

IHMA PATENT NEWSLETTER

Limited circulation patent news bulletin for the Holography Industry

MARCH 2023 – 96 PATENTS

Published and granted patents

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Please note that:

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

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P36177

SECURITY & OPTICAL EFFECTS' COLUMN
PRINTING – BANKNOTE – CARD – THREAD – RELIEF –
THERMOCHROMY

EP4151426

LEONHARD KURZ STIFTUNG

Inventor(s):

OLSZOWKA VIOLETTA | SCHMIDT MARTINA

Application Nber / Date:

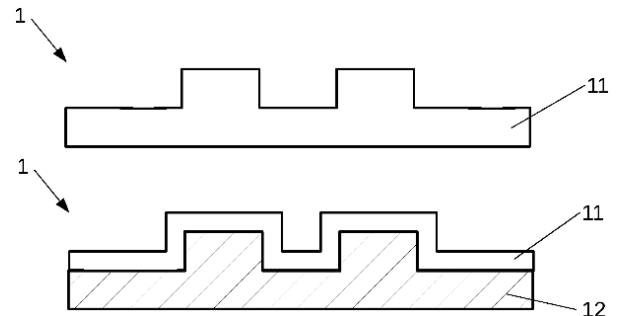
EP22195109 2022-09-12

Priority Nber / Date / Country:

DE102021124407 2021-09-21

THERMOCHROMIC SECURITY ELEMENT AND METHOD FOR PRODUCING A THERMOCHROMIC SECURITY ELEMENT

The invention relates to a security element (1) and to a method for producing a security element (1). The security element (1), in particular a security strip or a security thread or a Patch or a transfer film (2) or a laminating film or a print for securing security documents (3), comprises at least one thermochromic element (11), wherein i) the at least one thermochromic element (11) has haptic properties; and/or ii) the security element (1) has at least one haptic layer (12).



CLAIM 1. A security element (1), in particular a security strip or a security thread or a Patch or a transfer film (2) or a laminating film or a print for securing security documents (3), characterized in that, characterized in that the security element (1) has at least one thermochromic element (11), wherein i) the at least one thermochromic element (11) has haptic properties; and/or ii) the security element (1) has at least one haptic layer (12).

Equivalents: US20230092587 A1 | DE102021124407 A1

Status: pending

Research Report:

EP 4 151 426 A1



EUROPÄISCHER RECHERCHENBERICHT

Nummer der Anmeldung
EP 22 19 5109

Table with 4 columns: Kategorie, Kennzeichnung des Dokuments mit Angabe, soweit erforderlich, der maßgeblichen Teile, Betrifft Anspruch, and KLASSIFIKATION DER ANMELDUNG (IPC). It lists two relevant documents: DE 10 2011 108239 A1 and DE 10 2006 016118 A1.

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

P36146

PRINTING – BRAND PROTECTION – TRACK & TRACE

WO202328199

ELITE COINAGE

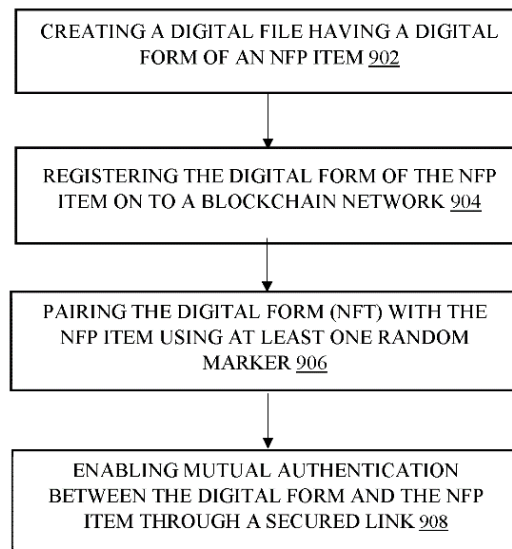
Priority Date: 25/08/2021

METHOD AND SYSTEM FOR PROTECTION AGAINST COUNTERFEITING

Embodiments relate to a non-fungible physical (NFP) item. The non-fungible physical (NFP) item comprises an identifier. The identifier is embedded and layered within the non-fungible physical item in an unplanned pattern. The identifier in the unplanned pattern is configured to provide high security against counterfeiting of the non-fungible physical (NFP) item. The identifier comprises at least one of a random marker and a unique marker. The unplanned pattern comprises at least one of a random pattern and a unique pattern. Further the non-fungible physical (NFP) item is registered as a non-fungible token on a blockchain. The NFP item is then paired with the non-fungible token for enabling two-way mutual authentication and enhanced authenticity. The pairing of the NFP item with the non-fungible token enables tracking condition, provenance, and grading of the NFP item.

PROCÉDÉ ET SYSTÈME DE PROTECTION CONTRE LA CONTREFAÇON

Des modes de réalisation concernent un article physique non fongible (NFP). L'article physique non fongible (NFP) comprend un identifiant. L'identifiant est intégré et stratifié à l'intérieur de l'article physique non fongible selon un motif non planifié. L'identifiant dans le motif non planifié est configuré pour offrir une sécurité élevée contre la contrefaçon de l'article physique non fongible (NFP). L'identifiant comprend un marqueur aléatoire et/ou un marqueur unique. Le motif non planifié comprend un motif aléatoire et/ou un motif unique. En outre, l'article physique non fongible (NFP) est enregistré sous la forme d'un jeton non fongible sur une chaîne de blocs. L'article NFP est ensuite apparié au jeton non fongible pour permettre une authentification mutuelle bidirectionnelle et une authenticité améliorée. L'appariement de l'article NFP avec le jeton non fongible permet de suivre l'état, la provenance et le classement de l'article NFP.



CLAIM 1. A non-fungible physical (NFP) item comprising: an identifier embedded and layered within the non-fungible physical item in an unplanned pattern, wherein the identifier in the unplanned pattern provides a random uniqueness to the NFP item and configured to provide high security against counterfeiting of the non-fungible physical (NFP) item, wherein the identifier comprises at least one of a random marker and a unique marker, and wherein the unplanned pattern comprises at least one of a random pattern and a unique pattern.

P36162

CARD

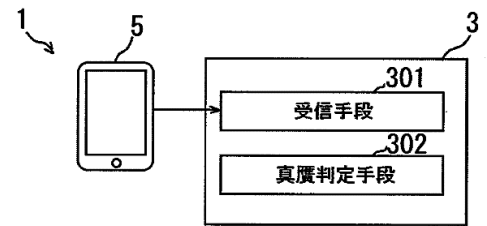
JP2023038534

DAI NIPPON PRINTING

Priority Date: 07/09/2021

AUTHENTICITY DETERMINATION APPARATUS AND PROGRAM

TOPIC: To provide an authenticity determination apparatus and the like capable of suitably performing authenticity determination of identity verification. INVENTION: An authenticity determination apparatus 3 includes receiving means 301 for receiving a captured image of an ID card from a user terminal 5, and means for using a color image of a predetermined color component of the captured image of the ID card, And authenticity determination means 302 for performing authenticity determination of the ID card by comparing a contour portion of a character to be inspected formed in a predetermined range of the ID card with a contour portion of a positive character. The authenticity determination unit 302 uses a grayscale image obtained by performing grayscale conversion on the photographed image, and compares the contour portion of the character to be inspected with the contour portion of the positive character, and performs authenticity determination using a color image when the ID card is not true.



CLAIM 1. An authenticity determination apparatus for an identification certificate in which a hologram is formed, the apparatus comprising: An authenticity determination unit configured to determine authenticity of the identification certificate by comparing a contour portion of a character to be inspected formed in a predetermined range of the identification certificate with a contour portion of a positive character.

P36190

PRINTING – BANKNOTE – CARD – LUMINESCENCE

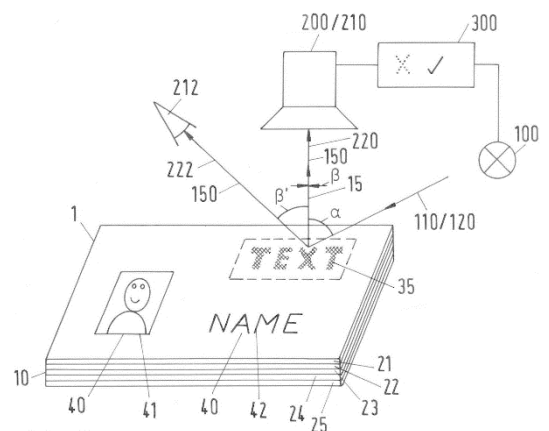
DE102021210432

BUNDESDRUCKEREI

Priority Date: 20/09/2021

ANGLE DEPENDENT PRINTED HIDDEN SECURITY ELEMENT

The invention relates to a security element (30) having a direction-dependent concealed security feature, comprising at least one substrate (22) and a print (35) which comprises functional pigments (3000), wherein the functional pigments (3000) comprise luminescent substances (3100) which can be excited with an excitation radiation (110) to emit luminescent radiation (150) in a first wavelength range (1200) and in a second wavelength range, wherein the functional pigments (3000) comprise a first interference structure (3400) and a second interference structure, wherein the first interference structure (3400) is assigned to the first wavelength range (1200) and the second interference structure (3500) is assigned to the second wavelength range (1300), and the interference structures (3400, 3500) are configured such that the detectable luminescence radiation (150) in the first wavelength range (1200) has a dependency on an excitation direction (120) of the one excitation radiation (110) and/or a dependency on a detection direction (220, 222) And the detectable luminescence radiation (150) in the second wavelength range (1300) show a dependency on the excitation direction (120) and/or a dependency on the detection direction (220, 222), wherein the excitation direction dependency and/or the detection direction dependency are different for the two wavelength ranges (1200, 1300).



CLAIM 1. A security element (30) with direction-dependent hidden security feature comprising at least one substrate (22) and a print (35) comprising functional pigments (3000), wherein the functional pigments (3000) comprise luminescent substances (3100), which can be excited with an excitation radiation (110) for emitting luminescence radiation (150) in a first wavelength range (1200) and in a second wavelength range, characterized in that In that the functional pigments (3000) comprise a first interference structure (3400) and a second interference structure, wherein the first interference structure (3400) is assigned to the first wavelength range (1200) and the second interference structure (3500) is assigned to the second wavelength range (1300), and the interference structures (3400, 3500) are configured such that the detectable luminescence radiation (150) in the first wavelength range (1200) has a dependency on an excitation direction (120) of the one excitation radiation (110) and/or a dependency on a detection direction (220, 222) And the detectable luminescence radiation (150) in the second wavelength range (1300) show a dependency on the excitation direction (120) and/or a dependency on the detection direction (220, 222), wherein the excitation direction dependency and/or the detection direction dependency are different for the two wavelength ranges (1200, 1300).

P36206

BRAND PROTECTION

CN218619430U

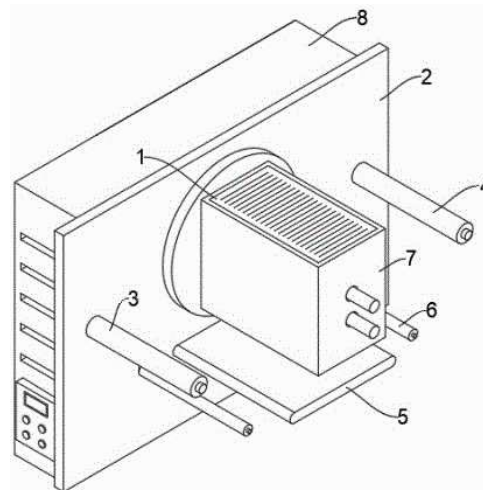
SHANTOU HENGSHUN PACKAGING MAT

Priority Date: 15/02/2023

HOLOGRAPHIC ANTI-COUNTERFEITING FILM FEEDING MECHANISM

A holographic anti-counterfeiting film feeding mechanism comprises embossing templates and a machine body, wherein a feeding roller and a winding roller are respectively arranged at two ends of one side portion of the machine body, a bottom plate is arranged in the middle of the machine body, guide rollers are arranged on two sides of the bottom plate, a rotating mechanism is arranged on the machine body and above the bottom plate and comprises a frame body, at least two embossing templates are symmetrically arranged at two ends of the frame body, the embossing templates close to the bottom plate are kept horizontal with the bottom plate, and a driving box for driving the feeding roller, the winding roller, the rotating mechanism and the two guide rollers to synchronously rotate is arranged on the side portion of the machine body; the utility model discloses a rotary mechanism sets up a plurality of impressed watermark templates, through a plurality of impressed watermark templates work in turn, reduces the continuation of single impressed watermark template work, improves the production quality to anti-fake membrane.

CLAIM 1. The utility model provides a holographic anti-fake film feed mechanism, includes embossing template (1), its characterized in that still includes organism (2), the both ends position of organism (2) lateral part is provided with feed roll (3) and wind-up roll (4) respectively, the middle part of organism (2) is provided with bottom plate (5), the both sides of bottom plate (5) all are provided with guide roll (6), on organism (2) and the top that is located bottom plate (5) is provided with rotary mechanism (7), rotary mechanism (7) include a framework (702), embossing template (1) is provided with two at least, and two embossing template (1) symmetry sets up the both ends at framework (702), and is close to embossing template (1) and bottom plate (5) the keeping level of bottom plate (5), the lateral part of organism (2) is provided with drive feed roll (3), wind-up roll (4), rotary mechanism (7) and two guide roll (6) synchronous pivoted drive case (8).



P36212

BRAND PROTECTION

CN218547808U

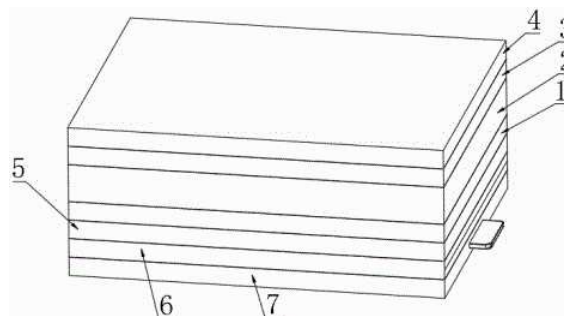
SHANTOU HENGSHUN PACKAGING MAT

Priority Date: 10/01/2023

HOLOGRAPHIC POSITIONING ANTI-COUNTERFEITING HOT STAMPING FILM

The utility model relates to an anti-fake thermoprint membrane technical field, concretely relates to holographic location anti-fake thermoprint membrane, including anti-fake layer, still including setting up in the last glue film of anti-fake layer bottom, set up in the peel ply of last glue film bottom and set up in the anti-fake piece of the inside of last glue film for carry out anti-fake work to anti-fake layer, the utility model discloses at the in-process that uses, even illegal vendor tears anti-fake layer from the genuine, because glue on the in-process upper glue film surface that tears no longer plays a role, and when reusing glue and pasting anti-fake layer, because last glue film is made by transparent material, glue that pastes the in-process again and uses can produce bright contrast with the inside remaining glue that has certain colour of last glue film, and then reaches anti-fake effect, has improved holographic location anti-fake thermoprint membrane's anti-fake effect.

CLAIM 1. The utility model provides an anti-fake thermoprinting film of holographic location, includes anti-fake layer (1), its characterized in that still includes: the anti-counterfeiting adhesive tape comprises a gluing layer (6) arranged at the bottom of an anti-counterfeiting layer (1), a stripping layer (7) arranged at the bottom of the gluing layer (6) and an anti-counterfeiting piece arranged inside the gluing layer (6) and used for performing anti-counterfeiting work on the anti-counterfeiting layer (1).



P36214

LUMINESCENCE

CN115819468

Priority Date: 26/12/2022

HUAZHONG UNIVERSITY OF SCIENCE & TECHNOLOGY

ORGANIC METAL COMPLEX, IMAGE STORAGE MATERIAL BASED ON ORGANIC METAL COMPLEX, AND PREPARATION AND APPLICATION OF IMAGE STORAGE MATERIAL

The invention belongs to the technical field of functional materials, and particularly relates to an organic metal complex, an image storage material based on the organic metal complex, and preparation and application of the organic metal complex. The dual image storage material is prepared by 0.1-10 parts by weight of organic metal complex, 20-75 parts by weight of high molecular binder, 20-75 parts by weight of photopolymerizable monomer and 0.1-5 parts by weight of photoinitiator through orthogonal photoreaction. The dual-image storage material can display a holographic image visible to naked eyes under natural light, and can display a luminescent image under ultraviolet light, and the color of the luminescent image can be accurately controlled by changing the content of the organic metal complex and/or the composition of the high-molecular adhesive. The dual-image storage material can be applied to the fields of high-end anti-counterfeiting, information storage, intelligent display and the like.



CLAIM 1. An organometallic complex characterized by having one of the structures Pt-1 and Pt-2 shown below: wherein R is 1 Is hydrogen, methyl, ethyl, trifluoromethyl, nitro, amino or phenyl; r 2 And R 3 Each independently is hydrogen or cyano; r 4 Is n-octyl, n-octyloxy, isooctyl, isooctyloxy, n-dodecyl, n-dodecyloxy, n-hexadecyl, n-hexadecyloxy, tetraethylene glycol group or citronellyl group; m is any integer of 1 to 5; n is 0 or 1; p is 0 or 1.

P36220

LABEL

CN115782375

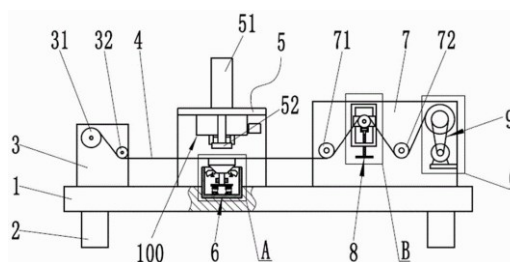
Priority Date: 03/11/2022

FUJIAN SANYUANXING TEXTILE TECHNOLOGY

HOLOGRAPHIC ANTI-COUNTERFEITING POSITIONING HOT STAMPING DETECTION EQUIPMENT

The invention discloses holographic anti-counterfeiting positioning hot stamping detection equipment, which relates to the technical field of anti-counterfeiting labels and comprises a base, an unreeling device, a hot stamping device, a tensioning mechanism, a detection mechanism and a reeling mechanism, wherein the unreeling device is arranged on a first support plate of the base; the winding mechanism is arranged on the second support plate, is arranged on the same side as the tensioning mechanism and is positioned at the right end of the tensioning mechanism; the anti-counterfeiting film is wound on the unwinding mechanism, penetrates through the hot stamping device and then sequentially winds through the tensioning mechanism and the winding mechanism, and finally is wound by the winding mechanism. The tension mechanism arranged on the base can integrally tighten the anti-counterfeiting film to prevent dislocation, and the bearing mechanism arranged on the base can provide buffer, so that the hot stamping quality is improved.

CLAIM 1. A holographic anti-counterfeiting positioning hot stamping detection device is characterized by comprising: a base (1); the unwinding device is arranged on a first support plate (3) of the base (1); the hot stamping device is fixed on a bracket (5) in the middle of the base (1); a detecting mechanism (100), the detecting mechanism (100) includes a mounting bracket (101), a screw mechanism and a pair of clamping mechanisms, the mounting bracket (101) is fixedly connected with the bracket (5), the screw mechanism includes a screw (102), a first nut (103) and a second nut (104), the screw (102) is rotatably disposed on the mounting bracket (101) and is controlled and driven by a knob (109), the first nut (103) is in threaded connection with a positive thread portion (1021) of the screw (102), the second nut (104) is in threaded connection with a negative thread portion (1022) of the screw (102), the pair of clamping mechanisms are respectively disposed on the first nut (103) and the second nut (104), the clamping mechanism includes a moving plate (105) and a clamping plate (107), the moving plate (105) is sleeved on the outer end of the first nut (103) or the second nut (104), and the moving plate (105) can be connected with a guide rod (106) of the mounting bracket (101), and the moving plate (105) is slidably connected with a lower end of the clamping plate (108) corresponding to the detecting mechanism (5) for fixedly connecting the camera with the clamping mechanism (105); the tensioning mechanism (8) is mounted on the second support plate (7) of the base (1); the winding mechanism (9) is arranged on the second support plate (7) and is positioned at the right end of the tensioning mechanism (8); the anti-counterfeiting film (4) is wound on the unwinding device, the anti-counterfeiting film (4) is thermoprinted by the thermoprinting device, and after being detected by the detection mechanism (100), the anti-counterfeiting film sequentially winds through the tensioning mechanism (8) and the winding mechanism (9), and finally is wound by the winding mechanism (9).



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

P36137

PRINTING – BANKNOTE – RELIEF

WO202342891

TOPPAN PRINTING

Priority Date: 16/09/2021

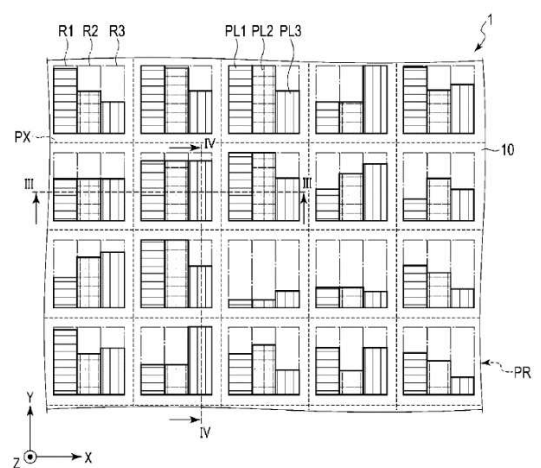
DISPLAY BODY

Provided is a technology capable of achieving a display body that does not require extremely high position accuracy in manufacturing, can be manufactured at relatively low cost, and produces a high forgery prevention effect. A display body (1) is provided with a base material (10) and pixels (PX). The pixels are arrayed in X and Y directions and have a dimension of 440 μm or less in the respective directions. Each pixel includes linear first to third regions (R1, R2, R3) each extending in the Y direction and arrayed in the X direction. At least a part of the pixel has a first coloring line (P1) in the first region, at least a part of the pixel has a second coloring line (PL2) exhibiting a color different from the first coloring line in the second region, and at least a part of the pixel has a third coloring line (PL3) exhibiting a color different from the first and second coloring lines. Each pixel is different from one or more other pixels in the dimension of one or more of the first to third coloring lines in the Y direction. Thus, a gradation display image is displayed.

CORPS D’AFFICHAGE

L’invention concerne une technologie capable d’obtenir un corps d’affichage qui ne nécessite pas une précision de position extrêmement élevée lors de la fabrication, peut être fabriqué à un coût relativement bas, et produit un effet de prévention de la contrefaçon élevé. Un corps d’affichage (1) est pourvu d’un matériau de base (10) et de pixels (PX). Les pixels sont déployés dans des directions X et Y et ont une dimension de 440 μm ou moins dans les directions respectives. Chaque pixel inclut des première à troisième régions linéaires (R1, R2, R3) s’étendant chacune dans la direction Y et déployées dans la direction X. Au moins une partie du pixel a une première ligne de coloration (P1) dans la première région, au moins une partie du pixel a une deuxième ligne de coloration (PL2) présentant une couleur différente de la première ligne de coloration dans la seconde région, et au moins une partie du pixel a une troisième ligne de coloration (PL3) présentant une couleur différente de la première et de la deuxième ligne de coloration. Chaque pixel est différent d’un ou de plusieurs autres pixels dans la dimension d’une ou de plusieurs des première à troisième lignes de coloration dans la direction Y. Ainsi, une image d’affichage à gradation est affichée.

CLAIM 1. A display device comprising: a base material; and a plurality of pixels disposed on the base material, wherein the plurality of pixels are arranged in first and second directions intersecting each other, a dimension in each of the first and second directions is 440 μm or less, each of the plurality of pixels extends in the second direction, and First to third linear regions arranged in the first direction, wherein at least some of the plurality of pixels are provided with first coloration lines extending across an entire width of the first region and extending in the second direction, and at least some of the plurality of pixels are provided with: The device according to claim 1, wherein a second coloration line extending across an entire width of the second region, extending in the second direction, and exhibiting a color different from a color of the first coloration line is provided in the second region, and at least some of the plurality of pixels are provided in the third region, extending across an entire width of the third region, and extending in the second direction, A third coloration line exhibiting a color different from that of the first and second coloration lines is provided, and each of the plurality of pixels is different from one or more others of the plurality of pixels in terms of one or more dimensions of the first to third coloration lines in the second direction, thereby displaying a gray-scale display image.

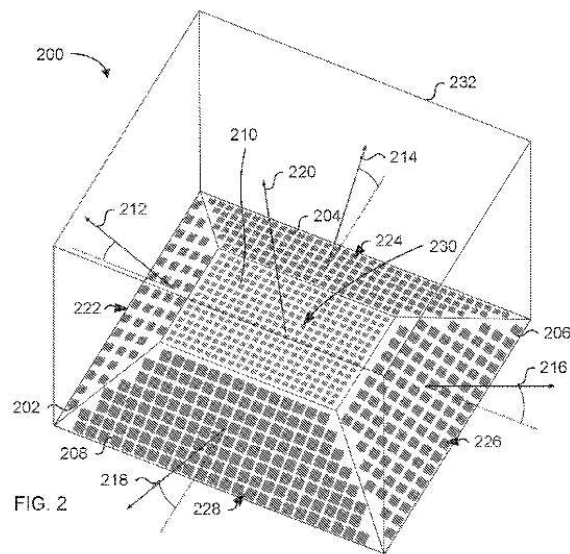


OPTICAL SECURITY DEVICE PROVIDING COLOR SWITCHING OR IMAGE SWITCHING EFFECT

Optical security features having pixels with faceted microstructures supporting nano-patterned optical filters are disclosed.

DISPOSITIF DE SÉCURITÉ OPTIQUE FOURNISSANT UN EFFET DE COMMUTATION DE COULEUR OU DE COMMUTATION D'IMAGE

L'invention concerne des caractéristiques de sécurité optique comportant des pixels ayant des microstructures à facettes supportant des filtres optiques à nano-motifs.



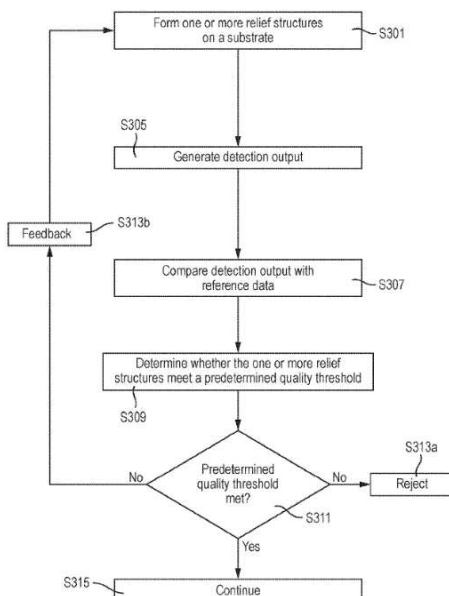
CLAIM 1. An optical security feature comprising: a plurality of pixels, each pixel comprising: a substrate configured to emit light of at least a first wavelength and a second wavelength different from the first wavelength; and a microstructure comprising a first facet and a second facet non-parallel to the first facet, the microstructure comprising: a first nano-patterned optical filter provided on the first facet, the first nano-patterned optical filter comprising a first stopband that includes the first wavelength and excludes the second wavelength; and a second nano-patterned optical filter provided on the second facet, the second nanopatterned optical filter comprising a second stopband that includes the second wavelength and excludes the first wavelength.

SECURITY DEVICES AND METHODS OF MANUFACTURE THEREOF

A method of manufacturing one or more relief structures for a security device is provided. The method comprises forming one or more relief structures on a substrate, wherein the one or more relief structures are each formed of at least one cured material comprising a machine readable substance; generating a detection output using a detector configured to detect the machine readable substance; and analysing the detection output to determine whether the one or more relief structures meet a predetermined quality threshold. A system for manufacturing one or more relief structures is also provided, as well as security devices comprising such relief structures.

DISPOSITIFS DE SÉCURITÉ ET LEURS PROCÉDÉS DE FABRICATION

L'invention concerne un procédé de fabrication d'une ou de plusieurs structures en relief pour un dispositif de sécurité. Le procédé consiste à former une ou plusieurs structures en relief sur un substrat, la ou les structures en relief étant chacune constituée d'au moins un matériau durci comprenant une substance lisible par machine ; à générer une sortie de détection à l'aide d'un détecteur configuré pour détecter la substance lisible par machine ; et à analyser la sortie de détection pour déterminer si la ou les structures en relief satisfont un seuil de qualité prédéfini. L'invention concerne également un système de fabrication d'une ou de plusieurs structures en relief, ainsi que des dispositifs de sécurité comprenant de telles structures en relief.



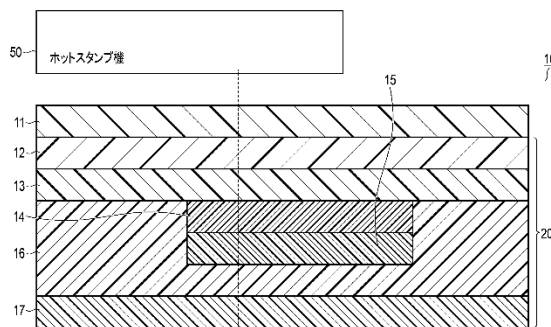
CLAIM 1. A method of manufacturing one or more relief structures for a security device, comprising: forming one or more relief structures on a substrate, wherein the one or more relief structures are each formed of at least one cured material comprising a machine readable substance; generating a detection output using a detector configured to detect the machine readable substance; and analysing the detection output to determine whether the one or more relief structures meet a predetermined quality threshold.

TRANSFER FOIL, TRANSFER ARTICLE, DISPLAY BODY, METHOD AND DEVICE FOR VERIFYING AUTHENTICITY OF DISPLAY BODY, AND INDIVIDUAL AUTHENTICATION METHOD

In this transfer foil, a transfer material layer and a support body for releasably supporting the transfer material layer are laminated. A first release strength at a first temperature when the transfer material layer is released from the support body is 0.1-0.3 gf/mm. The difference between the first release strength and a second release strength at a second temperature that is higher than the first temperature and lower than a transfer temperature when the transfer material layer is released from the support body is 0.05-0.2 gf/mm.

FEUILLE DE TRANSFERT, ARTICLE DE TRANSFERT, CORPS D’AFFICHAGE, PROCÉDÉ ET DISPOSITIF POUR VÉRIFIER L’AUTHENTICITÉ D’UN CORPS D’AFFICHAGE, ET PROCÉDÉ D’AUTHENTIFICATION INDIVIDUELLE

Dans la feuille de transfert selon l'invention, sont stratifiés une couche de matériau de transfert et un corps de support pour supporter amovible la couche de matériau de transfert. Une première force de libération à une première température lorsque la couche de matériau de transfert est libérée du corps de support est de 0,1 à 0,3 gf/mm. La différence entre la première force de libération et une seconde force de libération à une seconde température qui est supérieure à la première température et inférieure à une température de transfert lorsque la couche de matériau de transfert est libérée du corps de support est de 0,05 à 0,2 gf/mm.



