

IHMA PATENT NEWSLETTER

Limited circulation patent news bulletin for the Holography Industry

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Published and granted patents

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- IHMA Patent Newsletter covers the requests for worldwide patents (WO, US, EP, FR, GB, DE, JP, CN, KR, RU...).
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- Some old patents are sometimes introduced in the databases if they have not been included in the previous update.
- The full patent information is in the tables at the end of this document (See TABLES WITH REFERENCES).
- 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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CLAIM 1. A secure Document (2) comprising:- a first layer (24) comprising a metal holographic structure (32) forming an array (29) of pixels (30) each having a plurality of subpixels (31) of distinct colors; and - a second layer (34) positioned facing the first layer, said second layer being opaque to at least the visible wavelength spectrum; - wherein the first layer comprises first perforations (40) formed by first laser radiation (LS1), at least a first part of the first perforations (40) revealing locally through the holographic structure dark zones (42) in the sub-pixels caused by underlying regions (41) of the second opaque layer situated facing said at least a first part of the first perforations (40), so as to form a personalized image (IG) from the arrangement of pixels (30) combined with the dark areas (42).

Equivalents : FR3103736A1 – WO2021105582A1

Status: Pending

Research Report:

EP 3 828 000 A1



RAPPORT DE RECHERCHE EUROPEENNE

Numéro de la demande
EP 20 20 3892

DOCUMENTS CONSIDERES COMME PERTINENTS			
Catégorie	Citation du document avec indication, en cas de besoin, des parties pertinentes	Revue/édition concernée	CLASSEMENT DE LA DEMANDE (IPC)
A	EP 1 997 643 A2 (OVD KINEGRAM AG [CH]) 3 décembre 2008 (2008-12-03) * alinéas [0056] - [0071]; figures 5a, 5b, 7a, 7b *	1-13	INV. B42D25/00 B42D25/328 B42D25/346
A	JP 2008 142914 A (TOPPAN PRINTING CO LTD) 26 juin 2008 (2008-06-26) * alinéas [0039] - [0042], [0046], [0047], [0064]; figure 13 *	1-13	
A	WO 2019/034398 A1 (LEONHARD KURZ STIFTUNG & CO KG [DE]) 21 février 2019 (2019-02-21) * page 52, ligne 21 - page 57, ligne 14; figures 5a-c * * page 61, ligne 19 - page 64, ligne 23; figures 8a-c *	1-13	
A	JP H09 311614 A (DAINIPPON PRINTING CO LTD) 2 décembre 1997 (1997-12-02) * abrégé; figures *	1-13	
A	EP 3 279 003 A1 (GIESECKE+DEVRIENT CURRENCY TECH GMBH [DE]) 7 février 2018 (2018-02-07) * alinéas [0057] - [0059]; figures 6, 7 *	1-13	DOMAINES TECHNIQUES RECHERCHES (IPC) B42D
A	JP 2005 219296 A (NAT PRINTING BUREAU) 18 août 2005 (2005-08-18) * abrégé; figures *	1-13	
A	EP 3 521 052 A1 (GIESECKE DEVRIENT CURRENCY TECH GMBH [DE]) 7 août 2019 (2019-08-07) * alinéas [0023] - [0041]; figure 4d *	1-13	

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P33518

CARD – RFID

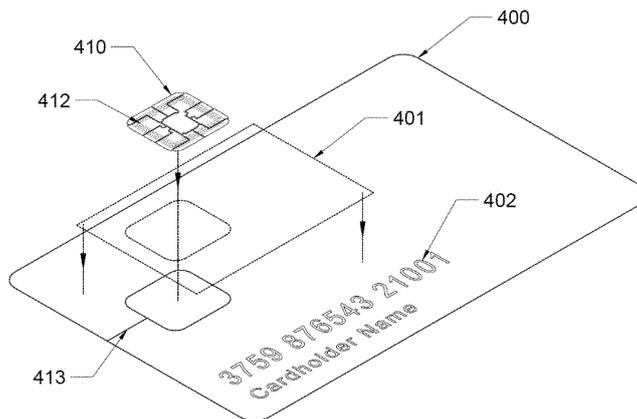
US20210174159

FEDERAL CARD SERVICES

Priority Date: 05/10/2019

RFID-ENABLED METAL TRANSACTION CARDS WITH FOIL, SPECIAL TEXTURE, COLOR AND CARBON FIBER

RFID-enabled composite metal transaction cards may include a security layer comprising a hologram or diffraction grating on a metal layer having a slit. The metal layer may reside on a front or rear face, or as a core layer in the construction of the card. The security layer, with or without a carrier layer, may be hot stamped to the metal layer with a protective hard coating, to camouflage the existence of a discontinuity in the metal layer. The metal layer with slit or slits may be coated with a baked-on-ink to provide color and to partially fill the slit or slits. A metal foil, holofoil or a holographic metal film may be provided with a discontinuity in the form of a slit and may be a decorative foil mounted to a card body containing a metal layer with a slit.

