening point of the polyester TPU is 70 ; the softening point of the polyvinyl acetate is 43 ; the thermal deformation temperature of the unsaturated polyester resin is 80 ; the alkyd resin is short-oil alkyd resin with the vegetable oil content of 32 percent; the average grain diameter of the high-density polyethylene wax powder is 4.5 μm ; the average particle diameter of the fumed silica powder is 2.5-3 μm , and the DBP absorption value is 3.0-3.2 $\text{m}^3(\text{ii})/\text{g}$; the diluent is prepared from butanone, ethyl acetate, n-propyl ester and isopropanol in a mass ratio of 6: 6: 2: 1 are mixed.

P34793

PRINTING

CN114103511

SHANGHAI MAY MAY NOBLE PRINTING

Priority Date: 26/11/2021

INKLESS LASER PRINTING PAPER, PREPARATION PROCESS THEREOF AND INKLESS LASER PRINTING PROCESS

The application relates to the field of paper printing, in particular to inkless laser printing paper and a printing process. An inkless laser printing process comprising the steps of: step 01): acquiring digital image-text information to be printed, and adjusting the image-text information to become laser printing information identified by laser printing equipment; step 02): putting inkless laser printing paper; step 03): starting the operation, and irradiating laser on the inkless laser printing paper to obtain a finished product with pictures and texts. The method has the advantages of improving the hydrophobicity of the ink-free laser printing paper, enabling the printed pictures and texts to be fresh and vivid, being capable of being combined with a laser color hologram plate making technology to realize anti-counterfeiting, being capable of being stored for a long time and having good development prospect. Meanwhile, the method has the advantages of enabling the color sense of the image-text information to be richer and meeting the environmental protection idea promoted by the market.

CLAIM 1. The inkless laser printing paper comprises a paper base layer, a precoating layer, a thermosensitive cyan layer, a thermosensitive red layer and a thermosensitive yellow layer which are sequentially arranged, and is characterized in that the paper base layer comprises the following raw materials in parts by weight: 65-80 parts of wood pulp fiber, 6-8 parts of terylene, 4-6 parts of acrylon, 1-3 parts of antibacterial agent, 5-8 parts of polydimethylsiloxane, 1.2-1.7 parts of polyacrylamide, 0.8-1.5 parts of microcrystalline wax, 20-32 parts of kaolin and 40-50 parts of water.

Click on the title to return to table of contents

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

P34634

BRAND PROTECTION – RELIEF

WO202258588

ALPLA WERKE ALWIN LEHNER

Priority Date: 21/09/2020

PLASTIC CONTAINER AND METHOD FOR DETERMINING A PROPERTY OF A PLASTIC CONTAINER

The invention relates to a plastic container (100) having a container wall (102) with an outside (10) and an inside. A surface (11) of the outside (10) has a structure at least in a first region (30). Said structure is formed by elevations (31) and/or recesses (32). Each elevation (31) or recess (32) has one or more boundary faces (33). Each transition from a first boundary face (33) to a second boundary face (33) or to the surface (11) of the container wall (102) has a radius, which is less than or equal to 5 μ m. The invention also relates to a method for determining a property of a plastic container and verifying the authenticity.

CONTENANT EN PLASTIQUE ET PROCÉDÉ POUR DÉTERMINER UNE PROPRIÉTÉ D'UN CONTENANT EN PLASTIQUE

L'invention concerne un contenant en plastique (100) dont une paroi (102) présente une face externe (10) et une face interne. Une surface (11) de la face externe (10) possède, au moins dans une première zone (30), une structure. Cette structure est formée de saillies (31) et/ou d'évidements (32). Chaque saillie (31) ou évidement (32) présente une ou plusieurs surfaces limites (33). Une transition entre une première surface limite (33) et une deuxième surface limite (33) ou la surface (11) de la paroi (102) du contenant présente un rayon inférieur ou égal à 5 μ m. L'invention concerne en outre un procédé pour déterminer une propriété d'un contenant en plastique et une preuve de son authenticité.



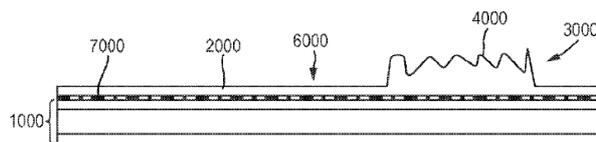
CLAIM 1. Plastic container (100) having a container wall (102) with an outer side (10) and an inner side, wherein a surface (11) of the outer side (10) has a structure at least in a first region (30), wherein this structure is formed by elevations (31) and/or depressions (32), wherein each elevation (31) or depression (32) has one or more boundary surfaces (33), characterized in that a transition from a first boundary surface (33) to a second boundary surface (33) or to the surface (11) of the container wall (102) has a radius which is less than or equal to 5 μ m, preferably less than or equal to 1 μ m and particularly preferably less than or equal to 0.5 μ m.

SECURITY DEVICES AND METHODS OF MANUFACTURE THEREOF

A security device is disclosed, comprising: a substrate having opposing first and second surfaces; on the first surface of the substrate, a surface relief structure formed of one or more cured, at least semi-transparent material(s); and on the second surface of the substrate, a print layer. In at least a first region of the security device in at least part of which the substrate is transparent or translucent, the surface relief structure and the print layer are each defined in accordance with a common image and are in alignment with one another, the surface relief structure exhibiting a first set of feature(s) of the common image and the print layer exhibiting a second set of feature(s) of the common image. The common image is exhibited by the surface relief structure and the print layer in combination with one another and the surface relief structure provides tactility to the common image.

DISPOSITIFS DE SÉCURITÉ ET LEURS PROCÉDÉS DE FABRICATION

Est divulgué un dispositif de sécurité comprenant : un substrat comportant une première et une seconde surface opposées ; sur la première surface du substrat, une structure en relief de surface constituée d'un ou plusieurs matériaux durcis, au moins semi-transparents ; et sur la seconde surface du substrat, une couche d'impression. Dans au moins une première zone du dispositif de sécurité, dont au moins une partie présente un substrat transparent ou translucide, la structure en relief de surface et la couche d'impression sont chacune définies conformément à une image commune et sont alignées l'une avec l'autre, la structure en relief de surface présentant un premier ensemble de caractéristique(s) de l'image commune et la couche d'impression présentant un second ensemble de caractéristique(s) de l'image commune. L'image commune est présentée par la structure en relief de surface et la couche d'impression en association l'une avec l'autre et la structure en relief de surface procure une tactilité à l'image commune.



CLAIM 1. A security device, comprising: a substrate having opposing first and second surfaces; on the first surface of the substrate, a surface relief structure formed of one or more cured, at least semi-transparent material(s); and on the second surface of the substrate, a print layer; wherein, in at least a first region of the security device in at least part of which the substrate is transparent or translucent, the surface relief structure and the print layer are each defined in accordance with a common image and are in alignment with one another, the surface relief structure exhibiting a first set of feature(s) of the common image and the print layer exhibiting a second set of feature(s) of the common image, whereby the common image is exhibited by the surface relief structure and the print layer in combination with one another and the surface relief structure provides tactility to the common image.

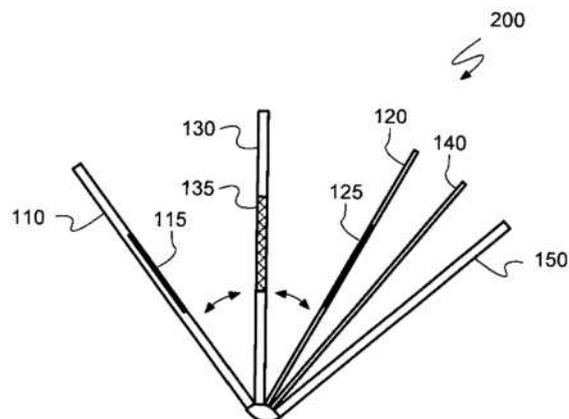
MULTI-SHEET DOCUMENT WITH SECURITY FEATURES AND METHOD AND DEVICE FOR THE PRODUCTION THEREOF

A multi-sheet document has a first, a second and a third document sheet. A visible optical security feature in which a hidden image or character is optically coded is provided on the first and second document sheets. The third document sheet has an at least partially transparent decoding element for optically decoding both the first and the second optical security feature. The document sheets are movably connected in such a way that, characterized in that the first security feature can be brought into at least partial overlap with the decoding element opposite a first document side of the third document sheet and the second Security feature can be brought into at least partial overlap with the decoding element opposite a second document side of the third document sheet opposite the first document side. Each of the two hidden images or characters can be optically decoded for the purpose of verifying the respective security feature on the basis of the decoding element, in that the decoding element is brought into coincidence with the respective security feature to be decoded and this respective security feature is viewed through the decoding element in the spectral range.

DOCUMENT DE PLUSIEURS FEUILLES DOTÉ DE CARACTÉRISTIQUES DE SÉCURITÉ, AINSI QUE PROCÉDÉ ET DISPOSITIF POUR PRODUIRE CELUI-CI

L'invention concerne un document de plusieurs feuilles comprenant une première, une deuxième et une troisième feuille de document. Sur les première et deuxième feuilles de document, une caractéristique de sécurité optique visible est fournie, dans laquelle une image cachée ou un signe caché est optiquement codé. La troisième feuille de document comprend un élément de décodage au moins semi-transparent pour décoder optiquement à la fois la première caractéristique de sécurité optique et la seconde caractéristique de sécurité optique. Les feuilles de document sont reliées mobiles de telle sorte que la première caractéristique de sécurité peut être amenée en chevauchement au moins partiel avec l'élément de décodage tout en faisant face à une première page de document de la troisième feuille de document et la seconde caractéristique de sécurité peut être amenée en chevauchement au moins partiel avec l'élément de décodage tout en faisant face à une seconde page de document de la troisième feuille de document, la seconde page de document étant opposée à la première page de document. Chacun(e) des deux signes cachés ou images cachées peut être optiquement décodé(e) au moyen de l'élément de décodage, afin de vérifier la caractéristique de sécurité en question, en amenant l'élément de décodage en chevauchement avec la caractéristique de sécurité en question qui doit être décodée et en observant ladite caractéristique de sécurité en question à travers l'élément de décodage dans la plage spectrale.

CLAIM 1. A multi-sheet document (100; 200), comprising: a first document sheet (110) on or in which a first optical security feature (115) visible at least in a certain optical spectral range is provided; a second document sheet (120) on or in which a second optical security feature (125) visible at least in the spectral range is provided; and a third document sheet (130) having a decoding element (135) at least partially transparent in the spectral range for optically decoding both the first and the second optical security feature (125); wherein: a first hidden image or character (155) is optically encoded into the first optical security feature (115) and a second hidden image or character (155) is optically encoded into the second optical security feature (125); the third document sheet (130) is movably connected to the first document sheet (110) and the second document sheet (120), characterized in that the first security feature (115) can be brought into at least partial overlap with the decoding element (135) opposite a first document side of the third document sheet (130) and the second Security feature (125) can be brought into at least partial overlap with the decoding element (135) opposite a second document side of the third document sheet (130) opposite the first document side; and each of the two hidden images or characters (155) can be optically decoded in the spectral range for the purpose of verifying the respective security feature on the basis of the decoding element (135), in that the decoding element (135) is brought into coincidence with the first security feature (115) or second security feature (125) to be decoded and this respective security feature (115 or 125) is viewed through the decoding element (135) in the spectral range.



OPTICALLY VARIABLE SECURITY ELEMENT

The invention relates to an optically variable security element (12) having a reflective flat region (20), which, in front illumination, shows at least two optically variable effects which can be detected from different viewing directions and appear with different first and second colours, and which, in rear illumination, shows an image in a third different colour. According to the invention, the reflective flat region (20) contains two separate relief structures (24, 34) which form a lower and a higher relief structure and which overlap in a feature region. The higher and lower relief structure (24, 34) are each provided with a reflection-increasing coating (26, 36) which follow the course of the relief and which have a wavelength-dependent reflection and transmission in the visible spectral range and have at least one reflection band and at least one transmission band. One reflection band of the second reflection-increasing coating (26) is at least partially in a transmission band of the first reflection-increasing coating (36) and overlaps at least one transmission band of the two reflection-increasing coatings (26, 36).

ÉLÉMENT DE SÉCURITÉ OPTIQUEMENT VARIABLE

L'invention concerne un élément de sécurité optiquement variable (12) ayant une région plate réfléchissante (20), qui, dans l'éclairage avant, présente au moins deux effets optiquement variables qui peuvent être détectés à partir de différentes directions de visualisation et qui apparaissent avec des première et seconde couleurs différentes, et qui, dans l'éclairage arrière, présente une image dans une troisième couleur différente. Selon l'invention, la région plate réfléchissante (20) contient deux structures en relief séparées (24, 34) qui forment une structure en relief inférieure et une structure en relief supérieure et qui se chevauchent dans une région caractéristique. Les structures en relief supérieure et inférieure (24, 34) sont chacune pourvues d'un revêtement augmentant la réflexion (26, 36) qui suit le tracé du relief et qui a une réflexion et une transmission dépendant de la longueur d'onde dans la plage spectrale visible et a au moins une bande de réflexion et au moins une bande de transmission. Une bande de réflexion du second revêtement augmentant la réflexion (26) est au moins partiellement dans une bande de transmission du premier revêtement augmentant la réflexion (36) et chevauche au moins une bande de transmission des deux revêtements augmentant la réflexion (26, 36).

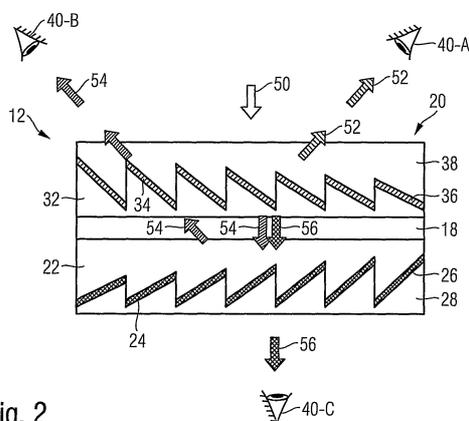


Fig. 2

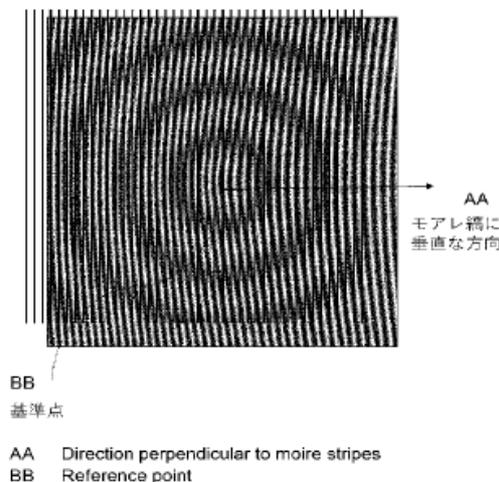
CLAIM 1. An optically variable security element for securing valuables, the areal extent of which defines a z-axis perpendicular thereto, having a reflective areal region which, in plan view, optically variable effects which can be recognized from different viewing directions and appear with different first and second colors, and which, when viewed through, shows an appearance in a third, different color,-the reflective surface region contains two independent relief structures, which are arranged in the z direction in different height steps and form a lower-lying relief structure and a higher-lying relief structure, and which overlap in a feature region, -the higher relief structure is provided with a first reflection-increasing coating which follows the relief course and has a wavelength-dependent reflection and transmission in the visible spectral region which has at least one reflection band and at least one transmission band, -the lower-lying relief structure is provided with a second reflection-increasing coating which follows the relief course and has a wavelength-dependent reflection and transmission in the visible spectral region, which has at least one reflection band and at least one transmission band,-wherein a reflection band of the second reflection-increasing coating lies at least partially in a transmission band of the first reflection-increasing coating, and at least one transmission band of the two reflection-increasing coatings overlaps, so that-the higher relief structure exhibits in plan view a first optically variable effect in the first color, the lower-lying relief structure exhibits, in plan view through the first reflection-increasing coating, a second optically variable effect in the second, different color, and wherein, in a view through the higher-lying and lower-lying relief structure, an appearance in the third, different color is exhibited.

MOIRE DISPLAY BODY, DEVICE FOR GENERATING MOIRE FORMATION PATTERN, SYSTEM FOR GENERATING MOIRE FORMATION PATTERN, AND METHOD FOR GENERATING MOIRE FORMATION PATTERN

Heretofore, there has existed neither a pattern capable of forming a moire image that gives the impression of a moving image nor anything capable of creating such a pattern. This moire display body comprises a first pattern and a second pattern which is disposed at a location separated from the first pattern by a prescribed distance and in which at least one region is configured to have a phase that continuously changes with respect to the first pattern. For example, the phase of the second pattern, when defined to change according to a mathematical function in at least one section thereof, is capable of forming a moire image that gives the impression of a moving image. Accordingly, it is possible to form a moire image that gives the impression of a natural moving image by supplying input data such as an input image and feature values thereof.

CORPS D’AFFICHAGE DE MOIRÉ, DISPOSITIF POUR GÉNÉRER UN MOTIF DE FORMATION DE MOIRÉ, SYSTÈME POUR GÉNÉRER UN MOTIF DE FORMATION DE MOIRÉ ET PROCÉDÉ POUR GÉNÉRER UN MOTIF DE FORMATION DE MOIRÉ

Jusqu’à présent, il n’existe pas de motif pouvant former une image de moiré qui donne l’impression d’une image animée ni quoique ce soit pouvant créer un tel motif. Le corps d’affichage de moiré de la présente invention comprend un premier motif et un second motif qui est disposé à un emplacement séparé du premier motif à une distance prescrite et dans lequel au moins une région est configurée pour avoir une phase qui change en continu par rapport au premier motif. Par exemple, la phase du second motif, lorsqu’elle est définie pour changer selon une fonction mathématique dans au moins une section de cette dernière, peut former une image de moiré qui donne l’impression d’une image animée. Ainsi, il est possible de former une image de moiré qui donne l’impression d’une image animée naturelle en fournissant des données d’entrée telles qu’une image d’entrée et des valeurs caractéristiques de cette dernière.



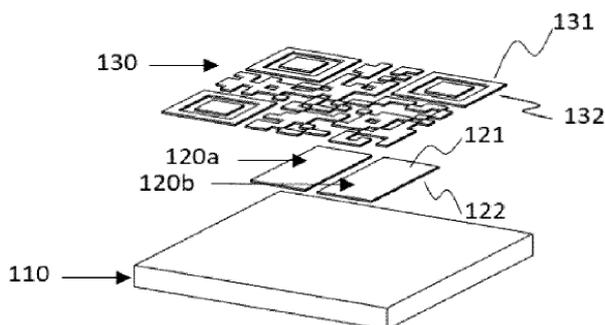
CLAIM 1. A moir display comprising: a first pattern; and a second pattern disposed at a predetermined distance from the first pattern, the second pattern continuously changing in phase with respect to the first pattern in at least one region.

SECURITY MARKING, METHOD AND DEVICE FOR READING THE SECURITY MARKING, SECURITY DOCUMENT MARKED WITH THE SECURITY MARKING, AND METHOD AND SYSTEM FOR VERIFYING SAID SECURITY DOCUMENT

The invention relates to a security marking (100), a method and a device for reading and decoding the security marking (100), a security document (150) marked with the security marking (100), and a method and a system for verifying and authenticating said security document (150). The security marking (100) comprises a machine readable marking (130) overlapping with a magnetically induced layer (120) of a material including magnetically oriented reflective platelet-shaped magnetic or magnetizable pigment particles with two zones (120a) and (120b) of distinct orientations of the particles. The encoded data on the machine readable marking (130) being decodable only after the data separately read from the two zones (120a) and (120b) are gathered.

MARQUAGE DE SÉCURITÉ, PROCÉDÉ ET DISPOSITIF DE LECTURE DU MARQUAGE DE SÉCURITÉ, DOCUMENT DE SÉCURITÉ MARQUÉ AVEC LE MARQUAGE DE SÉCURITÉ, ET PROCÉDÉ ET SYSTÈME DE VÉRIFICATION DUDIT DOCUMENT DE SÉCURITÉ

La présente invention concerne un marquage de sécurité (100), un procédé et un dispositif de lecture et de décodage du marquage de sécurité (100), un document de sécurité (150) marqué avec le marquage de sécurité (100), et un procédé et un système de vérification et d'authentification dudit document de sécurité (150). Le marquage de sécurité (100) comprend un marquage lisible par machine (130) se chevauchant avec une couche magnétiquement induite (120) d'un matériau comprenant des particules de pigment magnétiques ou magnétisables en forme de plaquettes réfléchissantes orientées magnétiquement avec deux zones (120a) et (120b) d'orientations distinctes des particules. Les données codées sur le marquage lisible par machine (130) peuvent être décodables uniquement après que les données lues séparément sur les deux zones (120a) et (120b) sont rassemblées.



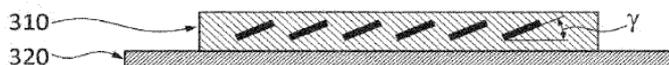
CLAIM 1. A security marking (100) characterized by comprising: a flat substrate (110) ; a magnetically induced layer (120) of a material comprising magnetically oriented reflective platelet-shaped magnetic or magnetizable pigment particles, the magnetically induced layer being applied on the substrate (110) and comprising a first zone (120a) wherein said magnetically oriented reflective plateletshaped magnetic or magnetizable pigment particles have their planar faces oriented in a first direction and a second zone (120b) , distinct from the first zone (120a) , wherein said magnetically oriented reflective platelet-shaped magnetic or magnetizable pigment particles have their planar faces oriented in a second direction distinct from the first direction, the platelet-shaped particles in the first zone (120a) having planar faces with an elevation angle γ_1 with respect to a plane of the substrate (110) and the platelet-shaped particles in the second zone (120b) having planar faces with an elevation angle γ_2 with respect to the plane of the substrate (110) , each acute angle of the planar faces with respect to the plane of the substrate being in a range from about 5° to about 25°; a machine readable marking (130) including a reference pattern (133) and a code pattern (134) representing encoded data, the machine readable marking (130) being respectively applied either on a top face (121) of the magnetically induced layer (120) or on the substrate (110) between said substrate and a rear face (122) of the magnetically induced layer (120) , a first area (134a) of the code pattern (134) being disposed in front of the first zone (120a) and a remaining second area (134b) of the code pattern (134) being disposed in front of the second zone (120b).

SECURITY DOCUMENTS OR ARTICLES COMPRISING OPTICAL EFFECT LAYERS COMPRISING MAGNETIC OR MAGNETIZABLE PIGMENT PARTICLES AND METHODS FOR PRODUCING SAID OPTICAL EFFECT LAYERS

The invention relates to the field of the protection of security documents such as for example banknotes and identity documents against counterfeit and illegal reproduction. In particular, the present invention provides security documents and decorative articles comprising one or more optical effect layers (OELs) and methods for producing said OELs, said OELs comprising magnetically oriented platelet-shaped magnetic or magnetizable pigment particles in an at least partially cured coating layer (x10) and exhibiting an eye-catching optical effect thus allowing an observer to easily authenticate said OELs upon tilting at viewing/observation angles between about -45° and about $+45^\circ$.

DOCUMENTS OU ARTICLES DE SÉCURITÉ COMPORTANT DES COUCHES À EFFET OPTIQUE COMPRENANT DES PARTICULES DE PIGMENTS MAGNÉTIQUES OU MAGNÉTISABLES ET PROCÉDÉS DE PRODUCTION DESDITES COUCHES À EFFET OPTIQUE

L'invention concerne le domaine de la protection de documents de sécurité, par exemple des billets de banque et des pièces d'identité, contre la contrefaçon et la reproduction illégale. En particulier, la présente invention concerne des documents de sécurité et des articles décoratifs comprenant une ou plusieurs couches à effet optique (OEL) et des procédés de production desdites OEL, lesdites OEL comprenant des particules de pigments magnétiques ou magnétisables lamelliformes orientées magnétiquement dans une couche de revêtement au moins partiellement durcie (x10) et présentant un effet optique qui attire l'œil permettant ainsi à un observateur d'authentifier facilement lesdites OEL lors d'une inclinaison à des angles de visualisation/d'observation compris entre environ -45° et environ $+45^\circ$.



CLAIM 1. A security document or a decorative article comprising a substrate (x20) having a two-dimensional surface and one or more optical effect layers (OELs) on said substrate (x20), wherein said one or more optical effect layers (OELs) comprise magnetically oriented platelet-shaped magnetic or magnetizable pigment particles having a main axis X and being in an at least partially cured coating layer (x10), wherein an orientation of the platelet-shaped pigment particles is defined by a platelet vector which is the vector parallel to the main axis X of the particle, wherein the platelet vectors of neighboring platelet-shaped magnetic or magnetizable pigment particles are substantially parallel to each other, wherein the platelet vectors of the platelet-shaped magnetic or magnetizable pigment particles are angled with respect to the two-dimensional surface of the substrate (x20) at the positions of the particles by an elevation angle y , said elevation angle y being larger than 0 and smaller than 30 ($0 < y < 30$) or larger than 150 and smaller than 180 ($150 < y < 180$), so that the one or more optical effects layers (OELs) exhibit an increase of brightness to reach a maximum value of brightness and a decrease of brightness within a viewing angle from -45 to $+45$ of the substrate (x20).

P34658

PRINTING

WO202237941

Priority Date: 20/08/2020

LEONHARD KURZ STIFTUNG

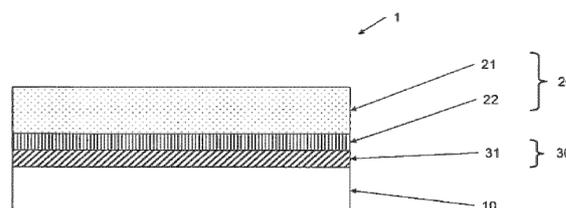
MULTILAYER BODY AND METHOD FOR PRODUCING A MULTILAYER BODY

The invention relates to a multilayer body (1), in particular a laminate, and to a method for producing a multilayer body (1). The multilayer body (1) comprises a substrate (10), at least one decorative layer (30) and at least one protective layer (20). The at least one protective layer (20) comprises at least one adhesive layer (22) and at least one protective layer (21), the at least one protective layer (21) comprising or consisting of paper, in particular transparent paper.

CORPS MULTICOUCHE ET PROCÉDÉ DE PRODUCTION D'UN CORPS MULTICOUCHE

L'invention concerne un corps multicouche (1), en particulier un stratifié, et un procédé de production d'un corps multicouche (1). Le corps multicouche (1) comprend un substrat (10), au moins une couche décorative (30) et au moins une couche de protection (20). La ou les couches de protection (20) comprennent au moins une couche adhésive (22) et au moins une couche de protection (21), la ou les couches de protection (21) comprenant ou étant constituées de papier, en particulier de papier transparent.

CLAIM 1. Method for producing a multilayer body (1) according to Claim 60, characterized in that step a) further comprises the following steps, in particular which are carried out in the following order: a1) providing the substrate (10), a2) providing the at least one decorative layer (30) as a transfer layer of a transfer film, wherein the transfer film further comprises a carrier layer and the transfer layer, a3) applying the at least one decorative layer (30) in at least one partial region to the substrate (10), a4) peeling off the carrier layer, in particular while retaining the substrate (10) provided with the at least one decorative layer (30). Method for producing a multilayer body (1) according to Claim 61, characterized in that the substrate provided in step a), more preferably the substrate provided in step a1), comprises at least one optical paint (11). Method for producing a multilayer body (1) according to one of Claims 61 to 62, characterized in that the transfer film provided as decorative layer (30) in step a2) has at least one release layer, in particular which is arranged between the carrier layer and the transfer layer.



P34662

PRINTING – CARD

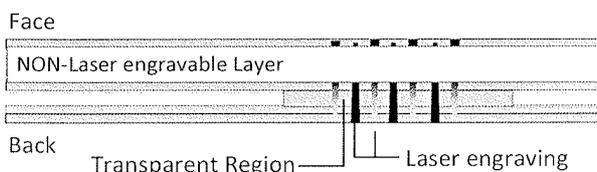
US20220088958

Priority Date: 24/09/2020

CANADIAN BANK NOTE

LASER MARKED OPTICALLY VARIABLE DEVICE

A security device for security documents provides an angle-dependent Moire effect. A security device for a security document and method for making the security device are provided. At least two interlaced laser engraved images form an angle dependent parallax effect. First and second images are laser engraved at a substrate of the security document. To render the security device more difficult to copy, a colour changing effect or a nonreciprocal transmission effect may be achieved by adding a coloured (absorptive or emissive) layer between or within non-laser engravable layers situated between the laser engravable layers, and/or by adding a patterned phase diffraction grating situated between the laser engravable layers.



CLAIM 1. A security device for a security document comprising at least two interlaced laser engraved images forming an angle dependent parallax effect wherein first and second images are laser engraved at a surface of a substrate of the security document, and the security device comprises a colour image on or within at least one non-laser-engravable layer situated between laser engravable layers.

P34664

PRINTING – LABEL – LUMINESCENCE – THERMOCHROMISM

US20220080763

TEMPTIME

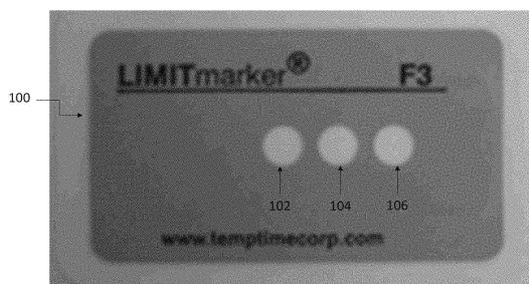
Priority Date: 17/09/2020

ENVIRONMENTAL HISTORY MONITOR WITH SECURITY FEATURES

Environmental monitors for monitoring a predetermined environmental exposure, for example, an historical heat exposure such as a cumulative ambient heat exposure and/or a peak ambient heat exposure may include an environmental indicator material and a security material. The environmental monitor may be configured to attach to a host product for monitoring the predetermined environmental exposure of the host product, and additionally serve as an anti-counterfeiting indicator.

MONITEUR D'HISTORIQUE ENVIRONNEMENTAL AVEC CARACTERISTIQUES DE SECURITE

Selon l'invention, des moniteurs environnementaux pour surveiller une exposition environnementale prédéterminée, par exemple, une exposition à la chaleur historique telle qu'une exposition à la chaleur ambiante cumulative et/ou une exposition à la chaleur ambiante maximale peuvent comprendre un matériau indicateur environnemental et un matériau de sécurité. Le moniteur environnemental peut être configuré pour être attaché à un produit hôte pour surveiller l'exposition environnementale prédéterminée du produit hôte, et servir aussi d'indicateur anticounterfeiting.



CLAIM 1. An environmental monitor, comprising: a substrate; an environmental indicator material supported by the substrate and configured to change its color state responsive to a predetermined environmental exposure other than light exposure; and a security material supported by the substrate, the security material being either a photochromic material configured to change its color state when exposed to specific light wavelengths or a luminescent material configured to give a bright appearance of a predetermined color when exposed to the specific light wavelengths.

P34665

PRINTING

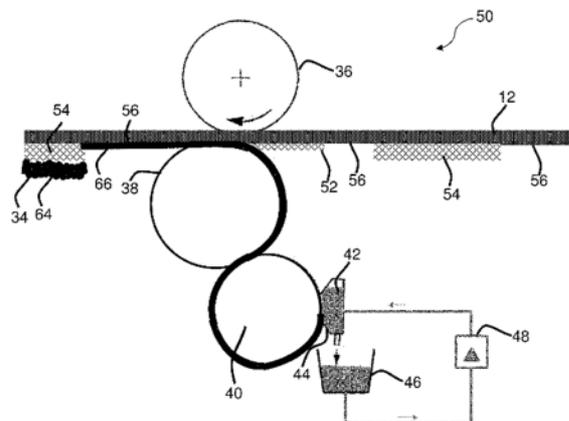
US20220080748

CANON PRODUCTION PRINTING

Priority Date: 11/09/2020

METHOD AND PRINTING DEVICE FOR INFLUENCING AN OPTICAL PROPERTY OF A VARNISH LAYER TO BE APPLIED ONTO A PRINTED RECORDING MEDIUM

In a method and a printing device for influencing an optical property of a varnish layer to be applied onto a printed recording medium, a coating substance is applied onto the recording medium by digital printing before the printing of at least one color separation of the print image on said recording medium. The quantity of the coating substance applied per area unit may be adjusted depending on the desired optical property of the varnish layer to be applied later.



CLAIM 1. A method for influencing an optical property of a varnish layer to be applied onto a recording medium on which a print image is printed by a printing device, the method comprising: digitally printing a coating substance onto the recording medium before a printing of at least one color separation of the print image on the recording medium; and adjusting a quantity of the coating substance applied per area unit based on a desired optical property of a varnish layer to be applied thereafter.

P34666

PATENT OF THE MONTH
PRINTING – BANKNOTE – CARD – RELIEF – MICROLENS

US20220072892

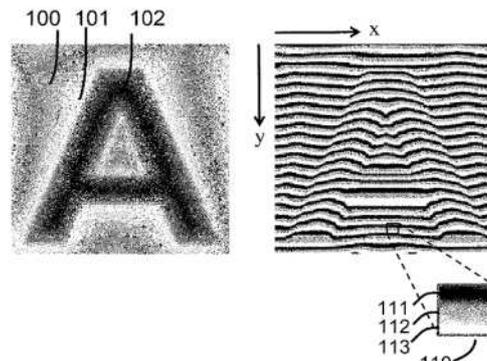
Priority Date: 10/09/2020

EPFL - ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE

SYNTHESIS OF MOVING AND BEATING MOIRÉ SHAPES

The present invention proposes a method for producing an authenticable moiré shape that simultaneously moves and shows a beating effect. The method relies on a combination of the 1D or the 2D moiré and the level line moiré. When tilting a compound showing such a moiré, the moiré shape moves, its intensity levels change significantly but its shape remains the same and is recognizable. Embodiments comprise a base layer made of patterned metallic tiny shapes and a revealing layer made of a 1D array of cylindrical lenslets or of a 2D array of spherical or aspherical lenslets.

CLAIM 1. A method for producing an authenticable moir shape that simultaneously moves and shows a beating effect, the method comprising steps of: creating a height map representing a recognizable shape; creating a base elevation profile comprising an array of replicated base shapes obtained by a linear transformation of said height map; creating a modified base by performing operations comprising a modulo addition between said base elevation profile and a grating of gradients; superposing the modified base and a revealing layer formed by a grating of sampling elements; authenticating the moir shape obtained by superposition of the modified base and the revealing layer by verifying that both a movement and a beating of said moir shape are present, where the beating effect is embodied by moir shape intensities evolving according to displacements of the revealing layer's sampling locations on top of said modified base, and where despite evolving moir shape intensities, there remains a contrast at boundaries of the moving moir shape.



P34681

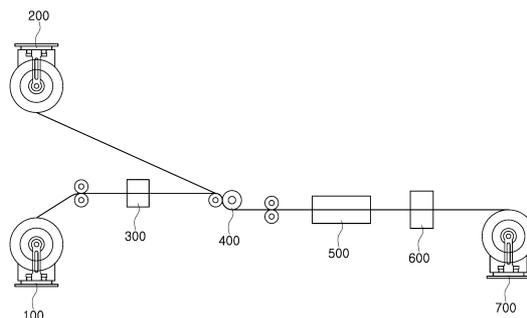
KR20220020054

Priority Date: 11/08/2020

KOREA SECURITY PRINTING & MINTING

PHOTONIC CRYSTAL FILM MANUFACTURING APPARATUS AND MANUFACTURING METHOD

The present invention provides a continuous production method and apparatus for producing a photonic crystal film. According to an embodiment of the present invention, since the photonic crystal film is manufactured by a roll-to-roll process, it is possible to stably and efficiently manufacture the photonic crystal film.



CLAIM 1. An unwinding apparatus comprising: an unwinding unit including a first unwinding roller on which a base film is unwound and a second unwinding roller on which a cover film is unwound; a supply unit disposed downstream of the unwinding unit and supplying a photonic crystal composition to the base film unwound from the first unwinding roller; A coating portion disposed downstream of the supply portion and configured to bond the cover film unwound from the second unwinding roller to an upper surface of the base film to which the photonic crystal composition is supplied to form a bonded film; An aging part disposed downstream of the coating part and configured to maintain the bonding film at a predetermined temperature to induce self-assembly of the photonic crystal composition; a heat transfer part disposed downstream of the aging part, A curing unit for forming a photonic crystal film by irradiating the bonding film having undergone the aging unit with light to cure the photonic crystal composition; and a winding unit disposed downstream of the curing unit and including a winding roller for winding the photonic crystal film.

P34686

PRINTING – CARD – BIOMETRY

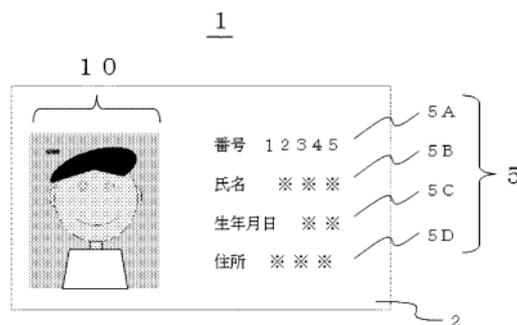
JP2022042577

NATIONAL PRINTING BUREAU

Priority Date: 03/09/2020

BIOMETRIC INFORMATION RECORDING MEDIUM, BIOMETRIC INFORMATION RECORDING MEDIUM ISSUING SYSTEM, AND BIOMETRIC INFORMATION AUTHENTICATION SYSTEM

TOPIC: To provide a biological information recording medium that prevents tampering with a medium containing digitized information in which biological information is embedded and that does not analyze the embedded biological information. INVENTION: a biological information recording medium in which an authentication image in which biological information is embedded in a biological image is formed on a base material, and authentication is performed on the basis of the authentication image, wherein the authentication image is configured so that the biological information embedded in the biological image does not contain: Irreversibly converted biological information recording medium, a system for issuing the biological information recording medium, and an authentication system for authenticating the issued biological information recording medium.



CLAIM 1. A biological information recording medium comprising: an authentication image in which biological information is embedded in a biological image, the authentication image being formed on a base material; and authentication being performed on the basis of the authentication image, wherein the authentication image is formed by irreversibly converting the biological information embedded in the biological image.