50 Hot stamper

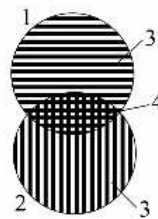
CLAIM 1. A transfer foil including an imprint material layer and a supporter that releasably supports the imprint material layer, wherein a first peel strength at a first temperature when peeling the imprint material layer from the supporter is 0.1gf/mm or greater and 0.3gf/ mm or less, and a difference between a second peel strength at a second temperature higher than the first temperature and lower than the transfer temperature and the first peel strength at the time of peeling the transfer material layer from the backing is 0.05gf/mm or greater and 0.2gf/mm or less.

PROTECTED INFORMATION CARRIER WITH OPTICALLY VARIABLE EFFECT AND METHOD FOR ITS MANUFACTURE

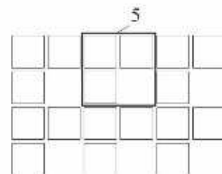
FIELD: security printing.

SUBSTANCE: inventions group relates to the field of security printing and can be used in the manufacture of banknotes, securities, passports and other security printing products. A secure information carrier with an optically variable effect includes a paper, polymer or combined base containing a zone with a regular and/or irregular dot pattern applied. Moreover, the points that make up the raster structure are made in the form of geometric shapes containing straight, broken, curvilinear lines, several colours, and in the area of the raster structure, a three-dimensional raster is applied, made by the method for intaglio colourless embossing, and/or relief embossing, and/or blind embossing, and/or relief printing, and when observing the zone at an angle of 90° from the plane of the information carrier, a uniformly coloured field is visible with a colour resulting from the synthesis of dot structure inks. At the same time, when observing the zone at an acute angle on a uniform field of the protective carrier, the first image is seen, uniformly coloured by colour or stripes alternating in different colours, in addition, when observing the zone of the information carrier at an acute angle and rotated by 90° , the first image changes to the second image uniformly coloured with a colour different from the colour of the first image, or stripes alternating in different colours, different from the colour of the stripes of the first image and changing the orientation of the alternating stripes on the plane of the information carrier.

EFFECT: creation of a new security printing technology, expansion of the arsenal of technical means for creating visual security features based on various visual effects.



Фиг. 1



Фиг. 2

CLAIM 1. An optical variable-variable media containing a paper, polymer or combined base containing a point with a point raster regular and/or irregular structure, with the raster points being carried out as geometric figures containing straight, broken, crank lines, several colors and a threedimensional plant in the tensile area of the structure, with the method of metal-contour painting and/or conjugation, and/or oblique printing and/or marking, with the zone observing 90° from the plane of the information medium in an evenly colored field resulting from the synthesis of the point structure paints, and when monitoring the zone at an acute angle on the uniform protective holder field; first image is visible, equal colored or colored in different colors, in addition to observing the media area at a sharp angle and a turn of 90° the first image is changed to the second image, uniformly colored in color different from the first image, or alternating color different from the color of the first image, or alternating in color, different from the color of the stripes of the first image, and changing the orientation of alternating stripes on the plane of the information medium, with the 3-D plant formed by the overlap of two performed with parallel multiple elements of the grid so that the lattices overlap between 5-95% of the three-dimensional tensile area in such a way that the closing of the bars forms a site or sections mutually perpendicular to the elements of each of the components of the two lattices or the reciprocal arrangement of the elements of each of the two arrays at an angle of between 0.02° and 89.8° and the other part of the three-dimensional ferret is formed by the non-overlapping parts of the lattices with their unidirectional elements of 5-95% of the three-dimensional tensile area, with unidirectional elements having no horizontal or vertical angle formation, respectively, or situated at an angle of 0.02° to 89.8° horizontal or vertical, respectively.

P36155

PRINTING – INK – LUMINESCENCE

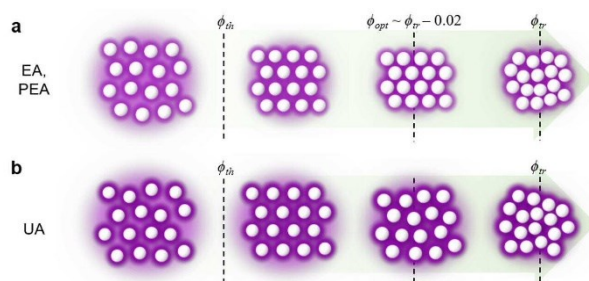
KR20230033409

Priority Date: 01/09/2021

KOREA ADVANCED INSTITUTE OF SCIENCE & TECHNOLOGY

INK COMPOSITION FOR DIRECT PRINTING OF STRUCTURED COLOR STRUCTURES AND METHOD FOR PRODUCING STRUCTURED COLOR STRUCTURES USING THE SAME

An ink composition for direct-writing structured structures, said ink composition comprising silica particles dispersed within a polymer, said polymer being capable of hydrogen bonding with said silica particles, said silica particles being capable of hydrogen bonding within said ink composition at ϕ_{tr} - 0.05 to ϕ_{tr} - 0.01, and wherein the ink composition does not comprise a volatile solvent, wherein ϕ_{tr} (Silver solid state transition volume fraction of the ink composition) is disclosed. The ink composition for direct printing of structure color structures provided in one aspect of the present invention can be easily manufactured in a tailored manner to conform to various shapes to be manufactured, and printing can be performed without limitation on a substrate. In addition, in the case of manufacturing a structure color structure using the same, unlike conventional processes, it is possible to manufacture the structure color structure in a short time since evaporation of the dispersion medium is not required, it has high viscoelasticity, it is easy to control the flow rate and print at a fast speed, and it is possible to manufacture a photonic crystal structure or a photoglass structure by adjusting the viscosity of the dispersion medium according to desired characteristics.



In addition, in the case of manufacturing a structure color structure using the same, unlike conventional processes, it is possible to manufacture the structure color structure in a short time since evaporation of the dispersion medium is not required, it has high viscoelasticity, it is easy to control the flow rate and print at a fast speed, and it is possible to manufacture a photonic crystal structure or a photoglass structure by adjusting the viscosity of the dispersion medium according to desired characteristics.

CLAIM 1. An ink composition for direct-writing structured structures, said ink composition comprising silica particles dispersed within a polymer, said polymer being capable of hydrogen bonding with said silica particles, said silica particles being capable of hydrogen bonding within said ink composition at ϕ_{tr} - 0.05 to ϕ_{tr} - 0.01, and wherein the ink composition does not comprise a volatile solvent, wherein ϕ_{tr} (Silver solid state transition volume fraction of the ink composition).

P36169

PRINTING – CARD – PASSPORT – INFRARED

JP2023026824

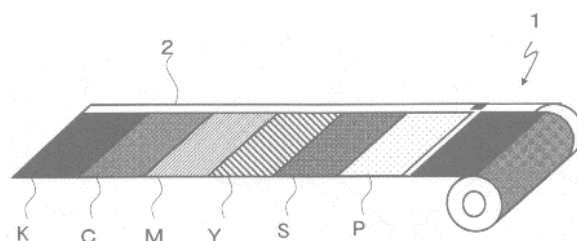
Priority Date: 16/08/2021

TOPPAN PRINTING

INFORMATION RECORDING MATERIAL AND THERMOSENSITIVE TRANSFER MEDIUM

TOPIC: To provide an information recording material such as a brochure or card such as a passport or an assessment that requires high security, the information recording material having a high anti-counterfeiting effect and having an image for which authenticity can be easily determined, and a thermosensitive transfer medium used for producing the information recording material. INVENTION: An information recording material obtained by laminating a first protective layer, a laser coloring layer, a core layer, a second protective layer, and an overlay layer in this order, the first protective layer, the laser coloring layer, the core layer, the second protective layer, and the overlay layer each containing a plastic sheet, wherein the overlay layer contains at least a first security design on demand by an infrared-transparent ink, and the first design and the second security design are combined with each other; A second security design on which an image is formed on demand by laser engraving on the laser coloring layer can display security design information that varies depending on an observation angle; and a thermosensitive transfer medium for manufacturing the same.

CLAIM 1. An information recording material obtained by laminating a first protective layer, a laser coloring layer, a core layer, a second protective layer, and an overlay layer in that order, each of the first protective layer, the laser coloring layer, a core layer, a second protective layer, and an overlay layer comprising at least a first security design on demand an infrared-transmitting ink; An image obtained by superimposing the first design and a second security design on which an image is formed on demand by laser engraving on the laser coloring layer can display security design information that varies depending on an observation angle.



P36175

FR3126793

Priority Date: 07/09/2021

GUIGAN FRANCK

AUTHENTICATION METHOD AND APPARATUS

The invention is an optical authentication method and device for authenticating a product or document. It can be used conventionally by taking the difference between two successive photographic acquisitions carried out with and without flash but also without having to use the flash. It consists in selecting in a first so-called subsequent description of the authentication device a part of the image of the device which resembles the same part of the device in a so-called original description carried out before the authentication procedure. The resemblance is established by comparing elementary parts of this surface in the two original and subsequent descriptions, and/or so-called graphical boundary lines between zones having different brightness and/or colour characteristics.

PROCÉDÉ ET DISPOSITIF D'AUTHENTIFICATION

L'invention est un procédé et un dispositif d'authentification optique qui permettent d'authentifier un produit ou un document. Elle peut être utilisée de façon classique en faisant la différence entre deux acquisitions photographiques successives réalisées avec et sans flash mais aussi sans avoir à utiliser le flash. Elle consiste à sélectionner dans une première description dite ultérieure du dispositif d'authentification une partie de l'image du dispositif qui ressemble à la même partie du dispositif dans une description dite originale réalisée avant la procédure d'authentification. La ressemblance est établie en comparant des parties élémentaires de cette surface dans les deux descriptions originale et ultérieure, et/ou des lignes dites de frontière graphique entre des zones présentant des caractéristiques différentes de luminosité et/ou de couleur.



CLAIM 1. Of authentication of an authentication device (11) which can visually present several possible appearances depending on the viewpoint under which it is observed or depending on the illumination to which it is subjected, comprising parts called elementary parts, some (111, 112 et seq.) disturb the reflection and/or transmission of the light, characterized in that it comprises: - a step 1 which is the establishment of a description called original description with a means of acquisition from a position called original position, comprising the selection of lines called graphic boundary lines, it being specified that graphic boundary lines are understood to mean boundaries between zones having different brightness and/or colour characteristics - a step 2 which is the establishment with photographic acquisition means placed in a position referred to as the subsequent position of a description of the authentication device referred to as the subsequent description, - a step 3 consisting in selecting in said subsequent description so-called graphical boundary lines similar to said graphical boundary lines of said original description.

P36176

FR3126531

Priority Date: 30/08/2021

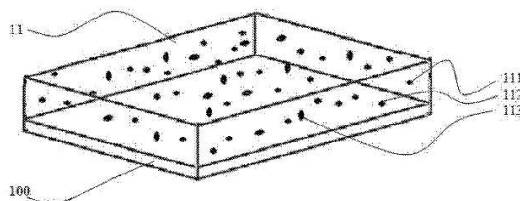
GUIGAN FRANCK

AUTHENTICATION METHOD

The invention is an optical authentication method and device which make it possible to authenticate a product or a document from a single shot, without having to use the flash. The basic principle is that if the light emitted by the light source used to establish a so-called subsequent description is reflected towards the acquisition means by a certain number of optical disturbers of the authentication device, and that if this disturber already sent back to the acquisition means the light coming from the light source used to establish the so-called original description, other disturbers who have already returned to the acquisition means the light coming from the light source used to establish the so-called original description must also return to the acquisition means the light coming from the light source used to establish the so-called subsequent description.

PROCÉDÉ D'AUTHENTIFICATION

L'invention est un procédé et un dispositif d'authentification optique qui permettent d'authentifier un produit ou un document à partir d'une seule prise de vue, sans avoir à utiliser le flash. Le principe de base est que si la lumière émise par la source de lumière utilisée pour établir une description dite ultérieure est réfléchiée vers le moyen d'acquisition par un certain nombre de perturbateurs optiques du dispositif d'authentification, et que si ce perturbateur renvoyait déjà vers le moyen d'acquisition la lumière issue de la source de lumière utilisée pour établir la description dite originale, d'autres perturbateurs qui renvoyaient déjà vers le moyen d'acquisition la lumière issue de la source de lumière utilisée pour établir la description dite originale doivent aussi renvoyer vers le moyen d'acquisition la lumière issue de la source de lumière utilisée pour établir la description dite ultérieure.



CLAIM 1. A method for authenticating an authentication device (11), the appearance of which changes according to the viewpoint under which it is observed or according to the illumination to which it is subjected, comprising so-called disturbing elements (111, 112 et seq.) disturbing the light, consisting in establishing with an acquisition means a so-called subsequent description of the authentication device and in comparing this subsequent description with a so-called original description of the authentication device, the original description comprising the list of several of the disturbers returning to the acquisition means the light coming from a light source called original source, under which the acquisition was carried out having served to carry out said description, characterized in that the comparison consists in verifying that as soon as one of the disruptors forming part of said list returns to the acquisition means the light source under which the subsequent description was acquired referred to as the subsequent source, at least one other of the disturbers belonging to the list also sends back to the acquisition means the light emitted by said subsequent source.

P36177

PATENT OF THE MONTH PRINTING – BANKNOTE – CARD – THREAD – RELIEF – THERMOCHROMY

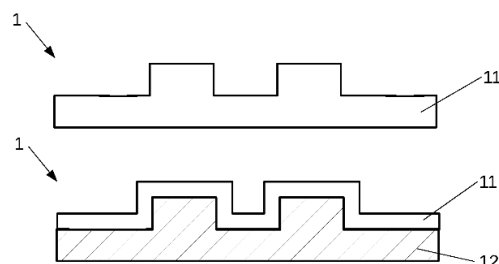
EP4151426

Priority Date: 21/09/2021

LEONHARD KURZ STIFTUNG

THERMOCHROMIC SECURITY ELEMENT AND METHOD FOR PRODUCING A THERMOCHROMIC SECURITY ELEMENT

The invention relates to a security element (1) and to a method for producing a security element (1). The security element (1), in particular a security strip or a security thread or a Patch or a transfer film (2) or a laminating film or a print for securing security documents (3), comprises at least one thermochromic element (11), wherein i) the at least one thermochromic element (11) has haptic properties; and/or ii) the security element (1) has at least one haptic layer (12).



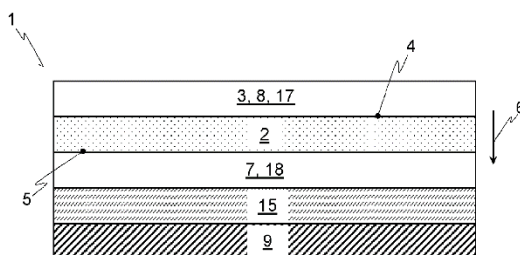
CLAIM 1. A security element (1), in particular a security strip or a security thread or a Patch or a transfer film (2) or a laminating film or a print for securing security documents (3), characterized in that, characterized in that the security element (1) has at least one thermochromic element (11), wherein i) the at least one thermochromic element (11) has haptic properties; and/or ii) the security element (1) has at least one haptic layer (12).

SECURITY LABEL

Security label (1) having a plurality of layers, comprising - a laser-writable layer (2) with black aluminium oxide, wherein the laser-writable layer (2) has an upper side (4) and a lower side (5) which are arranged opposite one another and point away from one another, - at least one transparent protective layer (3), which viewed in a first direction (6) is arranged in front of the laser-inscribable layer (2) in order to protect the laser-inscribable layer (2) from external influences, wherein the first direction (6) points from the upper side (4) to the lower side (5), and - a contrast layer (7) which viewed in the first direction (6) is arranged behind the laser-inscribable layer (2). According to the invention, provision is made for at least one of the plurality of layers to be formed as a fracture layer (8) from a brittle plastic film in order to prevent destruction of the at least one fracture layer (8) and of the laser-inscribable layer (2), and optionally one or more intermediate layers, in the event of Manipulation or detachment of the security label (1) adhered to a substrate (9).

ÉTIQUETTE DE SÉCURITÉ

L'invention concerne une étiquette de sécurité (1) à couches multiples, comprenant : - une couche inscriptible au laser (2) à oxyde d'aluminium noir, ladite couche inscriptible au laser (2) ayant une face supérieure (4) et une face inférieure (5) qui sont disposées en regard l'une de l'autre et qui sont éloignées l'une à l'autre, - au moins une couche de protection transparente (3) qui est disposée devant la couche inscriptible au laser (2) lorsqu'elle est vue dans une première direction (6) afin de protéger la couche inscriptible au laser (2) des influences externes, la première direction (6) faisant face de la face supérieure (4) à la face inférieure (5), et - une couche de contraste (7) qui est disposée derrière la couche inscriptible au laser (2) lorsqu'elle est vue dans la première direction (6). Selon l'invention, au moins une couche parmi la pluralité de couches se présente sous forme de couche de rupture (8) qui est constituée d'un matériau plastique cassant afin de provoquer la destruction des couches de rupture (8) et de la couche inscriptible au laser (2), et éventuellement d'une ou plusieurs couches se trouvant entre la couche de rupture et la couche inscriptible au laser, lorsque l'étiquette de sécurité (1) collée sur une surface sous-jacente (9) est manipulée ou retirée.



CLAIM 1. A security label (1) having multiple layers comprising- a laser-inscribable layer (2) with black aluminium oxide, wherein the laser-inscribable layer (2) has an upper side (4) and a lower side (5) which are arranged opposite one another and point away from one another, - at least one transparent protective layer (3) which is arranged in front of the laser-writable layer (2) as seen in a first direction (6) in order to protect the laser-writable layer (2) from external influences, wherein the first direction (6) points from the upper side (4) to the lower side (5), and - a contrast layer (7) which, viewed in the first direction (6), is arranged behind the laser-inscribable layer (2), characterized in that at least one of the plurality of layers is formed as a fracture layer (8) made of a brittle plastic film in order to cause destruction of the at least one fracture layer (8) and of the laser-writable layer (2), and optionally of one or more intermediate layers, in the event of Manipulation or detachment of the security label (1) adhesively bonded to a substrate (9).

P36182

PRINTING – LABEL – BRAND PROTECTION – TAMPER EVIDENCE

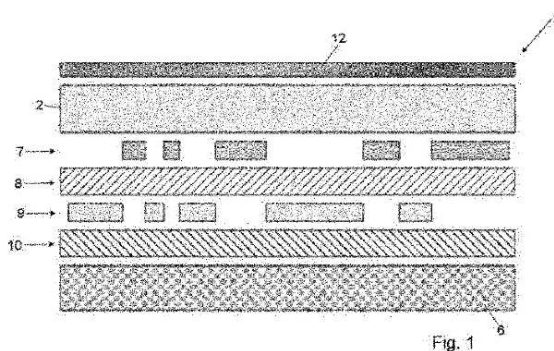
EP4141848

SCRIBOS

Priority Date: 31/08/2021

MULTILAYER SEALING LABEL WITH INITIAL OPENING DETECTION AND A METHOD FOR ITS MANUFACTURE

The invention relates to a multilayer sealing label with a first opening detection system with a first adhesion-controlling layer (7) applied along a carrier layer (2), a first colour layer (8) applied along the first adhesion-controlling layer (7), a second adhesion-controlling layer (9) applied along the first colour layer (8), which is formed at least in regions in register with the first adhesion-controlling layer (7), a second ink layer (11) applied along the second adhesion-controlling layer (9), wherein a pigment-containing transparent on-top layer (12) is applied on the outside along the carrier layer (2).



CLAIM 1. Multilayer sealing label having a first opening detection means with a first adhesion-controlling layer (7) applied along a carrier layer (2), a first ink layer (8) applied along the first adhesion-controlling layer (7), a second adhesion-controlling layer (9) which is applied along the first ink layer (8) and is formed at least in regions in register with the first adhesion-controlling layer (7), a second ink layer (11) applied along the second adhesion-controlling layer (9), characterized in that a pigment-containing transparent on-top layer (12) is applied on the outside along the carrier layer (2).

P36184

LABEL – TAMPER EVIDENCE

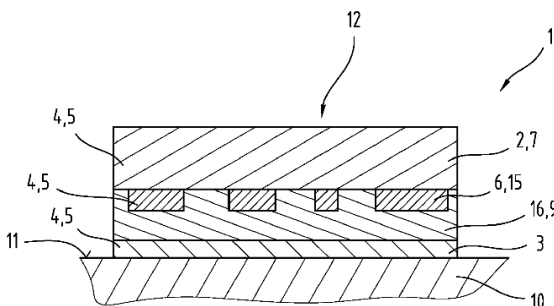
EP4141081

HUECK FOLIEN

Priority Date: 30/08/2021

ADHESIVE ELEMENT

The invention relates to an adhesive element (1) comprising a carrier substrate (2) and an adhesive layer (3) arranged on the carrier substrate (2). According to the invention, the adhesive element (1) comprises at least one recycled material (4), and/or at least one material consisting of renewable raw materials, and/or at least one biologically and/or marine-degradable material (5).



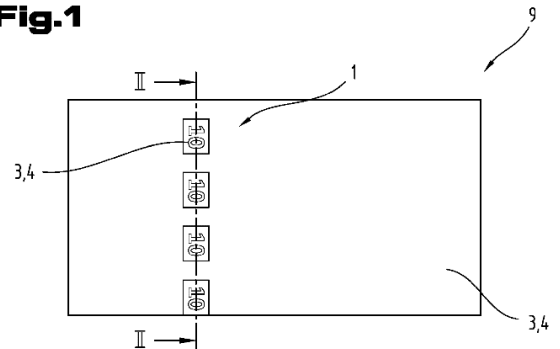
CLAIM 1. Adhesive element (1), comprising a carrier substrate (2) and an adhesive layer (3) arranged on the carrier substrate (2), characterized in that the adhesive element (1) comprises at least one recycled material (4), and/or at least one material of renewable raw materials, and/or at least one biologically and/or marine-degradable material (5).

SECURITY ELEMENT FOR VALUABLE DOCUMENTS OR SECURITY DOCUMENTS

The invention relates to a security element (1), a polymer substrate (8), and a value document or security document. The security element (1) for value documents or security documents comprises at least one security feature (2), wherein it is provided that the security element (1) comprises at least one recycled material (3), and/or at least one material from renewable raw materials, and/or at least one biologically and/or marine-degradable material (4).

ÉLÉMENT DE SECURITE POUR DOCUMENTS DE VALEUR OU DOCUMENTS DE SECURITE

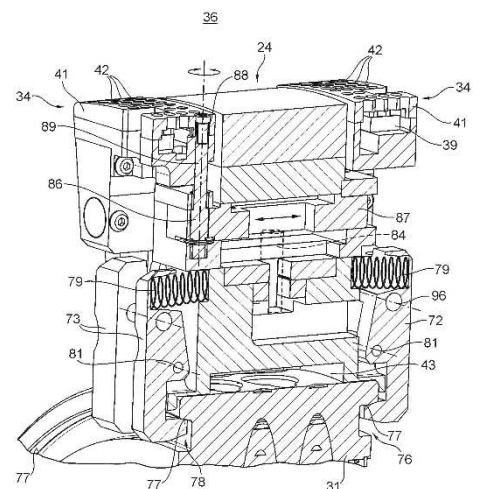
L'invention concerne un élément de sécurité (1), un substrat polymère (8) ainsi qu'un document de valeur ou un document de sécurité. L'élément de sécurité (1) pour des documents de valeur ou des documents de sécurité comprend au moins une caractéristique de sécurité (2). Selon l'invention, l'élément de sécurité (1) comprend au moins un matériau recyclé (3) et/ou au moins un matériau constitué de matières premières renouvelables et/ou au moins un matériau (4) biodégradable et/ou dégradé en milieu marin.

Fig.1

CLAIM 1. A security element (1) for value documents or security documents having at least one security feature (2), characterized in that the security element (1) comprises at least one recycled material (3), and/or at least one material of renewable raw materials, and/or at least one biologically and/or marine-degradable material (4).

DEVICE FOR ALIGNING MAGNETIC OR MAGNETIZABLE PARTICLES AND MACHINE FOR PRODUCING OPTICALLY VARIABLE IMAGE ELEMENTS

The invention relates to a device for aligning magnetic or magnetizable particles contained in coating agents on a substrate with a cylinder, which comprises, in the region of its outer circumference, in a matrix-like manner, elements providing a number of $n \times m$ magnetic fields, in short magnetic elements, which are arranged in n rows running parallel to the axis and in m columns running in the circumferential direction, wherein at least two or all magnet elements provided one behind the other in the same column are mounted as a group on or on a common support element and can be varied together with the latter and independently of the magnet elements of an adjacent column with respect to their axial position in or on the cylinder. The at least two or all magnetic elements of the same gap are arranged on respective magnetic element carriers which can be positioned independently of one another in the circumferential direction on the common carrying element and/or can be released from the carrying element, and are mounted on the relevant magnetic element carrier such that they can be adjusted relative to the latter in the axial direction within an adjustment range. The invention also relates to a machine for producing optically variable image elements on a substrate.



CLAIM 1. An apparatus for aligning magnetic or magnetizable particles (P) contained in coating agents (06) on a substrate (02), comprising a cylinder (26), in the region of its outer circumference, comprises in matrix-like manner a number of $n \times m$ (in words n times m ; with $N, m \in n > 1$) elements (24), short magnet elements (24), which provide magnetic fields and are arranged in n rows running axially parallel and in m columns running in the circumferential direction, wherein at least two or all magnet elements (24) provided one behind the other in the same column are mounted as a group on or on a common support element (31) and can be varied together with the latter and independently of the magnet elements (24) of an adjacent column with respect to their axial position in or on the cylinder (26), characterized in that in that the at least two or all magnet elements (24) of the same gap are arranged at respective, which can be positioned independently of one another in the circumferential direction on the common supporting element (31) and/or can be released from the supporting element (31), and are mounted on the relevant magnetic element carrier (37) so as to be adjustable relative to the latter in the axial direction within an adjustment range.

P36188

PRINTING – BANKNOTE – MAGNETISM

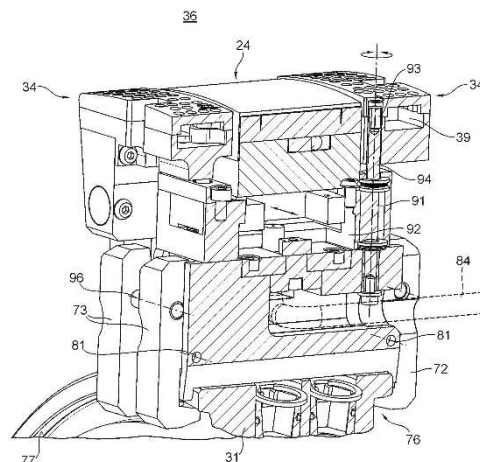
DE102022109034

KOENIG & BAUER

Priority Date: 13/04/2022

DEVICE FOR ALIGNING MAGNETIC OR MAGNETIZABLE PARTICLES AND MACHINE FOR PRODUCING OPTICALLY VARIABLE IMAGE ELEMENTS

The invention relates to a device for aligning magnetic or magnetizable particles contained in coating agents on a substrate with a cylinder, which comprises, in the region of its outer circumference, in a matrix-like manner, elements providing a number of n x m magnetic fields, in short magnetic elements, which are arranged in n rows running parallel to the axis and in m columns running in the circumferential direction, wherein at least two magnet elements provided one behind the other in the same column are arranged on or in magnet element carriers which are different from one another and can be positioned independently of one another on the cylinder in the circumferential direction. The at least two magnet elements arranged on the respective magnet element carriers are mounted so as to be adjustable in the circumferential direction within an adjustment range relative to the magnet element carrier carrying the magnet element. The invention also relates to a machine for producing optically variable image elements on a substrate.



CLAIM 1. An apparatus for aligning magnetic or magnetizable particles (P) contained in coating agents (06) on a substrate (02), having a cylinder (26) which, in the region of its outer circumference, comprises elements (24), in short magnetic elements (24), which provide magnetic fields in a matrix-like manner a number of n x m (in words n times m; with N, m ∈ n > 1), which are arranged in n rows running axially parallel and in m columns running in the circumferential direction, at least two magnet elements (24) provided one behind the other in the same column being arranged on or in magnet element carriers (37) which are different from one another and can be positioned independently of one another on the cylinder (26) in the circumferential direction, characterized in that In that the at least two magnet elements (24) arranged on the respective magnet element carriers (37) are mounted so as to be adjustable in the circumferential direction within an adjustment range relative to the magnet element carrier (37) carrying the magnet element (24).

P36191

BANKNOTE – CARD – THREAD – RELIEF – MICROLENS

DE102021123069

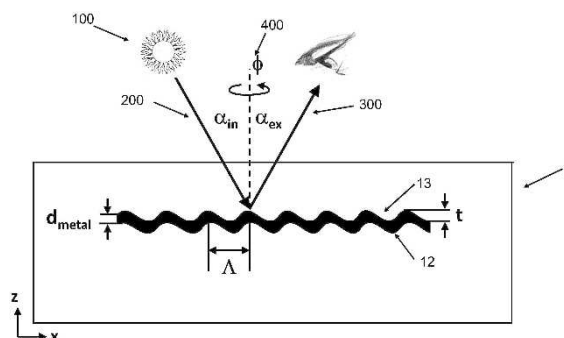
OVD KINEGRAM

Priority Date: 07/09/2021

FUNCTIONAL ELEMENT, A METHOD FOR PRODUCING A FUNCTIONAL ELEMENT AND A PRODUCT

The invention relates to a functional element (2) comprising at least one first relief structure (13) in at least one first region (21) and at least one metal layer (12) arranged in at least one partial region of the at least one first relief structure (13) and optionally a preferably polymeric dielectric layer on the side of the metal layer (12) facing the viewer, wherein the at least one first relief structure 13 has a periodic variation in the x and y direction of elevations and depressions, wherein the elevations follow one another with a grating period Λ , which is smaller than a wavelength of the light visible to the human eye, wherein the Minima of the depressions define a base area and wherein the at least one first relief structure 13 has a relief depth t. The invention further relates to a method for producing or modifying a surface and to a product 1 comprising such a functional element 2.

CLAIM 1. Functional element (2) comprising at least one first relief structure (13) in at least one first region (21) and at least one metal layer (12) arranged in at least one partial region of the at least one first relief structure (13), characterized in that In that optionally a preferably polymeric dielectric layer is arranged on the side of the metal layer (12) facing the viewer, wherein the at least one first relief structure (13) has a periodic variation in x- and y-direction of elevations and depressions, wherein the elevations follow one another with a grating period Λ which is smaller than a wavelength of the light visible to the human eye, wherein the Minima of the depressions define a base area and wherein the at least one first relief structure (13) has a relief depth t.