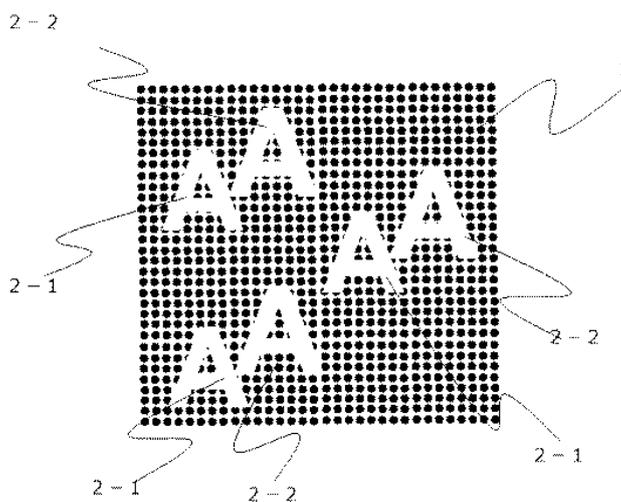


CLAIM 1. An RFID-enabled smartcard comprising: a metal layer having a scratch protection coating over a print layer on its front face, wherein the scratch protection coating comprises at least one of (i) a layer of ink, varnish or a polymer and (ii) a layer of hard coat lamination film; wherein the scratch protection coating is suitable for one or more of the following treatments: the scratch protection coating is capable of being laser marked for inscribing personalization data into or onto the coating; the scratch protection coating is capable of being laser engraved to partially remove the coating in creating a logo or a deboss feature; and the scratch protection coating is capable of being laser treated without removal of material to create thin film effects.

PHOTOLUMINESCENT VIDEO PATTERN

TOPIC: To provide a hologram that uses a diffraction grating as a means for sampling a compressed image to move more smoothly than a conventional video effect, to express with higher luminance, and to freely change hue.

INVENTION: The present invention provides a photoluminescent moving pattern including a combination of a photoluminescent element group and a latent element group having optical characteristics different from those of the photoluminescent element group, wherein the photoluminescent element group includes a plurality of photoluminescent elements arranged with regularity, each of the photoluminescent elements includes a diffraction grating in which a plurality of grating lines are arranged, The latent image element group is a photoluminescent moving pattern in which a plurality of latent image elements formed by dividing and compressing a base image are arranged, and the base image appears as a moving pattern under specularly reflected light, and the position of the moving pattern is changed to be visually recognized by changing the angle.



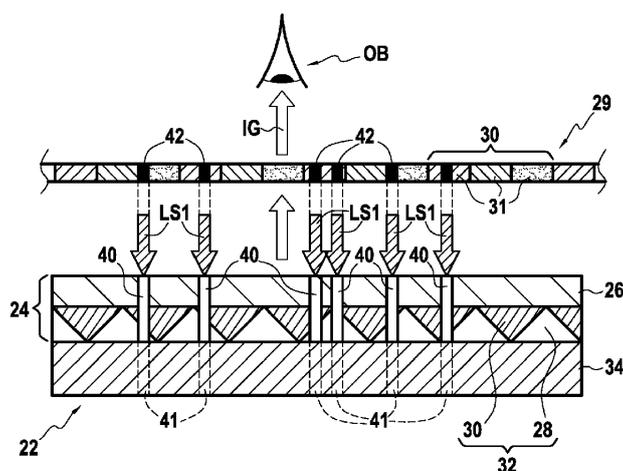
CLAIM 1. A photoluminescent moving pattern formed by combining or integrating a photoluminescent element group and a latent element group having optical properties different from those of the photoluminescent element group, the photoluminescent element group comprising: The display device according to claim 1, wherein the plurality of photoluminescent elements are arranged in a regular manner, each of the photoluminescent elements includes a diffraction grating in which a plurality of grating lines are arranged, the grating lines being formed by a combination of curved lines or straight lines having different angles, and the latent image element group includes: A plurality of latent image elements obtained by compressing a base image being arranged to have a regularity different from the regularity of the photoluminescent element group, or ii) a plurality of latent image elements obtained by dividing and compressing a base image being arranged to have the same regularity as the regularity of the photoluminescent element group, Wherein the base image appears as a moving pattern under specularly reflected light, and a position of the moving pattern is changed and visually recognized by changing an angle.

SECURITY DOCUMENT AND MANUFACTURING PROCESS OF A SECURITY DOCUMENT INVOLVING A PERSONALISED IMAGE WITH A METALLIC HOLOGRAM

The invention relates to a secure document comprising: a first layer (24) comprising a holographic metal structure (32) forming an arrangement (29) of pixels (30) each comprising a plurality of sub-pixels (31) of distinct colours; and a second layer (34) positioned opposite the first layer (24), this second layer being opaque with respect to the visible wavelength spectrum. The first layer (24) comprises perforations (40) formed by a first laser radiation (LS1), these first perforations revealing locally through the holographic structure (32) dark zones (42) in the sub-pixels (31) caused by underlying regions (41) of the opaque second layer (34) situated facing the perforations, so as to form a personalized image (IG) from the arrangement of pixels (30) combined with the dark areas (42).