P34689

RELIEF – MICROLENS

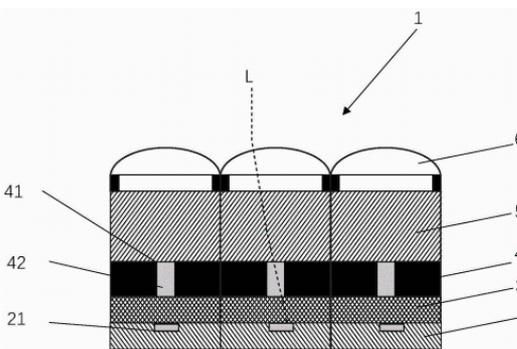
JP2022037917

TOPPAN PRINTING

Priority Date: 25/08/2020

SOLID-STATE IMAGING ELEMENT AND METHOD FOR MANUFACTURING SOLID-STATE IMAGING ELEMENT

The present invention relates to a solid-state imaging element and a method for manufacturing the solid-state imaging element. The solid-state imaging element includes: a semiconductor substrate having a plurality of photoelectric conversion elements arranged two-dimensionally; a first optical path layer provided on one surface side of the semiconductor substrate; a second optical path layer provided on a surface of the first optical path layer opposite to the semiconductor substrate; a light shielding layer formed between the first and second light path layers; and a plurality of microlenses two-dimensionally arranged on a surface of the second optical path layer opposite to the light-shielding layer. The light-shielding layer has a minute opening along the thickness direction to secure an optical path of light incident on the photoelectric conversion element, and a columnar structure through which light can pass is formed in the opening in the same shape as the opening.



CLAIM 1. A solid-state imaging element includes: a semiconductor substrate having a plurality of photoelectric conversion elements arranged two-dimensionally; a first optical path layer provided on one surface side of the semiconductor substrate; a second optical path layer provided on a surface of the first optical path layer opposite to the semiconductor substrate; a light shielding layer formed between the first light path layer and the second light path layer; and a plurality of microlenses two-dimensionally arranged on a surface of the second optical path layer opposite to the light-shielding layer, the light-shielding layer has a minute opening formed along a thickness direction thereof for securing an optical path of light incident on the photoelectric conversion element, the thickness of the light-shielding layer is more than 1.0 μm, in a cross section along the thickness direction and passing through the opening portion, a height dimension of the opening portion in the thickness direction is b, a minimum value of an opening dimension of the opening portion in a direction orthogonal to the thickness direction is a, and an aspect ratio, which is a ratio b/a of the height dimension to the opening dimension, is 1 or more and 2.7 or less, a columnar structure through which light can pass is formed in the opening in the same shape as the opening.

P34704

PRINTING – BANKNOTE – CARD – RELIEF – MICROLENS

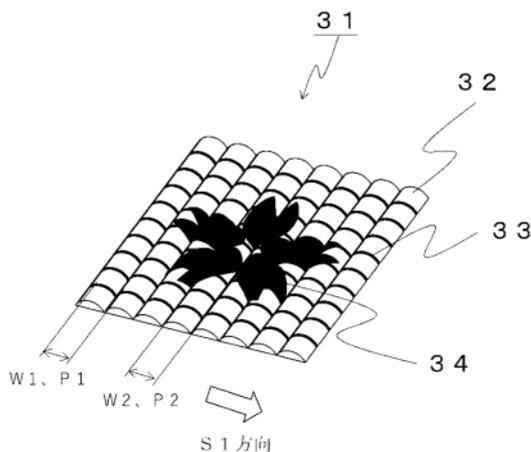
JP2022029221

NATIONAL PRINTING BUREAU

Priority Date: 04/08/2020

LATENT IMAGE FORMING BODY

TOPIC: To provide a latent image forming body that can improve visibility and decoration in addition to anti-counterfeiting effects by dynamically visually recognizing a latent image in response to changes in the angle of incidence of light and changing the color when observed while changing the observation angle. INVENTION: A semicylindrical element group is formed by arranging a plurality of semicylindrical elements having light-dark flip-flop properties in a predetermined direction on at least a portion of the base material, and the base image is divided and/or expanded into a portion of the semicylindrical element group. Or a plurality of compressed latent image elements having partially different optical characteristics, and a diffraction grating is provided in at least one of a region where the latent image element is formed and a remaining region of the semicylindrical element group.



CLAIM 1. A latent image element group is formed on at least a portion of a base material, the latent image element group including a plurality of latent image elements obtained by dividing and/or compressing a base image and arranged in a predetermined direction, the latent image element group having light-dark flip-flop properties; Wherein the latent image element has at least a portion of a semicylindrical cross-sectional shape and includes a diffraction grating.

P34712

LABEL – TAMPER EVIDENCE

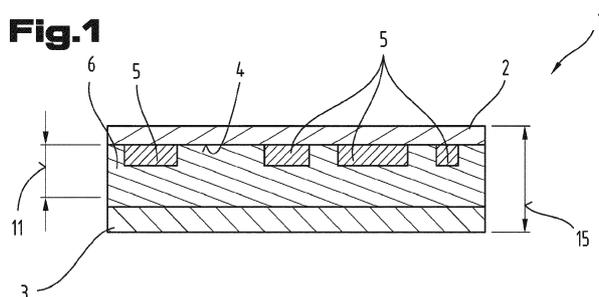
EP3971872

HUECK FOLIEN

Priority Date: 21/09/2020

TAMPER EVIDENT SECURITY ELEMENT

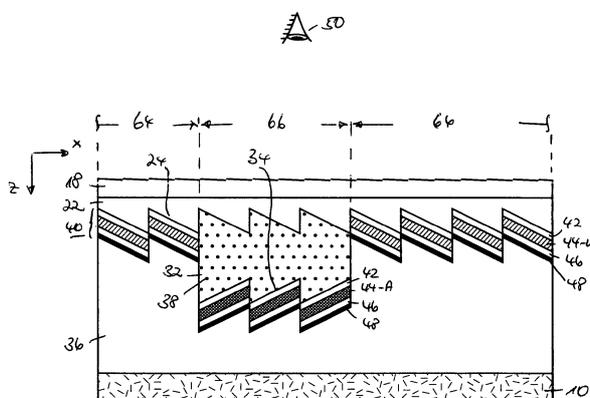
The invention relates to a security element (1), in particular a security label or adhesive security tape, with proof of tampering, comprising a carrier substrate (2) and a self-adhesive layer (3) arranged on the carrier substrate (2). According to the invention, a partial separating layer (5) is formed on the side (4) of the carrier substrate (2) facing the self-adhesive layer (3) and a deformable layer (6) is formed between the carrier substrate (2) and the self-adhesive layer (3) and between the partial separating layer (5) and the self-adhesive layer (3). The deformable layer (6) has a greater elasticity than the partial separating layer (5) and/or a greater elasticity than the carrier substrate (2). In addition, the security element (1) can be attached to a surface (7) of an object (8) by means of the self-adhesive layer (3).



CLAIM 1. A security element (1), in particular a security label or adhesive security tape, with proof of tampering comprising a carrier substrate (2) and a self-adhesive layer (3) arranged on the carrier substrate (2), characterized in that a partial release layer (5) is formed on the side (4) of the carrier substrate (2) facing the self-adhesive layer (3), and in that a deformable layer (6) is formed between the carrier substrate (2) and the self-adhesive layer (3) and between the partial release layer (5) and the self-adhesive layer (3), wherein the deformable layer (6) has a greater elasticity than the partial release layer (5) and/or a greater elasticity than the carrier substrate (2), and wherein the security element (1) can be attached to a surface (7) of an object (8) by means of the self-adhesive layer (3).

OPTICALLY VARIABLE SECURITY ELEMENT

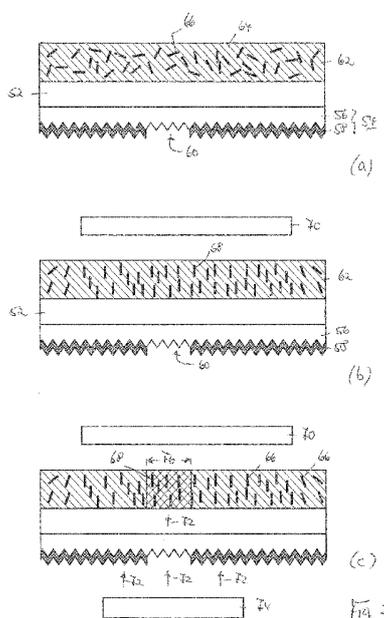
The invention relates to an optically variable security element (12) for securing valuable objects, the surface extension of which defines a z-axis perpendicular thereto, comprising a reflective surface area. The reflective surface area contains a primary structure in the form of a first embossing lacquer layer (22) with a first embossed relief structure (24). The first embossing lacquer layer (22) is partially covered by a secondary structure (32) so that overlapping areas (66) with a secondary structure and free areas (64) without a secondary structure are present on the first embossing lacquer layer. The primary structure and the secondary structure (22, 32) are provided with a common reflection-increasing coating (40) so that the reflection-increasing coating is arranged in the overlap areas (66) on the secondary structure (32) and in the free areas (64) on the primary structure (22). The reflection-increasing coating (40) contains a layer of a phase-change material (44) which, in the crystalline and amorphous material state (44-A, 44-K), produces a different colour impression and/or a different reflectivity of the coating. The phase change material is present in the overlap regions (66) in the amorphous material state (44-A) and in the free regions (64) in the crystalline material state (44-K), or vice versa.



CLAIM 1. An optically variable security element for securing valuable objects, the areal extent of which defines a z-axis perpendicular thereto, having a reflective areal region, wherein - the reflective areal region contains a primary structure in the form of a first embossing lacquer layer having a first embossed relief structure, - the first embossing lacquer layer is partially covered by a secondary structure, so that overlap regions with a secondary structure and free regions without a secondary structure are present on the first embossing lacquer layer, - the primary structure and the secondary structure are provided with a common reflection-increasing coating, so that the reflection-increasing coating is arranged in the overlap regions on the secondary structure and in the free regions on the primary structure, - wherein the reflection-increasing coating contains a layer of a phase change material, in the crystalline and amorphous material state, produces a different colour impression and/ or a different reflectivity of the coating, and - wherein the phase change material is present in the amorphous material state in the overlap regions and is present in the crystalline material state in the free regions, or vice versa.

OPTICALLY VARIABLE SECURITY ELEMENT

The invention relates to an optically variable security element (50) for securing valuable objects, said security element having a different visual appearance when viewed from the front side and the rear side and exhibiting common see-through information. The security element contains a front security feature (30; 54) with a first, translucent or transparent surface region (34; 60) and a second, opaque surface region (32; 58), wherein the first surface region (34; 60) of the front-side security feature has a higher transmittance for crosslinking radiation, in particular for UV radiation, than the second surface region (32; 58), and wherein the two surface regions produce the front-side visual appearance of the security element. The security element further contains a rear optically variable security feature (40) with a cross-linked effect layer (62) with platelet-shaped, three-dimensionally aligned effect pigments (68, 80), having a first (42) and a second surface region (44, 46), in which the effect pigments are oriented in different ways, and wherein the two surface regions produce the different rear-side appearance of the security element. The first surface area (34; 60) of the front security feature is arranged congruently with the first surface area (42; 76) of the rear security feature, and the two first surface areas (34, 42; 60, 76) generate the common see-through information.



CLAIM 1. An optically variable security element for securing valuable objects, which security element has a different visual appearance when viewed from the front side and the rear side and exhibits common see-through information, comprising:- a front-side security feature having a first, translucent or transparent surface region, and a second, opaque surface region, wherein the first surface region of the front-side security feature has a higher transmittance for crosslinking radiation, in particular for UV radiation, than the second surface region and wherein the two surface regions produce the front-side visual appearance of the security element, - a rear-side optically variable security feature having a crosslinked effect layer with platelet-shaped, three-dimensionally oriented effect pigments, having a first and a second surface region, in which the effect pigments are oriented in different ways and wherein the two surface regions produce the different rear-side appearance of the security element, - wherein the first surface region of the front-side security feature is arranged congruently with the first surface region of the rear-side security feature, and the two first surface regions generate the common see-through information.

P34722

PRINTING – CARD

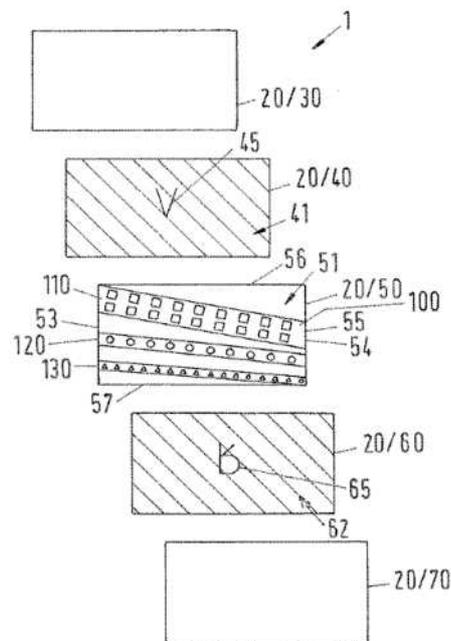
DE102020211950

BUNDESDRUCKEREI

Priority Date: 23/09/2020

DOCUMENT BODY WITH END FACE IDENTIFICATION

The invention relates to a document body (1) with forgery-proof end face identification (412, 423) and to a method for the production thereof. The document body (1) comprises a flat lamination body (10) which is formed from a plurality of thin layers (20) which are laminated to one another with their surfaces, wherein the lamination body has an upper side (11) and an opposite lower side (12) and wherein at least one end face (13, 14, 16, 17) of the lamination body is formed between the upper side (11) and the lower side (12), the areal extent of which end face is smaller than the areal extent of the upper side (11) and the lower side (12), wherein an identifier is formed in the interior of the lamination body so that it can be optically detected as an end-face identifier at the at least one end face (13, 14, 16, 17), wherein the identifier is printed onto a layer surface (51) of one of the layers (20) as an identifier print (100), wherein the one layer surface (51) is arranged in the lamination body (10) in the interior and wherein the identification pressure (100) extends on the layer surface (51) as far as the at least one end face (13, 14, 16, 17).



CLAIM 1. Document body (1) with forgery-proof end face identification (412, 423) comprising a flat lamination body (10) which is formed from a plurality of thin layers (20) which are laminated to one another with their surfaces, wherein the lamination body (10) has an upper side (11) and an opposite lower side (12) and wherein at least one end face (13, 14) of the lamination body (10) is arranged between the upper side (11) and the lower side (12), 14, 16, 17) of the lamination body, the areal extent of which is smaller than the areal extent of the upper side (11) and the lower side (12), wherein an identifier is formed in the interior of the lamination body (10) so that it can be optically detected on the at least one end face (13, 14, 16, 17), characterized in that the identifier is printed on a layer surface (51) of one of the layers (50) as identifier print (100), wherein the one layer surface (51) is arranged in the lamination body (10) in the interior and wherein the identifier print (100) extends on the layer surface (51) as far as the at least one end face (13, 14, 16, 17).

P34726

BRAND PROTECTION

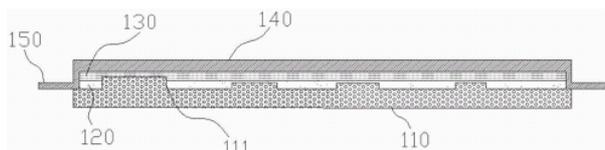
CN216107829U

JINHUA HANMA LASER PACKAGING MAT

Priority Date: 03/11/2021

RELEASE LAYER-FREE TRANSFER PAPER

The utility model relates to the technical field of anti-counterfeiting packaging, and particularly discloses a transfer paper without a release layer. It includes the basic unit, and the basic unit upper end is equipped with the layer of aluminizing, and the layer of aluminizing upper end is equipped with the resin layer, and the intraresin is impressed and is had radium-shine picture and text, and the resin layer upper end is equipped with the PET membrane, is equipped with a plurality of archs not of uniform size on the basic unit up end. The utility model provides a transfer paper without a release layer. The anti-counterfeiting transfer paper has the advantages that the anti-counterfeiting function can be realized, the problem of poor anti-counterfeiting effect of the transfer paper is solved, and the effect of avoiding economic loss of merchants is achieved.



CLAIM 1. The utility model provides a there is not from type layer transfer paper which characterized in that: including basic unit (110), basic unit (110) upper end is equipped with aluminized layer (120), and aluminized layer (120) upper end is equipped with resin layer (130), and the laser picture and text has been impressed in resin layer (130), and resin layer (130) upper end is equipped with PET membrane (140), is equipped with a plurality of archs (111) of different sizes on basic unit (110) up end.

P34729

BRAND PROTECTION

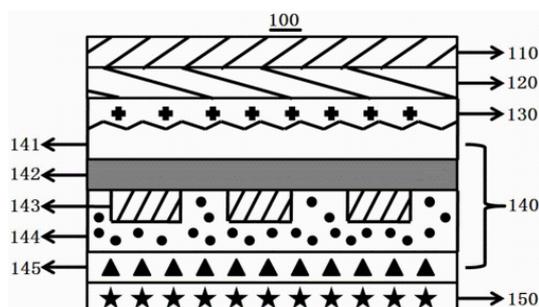
CN216069431U

Priority Date: 24/09/2021

WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT

MULTICOLOR OPTICALLY VARIABLE ANTI-COUNTERFEITING FILM AND ANTI-COUNTERFEITING PRODUCT

The embodiment of the application provides a multicolor optically variable anti-counterfeiting film and an anti-counterfeiting product, and relates to the field of anti-counterfeiting films. Polychrome light becomes anti-counterfeiting film is including the semi-transparent reflection stratum that superposes the setting in proper order from top to bottom, at least two-layer light becomes unit layer and gum layer, and every layer of light becomes unit layer and includes resin layer and the reflection stratum that sets up from top to bottom, and every layer of reflection stratum of the light change unit layer top of below all comprises the reflection area that the interval set up, and the at least part region of every layer of reflection stratum all can see through all resin layers and the projection of its top on semi-transparent reflection stratum. The multi-color optically variable anti-counterfeiting film can easily realize optically variable effects of different colors and can be applied to daily packaging with anti-counterfeiting requirements.



CLAIM 1. The utility model provides a polychrome light becomes anti-counterfeiting film which characterized in that, it includes from top to bottom superposes the translucent reflection layer, at least two-layer light change unit layer and the gum layer that sets up in proper order, every layer light change unit layer includes the resin layer and the reflection stratum that set up from top to bottom, the below every layer of light change unit layer top the reflection stratum all comprises the reflection zone region that the interval set up, every layer at least partial region of reflection stratum all can see through all of its top the resin layer and projection in on the translucent reflection stratum.

P34730

PRINTING – LABEL

CN216069323U

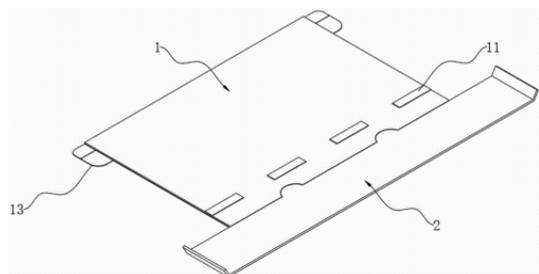
Priority Date: 19/10/2021

GUANGZHOU HAOYI GRAPHIC SERVICE

MULTI-POSITIONING LASER ANTI-COUNTERFEITING PRINTING PAPER

The utility model relates to the technical field of anti-counterfeiting labels, in particular to multi-positioning laser anti-counterfeiting printing paper which comprises a printing paper main body, wherein laser anti-counterfeiting strips are embedded in the printing paper main body, an adhesive layer and laminated paper are arranged on the bottom surface of the printing paper main body, the laminated paper is divided into main film paper and uncovering strips, and a positioning plate is attached to the front end of the printing paper main body. This radium-shine anti-fake printing paper of multiple location, through separate into main membrane paper with tectorial membrane paper and take off the strip and be provided with the locating plate for can make the printing paper main part location on the locating plate after will printing paper main part and locating plate laminating, can make the edge of printing paper main part paste earlier on the object through taking off earlier the strip this moment, thereby make the printing paper main part can paste by the worker's soil preparation, with the worker's degree requirement when pasting of satisfying people to the label of printing paper main part.

CLAIM 1. Radium-shine printing paper of multiple location, including printing paper main part (1), inlay on printing paper main part (1) and be equipped with radium-shine anti-fake strip (11), its characterized in that: the bottom surface coating of printing paper main part (1) has pastes layer (12), the bottom surface of pasting layer (12) is pasted and is had tectorial membrane paper (13), main membrane paper (132) and take off strip (133) are separated into in tectorial membrane paper (13), a plurality of notches (1322) have been seted up to the front end edge of main membrane paper (132), a plurality of recesses (14) have been seted up to the front end edge of printing paper main part (1), notch (1322) with the position of recess (14) is corresponding, the front end laminating of printing paper main part (1) has locating plate (2), integrated into one piece has a plurality of location arch (21) on locating plate (2), protruding (21) in location stretch into in recess (14).



P34732

PRINTING – BRAND PROTECTION

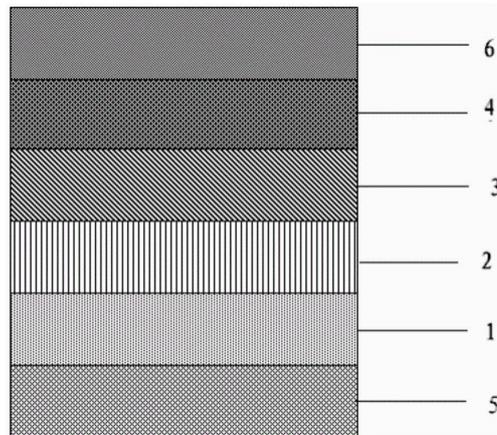
CN216040422U

NANJING JINLING GOLDFOIL

Priority Date: 16/08/2021

FULL-PAGE LASER HOLLOW-OUT PRINTING PACKAGING PAPER

The utility model relates to full-page laser hollow printing packaging paper, which comprises a front printing layer and a back printing layer arranged on the back of the front printing layer, wherein the front printing layer comprises a glue layer, a transfer coating layer, an aluminum plating layer and a hollow printing layer which are sequentially arranged from bottom to top; the full-page laser pattern has an anti-counterfeiting effect, and the packaging paper is more attractive and striking due to the hollow printing, the grade is improved, the anti-counterfeiting effect is obviously improved, and the anti-counterfeiting effect is energy-saving and environment-friendly.



CLAIM 1. The utility model provides a radium-shine fretwork printing wrapping paper of full version, includes the reverse side printing layer of front printing layer and setting up its back, its characterized in that: the front printing layer comprises a glue layer, a transfer coating layer, an aluminum plating layer and a hollow printing layer which are sequentially arranged from bottom to top, the reverse printing layer comprises a bottom paper layer and a printing layer arranged at the lower end of the bottom paper layer, and the upper end of the bottom paper layer is bonded with the glue layer.

P34734

BRAND PROTECTION

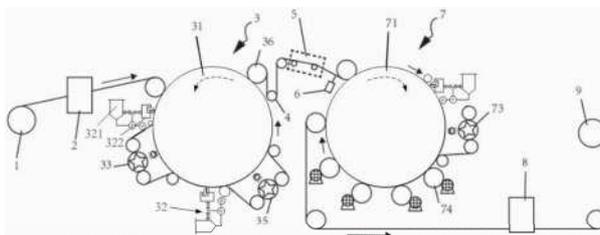
CN216033156U

SHENZHEN JINJIA

Priority Date: 30/09/2021

MICRO-NANO STRUCTURE POSITIONING DIE PRESSING AND PACKAGING STRETCHING FILM AND PRODUCTION EQUIPMENT THEREOF

The utility model discloses a micro-nano structure positioning die pressing and packaging stretch film and production equipment thereof. Wherein, production facility, it includes: the unwinding device is used for continuously providing a stretched film; the first satellite printing device is used for coating and molding at least once on one surface of the stretched film to form a first molded layer on the one surface of the stretched film; a second satellite printing device for coating and molding at least once on the other surface of the stretched film to form a second molded layer on the other surface of the stretched film; and the winding device is used for winding the stretched film after double-sided processing. The utility model adopts the double-satellite type printing device, and can ensure that the stretching film can be attached to the satellite roller of the satellite type printing device as much as possible when the double surfaces of the high-stretching film are processed, thereby reducing the stretching of the stretching film in the processing process and ensuring that the nesting position is more accurate.



CLAIM 1. The utility model provides a production facility of micro-nano structure location mould pressing, tensile membrane of packing which characterized in that includes: the unwinding device is used for continuously providing a stretched film; the first satellite printing device is used for coating and molding at least once on one surface of the stretched film to form a first molded layer on the one surface of the stretched film; a second satellite printing device for coating and molding at least once on the other surface of the stretched film to form a second molded layer on the other surface of the stretched film; and the winding device is used for winding the stretched film after double-sided processing.

P34737

LABEL – RFID

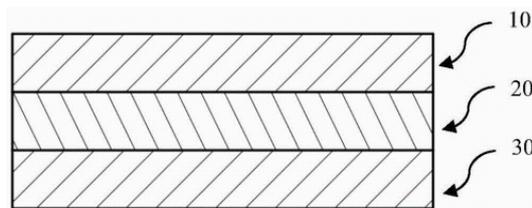
CN216014294U

Priority Date: 08/10/2021

LINTEC | LINTEC TECHNOLOGY

LASER DOUBLE-SIDED TAPE AND RFID LABEL

The utility model provides a radium-shine double-sided tape and include RFID inserts (100) and radium-shine double-sided tape (1)'s RFID label. A laser double-sided tape is formed by laminating a first adhesive layer (10), a laser-processed transparent base layer (20), and a second adhesive layer (30) in this order, wherein manufacturer identification information is formed on the transparent base layer (20).



CLAIM 1. A laser double-sided tape is characterized in that a first adhesive layer (10), a laser-processed transparent base layer (20) and a second adhesive layer (30) are sequentially laminated, and manufacturer identification information is formed on the transparent base layer (20).

P34738

LABEL – RELIEF – MICROLENS

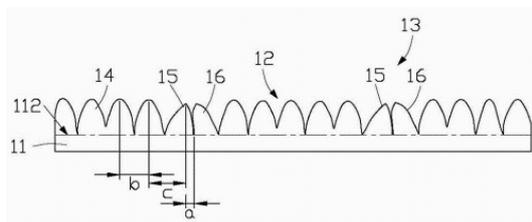
CN216013831U

Priority Date: 29/07/2021

JIANGXI OUMAI MICROELECTRONICS

DODGING DEVICE, EMISSION MODULE, ELECTRONIC EQUIPMENT AND ANTI-COUNTERFEITING STRUCTURE FOR OPTICAL ELEMENT

The application discloses a light homogenizer, which comprises a substrate and a plurality of micro lenses. The substrate is provided with a light-emitting surface; the micro lenses are arranged on the light emitting surface to form a light homogenizing area; at least one anti-counterfeiting area is arranged in the light homogenizing area, and the anti-counterfeiting area is limited by a virtual track line positioned on the light emitting surface; the projection of the vertex of the microlens adjacent to the virtual trajectory line on the light-emitting surface is deviated towards the virtual trajectory line; the projection of the vertex of the micro lens which is not adjacent to the virtual trajectory line on the light emitting surface is distributed according to an initial rule, and the initial rule is used for enabling the micro lens which is not adjacent to the virtual trajectory line to have a uniform light effect. When the dodging device is cut and stolen, if the optical effect of the dodging device is required to be kept, the anti-counterfeiting area is inevitably kept, so that the stolen dodging device can be detected. The application simultaneously discloses an emission module, electronic equipment and be used for optical element's anti-fake structure.



CLAIM 1. A light homogenizer, comprising: the substrate is provided with a light emergent surface; the micro lenses are arranged on the light emitting surface to form a light homogenizing area; at least one anti-counterfeiting area is arranged in the light homogenizing area, and the anti-counterfeiting area is limited by a virtual track line positioned on the light emitting surface; the projection of the vertex of the microlens adjacent to the virtual trajectory line on the light-emitting surface is deviated towards the virtual trajectory line; the projection of the vertex of the micro lens which is not adjacent to the virtual trajectory line on the light emitting surface is distributed according to an initial rule, and the initial rule is used for enabling the micro lens which is not adjacent to the virtual trajectory line to have a uniform light effect.

P34741

PRINTING – BRAND PROTECTION – RELIEF – MICROLENS

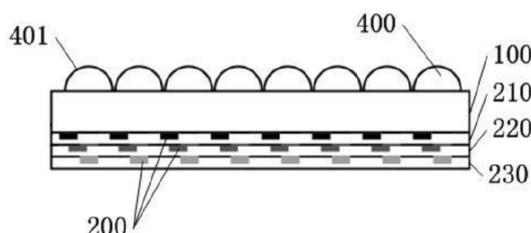
CN216001808U

ANHUI ANTAI NEW STYLE PACKAGING MATERIALS | SHENZHEN JINJIA

Priority Date: 28/05/2021

COLOR IMAGE-TEXT MICRO-NANO STRUCTURE PRINTING EQUIPMENT AND PRINTED MATTER

The utility model discloses a printing device for a color image-text micro-nano structure and a printed product. The printing equipment for the color image-text micro-nano structure comprises an unreeling device, a transfer device, a turning device, a mould pressing device and a reeling device, wherein the unreeling device unreels an unprinted base film, the transfer device transfers micro image-text information to one side of the base film, the base film is turned over through the turning device, the mould pressing device presses a micro lens unit to the other side of the base film, and finally the reeling device rolls the printed base film. According to the utility model, the micro-image-text information is transferred on one side of the base film for multiple times through the transfer device to form a plurality of micro-image-text layers, ink is filled in the micro-grooves in a blade coating or printing mode, the color ink amount filled in the micro-grooves is controlled by regulating the depth of the micro-grooves, and the image-text amplified by the micro-lens layers is colored through superposition of a plurality of layers of micro-image-text information according to the pigment color reduction method principle, so that the printing effect is more colorful.



CLAIM 1. A printing device for color image-text micro-nano structure is characterized by comprising The unwinding device is used for unwinding the unprinted base film; a transfer device for transferring the microimage-text information on one side of the base film for multiple times to form multiple microimage-text layers; the overturning device is used for overturning the base film transferred with the micro image-text information to enable the other side of the base film to be a molded surface; a mold pressing device for molding the microlens unit on the other side of the base film to form a microlens layer; the winding device is used for winding the printed base film; the unwinding device, the transfer device, the turnover device, the die pressing device and the winding device are sequentially arranged.

P34749

BRAND PROTECTION – RELIEF – MICROLENS

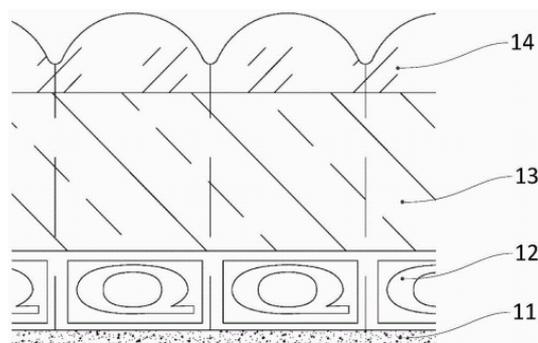
CN215921667U

JIANGYIN TONGLI OPTOELECTRONIC TECHNOLOGY

Priority Date: 11/12/2020

COLORED MICROLENS DYNAMIC FILM

The utility model relates to a color micro-lens dynamic film which is respectively provided with a bottom coating, an image-text layer, a base material layer and a lens layer from bottom to top; the bottom coating covers the image-text layer on the base material layer completely; the bottom coating is pictures and texts or patterns which have the same regular array with the picture and text layer; the base coat is a full-coating single color, gradient color or irregular picture and text pattern. The color micro-lens dynamic film can effectively cover adverse coloring influence while enriching the product color. By adopting the scheme, the regular identification image-text information of the image-text layer can be displayed, and fixed patterns can be arranged on the bottom coating, so that the display information of the dynamic film is richer. The color micro-lens dynamic film has simple structure, easy processing and realization and convenient popularization.



CLAIM 1. A color micro-lens dynamic film is characterized in that a bottom coating layer, an image-text layer, a base material layer and a lens layer are respectively arranged from bottom to top; the bottom coating covers the picture and text layer on the base material layer completely.

P34777

BANKNOTE – LUMINESCENCE

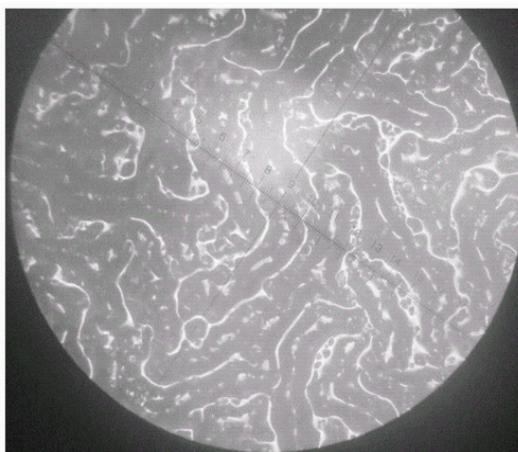
CN114149726

Priority Date: 25/08/2021

HUIZHOU HUAYANG OPTICAL TECHNOLOGY

DYNAMIC OPTICAL EFFECT LAYER AND PREPARATION METHOD THEREOF

The invention discloses a dynamic optical effect layer, wherein the surface of the dynamic optical effect layer presents fluctuant textures, and presents layering and three-dimensional sense; when the visual angle is changed or under the irradiation of light, dynamic color flicker and dynamic motion effect and color change or rainbow color appear; the dynamic optical effect layer consists of a three-dimensional micro-nano structure layer and a flaky effect pigment loaded on the three-dimensional micro-nano structure layer; and the three-dimensional micro-nano structure on the three-dimensional micro-nano structure layer is formed by irradiation of an ultraviolet lamp. The scheme adopted by the invention has the following beneficial effects: 1. the surface of the material is provided with fluctuant textures, so that the material has obvious stereoscopic impression and layering effect; 2. the special optical effect is that dynamic color flicker points and dynamic motion effects and color changes or iridescence appear when the visual angle is changed or under the irradiation of light; 3. the production cost is low; 4. and (4) environmental protection.



CLAIM 1. A dynamic optical effect layer, characterized by: the surface of the dynamic optical effect layer presents fluctuant textures, and the dynamic optical effect layer presents layering and three-dimensional sense; when the visual angle is changed or under the irradiation of light, dynamic color flicker and dynamic motion effect and color change or rainbow color appear; the dynamic optical effect layer consists of a three-dimensional micro-nano structure layer and a flaky effect pigment loaded on the three-dimensional micro-nano structure layer; and the three-dimensional micro-nano structure on the three-dimensional micro-nano structure layer is formed by irradiation of an ultraviolet lamp.

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

N8477

WO202253404

SAINT GOBAIN GLASS

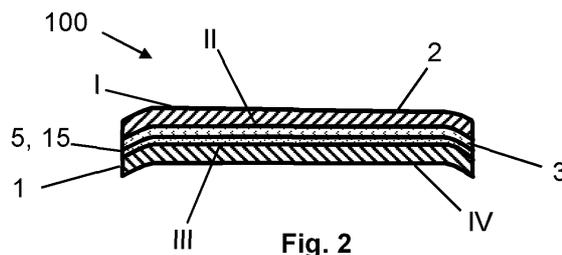
Priority Date: 14/09/2020

PROCESS FOR PRODUCING A COMPOSITE PANE HAVING A HOLOGRAM

The invention relates to a process for producing a composite pane (100) having a hologram, at least comprising the steps of: a) providing a first pane (1) and a second pane (2), b) spraying a photosensitive material (15) as a hologram element (5) at least in a coating region (7) on the surface (III) of the first pane (1), c) generating at least one hologram by means of selective laser irradiation of the exposed hologram element (5), d) forming a layer stack from the first pane (1), a thermoplastic intermediate layer (3) and a second pane (2), the hologram element (5) being arranged between the two panes (1, 2), e) joining the first pane (1) and the second pane (2) by means of the thermoplastic intermediate layer (3) to form a composite pane (100) in a lamination process.

PROCÉDÉ DE PRODUCTION D'UNE VITRE COMPOSITE DOTÉE D'UN HOLOGRAMME

La présente invention concerne un procédé de production d'une vitre composite (100) ayant un hologramme, comprenant au moins les étapes consistant à : a) fournir une première vitre (1) et une seconde vitre (2), b) pulvériser un matériau photosensible (15) en tant qu'élément hologramme (5) au moins dans une zone de revêtement (7) sur la surface (III) de la première vitre (1), c) générer au moins un hologramme au moyen d'une irradiation laser sélective de l'élément hologramme rendu visible (5), d) former un empilement de couches à partir de la première vitre (1), une couche intermédiaire thermoplastique (3) et une seconde vitre (2), l'élément hologramme (5) étant disposée entre les deux vitres (1, 2), e) assembler la première vitre (1) et la seconde vitre (2) au moyen de la couche intermédiaire thermoplastique (3) pour former une vitre composite (100) dans un procédé de stratification.



N8506

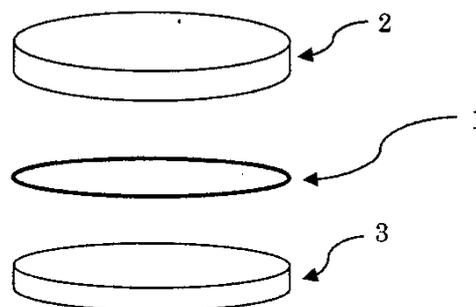
JP3236438U

MARUA

Priority Date: 03/12/2021

EDGE COLOR CONTAINING LUMINESCENT PAINT AND HIGH VISIBILITY FOCUSING GOLF MARKER WITH LOW ANGLE DEFLECTION HIGH REFLECTION HOLOGRAM FUNCTION

TOPIC: To provide an edge color containing a luminescent paint and a highly visible light-collecting golf marker with a low-angle deflection, highly reflective hologram function, with which it is possible to easily identify an existing golf marker on a golf green and that is superior in visibility from the distance and the entire periphery. INVENTION: a highly visible light condensing golf marker including a luminescent coating-containing edge collar and a low-angle deflection and highly-reflective hologram function includes a highly visible hologram sheet 1 that deflects and highly reflects from a low angle to a metal plate 3 that is a substrate; The edge color (transparent color material) acrylic 2 containing a luminescent paint is provided on the hologram upper surface to solve weak visibility from the distance and weak visibility from the periphery, and to achieve excellent visibility from the distance and the entire periphery.