P36203

**PRINTING – CARD – LABEL – BRAND PROTECTION –
LUMINESCENCE – RELIEF – MICROLENS**

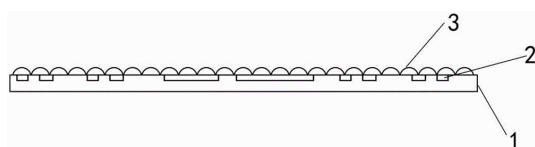
CN218631124U

Priority Date: 18/08/2022

**CHINA SECURITY ANTI COUNTERFEIT CERTIFICATE
DEVELOPMENT CENTER**

LENS IMAGE-TEXT COMPOSITE STRUCTURE AND ANTI-COUNTERFEITING PRODUCT

The utility model discloses a lens picture and text composite structure, which comprises a first part and a second part, wherein the first part and the second part are combined together in a heat seal mode, and the first part comprises a picture and text bearing part; the second component includes a lens. The utility model discloses a lens picture and text integrated configuration includes microlens and little picture and text. The utility model also discloses an include lens picture and text integrated configuration's anti-fake product. The utility model does not need adhesive coating, the lens picture and text composite structure can not be split, the service life of the lens picture and text composite structure is prolonged, the anti-counterfeiting effect of anti-tampering, copying or replacement is achieved, and the dynamic display effect is also achieved; the micro-graph and text are obtained by a printing mode, and the used pigment contains anti-counterfeiting particles such as fluorescence and the like, so that the anti-counterfeiting effect is further improved; when the micro-pattern is used as an anti-counterfeiting certificate, the micro-pattern and the certificate pattern can be printed simultaneously, the printing is convenient and fast, and the micro-pattern and the certificate pattern are formed at one time during certificate making.



CLAIM 1. A lens picture and text composite structure is characterized in that: the picture and text combined type mobile phone comprises a first part and a second part, wherein the first part and the second part are combined together in a heat sealing mode, and the first part comprises pictures and texts and a picture and text bearing part; the second component includes a lens.

P36208

MAGNETISM

CN218601868U

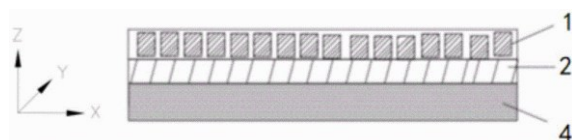
Priority Date: 19/08/2022

BEIJING KESIYUAN TECHNOLOGY

MULTILAYER MAGNETIC SHEET ANTI-COUNTERFEITING STRUCTURE

The utility model relates to a multilayer magnetic sheet anti-counterfeiting structure, which at least comprises a substrate layer and at least two magnetic sheet layers in partial areas, wherein in an XYZ coordinate system, the substrate layer is parallel to an XY plane; the human eye observes from the opposite direction of the Z axis and sequentially comprises a first magnetic sheet layer and a second magnetic sheet layer; the surface of the magnetic sheet of the first magnetic sheet layer is vertical to the XY plane and parallel to the ZX plane; the magnetic sheet surface of the second magnetic sheet layer is vertical to the ZX plane; the substrate layer is located the Z axle positive direction side of first magnet piece layer, or between first magnet piece layer and second magnet piece layer, or the Z axle negative direction side of second magnet piece layer. The utility model discloses not only can see different visual characteristics when the switching direction is observed in the coplanar, can also see other visual characteristics when switching different planar observations, but also guaranteed that the magnetic sheet of first magnet layer does not influence the display of the visual characteristics on other layers.

CLAIM 1. A multilayer magnetic sheet anti-counterfeiting structure is characterized by comprising a substrate layer and at least two magnetic sheet layers in at least partial areas, wherein in an XYZ coordinate system, the substrate layer is parallel to an XY plane; a first magnetic sheet layer and a second magnetic sheet layer are sequentially arranged along the opposite direction of the Z axis; the surface of the magnetic sheet of the first magnetic sheet layer is vertical to the XY plane and parallel to the ZX plane; the magnetic sheet surface of the second magnetic sheet layer is vertical to the ZX plane; the substrate layer is located the Z axle positive direction side of first magnet piece layer, or between first magnet piece layer and second magnet piece layer, or the Z axle negative direction side of second magnet piece layer.



P36209

INCLUSION – ANTI-COUNTERFEITING FIBER

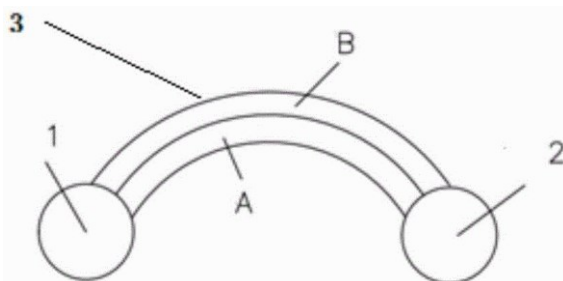
CN218596762U

BEIJING KESIYUAN TECHNOLOGY

Priority Date: 21/09/2022

ANTI-COUNTERFEITING FIBER AND ANTI-COUNTERFEITING PAPER OR PAPERBOARD

The anti-counterfeiting fiber and the anti-counterfeiting paper or the paperboard are obtained by cutting flat strip-shaped fibers; the geometric shape of the anti-counterfeiting fiber can ensure that the cutting surface is parallel to the paper surface after the anti-counterfeiting fiber forms paper in the papermaking process; the cutting surface of the anti-counterfeiting fiber at least comprises two materials A and B with different heat shrinkage rates, and the materials A and B extend in parallel along the length direction to form a bending section capable of being bent by heat; in the length direction, the heat shrinkage rate of the material A is larger than that of the material B, and the hot bending direction of the bending section can be bent towards the inner surface of the material A to form the bending deformation visual characteristic. The utility model discloses the realization basis of effect utilizes: multiple-component melt spinning of long strips plus cross-sectional slices of knife-cut long strips (thickness usually not more than 0.2 mm) + visual features represents the combined effect of different heat-shrinkable materials forming local segments of fiber curvature across the cross-section.



CLAIM 1. The anti-counterfeiting fiber is characterized in that the anti-counterfeiting fiber is obtained by cutting flat strip-shaped fibers with a knife; the cutting surface of the anti-counterfeiting fiber at least comprises two materials with different heat shrinkage rates, and the two materials are juxtaposed and extend along the length direction to form a bending section capable of being bent by heat; the two materials differ in thermal shrinkage in the lengthwise direction.

P36210

BRAND PROTECTION – IRISATION

CN218593832U

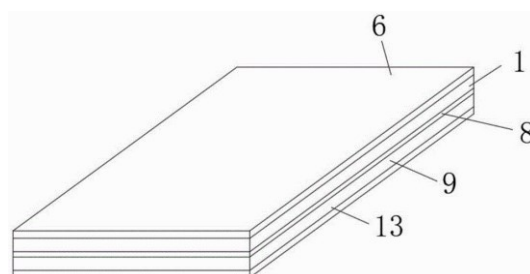
LONGGANG YONGSHENG ELECTRONICS

Priority Date: 27/07/2022

COLORED-DIZZY RADIUM-SHINE TRANSFER LINE PAPER OF PEARLY-LUSTRE

The utility model discloses a radium-shine transfer emboss paper of various dizzy pearly-lustre, including base paper layer, base paper layer's inside is provided with the polyurethane layer, the bottom on polyurethane layer is connected with the aluminium lamination, the bottom of aluminium lamination is connected with the pearly-lustre layer, the bottom on pearly-lustre layer is connected with radium-lustre layer, base paper layer's upper surface is connected with various dizzy pearly-lustre coating, the top layer of various dizzy pearly-lustre coating is provided with the emboss layer, base paper layer's lower surface is connected with the adhesive linkage, the lower surface of adhesive linkage is connected with the stratum basale, the inside of stratum basale is provided with dyeing layer, dyeing layer's bottom is connected with the acrylic resin layer, the bottom on acrylic resin layer is connected with the clear paint layer, the lower surface of stratum basale is connected with the dull polish protective layer, through the combined action with base paper layer continuous structure, utilize its various dizzy pearly-lustre coating and radium-lustre texture of radium-lustre paper, with pearly-lustre paper, form a better emboss paper of visual sense.

CLAIM 1. The utility model provides a laser transfer embossing paper of coloured dizzy pearly-lustre, includes base paper layer (1), its characterized in that: the inside of base paper layer (1) is provided with polyurethane layer (2), the bottom of polyurethane layer (2) is connected with aluminium lamination (3), the bottom of aluminium lamination (3) is connected with pearly-lustre layer (4), the bottom of pearly-lustre layer (4) is connected with radium-shine layer (5), the upper surface of base paper layer (1) is connected with colored dizzy pearl coating (6), the top layer of colored dizzy pearl coating (6) is provided with knurling layer (7), the lower surface of base paper layer (1) is connected with adhesive linkage (8), the lower surface of adhesive linkage (8) is connected with stratum basale (9), the inside of stratum basale (9) is provided with dyeing layer (10), the bottom of dyeing layer (10) is connected with acrylic resin layer (11), the bottom of acrylic resin layer (11) is connected with varnish layer (12), the lower surface of stratum basale (9) is connected with dull polish protective layer (13).



P36231

PRINTING – BRAND PROTECTION

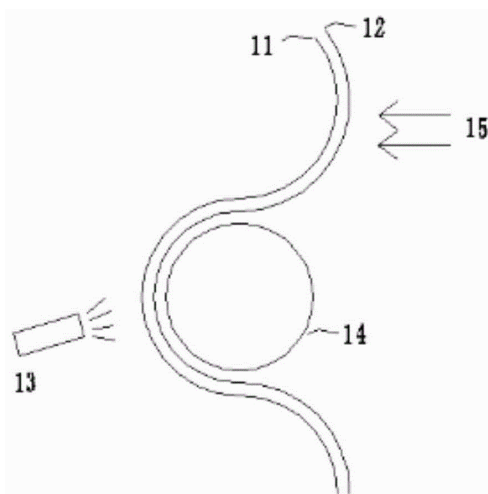
CN115723461

SVG TECHNOLOGY

Priority Date: 30/08/2021

OPTICAL TRANSFER MATERIAL AND PREPARATION METHOD THEREOF

A method of preparing an optical transfer material comprising: providing a base film; coating a UV resin coating layer on the base film; copying the micro-nano structure on the UV resin coating by using a mould with the micro-nano structure through mould pressing, and carrying out UV curing, wherein a release agent is filled between the UV resin coating and the mould during mould pressing; compounding a substrate on one side of the UV resin coating with the micro-nano structure; peeling the base film. According to the optical transfer material and the preparation method thereof, the isolating agent is filled between the UV resin coating and the mold during mold pressing, so that the UV resin coating and the mold are easy to peel, and the base film is easy to peel when the UV resin coating is transferred to the substrate, so that the optical transfer material is simple to manufacture, good in manufacturability, recyclable, environment-friendly and easy to degrade, and the surface of the optical transfer material is free of the base film.



CLAIM 1. A method of making an optical transfer material, comprising: providing a base film; coating a UV resin coating layer on the base film; the micro-nano structure is copied on the UV resin coating by mould pressing through a mould with the micro-nano structure, UV curing is carried out, and a release agent is filled between the UV resin coating and the mould during mould pressing; compounding a substrate on one side of the UV resin coating with the micro-nano structure; peeling the base film.

P36238

COIN

CA3171686

UNIVERSITY OF OTTAWA

Priority Date: 30/08/2021

FAST REPLICATION OF LASER MACHINED MICRON/SUB-MICRON SCALE PATTERNS ONTO SOFT-METAL SUBSTRATES VIA EMBOSsing

Systems and methods described for embossing micro-scale features are provided. On various substrates. Micro-scaled features can contain nanometer to micrometer structural features. Various embodiments may relate to methods and systems that may allow substrates, non-limiting examples of which may include metals such as silver, copper, tin, gold, or the like, to be embossed to diffract light into various colors that can be refracted at various perspective angles. High-quality grooves can be machined down to the sub-micron or nanometer regime to generate embossment moulds for fast, single-step, repeated (e.g. in the order of tens to thousands) replication of gratings on bulk metallic substrates using a same embossing die without significant loss of embossing quality.

CLAIM 1. A method of fast replication of laser machined micron/sub-micron scale patterns onto soft-metal substrates via embossing comprising: laser machining of a die to engrave grooves; pre-flattening of the substrate using two blank dies with a pre-flattening load; and embossing of the substrate using the laser machined die and a blank die with an embossing load.

Click on the title to return to table of contents

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

N9248

KR20230033049

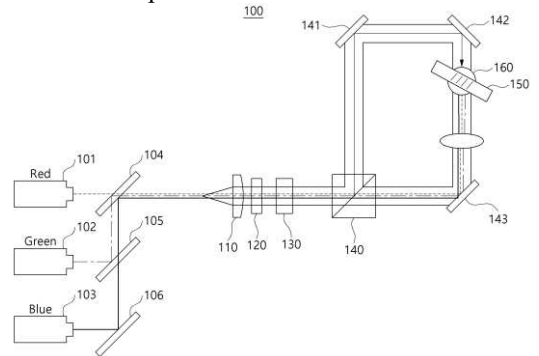
Priority Date: 26/08/2021

HEESUNG ELECTRONICS

APPARATUS AND METHOD FOR MANUFACTURING FULL-COLOR HOLOGRAM OPTICAL ELEMENT, AND AUGMENTED REALITY DISPLAY DEVICE PROVIDED WITH THE OPTICAL ELEMENT

A method of manufacturing a full-color hologram optical device according to an embodiment of the present invention includes a setting step of setting an intensity and a condition of a laser beam having respective wavelengths of red (R), green (g), and blue (b), a reactivity measurement step of measuring reactivity of the recording medium, And a wavelength matching step of sequentially performing wavelength matching by changing and recording angles of wavelengths of each of the red (red), green (g), and blue (b) when it is determined to be a reaction during the reaction measurement step.

CLAIM 1. A method for manufacturing a full-color hologram optical element of an apparatus for manufacturing a full-color hologram optical element, in which wavelengths are sequentially matched by changing angles of respective wavelengths of R, g, and b provided from respective R (Red), g (Green), and b (Blue) lasers using a recording medium of the full-color hologram optical element, A setting step of setting intensities and conditions of laser beams having respective wavelengths of blue (b); a reactivity measuring step of measuring reactivity of the recording medium; and a step of measuring reactivity of the recording medium, And a wavelength matching step of sequentially performing wavelength matching by changing and recording angles of respective wavelengths of g (green) and b (blue).



N9249

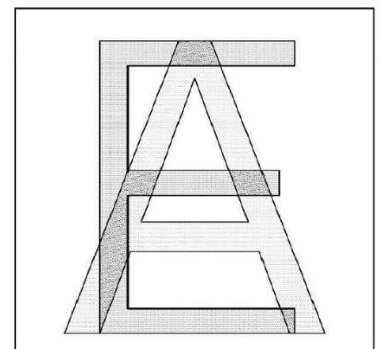
KR20230030958

Priority Date: 26/08/2021

CHUN, IN KYU | JEONG, SANG KYUN

METHOD FOR MANUFACTURING HOLOGRAM STRUCTURE USING PHOTOMASK AND HOLOGRAM STRUCTURE MANUFACTURED THEREBY

The present invention relates to a method of manufacturing a hologram structure using a photomask and a hologram structure manufactured by the method. An aspect of the present invention includes generating image data in which a plurality of pixels are arranged to represent a shape of a first image and a plurality of pixels are arranged to represent a shape of a second image different from the first image, Fabricating a photomask having a diffraction grating pattern formed at a position corresponding to the plurality of pixels based on the image data, and fabricating a hologram structure having a structure pattern corresponding to the diffraction grating pattern formed on a surface thereof using the photomask, The structure pattern displays the first image and the second image by expressing a specific structure color by irradiating light.



CLAIM 1. A method of manufacturing a photomask, comprising: generating image data in which a plurality of pixels are arranged to represent a shape of a first image and a plurality of pixels are arranged to represent a shape of a second image different from the first image; And manufacturing a hologram structure having a structure pattern corresponding to the diffraction grating pattern formed on a surface thereof using the photomask, wherein the structure pattern expresses a specific structure color by irradiated light to display the first image and the second image.

N9253

JP2023032881

Priority Date: 27/08/2021

KDDI

COMPUTER COMPOSITE HOLOGRAM GENERATION APPARATUS, METHOD, AND PROGRAM

TOPIC: In reducing the number of point light sources used in a light wave propagation calculation by adopting backface scaling, the point light sources for which propagation calculation is to be performed are prevented from being removed by backface scaling by acquiring the point light sources for partial backface polygons in which the front and back of the plane visible depending on the position on the hologram surface are changed. INVENTION: a partial back face polygon determination unit 10 determines whether or not each polygon of a polygon model is a partial back face polygon including a pixel position where the front side of the polygon is visible and a pixel position where the back side is visible on a hologram surface. The point cloud acquisition unit 20 acquires the 3 D point cloud by rendering processing from the hologram surface to each polygon. Selective backface scaling unit 201 executes selective backface scaling that does not discard the point light sources acquired from the back side of the partial backface polygon, in backface scaling that discards the point light sources acquired from the back side of the polygon.

CLAIM 1. An apparatus for calculating a light wave propagation from a 3 D point cloud on a polygon model to a hologram surface to generate a computer composite hologram, the apparatus comprising: means for determining whether or not each polygon of the polygon model is a partial back face polygon including a pixel position where a front side of the polygon is visible and a pixel position where a back side of the polygon is visible on the hologram surface; Means for acquiring a 3 D point cloud through rendering processing from a hologram surface to each polygon, and backface scaling for discarding a point light source acquired from a back side of the polygon, Means for performing selective back-face scaling that does not discard point light sources acquired from a back side of the partial back-face polygon.

N9255

JP2023028321

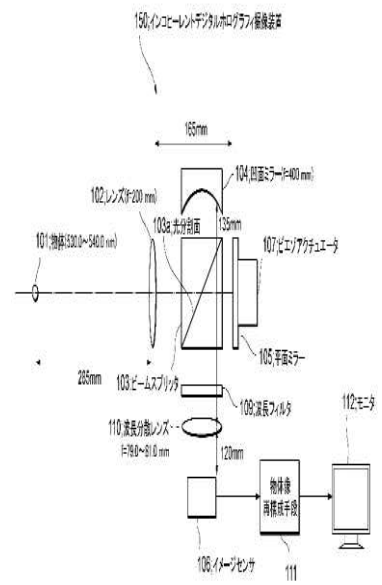
Priority Date: 19/08/2021

NIPPON HOSO KYOKAI

INCOHERENT DIGITAL HOLOGRAPHIC IMAGING DEVICE AND METHOD OF IMAGING THE SAME

TOPIC: To provide an incoherent digital holographic imaging apparatus and an imaging method capable of suppressing degradation of signal quality of high frequency components of a hologram and achieving a high-quality reconstructed image even when a wavelength width of light incident on an imaging element is set wide. INVENTION: a light splitting unit (103) that splits incoherent light from an object 101 into first split beams and second split beams; a concave mirror 104/planar mirror 105 that imparts a relatively spherical phase distribution to the two split beams; a light synthesizing unit (103) that synthesizes the light from the two mirrors 104 and 105; An image sensor (106) that captures an image of interference fringes formed by the two synthesized split beams interfering with each other, and a wavelength dispersion lens (110) that is disposed upstream from the image sensor (106) and that generates a focal length of a length in accordance with a wavelength of the incident light so that a Gabor zone plate formed for each light spot of an object (101) is uniform in size.

CLAIM 1. A light splitting unit configured to split an incoherent light wave from an object into two light waves, the two light waves being a first split beam and a second split beam; and a light source configured to modulate a radius of curvature of a wavefront of at least one of the first split beam and the second split beam, A phase distribution imparting unit that imparts a relative spherical phase distribution to wavefronts of the two split light waves; and a synthesizing unit that synthesizes two light waves composed of the first split beam and the second split beam that have passed through the phase distribution imparting unit; Interference fringe imaging means for imaging interference fringes formed by the first split beams and the second split beams synthesized by the synthesizing means interfering with each other; and a stabilizer disposed upstream from the interference fringe imaging means, the stabilizer being configured to adjust a size of a Gabor zone plate formed for each of the light spots of the object regardless of a wavelength of incident light. An optical element set to generate, for each light spot of the object, a focal length of a length corresponding to a wavelength of the light incident on the object.



N9261

CN218675699U

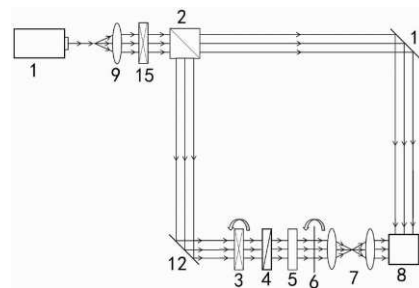
Priority Date: 06/12/2022

FUJIAN NORMAL UNIVERSITY

SCALAR VORTEX LIGHT BEAM GENERATION SYSTEM BASED ON HOLOGRAPHIC TECHNOLOGY

The utility model relates to a scalar vortex light beam generation system based on holographic technique, include: a laser light source for generating laser light; the polarization beam splitter prism is used for splitting laser generated by the laser light source into signal light and reference light; the adjusting system comprises a half-wave plate, a quarter-wave plate, a first polaroid, a fan-shaped slit, a first rotating device and a second rotating device, and is used for adjusting the rotating speed ratio between the half-wave plate and the fan-shaped slit to adjust the phase of the signal light to obtain scalar vortex light beams of different orders; a first 4f imaging system disposed between the conditioning system and the holographic recording material; a holographic recording material for recording an incident scalar vortex beam. Scalar vortex beams of different orders can be flexibly prepared, and meanwhile, the holographic material is simple in manufacturing process and low in cost.

CLAIM 1. A holographic-based scalar vortex beam generation system, comprising: a laser light source for generating laser light; the polarization beam splitter prism is used for splitting laser generated by the laser light source into signal light and reference light; a reference optical path for conveying the reference light; a signal light path for conveying the signal light; the adjusting system comprises a half-wave plate, a quarter-wave plate, a first polaroid, a fan-shaped slit, a first rotating device and a second rotating device, wherein the half-wave plate, the quarter-wave plate, the first polaroid and the fan-shaped slit are sequentially arranged on a signal light path, the first rotating device is used for rotating the half-wave plate, the second rotating device is used for rotating the fan-shaped slit, and the adjusting system is used for adjusting the rotating speed ratio between the half-wave plate and the fan-shaped slit through the first rotating device and the second rotating device to adjust the phase of the signal light so as to obtain scalar vortex light beams of different orders; a first 4f imaging system disposed between the conditioning system and the holographic recording material; and the holographic recording material is used for recording the incident scalar vortex light beam, and the signal light and the reference light are perpendicularly incident to the holographic recording material.



N9263

CN218675538U

Priority Date: 06/12/2022

FUJIAN NORMAL UNIVERSITY

DEVICE FOR GENERATING VECTOR, SCALAR VORTEX AND VECTOR VORTEX LIGHT BEAMS

The utility model relates to a device of generation vector, scalar vortex and vector vortex light beam, include: the polarization beam splitter prism is used for splitting laser generated by the laser light source into signal light and reference light; the first polaroid and the first quarter-wave plate are arranged on a signal light path; the adjusting system is used for adjusting the rotation speed ratio among the first half-wave plate, the second polaroid and the fan-shaped slit to adjust the phase and the polarization state of the signal light to obtain a vector light beam, a scalar vortex light beam or a vector vortex light beam; a first 4f imaging system disposed between the conditioning system and the polarization-sensitive holographic recording material; a polarization-sensitive holographic recording material for recording an incident vector beam, scalar vortex beam or vector vortex beam. The method can flexibly prepare vector beams, scalar vortex beams or vector vortex beams, and meanwhile, the polarization sensitive holographic material is simple in manufacturing process and low in cost.

CLAIM 1. An apparatus for generating vector, scalar vortex, and vector vortex beams, comprising: a laser light source for generating laser light; the polarization beam splitter prism is used for splitting laser generated by the laser light source into signal light and reference light; a reference optical path for conveying the reference light; a signal light path for conveying the signal light; the first polarizer and the first quarter-wave plate are arranged on a signal light path; the adjusting system comprises a first half-wave plate, a second polarizing plate, a fan-shaped slit, a first rotating device, a second rotating device and a third rotating device, wherein the first half-wave plate, the second polarizing plate and the fan-shaped slit are sequentially arranged on a signal light path, the first rotating device is used for rotating the first half-wave plate, the second rotating device is used for rotating the second polarizing plate, the third rotating device is used for rotating the fan-shaped slit, and the adjusting system is used for adjusting the rotating speed ratio among the first half-wave plate, the second polarizing plate and the fan-shaped slit through the first rotating device, the second rotating device and the third rotating device to adjust the phase and the polarization state of the signal light to obtain a vector light beam, a scalar vortex light beam or a vector vortex light beam; a first 4f imaging system disposed between the conditioning system and the polarization-sensitive holographic recording material; the polarization-sensitive holographic recording material is used for recording incident vector beams, scalar vortex beams or vector vortex beams, and the signal light and the reference light are mutually and perpendicularly incident to the polarization-sensitive holographic recording material.

N9273

CN115826382

Priority Date: 20/12/2022

NANJING RUIWEISHI TECHNOLOGY

HOLOGRAPHIC PROCESSING DEVICE, CHIP AND DISPLAY EQUIPMENT

The application relates to the technical field of projection display, in particular to a holographic processing device, a chip and display equipment. The method and the device introduce a plurality of random phases to modulate pictures to generate a plurality of holograms, and control the spatial light modulator to alternately display different holograms in a specific time period to generate corresponding reproduction fields, the plurality of reproduction fields are observed as a unified hologram based on the principle of persistence of vision, and the plurality of holograms are realized by adopting a hardware architecture of parallel processing. The method and the device can reduce the generation time of the hologram and improve the efficiency of holographic display.

CLAIM 1. A holographic processing device, comprising: the programmable logic device is at least used for generating a hologram corresponding to the first picture; the programmable logic device is configured with at least a first module and a second module for parallel processing; the first module is used for performing inverse Fourier transform on the first picture modulated by the first random phase to generate a first hologram; the second module is configured to perform inverse fourier transform on the first picture modulated by the second random phase to generate a second hologram; and the display control module is used for controlling the spatial light modulator to alternately display the first hologram and the second hologram in a specific time period so as to enable the reproduction field to be observed as a holographic image corresponding to the first picture.

N9276

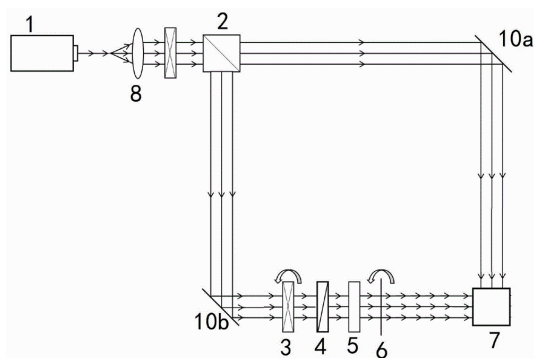
CN115826224

Priority Date: 06/12/2022

FUJIAN NORMAL UNIVERSITY

SCALAR VORTEX LIGHT BEAM GENERATION SYSTEM AND METHOD BASED ON HOLOGRAPHIC TECHNOLOGY

The invention relates to a scalar vortex light beam generation system and method based on holographic technology, wherein the system comprises: a laser light source for generating laser light; the polarization beam splitter prism is used for splitting laser generated by the laser light source into signal light and reference light; the adjusting system comprises a half-wave plate, a quarter-wave plate, a first polarizing plate, a fan-shaped slit, a first steering device and a second steering device, and is used for adjusting the phase of the signal light to obtain scalar vortex light beams of different orders by adjusting the rotating speed ratio between the half-wave plate and the fan-shaped slit through the first steering device and the second steering device; and the holographic recording material is used for recording the incident scalar vortex light beam, and the signal light and the reference light are mutually and perpendicularly incident into the holographic recording material. Scalar vortex beams of different orders can be flexibly prepared, and meanwhile, the holographic material is simple in manufacturing process and low in cost.



CLAIM 1. A holographic-based scalar vortex beam generation system, comprising: a laser light source for generating laser light; the polarization beam splitter prism is used for splitting laser generated by the laser light source into signal light and reference light; a reference optical path for conveying the reference light; a signal light path for conveying the signal light; the adjusting system comprises a half-wave plate, a quarter-wave plate, a first polaroid, a fan-shaped slit, a first steering device and a second steering device, wherein the half-wave plate, the quarter-wave plate, the first polaroid and the fan-shaped slit are sequentially arranged on a signal light path, the first steering device is used for rotating the half-wave plate, the second steering device is used for rotating the fan-shaped slit, and the adjusting system is used for adjusting the phase of the signal light to obtain scalar vortex light beams of different orders by adjusting the rotating speed ratio between the half-wave plate and the fan-shaped slit through the first steering device and the second steering device; and the holographic recording material is used for recording the incident scalar vortex light beam, and the signal light and the reference light are perpendicularly incident to the holographic recording material.

N9280

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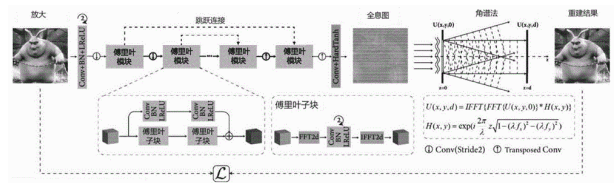
Priority Date: 05/12/2022

SHANGHAI JIAO TONG UNIVERSITY

REAL-TIME HOLOGRAM GENERATION METHOD BASED ON NEURAL NETWORK OF FOURIER INSPIRATION

A real-time hologram generating method based on a neural network inspired by Fourier transform adopts an improved U-Net network model with jump connection to fuse the spatial features from spatial branches and Fourier features from Fourier branches in an encoding stage, and converts an image into a hologram with a pure phase; the reconstruction result is obtained by angular spectroscopy in the decoding stage. The invention can be used for generating the real-time and high-fidelity phase hologram, and the reconstructed image has no speckle noise.

CLAIM 1. A real-time hologram generating method based on a neural network inspired by Fourier is characterized in that an improved U-Net network model with jump connection is adopted in a coding stage to fuse spatial features from spatial branches and Fourier features from Fourier branches, and an image is converted into a phase-only hologram; in the decoding stage, the reconstruction result is obtained by angular spectroscopy.



N9281

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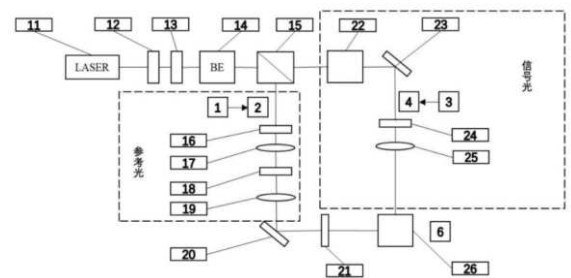
Priority Date: 14/11/2022

LUXSHARE PRECISION TECHNOLOGY NANJING

FACE IMAGE ENCRYPTION METHOD BASED ON OPTICAL HOLOGRAPHY AND OPTICAL SYSTEM

The invention discloses a face image encryption method and an optical encryption system based on optical holography, wherein the encryption method comprises an encryption process and comprises the following steps: firstly, an original password QR code image and a face image are obtained, then the original password QR code image is irradiated through a first zero laser, and reaches a holographic recording material through a first phase plate, a first Fourier lens, a second phase plate, a second Fourier lens and a third phase plate in sequence, the face binary image is irradiated through a second zero laser, and reaches the holographic recording material through a fourth phase plate and a third Fourier lens in sequence, and on the holographic recording material, two beams of light interfere to finish the encryption of the face image. In the process, the third phase plate is arranged, so that the transmission error between two steps of iteration of the special attack algorithm is enlarged, and the encryption safety is improved.