DOCUMENT SÉCURISÉ ET PROCÉDÉ DE FABRICATION D'UN DOCUMENT, CONCERNANT UN'IMAGE PERSONNALISÉE FORMÉE À PARTIR D'UN HOLOGRAMME MÉTALLIQUE

L'invention concerne un document sécurisé comprenant : une première couche (24) comprenant une structure holographique métallique (32) formant un arrangement (29) de pixels (30) comportant chacun une pluralité de sous-pixels (31) de couleurs distinctes ; et une deuxième couche (34) positionnée en regard de la première couche (24), cette deuxième couche étant opaque vis-à-vis du spectre de longueurs d'onde du visible. La première couche (24) comprend des perforations (40) formées par un premier rayonnement laser (LS1), ces premières perforations révélant localement au travers de la structure holographique (32) des zones sombres (42) dans les sous-pixels (31) causées par des régions sous-jacentes (41) de la deuxième couche opaque (34) situées en regard des perforations, de sorte à former une image personnalisée (IG) à partir de l'arrangement de pixels (30) combinées aux zones sombres (42).



CLAIM 1. A secure Document (2) comprising: - a first layer (24) comprising a metal holographic structure (32) forming an array (29) of pixels (30) each having a plurality of subpixels (31) of distinct colors; and - a second layer (34) positioned facing the first layer, said second layer being opaque to at least the visible wavelength spectrum; - wherein the first layer comprises first perforations (40) formed by first laser radiation (LS1), at least a first part of the first perforations (40) revealing locally through the holographic structure dark zones (42) in the sub-pixels (31) caused by underlying regions (41) of the second opaque layer situated facing said at least a first part of the first perforations (40), so as to form a personalized image (IG) from the arrangement of pixels (30) combined with the dark areas (42).

P33573

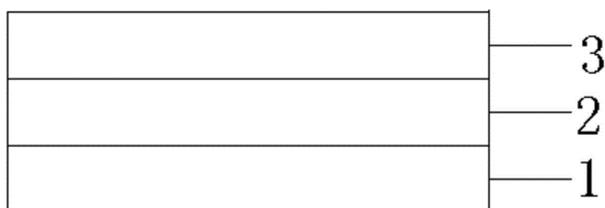
CN113002212

Priority Date: 20/12/2019

SVG TECHNOLOGY

COMPOSITE MATERIAL WITH HOLOGRAPHIC ANTI-COUNTERFEITING EFFECT AND MANUFACTURING METHOD THEREOF

The invention discloses a composite material with holographic anti-counterfeiting effect and a manufacturing method thereof, wherein the composite material comprises a holographic layer, a medium coating and a protective layer; the holographic layer comprises a supporting layer and a holographic anti-counterfeiting micro-nano structure formed on the surface of the supporting layer; the transparent medium coating is formed on the holographic layer and covers the holographic anti-counterfeiting micro-nano structure; the protective layer is formed on the transparent medium coating and is formed by curing a UV light curing coating and/or a thermosetting coating. The composite material with the holographic anti-counterfeiting effect has the advantages of strong wear resistance and bending resistance, higher anti-counterfeiting technology content grade, obvious optical effect, easy and quick identification of authenticity, stable product quality in long-term use, and difficulty in imitation and information falsification.



CLAIM 1. A composite material with holographic anti-counterfeiting effect is characterized in that: it comprises a holographic layer, a medium coating and a protective layer; the holographic layer comprises a supporting layer and a holographic anti-counterfeiting micro-nano structure formed on the surface of the supporting layer; the transparent medium coating is formed on the holographic layer and covers the holographic anti-counterfeiting micro-nano structure; the protective layer is formed on the transparent medium coating and is formed by curing a UV light curing coating and/or a thermosetting coating.

P33577

LABEL

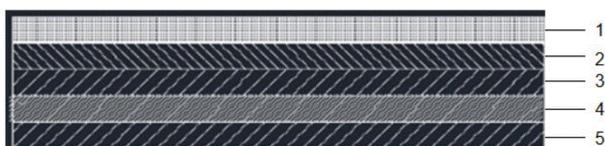
CN112980310

Priority Date: 04/03/2021

SUZHOU BAICONG TECHNOLOGY

COMBINED COATING FOR LASER HOLOGRAPHIC HOT STAMPING LABEL AND APPLICATION METHOD THEREOF

The invention belongs to the technical field of coatings, and particularly relates to a combined coating for a laser holographic hot stamping label and an application method thereof; the bonding coating is characterized by comprising the following components in parts by weight: 40-60 parts of resin, 15-25 parts of salt forming agent and 25-40 parts of water; the laser holographic hot stamping label substrate coated with the combined coating can reproduce visible and hidden information, has good reducibility of all the information so as to improve the three-dimensional effect of the hot stamping label, increase artistic artistry, decoration and improve anti-counterfeiting performance, adopts water-based coating, has low odor, low Volatile Organic Compounds (VOCs), and is environment-friendly and pollution-free.