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

N8484

WO202243062

SCRIBOS

Priority Date: 31/08/2020

READ-OUT DEVICE FOR READING OUT INFORMATION STORED HOLOGRAPHICALLY, METHOD FOR READING OUT INFORMATION STORED HOLOGRAPHICALLY, AND READ-OUT SYSTEM FOR READING OUT INFORMATION STORED HOLOGRAPHICALLY

The invention relates to a read-out device (100) for reading out information stored holographically in a Fourier hologram, which Fourier hologram can have local faults, e.g. scratches, and can also be deformed, e.g. curved. For this purpose, the read-out device (100) comprises a light source (15) for emitting a light beam, a detector (4) for detecting the light beam propagating along a beam path, a delimiting element (7) having a delimiting surface (7.1) for delimiting the beam path and having a transmission surface (7.2) for transmitting the light beam propagating along the beam path, and an optical active element (3) for transforming the light beam propagating along the beam path by means of a Fourier transform. The invention also relates to a method for reading out information stored holographically in a Fourier hologram (5) and to a read-out system (100) for reading out information stored holographically in a Fourier hologram (5).

DISPOSITIF, PROCÉDÉ ET SYSTÈME DE LECTURE PERMETTANT DE LIRE DES INFORMATIONS D'ENREGISTREMENT HOLOGRAPHIQUE

L'invention concerne un dispositif de lecture (100) destiné à la lecture d'informations enregistrées holographiquement dans un hologramme de Fourier, l'hologramme de Fourier pouvant présenter des imperfections locales, p.ex. éraflures, tout en pouvant être déformé, p.ex. incurvé. En outre, le dispositif de lecture (100) comprend une source lumineuse (15) destinée à l'émission d'un faisceau lumineux, un détecteur (4) destiné à la détection du faisceau lumineux se propageant le long d'un trajet optique, un élément de délimitation (7) pourvu d'une surface de délimitation (7.1) et destiné à la délimitation du trajet optique, et une surface de transmission (7.2) destinée à la transmission du faisceau lumineux se propageant le long du trajet optique, un élément actif optique (3) permettant de transformer le faisceau lumineux se propageant le long du trajet optique par une transformée de Fourier. L'invention concerne également un procédé de lecture d'informations enregistrées holographiquement dans un hologramme de Fourier (5) et un système de lecture (100) destiné à la lecture des informations enregistrées holographiquement dans un hologramme de Fourier (5).

CLAIM 1. Claims for reading out information holographically stored in a Fourier hologram (5), comprising: - a light source (15) for emitting a light beam, - a detector (4) for detecting the light beam (2.1, 2.2, 2.2.0, 2.2.1, 2.4) propagated along a beam path, - a limiting element (7) having a limiting surface (7.1) for limiting the beam path and a transmission surface (7.2) for transmitting the light beam (2.1, 2.2, 2.2.0, 2.2.1, 2.4) propagating along the beam path, - an optical active element (3) for transforming the light beam propagating along the beam path by means of a Fourier transformation, wherein a Fourier hologram (5) can be arranged in the read-out device (100), wherein the optical active element (3) and the limiting element (7) are arranged along the beam path in such a way that, when the light source (15) emits the light beam and the Fourier hologram (5) is arranged in the beam path of the read-out device: - the light beam (2.1) illuminates at least a partial surface of the Fourier hologram (5), and the hologram (5) diffracts the light beam (2.2) at the illuminated surface (1 b), - the light beam (2.2, 2.2.0, 2.2.1, 2.4) propagating along the beam path is delimited by the delimiting surface (7.1) and the undelimited part of the light beam (2.4) is transmitted through the transmission surface (7.2), - the optical active element (3) transforms the unlimited part of the light beam (2.4) propagating along the beam path (2.2, 2.2.0, 2.2.1, 2.4) by means of the Fourier transformation, and - the detector (4) detects that part of the light beam (2.4) which is not limited by the optical active element (3) and by means of the Fourier transformation.

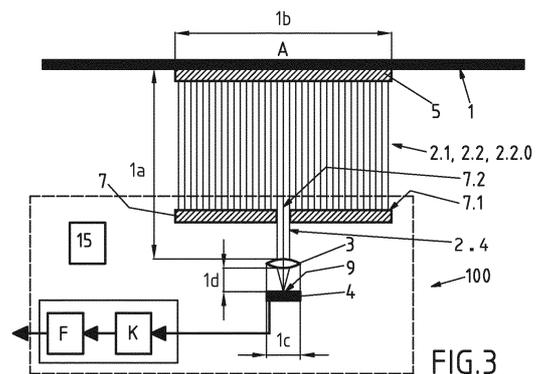


FIG.3

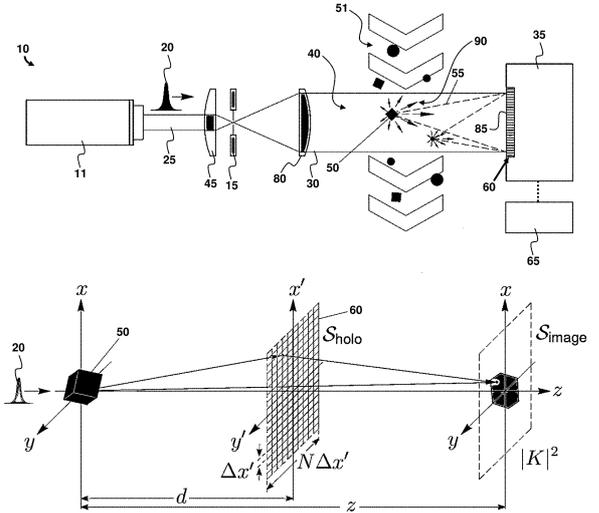
N8489

US20220091019
Priority Date: 21/09/2020

U S ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND ARMY
RESEARCH LABORATORY

CONTACT-FREE HOLOGRAPHIC IMAGING OF AEROSOL PARTICLES FROM MOBILE PLATFORMS

A device includes a filter that enhances a beam profile of a received pulsed laser; a first optical element to direct the pulsed laser as a reference wave towards an optical sensor; an open cavity positioned between the first optical element and the optical sensor. The open cavity receives an aerosol particle, which enters the open cavity from any direction. The reference wave illuminates the aerosol particle. An illuminated particle generates and directs an object wave towards the optical sensor. A pixel array is connected to the optical sensor. The pixel array receives the reference wave and the object wave. The optical sensor creates a contrast hologram comprising an interference pattern of the illuminated particle. A processor creates an image of the illuminated particle based on the contrast hologram.



CLAIM 1. A device comprising: a filter that enhances a beam profile of a received pulsed laser; a first optical element to direct the pulsed laser as a reference wave towards an optical sensor; an open cavity positioned between the first optical element and the optical sensor, wherein the open cavity receives an aerosol particle, wherein the reference wave illuminates the aerosol particle, and wherein an illuminated particle generates and directs an object wave towards the optical sensor; a pixel array connected to the optical sensor, wherein the pixel array receives the reference wave and the object wave, and wherein the optical sensor creates a contrast hologram comprising an interference pattern of the illuminated particle; and a processor that creates an image of the illuminated particle based on the contrast hologram.

N8503

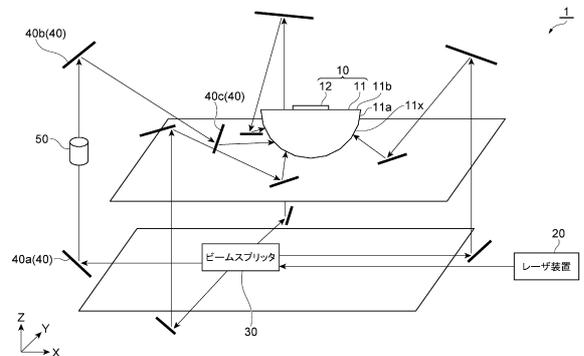
JP2022041486
Priority Date: 01/09/2020

NTT DOCOMO

HOLOGRAM EXPOSURE DEVICE

TOPIC: To provide a hologram exposure device capable of suppressing reflection and suppressing chromatic aberration of a plurality of lights incident from directions different from each other. INVENTION: a hologram exposure device 1 includes: a hemispherical lens 11 including a curved surface portion 11 a and a flat surface portion 11 b, a plurality of flat surface regions 11x being formed in the curved surface portion 11 a; a hologram recording medium 12 disposed in the flat surface portion 11 b of the hemispherical lens 11 and configured to record interference fringes using incident object light and reference light; A display apparatus includes a laser device 20 configured to emit laser light related to object light and reference light, and a plurality of mirrors 40 configured to cause the laser light related to the object light and the reference light emitted by the laser device 20 to be incident perpendicularly to the plurality of planar regions 11x from mutually different directions and to be reflected to reach a hologram recording medium 12.

CLAIM 1. A hologram recording device comprising: a hemispherical lens including a curved surface portion and a flat surface portion, a plurality of flat surface regions formed in the curved surface portion; a hologram recording medium disposed in the flat surface portion of the hemispherical lens and configured to record interference fringes by incident object light and reference light; a laser device configured to emit laser light related to the object light and the reference light; A plurality of mirrors configured to reflect the laser light relating to the object light and the reference light emitted by the laser device so that the laser light is incident perpendicularly to the plurality of planar regions from directions different from each other and reaches the hologram recording medium.



N8509

EP3958065

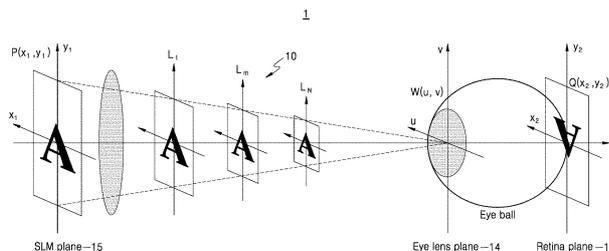
Priority Date: 20/08/2020

SAMSUNG ELECTRONICS

METHOD AND APPARATUS FOR GENERATING COMPUTER-GENERATED HOLOGRAM

Disclosed are a method and a system for processing a computer-generated hologram (CGH). The system for processing a CGH includes a CGH generation apparatus and a display apparatus. The CGH generation apparatus repeatedly performs a process of propagating object data from a first depth layer to a second depth layer, changing amplitude data of the object data to second predefined amplitude data, back-propagating the object data from the second depth layer to the first depth layer, and changing the amplitude data of the object data to first predefined amplitude data, and generates a CGH by using the object data.

CLAIM 1. A method for processing a computer-generated hologram (CGH), the method comprising: obtaining a first object image corresponding to a first depth layer and a second object image corresponding to a second depth layer; determining first predefined amplitude data based on the first object image and second predefined amplitude data based on the second object image; generating first object data comprising the first predefined amplitude data and randomized first phase data; and performing a propagation process using the first object data as an input, the propagation process comprising: propagating the first object data to the second depth layer to obtain second object data comprising second amplitude data and second phase data; replacing the second amplitude data with the second predefined amplitude data to obtain changed second object data; back-propagating the changed second object data to the first depth layer to obtain changed first object data comprising changed first amplitude data and changed first phase data; and replacing the changed first amplitude data included in the changed first object data with the first predefined amplitude data to obtain final first object data, wherein the method further comprises: generating a CGH based on the final first object data; and displaying a first holographic image comprising the first predefined amplitude data and a second holographic image comprising the second predefined amplitude data based on the CGH.



N8510

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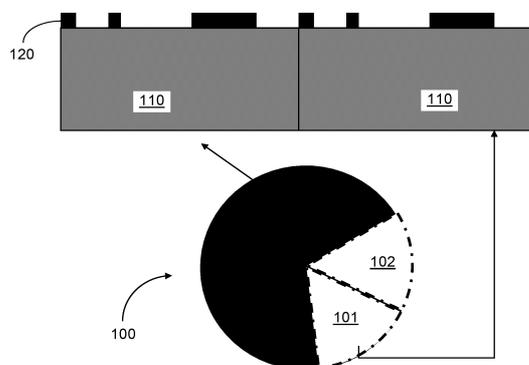
Priority Date: 19/04/2021

CARL ZEISS SMT

METHOD AND APPARATUS FOR PRODUCING A COMPUTER-GENERATED HOLOGRAM

The invention relates to a method and a device for producing a computer-generated hologram (CGH). A method according to the invention has the following steps: provision of a substrate (110) to which a hard mask (120) is applied, application of an electron beam-sensitive resist (130) to the hard mask (120), Electron beam lithographic structuring of the hard mask (120), wherein a structure produced by exposing a region of the resist (130) to an electron beam (140) and subsequently developing in the Resist (130) is transferred into the hard mask (120) in an etching process, patterning the substrate (110) in a further etching process, in which the structure previously produced in the hard mask (120) is transferred into the substrate (110) and removing the hard mask, wherein the sequence of the steps of applying an electron beam-sensitive resist and of electron beam lithographically structuring the hard mask is carried out repeatedly for respectively different portions of the hard mask (120).

CLAIM 1. Method for producing a computer-generated hologram (CGH), wherein the method comprises the following steps: a) providing a substrate (110) to which a hard mask (120) is applied; b) applying an electron beam-sensitive resist (130) to the hard mask (120); c) electron beam-lithographically structuring the hard mask (120), wherein a structure produced by exposing a region of the resist (130) to an electron beam (140) and subsequently developing in the Resist (130) is transferred into the hard mask (120) in an etching process; d) patterning the substrate (110) in a further etching process in which the structure previously produced in the hard mask (120) is transferred into the substrate (110); and e) removing the hard mask; characterized in that That s the sequence of steps b) and c) is performed repeatedly for respectively different portions of the hard mask (120).



N8550

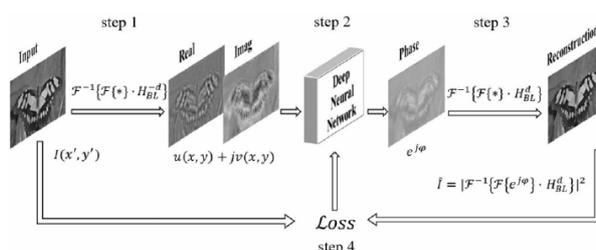
CN114067015

Priority Date: 11/11/2021

CHINESE PEOPLE S LIBERATION GROUND FORCE ARMORED TROOP
ACADEMY

PURE PHASE HOLOGRAM GENERATION METHOD AND SYSTEM COMBINING DNN

The invention relates to a pure phase hologram generating method and a system combining DNN, wherein the method comprises the following steps: acquiring a target image; carrying out reverse propagation on the target image to obtain a diffraction field on a holographic surface; processing the complex amplitude of the diffraction field by using a deep neural network to obtain pure phase information; the deep neural network is a generator structure; and carrying out image reconstruction by using an angle spectrum method according to the pure phase information to obtain a reconstructed image. The invention can improve the display quality of the reconstructed image.



CLAIM 1. A method of generating a DNN-integrated phase-only hologram, comprising: acquiring a target image; carrying out reverse propagation on the target image to obtain a diffraction field on a holographic surface; processing the complex amplitude of the diffraction field by using a deep neural network to obtain pure phase information; the deep neural network is a generator structure; and carrying out image reconstruction by using an angle spectrum method according to the pure phase information to obtain a reconstructed image.

N8552

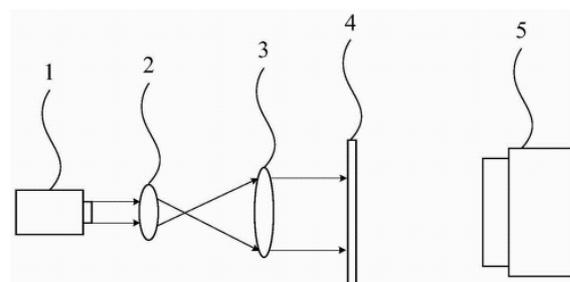
CN114061769

Priority Date: 19/11/2021

JIANGSU UNIVERSITY OF SCIENCE & TECHNOLOGY

DEVICE AND METHOD FOR MEASURING LASER WAVELENGTH BASED ON COAXIAL HOLOGRAPHIC SELF-FOCUSING TECHNOLOGY

The invention discloses a device and a method for measuring laser wavelength based on a coaxial holographic self-focusing technology, which comprises a laser input end, a collimation and beam expansion system, a resolution plate and a CCD (charge coupled device) which are sequentially arranged, wherein the resolution plate is irradiated by laser to generate object light containing object information, the CCD records the acquired light intensity distribution and generates a hologram, and the coaxial holographic self-focusing technology of the resolution plate is utilized and the function relation of the wavelength and the recording distance or the optimal reproduction distance is combined to measure unknown laser wavelength.



The invention enriches the measuring method of the laser wavelength, has the advantages of simple structure, low cost, automatic calculation of the wavelength and the like, is convenient to popularize and apply, can greatly shorten the acquisition time of the hologram, does not need other focusing devices, enables the system to be simple and efficient, has higher precision of the measured wavelength, can be applied to the field of industrial measurement, and can also be applied to teaching experiments in the directions of coaxial holographic transmission, diffraction transmission and the like.

CLAIM 1. The utility model provides a device based on coaxial holographic self-focusing technique measures laser wavelength, is including laser input end (1), collimation beam expanding system, resolution ratio board (4) and CCD (5) that set gradually, its characterized in that, laser input end (1), collimation beam expanding system, resolution ratio board (4) and CCD (5) be located same optical axis, adopt laser irradiation resolution ratio board (4), produce the object light that contains object information to the light distribution who gathers and produce the hologram by CCD (5) record.

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

N8524

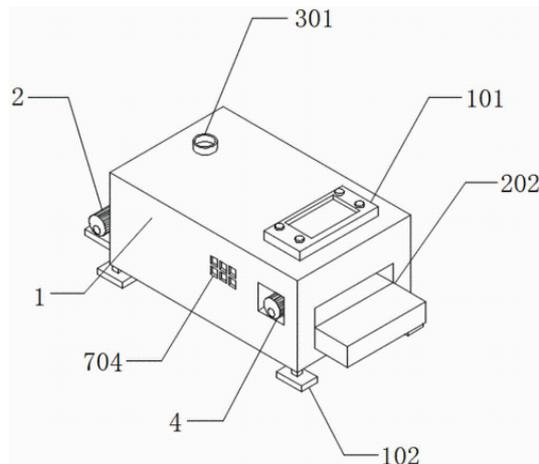
CN216001816U

Priority Date: 20/08/2021

SUZHOU BAICONG TECHNOLOGY

PREVENT HOLOGRAPHIC MEMBRANE PRODUCTION FACILITY OF LASER THAT CURLS

The utility model discloses anti-curling laser holographic film production equipment which comprises a main body and a support plate, wherein a fixing rod is arranged on the bottom wall of the interior of the main body, the support plate is arranged at the top of the fixing rod, a rotating shaft penetrates through the inner wall of the support plate, a rotating rod is arranged on the outer wall of the rotating shaft, a spring is arranged at the top of the support plate, one end of the spring is connected with the outer wall of the rotating rod, and a reverse roller is arranged at the top of the rotating rod. The utility model prevents the laser holographic film from curling by installing the spring and the reverse roller, the rotating speed of the conveying roller is slightly less than that of the traction roller, so that the laser holographic film is continuously pulled out of the conveying roller and is in a straightening state, the rotating rod is upwards rotated by the elasticity of the spring to drive the reverse roller to move upwards, the reverse roller can provide an opposite force for the initial carrier film, the traction roller drives the laser holographic film to move oppositely to the movement of the reverse roller, and the laser holographic film is in a tightening state to prevent curling.



CLAIM 1. A laser holographic film production apparatus for preventing curling, comprising a main body (1), a support plate (5) and a cooling plate (7), characterized in that: a fixing rod (501) is installed on the bottom wall inside the main body (1), a supporting plate (5) is installed at the top of the fixing rod (501), a baffle (602) is installed on the inner wall of the main body (1), and a cooling plate (7) is installed in front of the baffle (602); a rotating shaft (502) penetrates through the inner wall of the supporting plate (5), a rotating rod (503) is installed on the outer wall of the rotating shaft (502), a spring (504) is installed at the top of the supporting plate (5), one end of the spring (504) is connected with the outer wall of the rotating rod (503), and a reverse roller (505) is installed at the top of the rotating rod (503); the back mounted of main part (1) has first motor (2), scribble workbin (3) is installed to the inner wall of main part (1), second motor (4) are installed in the front of main part (1), heating chamber (6) are installed to the inner wall of main part (1), and heating chamber (6) are located the preceding of scribbling workbin (3).

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

N8473

WO202255315

Priority Date: 14/09/2020

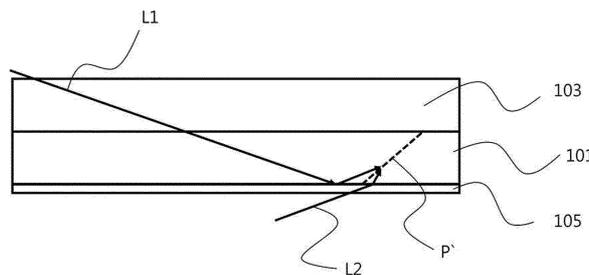
LG CHEM

HOLOGRAPHIC OPTICAL ELEMENT AND METHOD FOR MANUFACTURING SAME

The present invention relates to a holographic optical element and a method for manufacturing same and, specifically, to: a holographic optical element using a retardation layer to prevent unwanted interference patterns from being formed in the process of recording an interference pattern on a photopolymer resin layer; and a method for manufacturing same.

ÉLÉMENT OPTIQUE HOLOGRAPHIQUE ET SON PROCÉDÉ DE FABRICATION

La présente invention concerne un élément optique holographique et son procédé de fabrication et, spécifiquement : un élément optique holographique utilisant une couche de retard pour empêcher des motifs d'interférence indésirables d'être formés dans le processus d'enregistrement d'un motif d'interférence sur une couche de résine photopolymère; et un procédé de fabrication de celui-ci.



CLAIM 1. Providing a retardation layer on one surface of a photopolymer resin layer containing a photopolymer resin; and Irradiating a first laser parallel beam to the other surface of the photopolymer resin layer, which is a surface where the retardation layer is not provided, and irradiating a second laser parallel beam to one surface of the photopolymer resin layer to record an interference pattern caused by interference phenomenon of the first laser parallel beam and the second laser parallel beam in the photopolymer resin layer, A method of manufacturing a holographic optical element.

N8476

WO202254888

Priority Date: 10/09/2020

**NICT NATIONAL INSTITUTE OF INFORMATION & COMMUNICATIONS
TECHNOLOGY**

IMAGE REPRODUCTION DEVICE, HOLOGRAM RECORDING DEVICE, AND DIGITAL HOLOGRAPHY DEVICE

An image reproduction device 6 reproduces an image including N different parameters of a wavelength range or the like, and comprises: a multiplexed hologram acquisition unit 61 for acquiring N to 2N multiplexed holograms obtained by multiplex-recording interference patterns for each parameter; a parameter selection unit 63 for selecting the parameters one by one; a hologram generation unit 64 for generating a calculation hologram including two light waves having the selected parameters from the multiplexed holograms; and a light wave restoration unit 65 for restoring one of the two light waves from the calculation hologram.

DISPOSITIF DE REPRODUCTION D'IMAGE, PROCÉDÉ D'ENREGISTREMENT D'HOLOGRAMME ET DISPOSITIF D'HOLOGRAPHIE NUMÉRIQUE

La présente invention concerne un dispositif de reproduction d'image 6 qui reproduit une image comprenant N paramètres différents d'une plage de longueur d'onde ou similaire, et qui comprend : une unité d'acquisition d'hologramme multiplexé 61 servant à acquérir de N à 2N hologrammes multiplexés obtenus en effectuant un enregistrement multiplex de motifs d'interférence pour chaque paramètre ; une unité de sélection de paramètres 63 servant à sélectionner les paramètres un par un ; une unité de génération d'hologramme 64 servant à générer un hologramme de calcul comprenant deux ondes lumineuses ayant les paramètres sélectionnés à partir des hologrammes multiplexés ; et une unité de restauration d'onde lumineuse 65 servant à restaurer l'une des deux ondes lumineuses à partir de l'hologramme de calcul.

CLAIM 1. A total of N patterns of interference fringes formed by two light waves having different phases for each of the parameters or combinations thereof for each of the optical information of at least one of the wavelength band, the polarization direction, and the measurement region is recorded in a temporally or spatially divided manner, the interference fringes being formed by two light waves having different phases for each of the parameters. An image reproduction device for reproduction from N to 2 N multiplex holograms in which phases of at least one light wave of a total of 2 N types of light waves in which the interference fringes of the N pattern are formed are mutually different, the image reproduction device comprising: A parameter selecting section configured to select a parameter one by one from the N parameters N times, when the parameter selecting section selects a parameter, from at least one of the multiplexed holograms, A hologram generation unit configured to remove interference fringes of an (N-1) pattern other than interference fringes formed of two light waves having the selected parameter to generate a calculation hologram including the two light waves; and a light wave restoration unit configured to restore one of the two light waves from the calculation hologram generated by the hologram generation unit, wherein the hologram generation unit includes: After the light wave restoration unit restores one or more light waves, at least one of the light waves restored by the light wave restoration unit and a calculator hologram used to restore the light waves is used to generate a calculation hologram including two light waves having parameters different from those of the restored light waves.

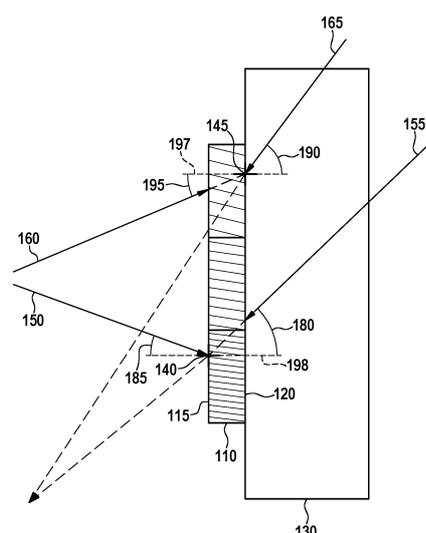
METHOD FOR PRODUCING A HOLOGRAPHIC OPTICAL ELEMENT

The invention relates to a method for producing a holographic optical element. According to the invention, a transparent carrier substrate (130) and a layer (110) made of a holographic material, in particular a photopolymer layer, arranged on a surface of the carrier substrate (130) are first provided. A first partial surface (140) of the layer (110) made of the holographic material is then exposed to a first object beam (150) of a light beam of a first wavelength and a first angle of incidence (185) of the first object beam (150) within the holographic material. In addition, the first partial surface (140) of the layer (110) made of the holographic material is exposed to a first reference beam (155) of the light beam of the first wavelength and a second angle of incidence (180) of the first reference beam (155) within the holographic material, characterized in that a first hologram structure is generated in the first partial surface (140) of the layer (110) made of the holographic material as a function of the first wavelength of the first light beam, the first angle of incidence (185) of the first object beam (150) and the second angle of incidence (180) of the first reference beam (155). During the exposure of the first partial surface (140) of the layer (110) made of the holographic material, the first angle of incidence (185) of the first object beam (150) and the second angle of incidence (180) of the first reference beam (155) are selected in such a way that light beams of a second wavelength are deflected in a defined direction at the completely exposed first hologram structure.

PROCÉDÉ DE PRODUCTION D'UN ÉLÉMENT OPTIQUE HOLOGRAPHIQUE

L'invention concerne un procédé de production d'un élément optique holographique. Le procédé comprend tout d'abord la fourniture d'un substrat porteur transmettant la lumière (130) et d'une couche (110) d'un matériau holographique, en particulier d'une couche photopolymère, disposée sur une surface du substrat porteur (130). Ensuite, une première zone partielle (140) de la couche (110) du matériau holographique est exposée à un premier faisceau objet (150) d'un faisceau lumineux ayant une première longueur d'onde et un premier angle (185) d'incidence du premier faisceau objet (150) à l'intérieur du matériau holographique. De plus, la première zone partielle (140) de la couche (110) du matériau holographique est exposée à un premier faisceau de référence (155) du faisceau lumineux ayant la première longueur d'onde et un second angle (180) d'incidence du premier faisceau de référence (155) à l'intérieur du matériau holographique de telle sorte qu'une première structure d'hologramme est produite dans la première zone partielle (140) de la couche (110) du matériau holographique en fonction de la première longueur d'onde du premier faisceau lumineux, du premier angle (185) d'incidence du premier faisceau objet (150) et du second angle (180) d'incidence du premier faisceau de référence (155). Lors de l'exposition de la première zone partielle (140) de la couche (110) du matériau holographique, le premier angle (185) d'incidence du premier faisceau objet (150) et le second angle (180) d'incidence du premier faisceau de référence (155) sont choisis de telle sorte que des faisceaux lumineux ayant une seconde longueur d'onde soient déviés dans une direction définie au niveau de la première structure d'hologramme complètement exposée.

CLAIM 1. Method for producing a holographic optical element (340), wherein the method comprises the following method steps: - providing (40) a transparent carrier substrate (130) and a layer (110) of a holographic material arranged on a surface of the carrier substrate (130), in particular a photopolymer layer, and - exposing (50) a first partial surface (140) of the layer (110) made of the holographic material to a first object beam (150) of a light beam of a first wavelength and a first angle of incidence (185) of the first object beam (150) within the holographic material, and - exposing the first partial surface (140) of the layer (110) made of the holographic material to a first reference beam (155) of the light beam of the first wavelength and a second angle of incidence (180) of the reference beam (155) within the holographic material, characterized in that in the first partial surface (140) of the layer (110) made of the holographic material, the first angle of incidence (185) of the first object beam within the holographic material (150) and the second angle of incidence (180) of the first reference beam (155) within the holographic material, characterized in that The first angle of incidence (185) of the first object beam (150) within the holographic material and the second angle of incidence (180) of the first reference beam (155) within the holographic material are selected in such a way that, during the exposure (50) of the first partial surface (140) of the layer (110) of the holographic material, characterized in that light beams of a second wavelength (200, 310, 400) are deflected in a defined direction at the completely exposed first hologram structure.



N8481

WO202245758

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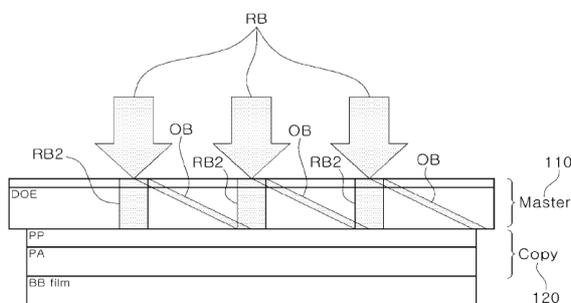
Priority Date: 25/08/2020

METHOD FOR REPLICATING LARGE-AREA HOLOGRAPHIC OPTICAL ELEMENT, AND LARGE-AREA HOLOGRAPHIC OPTICAL ELEMENT REPLICATED THEREBY

The present invention relates to a method for replicating a holographic optical element and to a holographic optical element replicated thereby, wherein the method replicates a holographic optical element which has a holographic grating pattern implemented, on a mask having a specific diffractive grating pattern formed thereon, by means of interference of reflected, diffracted, or transmitted light generated by irradiating laser light to the master, and which has a larger area than the master.

PROCÉDÉ DE RÉPLICATION D'UN ÉLÉMENT OPTIQUE HOLOGRAPHIQUE DE GRANDE SURFACE, ET ÉLÉMENT OPTIQUE HOLOGRAPHIQUE DE GRANDE SURFACE RÉPLIQUÉ PAR CELUI-CI

La présente invention concerne un procédé de réplique d'un élément optique holographique et un élément optique holographique répliqué par celui-ci, le procédé répliquant un élément optique holographique qui a un motif de réseau holographique mis en œuvre, sur un masque ayant un motif de réseau de diffraction spécifique formé sur celui-ci, au moyen d'une interférence de la lumière réfléchie, diffractée ou transmise générée par l'irradiation de la lumière laser vers le maître, et qui a une plus grande surface que le maître.



CLAIM 1. A method of replicating a large-area holographic optical element, Disposing a master composed of a diffractive optical element having a diffraction grating pattern to be transferred in a holographic grating pattern to the holographic optical element; and a photocurable panel having an area larger than that of the master and to which the holographic grating pattern formed by the diffraction grating pattern is transferred; A grating forming step of forming the holographic grating pattern on the photocurable panel by causing a reference light irradiated by a light source to enter the master; and A moving step of forming the holographic grating pattern in an area wider than the master on the photocurable panel while simultaneously moving the light source and the master or moving only the photocurable panel while the reference light is incident. A method of replicating a large-area holographic optical element.

N8482

WO202245699

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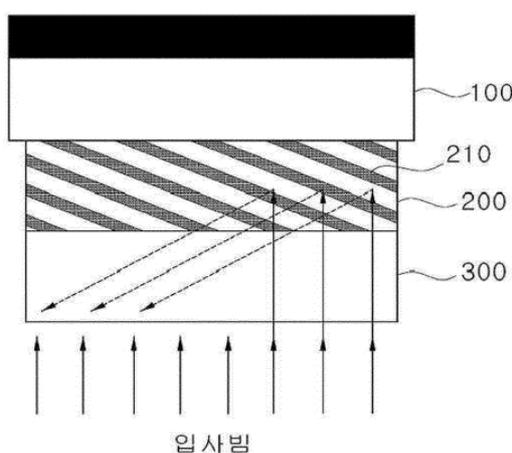
Priority Date: 25/08/2020

HOLOGRAPHIC OPTICAL ELEMENT, MANUFACTURING METHOD THEREFOR AND MANUFACTURING DEVICE THEREFOR

The present invention relates to: a holographic optical element enabling the improvement of the luminance of an augmented image; a manufacturing method therefor; and a manufacturing device therefor. The holographic optical element is configured by combining a plurality of optical elements, wherein respective interference patterns recorded on each of the optical elements have the same pitch as each other, but different inclination angles from each other.

ÉLÉMENT OPTIQUE HOLOGRAPHIQUE, PROCÉDÉ DE FABRICATION S'Y RAPPORTANT ET DISPOSITIF DE FABRICATION S'Y RAPPORTANT

La présente invention concerne : un élément optique holographique permettant d'améliorer la luminance d'une image augmentée ; un procédé de fabrication s'y rapportant ; et un dispositif de fabrication s'y rapportant. L'élément optique holographique est conçu par combinaison d'une pluralité d'éléments optiques, les motifs d'interférence respectifs enregistrés sur chacun des éléments optiques ayant le même pas les uns par rapport aux autres mais différents angles d'inclinaison les uns des autres.



CLAIM 1. A method for manufacturing an optical element, comprising: a first step of laminating a master, which is a diffractive optical element having an interference pattern formed thereon, on a substrate; A second step of laminating a photosensitive material on the master and irradiating the photosensitive material with an incident beam at a predetermined incident angle to record an interference pattern of the master on the photosensitive material; A third step of separating the photosensitive material in which the interference pattern is recorded from the master to produce an optical element; A fourth step of repeating the second step and the third step a predetermined number of times to generate a plurality of the optical elements; and A fifth step of combining a plurality of said optical elements to form a holographic optical element, In the fourth step, And irradiates incident beams with different angles of incidence on the photosensitive material for each of the second steps repeated so that the interference patterns recorded in each of the optical elements have the same pitch and different angles of inclination.

N8493

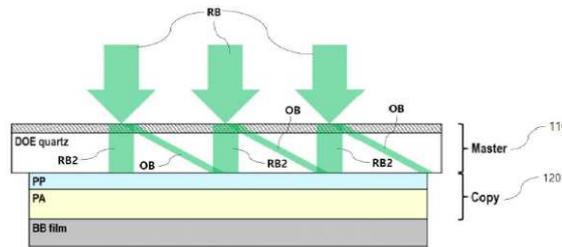
KR20220033324

Priority Date: 09/09/2020

LG CHEM

METHOD FOR REPLICATING HOLOGRAPHIC OPTICAL ELEMENT AND HOLOGRAPHIC OPTICAL ELEMENT REPLICATED THEREBY

An embodiment of the present invention provides a holographic optical element manufacturing method, comprising: an arrangement step of arranging a photo-curable panel constituting a holographic optical element and a master constituted of a diffractive optical element (Doe) having a grating pattern transferred to the photo-curable panel; And a grating forming step of forming the grating pattern on the photocurable panel by causing reference light to enter the master, thereby improving the persistence, uniformity, and precision of replication.



CLAIM 1. A method for replicating a holographic optical element (hoe), comprising: a photocurable panel constituting the holographic optical element; a diffractive optical element (Doe, Doe) having a grating pattern transferred to the photocurable panel, an arranging step of arranging a master composed of a differential optical element; and a grating forming step of forming the grating pattern on the photocurable panel by causing reference light to enter the master.

N8496

KR20220026363

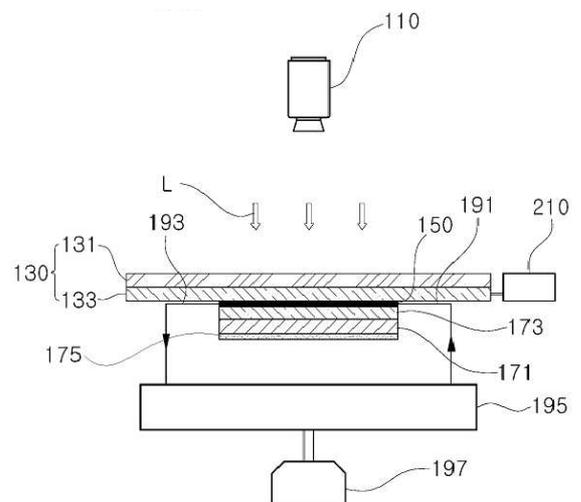
Priority Date: 25/08/2020

LG CHEM

HOLOGRAPHIC OPTICAL ELEMENT MANUFACTURING APPARATUS

The present invention relates to an apparatus for manufacturing a holographic optical device, and more particularly, to an apparatus for manufacturing a holographic optical device, the apparatus comprising: a holographic grating pattern replicating unit configured to diffract light emitted from a light source to record an interference pattern between the incident light and the diffracted light in the photosensitive sheet, And a transport unit between the holographic grating pattern replicating unit and the laser light diffracting unit, thereby manufacturing a holographic optical element having a large area.