CLAIM 1. A face image encryption method based on optical holography is characterized by comprising an encryption process, and comprises the following steps: s1, converting an original password into an original password QR code image; s2, irradiating the original password QR code image through zeroth laser to form a first laser beam carrying the image information of the original password QR code; s3, the first laser beam sequentially passes through a first phase plate and a first Fourier lens to perform Fourier transform on the QR code image of the original password to form a second laser beam carrying first encrypted information; s4, the second laser beam sequentially passes through a second phase plate and a second Fourier lens to perform Fourier inverse transformation on the first encrypted information to form a third laser beam carrying second encrypted information; s5, the third laser beam carries out phase truncation on the second encrypted information through a third phase plate to form a fourth laser beam carrying third encrypted information; executing S6 while executing S1, and converting the face image of the user into a face binary image; executing S7 while executing S2, and irradiating the face binarization image by using zeroth second laser to form a fifth laser beam carrying the face binarization image, wherein the zeroth first laser and the zeroth second laser have the same parameter; s8, the fifth laser beam sequentially passes through a fourth phase plate and a third Fourier lens to perform Fourier transform on the face binary image, and a sixth laser beam carrying face binary image information is obtained; and S9, irradiating the fourth laser beam and the sixth laser beam onto a holographic recording material to generate interference, and forming a human face optical holographic encrypted image.



N9299

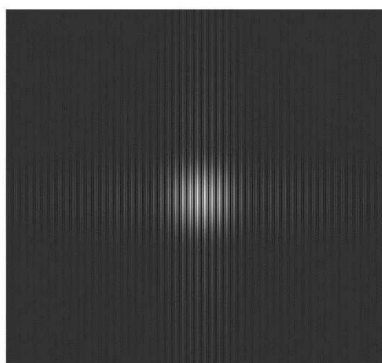
CN115755417

Priority Date: 14/09/2022

NANJING NORMAL UNIVERSITY

REGULATION AND IMAGING SYSTEM OF SYMMETRICAL BUTTERFLY LIGHT BEAM

The application relates to a regulating and imaging system of a symmetrical butterfly beam, which is used for theoretically deducing the diffraction characteristic of the symmetrical Gaussian butterfly beam and carrying out numerical study on the diffraction characteristic in order to study the diffraction of the symmetrical Gaussian butterfly beam of the beam. Wherein the symmetric gaussian butterfly beam is generated by the product of a gaussian term and two butterfly integrals. Obtaining a hologram of the symmetric butterfly light beam after the two-dimensional light field of the symmetric butterfly light beam obtained by calculation interferes with the parallel light; after the laser beam illuminates the image, it is incident on the spatial light modulator loaded with the hologram, carrying the image information. In the fourier plane, the image can be modulated on to a symmetric butterfly beam. After a certain distance, image information can be recovered from the butterfly beam through Fourier transformation, and dynamic imaging is realized. The present application generates symmetric butterfly beams by utilizing holographic techniques. The symmetric butterfly light beam is used for transmitting image signals, and the adjustment, control and application of the symmetric butterfly light beam are achieved through the application.



CLAIM 1. A symmetric butterfly beam steering and imaging system, comprising: a solid state laser for generating a gaussian beam; the collimation beam expander is used for connecting the Gaussian beam and performing collimation beam expansion processing on the Gaussian beam; an image for verifying the validity of the system for image signal transmission; the beam splitting prism splits the Gaussian beam, and a part of light enters the spatial light modulator and is received and transmitted by the light reflected by the spatial light modulator; a reflective spatial light modulator for loading a hologram; generating a symmetric butterfly beam based on the hologram; a 4f optical system for filtering zero-order diffraction information of the light beam reflected by the spatial light modulator; obtaining an initial light field; and the charge coupling device is used for receiving the initial light field and the light field information after diffracting different distances.

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

N9265

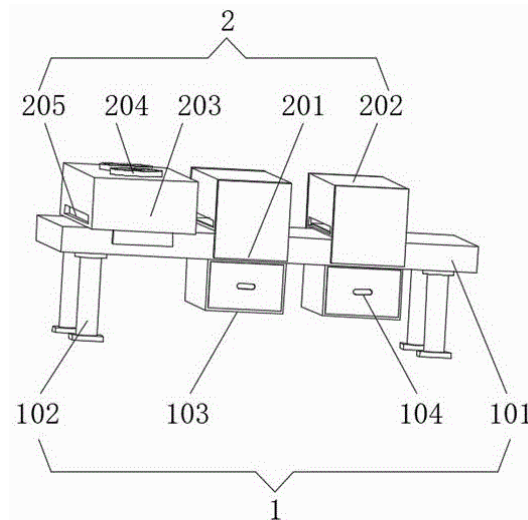
CN218660920U

Priority Date: 17/10/2022

WUXI KLASER TECHNOLOGY

STRIPPING DEVICE OF LASER HOLOGRAPHIC WATER TRANSFER FILM

The utility model relates to a radium-shine holographic water transfer film technical field just discloses radium-shine holographic water transfer film's stripping off device, retrieve mechanism and peeling means including supporting, peeling means movable mounting is in supporting and retrieves mechanism top surface, it sets up in peeling means surface bottom to support and retrieve the mechanism, peel off case one and peel off case two movable mounting in peeling means surface. The utility model discloses a peel off roller surface fixed connection has the stripping blade, and the stripping blade slides about peeling off a case inside through the spout and the pivot that set up, in the radium-shine holographic water-transfer film that will peel off is transmitted to peeling off a case one from the feed inlet, start driving motor, the pivot rotates, make the stripping blade peel off the operation to radium-shine holographic water-transfer film surface, the staff carries out high regulation through external equipment to driving motor on the spout surface simultaneously, peel off efficiency more comprehensively to radium-shine holographic water-transfer film surface film.



CLAIM 1. Radium-shine holographic water transfer film's stripping off device is including supporting recovery mechanism (1) and peeling means (2), its characterized in that: the stripping mechanism (2) is movably arranged on the top surface of the supporting and recovering mechanism (1), and the supporting and recovering mechanism (1) is arranged at the bottom of the outer surface of the stripping mechanism (2); the supporting and recovering mechanism (1) comprises a conveying table (101), the conveying table (101) is arranged on the surface of the top of the supporting and recovering mechanism (1), and supporting columns (102) are fixedly arranged on the periphery of the bottom of the supporting and recovering mechanism (1); the peeling mechanism (2) comprises a first peeling box (202), the first peeling box (202) and a second peeling box (203) are movably mounted on the surface of the peeling mechanism (2), two fixing blocks (201) are fixedly connected to two sides of the outer surfaces of the first peeling box (202) and the second peeling box (203), a driving motor (206) is arranged on one side of the surface of the first peeling box (202), and a sliding groove (207) is formed in one side of the surface of the driving motor (206).

N9268

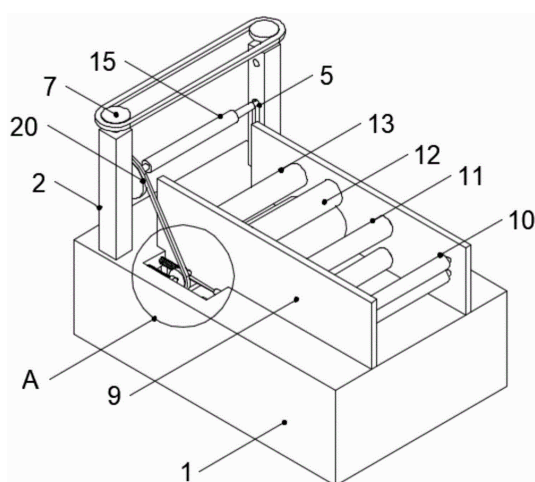
CN218615421U

Priority Date: 13/06/2022

CHANGZHOU ZHONGHENG MACHINERY TECHNOLOGY

DOUBLE-SIDED PREHEATING ADJUSTABLE LASER HOLOGRAPHIC MOLDING PRESS

The utility model provides a two-sided adjustable laser holography moulding press that preheats relates to moulding press technical field, the on-line screen storage device comprises a base, base top one side is equipped with a pair of stand, the inside movable groove that has all been seted up of stand, the movable inslot portion all installs the screw thread lead screw, and is a pair of the spout has all been seted up to the one side that the stand is relative, the spout communicates with each other with two movable inslots respectively, and is a pair of install the bracing piece between the stand, penetrate the movable groove from two spouts respectively at the both ends of bracing piece, just the both ends of bracing piece respectively with two screw thread lead screw threaded connection, two the one end of stand is all worn out with one end of screw thread lead screw, and the one end of wearing out all is connected with first belt pulley. This device is at the in-process of wind-up roll rolling, can keep the relative position between the rolling point of wind-up roll and other structures in the mould pressing machine unchanged, and then causes the influence to other processes when avoiding the mould pressing operation.



CLAIM 1. The utility model provides a two-sided preheating adjustable laser holography moulding press which characterized in that: including base (1), base (1) top one side is equipped with a pair of stand (2), movable groove (3) have all been seted up to stand (2) inside, threaded lead screw (4) are all installed to movable groove (3) inside, and are a pair of spout (5) have all been seted up to one side that stand (2) are relative, spout (5) communicate with each other with two movable groove (3) inside respectively, and are a pair of install bracing piece (6) between stand (2), the both ends of bracing piece (6) penetrate movable groove (3) from two spout (5) respectively, just the both ends of bracing piece (6) respectively with two threaded lead screw (4) threaded connection, two threaded lead screw (4) all wear out from the one end of stand (2) with one end, and the one end of wearing out all is connected with first belt pulley (7), two connect through belt transmission between first belt pulley (7).

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

N9238

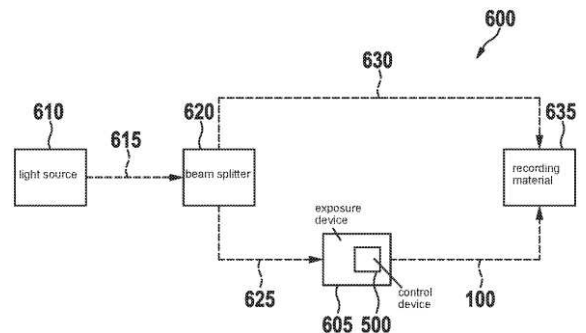
US20230090984

ROBERT BOSCH

Priority Date: 20/09/2021

METHOD FOR PRODUCING A HOLOGRAPHIC OPTICAL ELEMENT, CONTROL DEVICE AND EXPOSURE DEVICE

A method for producing a holographic optical element. The method includes a step of exposing a recording material to a phase pattern which is provided by a first modulated light beam with a first phase portion. Furthermore, the method includes a step of an additional exposure of the recording material to the phase pattern, which is provided by a second modulated light beam with a second phase portion, wherein the second phase portion has a phase offset with respect to the first phase portion in order to produce a holographic optical element.



CLAIM 1. A method for producing a holographic optical element, the method comprising the following steps: exposing a recording material to a phase pattern which is provided by a first modulated light beam having a first phase portion; and additionally exposing the recording material to the phase pattern which is provided by a second modulated light beam having a second phase portion, wherein the second phase portion has a phase offset with respect to the first phase portion, to produce the holographic optical element.

N9240

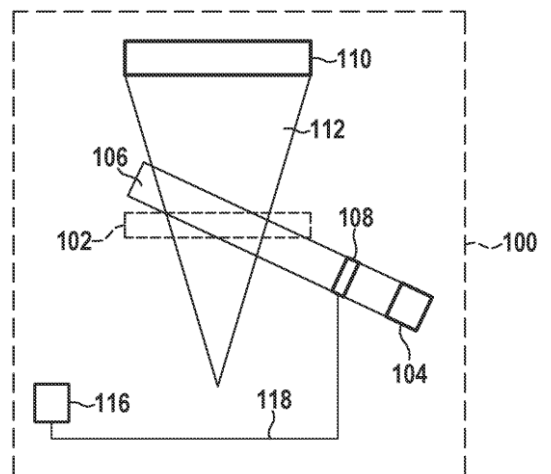
US20230090419

ROBERT BOSCH

Priority Date: 20/09/2021

APPARATUS AND METHOD FOR RECORDING A HOLOGRAPHIC OPTICAL ELEMENT

An apparatus and method for recording a holographic optical element. The apparatus includes a first recording unit configured to provide a first wave front for recording the holographic optical element, a second recording unit configured to provide a second wave front for recording the holographic optical element, and (i) a deformable phase plate configured to perform wave front modulation of the first wave front when the holographic optical element is recorded, or (ii) a plurality of deformable phase plates, at least one deformable phase plate (of the plurality of deformable phase plates can be configured to perform wave front modulation of the first wave front when the holographic optical element is recorded.



CLAIM 1. An apparatus for recording a holographic optical element, comprising: a first recording unit configured to provide a first wave front for recording the holographic optical element; a second recording unit configured to provide a second wave front for recording the holographic optical element; and (i) a deformable phase plate configured to perform wave front modulation of the first wave front when the holographic optical element is recorded, or (ii) a plurality of deformable phase plates, wherein at least one deformable phase plate of the plurality of deformable phase plates is configurable to perform wave front modulation of the first wave front when the holographic optical element is recorded.

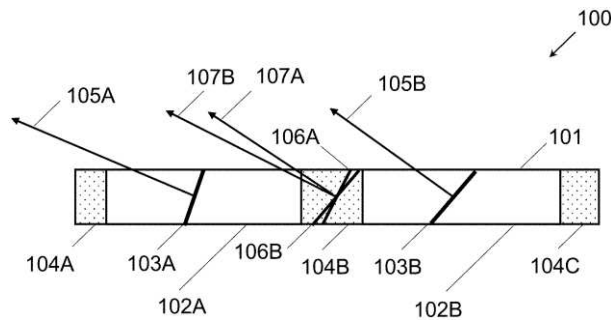
N9245

US20230061090
Priority Date: 26/08/2021

DIGILENS

PIECEWISE ROLLED VECTOR GRATINGS AND METHODS OF FABRICATION

Various embodiments of this disclosure relate to a piecewise varying rolled K-vector grating structure including: a first grating section containing a grating with a first K-vector, a second grating section containing a grating with a second K-vector; and a first boundary region positioned between the first grating section and the second grating section. The first boundary region is a multiplexed grating region including both the first K-vector and the second K-vector. Further disclosed is a method for recording such a grating structure utilizing a holographic recording process. Providing a multiplexed grating in the first boundary region may largely remove line exposure artifacts between adjacent sections of the P-RKV grating.



CLAIM 1. A grating structure, comprising: a first grating section containing a grating with a first K-vector providing a first diffraction efficiency versus angle characteristic; a second grating section containing a grating with a second K-vector providing a second diffraction efficiency versus angle characteristic; and a first boundary region positioned between the first grating section and the second grating section, wherein the first boundary region is a multiplexed grating region including both the first K-vector and the second K-vector.

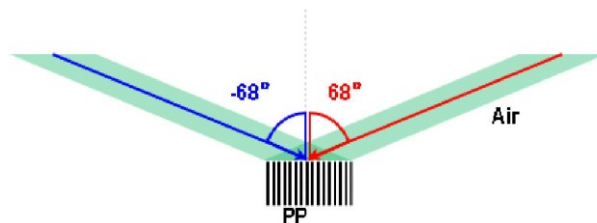
N9250

KR20230029278
Priority Date: 24/08/2021

LG CHEM

HOLOGRAPHIC OPTICAL ELEMENT AND METHOD OF MANUFACTURING THE SAME

The present invention relates to a holographic optical device and a method of manufacturing the same. More particularly, the present invention relates to a holographic optical device to which an overmodulation effect is applied, which improves difficulty of securing a viewing angle of an image due to a narrow angle operating range, and a method of manufacturing the same. The present invention provides a holographic optical device including a photopolymer resin layer including a photopolymer resin, wherein an interference pattern formed by an interference phenomenon between first and second laser parallel beams irradiated on one surface of the photopolymer resin layer and irradiated at a predetermined angle to a normal of the photopolymer resin layer, respectively, is recorded.



CLAIM 1. A method of manufacturing a holographic optical element, the method comprising: providing a photopolymer resin layer including a photopolymer resin; and recording an interference pattern formed by interference phenomenon between first and second laser parallel beams irradiated on one surface of the photopolymer resin layer and irradiated to form a predetermined angle with a normal of the photopolymer resin layer, respectively.

N9252

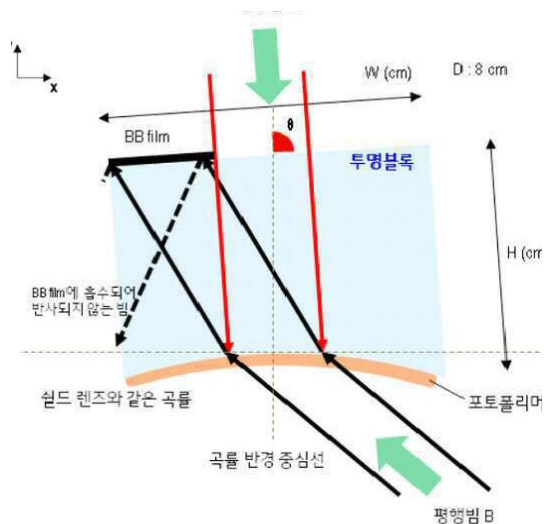
KR20230024571
Priority Date: 12/08/2021

LG CHEM

CURVED HOLOGRAPHIC OPTICAL ELEMENT USING TRANSPARENT BLOCK AND METHOD FOR MANUFACTURING THE SAME

The present invention relates to a curved holographic optical element using a transparent block and a method of manufacturing the same. More particularly, the present invention relates to a curved holographic optical device for recording an interference pattern using a photopolymer resin layer and a transparent block, and a method of manufacturing the same. The present invention provides a photopolymer resin layer including a photopolymer resin; and a transparent block formed on one surface of the photopolymer resin layer with a predetermined curvature to transmit a parallel beam flowing from the outside, Wherein a first laser parallel beam is irradiated on one surface of the transparent block and a second laser parallel beam is irradiated on the photopolymer resin layer to record an interference pattern formed by an interference phenomenon between the first laser parallel beam and the second laser parallel beam by forming a predetermined angle with a center line of a radius of curvature of the transparent block.

CLAIM 1. A photopolymer resin layer comprising: a photopolymer resin layer including a photopolymer resin; and a transparent block formed on one surface of the photopolymer resin layer with a predetermined curvature to transmit a parallel beam flowing from the outside, And forming a predetermined angle with the center line of the radius of curvature of the transparent block so that one surface of the transparent block is irradiated with a first laser parallel beam and a second laser parallel beam is irradiated with the photopolymer resin layer to record an interference pattern formed by an interference phenomenon between the first laser parallel beam and the second laser parallel beam.



N9275

CN115826355
Priority Date: 28/11/2022

SHENZHEN NAMUDA TECHNOLOGY

GREEN SENSITIVE HOLOGRAPHIC PHOTOPOLYMER PHOTSENSITIVE MATERIAL, PREPARATION METHOD AND APPLICATION

The invention relates to a green sensitive photopolymer photosensitive material, a preparation method and application thereof. The polymerization-active monomer comprises at least N-(2-hydroxyethyl)-methacrylamide; the surfactant is a nonionic perfluorinated aliphatic polymer. Compared with the existing holographic recording photopolymer material, the photopolymer material provided by the invention has the advantages of long storage time, water resistance, oil resistance and low wrinkle shrinkage rate during curing; the obtained grating has high refractive index modulation degree, exposure sensitivity and diffraction efficiency, and is insensitive to the environmental humidity.

CLAIM 1. The green sensitive holographic photopolymer photosensitive material is characterized by comprising the following components in parts by weight: 20-45 parts of prepolymer monomer, 25-40 parts of film forming resin, 0.1-3 parts of photosensitizer, 0.5-3 parts of chain transfer agent and 0-0.5 part of surfactant; the prepolymer monomer at least comprises N-(2-hydroxyethyl)-methacrylamide; the surfactant is a nonionic perfluorinated aliphatic polymer.

N9279

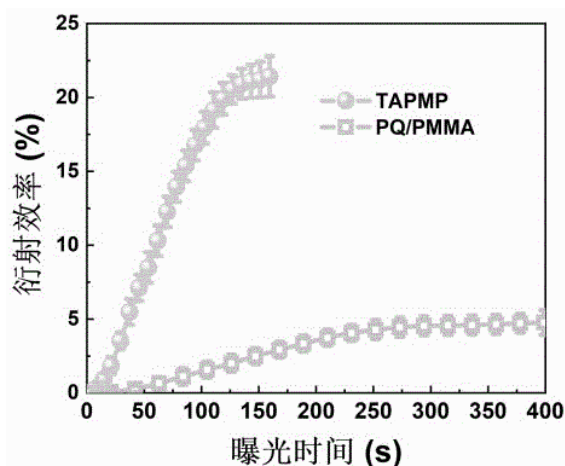
CN115798545

Priority Date: 24/11/2022

FUJIAN NORMAL UNIVERSITY

TAPMP (TAPMP) PHOTOPOLYMER HOLOGRAPHIC STORAGE MATERIAL WITH HIGH PHOTSENSITIVITY AND EXCELLENT POLARIZATION CHARACTERISTIC AND PREPARATION METHOD THEREOF

The invention discloses a TAPMP (TAPMP) photopolymer holographic storage material with high photosensitivity and excellent polarization characteristics, wherein triethanolamine, monomer acrylamide and methylene bisacrylamide are added on the basis of a PQ/PMMA (polymethyl methacrylate) photopolymer; the monomer AA is used as a comonomer and directly reacts with the photosensitizer PQ under the assistance of the photoinitiator TEA in the photoreaction stage to generate a photoproduct, so that the photosensitivity of the PQ/PMMA material is improved, the shrinkage of a photopolymer is reduced, the polarization performance of the material is improved, and the photopolymer material is used as an excellent medium for high-photosensitivity polarization holographic storage. The holographic storage material provided by the invention has the advantages of simple preparation process, millimeter-scale thickness value, accuracy and controllability, negligible photoinduced shrinkage, and becomes a core recording material required in the application of the polarization holographic and data storage fields.



CLAIM 1. A TAPMP photopolymer holographic storage material with high photosensitivity and excellent polarization characteristics is characterized in that: the raw materials of each component are as follows by mass fraction: methyl methacrylate: 100 1wt% of azodiisobutyronitrile, 1-1.3 wt% of phenanthrenequinone, 0.5wt% to 2.0 wt% of triethanolamine, 0.5wt% to 2.0 wt% of monomer acrylamide and 0.4wt% of methylene bisacrylamide.

N9282

CN115793966

Priority Date: 04/11/2022

HUAZHONG UNIVERSITY OF SCIENCE & TECHNOLOGY

HOLOGRAPHIC DISK-ORIENTED DATA ORGANIZATION METHOD, DEVICE AND SYSTEM

The invention discloses a data organization method, a device and a system facing to a holographic disk, belonging to the technical field of computer storage. The method provided by the invention can adapt to the changes of physical sector size, bit error rate and the like by adjusting the encoding method and parameters, improve the integral fault-tolerant capability and storage efficiency of the holographic optical disk, and greatly improve the recovery capability of continuous data damage.

CLAIM 1. A holographic disk-oriented data organization method, comprising: s1, primary coding is carried out on an original data DSU block in each physical frame of each physical sector to generate a check DSU block, and the check DSU block is placed behind the original data DSU block; for any physical sector, original data DSU block and check DSU block are interleaved respectively, so that the distances between original data DSU block and adjacent check DSU block in the same physical frame in the data block storage space are all changed into d 1 And writing into physical sectors of the holographic disk; s2, performing secondary coding on the physical sectors in each strip to generate check physical sectors, and placing the check physical sectors behind the physical sectors; for any sector cluster, the physical sector and the check physical sector are respectively interleaved among the sector groups, so that the adjacent physical sectors and the adjacent check physical sectors in the same stripe are enabled to be in the logical sectorThe distance between the storage spaces becomes d 2 ; S3, performing three-level coding on the physical page in each strip to generate a check page, and placing the check page behind the physical page; for any page cluster, the physical page and the check page are respectively interleaved among page groups, so that the distance between the adjacent physical pages and the adjacent check pages in the same strip originally becomes d 3.

N9290

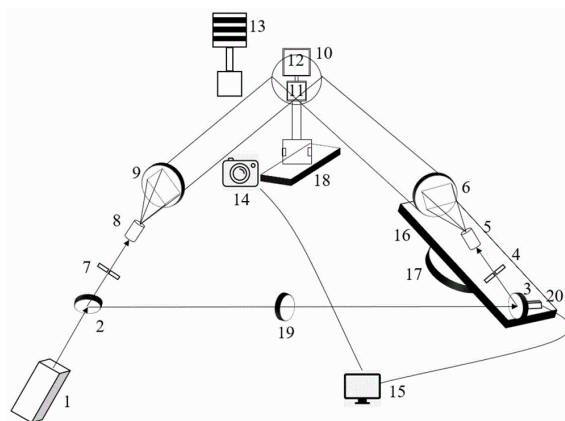
CN115793117

Priority Date: 03/12/2022

SUZHOU DONGHUI OPTICAL

HOLOGRAPHIC EXPOSURE OPTICAL PATH SYSTEM FOR MANUFACTURING REFLECTIVE VOLUME BRAGG GRATING AND WRITING METHOD THEREOF

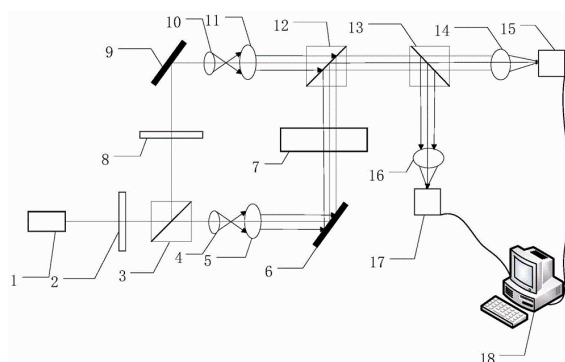
The invention discloses a holographic exposure optical path system for manufacturing a reflective volume Bragg grating, which comprises a laser interference optical path and a fringe locking system, wherein coherent light emitted by a laser is divided into reflected light and transmitted light through a beam splitter, and a reflector, a first diaphragm, a first spatial filter and a first collimating lens are sequentially arranged on the reflected light path; a second diaphragm, a second spatial filter and a second collimating lens are sequentially arranged on the transmission light path, finally, the reflected light and the transmission light are symmetrically incident to a substrate frame, and a reflective volume Bragg grating to be written and a surface grating used for locking stripes are arranged on the substrate frame; the invention also provides a writing method of the holographic exposure optical path system for manufacturing the reflective volume Bragg grating; through the mode, the reflective grating is manufactured in a transmission type exposure mode, the interference angle of a holographic exposure light path is convenient to adjust, the period of the grating is ensured to be changed accurately, meanwhile, the stability of interference light beams is good, and the stable writing of the small-period volume grating can be ensured.



CLAIM 1. A holographic exposure optical path system for manufacturing a reflective volume Bragg grating is characterized in that: the laser interference device comprises a laser interference light path and a fringe locking system, coherent light emitted by a laser (1) is divided into reflected light and transmitted light through a beam splitter (2), and a reflector (3), a first diaphragm (4), a first spatial filter (5) and a first collimating lens (6) are sequentially arranged on the reflected light path; and a second diaphragm (7), a second spatial filter (8) and a second collimating lens (9) are sequentially arranged on the transmission light path, finally, the reflected light and the transmission light are symmetrically incident on a substrate frame (10), and a reflective volume Bragg grating (11) to be written and a self-made surface grating (12) used for locking stripes are arranged on the substrate frame (10).

DETECTION METHOD AND DEVICE FOR MEASURING SHRINKAGE RATE OF PHOTOPOLYMER

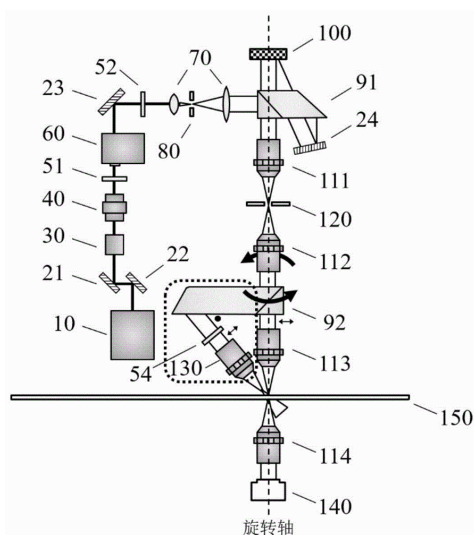
The invention discloses a detection method and a detection device for determining the shrinkage rate of a photopolymer, and belongs to the technical field of material detection. The method of the invention obtains the digital hologram and the edge image of the photopolymer before and after the polymerization reaction through experiments, respectively processes the digital hologram and the edge image by image recognition and edge detection means, and then obtains the shrinkage of the photopolymer material through calculation and analysis. The method utilizes a digital holography and image processing method to obtain digital holograms and edge images of the photopolymer before and after polymerization reaction through experiments, and processes the digital holograms and the edge images respectively by means of image identification and edge detection so as to obtain the shrinkage of the photopolymer material. The invention has simple light path and convenient test, and meets the requirement of measuring the shrinkage of the photopolymer.



CLAIM 1. a detection method for measuring the shrinkage rate of a photopolymer is characterized by comprising the following steps: the method specifically comprises the following steps: (1) Building a light path, placing the photopolymer which does not generate polymerization reaction in the light path, shooting a hologram which does not generate reaction by using a first CCD camera, and shooting an image of the edge by using a second CCD camera; (2) Taking out the photopolymer, putting the photopolymer into a light path with laser as exciting light to perform polymerization reaction, putting the photopolymer after polymerization reaction into the light path, shooting a hologram after complete reaction by using a first CCD camera, and shooting an image of the edge by using a second CCD camera; (3) And performing image processing on the shot edge image: acquiring the number of pixels occupied by the material in the picture by using an edge detection means, wherein the number comprises the area and the perimeter, and calculating the shrinkage of the photopolymer in the length direction and the width direction by using the relation between the rectangular area, the perimeter and the length and the width; (4) Image processing is performed on the photographed digital hologram: processing by image recognition means, reading two digital holograms before and after reaction, converting the two digital holograms into double-precision images, and respectively processing the first digital hologram and the second digital hologram. Converting the digital hologram into frequency domain, presetting filtered frequency spectrum, filtering, retaining +1 level, and performing inverse Fourier transform to reconstruct phase to obtain the reconstructed phase diagram O of the hologram before photopolymer reaction 1 Reconstructed phase diagram O of hologram after reaction of R with photopolymer 2 R, finally reestablishing O 2 R and O 1 And (3) displaying the phase difference of the R, reconstructing the phase, drawing a section line to obtain the change of the phase, and calculating and analyzing the shrinkage of the photopolymer in the thickness direction according to the change of the phase according to the shrinkage of the length direction and the width direction.