CLAIM 1. The combined coating for the laser holographic hot stamping label is characterized by comprising the following components in parts by weight: 40-60 parts of resin, 15-25 parts of salt forming agent and 25-40 parts of water.

P33583

LABEL

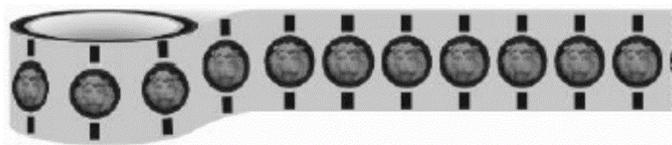
CN112967590

SUZHOU BAICONG TECHNOLOGY

Priority Date: 04/03/2021

CONTINUOUSLY COILED LASER HOLOGRAPHIC LABEL AND PREPARATION METHOD THEREOF

The invention belongs to the technical field of laser holography, and relates to a continuously rolled laser holographic label and a preparation method thereof.



CLAIM 1. The continuously rolled laser holographic label is characterized in that continuous patterns are printed on a continuously rolled label substrate; the length of the coiled label substrate is adjustable.

P33587

PRINTING

CN112951071

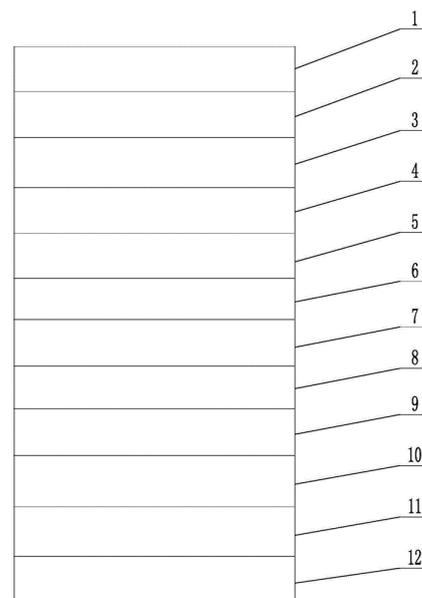
SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP

Priority Date: 31/03/2021

HOLOGRAPHIC RAINBOW LASER SECRET TYPE ANTI-COUNTERFEITING MARK AND PREPARATION METHOD THEREOF

The invention belongs to the technical field of anti-counterfeiting marks, and particularly relates to a holographic rainbow laser secret type anti-counterfeiting mark and a preparation method thereof. The mark comprises a plastic film layer, a coating, a die-pressing holographic information layer, a transfer coating, a polyamide layer, a printing layer, a pressure-sensitive adhesive layer, a holographic rainbow transfer layer, a first glue layer, a fragile paper layer and a second glue layer which are arranged in sequence from top to bottom; the holographic rainbow transfer layer comprises a laser molding information layer and an aluminum-plated layer, and the laser molding information layer is positioned above the aluminum-plated layer; the mark can be uncovered and is divided into a stripping part and a bottom-remaining part, wherein the stripping part is a part above the transfer coating, and the bottom-remaining part is a part below the transfer coating and below the transfer coating. After the mark is uncovered, the upper surface and the lower surface of the stripped part both display the hidden laser effect, the bottom part displays the rainbow holographic effect and the hidden laser effect, and a consumer judges the mark to be true or false by identifying the hidden information and still displays the hidden laser information when the mark is adhered together; the preparation method is simple and easy to implement.

CLAIM 1. The utility model provides a holographic rainbow laser cryptomorphic false proof mark which characterized in that: the holographic rainbow film comprises a plastic film layer (1), a coating layer (2), a die pressing holographic information layer (3), a transfer coating layer (4), a polyamide layer (5), a printing layer (6), a pressure-sensitive adhesive layer (7), a holographic rainbow transfer layer, a first glue layer (10), a fragile paper layer (11) and a second glue layer (12) which are arranged from top to bottom in sequence; the holographic rainbow transfer layer comprises a laser die-pressing information layer (8) and an aluminum-plated layer (9), wherein the laser die-pressing information layer (8) is positioned above the aluminum-plated layer (9); the anti-counterfeiting mark can be uncovered and is divided into a stripping part and a reserved part, wherein the stripping part is a part above the transfer coating (4), and the reserved part is the transfer coating (4) and a part below the transfer coating (4).