CLAIM 1. A holographic grating device comprising: an optical unit configured to irradiate laser light; a holographic grating pattern replicating unit including a photosensitive sheet and transmitting the laser light by irradiating one surface of the photosensitive sheet; a transport unit configured to transmit the laser light received from the holographic grating pattern replicating unit and transport the holographic grating pattern replicating unit; And a laser light diffraction unit including an optical element having a holographic grating pattern for diffracting the laser light received from the transport unit, Wherein a holographic grating pattern by interference between the laser light emitted by the optical unit and the laser light diffracted by the laser light diffracting unit is recorded in the photosensitive sheet and replicated into a holographic grating pattern included in the optical element.



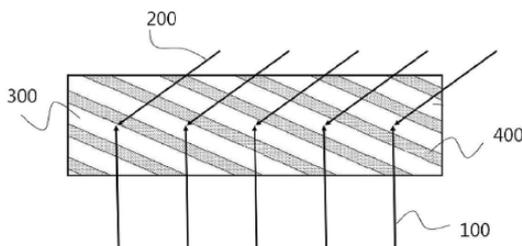
N8498

KR20220026361
Priority Date: 25/08/2020

LG CHEM

HOLOGRAPHIC OPTICAL DEVICE AND METHOD FOR MANUFACTURING THE SAME

The present invention relates to a holographic optical device and a method of manufacturing the same, and more particularly, to a holographic optical device capable of improving brightness of an enhanced image and a method of manufacturing the same.



CLAIM 1. A method for producing an optical element, comprising: a first step of recording an interference pattern, which is a holographic grating pattern implemented by an interference phenomenon between reference light and object light, into a photosensitive material to produce an optical element; a second step of repeating the first step a predetermined number of times to produce a plurality of the optical elements; A third step of heating the optical element so that an inclination angle of the interference pattern is changed; and a fourth step of combining a plurality of the optical elements to form a holographic optical element.

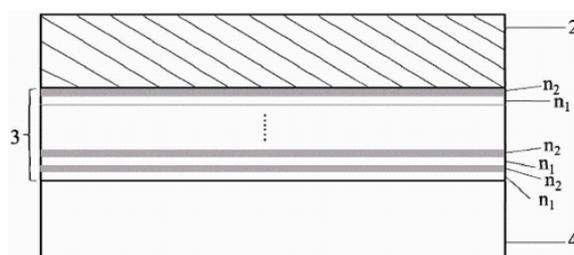
N8529

CN215911186U
Priority Date: 17/06/2021

GUANGDONG ZIJING INFORMATION STORAGE TECHNOLOGY

DICHROIC LAYER APPLIED TO HOLOGRAPHIC STORAGE MEDIUM AND HOLOGRAPHIC STORAGE MEDIUM

The utility model provides a dichroic layer applied to a holographic storage medium and the holographic storage medium, wherein the dichroic layer can reflect red light and transmit blue light or green light, and is formed by alternately laminating a plurality of first film layers and second film layers, and the refractive index ranges of the first film layers and the second film layers are 1.4-3.0. The dichroic layer is formed by multiple film layers with alternating high and low refractive indexes and stacked arrangement, and the design of the multiple film layers is beneficial to the reflection of red light and the transmission of blue light or green light, so that the requirement of a transmission type holographic storage medium can be met. The refractive index of each first film layer may be the same, may be different, or may not be completely the same. Likewise, the refractive indices for the second film layers may be the same, may be different, or may not be exactly the same. The thickness of each first film layer may be the same, different or not identical. Likewise, the thicknesses of the second film layers may be the same, different or not identical.



CLAIM 1. The dichroic layer can reflect red light and transmit blue light or green light, and is formed by alternately stacking a plurality of first film layers and second film layers, and the refractive index ranges of the first film layers and the second film layers are 1.4-3.0.

N8540

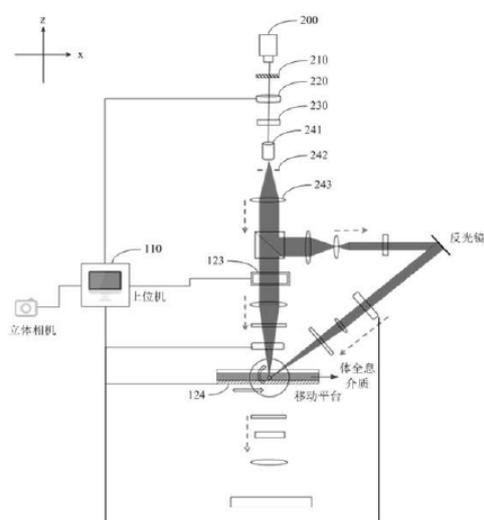
CN114121047

Priority Date: 28/01/2022

GENERAL COAL RESEARCH INSTITUTE

VOLUME HOLOGRAPHIC STORAGE SYSTEM AND ELECTRONIC DEVICE

The application provides a volume holographic storage system, comprising: the holographic storage device comprises a light source assembly, a light processing assembly, a spatial light modulator and a mobile platform, wherein the upper computer is connected with the holographic storage device and comprises the light source assembly, the light processing assembly, the spatial light modulator and the mobile platform; the upper computer is used for acquiring a plurality of holograms of a target scene; the upper computer is also used for controlling the spatial light modulator to load a plurality of holograms in sequence and controlling the light source component to provide an initial light beam with a color corresponding to the color component of the hologram currently loaded by the spatial light modulator; and the light processing assembly and the spatial light modulator are used for processing the initial light beam to obtain target object light and target reference light of a target scene, and interfering the target object light and the target reference light to store a 3D image on the volume holographic storage medium.



CLAIM 1. A volume holographic storage system, comprising: an upper computer and a holographic storage device, wherein the upper computer is connected with the holographic storage device, the holographic storage device comprises a light source component, a light processing component, a spatial light modulator and a mobile platform, wherein the upper computer is respectively connected with the light source component, the light processing component, the mobile platform and the spatial light modulator, and a volume holographic storage medium is arranged on the mobile platform; the upper computer is used for acquiring a plurality of holograms of a target scene; the upper computer is also used for controlling the spatial light modulator to sequentially load the plurality of holograms and controlling the light source assembly to provide an initial light beam with a color corresponding to the color component of the hologram currently loaded by the spatial light modulator; the light processing assembly and the spatial light modulator are configured to process the initial light beam to obtain target object light and target reference light of the target scene, and interfere the target object light and the target reference light to store a 3D image on the volume holographic storage medium.

Click on the title to return to table of contents

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

N8475

WO202255033

Priority Date: 09/09/2020

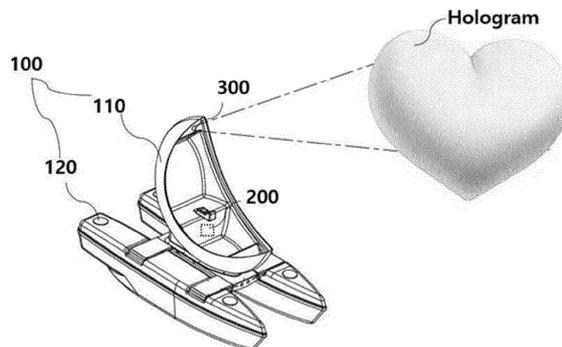
SEONGAHPARK | SONG, JIN-HO

IOT-BASED INTERACTIVE BOAT USING HOLOGRAM

The present invention relates to an IoT-based interactive boat using a hologram, the IoT-based interactive boat comprising: an interactive boat; a control unit provided on the interactive boat; and a hologram generating unit which three-dimensionally represents, by means of the control unit, a hologram in a direction spaced apart at a predetermined distance from the interactive boat.

BATEAU INTERACTIF FONDÉ SUR L'IDO UTILISANT UN HOLOGRAMME

La présente invention se rapporte à un bateau interactif fondé sur l'IdO utilisant un hologramme, ledit bateau interactif comprenant : un bateau interactif ; une unité de commande disposée sur le bateau interactif ; une unité de génération d'hologramme qui représente en trois dimensions, au moyen de l'unité de commande, un hologramme dans une direction espacée à une distance prédéterminée du bateau interactif.



CLAIM 1. Interactive boat 100; A control unit (200) provided on the interactive boat (100); A hologram generation unit (300) for three-dimensionally shaping the hologram in a direction spaced apart from the interactive boat (100) by a predetermined distance by the control unit (200).

N8478

WO202253403

Priority Date: 14/09/2020

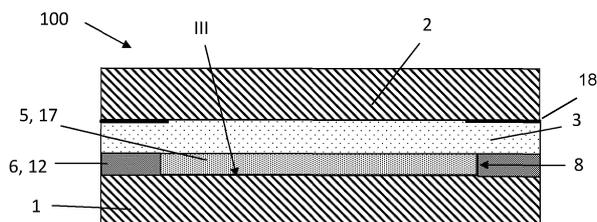
SAINT GOBAIN GLASS

COMPOSITE PANEL FOR A HOLOGRAPHIC HEAD-UP DISPLAY

A method for producing a composite panel (100) with a hologram, at least comprising the steps of: a) providing a first panel (1) and a second panel (2), b) - arranging a masking strip (4) on a surface (III) of the first panel (1) such that the masking strip (4) delimits a section (7) for a hologram element (5), - applying a photosensitive material (15) as a hologram element (5) at least in the section (7) delimited by the masking strip (4), c) removing the masking strip (4) such that a peripheral edge (8) of the hologram element (5) is uncovered, d) generating at least one hologram by exposing the hologram element (5), e) forming a layer stack made of the first panel (1), a thermoplastic interlayer (3) and a second panel (2), wherein the hologram element (5) is arranged between the two panels (1, 2), f) interconnecting the first panel (1) and the second panel (2) by way of the thermoplastic interlayer (3) to form a composite panel (100) within the scope of a lamination method.

PANNEAU COMPOSITE POUR AFFICHAGE TÊTE HAUTE HOLOGRAPHIQUE

La présente invention concerne un procédé de production d'un panneau composite (100) avec un hologramme, comprenant au moins les étapes consistant à : a) fournir un premier panneau (1) et un second panneau (2), b) - disposer une bande de masquage (4) sur une surface (III) du premier panneau (1) de sorte que la bande de masquage (4) délimite une section (7) pour un élément hologramme (5), - appliquer un matériau photosensible (15) en tant qu'élément hologramme (5) au moins dans la section (7) délimitée par la bande de masquage (4), c) retirer la bande de masquage (4) de sorte qu'un bord périphérique (8) de l'élément hologramme (5) est découvert, d) générer au moins un hologramme en rendant visible l'élément hologramme (5), e) former un empilement de couches constitué du premier panneau (1), une couche intermédiaire thermoplastique (3) et un second panneau (2), l'élément hologramme (5) étant disposé entre les deux panneaux (1, 2), f) interconnecter le premier panneau (1) et le second panneau (2) au moyen de la couche intermédiaire thermoplastique (3) pour former un panneau composite (100) dans l'étendue d'un procédé de stratification.



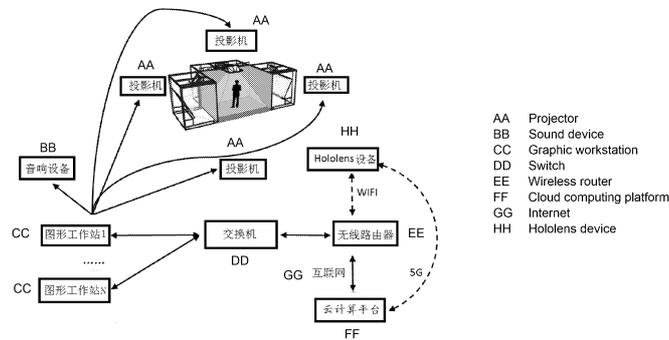
CLAIM 1. Method for producing a composite pane (100) with a hologram, at least comprising the steps of: a) providing a first pane (1) and a second pane (2), b) - arranging a masking strip (4) on a surface (III) of the first pane (1) such that the masking strip (4) delimits a cutout (7) for a hologram element (5), - Applying a photosensitive material (15) as hologram element (5) at least in the cutout (7) bounded by the masking strip (4), c) removing the masking strip (4) so that a peripheral edge (8) of the hologram element (5) is exposed, d) producing at least one hologram by exposing the hologram element (5), e) forming a layer stack from the first pane (1), a thermoplastic intermediate layer (3) and a second pane (2), wherein the hologram element (5) is arranged between the two panes (1, 2), f) connecting the first pane (1) and the second pane (2) via the thermoplastic intermediate layer (3) to form a composite pane (100) in a lamination method.

VIRTUAL EXPERIENCE SYSTEM AND METHOD COMBINING HOLOLENS AND CAVE

Disclosed are a virtual experience system and method combining Hololens and CAVE. The system comprises a CAVE system and a Hololens device. The CAVE system generates a three-dimensional virtual environment; and the Hololens device generates, in the three-dimensional virtual environment generated by the CAVE system and according to a three-dimensional model in the Hololens device, a three-dimensional holographic image of a virtual object, wherein the three-dimensional holographic image of the virtual object and the three-dimensional virtual environment are superposed to form a virtual three-dimensional scene. According to the system and the method of the present invention, by means of CAVE, the system overcomes the defect of it being difficult for a Hololen device to provide a large-view-field virtual scene due to the limitation of a field of view; moreover, by means of the characteristics of a Hololen device, i.e. being light and flexible and being capable of mixing and superposing a holographic image of a virtual object and a real scene, the defects of relatively poor virtual scene flexibility and the interactive experience feeling of the CAVE system are overcome.

SYSTÈME ET PROCÉDÉ D'EXPÉRIENCE VIRTUELLE COMBINANT HOLOLENS ET CAVE

Sont divulgués un système et un procédé d'expérience virtuelle combinant Hololens et CAVE. Le système comprend un système CAVE et un dispositif Hololens. Le système CAVE génère un environnement virtuel tridimensionnel. Le dispositif Hololens génère une image holographique tridimensionnelle d'un objet virtuel dans l'environnement virtuel tridimensionnel généré par le système CAVE et en fonction d'un modèle tridimensionnel dans le dispositif Hololens. L'image holographique tridimensionnelle de l'objet virtuel et l'environnement virtuel tridimensionnel sont superposés de façon à former une scène tridimensionnelle virtuelle. D'après le système et le procédé selon la présente invention, grâce à CAVE, le système surmonte la difficulté pour un dispositif Hololens de présenter une scène virtuelle ayant un grand champ de vision à cause de la limitation d'un champ de vision. De plus, un dispositif Hololens a pour caractéristiques sa légèreté, sa flexibilité et sa capacité à mélanger et superposer une image holographique d'un objet virtuel et une scène réelle. De telles caractéristiques permettent d'éliminer les défauts comme la flexibilité de scène virtuelle et la sensation d'expérience interactive relativement médiocres du système CAVE.



CLAIM 1. A virtual experience system in combination with a Hololens and CAVE, comprising: a processor; CAVE system and Hololens equipment; The CAVE system is used to generate a three dimensional virtual environment, the Hololens device is used to generate a three dimensional holographic image of a virtual object based on a three dimensional model in the Hololens device in a three dimensional virtual environment generated by the CAVE system, and the three dimensional holographic image of the virtual object is superimposed with the three dimensional virtual environment to form a virtual three dimensional scene.

N8483

WO202245294

Priority Date: 28/08/2020

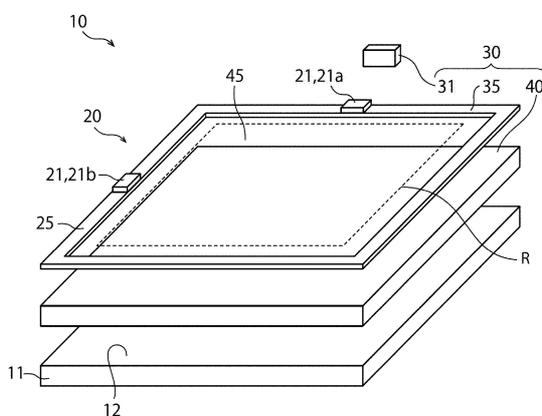
DAI NIPPON PRINTING

AERIAL IMAGE FORMING DEVICE, AERIAL INPUT DEVICE, DISPLAY DEVICE WITH AERIAL IMAGE FORMING DEVICE, MOBILE OBJECT, AND HOLOGRAM IMAGING LENS

An aerial image forming device 30 comprises a display device 31 that emits image light and a hologram imaging lens 40 that causes the image light emitted from the display device 31 to form an image at an image forming position 45.

DISPOSITIF DE FORMATION D'IMAGE AÉRIEN, DISPOSITIF D'ENTRÉE AÉRIEN, DISPOSITIF D'AFFICHAGE POURVU DU DISPOSITIF DE FORMATION D'IMAGE AÉRIEN, OBJET MOBILE ET LENTILLE D'IMAGERIE D'HOLOGRAMME

L'invention concerne un dispositif (30) de formation d'image aérien comprenant un dispositif (31) d'affichage qui émet une lumière d'image et une lentille (40) d'imagerie d'hologramme qui amène la lumière d'image émise par le dispositif (31) d'affichage à former une image au niveau d'une position (45) de formation d'image.



CLAIM 1. An aerial imaging device, comprising: a display device configured to emit imaging light; and a hologram imaging lens configured to form an image of the imaging light emitted from the display device at an imaging position.

N8485

WO202239208

Priority Date: 20/08/2020

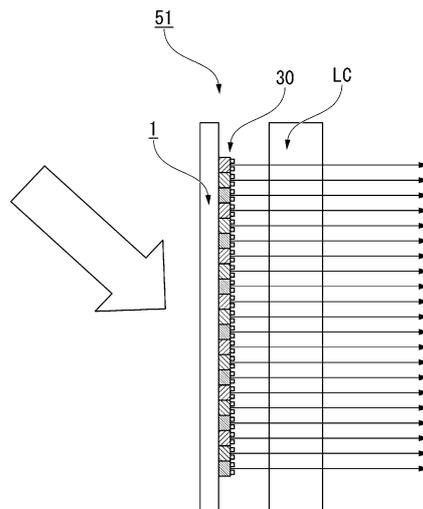
TOPPAN PRINTING

DIFFRACTION SHEET, METHOD FOR MANUFACTURING SAME, THREE-DIMENSIONAL DISPLAY DEVICE, LIGHT-BEAM REPRODUCTION DEVICE, THREE-DIMENSIONAL SPACE DISPLAY SYSTEM, LIGHT-BEAM REPRODUCTION METHOD, AND PROGRAM

This three-dimensional display device comprises: a diffraction sheet 1 measuring ten inches or larger on a diagonal, the diffraction sheet 1 having a diffraction layer that includes a first diffraction pattern positioned in a first alignment pattern on a transparent substrate, and a second diffraction pattern positioned in a second alignment pattern; a liquid crystal device having a plurality of pixels; and a light source. The first diffraction pattern and second diffraction pattern and the pixels are positioned overlapping in the direction normal to the diffraction sheet, and the amount of offset thereof is 1/10 or less of the pixel pitch.

FEUILLE DE DIFFRACTION, SON PROCÉDÉ DE FABRICATION, DISPOSITIF D’AFFICHAGE TRIDIMENSIONNEL, DISPOSITIF DE REPRODUCTION DE FAISCEAU LUMINEUX, SYSTÈME D’AFFICHAGE D’ESPACE TRIDIMENSIONNEL, PROCÉDÉ DE REPRODUCTION DE FAISCEAU LUMINEUX ET PROGRAMME

L’invention concerne un dispositif d’affichage tridimensionnel comprenant : une feuille de diffraction 1 mesurant dix pouces ou plus sur une diagonale, la feuille de diffraction 1 ayant une couche de diffraction qui comprend un premier motif de diffraction positionné dans un premier motif d’alignement sur un substrat transparent, et un second motif de diffraction positionné dans un second motif d’alignement ; un dispositif à cristaux liquides ayant une pluralité de pixels ; et une source de lumière. Le premier motif de diffraction et le second motif de diffraction et les pixels sont positionnés de manière à se chevaucher dans la direction normale à la feuille de diffraction, et la quantité de décalage de celui-ci est de 1/10 ou moins du pas de pixel.



CLAIM 1. A display device comprising: a diffraction sheet of 10 inches or greater diagonal, the diffraction sheet including a transparent substrate and a diffraction layer including a first diffraction pattern arranged in a first arrangement pattern and a second diffraction pattern arranged in a second arrangement pattern on the substrate; either a liquid crystal device including a plurality of pixels or a color filter including two or more types of color filters; A light source, wherein the first diffraction pattern and the second diffraction pattern overlap with each other in a normal direction of the diffraction sheet, and the pixels or the color filter are disposed to overlap with each other, and an amount of deviation of the first diffraction pattern and the second diffraction pattern is 1/10 or less of a pitch of the pixels or the color filter.

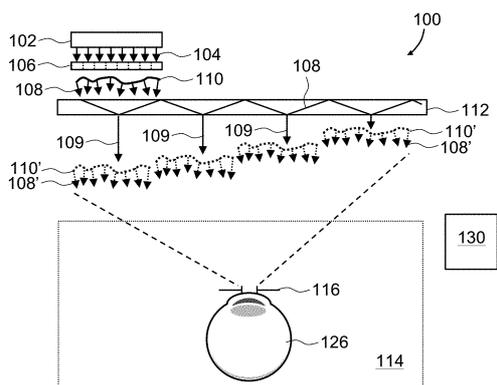
N8487

US20220091560
Priority Date: 24/09/2020

FACEBOOK TECHNOLOGIES

LIGHTGUIDE BASED HOLOGRAPHIC DISPLAY

A holographic display with a spatial light modulator coupled to a pupil-replicating lightguide is disclosed. The spatial light modulator provides a light beam with spatially modulated amplitude and/or phase. The light beam is replicated by the pupil-replicating lightguide into a plurality of portions. The portions interfere at an exit pupil to provide an image for direct observation by a user. An eye-tracking system may be provided to determine the position of the user pupils, and the spatial modulation of the light beam may be adjusted accordingly to make sure that the optical interference of the beam portions at the eye pupils provides the required image.



CLAIM 1. A display comprising: an illuminator for providing an illuminating light beam; a spatial light modulator (SLM) operably coupled to the illuminator for receiving and spatially modulating at least a phase of the illuminating light beam to provide an image light beam having a spatially varying wavefront; and a first replicating lightguide operably coupled to the SLM for receiving the image light beam and providing multiple laterally offset portions of the image light beam at an eyebox of the display; wherein the spatially varying wavefront of the image light beam has such a shape that the portions of the image light beam add or subtract coherently at an exit pupil of the display to form an image for direct observation by a user.

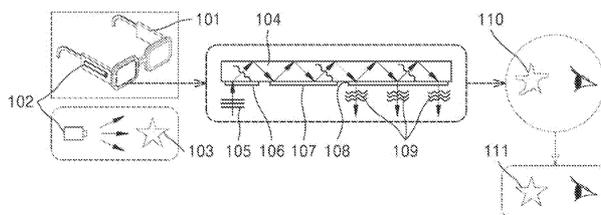
N8488

US20220091419
Priority Date: 22/09/2020

SAMSUNG ELECTRONICS

HOLOGRAPHIC WAVEGUIDE, METHOD OF PRODUCING THE SAME, AND DISPLAY DEVICE INCLUDING THE HOLOGRAPHIC WAVEGUIDE

Provided is a holographic waveguide including a waveguide element configured to guide light, and a diffractive optical element including an aberration correction hologram pattern, the diffractive optical element being provided adjacent to the waveguide element and configured to correct aberrations generated in the light traveling along the waveguide element by the waveguide element.



CLAIM 1. A holographic waveguide comprising: a waveguide element configured to guide light; and a diffractive optical element comprising an aberration correction hologram pattern, the diffractive optical element being provided adjacent to the waveguide element and configured to correct aberrations generated in the light traveling along the waveguide element by the waveguide element.

N8490

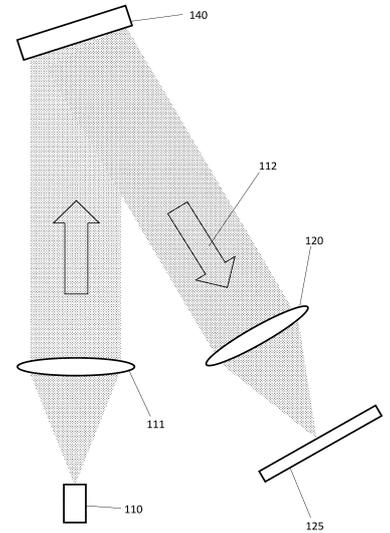
US20220075317
Priority Date: 04/09/2020

ENVISICS

HOLOGRAPHIC PROJECTOR

A projector arranged to project an image within a display area on a display plane. The image comprises a light feature. A light sensor is spatially separated from the display plane. In an aligned state, light forming the light feature of the image on the display plane is at least partially disposed around the light sensor. In the aligned state, substantially no light forming the light feature impinges on the light sensor. The aligned state defines a selected alignment between the display area and the display plane (i.e. a selected position of the display area on the display plane).

CLAIM 1. A projector arranged to project an image within a display area on a display plane, wherein the image comprises a light feature, and the projector comprises a light sensor spatially separated from the display plane, wherein the display area and light sensor are aligned such that light forming the light feature of the image on the display plane is at least partially disposed around the light sensor, without substantially impinging thereon, when operated in an aligned state, wherein the aligned state defines a selected alignment between the display area and the display plane.



N8491

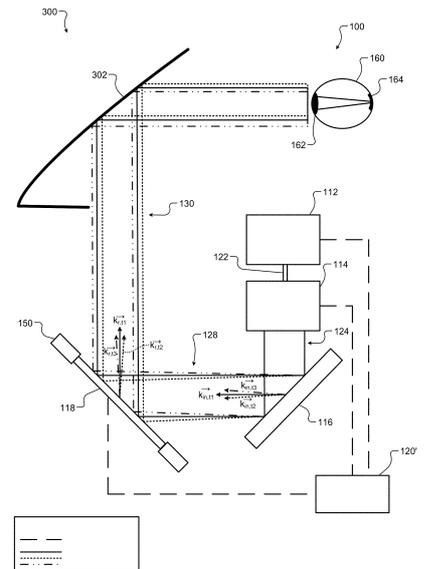
US20220066211
Priority Date: 27/08/2020

GM GLOBAL TECHNOLOGY OPERATIONS

SPECKLE-REDUCED DIRECT-RETINA HOLOGRAPHIC PROJECTOR INCLUDING MULTIPLE SPATIAL LIGHT MODULATORS

A direct-retina holographic projection system includes first and second spatial light modulators (SLMs) and a control module. The first SLM receives a beam of light and dithers the beam of light at a predetermined frequency to provide multiple instances of the beam of light. The second SLM receives the instances of the beam of light, displays an encoded phase hologram of a graphic image to be projected, and diffracts the instances of the beam of light to provide instances of the encoded phase hologram with the same graphic image but multiplied with dithered wavefronts. The control module: iteratively adjusts a parameter of the first SLM to generate the instances of the beam of light; and controls operation of the second SLM to, based on the instances of the beam of light, display multiple instances of the graphic image on a retina of an eye of a viewer.

CLAIM 1. A direct-retina holographic projection system comprising: a first spatial light modulator configured to receive a beam of light from a non-image light source and dither the beam of light at a predetermined frequency to provide a plurality of instances of the beam of light; a second spatial light modulator configured to receive the plurality of instances of the beam of light from the first spatial light modulator, display an encoded phase hologram of a graphic image to be projected, and diffract the plurality of instances of the beam of light to provide a plurality of instances of the encoded phase hologram with same graphic information as the graphic image but multiplied with a plurality of dithered wavefronts; and a control module configured to iteratively adjust a parameter of the first spatial light module to generate the plurality of instances of the beam of light, and control operation of the second spatial light modulator to; based on the plurality of instances of the beam of light; display multiple instances of the graphic image on a retina of an eye of a viewer by directing the plurality of instances of the encoded phase hologram of the graphic image toward a reflector or the eye of the viewer.



N8494

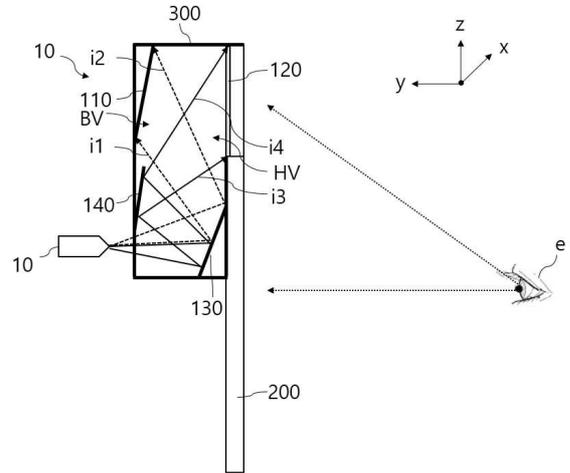
KR20220033170
Priority Date: 09/09/2020

CHMAI

IMAGING DEVICE ASSOCIATED WITH ARTIFICIAL INTELLIGENCE HOLOGRAM IMAGES

The present invention relates to an imaging device associated with an artificial intelligence hologram image that finds and shows a moving image desired by a hologram character through voice recognition. An imaging apparatus includes: a screen unit in which a hologram image of a 3 D image is implemented; an image processing unit in which an image is displayed below the screen unit; an image source which provides an image to the screen unit; and a processing unit which displays a desired image based on an audio command through the image processing unit when an audio signal is input by the hologram image.

CLAIM 1. An image apparatus, comprising: a screen unit in which a hologram image of a 3 D image is implemented; an image processing unit in which an image is displayed below the screen unit; an image source which provides an image to the screen unit; and a processing unit which, when an audio signal is input by the hologram image, causes a desired image to be displayed through the image processing unit based on an audio command.



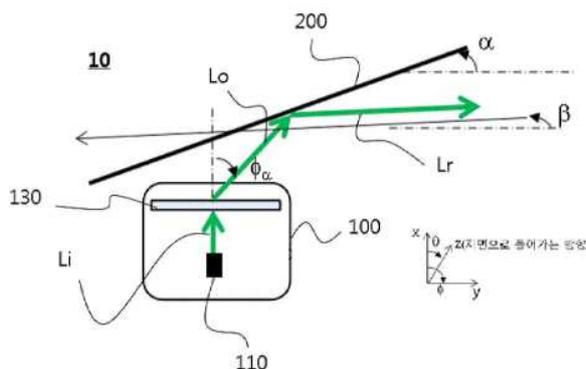
N8495

KR20220030055
Priority Date: 02/09/2020

LG CHEM

HOLOGRAPHIC LIGHT GUIDE PLATE AND DISPLAY DEVICE INCLUDING THE SAME

The present invention relates to a holographic light guide panel and a display device including the same. More particularly, the present invention relates to a holographic light guide plate capable of miniaturizing a display device to which the holographic light guide plate is applied and simplifying a structure by adjusting an angle of light output by diffraction from an output holographic optical element unit or an additional holographic optical element unit, and a display device including the same.



CLAIM 1. A holographic optical device comprising: a light guide unit configured to guide light; an input holographic optical element unit disposed on one surface or the other surface of the light guide unit so that light output from a light source is input and guided on the light guide unit, the input holographic optical element unit being configured to diffract the input light; And an output holographic optical element portion configured to receive light diffracted from the input holographic optical element portion and to output the received light from the light guide portion by diffraction, wherein the light output from the light guide portion forms a predetermined angle with a normal to one surface of the light guide portion.

N8497

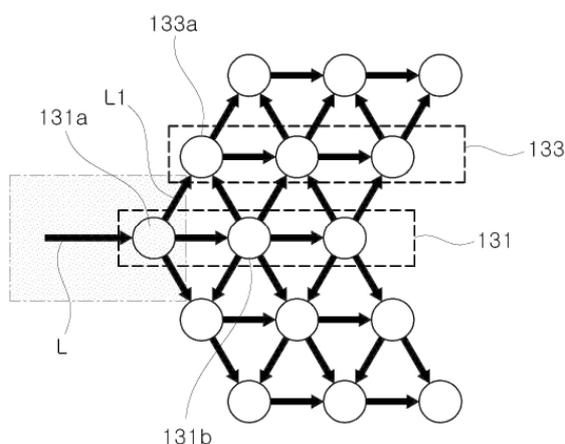
KR20220026362

Priority Date: 25/08/2020

LG CHEM

HOLOGRAPHIC LIGHT GUIDE PLATE AND DISPLAY DEVICE INCLUDING THE SAME

The present invention relates to a holographic light guide plate and a display device including the same, and more particularly, to a holographic light guide plate capable of expanding an eyemotion box without additional light scattering by using an optical element capable of expanding light simultaneously in a horizontal direction and a vertical direction.



CLAIM 1. A holographic optical device comprising: a light guide configured to guide light; a first holographic optical element disposed on one surface or the other surface of the light guide so that the light output from a light source is input and guided on the light guide, and configured to diffract the input light and expand the input light in vertical and horizontal directions; And a second holographic optical element configured to receive diffracted and expanded light from the first holographic optical element and to output the received light from the light guide section by diffraction.

N8499

KR20220018167

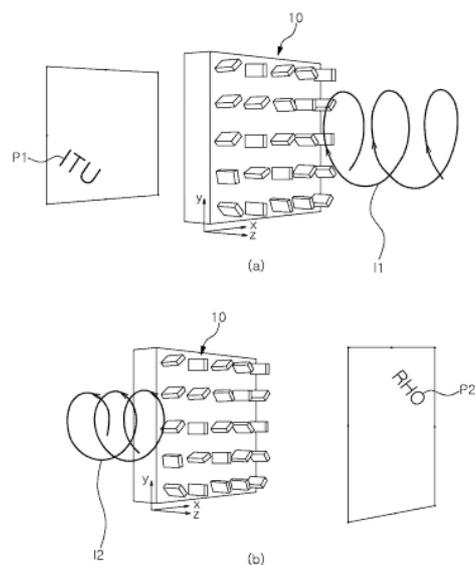
Priority Date: 06/08/2020

CENTER FOR ADVANCED META MATERIALS | POHANG UNIVERSITY OF SCIENCE & TECHNOLOGY POSTECH

MULTI-DIRECTIONAL HOLOGRAM DEVICE AND MULTI-DIRECTIONAL HOLOGRAM IMPLEMENTING SYSTEM COMPRISING THE SAME

The present invention relates to a multi-directional hologram device and a multi-directional hologram implementing system including the same. A multi-directional hologram device includes: a substrate; and a dielectric layer on which a plurality of nanostructures are provided. the dielectric layer includes: a first dielectric layer that transmits light incident from a first direction to form a first image; and a second dielectric layer that transmits light incident from a second direction different from the first direction to form a second image.

CLAIM 1. A multidirectional hologram device comprising: a substrate; and a dielectric layer provided with a plurality of nanostructures on the substrate, wherein the dielectric layer comprises: a first dielectric layer that transmits light incident from a first direction to form a first image; and a second dielectric layer that transmits light incident from a second direction different from the first direction to form a second image.



N8500

KR102377063

Priority Date: 29/11/2021

CHOI, JUNG WAN

HOLOGRAM DISPLAY DEVICE

The present invention relates to a hologram display device. the hologram display device according to an embodiment of the present invention comprises: a housing provided with an open part in front; an image output part provided in the housing and outputting a hologram image; an image output part provided in the open part, A display unit formed from a lower end of the opening to an upper end of the rear of the opening to form an outward inclined surface, the display unit receiving and displaying a hologram image output from the image output unit; a display unit embedded in the display unit, A display device, comprising: a turntable that passes through and rotates a display; a light emitting unit that emits light in a direction of the turntable; an audio output unit that is provided in the housing and outputs audio; and a control unit that is used to control the image output unit, the turntable, the light emitting unit, A display to which a user desires to promote and display is rotated by being placed on a hologram display device, and a hologram image is output around the display to have advantages in which visibility and acceleration effects are increased.

CLAIM 1. An image output unit provided in the housing and outputting a hologram image, the image output unit being provided in the housing and being configured to form an outwardly inclined surface, the image output unit being provided in the opening and being formed from a lower end in front of the opening to an upper end in rear of the opening, A display unit configured to receive and display a hologram image output from the image output unit; a turntable embedded in the display unit and configured to hold and rotate a display; a light emitting unit configured to emit light in a direction of the turntable; a sound output unit provided in the housing and configured to output sound, A light emitting unit and a sound output unit, wherein the light emitting unit includes a plurality of vertical frames vertically extending from a lower surface of the opening unit and formed in a circular arrangement with respect to the turntable and a control unit provided in the plurality of vertical frames, A display enhancement module formed of a combination of light emitting modules provided to emit green color light, and a background light emission module provided on a lower surface, a front surface, and an upper surface of an opening provided in the housing, and formed such that led elements emitting white light are spaced apart from each other by a predetermined interval.

N8501

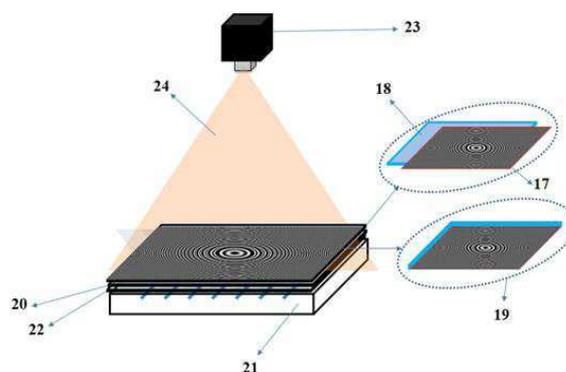
KR102374014

Priority Date: 19/08/2020

KONYANG UNIVERSITY INDUSTRIAL COOPERATION

APPARATUS AND METHOD FOR MANUFACTURING HOLOGRAPHIC SCREEN FOR THREE-DIMENSIONAL IMAGE PROJECTION

The present invention relates to an apparatus and a method for manufacturing a holographic screen for three-dimensional (3 D) image projection screen of various sizes can be manufactured simply and inexpensively in a short time without using an optical component such as a spherical reflector or a lens. The apparatus for manufacturing a holographic screen for three-dimensional image projection includes: a flat plate in which a photosensitive plate to which a photosensitive fluid is applied is laminated on one surface thereof; a diffusion plate laminated on the photosensitive plate in order to improve the uniformity of the surface of the holographic screen and to expand the viewing region; a transparent plate on which a diffraction pattern or a Fresnel pattern generated by calculation is printed; and a light source which illuminates a beam enlarged toward the transparent plate.