METHOD AND DEVICE FOR IMPROVING HOLOGRAM RECORDING AND READING SPEED IN CROSS-SHIFT MULTIPLEXING

The invention provides a method and a device for simplifying the movement of an optical disk and improving the recording speed of a hologram in cross-shift multiplexing, wherein the method comprises the following steps: s1: utilizing a beam of reference light and a beam of signal light carrying input information to perform interference exposure at a recording position in a storage medium to form a hologram for recording data information; s2: shift multiplexing recording of the hologram is performed on the entire storage medium by using a shift multiplexing method; s3: rotating the optical head to change the direction of the grating vector, repeating the steps S1-S2, and recording holograms with different grating vector directions on the whole storage medium to realize the cross multiplexing recording of the holograms; s4: repeating step S3 completes the cross-shift multiplexing recording on the entire storage medium. The method provided by the invention realizes the cross multiplexing recording of the hologram by rotating the optical head to change the vector direction of the grating formed by interference. The process adopts the rotation of the optical head to replace the complex position movement of the medium, reduces the position control requirement of the storage medium, and ensures that the moving mechanism of the storage medium is simplified, the volume is relatively small and the access speed is faster.



CLAIM 1. A method for increasing the recording speed of holograms in cross-shift multiplexing, characterized by the steps of: s1: utilizing a beam of reference light and a beam of signal light carrying data information to perform interference exposure at a recording position in a storage medium to form a hologram for recording the data information; s2: shift multiplexing recording of the hologram is performed on the entire storage medium by using a shift multiplexing method; s3: rotating the optical head to change the direction of the grating vector, repeating the steps S1-S2, and recording holograms with different grating vector directions on the whole storage medium to realize the cross multiplexing recording of the holograms; s4: repeating step S3 completes the cross-shift multiplexing recording on the entire storage medium.

Click on the title to return to table of contents

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

N9236

WO202331886

Priority Date: 04/09/2021

**NARAYANA KIKKERI, HARSHAVARDHANA | PANYAM RAM, AKSHAY
| HARSHAVARDHANA, SHWETHA | MUDLIYAR, ROHIT | CHATTERJEE,
BISWAJITH | MICHAHIAL, STAFFORD**

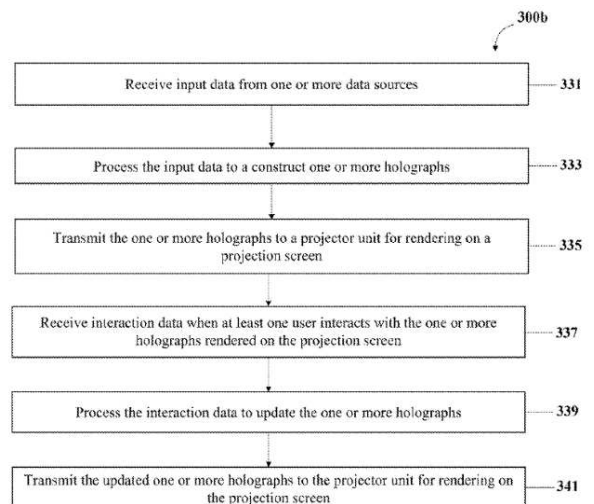
A METHOD, A PROCESSING UNIT AND A PROJECTOR DEVICE FOR RENDERING INTERACTIVE HOLOGRAPHS

The present disclosure provides a method, a processing unit, and a projector device for rendering interactive holographs. The method comprising receiving input data from one or more data sources and processing the input data to a construct one or more holographs. Thereafter, the method comprising transmitting the one or more holographs to a projector unit for rendering on a projection screen. Subsequently, the method comprising receiving interaction data when at least one user interacts with the one or more holographs rendered on the projection screen. Lastly, the method comprising processing the interaction data to update the one or more holographs and transmitting the updated one or more holographs to the projector unit for rendering on the projection screen. The one or more holographs and the updated one or more holographs comprise at least one of one or more animate objects and one or more inanimate objects.

PROCÉDÉ, UNITÉ DE TRAITEMENT ET DISPOSITIF PROJECTEUR PERMETTANT D'EFFECTUER LE RENDU D'HOLOGRAPHERS INTERACTIFS

La présente divulgation concerne un procédé, une unité de traitement et un dispositif projecteur permettant d'effectuer le rendu d'holographes interactifs. Le procédé consiste à recevoir des données d'entrée en provenance d'une ou plusieurs sources de données et à traiter les données d'entrée pour construire un ou plusieurs holographes. Ensuite, le procédé consiste à transmettre lesdits holographes à une unité de projecteur pour effectuer leur rendu sur un écran de projection. Ensuite, le procédé consiste à recevoir des données d'interaction lorsqu'au moins un utilisateur interagit avec lesdits holographes dont le rendu a été effectué sur l'écran de projection. Enfin, le procédé consiste à traiter les données d'interaction pour mettre à jour lesdits holographes et à transmettre lesdits holographes mis à jour à l'unité de projecteur pour effectuer leur rendu sur l'écran de projection. Lesdits holographes et lesdits holographes mis à jour comprennent au moins un objet animé et/ou au moins un objet inanimé.

CLAIM 1. A method for rendering interactive holographs, the method comprising: receiving input data from one or more data sources; processing the input data to a construct one or more holographs; transmitting the one or more holographs to at least one projector unit for rendering on at least one projection screen; receiving interaction data when at least one user interacts with the one or more holographs rendered on the at least one projection screen; processing the interaction data to update the one or more holographs; and transmitting the updated one or more holographs to the at least one projector unit for rendering on the at least one projection screen.



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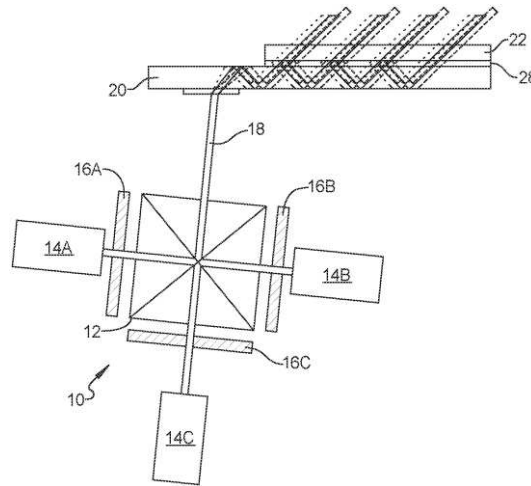
US20230091935

Priority Date: 22/09/2021

GM GLOBAL TECHNOLOGY OPERATIONS

POLARIZATION ADAPTIVE WAVEGUIDE HUD

A head-up display system includes a hologram projector adapted to project a holographic image, a waveguide positioned in front of the hologram projector, wherein the holographic image projected by the hologram projector passes through the waveguide, a glare control prism positioned in front of the waveguide assembly, and a waveplate positioned between the waveguide and the glare control prism, the waveplate adapted to adjust the polarization of the holographic image.



CLAIM 1. A head-up display system, comprising: a hologram projector adapted to project a holographic image; a waveguide positioned in front of the hologram projector, wherein the holographic image projected by the hologram projector passes through the waveguide; a glare control prism positioned relative to the waveguide, wherein the holographic image projected by the hologram projector exits the waveguide and passes through the glare control prism; and a waveplate positioned between the waveguide and the glare control prism, the waveplate adapted to adjust the polarization of the holographic image.

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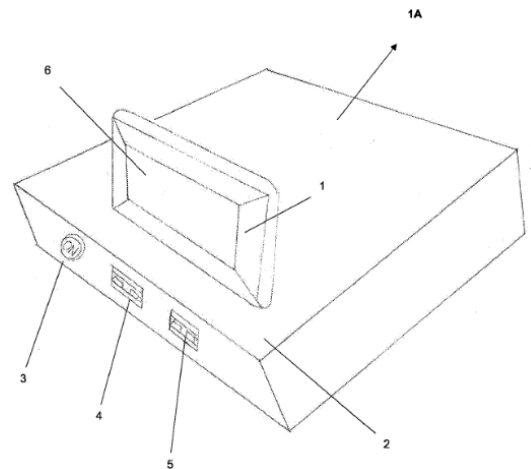
Priority Date: 22/09/2021

PULSION CAPITAL LIMITADA

NFT DISPLAY DEVICE AND NFT HOLOGRAPHIC PROJECTOR

An NFT display device having a user interface touch system, a monitor, and a storage unit and processor stored within a housing, in which the housing includes a power button, a USB port and a power connector port for supplying power to the NFT display device. Moreover, the disclosure describes an NFT holographic projector that includes a hologram projection lens, as well as a touch interface, a monitor, and a storage unit and processor stored within a housing in which the housing includes a power button, a USB port, and a power connector port for supplying power to the NFT holographic projector.

CLAIM 1. An NFT display device, comprising: a housing; a user interface; a monitor; a processor; a storage unit comprising a hard disk and RAM memory stored within the housing; wherein the housing comprises a power button, a USB port, and a power connector port for supplying power to the NFT display device; wherein the storage unit contains instructions, which when performed by the processor, validate Blockchain information and verify that an NFT displayed on the monitor is authentic.



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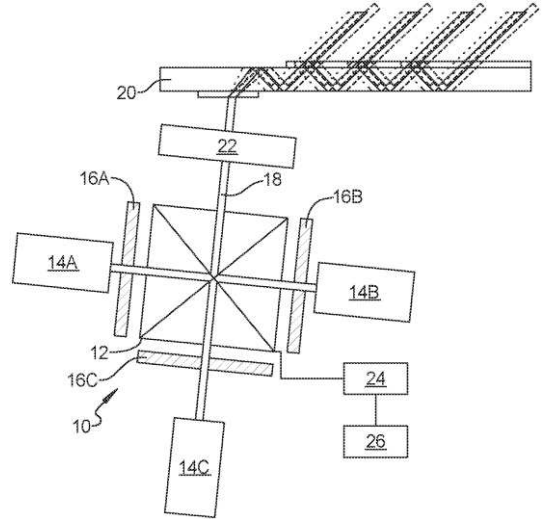
Priority Date: 22/09/2021

GM GLOBAL TECHNOLOGY OPERATIONS

WAVEGUIDE HEAD-UP DISPLAY

A head-up display system includes a hologram projector adapted to project a holographic image, a beam steering device adapted to adjust a look down angle of a holographic image projected through the beam steering device by the hologram projector, and a controller in communication with the hologram projector and adapted to compare the vertical location of the driver's eyes to a pre-determined nominal vertical position, and to adjust a virtual image distance of the holographic image projected by the hologram projector.

CLAIM 1. A method of controlling a head up display system for an automobile, comprising: locating, with a driver monitoring system, the vertical location of a driver's eyes; comparing, with a controller, the vertical location of the driver's eyes to a pre-determined nominal vertical position; adjusting, with a beam steering device, a look down angle of a holographic image projected by a hologram projector, wherein the beam steering device includes a liquid crystal lens adapted to steer light passing through the beam steering device upon application of voltage to the beam steering device, and selectively changing birefringent characteristics of the liquid crystal lens by varying the voltage supplied to the liquid crystal lens; and adjusting, with the controller, a virtual image distance of the holographic image projected by the hologram projector.



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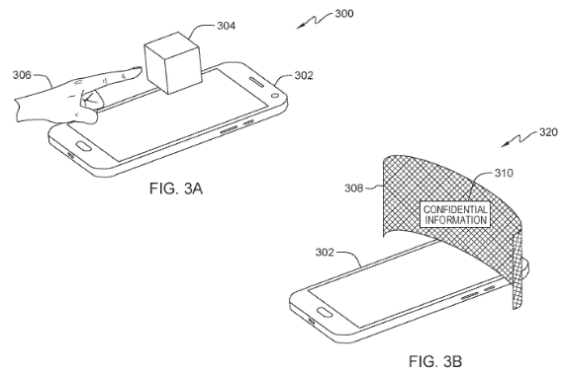
Priority Date: 10/09/2021

IBM

SECURITY FOR DISPLAYED CONFIDENTIAL HOLOGRAPHIC OBJECTS

In an approach to security for displayed confidential holographic objects, one or more computer processors receive a request from a user to display a holographic object in association with a device. One or more computer processors identify content to be moved to the holographic object. One or more computer processors determine the content includes confidential information. One or more computer processors request authentication from the user. One or more computer processors receive the authentication from the user. One or more computer processors create a holographic boundary, where the holographic boundary blocks a view of the holographic object from one or more unauthorized users. One or more computer processors display the holographic boundary. One or more computer processors display the holographic object in association with the device.

CLAIM 1. A computer-implemented method comprising: receiving, by one or more computer processors, a request from a user to display a holographic object in association with a device; identifying, by one or more computer processors, content to be moved to the holographic object; determining, by one or more computer processors, the content includes confidential information; requesting, by one or more computer processors, authentication from the user; receiving, by one or more computer processors, the authentication from the user; creating, by one or more computer processors, a holographic boundary, wherein the holographic boundary blocks a view of the holographic object from one or more unauthorized users; displaying, by one or more computer processors, the holographic boundary; and displaying, by one or more computer processors, the holographic object in association with the device.



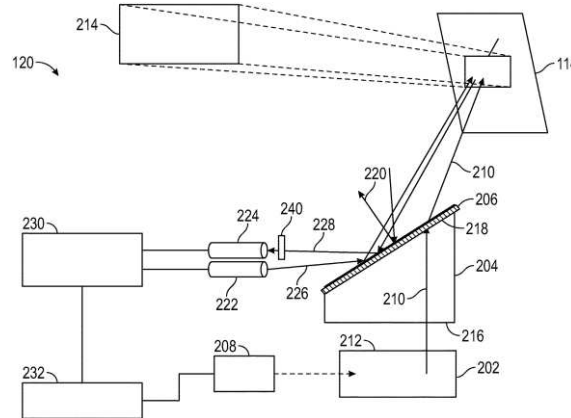
N9244

US20230065537
Priority Date: 30/08/2021

GM GLOBAL TECHNOLOGY OPERATIONS

EMBEDDED EYE TRACKER USING PUPIL EXPANDER GLARE PRISM

A head-up display and a system and method of operating a head-up display. The head-up display includes a prism, an imager and a camera. The prism has a first surface and a second surface. An infrared-reflective coating on the second surface of the prism has a maximum reflectivity at a selected wavelength. The imager is configured to project a hologram into the prism via the first surface, out of the prism via the second surface, through the infrared-reflective coating and into an eyebox. The camera is configured to receive an eye tracking beam from the eyebox that is reflected from the infrared-reflective coating. A processor determines eye information from the eye tracking beam and adjusts a parameter of the hologram based on the eye information.



CLAIM 1. A head-up display for a vehicle, comprising: a prism having a first surface and a second surface; an infrared-reflective coating on the second surface of the prism, the infrared-reflective coating having a maximum reflectivity at a selected wavelength; an imager configured to project a hologram into the prism via the first surface, out of the prism via the second surface, through the infrared-reflective coating to reflect off of a windshield of the vehicle and into an eyebox; and a camera configured to receive an eye tracking beam from the eyebox that is reflected from the windshield and the infrared-reflective coating.

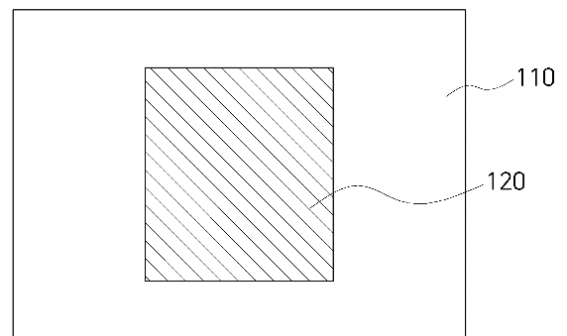
N9246

KR20230034861
Priority Date: 03/09/2021

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH
INSTITUTE

HOLOGRAM-BASED ROAD TRAFFIC SAFETY SIGN AND METHOD FOR MANUFACTURING THE SAME

The present invention relates to hologram-based roadway safety signs. The method includes selecting a diffraction equation model, calculating a fringe interference pattern for displaying a hologram image having a finite focal length using the diffraction equation model, fabricating a micro/nano-sized three-dimensional structure based on the calculated fringe interference pattern, and transferring the fringe interference pattern to the hologram film using the fabricated micro/nano-sized three-dimensional structure.



CLAIM 1. A method, comprising: selecting a diffraction equation model; calculating a fringe interference pattern for displaying a hologram image having a finite focal length using the diffraction equation model; fabricating a micro/nano-sized three-dimensional structure based on the calculated fringe interference pattern; And transferring a fringe interference pattern to the hologram film using the fabricated micro/nano-sized three-dimensional structure.

N9247

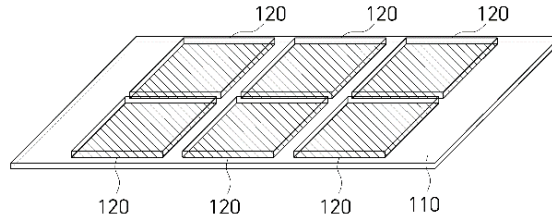
KR20230034860

Priority Date: 03/09/2021

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE

LARGE-AREA HOLOGRAPHIC IMAGE FILM AND METHOD FOR PRODUCING THE HOLOGRAPHIC IMAGE FILM

The present invention relates to large area holographic image films. The method includes: selecting a diffraction equation model to recover a hologram image to be displayed; calculating a hologram fringe interference pattern using the selected diffraction equation model; Preparing a micro/nano structure by using the calculated hologram fringe interference pattern; and forming the hologram fringe interference pattern on the hologram film by using the micro/nano structure thus prepared.



CLAIM 1. A method for displaying a hologram image, comprising: selecting a diffraction equation model to recover a hologram image to be displayed; calculating a hologram fringe interference pattern using the selected diffraction equation model; fabricating a micro/nanostructure using the calculated hologram fringe interference pattern; And forming a hologram fringe interference pattern on the hologram film at a nano pixel pitch depth by using the micro/nano structure thus prepared.

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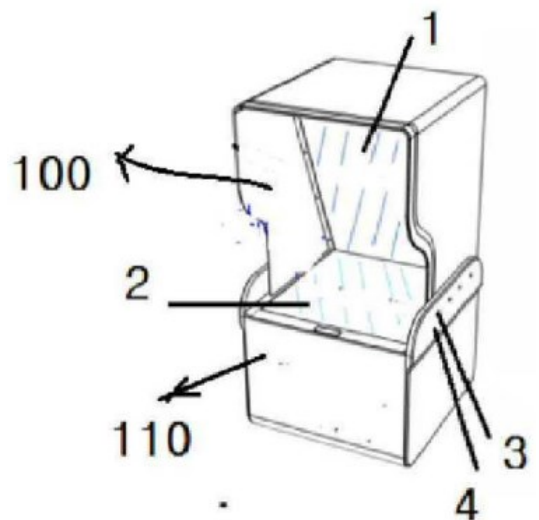
KR20230026667

Priority Date: 18/08/2021

QMIX

TRANSMISSIVE REAL HOLOGRAM 3 D DISPLAY SYSTEM

The present invention relates to a transmission type real hologram 3 D display system. the transmission type real hologram 3 D display system includes a mirror plate 2 installed on an upper surface of a lower table 110 to display an image illuminated from a display panel 121 of a lower portion, a lower end of a half mirror 1 is coupled to a rear end of the display panel 121, and the half mirror 1 is inclined forward toward an upper portion, The present invention can provide practical content and image to a user, is a product optimized for display and acceleration due to high transmission type structure and transparency, can remove half mirrors and be used in tabletop format to provide diversity, Since it is possible to provide a high-resolution image with a large depth, it is possible to observe content having an accurate depth sensation, to realize interaction by a user along with the resolution of the image.



CLAIM 1. A transmission real hologram 3 D display system is provided with a mirror plate 2 on an upper surface of a lower table 110 to display an image illuminated from a lower display panel 121, and a lower end of a half mirror 1 is coupled to a rear end of the display panel 121, and the half mirror 1 is inclined forward toward an upper portion of the display panel 3 D display system.

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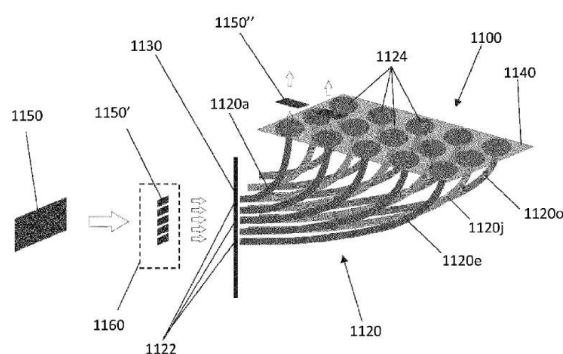
Priority Date: 21/09/2021

ENVISICS

HOLOGRAPHIC SYSTEM AND PUPIL EXPANDER THEREFOR

Holography includes a spatial light modulator (SLM) displaying a hologram 1150 of an image and outputting spatially modulated light encoded with the hologram. A pupil expander 1100 includes light guides 1120 with input 1122 and output 1124 ends and couples 1160 the light output by the SLM into the input end of each light guide where it is output from their output ends to a viewing area. Each of the light guides propagates the light received at its input so as to expand an exit pupil in a first dimension which may correspond to a dimension of the viewing area. The output ends of light guides may be in a one-dimensional array in the first dimension. A light guide splitter may couple the spatially modulated light output by the SLM into the input ends of the light guides at the same time. Holography including a SLM has light guides which form a replica of the input spatially modulated light so that they expand an exit pupil in a first dimension. Holography including a SLM outputs light channels 1150' coupled into light guides which propagate the respective light channels so that they expand an exit pupil in a first dimension.

CLAIM 1. A holographic system comprising:
a spatial light modulator arranged to display a hologram of an image and to output spatially modulated light encoded with the hologram;
a pupil expander comprising a plurality of light guides, each light guide having an input end and an output end, wherein the pupil expander is arranged so that spatially modulated light output by the spatial light modulator is coupled into the input end of each light guide and output from the output end thereof to a viewing area;
wherein each of the plurality of light guides is arranged to propagate the spatially modulated light received at its input end so as to expand an exit pupil of the system in a first dimension, wherein, optionally, the first dimension corresponds to a dimension of the viewing area.



N9257

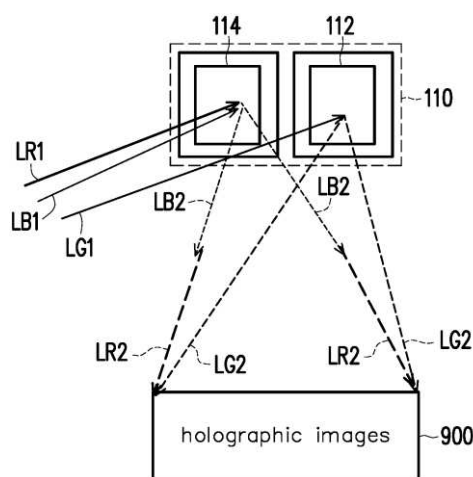
EP4141577

Priority Date: 27/08/2021

HIMAX DISPLAY

HOLOGRAPHIC DISPLAY SYSTEM AND METHOD FOR GENERATING HOLOGRAPHIC IMAGES

A holographic display system (100, 200) including a first spatial light modulator panel (112) and a second spatial light modulator panel (114) is provided. The first spatial light modulator panel (112) is configured to receive a first light (LG1) with a first color, and generate a first diffracted light (LG2) with the first color. The second spatial light modulator panel (114) is configured to receive a second light (LR1) with a second color and a third light (LB1) with a third color, and respectively generate a second diffracted light (LR2) with the second color and a third diffracted light (LB2) with the third color. The first color, the second color, and the third color are different colors, and the first diffracted light (LG2), the second diffracted light (LR2) and the third diffracted light (LB2) form holographic images (900). A method for generating holographic images (900) is also provided.

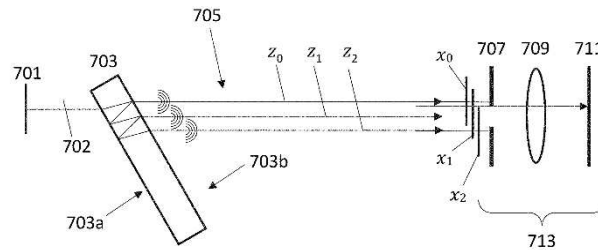


CLAIM 1. A holographic display system (100, 200), comprising: a first spatial light modulator panel (112), configured to receive a first light (LG1) with a first color, and generate a first diffracted light (LG2) with the first color; and a second spatial light modulator panel (114), configured to receive a second light (LR1) with a second color and a third light (LB1) with a third color, and respectively generate a second diffracted light (LR2) with the second color and a third diffracted light (LB2) with the third color, wherein the first color, the second color, and the third color are different colors, and the first diffracted light (LG2), the second diffracted light (LR2) and the third diffracted light (LB2) form holographic images.

100

HOLOGRAM CALCULATION

A method of determining a hologram of an image for a system comprising a display device and viewing system. The display device is arranged to display the hologram. The viewing system is arranged to view the hologram through a pupil expander. The pupil expander provides a plurality of light propagation paths from the display device to the viewing system. The method comprises first to fifth stages. The first stage comprises determining a first complex light field at an entrance pupil of the viewing system. The first complex light field results from the propagation of light from a display plane of the display device along at least one light propagation path of the pupil expander. The first stage also comprises cropping in accordance with the entrance pupil of the viewing system. The second stage comprises determining a second complex light field at a sensor plane of a sensor of the viewing system. The second complex light field results from the propagation of light of the first complex light field from the entrance pupil through a lens of the viewing system. The second stage also comprises modifying the amplitude component in accordance with the image. The third stage comprises determining a third complex light field at the entrance pupil. The third complex light field results from the reverse propagation of light of the second complex light field from the sensor plane back through the lens. The third stage also comprises cropping in accordance with the entrance pupil. The fourth stage comprises determining a fourth complex light field at the display plane. The fourth complex light field results from the propagation of light of the third complex light field back along the at least one light propagation path of the pupil expander. The fourth stage also comprises cropping in accordance with the display device. In a fifth stage, the hologram is extracted from the fourth data set.



CLAIM 1. A method of determining a hologram of an image for a system comprising a display device arranged to display the hologram and a viewing system arranged to view the hologram through a pupil expander providing a plurality of light propagation paths from the display device to viewing system, the method comprising the stages of: a first stage comprising determining a first complex light field at an entrance pupil of the viewing system, wherein the first complex light field results from the propagation of light from a display plane of the display device along at least one light propagation path of the plurality of light propagation paths of the pupil expander and cropping in accordance with the entrance pupil of the viewing system; a second stage comprising determining a second complex light field at a sensor plane of a sensor of the viewing system, wherein the second complex light field results from the propagation of light of the first complex light field from the entrance pupil through a lens of the viewing system and modification of the amplitude component in accordance with the image; a third stage comprising determining a third complex light field at the entrance pupil, wherein the third complex light field results from the reverse propagation of light of the second complex light field from the sensor plane back through the lens and cropping in accordance with the entrance pupil; a fourth stage comprising determining a fourth complex light field at the display plane, wherein the fourth complex light field results from the reverse propagation of light of the third complex light field back along the at least one light propagation path of the pupil expander and cropping in accordance with the display device; and extracting a hologram from a data set corresponding to the fourth complex light field.

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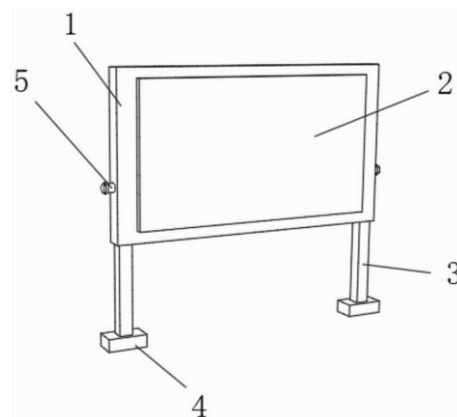
Priority Date: 06/11/2022

HENAN YUGUANG INTELLIGENT TECHNOLOGY

HOLOGRAPHIC IMAGE PARTITION WALL

The utility model relates to a projection apparatus accessory technical field discloses a holographic image partition wall, including the frame main part, the equal sliding connection in the inside left and right sides of frame main part has a leg frame, leg frame bottom fixedly connected with bearing block, two leg frame all is provided with a plurality of screws from one side, the equal threaded connection in the bottom of the frame main part left and right sides has the bolt, two the bolt is from the equal fixedly connected with rotation handle in one side mutually, frame main part top fixedly connected with hinge, the hinge outer wall is provided with the upset strip, the inside rear side fixedly connected with glass of frame main part, the glass rear side is provided with electromagnetic touch membrane, the glass front side is provided with holographic projection membrane. The utility model discloses in, through hinge and upset strip, realize changing the maintenance of curtain, it is more convenient, promote the connecting plate through electric putter, make to clean the cloth and carry out horizontal migration to clean the curtain, reach self-cleaning's effect.

CLAIM 1. A holographic partition wall, includes frame main part (1), its characterized in that: frame main part (1) inside left and right sides equal sliding connection has leg rest (3), leg rest (3) bottom fixedly connected with bearing block (4), two leg rest (3) all is provided with a plurality of screws (14) from one side mutually, the equal threaded connection in both sides bottom has bolt (5), two bolt (5) phase separates the equal fixedly connected with rotating handle (15) in one side mutually, frame main part (1) top fixedly connected with hinge (7), hinge (7) outer wall is provided with upset strip (6), frame main part (1) inside rear side fixedly connected with glass (9), glass (9) rear side is provided with electromagnetic touch membrane (12), glass (9) front side is provided with holographic projection membrane (13), frame main part (1) inside top side middle-end is provided with curtain (2), the equal fixedly connected with electric putter (8) in the inside front end left and right sides of frame main part (1), two the equal fixedly connected with electric putter (8) in one side of electric putter (8), connecting plate (10) rear side fixedly connected with wipes (11).



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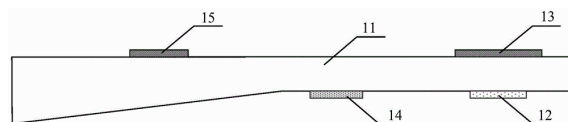
Priority Date: 27/10/2022

CHINA MOBILE COMMUNICATIONS | CHINA MOBILE SOFTWARE TECHNOLOGY

WAVEGUIDE-BASED HOLOGRAPHIC IMAGING SYSTEM AND ELECTRONIC DISPLAY DEVICE

The embodiment of the utility model discloses holographic imaging system and electronic display equipment based on waveguide, wherein holographic imaging system includes: the optical coupler comprises a waveguide, and a light source, an in-coupling optical element, a spatial light modulator and an out-coupling optical element which are arranged on two sides of the waveguide; wherein the waveguide comprises a wedge portion and a slab portion, the wedge portion to increase an angle of reflection of light within the waveguide; the in-coupling optical element is used for coupling light incident from the light source into the waveguide into the plate part of the waveguide at an angle; the spatial light modulator is used for dynamically loading and modulating the hologram; and the out-coupling optical element is used for enabling the modulated light to be coupled out of the waveguide and continuing the holographic reconstruction process.

CLAIM 1. A waveguide-based holographic imaging system, comprising: the optical coupler comprises a waveguide, and a light source, an in-coupling optical element, a spatial light modulator and an out-coupling optical element which are arranged on two sides of the waveguide; wherein the waveguide comprises a wedge-shaped portion and a slab portion, the wedge-shaped portion for increasing an angle of reflection of light within the waveguide; the in-coupling optical element is configured to couple light incident from the light source into the waveguide into the slab portion of the waveguide at an angle; the spatial light modulator is used for dynamically loading and modulating the hologram; and the out-coupling optical element is used for enabling the modulated light to be coupled out of the waveguide and continuing the holographic reconstruction process.