P33595

PRINTING

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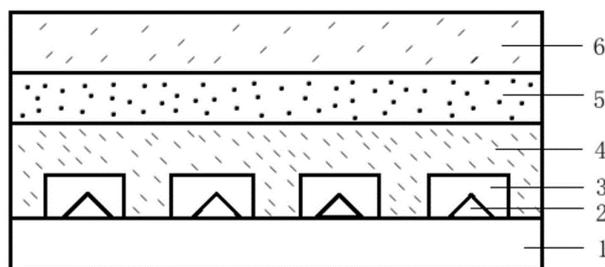
HENGFENG MATERIAL TECHNOLOGY ZHEJIANG

Priority Date: 29/01/2021

HOLOGRAPHIC ANTI-COUNTERFEITING HOT STAMPING FILM AND PREPARATION METHOD THEREOF

The invention relates to a holographic anti-counterfeiting hot stamping film and a preparation method thereof, belonging to the technical field of anti-counterfeiting printing. The holographic anti-counterfeiting hot stamping film is structurally and sequentially provided with a BOPET film layer, a color developable separation layer, a hot stamping pattern separation layer, a holographic anti-counterfeiting image-text layer, an aluminum-plated layer and a gum layer, and is prepared by sequentially printing the color developable separation layer, printing the hot stamping pattern separation layer, printing the mold-moldable image-text layer, laser molding, vacuum aluminum plating and coating the gum. The holographic anti-counterfeiting hot stamping film prepared by the invention can finish pattern hot stamping under a light plate hot stamping plate roller without using a special pattern hot stamping plate roller in the hot stamping process, and has the following steps: simple and efficient use, vivid holographic anti-counterfeiting image-text and good anti-counterfeiting identification.

CLAIM 1. A holographic anti-counterfeiting hot stamping film is characterized in that a BOPET film layer, a color developable separating layer, a hot stamping pattern separating layer, a holographic anti-counterfeiting image-text layer, an aluminum coating layer and a gum layer are sequentially arranged on the structure; the color-developable separation layer can be separated from the BOPET film layer during hot stamping, is attached to the surface of the hot stamping pattern separation layer after hot stamping, and can be quickly colored after being wiped by alkaline liquid; the hot stamping pattern separation layer can be separated from the BOPET film layer during hot stamping, and the printed pattern is consistent with the pattern finally subjected to hot stamping separation; the holographic anti-counterfeiting image-text layer can show a holographic anti-counterfeiting effect with image-texts with different colors.



P33598

PRINTING

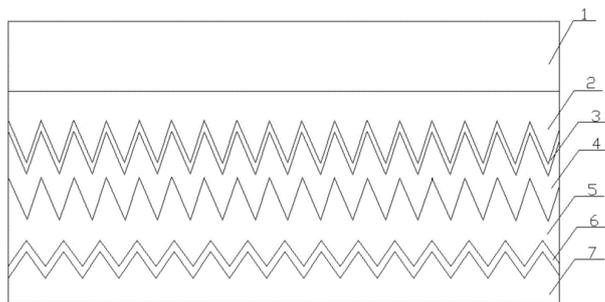
CN112925183

HUBEI YINLANGXING TECHNOLOGY DEVELOPMENT

Priority Date: 05/12/2019

HOLOGRAPHIC ANTI-COUNTERFEITING COMPOSITE FILM

The invention discloses a holographic anti-counterfeiting composite film which comprises a base film layer, a UV imaging layer, an isolation layer, a first dielectric layer, a hot-pressing imaging layer, a second dielectric layer and a back glue layer which are sequentially arranged from top to bottom, wherein the UV imaging layer is photocured on the base film layer in a gravure roll-coating printing mode. According to the invention, different patterns are formed on the upper layer and the lower layer of the hot-pressing imaging layer, and then the first dielectric layer and the second dielectric layer are used for brightening respectively, so that special moire patterns which interfere with each other can be formed under the irradiation of natural light, and the hot-pressing imaging layer has uniqueness and non-reproducibility and is difficult to counterfeit. The isolation layer is favorable to the separation of UV formation of image information layer and lower floor simultaneously for thereby UV formation of image information layer is kept on the basement rete and is reached the purpose of using repeatedly.



CLAIM 1. The holographic anti-counterfeiting composite film is characterized by comprising a base film layer, a UV imaging layer, an isolation layer, a first medium layer, a hot-pressing imaging layer, a second medium layer and a back glue layer which are sequentially arranged from top to bottom, wherein the UV imaging layer is printed in a gravure roll coating mode and is photocured on the base film layer.