CLAIM 1. An apparatus for manufacturing a holographic screen for three-dimensional image projection, comprising: a flat plate on which a photosensitive plate to which a photosensitive oil is applied is laminated; a transparent plate or Fresnel lens on which a diffraction pattern or Fresnel pattern generated by calculation is printed, or negative (positive) angles or printed; and a light source which illuminates a beam enlarged toward the transparent plate or Fresnel lens.

N8502

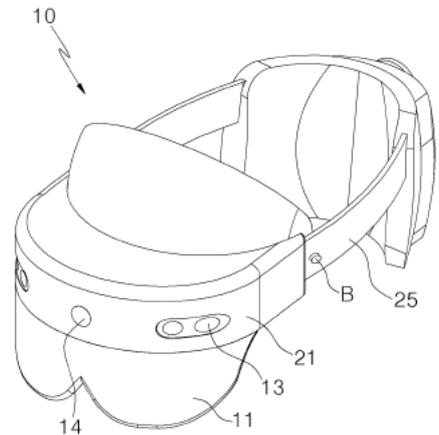
KR102367198

Priority Date: 03/11/2021

HO ENTERTAINMENT

HOLOGRAPHIC LENS MEDICAL EDUCATION SYSTEM UTILIZING SPEECH RECOGNITION

The present invention relates to a holographic lens medical training system using voice recognition, which enables live medical training by implementing human anatomy 3 D modeling with mixed reality (Mr) using a holographic lens terminal and operates through voice recognition. A holographic lens medical training system using voice recognition includes a database 31 providing 3 D modeling for human anatomical training and an export problem, a display panel 11 displaying the 3 D modeling and the export problem provided by the database 31 in mixed reality on a visual field of a wearer, a posture sensor 12 recognizing a posture of the wearer, A holographic lens terminal (10) including a camera (13) for recognizing a hand motion of a wearer and a microphone (14) for recognizing a voice of the wearer; and an analysis module (32) for analyzing a posture of the posture sensor (12), a hand motion of the camera (13), and a voice of the microphone (14), so that 3 D modeling of a corresponding human body portion is implemented on the display panel (11).



N8504

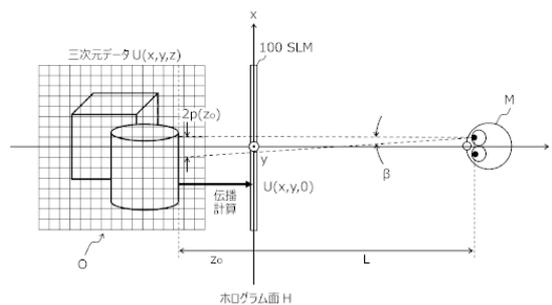
JP2022039234

Priority Date: 28/08/2020

JAPAN BROADCASTING

HOLOGRAM DATA GENERATION APPARATUS AND PROGRAM THEREFOR

TOPIC: To provide a hologram data generation apparatus capable of generating hologram data with a reduced computational complexity. INVENTION: a hologram data generation apparatus 1 includes: a down-sampling unit 11 configured to down-sample a hologram generation target image at a pixel pitch at which a spatial frequency of a hologram reproduction image is equal to or greater than at least a predetermined value; and a display unit configured to display, on a hologram surface, a complex amplitude distribution of the down-sampled hologram generation target image in a manner such that: An up-sampled light wave propagation means (12) configured to calculate light wave propagation so as to up-sample the light wave propagation to a pixel pitch of a spatial light modulator; and a hologram data calculation means (13) configured to calculate hologram data on the basis of a complex amplitude distribution of reference light prepared in advance, where the up-sampled complex amplitude distribution is a complex amplitude cloth of object light.



CLAIM 1. A hologram data generation apparatus for generating hologram data from a hologram generation target image, the apparatus comprising: A down-sampling unit configured to down-sample the hologram generation target image; and a complex amplitude distribution calculating unit configured to calculate, on a hologram surface, a complex amplitude distribution of the hologram generation target image downsampled by the down-sampling unit; An up-sampling light wave propagation means for calculating light wave propagation so as to up-sample the hologram data to a pixel pitch of a spatial light modulator displaying the hologram data; and a complex amplitude distribution up-sampled by the up-sampling light wave propagation means as a complex amplitude cloth of object light, A hologram data calculating unit configured to calculate the hologram data based on a complex amplitude distribution of reference light prepared in advance.

N8505

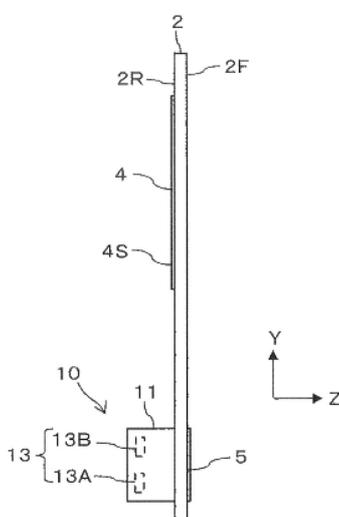
JP2022034463

Priority Date: 18/08/2020

ARTIENCE LAB

HOLOGRAM IMAGE REPRODUCTION DEVICE

TOPIC: To irradiate a holographic diffraction grating with light-source light, propagate light diffracted by the holographic diffraction grating while being totally reflected in a substrate, and reproduce a bright hologram image from an image hologram element without brightening the light-source light itself. INVENTION: a display device includes a substrate 2, an image hologram element 4 attached to a rear surface 2 R of the substrate 2, a holographic diffraction grating group 5 attached to the rear surface 2 R at a position different from that of the image hologram element 4, and an LED group 13 configured to illuminate the holographic diffraction grating group 5. the holographic diffraction grating group 5 includes a holographic diffraction grating column 5 A, 5 B, and each region in which the parallel light diffracted by each holographic diffraction grating propagates in the substrate 2 to illuminate the front surface 2 F and the rear surface 2 R are continuous without gaps therebetween, and the image hologram element 4 is illuminated by the parallel light diffracted by each holographic diffraction grating and propagating in the substrate 2.



CLAIM 1. A semiconductor light emitting device, comprising: a flat plate-shaped substrate having a transparent interior and a first surface and a second surface orthogonal to a thickness direction; An image hologram element attached to a first surface or a second surface of the substrate and reproducing a hologram image; A plurality of holographic diffraction gratings attached to a first surface or a second surface of the substrate at positions different from the image hologram element; and A plurality of light sources attached at positions facing the holographic diffraction grating and configured to illuminate the holographic diffraction grating, The backlight device according to claim 1, wherein the holographic diffraction grating diffracts the light emitted from the light source to parallel light in a constant direction, and the parallel light diffracted by the holographic diffraction grating includes: A hologram image reproduction device that impinges on first and second surfaces of the substrate and propagates through the substrate to illuminate the image hologram element to reproduce a hologram image, the hologram image reproduction device comprising: The device according to claim 1, wherein the plurality of holographic diffraction gratings form a holographic diffraction grating group in which a plurality of holographic diffraction grating columns are formed in a direction orthogonal to the one direction, the holographic diffraction grating columns being a plurality of holographic diffraction grating columns being arranged in the one direction; and Each region in which the parallel light diffracted by each holographic diffraction grating of the holographic diffraction grating group illuminates the first surface and the second surface of the substrate contiguous without gaps therebetween; A region of a first surface or a region of a second surface of the substrate in a portion to which the image hologram element is attached is irradiated with the parallel light diffracted by the holographic diffraction gratings. The hologram image reproduction device according to any one of claims 1 to 3.

N8508

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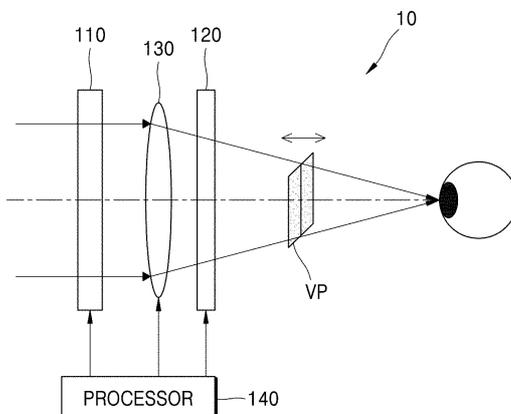
Priority Date: 28/08/2020

SAMSUNG ELECTRONICS

HOLOGRAPHIC DISPLAY APPARATUS AND OPERATING METHOD THEREOF

A holographic display apparatus and a holographic display method are provided. The holographic display apparatus determines a representative depth from 3D image data; calculates a computer generated hologram (CGH) corresponding to the representative depth on the 3D image data; obtains the modulated CGH by modulating a phase of the CGH to increase an eye box; modulates a light according to the modulated CGH and generates a hologram image; and forms the generated hologram image at the representative depth.

CLAIM 1. A holographic display apparatus, preferably a wearable apparatus, comprising: a processor configured to identify a representative depth from 3D image data, calculate a computer generated hologram, "CGH," corresponding to the representative depth on the 3D image data, and expand an eye box by modulating a phase of the CGH to obtain a modulated CGH; a spatial light modulator configured to generate a hologram image by modulating light based on the modulated CGH; and a focus optical system configured to form the hologram image generated by the spatial light modulator at the representative depth.



N8511

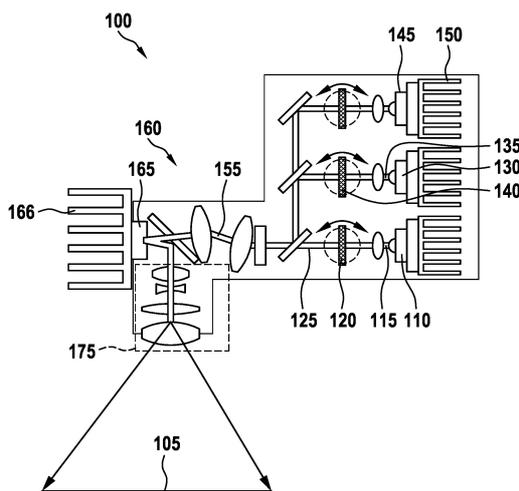
DE102020210759

Priority Date: 25/08/2020

ROBERT BOSCH

PROJECTOR FOR ILLUMINATING A HOLOGRAPHIC PROJECTION SURFACE FOR A VEHICLE, PROJECTION DEVICE FOR A VEHICLE AND METHOD FOR OPERATING A PROJECTOR

The invention relates to a projector (100) for illuminating a holographic projection surface (105) for a vehicle, wherein the projector (100) has a light source (110) for outputting a partial light beam (115) and at least one filter element (120) which can be inclined with respect to an optical axis, which is designed to filter at least the partial light beam (115) in such a way that a spectral portion (125) of the partial light beam (115) is transmitted in order to illuminate the holographic projection surface (105).



CLAIM 1. Projector (100) for illuminating a holographic projection surface (105) for a vehicle (900), wherein the projector (100) has the following features: - a light source (110) for outputting a partial light beam (115); and - at least one filter element (120) which can be inclined with respect to an optical axis and is designed to filter at least the partial light beam (115) in such a way that a spectral component (125) of the partial light beam (115) is transmitted in order to illuminate the holographic projection surface (105).

N8513

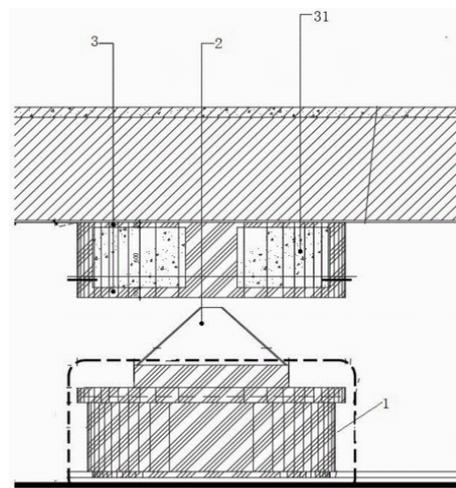
CN216119499U

Priority Date: 09/07/2021

GUANGDONG CONSTRUCTION & DECORATION ENGINEERING

FOUR-CONE HOLOGRAPHIC PROJECTION STRUCTURE OF INTELLIGENT EXHIBITION HALL

The utility model discloses a four-cone holographic projection structure of an intelligent exhibition hall, which comprises an exhibition stand, four-cone exhibition screens and a hanging display screen; the hanging display screen is arranged on the ceiling structure, the hanging display screen is integrally cylindrical, and the display screen is distributed on the side surface of the cylinder; the exhibition stand is oval in shape and comprises a stand main body, the upper surface of the stand main body extends outwards to form an exhibition stand surface, and lamplight is arranged at the bottom of the exhibition stand surface of the extending part; the bottom of the exhibition stand main body is concave inwards to form a step shape; a boss is arranged on the exhibition platform surface and used for mounting the four-side cone exhibition screen; and a touch screen is also arranged in the exhibition platform surface. The four-cone holographic projection structure of the intelligent exhibition hall is divided into the four-cone exhibition screen, the hanging display screen and the exhibition stand, integrated rapid installation and flexible disassembly and replacement are realized through a unit combination and hanging mode, and information exhibition is facilitated.



N8514

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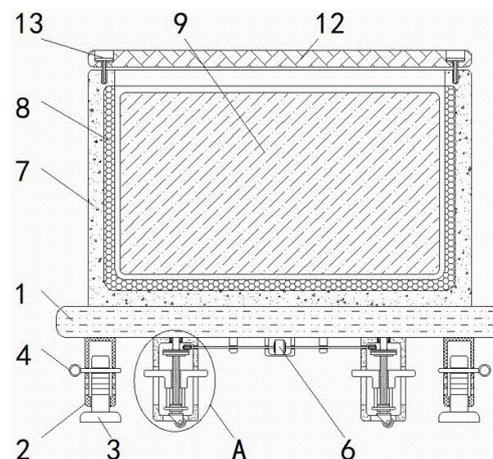
Priority Date: 29/11/2021

NANCHANG TRIPOLAR OPTOELECTRONICS TECHNOLOGY

HOLOGRAPHIC DISPLAY PANEL PROCESSING CONVEYER WITH INFORMATION RECORDING FUNCTION

The utility model discloses a holographic display panel processing and transporting device with an information recording function, which comprises a fixed mounting base, wherein fixed mounting brackets are fixedly mounted on the left side and the right side of the lower end of the fixed mounting base, fixed support legs are arranged on the lower side of the inside of each fixed mounting bracket, a driving motor is mounted in the middle of the lower end of the fixed mounting base, and moving assemblies are arranged at the left end and the right end of each driving motor; the storage box is fixedly arranged at the upper end of the fixed mounting base, an embedded rubber cushion is arranged on the inner side of the storage box, and thin rubber layers are arranged on the front side and the rear side of the partition plate; the dustproof cover plate is arranged at the upper end of the storage box, and an adjusting bolt is arranged at the joint of the dustproof cover plate and the storage box. This holographic display panel processing conveyer with information recording function can carry out nimble removal transportation, is favorable to carrying out classified storage to holographic display panel, and has improved device's practical function.

CLAIM 1. A holographic display panel processing and transporting device with an information recording function is characterized by comprising: the fixed mounting device comprises a fixed mounting base, wherein fixed mounting brackets are fixedly mounted on the left side and the right side of the lower end of the fixed mounting base, fixed support legs are arranged on the lower side in the fixed mounting brackets, limiting bolts are arranged at the joints of the fixed mounting brackets and the fixed support legs, a driving motor is mounted in the middle of the lower end of the fixed mounting base, and moving assemblies are arranged at the left end and the right end of the driving motor; the storage box is fixedly arranged at the upper end of the fixed mounting base, an embedded rubber cushion is arranged on the inner side of the storage box, a partition plate is arranged inside the embedded rubber cushion, thin rubber layers are arranged on the front side and the rear side of the partition plate, and an information nameplate is arranged in the middle of the upper end of the partition plate; the dustproof cover plate is arranged at the upper end of the storage box, and an adjusting bolt is arranged at the joint of the dustproof cover plate and the storage box.



N8515

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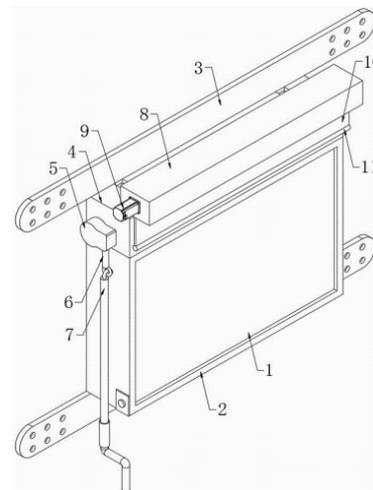
Priority Date: 08/11/2021

CICC EDUCATION TECHNOLOGY QINGDAO

HOLOGRAPHIC PROJECTION BLACKBOARD FOR NETWORK TEACHING

The utility model discloses a holographic projection blackboard for network teaching, which comprises a blackboard main body, wherein the outer wall of the blackboard main body is fixedly connected with one side of the inner wall of an outer frame, the top end of the outer frame is fixedly connected with the bottom end of a connecting box, one side of the connecting box is fixedly connected with one side of a driving box, the top end and the bottom end of the inner wall of the driving box are respectively embedded with a first connecting bearing, the inner walls of the two first connecting bearings are respectively fixedly connected with the top and the bottom of the outer wall of a worm, and the two sides of the inner wall of the connecting box are respectively embedded with a second connecting bearing. Guarantee that the projection effect is better, improve the teaching effect.

CLAIM 1. The utility model provides a holographic projection blackboard of network teaching, includes blackboard main part (1), its characterized in that, the outer wall of blackboard main part (1) and one side fixed connection of frame (2) inner wall, the top of frame (2) and the bottom fixed connection of connecting box (4), one side fixed and one side fixed connection of drive box (5) of connecting box (4), the top and the bottom of drive box (5) inner wall all inlay and are equipped with first connection bearing, two the inner wall of first connection bearing respectively with the top and the bottom fixed connection of worm (15) outer wall, the both sides of connecting box (4) inner wall all inlay and are equipped with second connection bearing, two the inner wall of second connection bearing respectively with the both sides fixed connection of transmission shaft (17) outer wall, the one end and the one end fixed connection of worm wheel (16) of transmission shaft (17), one side and one side meshing of worm (15) of worm wheel (16), the middle of the outer wall of the transmission shaft (17) is fixedly provided with two driving gears (18), the top ends of the two driving gears (18) are respectively meshed with one sides of the bottom ends of the two racks (14), and one sides of the top ends of the racks (14) are respectively fixedly connected with the bottom ends of the two I-shaped sliding blocks (13).



N8516

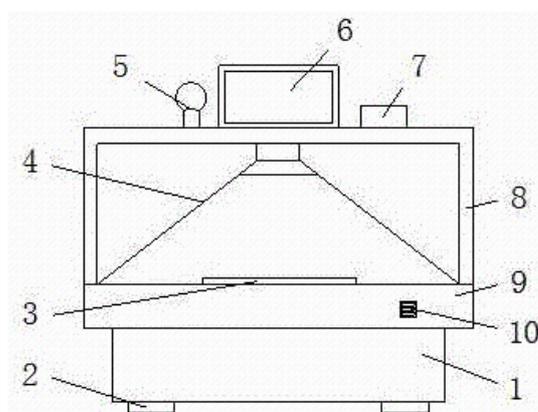
CN216086863U

Priority Date: 08/10/2021

SUZHOU HUIYAN INFORMATION TECHNOLOGY

HOLOGRAPHIC PROJECTION INTERACTION SYSTEM WITH REAL-TIME INTERACTION FUNCTION

The utility model discloses a holographic projection interaction system with a real-time interaction function, which comprises a base, wherein electric push rods are fixedly arranged at the left end and the right end of the top of an inner cavity of the base, a movable plate is fixedly connected to the extending end of each electric push rod, damping sleeves are fixedly connected to the left end and the right end of the bottom of the movable plate, damping springs and second magnetic blocks are fixedly connected to the left end and the right end of the inner cavity of each damping sleeve, the second magnetic blocks are located at the upper ends of the inner sides of the damping springs, a fixed plate is fixedly connected to the bottoms of the damping springs, and first magnetic blocks are fixedly connected to the left end and the right end of the top of the fixed plate. The utility model solves the problems that the conventional holographic projection interactive system with the real-time interactive function is very inconvenient to carry and brings inconvenience to the work of workers due to the fact that most of exhibition stands are fixed structures through the action of the electric push rod, the movable plate, the damping sleeve, the wheel seat, the movable wheel, the fixed plate, the damping spring, the first magnetic block and the second magnetic block.



N8517

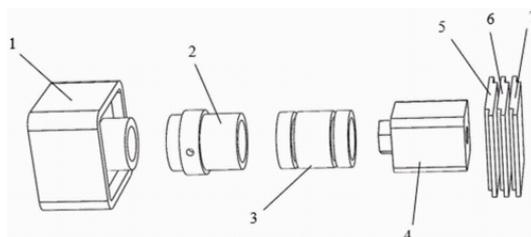
CN216083421U

Priority Date: 23/09/2021

EAST CHINA UNIVERSITY OF SCIENCE & TECHNOLOGY

HOLOGRAPHIC DYNAMIC DISPLAY DEVICE BASED ON LIQUID CRYSTAL GEOMETRIC PHASE DEVICE

The utility model relates to a holographic dynamic display device based on a liquid crystal geometric phase device, which comprises a light source, a beam expanding system, a circularly polarized light generating device and a liquid crystal box group which are sequentially connected, wherein the liquid crystal box group comprises a plurality of liquid crystal boxes, a liquid crystal layer is arranged in each liquid crystal box, the circularly polarized light generating device and the liquid crystal boxes in the liquid crystal box group are both connected with a controller, and the controller loads voltage waveforms to the circularly polarized light generating device and the liquid crystal boxes to realize holographic dynamic display of target patterns. Compared with the prior art, the utility model has the advantages of low display difficulty, less light leakage, low holographic projection display cost, improvement on the switching efficiency between different target patterns, improvement on the flexibility of projection equipment and the like.



CLAIM 1. The holographic dynamic display device is characterized by comprising a light source (1), a beam expanding system, a circularly polarized light generating device (4) and a liquid crystal box group which are sequentially connected, wherein the liquid crystal box group comprises a plurality of liquid crystal boxes, liquid crystal layers are arranged in the liquid crystal boxes, the circularly polarized light generating device (4) and the liquid crystal boxes in the liquid crystal box group are both connected with a controller, and the controller loads voltage waveforms to the circularly polarized light generating device (4) and the liquid crystal boxes.

N8518

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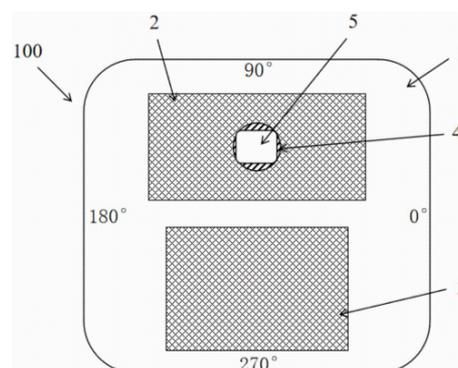
Priority Date: 29/10/2021

SVG TECHNOLOGY

HOLOGRAPHIC WAVEGUIDE SHEET AND AUGMENTED REALITY HEAD-UP DISPLAY DEVICE

The application relates to a holographic waveguide sheet, which comprises a waveguide, and an in-coupling region and an out-coupling region which are arranged on the surface of the waveguide, wherein the in-coupling region is configured to enable incident image light to be coupled into the waveguide and guided to the out-coupling region along the waveguide, the out-coupling region is configured to couple light in the waveguide out of the waveguide, the surface of a partial region of the in-coupling region is provided with a coating layer, and the projection of the coating layer on the surface of the waveguide covers the projection of the incident image light on the surface of the waveguide. The surface of the partial area of the coupling-in area is provided with the coating layer, so that the diffraction efficiency of the first diffraction of incident image light can be effectively improved, the light utilization efficiency of the holographic waveguide sheet can be effectively improved, and the holographic waveguide sheet is simple in structure and low in cost.

CLAIM 1. A holographic waveguide plate comprising a waveguide and disposed on a surface of the waveguide an incoupling region and an outcoupling region, the incoupling region being configured such that incident image light is coupled into the waveguide and guided along the waveguide to the outcoupling region, the outcoupling region being configured to outcouple light from the waveguide in the waveguide, a surface of a partial region of the incoupling region being provided with a coating, and a projection of the coating on the surface of the waveguide covering a projection of the incident image light on the surface of the waveguide.



N8520

CN216052615U

Priority Date: 20/10/2021

NANJING ZHONGSHAN VIRTUAL REALITY TECHNOLOGY RESEARCH INSTITUTE

HOLOGRAPHIC PROJECTION IMAGING DISPLAY SYSTEM

The utility model relates to the technical field of holographic projection, in particular to a holographic projection imaging display system, which comprises a base, a display part, a host and four imaging screens, wherein the base is provided with a plurality of imaging screens; the base is provided with a bearing plane; the display component is arranged above the imaging screen and is provided with display screens distributed corresponding to the imaging screen; the host computer is arranged in the base and is connected with the display screen through a data line. The utility model adopts four imaging screens with larger inclination angles to splice and form the quadrangular frustum pyramid shaped holographic display component, each imaging screen has larger effective display area due to larger inclination angles of the waist and the bottom edge, the occupation ratio of the top edge is larger, which is beneficial to displaying larger-size holographic pictures, and the space in the holographic display component is larger, so that the occupied area of the display system is reduced while cylindrical or square display objects with relatively large volume can be put in, and better exhibition experience is provided for visitors.

CLAIM 1. A holographic projection imaging display system is characterized by comprising a base, a display part, a host and four imaging screens; the base is provided with a bearing plane; the display component is arranged above the imaging screen and is provided with display screens distributed corresponding to the imaging screen; the host is arranged in the base and connected with the display screen through a data line, and the host is used for storing images, receiving instructions of an operation panel and driving the display screen to form images; the imaging screens are fixed to the bearing plane, each imaging screen is in an isosceles trapezoid shape, the waist of the trapezoid of each adjacent imaging screen is overlapped to form a quadrangular frustum pyramid shape, and a display area is formed in each of the four imaging screens; the angle x between the four imaging screens and the bearing plane is larger than 45 degrees, and the angle z between the display screen and the horizontal plane is $2x-90$ degrees, so that the image displayed by the display screen is subjected to three-dimensional holographic imaging through the imaging screens.

N8521

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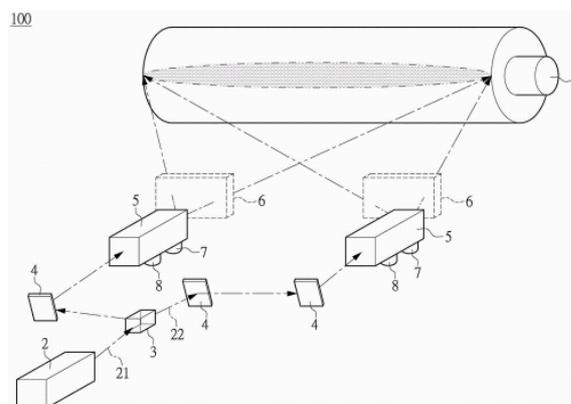
Priority Date: 21/10/2021

GUANGQUN LASER SCIENCE & TEC

HOLOGRAPHIC PROJECTION LITHOGRAPHIC APPARATUS

The utility model discloses a holographic projection photoetching equipment, which comprises: the device comprises an object to be photoetched, a light source, a beam splitter, a plurality of reflecting mirrors and two filters. The light source is used for emitting a laser beam. The beam splitter is arranged at intervals on the light source, and the beam splitter can be used for splitting the laser beam into two laser sub-beams. The plurality of mirrors are arranged at intervals on the beam splitter, and the plurality of mirrors can be used for changing the traveling direction of the two laser secondary beams. Two filters are disposed spaced apart from each other and one end of each filter is disposed adjacent to a mirror. The two laser sub-beams can pass through two filters and are used for irradiating the object to be photoetched, and then a plurality of photoetching patterns are formed on the corresponding object to be photoetched. Therefore, the resolution of the plurality of photoetching patterns projected by the holographic projection photoetching equipment is improved.

CLAIM 1. A holographic projection lithographic apparatus, characterized in that it comprises: an object to be photoetched; a light source for emitting a laser beam; a beam splitter disposed at intervals on the light source and operable to split the laser beam into two laser sub-beams; a plurality of mirrors which are arranged at intervals on the beam splitter and can be used for changing the traveling direction of two laser secondary beams; and two filters disposed at a distance from each other and each having one end adjacent to one of the mirrors; and the two laser secondary beams can pass through the two filters and are used for irradiating the object to be photoetched, and then a plurality of photoetching patterns are formed on the object to be photoetched.



N8522

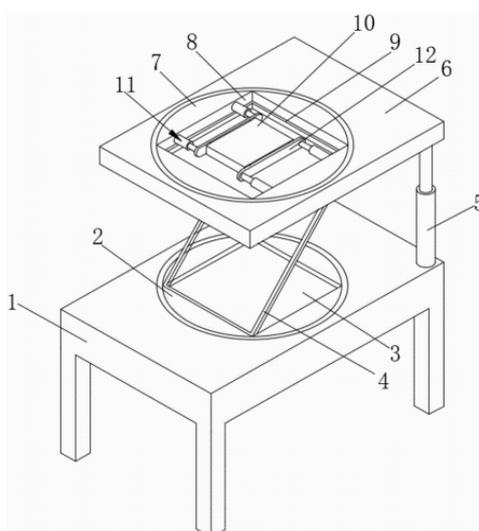
CN216014762U

Priority Date: 01/06/2021

SICHUAN SHANGPINDAOYE CULTURAL & CREATIVE INDUSTRY

HOLOGRAPHIC PROJECTION DEVICE FOR ACTIVITY PLAN

The utility model discloses a holographic projection device for movable planning, which comprises an underframe and a supporting top plate arranged above the underframe, wherein a rotating chassis is arranged in the middle of the upper end surface of the underframe, electric push rods are arranged at two ends of one side edge of the upper end surface of the underframe, a bottom groove is arranged in the middle of the upper end surface of the rotating chassis, a projection display panel is hinged in the bottom groove, the top ends of the two electric push rods are respectively fixed at two ends of one side edge of the bottom end surface of the supporting top plate, a rotating top plate is arranged right above the rotating chassis on the upper end surface of the supporting top plate, a through groove which vertically penetrates through the rotating top plate is arranged in the middle of the upper end surface of the rotating top plate, and a transparent placing plate is arranged in the through groove. The holographic projection device for the movable plan can adjust the horizontal angle of the projection display panel, is convenient to show at different angles, improves the watching effect, and adjusts the inclination angle of the projection display panel to achieve the best projection effect.



CLAIM 1. A holographic projection device for an activity plan, comprising a base frame (1) and a supporting top plate (6) arranged above the base frame (1), characterized in that: a rotating chassis (2) is arranged in the middle of the upper end face of the bottom frame (1), electric push rods (5) are arranged at two ends of one side edge of the upper end face of the bottom frame (1), a bottom groove (3) is formed in the middle of the upper end face of the rotating chassis (2), a projection display panel (4) is hinged in the bottom groove (3), the top ends of the two electric push rods (5) are respectively fixed at two ends of one side edge of the bottom end face of a supporting top plate (6), and a rotating top plate (7) is arranged right above the rotating chassis (2) on the upper end face of the supporting top plate (6); the utility model discloses a projection display panel, including rotation top dish (7), the up end of rotation top dish (7) is opened between two parties has vertical logical groove (8) that link up rotation top dish (7) to install transparent board (9) of placing in leading to groove (8), the equal embedded buffering clamping component (11) of installing in logical groove (8) both sides wall of placing board (9) top, and be connected with clamp plate (12) through buffering clamping component (11), press from both sides between two clamp plate (12) and press from both sides tightly and be fixed with projecting apparatus body (10), it all opens sliding side groove (13) to place logical groove (8) both sides wall of board (9) below, just sliding construction is constituted through sliding side groove (13) and logical groove (8) in the top of projection display panel (4).

N8523

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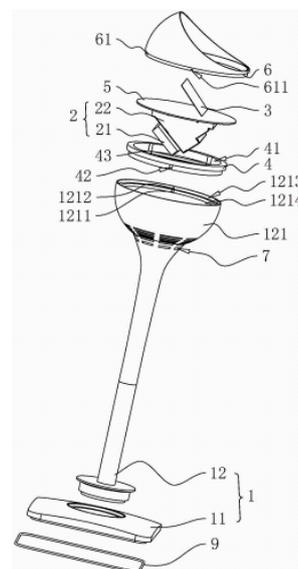
Priority Date: 21/10/2021

SHANGHAI YINGHUOCHONG DIGITAL TECHNOLOGY

FLOOR TYPE AIR IMAGING HOLOGRAPHIC INTERACTION DISPLAY STAND

The application relates to the technical field of holographic display, in particular to a floor type aerial imaging holographic interaction display stand. Including the show stand main part, the show stand main part includes base and support frame, the support frame connect in the base top, the support frame top is provided with places the portion, it is provided with the cavity to place the portion, the cavity is installed and is used for visitor to the interactive device of holographic image control. The application has the effect of improving the experience feeling of the visitors by increasing the interactivity of the visitors and the holographic projection.

CLAIM 1. The utility model provides a holographic mutual show stand of aerial formation of image of console mode, includes show stand main part (1), its characterized in that: the display table main body (1) comprises a base (11) and a support frame (12), the support frame (12) is connected to the top of the base (11), a placing part (121) is arranged at the top end of the support frame (12), a cavity (1214) is formed in the placing part (121), and an interaction device (2) used for controlling the holographic image by a visitor is installed in the cavity (1214).



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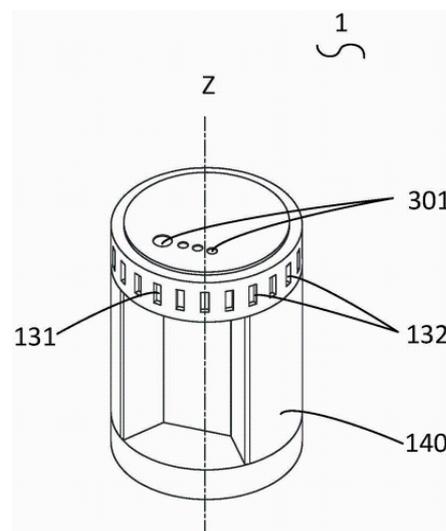
CN215986888U

Priority Date: 26/07/2021

IVIEW DISPLAYS

HOLOGRAPHIC PROJECTION DEVICE

The embodiment of the utility model relates to the technical field of projection, and particularly discloses a holographic projection device, which comprises: the imaging device comprises a support table, an imaging unit, an imaging system and a control system, wherein the imaging unit comprises a first holographic image screen, a second holographic image screen and a third holographic image screen, the first holographic image screen, the second holographic image screen and the third holographic image screen are arranged on the support table, and the first holographic image screen, the second holographic image screen and the third holographic image screen are connected in pairs respectively and arranged at a certain included angle; the imaging system is used for projecting an image onto the image unit; the control system is used for controlling the projection of the imaging system. Through the mode, the imaging system provided by the embodiment of the utility model can project the holographic images on the first holographic image screen, the second holographic image screen and the third holographic image screen, so that a user can watch the images on the first holographic image screen, the second holographic image screen and the third holographic image screen at the same time, and the images can be watched at multiple angles without distortion.



CLAIM 1. A holographic projection device, comprising: a support stand; the image unit comprises a first holographic image screen, a second holographic image screen and a third holographic image screen, wherein the first holographic image screen, the second holographic image screen and the third holographic image screen are arranged on the support table, and the first holographic image screen, the second holographic image screen and the third holographic image screen are connected in pairs respectively and arranged at a preset included angle; the imaging system is used for projecting images to the first holographic image screen, the second holographic image screen and the third holographic image screen respectively so as to form holographic images on the first holographic image screen, the second holographic image screen and the third holographic image screen; and a control system for controlling the projection of the imaging system.

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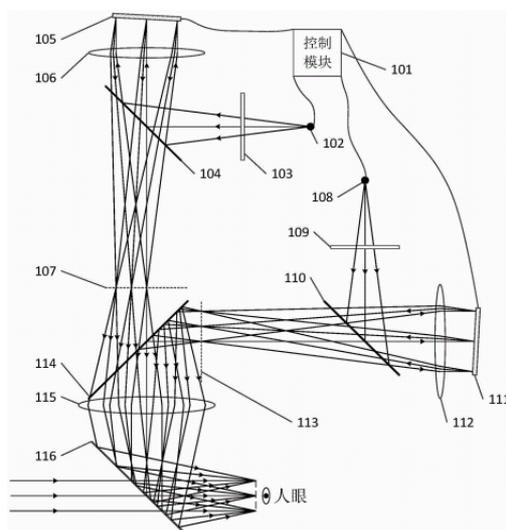
CN215986725U

Priority Date: 13/09/2021

JITONG TECHNOLOGY BEIJING

HOLOGRAPHIC NEAR-TO-EYE DISPLAY SYSTEM BASED ON MULTIPLE SPATIAL LIGHT MODULATORS

The embodiment of the utility model discloses a holographic near-to-eye display system based on a plurality of spatial light modulators. The holographic near-eye display system comprises a control module, a plurality of spatial light modulation subsystems, a second beam splitter, a second lens group and a third beam splitter, wherein each spatial light modulation subsystem comprises a light source, a polaroid, a first beam splitter, a spatial light modulator, a first lens group and a diaphragm; divergent light emitted by the light source is collimated into parallel light by the first lens group to be incident on the spatial light modulator, and the parallel light is reflected and diffracted by the spatial light modulator to form a three-dimensional imaging light beam; the three-dimensional imaging light beam enters human eyes through the second spectroscop, the second lens group and the third spectroscop. The embodiment of the utility model can project the three-dimensional image with the real depth of field information and eliminate the visual fatigue of human eyes; moreover, the viewing angle of the holographic near-eye display system can be enlarged through the combined action of the seamless splicing of the viewing angles of the plurality of spatial light modulators and the viewing angle enlarging system, and a three-dimensional display effect with a large viewing angle can be obtained.