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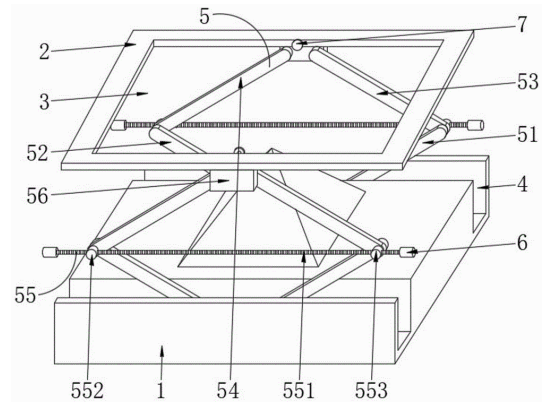
Priority Date: 30/08/2022

ANHUI LANCAI HOLOGRAPHIC CULTURE

PORTABLE HOLOGRAPHIC PROJECTION BOX

The utility model discloses a portable holographic projection box, supporting mechanism includes first support arm and second support arm, first support arm and second support arm all rotate through the pivot and connect in the recess, it is connected with the third support arm to rotate on the first support arm, it is connected with the fourth support arm to rotate on the second support arm, be provided with adjustment mechanism between the surface of third support arm and fourth support arm, it is connected with the connecting plate to rotate between the surface of third support arm and fourth support arm, be provided with installation mechanism between connecting plate and the roof, this application drives first support arm, second support arm, third support arm and fourth support arm motion through adjustment mechanism, realizes going up and down the operation to the roof, and the support effect to the roof is stable, avoids appearing the condition of emptying and takes place, and whole device is convenient for accomodate also, convenient to use.

CLAIM 1. A portable holographic projection box is characterized by comprising a base (1) and a top plate (2), wherein a through groove (3) is formed in the top of the top plate (2) in a penetrating mode, a groove (4) is formed in the top of the base (1), two grooves (4) are formed in the top of the base (1), and a supporting mechanism (5) is arranged between each groove (4) and the corresponding top plate (2); support mechanism (5) include first support arm (51) and second support arm (52), first support arm (51) and second support arm (52) are all rotated through pivot (58) and are connected in recess (4), it is connected with third support arm (53) to rotate on first support arm (51), it is connected with fourth support arm (54) to rotate on second support arm (52), be provided with adjustment mechanism (55) between the surface of third support arm (53) and fourth support arm (54), it is connected with connecting plate (56) to rotate between the surface of third support arm (53) and fourth support arm (54), be provided with installation mechanism (57) between connecting plate (56) and roof (2).



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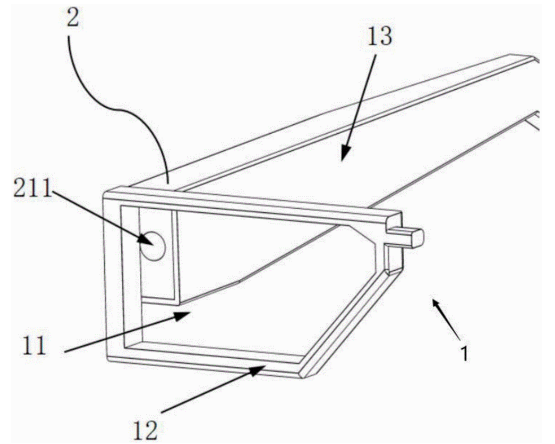
Priority Date: 08/03/2022

NANCHANG UNIVERSITY

HOLOGRAPHIC OPTICAL WAVEGUIDE AR GLASSES WITH SINGLE-CHIP FULL-COLOR MICRO-LED

The utility model relates to a carry full-color micro led's of dress single-chip holographic optical waveguide AR glasses, including the mirror body and module subassembly, the mirror body includes lens, picture frame, mirror leg, and the mirror leg activity sets up in one side of picture frame, and the inside of setting at the picture frame can be dismantled to the lens, the module subassembly is including encapsulation lid, miniature ray apparatus module, the full-color module of single-chip, power module, expand the function module outward, the encapsulation is covered and is opened there is the unthreaded hole module subassembly is fixed in inside the mirror leg, the full-color module of single-chip adopts the full-color micro led of single-chip, can show full-color picture with single chip, the lens adopts the holographic optical waveguide lens. The utility model discloses an adopt full-color module of single-chip and holographic optical waveguide lens, when reduce cost, simplified structure, reduce weight, reduce the volume, can also full-color display picture, effectively promoted the use of AR glasses and experienced.

CLAIM 1. The utility model provides a load with holographic optical waveguide AR glasses of full-color Microled of single-chip which characterized in that: including the mirror body (1), the mirror body (1) includes picture frame (12) and mirror leg (13), and mirror leg (13) activity sets up the one end in picture frame (12), the inside of mirror leg (13) is provided with module subassembly (2), module subassembly (2) include miniature ray apparatus module (22) and single-chip full-color module (23), and establish ties between miniature ray apparatus module (22) and the single-chip full-color module (23).



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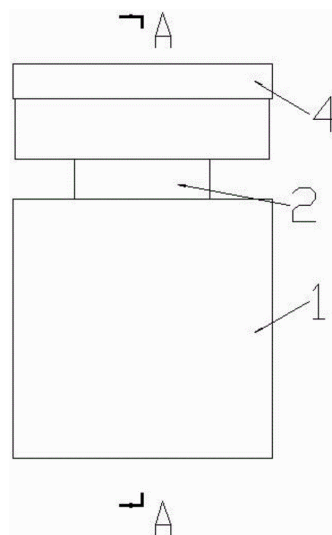
Priority Date: 08/09/2022

SHANGHAI ZHANGJIANG CHAOYI MULTIMEDIA SYSTEM

HOLOGRAPHIC DISPLAY PANEL

The utility model discloses a holographic display panel, include: the display panel comprises a first display panel, a second display panel and a top cover, wherein the first display panel is of a cover mounting structure; the second display panel is of a hollow oval structure and is arranged in the first display panel; the top cover is arranged on the first display panel, a first accommodating space is formed by the top cover and the first display panel in a surrounding mode, the second display panel is arranged in the first accommodating space, and a first projection lamp group used for projecting to the first display panel and a second projection lamp group used for projecting to the second display panel are arranged on the top cover. The utility model discloses set up first display panel and second display panel, the centre is placed ornamental properties such as fish, tortoise, pasture and water and can be moved about and article cooperation three-dimensional image carries out the multi-mode and is mutual.

CLAIM 1. A holographic display panel, comprising: the display panel comprises a first display panel and a second display panel, wherein the first display panel is of a covering structure; the second display panel is of a hollow oval structure and is arranged in the first display panel; the top cover is arranged on the first display panel, a first accommodating space is formed by the top cover and the first display panel in a surrounding mode, the second display panel is arranged in the first accommodating space, and a first projection lamp group used for projecting to the first display panel and a second projection lamp group used for projecting to the second display panel are arranged on the top cover.



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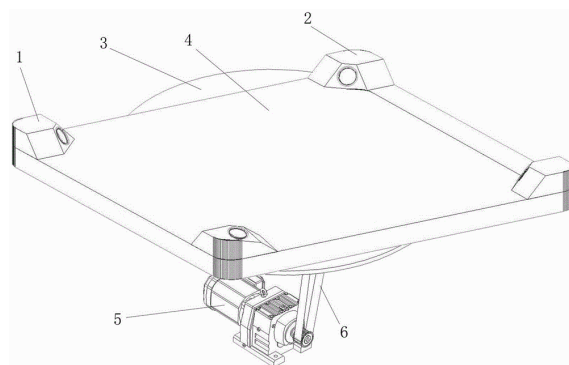
Priority Date: 08/09/2022

SHANGHAI ZHANGJIANG CHAOYI MULTIMEDIA SYSTEM

DOUBLE-IMAGING HYBRID HOLOGRAPHIC DISPLAY DEVICE

The utility model discloses a two formation of image mixed holographic display device, include: the device comprises two first holographic image emitting devices, two second holographic image emitting devices, a projection screen and a bottom turntable, wherein the two first holographic image emitting devices are arranged at an included angle of 45 degrees with a horizontal plane; the two second holographic image emission devices are arranged at an included angle of 45 degrees with the horizontal plane; a projection screen is arranged between the two first holographic image emission devices and the two second holographic image emission devices and receives light projected by the two first holographic image emission devices and the two second holographic image emission devices; the two first holographic image emission devices and the two second holographic image emission devices are arranged on the bottom rotating disc, and the bottom rotating disc rotates by taking the axis of the bottom rotating disc as a shaft. The utility model discloses set up rotating device in first holographic image emitter and second holographic image emitter's below for the holographic image that its throws out can 360 rotations show.

CLAIM 1. A dual imaging hybrid holographic display, comprising: the two first holographic image emitting devices are arranged at an included angle of 45 degrees with the horizontal plane and are arranged oppositely; the two second holographic image emission devices are arranged at an included angle of 45 degrees with the horizontal plane, the two second holographic image emission devices are oppositely arranged, and one second holographic image emission device is arranged between every two first holographic image emission devices; the projection screen is arranged between the two first holographic image emission devices and the two second holographic image emission devices and receives light projected by the two first holographic image emission devices and the two second holographic image emission devices; the bottom turntable is provided with the two first holographic image emission devices and the two second holographic image emission devices, and the bottom turntable rotates by taking the axis of the bottom turntable as a shaft.



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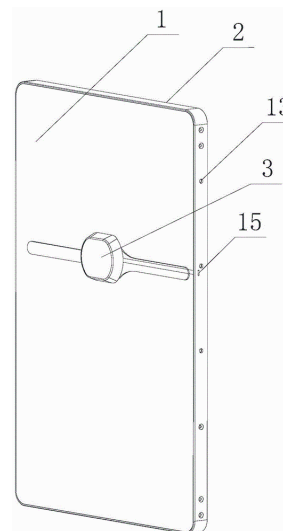
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Priority Date: 21/10/2022

SHENZHEN HOLOGRAPHIC TIMES MEDIA TECHNOLOGY

HOLOGRAPHIC DISPLAY GATE PENDULUM AND CHANNEL GATE

The utility model discloses a holographic display gate pendulum and channel gate, which comprises a first fixing component, a second fixing component and a display host device, wherein the first fixing component comprises a first fixing plate and a first frame body, the second fixing component comprises a second frame body and a second fixing plate, the first fixing plate is fixedly connected with the first frame body, and the second fixing plate is fixedly connected with the second frame body; the first fixing component and the second fixing component are detachably connected, an accommodating cavity is formed in the first fixing component and the second fixing component after the first fixing component and the second fixing component are fixedly connected, and the holographic display host device is arranged in the accommodating cavity. The utility model provides a first fixed subassembly and the fixed subassembly structure of second are exquisite simple to make things convenient for holographic display host computer device to fix on the floodgate pendulum, and carry out holographic display to information, installation and easy dismounting practice thrift manufacturing cost, raise the efficiency.



CLAIM 1. The holographic display gate pendulum is characterized by comprising a first fixing component (1), a second fixing component (2) and a holographic display host device (3), wherein the first fixing component (1) comprises a first fixing plate (12) and a first frame body (11), the second fixing component (2) comprises a second frame body (21) and a second fixing plate (22), the first fixing plate (12) is fixedly connected with the first frame body (11), and the second fixing plate (22) is fixedly connected with the second frame body (21); the holographic display device is characterized in that the first fixing component (1) and the second fixing component (2) are detachably connected, a containing cavity is formed inside the first fixing component (1) and the second fixing component (2) after the first fixing component and the second fixing component are connected, and the holographic display device host (3) is arranged in the containing cavity.

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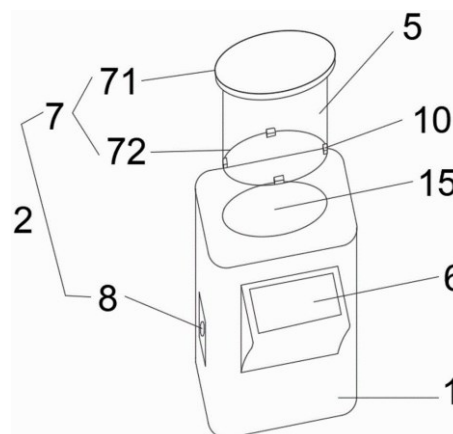
Priority Date: 15/02/2022

SHANGHAI ZHUXIN INTELLIGENT TECHNOLOGY

INTERACTIVE 3D HOLOGRAPHIC SHOWCASE

An interactive 3D holographic showcase relates to the technical field of interactive showcases and comprises a showcase body, an appearance assembly and an imaging module, wherein the imaging module comprises an information processing module and a display screen, and the display screen is a transparent cylindrical screen; the information processing module is connected with a computer center, the computer center is connected with a control panel, and the control panel is arranged on the side wall of the cabinet body; the appearance component comprises a screen support frame and a sound box; the stereo set sets up another lateral wall at the cabinet body, the utility model discloses a set up the columniform display screen of transparent formula and set up control panel at cabinet body outer wall connection, realized that the showpiece formation of image 360 is visible, and a machine can be controlled and change the different showpiece of show.

CLAIM 1. Interactive 3D holographically exhibits cabinet, including the cabinet body (1), outward appearance subassembly (2), formation of image module (3) is carried with image sensor and is equipped with information processing module (303), information processing module (303) connection computer maincenter (12), computer maincenter (12) contact control panel (6), its characterized in that, formation of image module (3) include imaging device (301), imaging device (301) are by information processing module (303) control switch, imaging device (301) include display screen (5), display screen (5) are transparent cylindrical screen; the control panel (6) is arranged on the side wall of the cabinet body (1), and the control panel (6) adopts a touch screen; the appearance component (2) comprises a screen support frame (7) and a sound box (8); the screen support frame (7) is clamped with the display screen (5); the sound box (8) is arranged on the side wall of the cabinet body (1), and the sound box (8) and the control panel (6) are respectively positioned on two adjacent side faces of the cabinet body (1).



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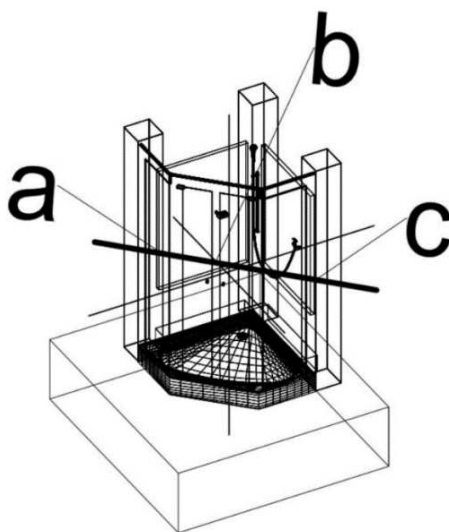
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Priority Date: 10/10/2022

BEIJING URBAN CONSTRUCTION

INTELLIGENT EXHIBITION HALL SYSTEM BASED ON HOLOGRAPHIC IMAGES

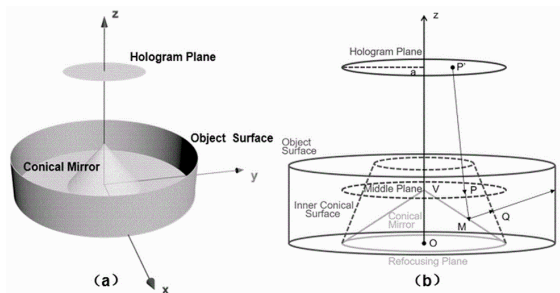
The invention relates to the technical field of intelligent exhibition hall systems, in particular to an intelligent exhibition hall system based on holographic images, which comprises: the motion sensing modules consist of pressure sensors and cameras and are used for observing and collecting the motions of corresponding visitors on the pressure sensors; the image display modules are holographic projection equipment and are used for displaying preset images; and the central control module is respectively connected with each action sensing module and the image display module and is used for receiving and analyzing the action characteristics of the visitor collected by the corresponding action sensing module so as to determine the access tendency of the visitor and control the output of the image. The invention utilizes the action sensing module, the image display module and the central control module to analyze the visit tendency of the visitor and change the holographic projection image through the visit tendency, thereby improving the exhibition experience of the visitor.



CLAIM 1. The utility model provides a wisdom exhibition room system based on holographic image which characterized in that includes: the motion sensing modules comprise a pressure sensor and a plurality of cameras for a single motion sensing module, wherein the cameras are used for observing and collecting the motions of corresponding visitors on the pressure sensor; the image display modules are holographic projection equipment for displaying preset images for a single image display module; and the central control module is respectively connected with each action sensing module and each image display module and is used for receiving and analyzing the action characteristics of the visitor collected by the corresponding action sensing module to determine the visit tendency of the visitor, and the central control module combines the determination result and the position relation between the visitor and the corresponding image display module to control the corresponding image display module to output the corresponding image at the designated position at the designated angle when the determination of the visit tendency of the visitor is completed.

VERTICAL VIEW FIELD EXPANDING METHOD FOR OPTICAL CYLINDRICAL HOLOGRAPHIC DISPLAY

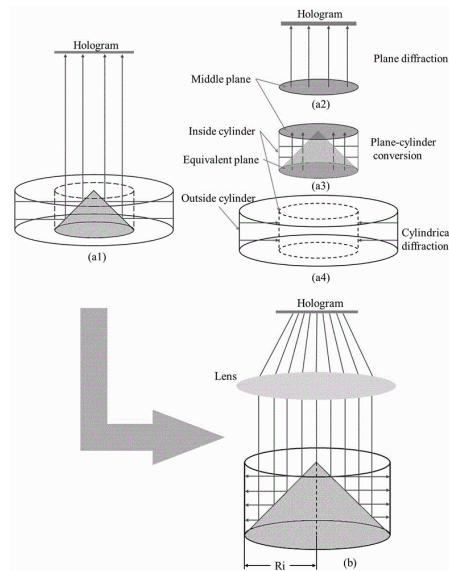
The invention provides a vertical field of view expanding method for optical cylindrical holographic display, aiming at the problem that the vertical field of view of optical cylindrical holographic display is limited. The method uses conical mirrors with different base angles to convert the diffraction field of a plane hologram to a conical surface by the phase plane conversion function of the conical mirrors and the like. Compared with the original method which only can convert the diffraction field of the plane hologram to the cylindrical surface, the method can realize the expansion of the vertical field of view of the optical cylindrical holographic display. The method solves the problem of limited vertical field of view of optical cylindrical holographic display for the first time, realizes the expansion of the vertical field of view of optical cylindrical holographic display, and has great application prospect.



CLAIM 1. A vertical view field expanding method for optical cylindrical holographic display is characterized by comprising the following steps: (i) A hologram reconstruction method of a vertical field of view expansion method of optical cylindrical holographic display comprises the following steps: step 1, loading a computed hologram Holo on a planar spatial light modulator, wherein the radius of the hologram is r , the computed hologram reaches a middle plane through a diffraction process from a holographic plane HP with a propagation distance z_1 to the middle plane MP, and the radius of the middle plane is r ; step 2, the diffraction field on the middle plane reaches an inner conical surface IC after being reflected by a conical mirror with a base angle of γ , and the radius and the base angle of the lower bottom surface of the inner conical surface are r and 2γ respectively; step 3, obtaining a 360-degree cylindrical holographic optical representation U_0 , namely an original light wave, by the diffraction process from the internal conical surface IC to the external cylindrical surface OC with the radius of R ; the mathematical process of the reproduction method is represented as: $u_0 = IC2OC_Prop \{ MP2IC_Tran [HP2MP_Prop (Holo, z_1), R], R, 2\gamma \}$, where $HP2MP_Prop (, z_1)$ denotes the diffraction propagation process from the holographic plane to the middle plane with propagation distance z_1 , $MP2IC_Tran [(, R)]$ denotes the equiphase plane transformation process from the middle plane to the conic surface of the conical mirror, $IC2OC_Prop [[], R, 2\gamma \}$ denotes the diffraction process from the conic surface to the external cylindrical surface with radius R for the radius of the bottom surface and for the base angle R and 2γ , respectively; (ii) A hologram calculation generation method of a vertical view field expansion method of optical cylindrical holographic display comprises the following steps: in order to realize the hologram reconstruction of the vertical field of view expansion method for optical cylindrical holographic display, a computer is adopted to simulate the generation process of the hologram, the process is opposite to the hologram reconstruction process, and the specific steps are as follows: step 1, obtaining the diffraction field distribution of an inner conical surface by the diffraction process of an inner conical surface IC from an outer cylindrical surface OC to a lower bottom surface with radius and bottom angle of R and 2γ respectively by an object light wave U_0 positioned on an outer cylindrical surface with radius of R ; step 2, simulating a conical mirror with a base angle of γ , and after the conical mirror reflects the conical mirror, transmitting a diffraction field from the inner conical surface IC to a middle plane MP which is as large as the lower bottom surface of the inner conical surface, wherein the radius r of the middle plane is the same as the radius r of the middle plane; step 3, the diffraction field on the middle plane reaches the holographic plane through the diffraction process from the middle plane MP with the propagation distance z_1 to the holographic plane HP, and the radius of the holographic plane is r ; finally, encoding the diffraction field restoration distribution on the holographic plane into a hologram which can be loaded and modulated by the spatial light modulator through a hologram encoding algorithm; the mathematical process of the calculation generation method is represented as follows: $holo = Encode \{ MP2HP_Prop \{ IC2MP_Tran [OC2IC_Prop (U_0, R, 2\gamma), R], z_1 \} \}$, where $OC2IC_Prop [[], R, 2\gamma \}$ denotes a diffraction process from an outer cylindrical surface with radius R to an inner conical surface with radius of the bottom surface and bottom angle R and 2γ , respectively, $IC2MP_Tran [(, R)]$ denotes an equiphase plane conversion process from the inner conical surface to an intermediate plane of the conical mirror, $MP2HP_Prop \{ (, z_1) \}$ denotes a diffraction propagation process from the intermediate plane with a propagation distance z_1 to the hologram plane; $encode \{ \}$ denotes a hologram encoding process.

AMPLIFICATION AND QUALITY IMPROVEMENT METHOD FOR OPTICAL CYLINDRICAL HOLOGRAPHIC DISPLAY

The invention provides an amplifying and quality improving method for optical cylindrical holographic display. The method comprises three parts of improving an optical cylindrical holographic display scheme, optimizing Fourier hologram by random gradient descent and reconstructing the hologram. In the generation process of the method, firstly, a Fourier lens is added in the plane diffraction process of optical cylindrical holographic display, the cylindrical diffraction process is cancelled, then the random gradient descent optimization Fourier algorithm provided by the invention is utilized, the randomly initialized hologram is reconstructed, the loss value between the randomly initialized hologram and a target image is calculated, the gradient of the randomly initialized hologram is obtained, the hologram is updated according to a back propagation formula, the operation is repeated on the updated hologram, the set threshold value is met, and the optimized hologram is obtained; loading the hologram for reconstruction; compared with the optical cylindrical holographic display method before improvement, the method can reconstruct cylindrical images with higher quality and larger size by obtaining the hologram, and has good application prospect in the cylindrical 360-degree display.



CLAIM 1. An amplification and quality improvement method for optical cylindrical holographic display is characterized by comprising three parts of improvement of an optical cylindrical holographic display scheme, optimization of Fourier hologram by random gradient descent and reconstruction of hologram; the improved optical cylindrical holographic display scheme is specifically described as follows: a Fourier lens is added in the plane diffraction process of optical cylindrical holographic display, and the cylindrical diffraction process is cancelled; the random gradient descent optimization Fourier hologram is specifically described as follows: initializing a random phase as a Fourier hologram H_0 ; reconstructing the initialized Fourier hologram H_0 by utilizing an inverse Fourier algorithm to obtain a reproduced image U_r ; step three, substituting the reproduced image U_r and the target plane image U_e into a loss function to calculate a loss value; step four, calculating the gradient of the loss value, performing reverse propagation, and updating the phase of the hologram; step five, reconstructing the updated hologram H_i again, repeating the operation of the step three and the operation of the step four, and optimizing; step six, when the set optimization times are met or satisfactory reconstruction quality is obtained, a final hologram is obtained; the hologram reconstruction is specifically described as follows: loading a hologram, converting the reconstructed plane image into a cylindrical surface by adopting a conical surface mirror with a bottom angle of 45 degrees, and receiving the holographic cylindrical surface reconstructed image.

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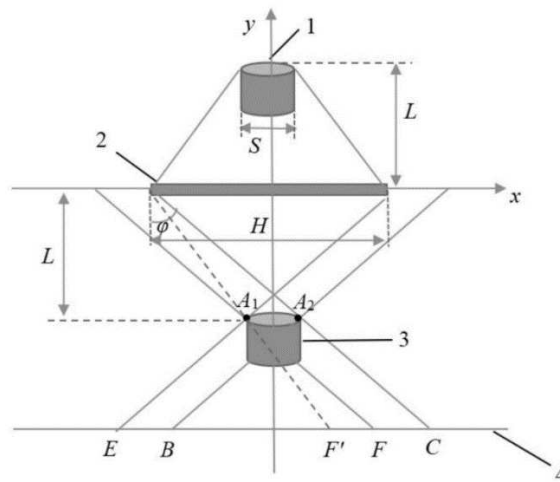
CN115793423

Priority Date: 06/12/2022

BEIHANG UNIVERSITY OF AERONAUTICS & ASTRONAUTICS

LARGE-VISUAL-ANGLE HOLOGRAPHIC 3D DISPLAY METHOD

The invention provides a large-visual-angle holographic 3D display method, which comprises the following three steps: firstly, regarding a 3D object as a series of object points, wherein each object point corresponds to a diffraction image point, firstly, calculating a hologram of a single image point according to the maximum diffraction angle of a spatial light modulator, analyzing an effective viewing area of a reconstructed image according to the whole size of the object, and further calculating a large-size hologram of the 3D object; secondly, in order to load a large-size hologram, seamlessly splicing the spatial light modulators together to form a large-size spatial light modulator array, and irradiating by using collimated coherent light as reproduction light; and thirdly, manufacturing a liquid crystal grating with a special structure, and performing secondary diffraction modulation on the reproduced image of the holographic 3D display by using the liquid crystal grating so as to generate a plurality of continuous secondary diffraction images and realize continuous expansion of the visual angle.



CLAIM 1. A large-viewing angle holographic 3D display method is characterized by comprising the following steps: first, for a 3D object, consider it as a series of object points, each corresponding to a diffraction image point, first according to the maximum diffraction angle of the spatial light modulator Calculating the hologram of a single image point and based on the whole objectAnalyzing the effective viewing area of the reconstructed image according to the size, and further calculating a large-size hologram of the 3D object; secondly, in order to load a large-size hologram, seamlessly splicing the spatial light modulators together to form a large-size spatial light modulator array, and irradiating by using collimated coherent light as reproduction light; thirdly, manufacturing a liquid crystal grating with a special structure, and performing secondary diffraction modulation on the reproduced image of the holographic 3D display by using the liquid crystal grating so as to generate N continuous secondary diffraction images and realize continuous expansion of the visual angle, wherein the viewing visual angle of the expanded holographic display is

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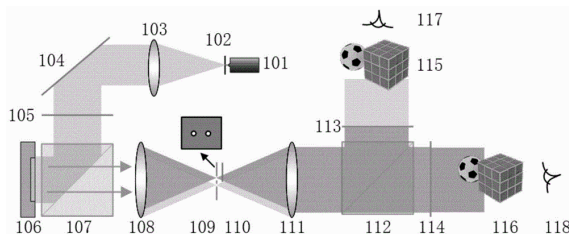
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Priority Date: 10/11/2022

BEIJING UNIVERSITY OF TECHNOLOGY

BINOCULAR HOLOGRAPHIC TRUE 3D NEAR-TO-EYE DISPLAY SYSTEM BASED ON SINGLE-CHIP SPATIAL LIGHT MODULATOR

A binocular holographic true 3D near-to-eye display system based on a single-chip spatial light modulator relates to the field of 3D display. The system comprises a laser, a spatial filter, a collimating lens, a reflector, a first wave plate, a first beam splitter, a first Fourier lens, a frequency spectrum filter, a second wave plate, a second Fourier lens, a second beam splitter, a first polarizing film and a second polarizing film, wherein the first polarizing film and the second polarizing film correspond to left and right eyes, the laser, the spatial filter and the collimating lens are used for generating an input light source required by the system, the Fourier lens is used for generating a Fourier frequency spectrum corresponding to a hologram for frequency domain filtering, the wave plate is used for adjusting the polarization directions of input light and diffraction reproduction light to enable the left and right eyes to reproduce light field polarization orthogonality, and the polarizing film is used for detecting and filtering 3D reproduction images of non-corresponding channels in binocular information. The invention can provide binocular parallax to increase stereoscopic vision clues on the basis of limited holographic 3D display parallax of the existing single-chip spatial light modulator, thereby relieving the problem of visual fatigue and reducing the requirement of a system on hardware.



CLAIM 1. A holographic true 3D near-to-eye display system based on a monolithic spatial light modulator is characterized by comprising a laser, a spatial filter, a collimating lens, a reflector, a first wave plate, a first beam splitter, a first Fourier lens, a frequency spectrum filter, a second wave plate, a second Fourier lens, a second beam splitter, a first polarizer and a second polarizer, wherein the first polarizer and the second polarizer correspond to left and right eyes; the light source emitted by the laser is linearly polarized light vertical to the plane of depression, and the first wave plate adjusts the polarization direction of the light incident on the spatial light modulator panel to be a strict vertical plane of depression; when the spatial light modulator loads the binocular hologram, the polarization direction of a diffraction light field of the spatial light modulator is not changed, but the diffraction light field simultaneously comprises 3D images of left and right eye visual angles, and the two images are overlapped together; when the diffracted light passes through the transformation action of the first Fourier lens and the second Fourier lens, the band-limited frequency spectrums of the left eye hologram and the right eye hologram are respectively positioned at different spatial positions of a Fourier plane; after the filtering action of the double-hole band-pass filter, only the frequency spectrum of the right-eye image and the frequency spectrum of the left-eye image of the positive level pass through, and the frequency spectrums of other levels are filtered; after the filtering operation, the polarization direction of the frequency spectrum of the binocular image hologram is still a vertical plane of depression, and then the frequency spectrum of the right eye image hologram is rotated by 90 degrees by the second wave plate, so that the polarization direction of the frequency spectrum of the right eye image hologram is changed into a parallel plane of depression, and the frequency spectrum polarization corresponding to the binocular image hologram is in orthogonal distribution; after the second beam splitter divides the left and right eye reproduced images into two paths, the polarization direction of the first polaroid is a vertical depression plane, and the polarization direction of the second polaroid is a parallel depression plane, so that the reproduced images divided into two paths are filtered by the two polaroids respectively to generate 3D reproduced images corresponding to the left and right eyes; and finally, combining various waveguide devices, and projecting the 3D reproduced images of the left eye and the right eye into the corresponding left eye and the right eye respectively.