REUSABLE UV TRANSFER FILM AND PRODUCTION METHOD THEREOF

The invention discloses a reusable UV transfer film which sequentially comprises a PET (polyethylene terephthalate) base layer, a UV imaging information layer, an isolation layer, an aluminum layer and a back adhesive layer from top to bottom, wherein the UV imaging information layer is printed by adopting a UV gravure printing method. Meanwhile, the invention also discloses a production method of the reusable UV transfer film, which comprises the following steps: s1, carrying out corona treatment on a PET base layer; s2, coating UV ink on the PET base layer by adopting gravure printing, and irradiating by using ultraviolet light to solidify the UV ink to obtain a UV imaging information layer; s3, spraying an isolation layer on the information surface of the UV imaging information layer; s4, aluminum plating is carried out on the surface of the isolation layer to form an aluminum layer; and S5, coating a back glue layer below the aluminum layer. The concave-convex microstructure on the UV imaging information layer can form a special holographic anti-counterfeiting pattern on the aluminum layer, the aluminum layer is directly adhered to paper, and the UV imaging information layer is reserved on the PET base film so as to achieve the purpose of repeated use.

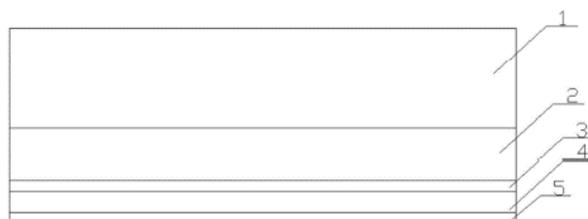


图1

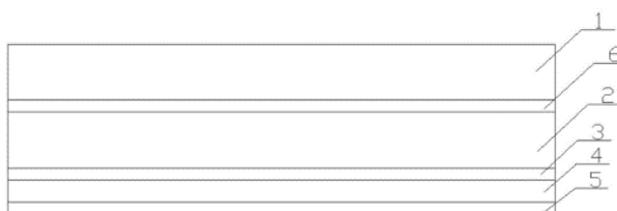
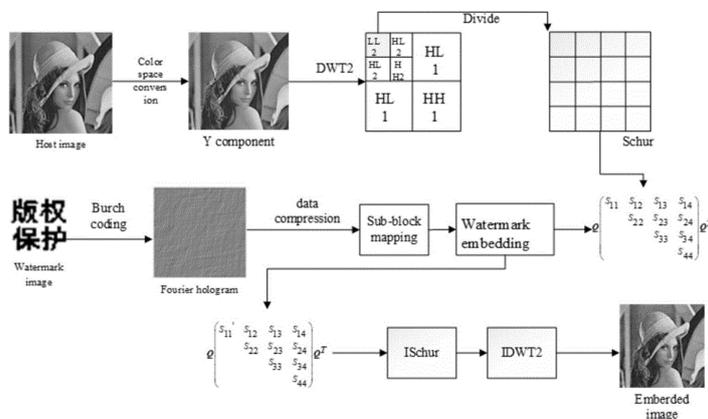


图2

CLAIM 1. The reusable UV transfer film is characterized by sequentially comprising a PET (polyethylene terephthalate) base layer, a UV imaging information layer, an isolation layer, an aluminum layer and a back adhesive layer from top to bottom, wherein the UV imaging information layer is printed by adopting a UV gravure printing method.

HIGH-ROBUSTNESS HOLOGRAPHIC BLIND WATERMARKING ALGORITHM BASED ON IMPROVED BOQI CODING AND DATA INTERVAL MAPPING

The invention discloses a high-robustness holographic blind watermarking algorithm based on improved Boqi coding and data interval mapping, which expands the range of an image to be coded in a space domain according to the principle and the characteristics of computer holography, encrypts a watermark by using an improved Burch coding algorithm and generates a holographic watermarking image. And the holographic watermark image is subjected to interval mapping, and the compressed numerical value is subjected to data interval mapping, so that the safety of the image watermark system is further improved. Secondly, converting the RGB color carrier image into a YUV color space, selecting a Y component to perform secondary discrete wavelet transform, blocking the low-frequency component, and performing Schur decomposition on each sub-block. And finally, selecting the first row and the first column of the upper triangular matrix as the embedding position of the holographic watermark, and dynamically selecting proper embedding strength. And performing Schur reconstruction and wavelet inverse transformation on the upper triangular matrix embedded with the watermark information, and converting the YUV space into an RGB color space to obtain an image containing the watermark information.

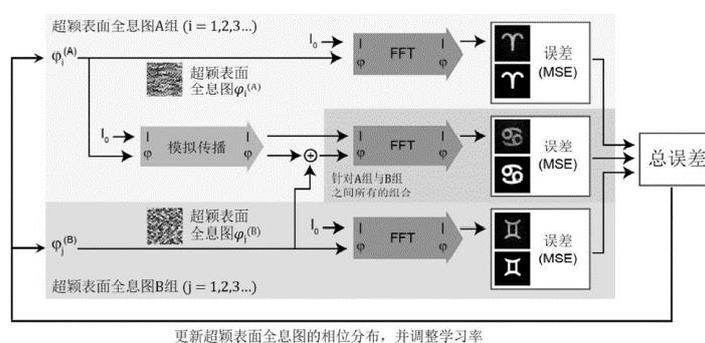


CLAIM 1. A high-robustness holographic blind watermark algorithm based on improved Boqi coding and data interval mapping is characterized by comprising copyright watermark embedding and copyright authentication:

- copyright watermark embedding comprises the following steps:
 - 1.1, setting H as a color carrier image, the size of M multiplied by N multiplied by 3, W as a watermark image and the size of P multiplied by Q, performing holographic encryption on the watermark image W, performing Fourier holographic encryption on a binary copyright image with the size of P multiplied by Q, and performing improved Burch coding on the Fourier holographic image to obtain a hologram BW with the size of 2P multiplied by 2Q;
 - 1.2 preprocessing the holographic image, and mapping the data interval of the obtained holographic image BW to obtain the image BW1;
 - 1.3 converting RGB carrier image H to YUV color space to obtain HY、HU、HVThree components, and for the luminance component HYPerforming wavelet decomposition twice to obtain the size ofA low frequency coefficient LL;
 - 1.4 4 x 4 non-overlapping partitioning of the low frequency coefficient LL, each sub-block denoted bi,jAnd performing Schur decomposition on each subblock to obtain a unitary matrix Ui,jAnd an upper triangular matrix Ti,j;
 - 1.5 Upper triangular matrix Ti,jIn which the hologram BW after preprocessing is embeddedlThe elements of (1);
 - 1.6 pairs of T 'embedded with watermark information'i,j(1,1) carrying out inverse Schur transformation and inverse wavelet transformation to obtain a luminance component H 'embedded with information'YAnd according to the U component H obtained in step 1.3UAnd V component HVConverting the image into an RGB color space to obtain a carrier image H' embedded with the watermark;

OPTICAL SECRET SHARING METHOD BASED ON CASCADE METASURFACE HOLOGRAPHY

The invention relates to an optical secret sharing method based on cascade metasurface holography, and belongs to the technical field of micro-nano optics, holographic display, encryption and anti-counterfeiting, and information security application. The invention uses an iterative gradient descent optimization algorithm to obtain the phase distribution of a plurality of metasurface holograms, and codes the metasurface holograms on different glass substrates by using amorphous silicon nanorod antennas through the processes of deposition, photoetching, stripping, etching and the like. When the method is used for secret sharing, only when the number of the metasurface holograms serving as the secret keys is complete and the metasurface holograms are correctly stacked, the encrypted information can be read in the corresponding polarization channel. The cascade metasurface system has multiple encryption channels, large information capacity and high safety, can be applied to the fields of information safety, holographic display, encryption, anti-counterfeiting and the like needing to hide confidential data, and has great development potential.



CLAIM 1. The optical secret sharing method based on the cascade metasurface holography is characterized in that: the method comprises the following steps: step one, using an iterative gradient descent optimization algorithm, storing physically split encrypted information while efficiently and directly obtaining a corresponding reproduced image, and using the physically split encrypted information as phase distribution of a plurality of metasurface holograms of a secret key during secret sharing; the iterative gradient descent optimization algorithm comprises the following specific steps: 1) dividing a plurality of metasurface holograms into a group A and a group B according to requirements, wherein the group A comprises i images, and the group B comprises j images; calculating a reproduction image corresponding to each metasurface hologram; comparing the reproduced image with a target image, and calculating to obtain $i + j$ mean square errors; 2) cascading the multiple metasurface holograms of the group A and the group B obtained in the step one by an exhaustion method; calculating a reproduced image corresponding to the cascaded phase distribution; comparing the reproduced image with a target image, and calculating to obtain $i \times j$ mean square errors; 3) summing the $i + j$ mean square errors and the $i \times j$ mean square errors to obtain a total error; 4) obtaining a gradient through the total error obtained in the step 3): the gradient is the derivative of the total error on the phase distribution of A, B two sets of metasurface holograms; 5) updating the phase distribution of the A, B two groups of metasurface holograms based on an Adam gradient descent optimization algorithm according to the gradient obtained in the step 4); 6) repeating the steps 1) to 5), carrying out multiple iterations, continuously updating the phase distribution of the metasurface holograms in the iterative optimization process, ensuring that the gradient is converged to be locally optimal finally, and finding a group of metasurface holograms with the minimum total error; step two, encoding the phase distribution of the metasurface hologram obtained in the step one through a medium nano antenna; processing a plurality of all-dielectric metasurface holograms formed by the amorphous silicon nanorod antennas on different glass substrates through the processes of deposition, photoetching, stripping, etching and the like; the multiple sheets of the holohedral surface holograms can reconstruct independent reproduced images in a far field through the lens; the optical secret sharing method can also be used as secret sharing keys to be combined in a mutually crossed mode and stacked at a preset distance to form a cascade metasurface system, a brand new reproduced image different from the reproduced image corresponding to the two single-layer metasurface holograms forming the cascade metasurface system is generated, namely, the physically split encrypted information is reproduced again, and the optical secret sharing based on the cascade metasurface holography is realized.