CLAIM 1. A holographic near-to-eye display system based on multiple spatial light modulators is characterized by comprising a control module, multiple spatial light modulation subsystems, a second beam splitter, a second lens group and a third beam splitter, wherein each spatial light modulation subsystem comprises a light source, a polaroid, a first beam splitter, a spatial light modulator, a first lens group and a diaphragm; the control module calculates three-dimensional image information to be displayed into a two-dimensional hologram, synchronously outputs and loads the two-dimensional hologram to the spatial light modulators in the spatial light modulation subsystems for displaying, and synchronously controls the light sources in the spatial light modulation subsystems to emit light; in the same spatial light modulation subsystem, divergent light emitted by the light source penetrates through the polaroid, is reflected by the first beam splitter, is collimated into parallel light by the first lens group, is incident on the spatial light modulator, and is reflected and diffracted by the spatial light modulator to form a three-dimensional imaging light beam; the three-dimensional imaging light beams formed in different spatial light modulation subsystems respectively pass through a multi-spatial light modulator field angle splicing system and a field angle amplifying system which are formed by the first lens group, the diaphragm, the second beam splitter and the second lens group, and then are reflected by the third beam splitter to enter human eyes.

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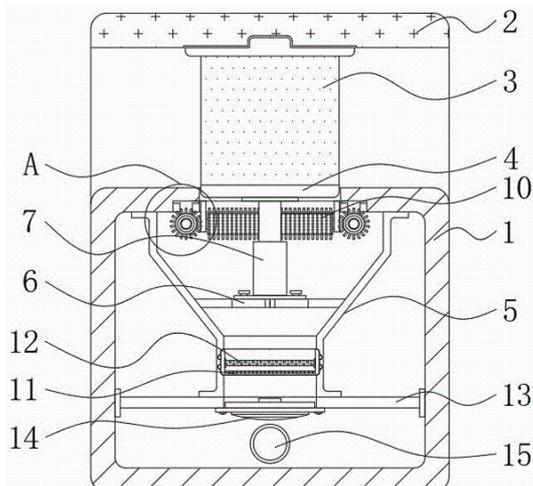
CN215932374U

Priority Date: 12/10/2021

NANCHANG TRIPOLAR OPTOELECTRONICS TECHNOLOGY

AUTOMATIC ASH-REMOVING HOLOGRAPHIC DISPLAY SELF-CLEANING DEVICE

The utility model discloses a holographic display self-cleaning device capable of automatically removing dust, which comprises: the mounting seat is fixedly provided with a mounting frame on the upper end surface, and the holographic display component body is arranged on the inner side of the lower end of the mounting frame; the mounting through pipe is fixedly mounted at the inner side end of the mounting seat, and a supporting component for mounting is arranged at the inner side end of the mounting through pipe; the connecting plate is fixedly arranged at the upper end of the inner side of the mounting seat, and a connecting rod penetrates through the connecting plate; the utility model discloses a fan, including the installation seat, the installation seat is provided with the air outlet, the inboard lower extreme of installation siphunculus, and the filter screen is inlaid to the inside of installation frame, the inboard lower extreme fixed mounting of installation seat has the fixed plate, and the fan is installed to the medial extremity of fixed plate to the rear end outside of installation seat is provided with the air outlet. The automatic-ash-removing holographic display self-cleaning device has an automatic ash-removing function during cleaning, improves the working efficiency of cleaning, and has better collecting and processing effects on the cleaned dust.



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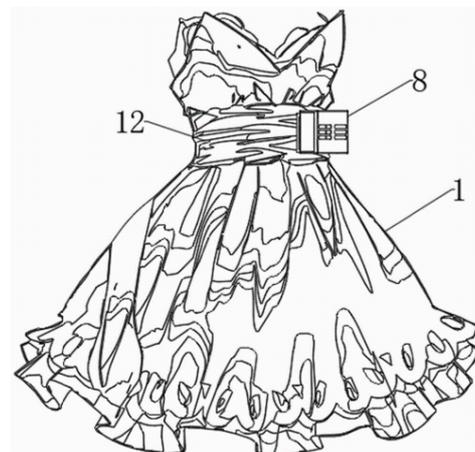
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Priority Date: 12/08/2021

DONGMENG | WENZHOU VOCATIONAL & TECHNICAL COLLEGE

3D HOLOGRAPHIC INTELLIGENT GARMENT

The utility model discloses a 3D holographic intelligent garment, which relates to the technical field of naked eye 3D and specifically comprises a projection skirt body, wherein a supporting ring is fixedly installed on the inner lining of the projection skirt body through a silk thread, an inner arc surface of the supporting ring is clamped with an arc-shaped piece, a connecting piece is clamped at the clamping position of the arc-shaped piece and the supporting ring, a motor is fixedly installed on one side of the connecting piece, a projection fan is fixedly installed at the output end of the motor, and an LED lamp is fixedly installed on one side of the projection fan. Through the bracer on the projection skirt body, the arc, motor and projection fan, make that the staff can be more convenient combine together projection skirt body and surrounding environment, the bandwagon effect that has increased then and technological sense and beautiful with the thing, and then increased the technological sense and the combination sense that equipment provided for the stage, and then greatly increased the practicality and the suitability of device, greatly reduced simultaneously and cooperated required a great deal of equipment, and greatly improved and be like effect and third dimension, and reduce personnel's of wearing health burden.



CLAIM 1. The utility model provides a holographic intelligent clothing of 3D, includes projection skirt body (1), it characterized in that: the inside lining of projection skirt body (1) has support ring (2) through silk thread fixed mounting, support the intrados joint arc piece (3) of ring (2), arc piece (3) and the joint department joint that supports ring (2) have connecting piece (4), one side fixed mounting of connecting piece (4) has motor (5), the output fixed mounting of motor (5) has projection fan (6), one side fixed mounting of projection fan (6) has the LED lamp, the surface winding of arc piece (3) has data line (7), the one end of data line (7) is connected with the power supply line of motor (5), the other end fixed mounting of data line (7) has power supply box (8).

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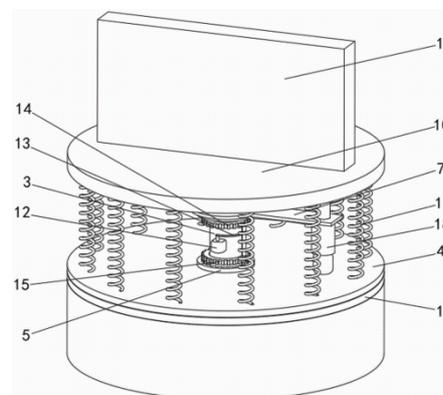
CN215862588U

Priority Date: 19/07/2021

SHENZHEN MENGYUN HOLOGRAPHIC TECHNOLOGY

ANGLE-ADJUSTABLE OPTICAL HOLOGRAPHIC DISPLAY DEVICE

The utility model belongs to the technical field of optical holographic display devices, and discloses an angle-adjustable optical holographic display device which comprises a fixing plate, wherein a first motor is fixedly installed on the bottom surface of the fixing plate, a main shaft is fixedly sleeved at the output end of the first motor, a rotating plate is movably connected to the surface of the main shaft, a lower meshing ring is fixedly installed on the top surface of the rotating plate, and a clamping ring is fixedly installed on the surface of the main shaft. According to the utility model, the contact position is jacked upwards by contacting the ejector rod with the bottom surface of the inclined plate, so that the inclination of the device is realized, the air cylinder drives the connecting frame to move upwards, the upper meshing gear is meshed in the upper meshing ring, at the moment, the motor drives the driven plate to rotate through the main shaft, the air cylinder and the upper meshing ring, and the ejector rod can rotate on the bottom surface of the inclined plate, so that the inclination of the inclined plate in different directions is realized, the adjustment of different angles of the display screen is realized, the user experience is improved, and the practicability of the device is increased.



CLAIM 1. An angularly adjustable optical holographic display device, comprising a fixed plate (1), characterized in that: the bottom surface fixed mounting of fixed plate (1) has motor (2), the fixed cover of output of motor (2) has connect main shaft (3), the superficial swing joint of main shaft (3) has rotor plate (4), the top surface fixed mounting of rotor plate (4) has lower meshing circle (5), the fixed surface mounting of main shaft (3) has clamp ring (6), the middle part swing joint of clamp ring (6) has driven plate (7), the bottom surface fixed mounting of driven plate (7) has last meshing circle (8), the top fixed mounting of main shaft (3) has universal ball joint (9), the top fixed mounting of universal ball joint (9) has hang plate (10), the top fixed mounting of hang plate (10) has display screen (11), the leading flank fixed mounting of main shaft (3) has cylinder (12), the fixed cover of output of cylinder (12) has connect link (13), the upper and lower both ends of link (13) are fixed mounting respectively have last meshing gear (14) and lower meshing gear (15), the right-hand member swing joint of driven plate (7) has ejector pin (16), the bottom surface fixed mounting of hang plate (10) has spring (17), the bottom surface fixed mounting of driven plate (7) has position sleeve (18), the bottom surface fixed mounting of position sleeve (18) has motor two (19), the fixed cover of the output of motor two (19) has threaded rod (20).

N8539

CN114125418

Priority Date: 25/08/2020

SHAANXI HONGXING SHANSHAN NETWORK TECHNOLOGY

HOLOGRAPHIC TOURIST SERVICE CENTER AND IMPLEMENTATION METHOD THEREOF

The invention relates to the field of holographic graphic display, in particular to a holographic tourist service center and an implementation method thereof. The holographic image acquisition device, the holographic image generation device, the omnibearing running equipment and the behavior capturing sensor are all connected with the cloud data processing center through the wireless transmission module, and the holographic image acquisition device is used for acquiring images of scenic spots. According to the action of the character, the data of the advancing direction, the speed, the displacement, the visual angle height and the like of the character in the scene are calculated, the holographic image acquisition device is calculated to adjust the focal length and the focal point, the picture in the reconstructed scene moves along with the character, meanwhile, the reconstructed moving scene picture is transmitted to the holographic image generation device in real time, the holographic image generation device takes the omnibearing running equipment as a central point to carry out holographic projection on the scenic spot image reconstructed in real time, and the aim that a user is placed in the real-time scene of each scenic spot in the scenic area in a fixed scene and can achieve scene conversion and visual angle switching along with the movement of footsteps is achieved.

CLAIM 1. A holographic guest service center, comprising: including holographic image collection device, cloud data processing center, holographic image generation device, all-round running equipment and action catch sensor, holographic image collection device, holographic image generation device, all-round running equipment and action catch sensor all through wireless transmission module with cloud data processing center connects, holographic image collection device is used for gathering the sight spot image.

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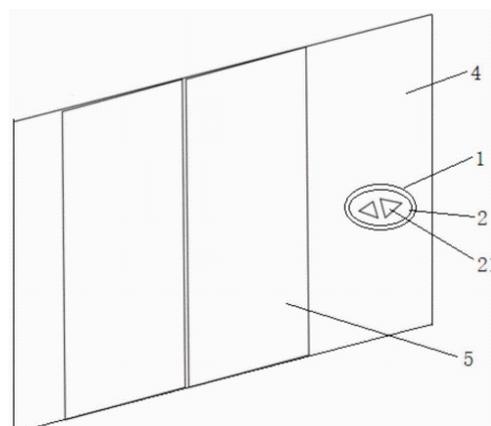
Priority Date: 29/11/2021

YUNZHISHENG SHANGHAI INTELLIGENT TECHNOLOGY

ENTRANCE GUARD'S SWITCHING DEVICE BASED ON HOLOGRAPHIC PROJECTION

The invention discloses an entrance guard switch device based on holographic projection, which comprises a cover body (1), a holographic projection panel (2) and a holographic projector (3); the holographic projector comprises an optical sensor (31), an optical projector (32) and a microcontroller (33), wherein the input end of the microcontroller is electrically connected with the optical sensor and the output end of the optical projector, and the output end of the microcontroller is electrically connected with an access control system of the opening and closing door; the holographic projection panel covers the holographic projector, the holographic projection panel is a transparent panel, the surface of the inner wall of the holographic projection panel is coated with a holographic film, the light projector emits light beams to the holographic film to form a virtual switch key (21), and the light sensor emits light beams to the holographic projection panel and the cover body to form an induction wire harness; the cover body covers the holographic projection panel, and the cover body is a transparent or semitransparent cover body. The invention can form a virtual switch key through holographic projection and control the opening and closing of the opening and closing door through induction.

CLAIM 1. The utility model provides an entrance guard's switching device based on holographic projection, characterized by: comprises a cover body (1), a holographic projection panel (2) and a holographic projector (3); the holographic projector (3) is arranged on the wall decorative plate (4) and is positioned beside the opening and closing door (5); the holographic projector (3) comprises a light sensor (31), a light projector (32) and a microcontroller (33), wherein the input end of the microcontroller (33) is electrically connected with the output ends of the light sensor (31) and the light projector (32), and the output end of the microcontroller (33) is electrically connected with an access control system of the opening and closing door (5); the holographic projection panel (2) is arranged on the wall decoration plate (4) and covers the holographic projector (3), the holographic projection panel (2) is a transparent panel, a holographic film is plated on the surface of the inner wall of the holographic projection panel, the light projector (32) emits light beams to the holographic film of the holographic projection panel (2) to form a virtual switch key (21), and the light sensor (31) emits light beams to the holographic projection panel (2) and the cover body (1) to form an induction wire harness; the cover body (1) covers the holographic projection panel (2), and the cover body (1) is a transparent or semitransparent cover body.



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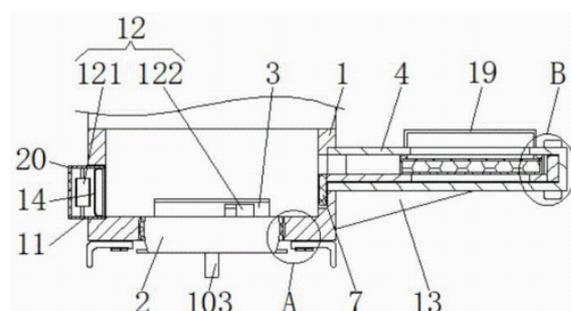
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Priority Date: 09/09/2021

SUZHOU SUXINRUIISHI TECHNOLOGY

DISPLAY AND METHOD FOR NEAR-TO-EYE DISPLAY BASED ON POLARIZER HOLOGRAPHIC GRATING

The invention discloses a display for near-to-eye display based on a polarizer holographic grating and a method thereof. According to the invention, the top of the micro display device is cleaned by the cleaning cotton through the pulling plate and the pushing plate, then the air in the installation sleeve is dehumidified by the dehumidifying component, then the micro display device is adjusted at multiple angles by the adjusting component, and finally the micro display device is detected and radiated by the detecting component, so that the micro display device has the advantages of convenience in dust removal and dehumidification, and the problems that a user cannot quickly clean dust on the surface of the micro display device in the use process of the existing micro display device, and meanwhile, moist air easily affects elements in the micro display device are solved.



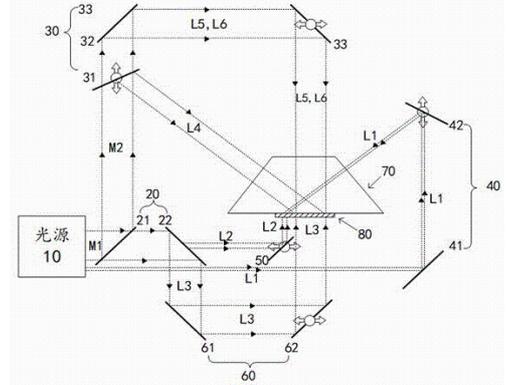
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CN114089470
Priority Date: 20/01/2022

SHENZHEN LOCHN OPTICS HI TECHNOLOGY

HOLOGRAPHIC OPTICAL WAVEGUIDE, MANUFACTURING DEVICE THEREOF AND NEAR-TO-EYE DISPLAY DEVICE

The embodiment of the invention provides a holographic optical waveguide, a manufacturing device thereof and near-to-eye display equipment, wherein the manufacturing device of the holographic optical waveguide comprises a light source, a first light splitting unit, a second light splitting unit, a first reflecting unit, a second reflecting unit, a third reflecting unit, a special-shaped prism and a holographic dry plate; the holographic dry plate is exposed through the light source, the light splitting units, the reflecting units and the special-shaped prism, and the holographic optical waveguide can be manufactured. The manufacturing device enables the holographic dry plate to be exposed to form a grating structure, so that the holographic optical waveguide is manufactured, the manufacturing efficiency is high, the cost is low, the yield is high, the manufactured holographic optical waveguide has the wavelength multiplexing and/or angle multiplexing functions, the light diffraction efficiency can be improved when the manufactured holographic optical waveguide is applied to near-to-eye display equipment, the field angle and the eye movement range can be remarkably improved, and the size of an optical machine can be reduced.



CLAIM 1. A device for making a holographic optical waveguide, comprising: the holographic optical system comprises a light source, a first light splitting unit, a second light splitting unit, a first reflecting unit, a second reflecting unit, a third reflecting unit, a special-shaped prism and a holographic dry plate; the first reflection unit and the first light splitting unit are arranged on the light emitting side of the light source; the first incident surface of the special-shaped prism is arranged in the reflection direction of the first reflection unit; the second reflection unit is arranged on the first light-emitting side of the first light splitting unit, the third reflection unit is arranged on the second light-emitting side of the first light splitting unit, and the second light splitting unit is arranged on the third light-emitting side of the first light splitting unit; the first surface of the holographic dry plate is arranged in the reflection direction of the second reflection unit and in the reflection direction of the third reflection unit; the second incident surface of the special-shaped prism is arranged on the first light-emitting side of the second light splitting unit, and the third incident surface of the special-shaped prism is arranged on the second light-emitting side of the second light splitting unit; the second surface of the holographic dry plate is arranged adjacent to the emergent surface of the special-shaped prism.

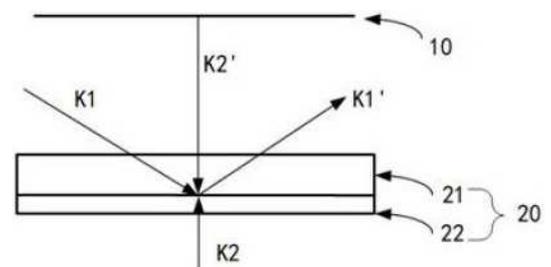
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CN114089469
Priority Date: 20/01/2022

SHENZHEN LOCHN OPTICS HI TECHNOLOGY

VOLUME HOLOGRAPHIC OPTICAL WAVEGUIDE, MANUFACTURING METHOD THEREOF AND COLOR VOLUME HOLOGRAPHIC OPTICAL WAVEGUIDE

The embodiment of the invention provides a volume holographic optical waveguide, a manufacturing method thereof and a color volume holographic optical waveguide, wherein the method comprises the following steps: providing a holographic dry plate, a prism and a flat glass; arranging a first side of the holographic dry plate on a first surface of the prism; arranging the second side of the holographic dry plate on the first surface of the flat glass; attaching the first surface of the prism, the holographic dry plate and the flat glass by using a refractive index matching fluid, or filling the first surface of the prism, the holographic dry plate and the flat glass by using the refractive index matching fluid; and carrying out one-time exposure on the holographic dry plate by a plurality of laser beams. The manufacturing method can make the manufactured coupling-in grating, coupling-out grating and turning grating all be reflective volume holographic gratings when the volume holographic optical waveguide is manufactured, and subsequently can avoid aliasing of various composite gratings in the required grating, and improve the field angle size and field brightness uniformity of the volume holographic optical waveguide.



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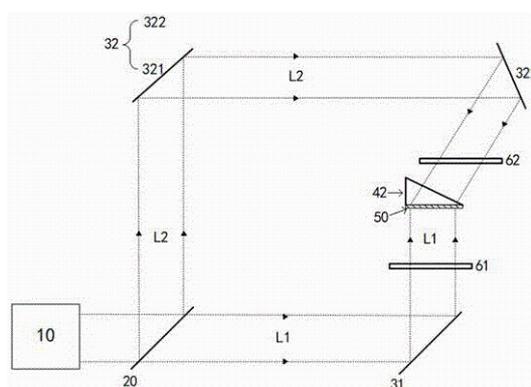
CN114089459

Priority Date: 20/01/2022

SHENZHEN LOCHN OPTICS HI TECHNOLOGY

VOLUME HOLOGRAPHIC GRATING MANUFACTURING DEVICE, VOLUME HOLOGRAPHIC OPTICAL WAVEGUIDE AND MANUFACTURING METHOD AND APPLICATION THEREOF

The embodiment of the invention provides a volume holographic grating manufacturing device, a volume holographic optical waveguide, a manufacturing method and application thereof, wherein the manufacturing device comprises a laser light source, a light splitting unit, a first reflecting unit, a second reflecting unit, a first prism, a volume holographic film and at least one gradual change attenuation sheet, or the manufacturing device comprises a laser light source, a light splitting unit, a first reflecting unit, a second reflecting unit, a first prism, a second prism, a volume holographic film and at least one gradual change attenuation sheet; the manufacturing device is simple and high in yield, and meanwhile, the volume holographic optical waveguide can be manufactured by cutting the exposed volume holographic film, large-scale mass production can be realized by the mode, the production efficiency is improved, and the manufactured volume holographic optical waveguide is applied to near-to-eye display equipment and can realize a large field angle and a large eye movement range.



CLAIM 1. A device for producing a volume holographic grating, the device comprising: the holographic volume holographic film comprises a laser light source, a light splitting unit, a first reflecting unit, a second reflecting unit, a first prism, a volume holographic film and at least one gradual change attenuation sheet; the light-emitting side of the laser light source is provided with a light-emitting side of the light-splitting unit, and the light-splitting unit is used for splitting light of the laser light source into a first light beam emitted from a first light-emitting side of the light-splitting unit and a second light beam emitted from a second light-emitting side of the light-splitting unit; the first reflection unit is arranged on the first light-emitting side, the first side of the volume holographic film is arranged on the light-emitting side of the first reflection unit, and the first reflection unit is used for emitting the first light beam to the volume holographic film; the second reflection unit is arranged on the second light-emitting side, the first side of the first prism is arranged on the light-emitting side of the second reflection unit, the second side of the volume holographic film is arranged on the second side of the first prism, the second reflection unit is used for emitting the second light beam to the first side of the first prism, and the first prism is used for receiving the second light beam through the first side of the first prism and emitting the second light beam to the volume holographic film through the second side of the first prism; the gradual attenuation sheet is arranged in the light path of the first light beam and is used for modulating the transmissivity of the first light beam, and/or is arranged in the light path of the second light beam and is used for modulating the transmissivity of the second light beam; the volume holographic film is used for being exposed by fringes formed by interference of the first light beam and the second light beam to form the volume holographic grating.

N8547

CN114081469

Priority Date: 11/11/2021

YUNZHISHENG SHANGHAI INTELLIGENT TECHNOLOGY

HOLOGRAPHIC DISH MAKING PROJECTION SYSTEM BASED ON BODY FAT SCALE DATA

The invention discloses a holographic dish making projection system based on body fat scale data, which comprises a body fat scale module and a projection module, wherein the body fat scale module is wirelessly connected with the projection module through Bluetooth, and the holographic dish making projection system comprises: the body fat scale module is used for measuring body fat data of a user and transmitting the body fat data to the projection module; and the projection module is used for analyzing the body fat data of the user, recommending dishes according to the body fat data analysis result, and performing holographic projection after the user is screened and confirmed. According to the invention, through the combination of the holographic projection cooking device and the body fat scale, the user can see body data on the holographic projection cooking device when leaving the body fat scale, meanwhile, the holographic projection cooking device can upload the body data to the cloud in real time to calculate the recommended recipe and support the voice-controlled cooking step of the user, a customized recommended recipe is generated according to the body data of the user by depending on a recipe recommendation algorithm, the user can learn to cook step by step along with a holographic projection picture, and the user experience is greatly improved.

CLAIM 1. A holographic dish making projection system based on body fat scale data is characterized in that: including body fat balance module and projection module, and body fat balance module with projection module passes through bluetooth wireless connection, wherein: the body fat scale module is used for measuring body fat data of a user and transmitting the body fat data to the projection module; and the projection module is used for analyzing the body fat data of the user, recommending dishes according to the body fat data analysis result, and performing holographic projection after the user is screened and confirmed.

N8548

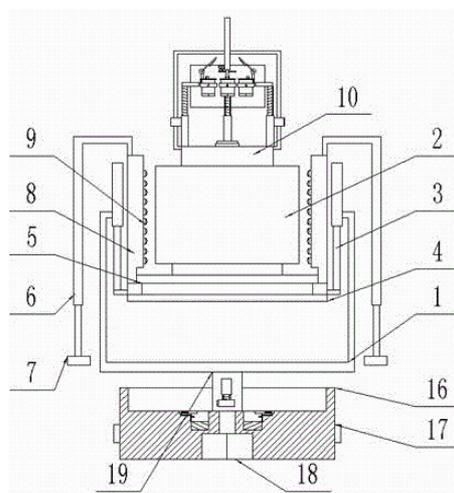
CN114067671

Priority Date: 17/12/2021

MA YI

3D HOLOGRAPHIC DISPLAY SCREEN CAPABLE OF MOVING ALONG WITH DYNAMIC IMAGES

The invention discloses a 3d holographic display screen capable of moving along with a dynamic image, which comprises: the holographic display screen comprises a supporting base and a holographic display screen body, wherein an image linkage mechanism is connected between the supporting base and the holographic display screen body; the image linkage mechanism includes: the device comprises a main electric telescopic rod, an electric guide rail, a supporting plate, an electric sliding block, a driving gear, a driving motor, a rack, a computer body, an identification camera, an action identification system and a reaction mechanism. When the 3d holographic video is played by the holographic display screen body, the action recognition system is used for recognizing the actions of the characters or other objects in the played video, so that the holographic display screen body synchronously moves along with the moving objects in the played holographic video, the spatial experience of a user is improved, and the three-dimensional impression is enhanced.



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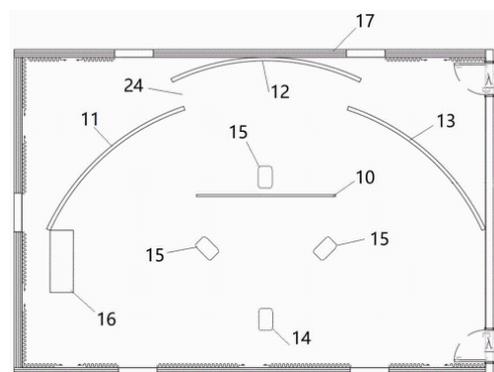
Priority Date: 25/11/2021

DONGGUAN AOLAI CULTURE TECHNOLOGY

IMMERSIVE HOLOGRAPHIC AR FUTURE CLASSROOM SYSTEM AND TEACHING METHOD THEREOF

The invention discloses an immersive holographic AR future classroom system and a teaching method thereof, wherein the system comprises the following steps: a liftable and semi-transparent interactive holographic projection screen; the first circular screen, the second circular screen and the third circular screen are sequentially arranged around the interactive holographic projection screen; the second annular curtain is arranged in a staggered manner with the first annular curtain and the third annular curtain respectively to form a channel; pattern lamps and dyeing effect lamps arranged on the ceiling; sounding; and the first projection equipment, the second projection equipment, the pattern lamp, the dyeing effect lamp and the sound are respectively connected with the control terminal. In the invention, a teacher can walk to a platform from a background through a channel and form the effect of the teacher passing through a picture by matching with the interactive holographic projection screen VR design; the virtual robot can be designed according to different school cultures to create exclusive IP, and the robot has courses in specific roles, so that knowledge is penetrated in interactive processes of conversation, game and the like between teachers and students and the robot, and teaching effects are improved.

CLAIM 1. An immersive holographic AR future classroom system, comprising: a liftable and semi-transparent interactive holographic projection screen; the first circular screen, the second circular screen and the third circular screen are sequentially arranged around the interactive holographic projection screen; the second annular curtain is arranged in a staggered manner with the first annular curtain and the third annular curtain respectively to form a channel; the holographic projection screen corresponds to a first projection device, and the first annular screen, the second annular screen and the third annular screen correspond to a second projection device respectively; pattern lamps and dyeing effect lamps arranged on the ceiling; sounding; and the first projection equipment, the second projection equipment, the pattern lamp, the dyeing effect lamp and the sound box are respectively connected with the control terminal.



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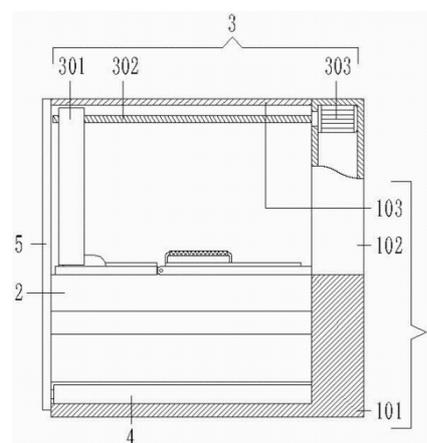
CN114052660

Priority Date: 10/11/2021

SHANGHAI FENGPEI DIGITAL TECHNOLOGY

THREE-DIMENSIONAL HOLOGRAPHIC IMAGE MEDICAL DIAGNOSIS DEVICE

The application discloses three-dimensional holographic image medical diagnosis device relates to mechanical equipment technical field, including the plummer, the inner chamber top of plummer is provided with the image subassembly, the inner chamber bottom of plummer is provided with the diagnosis platform, the left side of plummer is provided with transparent baffle, both sides all are provided with the automatically controlled telescopic link of fourth around the below of diagnosis platform, the flexible end of power and the rigid coupling of transparent baffle of the automatically controlled telescopic link of fourth. This application is convenient for carry on the removal adjustment of position about lying at patient's tie to and let patient's upper part of the body get up, form the shape of bowing, and then can cooperate three-dimensional holographic image appearance to carry out the comprehensive three-dimensional holographic image medical diagnosis of patient's health, make the inspection have not lost the hourglass part, and then reduce the condition that causes the error to patient's diagnosis result.



CLAIM 1. A three-dimensional holographic image medical diagnosis device comprises a bearing table (1), and is characterized in that: the inner chamber top of plummer (1) is provided with image subassembly (3), the inner chamber bottom of plummer (1) is provided with diagnostic table (2), the left side of plummer (1) is provided with transparent baffle (5), both sides all are provided with fourth automatically controlled telescopic link (4) around the below of diagnostic table (2), the flexible end of power and the transparent baffle (5) looks rigid coupling of sealing of fourth automatically controlled telescopic link (4).

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

N8474

WO202255194

Priority Date: 08/09/2020

INDUSTRY ACADEMIA COOPERATION OF SEJONG UNIVERSITY

FLYING-OVER BEAM PATTERN SCANNING HOLOGRAM MICROSCOPE DEVICE USING SCAN MIRROR AND TRANSLATION STAGE

The present invention relates to a flying-over beam pattern scanning hologram microscope device using a scan mirror and a translation stage. The present invention provides a flying-over beam pattern scanning hologram microscope device comprising: a scan beam generation unit which modulates the phase of a first beam split from a light source to convert the first beam to a first spherical wave through a first lens, converts a second beam to a second spherical wave through a second lens, and then makes the first spherical wave interfere with the second spherical wave, thereby forming a scan beam; a scanning unit, which comprises a scan mirror for controlling the scan beam in the horizontal direction to be transferred to a projection unit, and a translation stage for moving an object in the vertical direction at the rear end of the projection unit; the projection unit comprising multiple lens systems and an objective lens, and projecting the scan beam transferred from the scanning unit onto an object plane; and a light collection unit for detecting a beam that has passed through the objective lens again after fluorescing or being reflected from an object, wherein the scan beam projected onto the object plane has different patterns depending on the conical angle condition and focal position of each of the first and second spherical waves formed on a scanning mirror.

DISPOSITIF MICROSCOPE HOLOGRAPHIQUE À BALAYAGE DE MOTIF DE FAISCEAU DE SURVOL UTILISANT UN MIROIR DE BALAYAGE ET UNE PLATINE DE TRANSLATION

La présente invention se rapporte à un dispositif microscope holographique à balayage de motif de faisceau de survol utilisant un miroir de balayage et une platine de translation. La présente invention concerne donc un dispositif microscope holographique à balayage de motif de faisceau de survol comprenant : une unité de génération de faisceau de balayage qui module la phase d'un premier faisceau séparé d'une source de lumière pour convertir le premier faisceau en une première onde sphérique par l'intermédiaire d'une première lentille, convertit un second faisceau en une seconde onde sphérique par l'intermédiaire d'une seconde lentille, et amène ensuite la première onde sphérique à interférer avec la seconde onde sphérique, formant ainsi un faisceau de balayage ; une unité de balayage, qui comprend un miroir de balayage servant à commander le faisceau de balayage dans la direction horizontale pour le transférer vers une unité de projection, et une platine de translation servant à déplacer un objet dans la direction verticale au niveau de l'extrémité arrière de l'unité de projection ; l'unité de projection comprenant de multiples systèmes de lentilles et un objectif, et projetant le faisceau de balayage transféré de l'unité de balayage sur un plan objet ; et une unité de collecte de lumière servant à détecter un faisceau qui a traversé à nouveau l'objectif après une fluorescence ou qui est réfléchi par un objet, le faisceau de balayage projeté sur le plan objet ayant des motifs différents en fonction de l'état d'angle conique et de la position focale de chacune des première et seconde ondes sphériques formées sur un miroir de balayage.

CLAIM 1. A scan beam generation unit that modulates a phase of a first beam divided by a light source, converts a second beam into a second spherical wave through a second lens, and interferes the first and second spherical waves to form a scan beam; A scan unit including a scan mirror controlling the incident scan beam in a horizontal direction to transmit the scan beam to a projection unit to control a scanning position of the scan beam with respect to an object in the horizontal direction and the vertical direction, and a translation stage moving the object in the vertical direction at a rear end of the projection unit; A projection unit including a plurality of lens systems and an objective lens, the projection unit projecting a scan beam received from the scan unit onto an object plane on which the object is located; and A light collecting unit configured to detect a beam that passes through the objective lens again after being reflected or fluorescent from the object, Wherein a scan beam projected onto the object plane comprises: The flying over beam pattern scanning hologram microscope having different patterns according to respective focal positions and pyramid conditions of the first and second spherical waves formed on the scanning mirror.

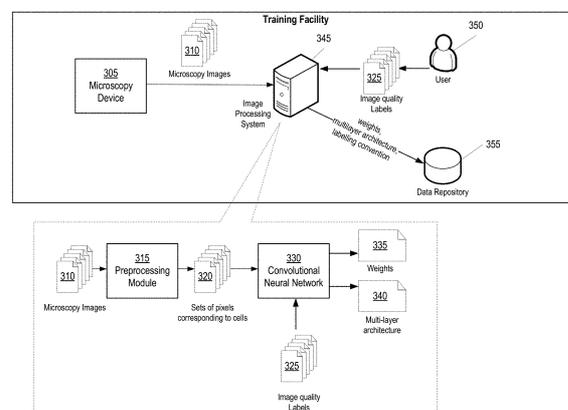
N8486

US20220092773
Priority Date: 15/08/2017

SIEMENS HEALTHCARE

IDENTIFYING THE QUALITY OF THE CELL IMAGES ACQUIRED WITH DIGITAL HOLOGRAPHIC MICROSCOPY USING CONVOLUTIONAL NEURAL NETWORKS

A system for performing adaptive focusing of a microscopy device comprises a microscopy device configured to acquire microscopy images depicting cells and one or more processors executing instructions for performing a method that includes extracting pixels from the microscopy images. Each set of pixels corresponds to an independent cell. The method further includes using a trained classifier to assign one of a plurality of image quality labels to each set of pixels indicating the degree to which the independent cell is in focus. If the image quality labels corresponding to the sets of pixels indicate that the cells are out of focus, a focal length adjustment for adjusting focus of the microscopy device is determined using a trained machine learning model. Then, executable instructions are sent to the microscopy device to perform the focal length adjustment.



CLAIM 1. A computer-implemented method for detecting out of focus microscopy images, the method comprising: acquiring a plurality of microscopy images depicting cells; extracting one or more sets of pixels from the plurality of microscopy images, wherein each set of pixels corresponds to an independent cell; assigning one of a plurality of image quality labels to each set of pixels indicating the degree to which the independent cell is in focus; training a classifier to classify the set of pixels into the plurality of image quality labels, wherein the classifier is configured according to a multi-layer architecture and the training results in determination of a plurality of weights for connecting layers in the multi-layer architecture; creating a deployment of the classifier based on the multi-layer architecture, the plurality of weights, and the plurality of image quality labels.

N8492

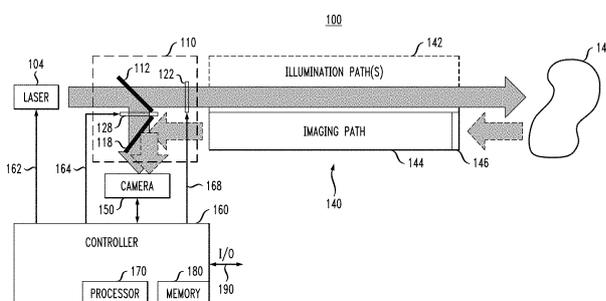
US20220061644
Priority Date: 27/08/2020

NOKIA

HOLOGRAPHIC ENDOSCOPE

An optical imaging system capable of performing holographic imaging through a multimode optical fiber. Images of an object acquired by the system using different object-illumination conditions can advantageously be used to obtain a holographic image with reduced speckle contrast therein. Additionally, a beat-frequency map of the object acquired by the system using optical-reflectometry measurements therein can be used to augment the depth information of the holographic image for more-detailed three-dimensional rendering of the object for the user. Digital back-propagation techniques may be applied to reduce blurring in the holographic image and in the depth information caused, e.g., by modal dispersion and mode mixing in the multimode optical fiber. Some embodiments may also provide the capability for polarization-sensitive holographic imaging in different spectral regions of light. An example embodiment of the disclosed optical imaging system may be used as a holographic endoscope for medical or industrial applications.