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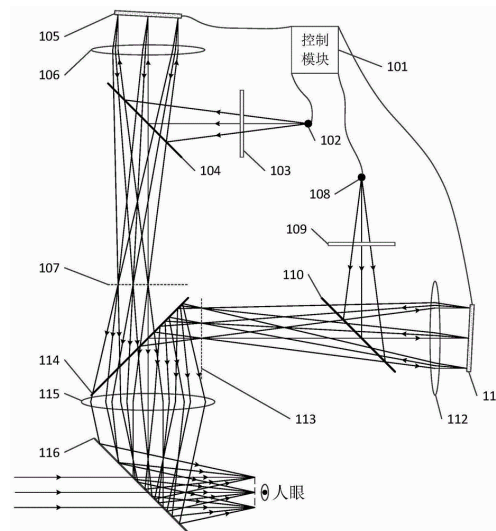
CN115793239

Priority Date: 13/09/2021

JITONG TECHNOLOGY BEIJING

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

The embodiment of the invention discloses a holographic near-eye display system and method based on a multi-spatial light modulator. The holographic near-eye display system comprises a control module, a plurality of spatial light modulation subsystems, a second spectroscop, a second lens group and a third spectroscop, wherein each spatial light modulation subsystem comprises a light source, a polaroid, a first spectroscop, a spatial light modulator, a first lens group and a diaphragm; divergent light emitted by the light source is collimated into parallel light through the first lens group to be incident on the spatial light modulator, and the spatial light modulator reflects and diffracts the parallel light 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 invention 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 display, 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; and the three-dimensional imaging light beams formed in different spatial light modulation subsystems respectively pass through a multi-spatial light modulator visual angle splicing system and a visual 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.

N9291

CN115791835

Priority Date: 10/01/2023

GUANGDONG UNIVERSITY OF TECHNOLOGY

IMAGE ACQUISITION SYSTEM AND WEAK DEFECT DETECTION METHOD OF MICRO-LENS ARRAY FOR HOLOGRAPHIC DISPLAY

The invention relates to the technical field of defect detection and identification, in particular to an image acquisition system and a weak defect detection method of a micro-lens array for holographic display, which has the technical scheme that the micro-lens array comprises a micro-imaging component for shooting a sample image; the image processing assembly is electrically connected with the microscopic imaging assembly and is used for processing the sample image; and the movement control assembly is used for bearing the sample and driving the sample to move. The invention can realize the full automation of the quality inspection of the micro-lens array for holographic display, improve the detection efficiency, simultaneously avoid the high subjectivity judgment during manual detection, reduce the detection error and reduce the omission factor and the false detection rate.

CLAIM 1. An image acquisition system, comprising: a microscopic imaging assembly for taking an image of the sample; the image processing assembly is electrically connected with the microscopic imaging assembly and is used for processing the sample image; and the movement control assembly is used for bearing the sample and driving the sample to move.

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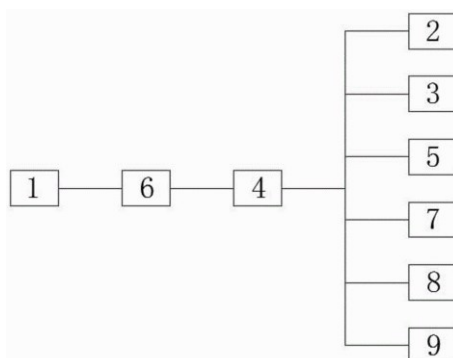
CN115756351

Priority Date: 02/09/2021

ZHEJIANG LEWEI EXHIBITION TECHNOLOGY

HOLOGRAPHIC IMAGE DISPLAY INTERACTIVE SYSTEM AND HOLOGRAPHIC IMAGE DISPLAY METHOD

The application discloses holographic image display interaction system and holographic image display method, including holographic image server, display element, acquisition unit, wireless transceiver unit, audio unit, processing unit, induction element, play unit and imaging element, holographic image server electric connection display element, acquisition unit, wireless transceiver unit, audio unit, processing unit, induction element, play unit and imaging element. Through holographic image server, display element, acquisition unit, wireless transceiver unit, audio unit, processing unit, induction element, broadcast unit and imaging element, for the impression of user's holographic image, can provide high-quality picture effect for the user, promote user's picture experience and feel each other.



CLAIM 1. A holographic image display interactive system is characterized in that: the holographic image server comprises a holographic image server (1), a display unit (2), a collection unit (3), a wireless transceiving unit (4), an audio unit (5), a processing unit (6), a sensing unit (7), a playing unit (8) and an imaging unit (9), wherein the holographic image server (1) is electrically connected with the display unit (2), the collection unit (3), the wireless transceiving unit (4), the audio unit (5), the processing unit (6), the sensing unit (7), the playing unit (8) and the imaging unit (9).

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

N9274

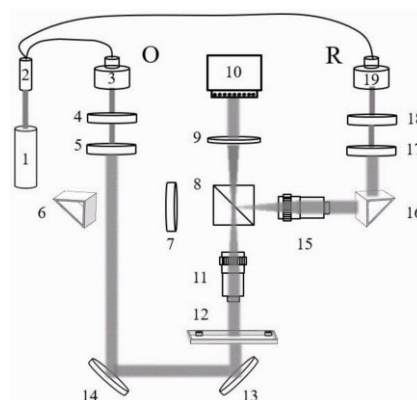
CN115826381

Priority Date: 09/08/2022

XI AN UNIVERSITY OF TECHNOLOGY

ROTARY ADJUSTING TYPE TRANSPARENT AND REFLECTIVE DUAL-PURPOSE HOLOGRAPHIC MICROSCOPY INSTRUMENT

The invention discloses a rotary adjusting type transmission and reflection dual-purpose holographic microscope, which comprises a helium-neon laser and a polarization maintaining optical fiber beam splitter, wherein the helium-neon laser is arranged at the front end of the polarization maintaining optical fiber beam splitter; the reference light system and the object light transmission system are sequentially provided with a beam splitter prism, a collimating lens and a CMOS camera after light combination, the reference light and the object light are combined at the beam splitter prism and upwards pass through the collimating lens, and the CMOS camera records an interference hologram. The invention ensures that the optical path simultaneously considers two measurement modes of transmission and reflection through a set of rotary switching device, and avoids the defect that the optical element is not beneficial to instrument integration when being inserted into and removed from the optical path.



CLAIM 1. A rotary adjustment type transmissive holographic microscopy instrument is characterized by comprising a helium neon laser (1) and a polarization maintaining optical fiber beam splitter (2), wherein the helium neon laser (1) is arranged at the front end of the polarization maintaining optical fiber beam splitter (2), the polarization maintaining optical fiber beam splitter (2) is arranged at the front ends of a reference light system and an object light transmission system, laser emitted by the helium neon laser (1) is split by the polarization maintaining optical fiber beam splitter (2), passes through the reference light system and the object light transmission system respectively, is switched to a measurement mode by a rotary switching device, and then is combined by a laser beam combining device; the reference light system and the object light transmission system are combined and then sequentially provided with a beam splitter prism (8), a collimating lens (9) and a CMOS camera (10); the reference light and the object light are combined at the beam splitting prism (8) and pass upwards through a collimating lens (9), and the CMOS camera (10) records the interference hologram.

N9277

CN115824857

Priority Date: 10/11/2022

NORTH UNIVERSITY OF CHINA

HIGH-PRECISION BRINELL HARDNESS MEASURING METHOD BASED ON DIGITAL HOLOGRAPHIC MICROSCOPY

The invention belongs to the technical field of Brinell hardness measurement of materials, and particularly relates to a high-precision Brinell hardness measurement method based on digital holographic microscopy, which comprises the steps of recording a hologram of a Brinell hardness indentation of a hardness test block; obtaining a primary spectrum area of the hardness test block by utilizing a method for adaptively positioning a holographic primary spectrum by utilizing a maximum value of a spectrum phase; performing numerical reconstruction by adopting a Fresnel diffraction method, and performing holographic reconstruction to obtain the three-dimensional microscopic morphology of the Brinell hardness indentation of the hardness test block; high-precision extraction and measurement of the Brinell hardness indentation morphology characteristics are realized by adopting a super-resolution fuzzy clustering and sub-pixel method, and the diameters of all Brinell hardness indentation circles in the current field are obtained; and calculating to obtain the Brinell hardness values of all the Brinell hardness indentation areas under the current field according to the measurement principle and the calculation formula of the Brinell hardness. The method can realize high-resolution and high-precision holographic microscopic detection of Brinell hardness indentation morphology under different forms and different surface conditions.

Click on the title to return to table of contents

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

N9235

WO202343884

Priority Date: 17/09/2021

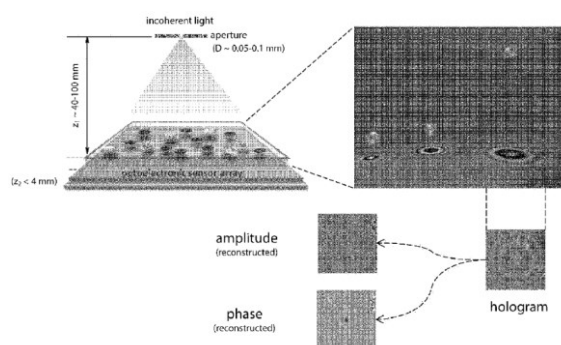
ACCELERATE DIAGNOSTICS

LENS-FREE HOLOGRAPHIC OPTICAL SYSTEM FOR HIGH SENSITIVITY LABEL-FREE CELL AND MICROBIAL GROWTH DETECTION AND QUANTIFICATION

Disclosed are optical interrogation apparatus that can produce lens-free images using an optoelectronic sensor array to generate a holographic image of sample objects, such as microorganisms in a sample. Also disclosed are methods of detecting and/or identifying microorganisms in a biological sample, such as microorganisms present in low levels. Also disclosed are methods of using systems to detect microorganisms in a biological sample, such as microorganisms present in low levels. In addition or as an alternative, the methods of using systems may identify microorganisms present in a sample and/or determine antimicrobial susceptibility of such microorganisms.

SYSTÈME OPTIQUE HOLOGRAPHIQUE SANS LENTILLE POUR UNE DÉTECTION ET UNE QUANTIFICATION À HAUTE SENSIBILITÉ DE CROISSANCE MICROBIENNE ET CELLULAIRE SANS MARQUEUR

La divulgation concerne un appareil d'interrogation optique qui peut produire des images sans lentille à l'aide d'un réseau de capteurs optoélectroniques pour générer une image holographique d'objets échantillons, tels que des micro-organismes dans un échantillon. La divulgation concerne également des procédés de détection et/ou d'identification de micro-organismes dans un échantillon biologique, tels que des micro-organismes présents à de faibles niveaux. La divulgation concerne en outre des procédés d'utilisation de systèmes permettant de détecter des micro-organismes dans un échantillon biologique, tels que des micro-organismes présents à de faibles niveaux. De plus ou en variante, les procédés d'utilisation de systèmes permettent d'identifier des micro-organismes présents dans un échantillon et/ou de déterminer la sensibilité antimicrobienne de tels micro-organismes.



CLAIM 1. An automated system comprising: a. an automated holographic optical apparatus situated to determine the phenotypical behavior of an object in a sample based on a detected variation over time of a hologram of the sample; b. wherein the holographic optical apparatus is an in-line holographic apparatus and the hologram is an in-line hologram; c. Wherein the in-line holographic optical apparatus includes one or a plurality of reference beam sources situated to direct the reference beam(s) to the sample volume, a sample receptacle situated to hold the sample volume in view of the reference beam(s), an optical sensor situated to detect the in-line hologram formed by the reference beam(s) and the sample volume, and a controller coupled to the optical sensor and that includes at least one processor and one or more computer-readable storage media including stored instructions that, responsive to execution by the at least one processor, cause the controller to determine the variation over time of the inline hologram; and d. an output of at least one data calculation module, and a phenotypical behavior of the cell unit, wherein the phenotypical behavior of the cell unit is classified based on the detected variation.

N9243

LIQUID CRYSTALS

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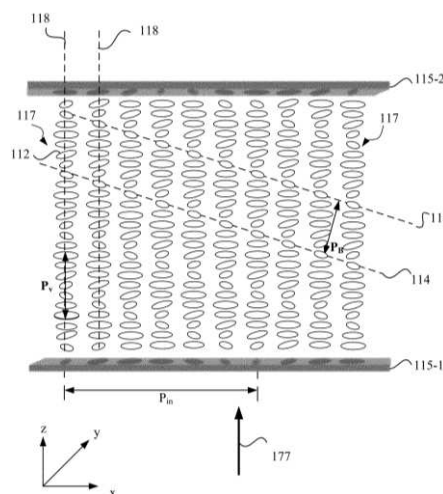
META PLATFORMS TECHNOLOGIES

Priority Date: 14/09/2021

LIQUID CRYSTAL POLARIZATION HOLOGRAM ELEMENT FOR REDUCING RAINBOW EFFECTS

A device includes a diffraction element and an optical filter stacked with the diffraction element. The optical filter is configured to forwardly deflect a light from a real-world environment incident onto the optical filter, at an incidence angle greater than or equal to a predetermined angle, toward the diffraction element. The diffraction element is configured to substantially transmit the light forwardly deflected by the optical filter.

CLAIM 1. A device, comprising: a diffraction element; and an optical filter stacked with the diffraction element and configured to: forwardly deflect a light from a real-world environment incident onto the optical filter, at an incidence angle greater than or equal to a predetermined angle, toward the diffraction element, wherein the diffraction element is configured to substantially transmit the light forwardly deflected by the optical filter.



N9254

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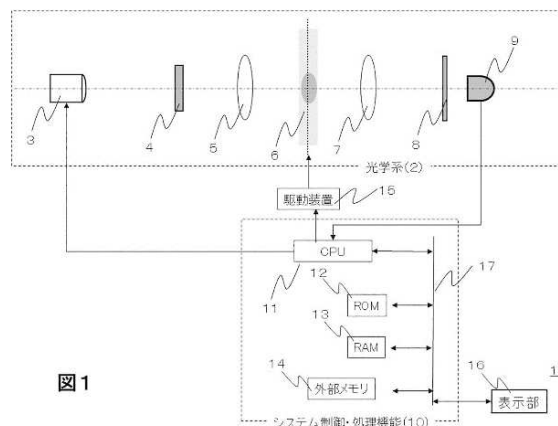
UNIVERSITY OF ELECTRO COMMUNICATIONS

Priority Date: 20/08/2021

OBJECT SHAPE MEASUREMENT DEVICE AND OBJECT SHAPE MEASUREMENT METHOD

TOPIC: In the related art, for example, in a method using a hologram recording medium, preparation such as experiments is required in advance to determine a threshold value of light intensity obtained by a photodetector, and it is difficult to obtain details of a phase distribution and an amplitude distribution of a target object from the acquisition of a correlation based on the light intensity. In addition, there is an SPI as another technique, but in order to reconfigure the target object, there is a problem in that the SPI requires a lot of time-consuming coded light. INVENTION: a hologram recording medium 6 in which a plurality of phase shift are applied, the phase modulation patterns being recorded as holograms, the phase modulation patterns being generated in advance by using a two-dimensional spatial light modulator that modulates amplitude and/or phase of light with a plurality of pixels; An object shape measurement device 1 employing a SPI that achieves high accuracy and high speed imaging by configuring the SPI using a spatial filter 8 having an aperture with a size of approximately one pixel of a two-dimensional spatial light modulator.

CLAIM 1. A light emitting device, comprising: a target object on which parallel light of a single wavelength emitted from a light source is incident; a first optical element that converges light transmitted through or reflected by the target object; and a first optical element that is disposed at a focal position of the first optical element, A recording device comprising: a recording medium configured to diffract focused light with a hologram recorded in advance; a second optical element configured to converge the light emitted from the recording medium; a third optical element disposed at a focal length of the second optical element and configured to transmit a portion of the focused light; A light detecting unit that detects an intensity of light transmitted through a third optical element, wherein the recording medium includes an amplitude of the light and/ Or a hologram recording medium in which interference fringes generated using a two-dimensional spatial light modulation unit that modulates the phase with a plurality of pixels are recorded as a hologram, and the third optical element is an optical element having an aperture with a size of approximately one pixel of the two-dimensional spatial light modulation unit.



N9258

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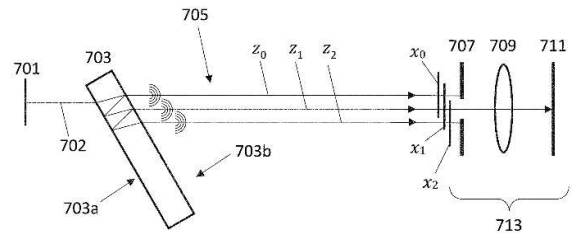
Priority Date: 26/08/2021

ENVISICS

HOLOGRAM CALCULATION

A method of reconstructing an image from a hologram. The method comprises first to fifth steps. The first to fifth steps may be performed in order. The first step comprises receiving an image for display within a display area. The display area is viewable or visible from a viewing area spatially separated therefrom. The second step comprises determining a first image component of the image. The third step comprises determining or calculating a hologram of the image. The hologram is configured to angularly distribute light in accordance with position within the image such that angular channels of angularly distributed light correspond with respective continuous regions of the image. The fourth step comprises displaying the hologram on a display device and spatially modulating light in accordance with the displayed hologram. The fifth step comprises propagating each spatially modulated light through a pupil expander arranged to provide a plurality of different light propagation paths for the spatially modulated light from the display device to the viewing area. Each light propagation path corresponds to a respective continuous region of the image owing to the angular distribution of light from the hologram. The fifth step may be achieved by arranging the pupil expander to receive the spatially modulated light from the display device. Notably, the method comprises apportioning more data processing resources to calculation of the hologram with respect to the first image component than a second image component of the image.

CLAIM 1. A method of reconstructing an image from a hologram, the method comprising: receiving the image for display within a display area of a display system, wherein the display area is viewable from a viewing area spatially separated therefrom; determining a first image component of the image; calculating a hologram of the image, wherein the hologram is configured to angularly distribute light in accordance with position within the image such that angular channels of angularly distributed light correspond with respective continuous regions of the image; displaying the hologram on a display device and spatially modulating light in accordance with the displayed hologram; propagating the spatially modulated light through a pupil expander arranged to provide a plurality of different light propagation paths for the spatially modulated light from the display device to the viewing area, wherein each light propagation path corresponds to a respective continuous region of the image owing to the angular distribution of light from the hologram, wherein the method comprises allocating more data processing resources to calculation of the hologram with respect to the first image component than a second image component of the image.



N9260

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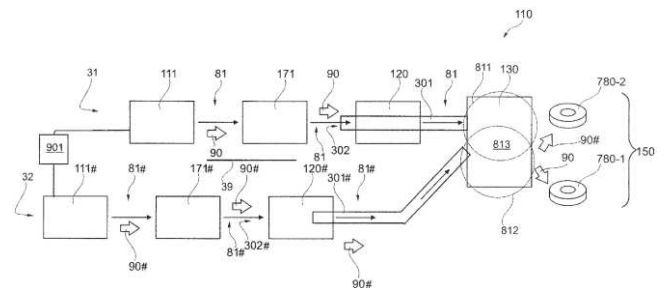
Priority Date: 10/09/2021

CARL ZEISS JENA

OPTICAL SYSTEM FOR FLOATING HOLOGRAMS WITH MULTIPLE SWITCHABLE OPTICAL CHANNELS

An optical system (110) comprises several optical channels (31, 32). A controller 901 may separately turn on and off light sources 111, 111# of the optical channels 31, 32. As a result, different image motifs (780-1, 780-2) of a hologram (150) can be illuminated by different illumination of at least one imaging holographic-optical element (130).

CLAIM 1. An optical system comprising: - at least one imaging holographic optical element, HOE (130), configured to generate, based on light (90), a floating hologram (150) reconstructed in a volume outside the at least one imaging HOE (130), - a plurality of optical channels (31), each comprising a light source and a beam path configured to guide the light (90) along the respective beam path towards the at least one imaging HOE (130), and - a controller (901) configured to individually drive the light sources (111) of the plurality of optical channels (31).



N9278

CN115820267

Priority Date: 23/02/2023

JOURNEY TECHNOLOGY

HOLOGRAPHIC POLYMER DISPERSED LIQUID CRYSTAL MATERIAL AND APPLICATION THEREOF

The invention provides a holographic polymer dispersed liquid crystal material and application thereof. The holographic polymer dispersed liquid crystal material comprises a liquid crystal composition, a polymerizable monomer and glue capable of being cured in a visible light wave band; the liquid crystal composition comprises compounds shown in formulas I-III, and the polymerizable monomer comprises at least one compound shown in formula IV. The holographic polymer dispersed liquid crystal material provided by the invention has excellent performance, and the volume holographic grating prepared by the holographic polymer dispersed liquid crystal material has high diffraction efficiency and low haze, can be switched between a holographic state and a transparent state, and can meet the application requirement of volume holographic optical waveguide.



CLAIM 1. The holographic polymer dispersed liquid crystal material is characterized by comprising a liquid crystal composition, a polymerizable monomer and glue curable in a visible light waveband; the liquid crystal composition comprises compounds shown as formulas I-III, and the polymerizable monomer comprises at least one compound shown as formula IV: formula I; formula II; formula III; formula IV; wherein R is 1 ,R 2 ,R 3 Each independently represent , , A straight chain or branched C1-C7 alkyl group, a C1-C7 alkoxy group, a C2-C7 chain alkenyl group, a C3-C7 chain alkenyloxy group, , , at least one hydrogen atom in a straight chain or branched chain C1-C7 alkyl group, a C1-C7 alkoxy group, a C2-C7 chain alkenyl group, a C3-C7 chain alkenyloxy group may be substituted with a fluorine atom; Sp 1 ,Sp 2 each independently represents a single bond, a C1-C6 linear alkyl group, at least one-CH in the C1-C6 linear alkyl groups 2 -may be substituted by-O-, -COO-or-C = C-; L 1 represents F, cl, straight chain or branched C1-C7 alkyl, C3-C6 cycloalkyl, C1-C7 alkoxy, C2-C6 chain alkenyl, C2-C6 chain alkenyloxy; p represents an integer of 1 to 5, and q represents an integer of 0 to 4.

N9287

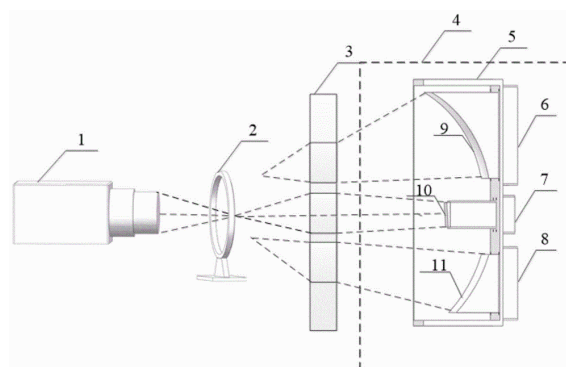
CN115793272

Priority Date: 25/11/2022

SHANGHAI JIANYING OPTICAL TECHNOLOGY

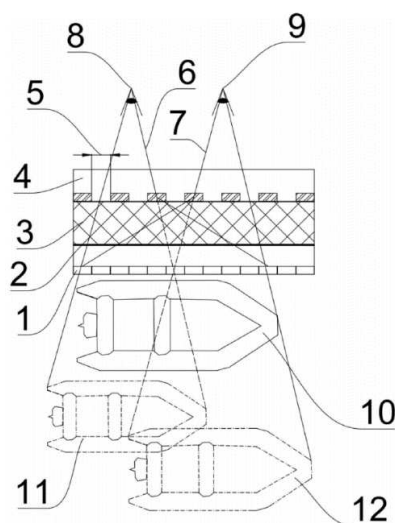
OFF-AXIS FREE-FORM SURFACE SPECTROMETER SYSTEM ADJUSTMENT EQUIPMENT BASED ON COMPUTER-GENERATED HOLOGRAM DEVICE

The invention relates to the technical field of optical machine assembly and calibration, and discloses a debugging device of an off-axis free-form surface spectrometer system based on a computer-generated hologram, which comprises a debugging device, wherein the debugging device consists of an interferometer, an attenuation sheet, a computer-generated hologram, a spectrometer module, a six-dimensional adjusting frame, a metal cushion block and an air floatation platform, wherein the spectrometer module consists of a spectrometer frame, a first reflecting mirror frame, a grating mirror frame, a third reflecting mirror frame, a first reflecting mirror, a grating, a third reflecting mirror, a second reflecting mirror frame and a standard spherical mirror. The invention integrates the two reflectors and the alignment holographic region, the main holographic region and the reference holographic region of the grating on one computer holographic device, and can efficiently finish the assembly and adjustment of the off-axis free-form surface spectrometer system by utilizing one computer holographic device, thereby reducing the assembly and adjustment freedom, reducing the assembly and adjustment difficulty, simplifying auxiliary tools and saving cost and time.



PREPARATION METHOD OF MULTILAYER COMPOSITE ADHESIVE TAPE FOR HOLOGRAPHIC IMAGING

The invention relates to the technical field of multilayer composite materials, in particular to a preparation method of a multilayer composite adhesive tape for holographic imaging, which comprises the following steps: determining parameters of the adhesive tape according to the refresh rate of target display equipment of the adhesive tape to be prepared; preparing a base layer and a grating layer in advance; measuring the virtual image spacing distance of the grating imaging through the test module; adjusting preparation parameters; preparing a glue coating layer, and bonding the basal layer and the grating layer to prepare the adhesive tape; the method has the advantages that the color of the display equipment is diffracted by printing the grating on the adhesive tape, so that a holographic 3D picture is formed, the application range of the adhesive tape is effectively expanded, and the universality of holographic 3D imaging by using the adhesive tape is improved.



CLAIM 1. A preparation method of a multilayer composite adhesive tape for holographic imaging is characterized by comprising the following steps: the method comprises the following steps of S1, determining a first preset attribute and a second preset attribute of the adhesive tape according to the refresh rate of a target display device of the adhesive tape to be prepared; s2, preparing a substrate layer of the adhesive tape according to the first preset attribute, and preparing a grating layer of the adhesive tape according to the second preset attribute; s3, controlling a testing module to superpose the substrate layer and the grating layer in a first preset mode under the first preparation completion condition, and measuring the virtual image spacing distance of the superposed grating image through the testing module; s4, adjusting a first preparation distance and a second preparation distance according to a comparison result of the virtual image spacing distance and a preset comparison spacing standard; s5, preparing a glue coating layer in a preset glue coating mode under the second preparation completion condition, and bonding the substrate layer and the grating layer to prepare the adhesive tape; the first preset attribute is the thickness of a base layer of the adhesive tape, the second preset attribute is the grating pitch of the adhesive tape, and the first preset mode is that non-adhesive filler with the same refractive index as that of the glue coating layer is filled between the base layer and the grating layer and is attached to the base layer and the grating layer; the first preparation distance is the corresponding distance of the thickness of the prepared adhesive tape, and the second preparation distance is the corresponding grid distance of the prepared grating; the preset gluing mode is that a gluing material is coated on the substrate layer in a uniform thickness, and the substrate layer is kept still for a preset gluing interval duration, wherein the preset gluing interval duration is the corresponding duration of the maximum binding power of the gluing material; the first preparation completing condition is to complete the preparation of the substrate layer and the grating layer, and the second preparation completing condition is to complete the preparation of the substrate layer by using the adjusted first preparation interval and complete the preparation of the grating layer by using the adjusted second preparation interval, or it is determined that the first preparation interval and the second preparation interval are not required to be adjusted.

N9295

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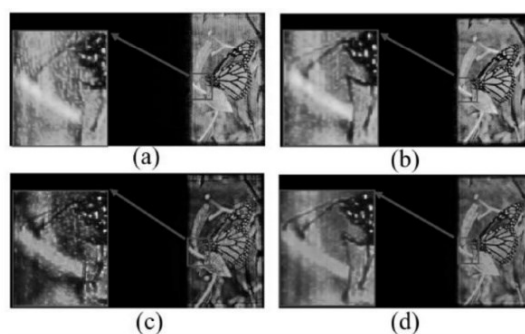
Priority Date: 06/12/2022

BEIHANG UNIVERSITY OF AERONAUTICS & ASTRONAUTICS

HOLOGRAM CALCULATION METHOD BASED ON PHYSICAL MODEL DRIVEN NETWORK

The invention provides a hologram calculation method based on a physical model driving network, which comprises the following four steps: the method comprises the following steps that firstly, a 3D object is input into a coder and decoder network, and the output of the network is a pure phase hologram to be optimized of a specific color channel of the 3D object; secondly, inputting the original 3D object into an unsharp mask filter to output high-frequency information, so as to obtain an optimized 3D object; inputting the pure phase hologram to be optimized into a selected physical model, thereby outputting a reconstructed image of the pure phase hologram to be optimized; fourthly, calculating a loss function of the reconstructed image and the optimized 3D object, and optimizing parameters of the encoder and decoder network based on the loss function; and repeating the steps until the value of the loss function is smaller than a set threshold value, wherein the output pure-phase hologram is the final hologram.

CLAIM 1. A hologram calculation method based on a physical model driven network is characterized by comprising the following steps: the method comprises the following steps that firstly, a 3D object is input into a coder and decoder network, and the output of the network is a pure phase hologram to be optimized of a specific color channel of the 3D object; secondly, inputting the original 3D object into a non-sharpening mask filter, and outputting high-frequency information after passing through the non-sharpening mask filter, so as to obtain an optimized 3D object; inputting the pure phase hologram to be optimized into a selected physical model, thereby outputting a reconstructed image of the pure phase hologram to be optimized; fourthly, calculating a loss function of the reconstructed image and the optimized 3D object, and optimizing parameters of an encoder and decoder network based on the loss function; and then repeating the four steps until the value of the loss function in the fourth step is smaller than a set threshold value, wherein the pure-phase hologram output in the first step is a final hologram, the final hologram is loaded on the spatial light modulator, and a high-quality holographic 3D display effect can be observed after the spatial light modulator is irradiated by laser.



N9296

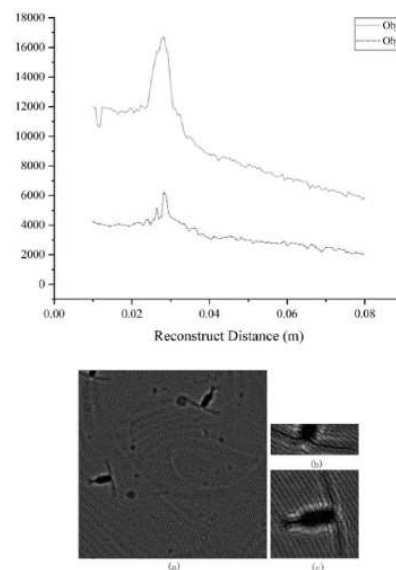
CN115761025

Priority Date: 01/11/2022

HAINAN INSTITUTE OF ZHEJIANG UNIVERSITY

MULTI-TARGET AUTOMATIC FOCUSING METHOD FOR HOLOGRAPHIC IMAGING IN COMPLEX ENVIRONMENT

The invention discloses a multi-target automatic focusing method for holographic imaging in a complex environment, which comprises the following steps of 1, carrying out Gaussian attenuation processing on an original holographic image by using a background light source; step 2, carrying out full-image reconstruction on the original holographic image to obtain a corresponding reconstructed image data set; step 3, filtering and binaryzation are carried out to obtain a corresponding binaryzation image data set; step 4, analyzing the connected components of the binarized image data to obtain centroid information corresponding to the binarized image data; step 5, repeating the process of the step 4 to obtain a centroid information set corresponding to the binaryzation image data set; step 6, combining the measurement and the centroid coordinates of the binary image data with the centroid distance smaller than the threshold value to obtain a measurement change curve as an image focusing curve; and 7, extracting the distance of the maximum value of the centroid on the measurement curve to obtain the corresponding focusing distance. The method provided by the invention does not need to extract and cut the target area, and avoids the problem of target omission caused by a segmentation algorithm.