CLAIM 1. An apparatus, comprising: an optical router to route source light; a multimode optical fiber to transmit to the optical router image light received from a region near a remote fiber end in response to the region being illuminated with a first portion of the source light; a two-dimensional pixelated light detector; and a digital processor configured to receive light-intensity measurements made using pixels of the two-dimensional pixelated light detector; wherein the optical router is configured to cause mixing of the image light and a second portion of the source light along the two-dimensional pixelated light detector; and wherein the digital processor is configured to form a digital image with reduced speckle contrast therein by summing two or more digital images of the region, in a pixel-by-pixel manner, for different illuminations of the region.



N8507

EP3964892

Priority Date: 02/09/2020

ASML | STICHTING NEDERLANDSE WETENSCHAPPELIJK
ONDERZOEK INSTITUUT | STICHTING VU MC | UNIVERSITEIT VAN
AMSTERDAM

ILLUMINATION ARRANGEMENT AND ASSOCIATED DARK FIELD DIGITAL HOLOGRAPHIC MICROSCOPE

An illumination arrangement operable to provide at least a first pair of radiation beams is disclosed. The illumination arrangement comprises a first beam path for providing a first beam of the first pair of radiation beams, the first beam path comprising a first optical fiber and a second beam path for providing a second beam of the first pair of radiation beams, the second beam path comprising a second optical fiber. The at least one dispersion compensation arrangement is operable to minimize a wavelength dependent optical path length difference between the first beam path and second beam path, at least over a wavelength range of interest.

CLAIM 1. An illumination arrangement operable to provide at least a first pair of radiation beams, the illumination arrangement comprising: a first beam path for providing a first beam of the first pair of radiation beams, the first beam path comprising a first optical fiber; a second beam path for providing a second beam of the first pair of radiation beams, the second beam path comprising a second optical fiber; and at least one dispersion compensation arrangement operable to minimize a wavelength dependent optical path length difference between the first beam path and second beam path, at least over a wavelength range of interest.

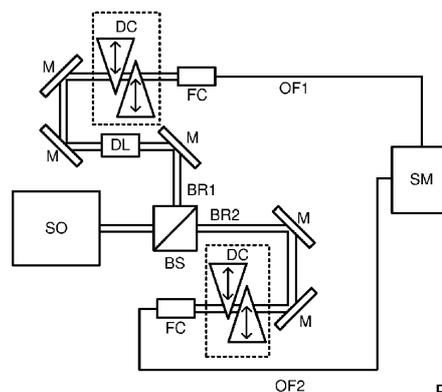


Fig. 13

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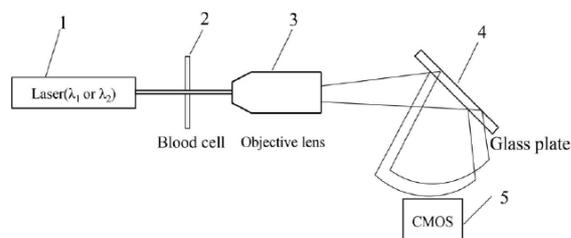
Priority Date: 27/12/2021

CHANGZHOU INSTITUTE OF MECHATRONIC TECHNOLOGY

SHEARING DIGITAL HOLOGRAPHY AND METHOD FOR SIMULTANEOUSLY MEASURING MORPHOLOGY AND REFRACTIVE INDEX OF BLOOD CELLS THEREOF

The invention belongs to the technical field of digital holography, and particularly relates to a shearing digital holography and a method for simultaneously measuring the appearance and the refractive index of blood cells, wherein the method for simultaneously measuring the three-dimensional microscopic appearance and the refractive index of the blood cells comprises the following steps: collecting off-axis interferograms of various wavelengths; acquiring object wave complex amplitude according to the acquired off-axis interferogram of each wavelength; recovering blood cell phase from the object wave complex amplitude; constructing a blood cell phase expression; the three-dimensional microscopic morphology and the refractive index of the hemocyte are measured, the hemocyte is not required to be scanned layer by layer, the three-dimensional tomography technology of the hemocyte is not required to be used, and the calculated data amount is small, simple and convenient; the blood cell medium does not need to be replaced, the technical difficulty is low, the operability is strong, and an additional measuring device is not needed; the phase of the off-axis interferogram can be quickly recovered by only acquiring the off-axis interferograms under two single wavelengths, and the simultaneous measurement of the three-dimensional microscopic morphology and the refractive index of the blood cells is realized.

CLAIM 1. A method for simultaneously measuring the three-dimensional micro-morphology and the refractive index of blood cells is characterized by comprising the following steps: collecting off-axis interferograms of various wavelengths; acquiring object wave complex amplitude according to the acquired off-axis interferogram of each wavelength; recovering blood cell phase from the object wave complex amplitude; constructing a blood cell phase expression; and measuring the three-dimensional microscopic morphology and the refractive index of the hemocytes.



N8532

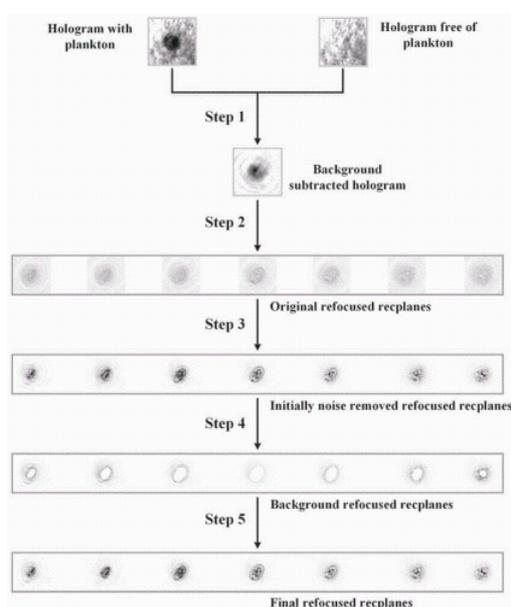
CN114202478

Priority Date: 09/12/2021

NANCHANG UNIVERSITY

OUT-OF-FOCUS IMAGE NOISE SUPPRESSION METHOD BASED ON DIGITAL HOLOGRAPHIC MICROSCOPIC IMAGING TECHNOLOGY

The invention discloses an out-of-focus image noise suppression method based on a digital holographic microscopic imaging technology, which comprises the following steps of: subtracting the background noise by subtracting the adjacent holograms; preliminarily removing overpass noise by a three-dimensional deconvolution algorithm; detecting an edge of an object in the reproduced image slice and extracting a background portion in which the object is not contained; and (4) propagating the background part to the to-be-processed reproduction image slices, and removing crosstalk among the reproduction image slices. The invention effectively inhibits the out-of-focus image noise in the reproduced image slice, can ensure that the digital holographic microscopic imaging technology obtains the three-dimensional imaging of the target through one hologram, and expands the application of the digital holographic in the three-dimensional imaging.



CLAIM 1. An out-of-focus image noise suppression method based on a digital holographic microscopy imaging technology is characterized by comprising the following steps of: (1) acquiring a hologram of a target, and subtracting background noise by subtracting the adjacent hologram without the target; (2) carrying out numerical reconstruction on the hologram subjected to noise reduction in the step (1) to obtain a series of original reproduction image slices, so that the whole target can be imaged in the slices; (3) placing a pinhole with the diameter of 1 μm at the positions 0mm, 0.5mm, 1mm and 1.5mm away from the focal plane of the objective lens in sequence along the direction far away from the focal plane of the objective lens, shooting a hologram of the pinhole, and obtaining a reproduced image slice with the out-of-focus image noise removed through a three-dimensional deconvolution algorithm; (4) detecting the edge of the target in the reproduction image slice in the step (3), and segmenting and removing the target to obtain a background reproduction image slice without the target; (5) and (3) further removing the out-of-focus image noise in the reproduced image slice in the step (3) by using the background reproduced image slice in the step (4) through a reproduced image slice crosstalk suppression method to obtain a final reproduced image slice.

N8534

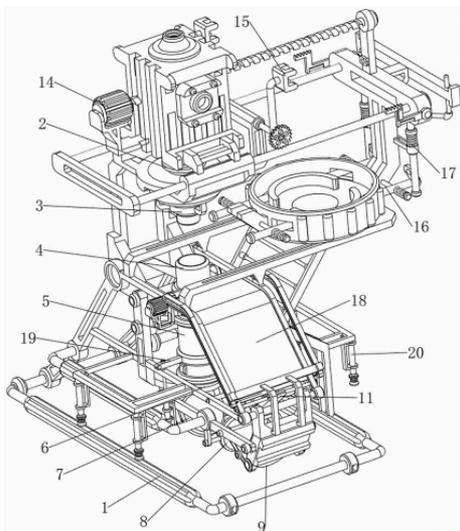
CN114153131

Priority Date: 23/11/2021

JIANGXI GAORUI PHOTOELECTRIC

SHEARING-AMOUNT-ADJUSTABLE COMMON-PATH OFF-AXIS DIGITAL HOLOGRAPHIC MICROSCOPIC DEVICE

The invention relates to a digital holographic microscope device, in particular to a common-path off-axis digital holographic microscope device with adjustable shearing amount. The invention provides a common-path off-axis digital holographic microscopy device which can realize common path of an object beam and a reference beam and can effectively compensate environmental interference on two interference beams and has adjustable shearing quantity. A common-path off-axis digital holographic microscopic device with adjustable shearing amount comprises a first fixing frame, a semiconductor laser light source, a beam expansion collimator and the like, wherein the semiconductor laser light source is connected to the upper portion of the first fixing frame, and the beam expansion collimator is connected to the upper portion of the first fixing frame. The light source that semiconductor laser light source sent can pass and expand a beam collimator, expands a beam collimator and spreads the light source into two bundles of light sources, and people's accessible manual regulation isosceles triangle prism's position adjusts the refraction angle of two bundles of light sources, so, then can realize object beam and reference beam common path, can effectively compensate the environmental interference on two interference beams.



CLAIM 1. A common-path off-axis digital holographic microscopic device with adjustable shearing amount comprises a first fixing frame (1), a semiconductor laser light source (2), a microobjective (4), a first lens (6), a first reflector (7), a second lens (8), a second reflector (9), a filter (11), a third lens (12) and the like, wherein the upper part of the first fixing frame (1) is connected with the semiconductor laser light source (2), the middle part of the first fixing frame (1) is connected with the microobjective (4), the lower side of the middle part of the first fixing frame (1) is connected with the first lens (6), the lower side of the middle part of the first fixing frame (1) is connected with the first reflector (7), the lower side of the front part of the first fixing frame (1) is connected with the second lens (8), the lower side of the front part of the first fixing frame (1) is connected with the second reflector (9), the sliding type of the front part of the first fixing frame (1) is connected with the filter (11), the front side of the first fixing frame (1) is connected with a third lens (12), the device is characterized by further comprising a beam expanding collimator (3), a dustproof cylinder (5), an isosceles triangular prism (10), an imaging detector (13), a placing mechanism (14), a shockproof mechanism (15) and a positioning mechanism (16), the upper part of the first fixing frame (1) is connected with the beam expanding collimator (3), the lower side of the first fixing frame (1) is provided with the dustproof cylinder (5) for isolating dust, the front lower side of the first fixing frame (1) is connected with the isosceles triangular prism (10) in a sliding manner, the middle part of the first fixing frame (1) is connected with the imaging detector (13), the rear side of the imaging detector (13) is connected with the microscope objective (4) through an electric wire, the upper part of the first fixing frame (1) is provided with the placing mechanism (14) for placing an object to be observed, and the shockproof mechanism (15) for avoiding shaking from influencing imaging is connected between the placing mechanism (14) part and the first fixing frame (1), a positioning mechanism (16) used for positioning the object to be observed is connected between the placing mechanism (14) component and the first fixing frame (1).

N8537

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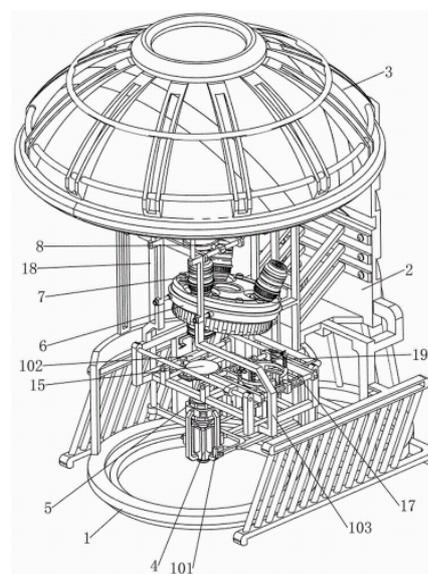
Priority Date: 23/11/2021

JIANGXI GAORUI PHOTOELECTRIC

COMMON-PATH OFF-AXIS DIGITAL HOLOGRAPHIC MICROSCOPIC DEVICE BASED ON OPTICAL WEDGE

The invention relates to a digital holographic microscope device, in particular to a common-path off-axis digital holographic microscope device based on an optical wedge. The invention provides a common-path off-axis digital holographic microscopic device based on optical wedges, which can obtain a larger off-axis interference angle while keeping a smaller shearing amount. The utility model provides a sharing light path off-axis digital holographic microscopic device based on optical wedge, is including first support frame, second support frame, dust cover and semiconductor laser light source etc. and first support frame rear side is connected with the second support frame, and second support frame upper portion is equipped with the dust cover that is used for blocking the dust, and first support frame downside is equipped with three elastic fixture, and the joint has semiconductor laser light source between the elastic fixture. According to the invention, by adjusting the angle of the optical wedge, a certain included angle is formed between the light reflected by the bottom surface of the optical wedge and the refracted light reflected by the inclined surface of the optical wedge, so that a larger off-axis interference angle can be obtained while a smaller shearing amount is kept.

CLAIM 1. A common-path off-axis digital holographic microscopic device based on an optical wedge comprises a first support frame (1), elastic clamps (101), a connecting frame (103), a second support frame (2), semiconductor laser light sources (4), a converter (6), a microscopic objective group (7), a first lens (8), the optical wedge (9) and a damping rotating shaft (10), wherein the rear side of the first support frame (1) is connected with the second support frame (2), the lower side of the first support frame (1) is connected with three elastic clamps (101), the semiconductor laser light sources (4) are clamped between the elastic clamps (101), the top of the first support frame (1) is connected with a connecting frame (103), a converter (6) is connected between the front lower side of the connecting frame (103) and the rear upper side of the first support frame (1), the top of the converter (6) is rotatably connected with a microscope objective group (7), the microscope objective group (7) consists of three objective lenses with different multiples, the middle of the connecting frame (103) is rotatably connected with a first lens (8), the upper part of the connecting frame (103) is rotatably connected with two damping rotating shafts (10), and an optical wedge (9) is connected between the inner sides of the two damping rotating shafts (10), the device is characterized by further comprising a dust cover (3), a beam expanding collimator (5), a second lens (11), a filter (12), a third lens (13), an imaging detector (14), a fixing rod (102), a guide frame (104), a fourth lens (15), a non-polarization beam splitting prism (16), a clamping mechanism (17) and a conversion mechanism (18), the upper part of the second support frame (2) is provided with a dust cover (3) for blocking dust, the upper part of the semiconductor laser light source (4) is provided with a beam expanding collimator (5), one side of the upper part of the connecting frame (103) close to the optical wedge (9) is rotatably connected with a second lens (11), one side of the upper part of the connecting frame (103) close to the second lens (11) is rotatably connected with a filter (12), one side of the upper part of the connecting frame (103) close to the filter (12) is rotatably connected with a third lens (13), the front side of the upper part of the connecting frame (103) is connected with an imaging detector (14), the lower side of the first support frame (1) is connected with two fixing rods (102), a fourth lens (15) is slidably connected between the front sides of the two fixing rods (102), the lower side of the connecting frame (103) is connected with two guide frames (104), and a non-polarization splitting prism (16) is slidably connected between the rear sides of the two guide frames (104), a first support frame (1) and a clamping mechanism (17) for clamping the sample is arranged between the second support frames (2), a conversion mechanism (18) for driving the semiconductor laser light source (4) to rotate is arranged between the first support frame (1) and the second support frame (2), and the part of the conversion mechanism (18) is connected with the fourth lens (15).



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

N8512

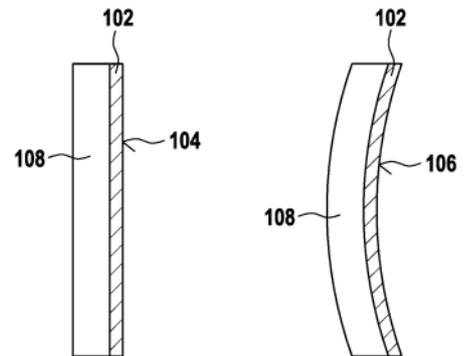
DE102020209501

Priority Date: 28/07/2020

ROBERT BOSCH

DEVICE AND METHOD FOR PRODUCING A CURVED HOLOGRAPHIC OPTICAL ELEMENT

The invention relates to a device and method for producing a curved photorefractive medium (102), wherein a model for producing a planar photorefractive medium (102) is determined depending on a target model, which defines a desired effect of the curved photorefractive medium (102), wherein a planar photorefractive medium (102) is produced depending on the model for producing the planar photorefractive medium (102) and is formed into the curved photorefractive medium (102).



N8519

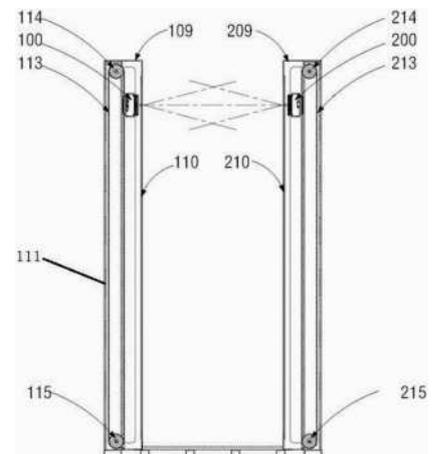
CN216083091U

Priority Date: 29/06/2021

BRAINWARE TERAHERTZ INFORMATION TECHNOLOGY

EQUIPMENT PANEL AND DOUBLE-VIEW-ANGLE EXTENSIBLE TYPE MILLIMETER WAVE THREE-DIMENSIONAL HOLOGRAPHIC HUMAN BODY IMAGING EQUIPMENT

The utility model discloses equipment panel and double-view-angle extensible millimeter wave three-dimensional holographic human body imaging equipment, which comprises a shell, a multi-view-angle millimeter wave transceiving array, a vertical support, a driving device and a connecting device, wherein the vertical support is vertically arranged in the shell; the system control module is connected with the multi-view millimeter wave transceiver array, the driving device, the microwave millimeter wave module, the signal acquisition processing module and the power supply module; the utility model realizes the detection imaging of a plurality of visual angles in one scanning by adopting the multi-visual angle millimeter wave planar array and the single-side array, thereby reducing scanning blind areas and improving the detection rate of equipment.



CLAIM 1. An equipment panel is characterized by comprising a shell, a multi-view millimeter wave transceiving array, a vertical support, a driving device and a connecting device, wherein the vertical support is vertically arranged in the shell, the multi-view millimeter wave transceiving array is movably connected to the vertical support, the driving device is in transmission connection with the multi-view millimeter wave transceiving array through the connecting device, and the multi-view millimeter wave transceiving array is driven by the driving device to freely move in the vertical direction along the vertical support; the equipment panel still includes system control module, microwave millimeter wave module, signal acquisition processing module and power module, system control module with multi-view millimeter wave receiving and dispatching array drive arrangement the microwave millimeter wave module signal acquisition processing module the power module is connected, multi-view millimeter wave receiving and dispatching array with microwave millimeter wave module signal acquisition processing module connects, microwave millimeter wave module does multi-view millimeter wave receiving and dispatching array provides the detection beam, signal acquisition processing module collects the feedback beam information that multi-view millimeter wave receiving and dispatching array accepted, power module does the equipment panel provides the power.

N8533

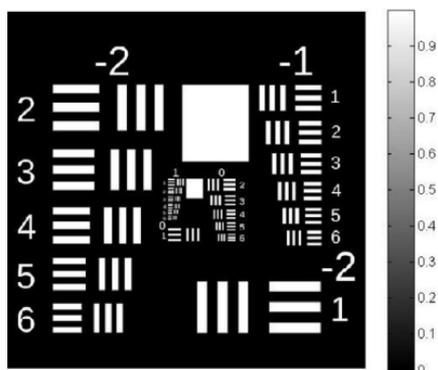
CN114167707

Priority Date: 08/12/2021

LASER FUSION RESEARCH CENTER CHINA ACADEMY OF
ENGINEERING PHYSICS

OFF-AXIS DIGITAL HOLOGRAPHIC REFERENCE LIGHT ESTIMATION METHOD AND SYSTEM

The invention relates to an off-axis digital holographic reference light estimation method and system, belonging to the field of digital holographic imaging, wherein a holographic image is subjected to discrete Fourier transform, and zero-frequency components are transferred to the center of the frequency spectrum of the holographic image to obtain a matrix index of a frequency maximum value in a +1-level image frequency spectrum; determining a local index region in the Fourier transform up-sampling spectrogram; searching the position of the frequency maximum value in the index area, and determining the row index and the column index of the position of the frequency maximum value in the index area; calculating the row index and the column index of the position of the frequency maximum value in the +1 level image frequency spectrum in the Fourier transform upsampling spectrogram according to the row index and the column index of the position of the frequency maximum value in the index area; calculating the angle cosine information of the reference light according to the row index and the column index of the position of the frequency maximum value in the +1-level image frequency spectrum; according to the angle cosine information of the reference light, the light field distribution information of the estimated reference light is calculated, and the estimation precision and the reconstruction quality of the reference light can be improved.



CLAIM 1. An off-axis digital holographic reference light estimation method, comprising: carrying out discrete Fourier transform on the holographic image, transferring zero-frequency components of the holographic image subjected to the discrete Fourier transform to the center of a frequency spectrum of the holographic image, and positioning position coordinates of frequency maxima in +/-1-level image frequency spectrums on two sides of the center of the frequency spectrum to obtain a matrix index of the frequency maxima in the +1-level image frequency spectrums; the +/-1-level image spectrum comprises a +1-level image spectrum and a -1-level image spectrum, wherein the +1-level image spectrum represents a spectrum of a product term of conjugation of the object light wave and the reference light wave, and the -1-level image spectrum represents a spectrum of a product term of conjugation of the object light wave and the reference light wave; determining a local index region fH_{in} in a Fourier transform upsampling spectrogram fHU of the holographic image according to the row index fr , the column index fc of the matrix index and the upsampling rate f of the discrete Fourier transform; the index region fH_{in} is an index region with the size of $2f$ and is formed by a row index range $(fr-2)f+1$ to frf and a column index range $(fc-2)f+1$ to fcf ; searching the position of the frequency maximum value from the index area fH_{in} to obtain a row index fr_{in} and a column index fc_{in} of the position of the frequency maximum value; calculating a row index fr_u and a column index fc_u of the position of the frequency maximum value in the +1-level image frequency spectrum in the Fourier transform upsampling spectrogram fHU of the holographic image according to the row index fr_{in} and the column index fc_{in} of the position of the frequency maximum value in the index area; calculating the angle cosine information of the reference light according to the row index fr_u and the column index fc_u of the position of the frequency maximum value in the +1-level image frequency spectrum; and calculating to obtain the estimated light field distribution information of the reference light according to the angle cosine information of the reference light.

N8535

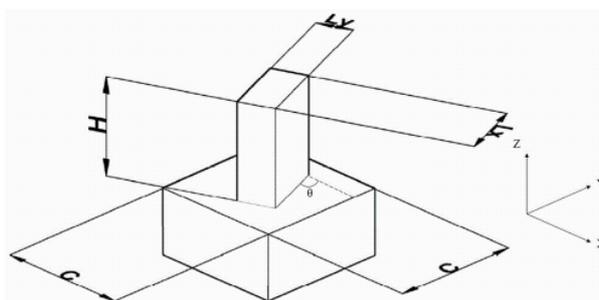
CN114137814

Priority Date: 30/11/2021

WUHAN UNIVERSITY

SUPER-SURFACE DEVICE FOR REALIZING INDEPENDENT HOLOGRAPHIC IMAGE MULTIPLEXING AND CONSTRUCTION METHOD THEREOF

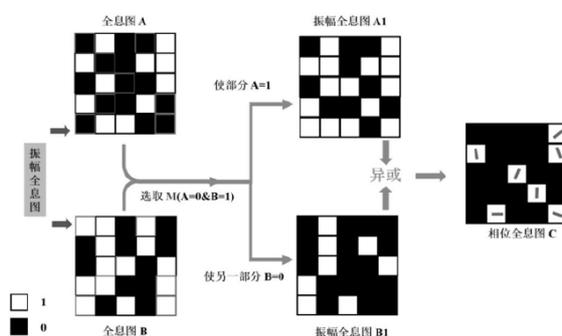
The invention belongs to the technical field of micro-nano optics, and discloses a super-surface device for realizing independent holographic image multiplexing and a construction method thereof. The invention selects circularly polarized light as incident light, utilizes the property that the geometric phase added by the emergent reverse circularly polarized light is only related to the steering angle of the nano brick, can adjust the geometric phase by adjusting the steering angle, reduces the number of the selected unit structures, adjusts the transmission phase by selecting different groups of unit structures, and avoids the problem that holographic images generated by orthogonal circularly polarized light incidence are not independent when the unit structures selected by each pixel point are the same. The super-surface device provided by the invention has a compact structure, can provide high information density storage, has the advantages of small volume and light weight, and has great industrialization prospects in the aspects of defense, encryption, information multiplexing and the like.



CLAIM 1. A construction method of a super-surface device for realizing independent holographic image multiplexing is characterized by comprising the following steps: step 1, constructing a unit structure for forming a super-surface device, wherein the unit structure comprises a substrate and a nano brick arranged on a working surface of the substrate; setting the directions of two edges parallel to the working surface of the substrate as an x axis and a y axis respectively to establish an xoy coordinate system, wherein the nano brick is in a cuboid structure, the long axis and the short axis of the nano brick are parallel to the working surface of the substrate, and the steering angle of the nano brick is the included angle between the long axis of the nano brick and the x axis; step 2, obtaining a plurality of groups of unit structures which are functionally equivalent to a half-wave plate through electromagnetic simulation and optimization design, wherein the size parameters of the long axis or the short axis of the nano bricks in the unit structures of different groups are different, and the height sizes of the nano bricks in the unit structures of different groups are the same; different groups of unit structures are added with different transmission phases under the incidence of circularly polarized light with working wavelength; step 3, designing a first target image and a second target image, taking each unit structure as a pixel point, and selecting the steering angle of the nano brick in the unit structure corresponding to each pixel point according to the reduction phase of the first target image and the reduction phase of the second target image; step 4, selecting a group unit structure with the additional transmission phase closest to the restoration phase of the target image from the unit structures of the multiple groups for each pixel point, and arranging to construct a super-surface device capable of realizing independent holographic image multiplexing; when the levorotatory circular polarized light is incident to the super-surface device, generating a holographic image of the first target image in a far field; and when the right-handed circularly polarized light is incident to the super-surface device, generating a holographic image of the second target image in a far field.

TERNARY ASSOCIATION MIXED HOLOGRAPHIC ENCRYPTION METHOD BASED ON METASURFACE

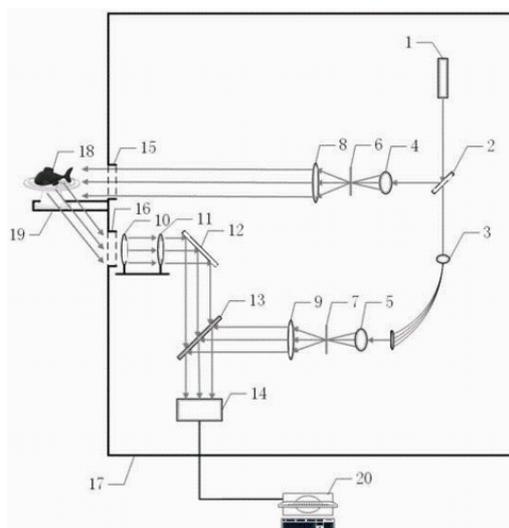
The invention discloses a ternary association hybrid holographic encryption method based on a metasurface, and belongs to the field of micro-nano optics and holographic multiplexing. The invention generates two amplitude holograms and a phase hologram which are quantitatively related based on the metasurface of a full medium, interpolates the two amplitude holograms which are quantitatively related into a hologram, selects a convertible pixel according to the sensitivity of incident wavelength, and assigns information carried by the other phase hologram to the convertible pixel; two isotropic square nano-columns are selected as pixels with amplitude shielding or light transmission under two working wavelengths according to the sensitivity of incident wavelengths, the rectangular nano-columns with transformable anisotropy are selected as switchable pixels according to the sensitivity of the incident wavelengths, the triple-associated mixed hologram is integrated into a single-chip metasurface, the quantitative associated triple-encrypted hologram is formed by controlling the wavelength and polarization combination, and the space bandwidth product is fully utilized to improve the information storage density.



CLAIM 1. The ternary association hybrid holographic encryption method based on the metasurface is characterized in that: the method comprises the following steps: step one, interpolating two amplitude holograms into a hologram according to a Correlated holographic algorithm Correlated Gerchberg-saxton (CGS), and improving the anti-noise capability of the hologram; step two, obtaining a mask through an exclusive or (XOR) operation between the two amplitude holograms obtained in the step one, taking the mask as a changeable pixel, and giving information carried by the other phase hologram to the changeable pixel; step three, establishing a triple incidence relation of the three holograms based on the step one and the step two; selecting two isotropic square nano columns with different sizes as pixels with amplitude shielding or light transmission under two working wavelengths according to the sensitivity of incident wavelengths, selecting a rectangular nano column with convertible anisotropy as a pixel with convertible anisotropy according to the sensitivity of the incident wavelengths, and integrating the triple-correlation hybrid hologram into a single-chip metasurface according to the three selected nano columns, namely realizing triple-correlation hybrid holographic encryption based on the single-chip metasurface; the three kinds of nano columns are isotropic square nano columns with two different sizes and an anisotropic rectangular nano column.

CULTURAL RELIC THREE-DIMENSIONAL SHAPE RECONSTRUCTION DEVICE AND METHOD FOR INFRARED DIGITAL HOLOGRAPHIC PHASE EXTRACTION

The invention discloses a cultural relic three-dimensional shape reconstruction device and method for infrared digital holographic phase extraction. A light beam emitted by an infrared laser is divided into two beams; the first laser beam becomes parallel light as a reference beam; the second beam of laser becomes parallel light, irradiates the object to be measured, and the reflected beam becomes an object beam; the object beam and the reference beam form an infrared holographic interference pattern on the beam splitter, the infrared holographic interference pattern is received and recorded by the image acquisition device and then transmitted to the computer for storage and reproduction, and therefore the hologram containing the three-dimensional phase information of the part of the object to be measured is recorded; and acquiring again after the automatic rotating platform rotates until complete information is acquired, processing and splicing images, restoring complete phase information of the object to be detected, and reconstructing the three-dimensional morphology. The invention adopts the infrared digital holographic technology for reconstructing the three-dimensional shape of the cultural relic, can ensure that the phase information of the cultural relic is accurately extracted, and improves the resistance of the phase extraction device to various interferences.



CLAIM 1. Three-dimensional appearance reconstruction device of historical relic that infrared digital holography phase was drawn, its characterized in that: the infrared laser comprises a light-tight shell (17), wherein an infrared laser (1), a beam splitter I (2), an infrared optical fiber coupler (3), a beam expander I (4), a beam expander II (5), a pinhole filter I (6), a pinhole filter II (7), a lens I (8), a lens II (9), a lens III (10), a lens IV (11), a total reflection mirror (12), a beam splitter II (13) and an image acquisition device (14) are arranged in the light-tight shell (17); an infrared window I (15) and an infrared window II (16) are arranged on the side wall of the light-tight shell (17); the object (18) to be measured is positioned outside the light-tight shell (17) and on the automatic rotating platform (19) at the infrared window I (15); the image acquisition device (14) is connected with the computer (20); the beam splitter I (2) is positioned on a light beam transmission light path emitted by the infrared laser (1), and a light beam emitted by the infrared laser (1) is divided into two beams after reaching the beam splitter I (2); an infrared optical fiber coupler (3), a beam expander II (5), a pinhole filter II (7) and a lens II (9) are sequentially distributed on the light path of the first beam of laser; making the first laser beam into parallel light called reference beam; a beam expander I (4), a pinhole filter I (6), a lens I (8) and an infrared window I (15) are sequentially arranged on the light path of the second laser beam passing through the beam splitter I (2), the second laser beam irradiates the surface of an object to be detected to generate diffuse reflection, and an infrared window II (16), a lens III (10) and a lens IV (11) are sequentially arranged on the transmission light path of the reflected light beam; making the second laser beam become an object beam; a total reflection mirror (12), a beam splitter II (13) and an image acquisition device (14) are sequentially arranged on the light path of the object beam; and the beam splitter II (13) and the image acquisition device (14) are also arranged on the light path of the reference beam.

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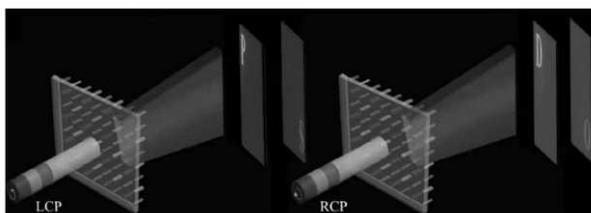
CN114063420

Priority Date: 25/10/2021

SHENZHEN UNIVERSITY

SWITCHABLE COLOR HOLOGRAPHIC IMAGING METHOD, DEVICE AND COMPUTER READABLE STORAGE MEDIUM

The invention discloses a switchable color holographic imaging method, a switchable color holographic imaging device and a computer readable storage medium, wherein the method comprises the following steps: acquiring image data of a color holographic image to be switched, and determining corresponding image switching parameters according to the image data; regulating and controlling the size of the nano block according to the image switching parameters, and regulating and controlling RGB (red, green and blue) three-color wavelength phases of incident light to obtain a reconstructed color holographic image; and adjusting and controlling the angle of the nano block according to the image switching parameters, and adjusting and controlling the polarization phase of incident light to obtain the color holographic image after the polarization state is switched. The invention can independently carry out polarization control and phase control on light waves with various wavelengths by regulating the size and the angle of the nano block and combining two regulation mechanisms of a transmission phase and a geometric phase, improves the information capacity of optical equipment, has the advantages of small volume, high resolution, convenient operation and the like, and has wide application prospect in the fields of dynamic display, virtual imaging, data storage and the like.



CLAIM 1. A switchable color holographic imaging method, characterized in that it comprises: acquiring image data of a color holographic image to be switched, and determining corresponding image switching parameters according to the image data; wherein, the color holographic image to be switched is an original color holographic image in an initial polarization state; regulating and controlling the size of the nano block according to the image switching parameters, and regulating and controlling RGB (red, green and blue) three-color wavelength phases of incident light to obtain a reconstructed color holographic image; and regulating and controlling the angle of the nano block according to the image switching parameter, and regulating and controlling the polarization phase of the incident light to obtain the color holographic image after the polarization state is switched.