N9297

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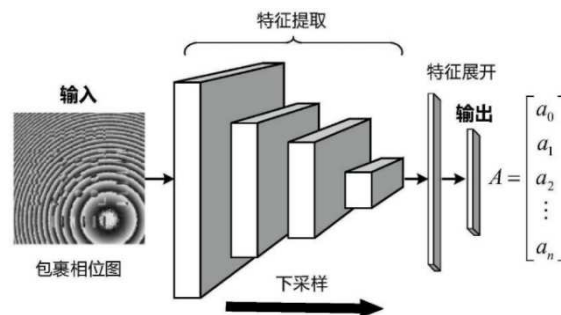
Priority Date: 26/10/2022

ZHEJIANG SCI-TECH UNIVERSITY

DIGITAL HOLOGRAPHIC WRAPPED PHASE DISTORTION COMPENSATION METHOD BASED ON DEEP LEARNING

The invention discloses a digital holographic wrapped phase distortion compensation method based on deep learning. Generating random Zernike polynomial coefficients and a corresponding wrapped phase diagram through a computer, and respectively using the random Zernike polynomial coefficients and the corresponding wrapped phase diagram as a learning label and a network training neural network model; building a digital holographic light path to record a hologram of a sample to be tested, inputting a wrapped phase diagram of the hologram into a trained neural network model after numerical reconstruction, outputting Zernike polynomial coefficients to reconstruct phase distortion distribution, and compensating object light complex amplitude in a spatial domain; and performing phase filtering and unwrapping on the compensated wrapped phase diagram, and performing background segmentation-based Zernike polynomial fitting on the unwrapped phase diagram to compensate the residual distortion. The method only uses the simulation data set to train the network, compensates most distortion before phase unwrapping, improves the reliability of wrapped phase data, greatly improves the phase recovery accuracy, and has the advantages of high calculation speed, accurate distortion compensation and the like.

CLAIM 1. A digital holographically wrapped phase distortion compensation method based on deep learning is characterized by comprising two stages of network training and holographic measurement, and comprises the following steps: a. the network training stage comprises the following steps: a computer autonomously generates simulated wrapped phase diagram data to train a neural network model, and the trained neural network model is obtained; b. holographic measurement phase And processing the sample to be detected by using the trained neural network model to obtain the three-dimensional profile distribution of the sample to be detected.



N9300

CN115713571

Priority Date: 17/11/2022

ANHUI UNIVERSITY

DOUBLE-DOMAIN OPTIMIZATION RANDOM PHASE HOLOGRAM GENERATION METHOD WITHOUT DOUBLE CONSTRAINTS AND STORAGE MEDIUM

The invention relates to a method for generating a double-domain optimized random phase hologram without double constraints and a storage medium, wherein the method comprises the steps of firstly, generating an optimized random phase in a dual domain (a space domain or a Fourier domain), and generating holograms corresponding to different target images in a non-iterative manner; secondly, relaxing image support constraints in the spatial domain for hologram generation with arbitrarily supported target images in image space; and finally, for target images with different window sizes, introducing a cutting operation, and cutting DD-ORAP with a corresponding size for quickly generating the CGH. The TCF-DD-ORAP method provided by the invention breaks through the double limitations of fixed support and window size in the CGH generation aspect of the original ORAP method, greatly saves the calculation cost and improves the flexibility of the CGH generation mode. The invention can be used for non-iterative generation of phase-only holograms of a target object with non-fixed supports and windows by a single TCF-DD-ORAP generated in the dual domain, with a high degree of flexibility from one generation to the next.

CLAIM 1. A method for generating a random phase hologram without double constraints and with double domain optimization, is characterized by comprising the following steps, s1, initializing a spatial domain complex amplitude through an initialization module; s2, obtaining a large-size DD-ORAP through a Generation module; s3, adding the generated large-size DD-ORAP into a Cropping module, and Cropping out a phase hologram which is the same as that of a target window from any area of the DD-ORAP to serve as TCF-DD-ORAP; and S4, reconstructing the target.

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HOLOGRAMS - 7 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P36146	WO	202328199	02/03/2023	ELITE COINAGE	US	25/08/2021	US2021063236696	WO202328199	METHOD AND SYSTEM FOR PROTECTION AGAINST COUNTERFEITING	
P36162	JP	2023038534	17/03/2023	DAI NIPPON PRINTING	JP	07/09/2021	JP2021000145311	JP2023038534	AUTHENTICITY DETERMINATION APPARATUS AND PROGRAM	
P36190	DE	102021210432	23/03/2023	BUNDESDRUCKEREI	DE	20/09/2021	DE202110210432	DE102021210432	ANGLE DEPENDENT PRINTED HIDDEN SECURITY ELEMENT	
P36206	CN	218619430	14/03/2023	SHANTOU HENGSHUN PACKAGING MAT	CN	15/02/2023	CN2023000220141	CN218619430U	HOLOGRAPHIC ANTI-COUNTERFEITING FILM FEEDING MECHANISM	
P36212	CN	218547808	28/02/2023	SHANTOU HENGSHUN PACKAGING MAT	CN	10/01/2023	CN2023000058598	CN218547808U	HOLOGRAPHIC POSITIONING ANTI-COUNTERFEITING HOT STAMPING FILM	
P36214	CN	115819468	21/03/2023	HUAZHONG UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	26/12/2022	CN2022001676161	CN115819468	ORGANIC METAL COMPLEX, IMAGE STORAGE MATERIAL BASED ON ORGANIC METAL COMPLEX, AND PREPARATION AND APPLICATION OF IMAGE STORAGE MATERIAL	
P36220	CN	115782375	14/03/2023	FUJIAN SANYUANXING TEXTILE TECHNOLOGY	CN	03/11/2022	CN2022001372656	CN115782375	HOLOGRAPHIC ANTI-COUNTERFEITING POSITIONING HOT STAMPING DETECTION EQUIPMENT	

VARIOUS OPTICAL EFFECTS - 23 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P36137	WO	202342891	23/03/2023	TOPPAN PRINTING	JP	16/09/2021	JP2021000150900	WO202342891	DISPLAY BODY	
P36138	WO	202339167	16/03/2023	META MEDIA	US	09/09/2021	US2021063242337	WO202339167	OPTICAL SECURITY DEVICE PROVIDING COLOR SWITCHING OR IMAGE SWITCHING EFFECT	
P36139	WO	202337087	16/03/2023	DE LA RUE INTERNATIONAL	GB	10/09/2021	GB2021000012955	WO202337087	SECURITY DEVICES AND METHODS OF MANUFACTURE THEREOF	Passport - Microlens
P36140	WO	202332989	09/03/2023	TOPPAN PRINTING	JP	30/08/2021	JP2021000140038	WO202332989	TRANSFER FOIL, TRANSFER ARTICLE, DISPLAY BODY, METHOD AND DEVICE FOR VERIFYING AUTHENTICITY OF DISPLAY BODY, AND INDIVIDUAL AUTHENTICATION METHOD	
P36151	RU	2790025	14/02/2023	GOZNAK	RU	09/09/2022	RU2022000124027	RU2790025	PROTECTED INFORMATION CARRIER WITH OPTICALLY VARIABLE EFFECT AND METHOD FOR ITS MANUFACTURE	Passport
P36155	KR	20230033409	08/03/2023	KOREA ADVANCED INSTITUTE OF SCIENCE & TECHNOLOGY	KR	01/09/2021	KR2021000116339	KR20230033409	INK COMPOSITION FOR DIRECT PRINTING OF STRUCTURED COLOR STRUCTURES AND METHOD FOR PRODUCING STRUCTURED COLOR STRUCTURES USING THE SAME	
P36169	JP	2023026824	01/03/2023	TOPPAN PRINTING	JP	16/08/2021	JP2021000132209	JP2023026824	INFORMATION RECORDING MATERIAL AND THERMOSENSITIVE TRANSFER MEDIUM	Passport
P36175	FR	3126793	10/03/2023	GUIGAN FRANCK	FR	07/09/2021	FR2021000009377	FR3126793	AUTHENTICATION METHOD AND APPARATUS	
P36176	FR	3126531	03/03/2023	GUIGAN FRANCK	FR	30/08/2021	FR2021000009037	FR3126531	AUTHENTICATION METHOD	
P36177	EP	4151426	22/03/2023	LEONHARD KURZ STIFTUNG	DE	21/09/2021	DE202110124407	EP4151426 US20230092587 DE102021124407	THERMOCHROMIC SECURITY ELEMENT AND METHOD FOR PRODUCING A THERMOCHROMIC SECURITY ELEMENT	
P36180	EP	4145426	08/03/2023	HUECK FOLIEN	EP	01/09/2021	EP2021000194263	EP4145426 WO202331239	SECURITY LABEL	
P36182	EP	4141848	01/03/2023	SCRIBOS	DE	31/08/2021	DE202110209562	EP4141848 DE102021209562	MULTILAYER SEALING LABEL WITH INITIAL OPENING DETECTION AND A METHOD FOR ITS MANUFACTURE	
P36184	EP	4141081	01/03/2023	HUECK FOLIEN	EP	30/08/2021	EP2021000193859	EP4141081 WO202328628	ADHESIVE ELEMENT	
P36185	EP	4140760	01/03/2023	HUECK FOLIEN	EP	30/08/2021	EP2021000193858	EP4140760 WO202328627	SECURITY ELEMENT FOR VALUABLE DOCUMENTS OR SECURITY DOCUMENTS	Microlens

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REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P36188	DE	102022109034	02/03/2023	KOENIG & BAUER	DE	13/04/2022	DE202210109034	DE102022109034	DEVICE FOR ALIGNING MAGNETIC OR MAGNETIZABLE PARTICLES AND MACHINE FOR PRODUCING OPTICALLY VARIABLE IMAGE ELEMENTS	
P36191	DE	102021123069	09/03/2023	OVD KINEGRAM	DE	07/09/2021	DE202110123069	DE102021123069	FUNCTIONAL ELEMENT, A METHOD FOR PRODUCING A FUNCTIONAL ELEMENT AND A PRODUCT	Microlens
P36203	CN	218631124	14/03/2023	CHINA SECURITY ANTI COUNTERFEIT CERTIFICATE DEVELOPMENT CENTER	CN	18/08/2022	CN2022002184797	CN218631124U	LENS IMAGE-TEXT COMPOSITE STRUCTURE AND ANTI-COUNTERFEITING PRODUCT	Microlens
P36208	CN	218601868	10/03/2023	BELJING KESYUAN TECHNOLOGY	CN	19/08/2022	CN2022002189475	CN218601868U	MULTILAYER MAGNETIC SHEET ANTI-COUNTERFEITING STRUCTURE	
P36209	CN	218596762	10/03/2023	BELJING KESYUAN TECHNOLOGY	CN	21/09/2022	CN2022002499737	CN218596762U	ANTI-COUNTERFEITING FIBER AND ANTI-COUNTERFEITING PAPER OR PAPERBOARD	Anti-counterfeiting fiber
P36210	CN	218593832	10/03/2023	LONGGANG YONGSHENG ELECTRONICS	CN	27/07/2022	CN2022001953818	CN218593832U	COLOR-ED-DIZZY RADIUM-SHINE TRANSFER LINE PAPER OF PEARLY-LUSTRE	
P36231	CN	115723461	03/03/2023	SVG TECHNOLOGY	CN	30/08/2021	CN2021001005406	CN115723461	OPTICAL TRANSFER MATERIAL AND PREPARATION METHOD THEREOF	
P36238	CA	3171686	28/02/2023	UNIVERSITY OF OTTAWA	US	30/08/2021	US2021063238665	CA3171686	FAST REPLICATION OF LASER MACHINED MICRON/SUB-MICRON SCALE PATTERNS ONTO SOFT-METAL SUBSTRATES VIA EMBOSsing	

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REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N9235	WO	202343884	23/03/2023	ACCELERATE DIAGNOSTICS	US	17/09/2021	US2021063245698	WO202343884	LENS-FREE HOLOGRAPHIC OPTICAL SYSTEM FOR HIGH SENSITIVITY LABEL-FREE CELL AND MICROBIAL GROWTH DETECTION AND QUANTIFICATION	
N9236	WO	202331886	09/03/2023	NARAYANA KIKKERI, HARSHAVARDHANA PANYAM RAM, AKSHAY HARSHAVARDHANA, SHWETHA MUDLIYAR, ROHIT CHATTERJEE, BISWAJITH MICHAHAL, STAFFORD	IN	04/09/2021	IN2021041009189	WO202331886	A METHOD, A PROCESSING UNIT AND A PROJECTOR DEVICE FOR RENDERING INTERACTIVE HOLOGRAPHS	
N9237	US	20230091935	23/03/2023	GM GLOBAL TECHNOLOGY OPERATIONS	US	22/09/2021	US2021017481900	US20230091935	POLARIZATION ADAPTIVE WAVEGUIDE HUD	
N9238	US	20230090984	23/03/2023	ROBERT BOSCH	DE	20/09/2021	DE202110210379	US20230090984 DE102021210379	METHOD FOR PRODUCING A HOLOGRAPHIC OPTICAL ELEMENT, CONTROL DEVICE AND EXPOSURE DEVICE	
N9239	US	20230090476	23/03/2023	PULSION CAPITAL LIMITADA	CR	22/09/2021	CR2021000000487	US20230090476	NFT DISPLAY DEVICE AND NFT HOLOGRAPHIC PROJECTOR	
N9240	US	20230090419	23/03/2023	ROBERT BOSCH	DE	20/09/2021	DE202110210377	US20230090419 DE102021210377	APPARATUS AND METHOD FOR RECORDING A HOLOGRAPHIC OPTICAL ELEMENT	
N9241	US	20230090374	23/03/2023	GM GLOBAL TECHNOLOGY OPERATIONS	US	22/09/2021	US2021017481909	US20230090374	WAVEGUIDE HEAD-UP DISPLAY	
N9242	US	20230084264	16/03/2023	IBM	US	10/09/2021	US2021017447333	US20230084264	SECURITY FOR DISPLAYED CONFIDENTIAL HOLOGRAPHIC OBJECTS	
N9243	US	20230080580	16/03/2023	META PLATFORMS TECHNOLOGIES	US	14/09/2021	US2021063243733	US20230080580 WO202343776	LIQUID CRYSTAL POLARIZATION HOLOGRAM ELEMENT FOR REDUCING RAINBOW EFFECTS	
N9244	US	20230065537	02/03/2023	GM GLOBAL TECHNOLOGY OPERATIONS	US	30/08/2021	US2021017460634	US20230065537 DE10202110865 CN115728945	EMBEDDED EYE TRACKER USING PUPIL EXPANDER GLARE PRISM	
N9245	US	20230061090	02/03/2023	DIGILENS	US	26/08/2021	US2021063237422	US20230061090	PIECEWISE ROLLED VECTOR GRATINGS AND METHODS OF FABRICATION	

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N9246	KR	20230034861	10/03/2023	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	03/09/2021	KR2021000117884	KR20230034861	HOLOGRAM-BASED ROAD TRAFFIC SAFETY SIGN AND METHOD FOR MANUFACTURING THE SAME	
N9247	KR	20230034860	10/03/2023	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	03/09/2021	KR2021000117883	KR20230034860	LARGE-AREA HOLOGRAPHIC IMAGE FILM AND METHOD FOR PRODUCING THE HOLOGRAPHIC IMAGE FILM	
N9248	KR	20230033049	08/03/2023	HEESUNG ELECTRONICS	KR	26/08/2021	KR2021000113051	KR20230033049	APPARATUS AND METHOD FOR MANUFACTURING FULL-COLOR HOLOGRAM OPTICAL ELEMENT, AND AUGMENTED REALITY DISPLAY DEVICE PROVIDED WITH THE OPTICAL ELEMENT	
N9249	KR	20230030958	07/03/2023	CHUN, IN KYU JEONG, SANG KYUN	KR	26/08/2021	KR2021000113266	KR20230030958	METHOD FOR MANUFACTURING HOLOGRAM STRUCTURE USING PHOTOMASK AND HOLOGRAM STRUCTURE MANUFACTURED THEREBY	
N9250	KR	20230029278	03/03/2023	LG CHEM	KR	24/08/2021	KR2021000111586	KR20230029278	HOLOGRAPHIC OPTICAL ELEMENT AND METHOD OF MANUFACTURING THE SAME	
N9251	KR	20230026667	27/02/2023	QMIIX	KR	18/08/2021	KR2021000108544	KR20230026667	TRANSMISSIVE REAL HOLOGRAM 3 D DISPLAY SYSTEM	
N9252	KR	20230024571	21/02/2023	LG CHEM	KR	12/08/2021	KR2021000106516	KR20230024571	CURVED HOLOGRAPHIC OPTICAL ELEMENT USING TRANSPARENT BLOCK AND METHOD FOR MANUFACTURING THE SAME	
N9253	JP	2023032881	09/03/2023	KDDI	JP	27/08/2021	JP2021000139238	JP2023032881	COMPUTER COMPOSITE HOLOGRAM GENERATION APPARATUS, METHOD, AND PROGRAM	
N9254	JP	2023029030	03/03/2023	UNIVERSITY OF ELECTRO COMMUNICATIONS	JP	20/08/2021	JP2021000135095	JP2023029030	OBJECT SHAPE MEASUREMENT DEVICE AND OBJECT SHAPE MEASUREMENT METHOD	
N9255	JP	2023028321	03/03/2023	NIPPON HOSO KYOKAI	JP	19/08/2021	JP2021000133954	JP2023028321	INCOHERENT DIGITAL HOLOGRAPHIC IMAGING DEVICE AND METHOD OF IMAGING THE SAME	
N9256	GB	2610870	22/03/2023	ENVISICS	GB	21/09/2021	GB2021000013436	GB2610870	HOLOGRAPHIC SYSTEM AND PUPIL EXPANDER THEREFOR	
N9257	EP	4141577	01/03/2023	HIMAX DISPLAY	US	27/08/2021	US2021017458561	EP4141577 US20230067172 JP2023033102 KR20230031767	HOLOGRAPHIC DISPLAY SYSTEM AND METHOD FOR GENERATING HOLOGRAPHIC IMAGES	
N9258	EP	4141576	01/03/2023	ENVISICS	GB	26/08/2021	GB2021000012216	EP4141576 US20230060564 GB202112216 GB2610204 CN115729083 KR20230031173	HOLOGRAM CALCULATION	
N9259	EP	4141575	01/03/2023	ENVISICS	GB	26/08/2021	GB2021000012213	EP4141575 US20230064690 GB202112213 GB2610203 JP2023033134 KR20230031135	HOLOGRAM CALCULATION	
N9260	DE	102021123515	16/03/2023	CARL ZEISS JENA	DE	10/09/2021	DE202110123515	DE102021123515	OPTICAL SYSTEM FOR FLOATING HOLOGRAMS WITH MULTIPLE SWITCHABLE OPTICAL CHANNELS	
N9261	CN	218675699	21/03/2023	FUJIAN NORMAL UNIVERSITY	CN	06/12/2022	CN2022003262658	CN218675699U	SCALAR VORTEX LIGHT BEAM GENERATION SYSTEM BASED ON HOLOGRAPHIC TECHNOLOGY	
N9262	CN	218675661	21/03/2023	HENAN YUGUANG INTELLIGENT TECHNOLOGY	CN	06/11/2022	CN2022002946057	CN218675661U	HOLOGRAPHIC IMAGE PARTITION WALL	
N9263	CN	218675538	21/03/2023	FUJIAN NORMAL UNIVERSITY	CN	06/12/2022	CN2022003263224	CN218675538U	DEVICE FOR GENERATING VECTOR, SCALAR VORTEX AND VECTOR VORTEX LIGHT BEAMS	
N9264	CN	218675520	21/03/2023	CHINA MOBILE COMMUNICATIONS CHINA MOBILE SOFTWARE TECHNOLOGY	CN	27/10/2022	CN2022002849009	CN218675520U	WAVEGUIDE-BASED HOLOGRAPHIC IMAGING SYSTEM AND ELECTRONIC DISPLAY DEVICE	
N9265	CN	218660920	21/03/2023	WUXI KLASER TECHNOLOGY	CN	17/10/2022	CN2022002721728	CN218660920U	STRIPPING DEVICE OF LASER HOLOGRAPHIC WATER TRANSFER FILM	
N9266	CN	218647295	17/03/2023	ANHUI LANCAI HOLOGRAPHIC CULTURE	CN	30/08/2022	CN2022002307148	CN218647295U	PORTABLE HOLOGRAPHIC PROJECTION BOX	
N9267	CN	218630357	14/03/2023	NANCHANG UNIVERSITY	CN	08/03/2022	CN2022000503837	CN218630357U	HOLOGRAPHIC OPTICAL WAVEGUIDE AR GLASSES WITH SINGLE-CHIP FULL-COLOR MICRO-LED	
N9268	CN	218615421	14/03/2023	CHANGZHOU ZHONGHENG MACHINERY TECHNOLOGY	CN	13/06/2022	CN2022001463126	CN218615421U	DOUBLE-SIDED PREHEATING ADJUSTABLE LASER HOLOGRAPHIC MOLDING PRESS	

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REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N9269	CN	218601688	10/03/2023	SHANGHAI ZHANGJIANG CHAOYI MULTIMEDIA SYSTEM	CN	08/09/2022	CN2022002389957	CN218601688U	HOLOGRAPHIC DISPLAY PANEL	
N9270	CN	218601687	10/03/2023	SHANGHAI ZHANGJIANG CHAOYI MULTIMEDIA SYSTEM	CN	08/09/2022	CN2022002389041	CN218601687U	DOUBLE-IMAGING HYBRID HOLOGRAPHIC DISPLAY DEVICE	
N9271	CN	218562171	03/03/2023	SHENZHEN HOLOGRAPHIC TIMES MEDIA TECHNOLOGY	CN	21/10/2022	CN2022002796222	CN218562171U	HOLOGRAPHIC DISPLAY GATE PENDULUM AND CHANNEL GATE	
N9272	CN	218547262	28/02/2023	SHANGHAI ZHUXIN INTELLIGENT TECHNOLOGY	CN	15/02/2022	CN2022000299191	CN218547262U	INTERACTIVE 3D HOLOGRAPHIC SHOWCASE	
N9273	CN	115826382	21/03/2023	NANJING RUIWEISHI TECHNOLOGY	CN	20/12/2022	CN2022001638078	CN115826382	HOLOGRAPHIC PROCESSING DEVICE, CHIP AND DISPLAY EQUIPMENT	
N9274	CN	115826381	21/03/2023	XI AN UNIVERSITY OF TECHNOLOGY	CN	09/08/2022	CN2022000950217	CN115826381	ROTARY ADJUSTING TYPE TRANSPARENT AND REFLECTIVE DUAL-PURPOSE HOLOGRAPHIC MICROSCOPY INSTRUMENT	
N9275	CN	115826355	21/03/2023	SHENZHEN NAMUDA TECHNOLOGY	CN	28/11/2022	CN2022001500981	CN115826355	GREEN SENSITIVE HOLOGRAPHIC PHOTOPOLYMER PHOTSENSITIVE MATERIAL, PREPARATION METHOD AND APPLICATION	
N9276	CN	115826224	21/03/2023	FUJIAN NORMAL UNIVERSITY	CN	06/12/2022	CN2022001558669	CN115826224	SCALAR VORTEX LIGHT BEAM GENERATION SYSTEM AND METHOD BASED ON HOLOGRAPHIC TECHNOLOGY	
N9277	CN	115824857	21/03/2023	NORTH UNIVERSITY OF CHINA	CN	10/11/2022	CN2022001408477	CN115824857	HIGH-PRECISION BRINELL HARDNESS MEASURING METHOD BASED ON DIGITAL HOLOGRAPHIC MICROSCOPY	
N9278	CN	115820267	21/03/2023	JOURNEY TECHNOLOGY	CN	23/02/2023	CN2023000152702	CN115820267	HOLOGRAPHIC POLYMER DISPERSED LIQUID CRYSTAL MATERIAL AND APPLICATION THEREOF	
N9279	CN	115798545	14/03/2023	FUJIAN NORMAL UNIVERSITY	CN	24/11/2022	CN2022001482674	CN115798545	TAPMP (TAPMP) PHOTOPOLYMER HOLOGRAPHIC STORAGE MATERIAL WITH HIGH PHOTSENSITIVITY AND EXCELLENT POLARIZATION CHARACTERISTIC AND PREPARATION METHOD THEREOF	
N9280	CN	115797231	14/03/2023	SHANGHAI JIAO TONG UNIVERSITY	CN	05/12/2022	CN2022001548093	CN115797231	REAL-TIME HOLOGRAM GENERATION METHOD BASED ON NEURAL NETWORK OF FOURIER INSPIRATION	
N9281	CN	115797137	14/03/2023	LUXSHARE PRECISION TECHNOLOGY NANJING	CN	14/11/2022	CN2022001427119	CN115797137	FACE IMAGE ENCRYPTION METHOD BASED ON OPTICAL HOLOGRAPHY AND OPTICAL SYSTEM	
N9282	CN	115793966	14/03/2023	HUAZHONG UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	04/11/2022	CN2022001376641	CN115793966	HOLOGRAPHIC DISK-ORIENTED DATA ORGANIZATION METHOD, DEVICE AND SYSTEM	
N9283	CN	115793845	14/03/2023	BEIJING URBAN CONSTRUCTION	CN	10/10/2022	CN2022001232494	CN115793845	INTELLIGENT EXHIBITION HALL SYSTEM BASED ON HOLOGRAPHIC IMAGES	
N9284	CN	115793425	14/03/2023	SICHUAN UNIVERSITY	CN	04/11/2022	CN2022001377463	CN115793425	VERTICAL VIEW FIELD EXPANDING METHOD FOR OPTICAL CYLINDRICAL HOLOGRAPHIC DISPLAY	
N9285	CN	115793424	14/03/2023	SICHUAN UNIVERSITY	CN	04/11/2022	CN2022001377453	CN115793424	AMPLIFICATION AND QUALITY IMPROVEMENT METHOD FOR OPTICAL CYLINDRICAL HOLOGRAPHIC DISPLAY	
N9286	CN	115793423	14/03/2023	BEIHANG UNIVERSITY OF AERONAUTICS & ASTRONAUTICS	CN	06/12/2022	CN2022001556737	CN115793423	LARGE-VISUAL-ANGLE HOLOGRAPHIC 3D DISPLAY METHOD	
N9287	CN	115793272	14/03/2023	SHANGHAI JIANYING OPTICAL TECHNOLOGY	CN	25/11/2022	CN2022001492652	CN115793272	OFF-AXIS FREE-FORM SURFACE SPECTROMETER SYSTEM ADJUSTMENT EQUIPMENT BASED ON COMPUTER-GENERATED HOLOGRAM DEVICE	
N9288	CN	115793246	14/03/2023	BEIJING UNIVERSITY OF TECHNOLOGY	CN	10/11/2022	CN2022001402941	CN115793246	BINOCULAR HOLOGRAPHIC TRUE 3D NEAR-TO-EYE DISPLAY SYSTEM BASED ON SINGLE-CHIP SPATIAL LIGHT MODULATOR	
N9289	CN	115793239	14/03/2023	JITONG TECHNOLOGY BEIJING	CN	13/09/2021	CN2021001066855	CN115793239	HOLOGRAPHIC NEAR-TO-EYE DISPLAY SYSTEM AND METHOD BASED ON MULTIPLE SPATIAL LIGHT MODULATORS	
N9290	CN	115793117	14/03/2023	SUZHOU DONGHUI OPTICAL	CN	03/12/2022	CN2022001543607	CN115793117	HOLOGRAPHIC EXPOSURE OPTICAL PATH SYSTEM FOR MANUFACTURING REFLECTIVE VOLUME BRAGG GRATING AND WRITING METHOD THEREOF	
N9291	CN	115791835	14/03/2023	GUANGDONG UNIVERSITY OF TECHNOLOGY	CN	10/01/2023	CN2023000030308	CN115791835	IMAGE ACQUISITION SYSTEM AND WEAK DEFECT DETECTION METHOD OF MICRO-LENS ARRAY FOR HOLOGRAPHIC DISPLAY	
N9292	CN	115791780	14/03/2023	KUNMING UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	02/12/2022	CN2022001534094	CN115791780	DETECTION METHOD AND DEVICE FOR MEASURING SHRINKAGE RATE OF PHOTOPOLYMER	

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REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N9293	CN	115785841	14/03/2023	SUZHOU OBEI NEW MATERIAL TECHNOLOGY	CN	10/02/2023	CN2023000097922	CN115785841	PREPARATION METHOD OF MULTILAYER COMPOSITE ADHESIVE TAPE FOR HOLOGRAPHIC IMAGING	
N9294	CN	115775568	10/03/2023	GUANGDONG ZIJING INFORMATION STORAGE TECHNOLOGY	CN	07/09/2021	CN2021001045489	CN115775568	METHOD AND DEVICE FOR IMPROVING HOLOGRAM RECORDING AND READING SPEED IN CROSS-SHIFT MULTIPLEXING	
N9295	CN	115775297	10/03/2023	BEIHANG UNIVERSITY OF AERONAUTICS & ASTRONAUTICS	CN	06/12/2022	CN2022001556319	CN115775297	HOLOGRAM CALCULATION METHOD BASED ON PHYSICAL MODEL DRIVEN NETWORK	
N9296	CN	115761025	07/03/2023	HAINAN INSTITUTE OF ZHEJIANG UNIVERSITY	CN	01/11/2022	CN2022001356714	CN115761025	MULTI-TARGET AUTOMATIC FOCUSING METHOD FOR HOLOGRAPHIC IMAGING IN COMPLEX ENVIRONMENT	
N9297	CN	115760598	07/03/2023	ZHEJIANG SCI-TECH UNIVERSITY	CN	26/10/2022	CN2022001319611	CN115760598	DIGITAL HOLOGRAPHIC WRAPPED PHASE DISTORTION COMPENSATION METHOD BASED ON DEEP LEARNING	
N9298	CN	115756351	07/03/2023	ZHEJIANG LEWEI EXHIBITION TECHNOLOGY	CN	02/09/2021	CN2021001025786	CN115756351	HOLOGRAPHIC IMAGE DISPLAY INTERACTIVE SYSTEM AND HOLOGRAPHIC IMAGE DISPLAY METHOD	
N9299	CN	115755417	07/03/2023	NANJING NORMAL UNIVERSITY	CN	14/09/2022	CN2022001115946	CN115755417	REGULATION AND IMAGING SYSTEM OF SYMMETRICAL BUTTERFLY LIGHT BEAM	
N9300	CN	115713571	24/02/2023	ANHUI UNIVERSITY	CN	17/11/2022	CN2022001441107	CN115713571	DOUBLE-DOMAIN OPTIMIZATION RANDOM PHASE HOLOGRAM GENERATION METHOD WITHOUT DOUBLE CONSTRAINTS AND STORAGE MEDIUM	