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HOLOGRAMS - 28 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P34637	WO	202258042	24/03/2022	GIESECKE & DEVRIENT CURRENCY TECHNOLOGY	DE	21/09/2020	DE202010005769	WO202258042 DE102020005769	SECURITY ELEMENT TRANSFER MATERIAL FOR TRANSFER, IN GOOD REGISTER, OF SECURITY ELEMENTS TO VALUE DOCUMENTS	
P34657	WO	202238161	24/02/2022	BASF	EP	21/08/2020	EP2020000192143	WO202238161	UV-CURABLE COATINGS HAVING HIGH REFRACTIVE INDEX	Micro lens
P34660	US	20220092168	24/03/2022	DIGICERT	US	23/09/2020	US2020063081960	US20220092168	DYNAMIC SECURITY SEAL	
P34672	KR	20220033208	16/03/2022	UNIST	KR	09/09/2020	KR2020000115331	KR20220033208	VARIABLE HETERO SURFACE COMPOSITE, METHOD FOR MANUFACTURING THE SAME, AND FORGERY PREVENTION DEVICE USING THE SAME	
P34687	JP	2022039593	10/03/2022	DAI NIPPON PRINTING	JP	28/08/2020	JP2020000144706	JP2022039593	METHOD FOR PRODUCING PRINTED PRODUCT AND HEAT TRANSFER PRINTING APPARATUS	
P34699	JP	2022033507	02/03/2022	TOPPAN PRINTING	JP	17/08/2020	JP2020000137447	JP2022033507	IMAGE FORMING BODY AND METHOD FOR MANUFACTURING SAME	
P34705	JP	2022028412	16/02/2022	DAI NIPPON PRINTING	JP	03/08/2020	JP2020000131787	JP2022028412	COMPOSITE CONTAINER	
P34706	JP	2022027859	14/02/2022	NATIONAL PRINTING BUREAU	JP	09/12/2021	JP2021000199709	JP2022027859	APPLICATION DEVICE	
P34717	EP	3961482	02/03/2022	CHECK IT OUT	EP	31/08/2020	EP2020000193711	EP3961482	SYSTEM AND METHOD FOR VERIFYING AUTHENTICITY OF AN ANTI-COUNTERFEITING ELEMENT, AND METHOD FOR BUILDING A MACHINE LEARNING MODEL USED TO VERIFY AUTHENTICITY OF AN ANTI-COUNTERFEITING ELEMENT	
P34720	EP	3939038	19/01/2022	CASE WESTERN RESERVE UNIVERSITY	US	09/06/2011	US2011061494966	US20220068306 EP3939038 EP2718930 EP2718930 EP2718930 US20140219072 US9275671 US20160336035 US9947360 US10229709 US20190214048 US11211091 WO2012170992 WO2012170992 WO2012170992 WO2020186093 CA2838842 CA2838842 AU2012267419 AU2012267419	OPTICAL INFORMATION STORAGE MEDIUM	
P34735	CN	216014614	11/03/2022	SHENZHEN ZOLO PACKAGING TECHNOLOGY	CN	07/09/2021	CN2021002169726	CN216014614U	OPTICAL VARIABLE HOLOGRAPHIC ANTI-COUNTERFEIT LABEL	
P34740	CN	216001957	11/03/2022	SUZHOU BAICONG TECHNOLOGY	CN	17/08/2021	CN2021001921743	CN216001957U	LASER HOLOGRAPHIC FILM PRODUCTION EQUIPMENT WITH EYE PROTECTION FUNCTION	
P34744	CN	215987838	08/03/2022	SHENZHEN ZOLO PACKAGING TECHNOLOGY	CN	30/08/2021	CN2021002073295	CN215987838U	MULTILAYER DATA VARIABLE HOLOGRAPHIC ANTI-COUNTERFEIT LABEL	
P34754	CN	215850388	18/02/2022	HUBEI GEDIAN DEVELOPMENT REGION CHENGUANG INDUSTRIAL	CN	18/03/2021	CN2021000554613	CN215850388U	HOLOGRAPHIC COMPREHENSIVE ANTI-COUNTERFEITING HOT STAMPING FOIL	
P34756	CN	114217514	22/03/2022	HENAN UNIVERSITY OF TECHNOLOGY	CN	22/12/2021	CN2021001579227	CN114217514	INFORMATION ENCRYPTION METHOD BASED ON CIRCUITOUS PHASE AND RESONANCE PHASE HYBRID NANOSTRUCTURE SURFACE	
P34757	CN	114203017	18/03/2022	SHANDONG TAIBAO PACKAGING PRODUCT	CN	13/12/2021	CN2021001514681	CN114203017	HIDDEN HOLLOW ALUMINUM-PLATED PATTERN HOLOGRAPHIC ANTI-COUNTERFEITING FILM AND MANUFACTURING METHOD THEREOF	
P34762	CN	114179549	15/03/2022	TRAFFIC MANAGEMENT RESEARCH INSTITUTE OF MINISTRY OF PUBLIC SECURITY	CN	15/12/2021	CN2021001530103	CN114179549	ANTI-FAKE CERTIFICATE CARD WITH ANTI-FAKE MARK AND ITS MAKING PROCESS	
P34763	CN	114179543	15/03/2022	SHENZHEN SHENDA AURORA TECHNOLOGY	CN	25/11/2021	CN2021001413848	CN114179543	HOLOGRAPHIC SELF-REPAIRING GRAPHENE LIQUID CRYSTAL MODIFIED POLYURETHANE DECORATIVE FILM AND PREPARATION METHOD AND APPLICATION THEREOF	
P34765	CN	114179541	15/03/2022	TRAFFIC MANAGEMENT RESEARCH INSTITUTE OF MINISTRY OF PUBLIC SECURITY	CN	15/12/2021	CN2021001530102	CN114179541	CERTIFICATE CARD ENDORSEMENT METHOD	
P34766	CN	114176293	15/03/2022	SHENZHEN CHAMPION UNION STICKER PRODUCTS	CN	12/01/2022	CN2022000030383	CN114176293	MANUFACTURING PROCESS OF LUMINOUS COMMEMORATIVE BANK NOTE AND LUMINOUS COMMEMORATIVE BANK NOTE	
P34767	CN	114170888	11/03/2022	SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP	CN	07/12/2021	CN2021001482680	CN114170888	DOUBLE-CODE DOUBLE-LAYER HOLOGRAPHIC LASER ANTI-TRANSFER UTILIZATION LABEL CAPABLE OF BEING COLLECTED AT HIGH SPEED AND PREPARATION METHOD THEREOF	

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HOLOGRAMS - 28 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P34768	CN	114167706	11/03/2022	BELJING UNIVERSITY OF TECHNOLOGY	CN	06/12/2021	CN2021001475245	CN114167706	ROTARY MULTIPLEXING METHOD BASED ON CASCADE METASURFACE HOLOGRAPHY	
P34776	CN	114150526	08/03/2022	SHANDONG TAIBAO PACKAGING PRODUCT	CN	13/12/2021	CN2021001514417	CN114150526	HIDDEN HOLLOW-OUT ALUMINIZED PATTERN HOLOGRAPHIC ANTI-COUNTERFEITING TRANSFER PAPER AND MANUFACTURING METHOD THEREOF	
P34779	CN	114148110	08/03/2022	SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP	CN	02/12/2021	CN2021001455585	CN114148110	HIGH-TEMPERATURE-RESISTANT HOLOGRAPHIC INFORMATION ELECTROCHEMICAL ALUMINUM MATERIAL FOR CLOTH COVER HOT STAMPING AND PREPARATION METHOD AND APPLICATION THEREOF	
P34784	CN	114132062	04/03/2022	SVG TECHNOLOGY	CN	03/09/2020	CN2020000917318	CN114132062	MICRO-NANO LATENT IMAGE ANTI-COUNTERFEITING DEVICE, PREPARATION METHOD THEREOF AND PRINTING ROLLER	
P34785	CN	114120799	01/03/2022	SHENZHEN YONGFENGJI TECHNOLOGY	CN	07/12/2021	CN2021001482749	CN114120799	HOLOGRAPHIC ANTI-COUNTERFEITING LABEL PASTING FILM WITH INVISIBLE EFFECT AND MANUFACTURING METHOD THEREOF	
P34792	CN	114106680	01/03/2022	HENG FENG MATERIAL TECHNOLOGY ZHEJIANG	CN	06/01/2022	CN2022000012850	CN114106680	MOLD-PRESSING TYPE RELEASE COATING FOR HOT STAMPING AND APPLICATION PROCESS THEREOF	
P34793	CN	114103511	01/03/2022	SHANGHAI MAY MAY NOBLE PRINTING	CN	26/11/2021	CN2021001418412	CN114103511	INKLESS LASER PRINTING PAPER, PREPARATION PROCESS THEREOF AND INKLESS LASER PRINTING PROCESS	

VARIOUS OPTICAL EFFECTS - 30 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P34634	WO	202258588	24/03/2022	ALPLA WERKE ALWIN LEHNER	CH	21/09/2020	CH202000001192	WO202258588	PLASTIC CONTAINER AND METHOD FOR DETERMINING A PROPERTY OF A PLASTIC CONTAINER	
P34640	WO	202253830	17/03/2022	DE LA RUE INTERNATIONAL	GB	11/09/2020	GB2020000014325	WO202253826 WO202253827 WO202253828 WO202253829 WO202253830 GB202112955 GB202112956 GB202112958 GB202112959 GB202112961 GB202112982	SECURITY DEVICES AND METHODS OF MANUFACTURE THEREOF	Microlens - Microprints
P34641	WO	202253268	17/03/2022	MUEHLBAUER	DE	08/09/2020	DE202010123430	DE102020123430 WO202253268	MULTI-SHEET DOCUMENT WITH SECURITY FEATURES AND METHOD AND DEVICE FOR THE PRODUCTION THEREOF	Passport
P34643	WO	202253174	17/03/2022	GIESECKE & DEVRIENT CURRENCY TECHNOLOGY	DE	14/09/2020	DE202010005607	WO202253174 DE102020005607	OPTICALLY VARIABLE SECURITY ELEMENT	Microlens
P34647	WO	202250022	10/03/2022	TOPPAN PRINTING	JP	07/09/2020	JP2020000149601	WO202250022 JP2022044131	MOIRE DISPLAY BODY, DEVICE FOR GENERATING MOIRE FORMATION PATTERN, SYSTEM FOR GENERATING MOIRE FORMATION PATTERN, AND METHOD FOR GENERATING MOIRE FORMATION PATTERN	
P34649	WO	202249025	10/03/2022	SICPA	EP	02/09/2020	EP2020000194057	WO202249025	SECURITY MARKING, METHOD AND DEVICE FOR READING THE SECURITY MARKING, SECURITY DOCUMENT MARKED WITH THE SECURITY MARKING, AND METHOD AND SYSTEM FOR VERIFYING SAID SECURITY DOCUMENT	
P34650	WO	202249024	10/03/2022	SICPA	EP	02/09/2020	EP2020000194060	WO202249024	SECURITY DOCUMENTS OR ARTICLES COMPRISING OPTICAL EFFECT LAYERS COMPRISING MAGNETIC OR MAGNETIZABLE PIGMENT PARTICLES AND METHODS FOR PRODUCING SAID OPTICAL EFFECT LAYERS	
P34658	WO	202237941	24/02/2022	LEONHARD KURZ STIFTUNG	DE	20/08/2020	DE202010121896	WO202237941 DE102020121896	MULTILAYER BODY AND METHOD FOR PRODUCING A MULTILAYER BODY	
P34662	US	20220088958	24/03/2022	CANADIAN BANK NOTE	CA	24/09/2020	CA2020003094381	US20220088958	LASER MARKED OPTICALLY VARIABLE DEVICE	
P34664	US	20220080763	17/03/2022	TEMPTIME	US	17/09/2020	US2020017024278	US20220080763 WO202260979	ENVIRONMENTAL HISTORY MONITOR WITH SECURITY FEATURES	
P34665	US	20220080748	17/03/2022	CANON PRODUCTION PRINTING	DE	11/09/2020	DE202010123690	US20220080748 DE102020123690	METHOD AND PRINTING DEVICE FOR INFLUENCING AN OPTICAL PROPERTY OF A VARNISH LAYER TO BE APPLIED ONTO A PRINTED RECORDING MEDIUM	
P34666	US	20220072892	10/03/2022	EPFL - ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE	US	10/09/2020	US2020017016414	US20220072892	SYNTHESIS OF MOVING AND BEATING MOIRÉ SHAPES	Microlens

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VARIOUS OPTICAL EFFECTS - 30 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P34681	KR	20220020054	18/02/2022	KOREA SECURITY PRINTING & MINTING	KR	11/08/2020	KR2020000100515	KR20220020054	PHOTONIC CRYSTAL FILM MANUFACTURING APPARATUS AND MANUFACTURING METHOD	
P34686	JP	2022042577	15/03/2022	NATIONAL PRINTING BUREAU	JP	03/09/2020	JP2020000148017	JP2022042577	BIOMETRIC INFORMATION RECORDING MEDIUM, BIOMETRIC INFORMATION RECORDING MEDIUM ISSUING SYSTEM, AND BIOMETRIC INFORMATION AUTHENTICATION SYSTEM	
P34689	JP	2022037917	09/03/2022	TOPPAN PRINTING	CN	25/08/2020	CN2020000860616	CN114093900 JP2022037917	SOLID-STATE IMAGING ELEMENT AND METHOD FOR MANUFACTURING SOLID-STATE IMAGING ELEMENT	Micro lens
P34704	JP	2022029221	17/02/2022	NATIONAL PRINTING BUREAU	JP	04/08/2020	JP2020000132454	JP2022029221	LATENT IMAGE FORMING BODY	Micro lens
P34712	EP	3971872	23/03/2022	HUECK FOLIEN	EP	21/09/2020	EP2020000197193	EP3971872	TAMPER EVIDENT SECURITY ELEMENT	
P34715	EP	3967508	16/03/2022	GIESECKE & DEVRIENT CURRENCY TECHNOLOGY	DE	09/09/2020	DE202010005522	DE102020005522 EP3967508	OPTICALLY VARIABLE SECURITY ELEMENT	Micro lens
P34718	EP	3960481	02/03/2022	GIESECKE & DEVRIENT CURRENCY TECHNOLOGY	DE	27/08/2020	DE202010005268	EP3960481 DE102020005268 CN114103516	OPTICALLY VARIABLE SECURITY ELEMENT	Micro lens
P34722	DE	102020211950	24/03/2022	BUNDESDRUCKEREI	DE	23/09/2020	DE202010211950	DE102020211950	DOCUMENT BODY WITH END FACE IDENTIFICATION	
P34726	CN	216107829	22/03/2022	JINHUA HANMA LASER PACKAGING MAT	CN	03/11/2021	CN2021002673203	CN216107829U	RELEASE LAYER-FREE TRANSFER PAPER	
P34729	CN	216069431	18/03/2022	WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT	CN	24/09/2021	CN2021002314041	CN216069431U	MULTICOLOR OPTICALLY VARIABLE ANTI-COUNTERFEITING FILM AND ANTI-COUNTERFEITING PRODUCT	
P34730	CN	216069323	18/03/2022	GUANGZHOU HAOYI GRAPHIC SERVICE	CN	19/10/2021	CN2021002523326	CN216069323U	MULTI-POSITIONING LASER ANTI-COUNTERFEITING PRINTING PAPER	
P34732	CN	216040422	15/03/2022	NANJING JINLING GOLDFOIL	CN	16/08/2021	CN2021001911764	CN216040422U	FULL-PAGE LASER HOLLOW-OUT PRINTING PACKAGING PAPER	
P34734	CN	216033156	15/03/2022	SHENZHEN JINJIA	CN	30/09/2021	CN2021002398105	CN216033156U	MICRO-NANO STRUCTURE POSITIONING DIE PRESSING AND PACKAGING STRETCHING FILM AND PRODUCTION EQUIPMENT THEREOF	
P34737	CN	216014294	11/03/2022	LINTEC LINTEC TECHNOLOGY	CN	08/10/2021	CN2021002420671	CN216014294U	LASER DOUBLE-SIDED TAPE AND RFID LABEL	
P34738	CN	216013831	11/03/2022	JIANGXI OUMAI MICROELECTRONICS	CN	29/07/2021	CN2021001749943	CN216013831U	DODGING DEVICE, EMISSION MODULE, ELECTRONIC EQUIPMENT AND ANTI-COUNTERFEITING STRUCTURE FOR OPTICAL ELEMENT	Micro lens
P34741	CN	216001808	11/03/2022	ANHUI ANTAL NEW STYLE PACKAGING MATERIALS SHENZHEN JINJIA	CN	28/05/2021	CN2021001175794	CN216001808U	COLOR IMAGE-TEXT MICRO-NANO STRUCTURE PRINTING EQUIPMENT AND PRINTED MATTER	Micro lens
P34749	CN	215921667	01/03/2022	JIANGYIN TONGLI OPTOELECTRONIC TECHNOLOGY	CN	11/12/2020	CN2020002969126	CN215921667U	COLORLED MICROLENS DYNAMIC FILM	Micro lens
P34777	CN	114149726	08/03/2022	HUIZHOU HUAYANG OPTICAL TECHNOLOGY	CN	25/08/2021	CN2021000984199	CN114149726	DYNAMIC OPTICAL EFFECT LAYER AND PREPARATION METHOD THEREOF	

NON SECURITY HOLOGRAMS - 81 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N8473	WO	202255315	17/03/2022	LG CHEM	KR	14/09/2020	KR2020000117902	WO202255315	HOLOGRAPHIC OPTICAL ELEMENT AND METHOD FOR MANUFACTURING SAME	
N8474	WO	202255194	17/03/2022	INDUSTRY ACADEMIA COOPERATION OF SEJONG UNIVERSITY	KR	08/09/2020	KR2020000114666	WO202255194	FLYING-OVER BEAM PATTERN SCANNING HOLOGRAM MICROSCOPE DEVICE USING SCAN MIRROR AND TRANSLATION STAGE	

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N8475	WO	202255033	17/03/2022	SEONGAHPARK SONG, JIN-HO	KR	09/09/2020	KR2020000115066	WO202255033 KR20220033103	IOT-BASED INTERACTIVE BOAT USING HOLOGRAM	
N8476	WO	202254888	17/03/2022	NICT NATIONAL INSTITUTE OF INFORMATION & COMMUNICATIONS TECHNOLOGY	JP	10/09/2020	JP2020000152433	WO202254888	IMAGE REPRODUCTION DEVICE, HOLOGRAM RECORDING DEVICE, AND DIGITAL HOLOGRAPHY DEVICE	
N8477	WO	202253404	17/03/2022	SAINT GOBAIN GLASS	EP	14/09/2020	EP2020000195949	WO202253404	PROCESS FOR PRODUCING A COMPOSITE PANE HAVING A HOLOGRAM	
N8478	WO	202253403	17/03/2022	SAINT GOBAIN GLASS	EP	14/09/2020	EP2020000195948	WO202253403	COMPOSITE PANEL FOR A HOLOGRAPHIC HEAD-UP DISPLAY	
N8479	WO	202253227	17/03/2022	ROBERT BOSCH	DE	10/09/2020	DE202010211345	DE102020211345 WO202253227	METHOD FOR PRODUCING A HOLOGRAPHIC OPTICAL ELEMENT	
N8480	WO	202247768	10/03/2022	GUILIN TOURISM UNIVERSITY	WO	07/09/2020	WO2020110003691	WO202247768	VIRTUAL EXPERIENCE SYSTEM AND METHOD COMBINING HOLOLENS AND CAVE	
N8481	WO	202245758	03/03/2022	LG CHEM	KR	25/08/2020	KR2020000107292	WO202245758 KR20220026521	METHOD FOR REPLICATING LARGE-AREA HOLOGRAPHIC OPTICAL ELEMENT, AND LARGE-AREA HOLOGRAPHIC OPTICAL ELEMENT REPLICATED THEREBY	
N8482	WO	202245699	03/03/2022	LG CHEM	KR	25/08/2020	KR2020000107287	WO202245699 KR20220026509	HOLOGRAPHIC OPTICAL ELEMENT, MANUFACTURING METHOD THEREFOR AND MANUFACTURING DEVICE THEREFOR	
N8483	WO	202245294	03/03/2022	DAI NIPPON PRINTING	JP	28/08/2020	JP2020000144689	WO202245294 JP2022039582	AERIAL IMAGE FORMING DEVICE, AERIAL INPUT DEVICE, DISPLAY DEVICE WITH AERIAL IMAGE FORMING DEVICE, MOBILE OBJECT, AND HOLOGRAM IMAGING LENS	
N8484	WO	202243062	03/03/2022	SCRIBOS	DE	31/08/2020	DE202010210936	WO202243062 DE102020210936	READ-OUT DEVICE FOR READING OUT INFORMATION STORED HOLOGRAPHICALLY, METHOD FOR READING OUT INFORMATION STORED HOLOGRAPHICALLY, AND READ-OUT SYSTEM FOR READING OUT INFORMATION STORED HOLOGRAPHICALLY	
N8485	WO	202239208	24/02/2022	TOPPAN PRINTING	JP	20/08/2020	JP2020000139079	WO202239208 JP2022035032	DIFFRACTION SHEET, METHOD FOR MANUFACTURING SAME, THREE-DIMENSIONAL DISPLAY DEVICE, LIGHT-BEAM REPRODUCTION DEVICE, THREE-DIMENSIONAL SPACE DISPLAY SYSTEM, LIGHT-BEAM REPRODUCTION METHOD, AND PROGRAM	
N8486	US	20220092773	24/03/2022	SIEMENS HEALTHCARE	US	15/08/2017	US2017062545517	US20220092773	IDENTIFYING THE QUALITY OF THE CELL IMAGES ACQUIRED WITH DIGITAL HOLOGRAPHIC MICROSCOPY USING CONVOLUTIONAL NEURAL NETWORKS	
N8487	US	20220091560	24/03/2022	FACEBOOK TECHNOLOGIES	US	24/09/2020	US2020017031204	US20220091560	LIGHTGUIDE BASED HOLOGRAPHIC DISPLAY	
N8488	US	20220091419	24/03/2022	SAMSUNG ELECTRONICS	RU	22/09/2020	RU2020000131229	US20220091419	HOLOGRAPHIC WAVEGUIDE, METHOD OF PRODUCING THE SAME, AND DISPLAY DEVICE INCLUDING THE HOLOGRAPHIC WAVEGUIDE	
N8489	US	20220091019	24/03/2022	U S ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND ARMY RESEARCH LABORATORY	US	21/09/2020	US2020017027131	US20220091019	CONTACT-FREE HOLOGRAPHIC IMAGING OF AEROSOL PARTICLES FROM MOBILE PLATFORMS	
N8490	US	20220075317	10/03/2022	ENVISICS	GB	04/09/2020	GB2020000013914	US20220075317 GB202013914 GB2598604	HOLOGRAPHIC PROJECTOR	
N8491	US	20220066211	03/03/2022	GM GLOBAL TECHNOLOGY OPERATIONS	US	27/08/2020	US2020017004249	US20220066211 DE102021110493 CN114114874	SPECKLE-REDUCED DIRECT-RETINA HOLOGRAPHIC PROJECTOR INCLUDING MULTIPLE SPATIAL LIGHT MODULATORS	
N8492	US	20220061644	03/03/2022	NOKIA	US	27/08/2020	US2020063070978	US20220061644	HOLOGRAPHIC ENDOSCOPE	
N8493	KR	20220033324	16/03/2022	LG CHEM	KR	09/09/2020	KR2020000115590	KR20220033324	METHOD FOR REPLICATING HOLOGRAPHIC OPTICAL ELEMENT AND HOLOGRAPHIC OPTICAL ELEMENT REPLICATED THEREBY	
N8494	KR	20220033170	16/03/2022	CHMAI	KR	09/09/2020	KR2020000115224	KR20220033170	IMAGING DEVICE ASSOCIATED WITH ARTIFICIAL INTELLIGENCE HOLOGRAM IMAGES	
N8495	KR	20220030055	10/03/2022	LG CHEM	KR	02/09/2020	KR2020000111781	KR20220030055	HOLOGRAPHIC LIGHT GUIDE PLATE AND DISPLAY DEVICE INCLUDING THE SAME	
N8496	KR	20220026363	04/03/2022	LG CHEM	KR	25/08/2020	KR2020000107291	KR20220026363	HOLOGRAPHIC OPTICAL ELEMENT MANUFACTURING APPARATUS	

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N8497	KR	20220026362	04/03/2022	LG CHEM	KR	25/08/2020	KR2020000107289	KR20220026362	HOLOGRAPHIC LIGHT GUIDE PLATE AND DISPLAY DEVICE INCLUDING THE SAME	
N8498	KR	20220026361	04/03/2022	LG CHEM	KR	25/08/2020	KR2020000107288	KR20220026361	HOLOGRAPHIC OPTICAL DEVICE AND METHOD FOR MANUFACTURING THE SAME	
N8499	KR	20220018167	15/02/2022	CENTER FOR ADVANCED META MATERIALS POHANG UNIVERSITY OF SCIENCE & TECHNOLOGY POSTECH	KR	06/08/2020	KR2020000098328	KR20220018167	MULTI-DIRECTIONAL HOLOGRAM DEVICE AND MULTI-DIRECTIONAL HOLOGRAM IMPLEMENTING SYSTEM COMPRISING THE SAME	
N8500	KR	102377063	21/03/2022	CHOL JUNG WAN	KR	29/11/2021	KR2021000166827	KR102377063	HOLOGRAM DISPLAY DEVICE	
N8501	KR	102374014	14/03/2022	KONYANG UNIVERSITY INDUSTRIAL COOPERATION	KR	19/08/2020	KR2020000104239	KR20220022814 KR102374014	APPARATUS AND METHOD FOR MANUFACTURING HOLOGRAPHIC SCREEN FOR THREE-DIMENSIONAL IMAGE PROJECTION	
N8502	KR	102367198	24/02/2022	HO ENTERTAINMENT	KR	03/11/2021	KR2021000149348	KR102367198	HOLOGRAPHIC LENS MEDICAL EDUCATION SYSTEM UTILIZING SPEECH RECOGNITION	
N8503	JP	2022041486	11/03/2022	NTT DOCOMO	JP	01/09/2020	JP2020000146711	JP2022041486	HOLOGRAM EXPOSURE DEVICE	
N8504	JP	2022039234	10/03/2022	JAPAN BROADCASTING	JP	28/08/2020	JP2020000144158	JP2022039234	HOLOGRAM DATA GENERATION APPARATUS AND PROGRAM THEREFOR	
N8505	JP	2022034463	03/03/2022	ARTIENCE LAB	JP	18/08/2020	JP2020000138258	JP2022034463	HOLOGRAM IMAGE REPRODUCTION DEVICE	
N8506	JP	3236438	18/02/2022	MARUA	JP	03/12/2021	JP2021000004889	JP3236438U	EDGE COLOR CONTAINING LUMINESCENT PAINT AND HIGH VISIBILITY FOCUSING GOLF MARKER WITH LOW ANGLE DEFLECTION HIGH REFLECTION HOLOGRAM FUNCTION	
N8507	EP	3964892	09/03/2022	ASML STICHTING NEDERLANDSE WETENSCHAPPELIJK ONDERZOEK INSTITUUT STICHTING VU MC UNIVERSITEIT VAN AMSTERDAM	EP	02/09/2020	EP2020000193990	EP3964892	ILLUMINATION ARRANGEMENT AND ASSOCIATED DARK FIELD DIGITAL HOLOGRAPHIC MICROSCOPE	
N8508	EP	3961311	02/03/2022	SAMSUNG ELECTRONICS	KR	28/08/2020	KR2020000109566	EP3961311 US20220066391 CN114114873 KR20220028496	HOLOGRAPHIC DISPLAY APPARATUS AND OPERATING METHOD THEREOF	
N8509	EP	3958065	23/02/2022	SAMSUNG ELECTRONICS	KR	20/08/2020	KR2020000104805	EP3958065 US20220057750 CN114077183	METHOD AND APPARATUS FOR GENERATING COMPUTER-GENERATED HOLOGRAM	
N8510	DE	102021203850	24/02/2022	CARL ZEISS SMT	DE	19/04/2021	DE202110203850	DE102021203850	METHOD AND APPARATUS FOR PRODUCING A COMPUTER-GENERATED HOLOGRAM	
N8511	DE	102020210759	03/03/2022	ROBERT BOSCH	DE	25/08/2020	DE202010210759	DE102020210759 CN114114811	PROJECTOR FOR ILLUMINATING A HOLOGRAPHIC PROJECTION SURFACE FOR A VEHICLE, PROJECTION DEVICE FOR A VEHICLE AND METHOD FOR OPERATING A PROJECTOR	
N8512	DE	102020209501	24/02/2022	ROBERT BOSCH	DE	28/07/2020	DE202010209501	DE102020209501	DEVICE AND METHOD FOR PRODUCING A CURVED HOLOGRAPHIC OPTICAL ELEMENT	
N8513	CN	216119499	22/03/2022	GUANGDONG CONSTRUCTION & DECORATION ENGINEERING	CN	09/07/2021	CN2021001559867	CN216119499U	FOUR-CONE HOLOGRAPHIC PROJECTION STRUCTURE OF INTELLIGENT EXHIBITION HALL	
N8514	CN	216102184	22/03/2022	NANCHANG TRIPOLEAR OPTOELECTRONICS TECHNOLOGY	CN	29/11/2021	CN2021002945678	CN216102184U	HOLOGRAPHIC DISPLAY PANEL PROCESSING CONVEYER WITH INFORMATION RECORDING FUNCTION	
N8515	CN	216101219	22/03/2022	CICC EDUCATION TECHNOLOGY QINGDAO	CN	08/11/2021	CN2021002717608	CN216101219U	HOLOGRAPHIC PROJECTION BLACKBOARD FOR NETWORK TEACHING	
N8516	CN	216086863	18/03/2022	SUZHOU HUIYAN INFORMATION TECHNOLOGY	CN	08/10/2021	CN2021002405070	CN216086863U	HOLOGRAPHIC PROJECTION INTERACTION SYSTEM WITH REAL-TIME INTERACTION FUNCTION	
N8517	CN	216083421	18/03/2022	EAST CHINA UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	23/09/2021	CN2021002300935	CN216083421U	HOLOGRAPHIC DYNAMIC DISPLAY DEVICE BASED ON LIQUID CRYSTAL GEOMETRIC PHASE DEVICE	
N8518	CN	216083281	18/03/2022	SVG TECHNOLOGY	CN	29/10/2021	CN2021002626848	CN216083281U	HOLOGRAPHIC WAVEGUIDE SHEET AND AUGMENTED REALITY HEAD-UP DISPLAY DEVICE	

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N8519	CN	216083091	18/03/2022	BRAINWARE TERAHERTZ INFORMATION TECHNOLOGY	CN	29/06/2021	CN2021001482522	CN216083091U	EQUIPMENT PANEL AND DOUBLE-VIEW-ANGLE EXTENSIBLE TYPE MILLIMETER WAVE THREE-DIMENSIONAL HOLOGRAPHIC HUMAN BODY IMAGING EQUIPMENT	
N8520	CN	216052615	15/03/2022	NANJING ZHONGSHAN VIRTUAL REALITY TECHNOLOGY RESEARCH INSTITUTE	CN	20/10/2021	CN2021002529091	CN216052615U	HOLOGRAPHIC PROJECTION IMAGING DISPLAY SYSTEM	
N8521	CN	216052602	15/03/2022	GUANGQUN LASER SCIENCE & TEC	CN	21/10/2021	CN2021002542091	CN216052602U	HOLOGRAPHIC PROJECTION LITHOGRAPHIC APPARATUS	
N8522	CN	216014762	11/03/2022	SICHUAN SHANGPINDAOYE CULTURAL & CREATIVE INDUSTRY	CN	01/06/2021	CN2021001210562	CN216014762U	HOLOGRAPHIC PROJECTION DEVICE FOR ACTIVITY PLAN	
N8523	CN	216010173	11/03/2022	SHANGHAI YINGHUOCHONG DIGITAL TECHNOLOGY	CN	21/10/2021	CN2021002543680	CN216010173U	FLOOR TYPE AIR IMAGING HOLOGRAPHIC INTERACTION DISPLAY STAND	
N8524	CN	216001816	11/03/2022	SUZHOU BAICONG TECHNOLOGY	CN	20/08/2021	CN2021001963205	CN216001816U	PREVENT HOLOGRAPHIC MEMBRANE PRODUCTION FACILITY OF LASER THAT CURLS	
N8525	CN	215986888	08/03/2022	IVIEW DISPLAYS	CN	26/07/2021	CN2021001715059	CN215986888U	HOLOGRAPHIC PROJECTION DEVICE	
N8526	CN	215986725	08/03/2022	JITONG TECHNOLOGY BEIJING	CN	13/09/2021	CN2021002210673	CN215986725U	HOLOGRAPHIC NEAR-TO-EYE DISPLAY SYSTEM BASED ON MULTIPLE SPATIAL LIGHT MODULATORS	
N8527	CN	215932374	01/03/2022	NANCHANG TRIPOLAR OPTOELECTRONICS TECHNOLOGY	CN	12/10/2021	CN2021002449564	CN215932374U	AUTOMATIC ASH-REMOVING HOLOGRAPHIC DISPLAY SELF-CLEANING DEVICE	
N8528	CN	215913349	01/03/2022	DONGMENG WENZHOU VOCATIONAL & TECHNICAL COLLEGE	CN	12/08/2021	CN2021001890007	CN215913349U	3D HOLOGRAPHIC INTELLIGENT GARMENT	
N8529	CN	215911186	25/02/2022	GUANGDONG ZIJING INFORMATION STORAGE TECHNOLOGY	CN	17/06/2021	CN2021001356507	CN215911186U	DICHROIC LAYER APPLIED TO HOLOGRAPHIC STORAGE MEDIUM AND HOLOGRAPHIC STORAGE MEDIUM	
N8530	CN	215862588	18/02/2022	SHENZHEN MENGYUN HOLOGRAPHIC TECHNOLOGY	CN	19/07/2021	CN2021001644402	CN215862588U	ANGLE-ADJUSTABLE OPTICAL HOLOGRAPHIC DISPLAY DEVICE	
N8531	CN	114216880	22/03/2022	CHANGZHOU INSTITUTE OF MECHATRONIC TECHNOLOGY	CN	27/12/2021	CN2021001613648	CN114216880	SHEARING DIGITAL HOLOGRAPHY AND METHOD FOR SIMULTANEOUSLY MEASURING MORPHOLOGY AND REFRACTIVE INDEX OF BLOOD CELLS THEREOF	
N8532	CN	114202478	18/03/2022	NANCHANG UNIVERSITY	CN	09/12/2021	CN2021001498523	CN114202478	OUT-OF-FOCUS IMAGE NOISE SUPPRESSION METHOD BASED ON DIGITAL HOLOGRAPHIC MICROSCOPIC IMAGING TECHNOLOGY	
N8533	CN	114167707	11/03/2022	LASER FUSION RESEARCH CENTER CHINA ACADEMY OF ENGINEERING PHYSICS	CN	08/12/2021	CN2021001490469	CN114167707	OFF-AXIS DIGITAL HOLOGRAPHIC REFERENCE LIGHT ESTIMATION METHOD AND SYSTEM	
N8534	CN	114153131	08/03/2022	JIANGXI GAORUI PHOTOELECTRIC	CN	23/11/2021	CN2021001392844	CN114153131	SHEARING-AMOUNT-ADJUSTABLE COMMON-PATH OFF-AXIS DIGITAL HOLOGRAPHIC MICROSCOPIC DEVICE	
N8535	CN	114137814	04/03/2022	WUHAN UNIVERSITY	CN	30/11/2021	CN2021001438341	CN114137814	SUPER-SURFACE DEVICE FOR REALIZING INDEPENDENT HOLOGRAPHIC IMAGE MULTIPLEXING AND CONSTRUCTION METHOD THEREOF	
N8536	CN	114137812	04/03/2022	BEIJING UNIVERSITY OF TECHNOLOGY	CN	03/12/2021	CN2021001466607	CN114137812	TERNARY ASSOCIATION MIXED HOLOGRAPHIC ENCRYPTION METHOD BASED ON METASURFACE	
N8537	CN	114137811	04/03/2022	JIANGXI GAORUI PHOTOELECTRIC	CN	23/11/2021	CN2021001392858	CN114137811	COMMON-PATH OFF-AXIS DIGITAL HOLOGRAPHIC MICROSCOPIC DEVICE BASED ON OPTICAL WEDGE	
N8538	CN	114136204	04/03/2022	KUNMING UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	09/12/2021	CN2021001499335	CN114136204	CULTURAL RELIC THREE-DIMENSIONAL SHAPE RECONSTRUCTION DEVICE AND METHOD FOR INFRARED DIGITAL HOLOGRAPHIC PHASE EXTRACTION	
N8539	CN	114125418	01/03/2022	SHAANXI HONGXING SHANSHAN NETWORK TECHNOLOGY	CN	25/08/2020	CN2020000865985	CN114125418	HOLOGRAPHIC TOURIST SERVICE CENTER AND IMPLEMENTATION METHOD THEREOF	
N8540	CN	114121047	01/03/2022	GENERAL COAL RESEARCH INSTITUTE	CN	28/01/2022	CN2022000103822	CN114121047	VOLUME HOLOGRAPHIC STORAGE SYSTEM AND ELECTRONIC DEVICE	
N8541	CN	114120513	01/03/2022	YUNZHISHENG SHANGHAI INTELLIGENT TECHNOLOGY	CN	29/11/2021	CN2021001434907	CN114120513	ENTRANCE GUARD'S SWITCHING DEVICE BASED ON HOLOGRAPHIC PROJECTION	

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N8542	CN	114089529	25/02/2022	SUZHOU SUXINRUIHI TECHNOLOGY	CN	09/09/2021	CN2021001057006	CN114089529	DISPLAY AND METHOD FOR NEAR-TO-EYE DISPLAY BASED ON POLARIZER HOLOGRAPHIC GRATING	
N8543	CN	114089470	25/02/2022	SHENZHEN LOCHN OPTICS HI TECHNOLOGY	CN	20/01/2022	CN2022000066997	CN114089470	HOLOGRAPHIC OPTICAL WAVEGUIDE, MANUFACTURING DEVICE THEREOF AND NEAR-TO-EYE DISPLAY DEVICE	
N8544	CN	114089469	25/02/2022	SHENZHEN LOCHN OPTICS HI TECHNOLOGY	CN	20/01/2022	CN2022000066995	CN114089469	VOLUME HOLOGRAPHIC OPTICAL WAVEGUIDE, MANUFACTURING METHOD THEREOF AND COLOR VOLUME HOLOGRAPHIC OPTICAL WAVEGUIDE	
N8545	CN	114089459	25/02/2022	SHENZHEN LOCHN OPTICS HI TECHNOLOGY	CN	20/01/2022	CN2022000067767	CN114089459	VOLUME HOLOGRAPHIC GRATING MANUFACTURING DEVICE, VOLUME HOLOGRAPHIC OPTICAL WAVEGUIDE AND MANUFACTURING METHOD AND APPLICATION THEREOF	
N8546	CN	114089458	25/02/2022	SHENZHEN LOCHN OPTICS HI TECHNOLOGY	CN	20/01/2022	CN2022000066958	CN114089458	LARGE-SIZE HOLOGRAPHIC GRATING AND MANUFACTURING DEVICE THEREOF	
N8547	CN	114081469	25/02/2022	YUNZHISHENG SHANGHAI INTELLIGENT TECHNOLOGY	CN	11/11/2021	CN2021001332347	CN114081469	HOLOGRAPHIC DISH MAKING PROJECTION SYSTEM BASED ON BODY FAT SCALE DATA	
N8548	CN	114067671	18/02/2022	MA YI	CN	17/12/2021	CN2021001553274	CN114067671	3D HOLOGRAPHIC DISPLAY SCREEN CAPABLE OF MOVING ALONG WITH DYNAMIC IMAGES	
N8549	CN	114067622	18/02/2022	DONGGUAN AOLAI CULTURE TECHNOLOGY	CN	25/11/2021	CN2021001415229	CN114067622	IMMERSIVE HOLOGRAPHIC AR FUTURE CLASSROOM SYSTEM AND TEACHING METHOD THEREOF	
N8550	CN	114067015	18/02/2022	CHINESE PEOPLE S LIBERATION GROUND FORCE ARMORED TROOP ACADEMY	CN	11/11/2021	CN2021001331792	CN114067015	PURE PHASE HOLOGRAM GENERATION METHOD AND SYSTEM COMBINING DNN	
N8551	CN	114063420	18/02/2022	SHENZHEN UNIVERSITY	CN	25/10/2021	CN2021001244636	CN114063420	SWITCHABLE COLOR HOLOGRAPHIC IMAGING METHOD, DEVICE AND COMPUTER READABLE STORAGE MEDIUM	
N8552	CN	114061769	18/02/2022	JIANGSU UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	19/11/2021	CN2021001376230	CN114061769	DEVICE AND METHOD FOR MEASURING LASER WAVELENGTH BASED ON COAXIAL HOLOGRAPHIC SELF-FOCUSING TECHNOLOGY	
N8553	CN	114052660	18/02/2022	SHANGHAI FENGPEI DIGITAL TECHNOLOGY	CN	10/11/2021	CN2021001325916	CN114052660	THREE-DIMENSIONAL HOLOGRAPHIC IMAGE MEDICAL DIAGNOSIS DEVICE	