Click on the title to return to table of contents

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

P33488

PRINTING – BANKNOTE – RELIEF – MICROLENS

WO2021127241

CRANE

Priority Date: 18/12/2019

MICRO-OPTIC SECURITY DEVICE WITH PHASE ALIGNED IMAGE LAYERS

A micro-optic security device (105) includes a planar array of microlenses (305), which are configured to focus light along a plurality of focal paths (610) associated with a viewing angle. The micro-optic security device further includes an icon layer stack (905) disposed along the plurality of focal paths. The icon layer stack includes a first icon layer (620) with volumes of cured material of a first color (613b) and volumes of substantially transparent material at locations outside of focal paths of the first range of viewing angles. The icon layer stack also includes a second icon layer (640) with volumes of substantially transparent cured material at locations along focal paths of the first range of viewing angles, and volumes of cured material of a second color (637a) at locations along focal paths of a second range of viewing angles.

DISPOSITIF DE SÉCURITÉ MICRO-OPTIQUE DOTÉ DE COUCHES D'IMAGE À ALIGNEMENT DE PHASE

La présente invention concerne un dispositif de sécurité micro-optique (105) comprenant un ensemble plan de microlentilles (305), qui sont conçues pour focaliser la lumière le long d'une pluralité de trajets focaux (610) associés à un angle de visualisation. Le dispositif de sécurité micro-optique comprend, en outre, un empilement de couches d'icônes (905) disposé le long de la pluralité de trajets focaux. L'empilement de couches d'icônes comprend une première couche d'icônes (620) avec des volumes de matériau durci d'une première couleur (613b) et des volumes de matériau sensiblement transparent à des emplacements à l'extérieur de trajets focaux de la première plage d'angles de visualisation. L'empilement de couches d'icônes comprend également une seconde couche d'icônes (640) avec des volumes de matériau durci sensiblement transparent à des emplacements le long de trajets focaux de la première plage d'angles de visualisation, et des volumes de matériau durci d'une seconde couleur (637a) à des emplacements le long de trajets focaux d'une seconde plage d'angles de visualisation.

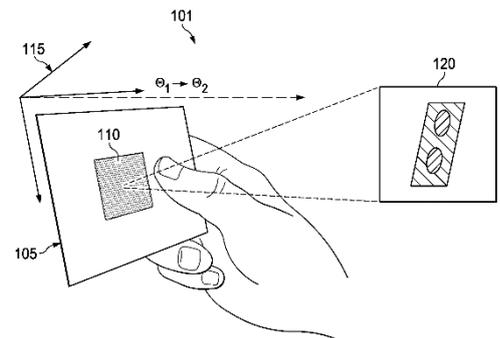


FIG. 1A

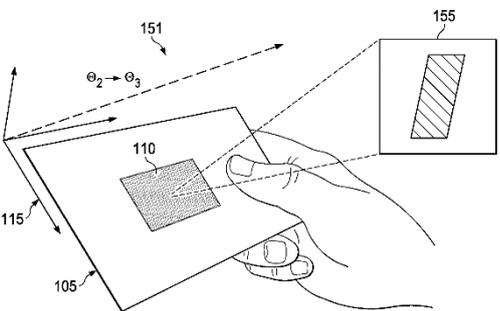


FIG. 1B

CLAIM 1. A micro-optic security device (105), comprising: a planar array of microlenses (305), configured to focus light along a plurality of focal paths, the plurality of focal paths (610) associated with a viewing angle of the micro-optic security device; and an icon layer stack (905) disposed along the plurality of focal paths, the icon layer stack comprising: a first icon layer (620) comprising: volumes of cured material of a first color (613b) at locations along focal paths of a first range of viewing angles; and volumes of substantially transparent material at locations outside of focal paths of the first range of viewing angles; and a second icon layer (640) disposed below the first icon layer relative to the planar array of microlenses, the second icon layer further comprising: volumes of substantially transparent cured material at locations along focal paths of the first range of viewing angles; and volumes of cured material of a second color (637a) at locations along focal paths of a second range of viewing angles, wherein at least one of the first icon layer or the second icon layer comprises a plurality of substantially transparent retaining structures.

P33490

PRINTING – CARD – RELIEF – MICROLENS

WO2021124759

DAI NIPPON PRINTING

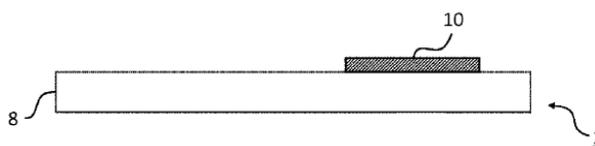
Priority Date: 19/12/2019

LAMINATE, MEDIUM, AND METHOD

The problem addressed by the present invention is to provide: a laminate on which information representing, e.g., a variable pattern that is difficult to recognize with a visible light camera or naked eyes can be printed using a laser beam; a medium having a similar property; and a related method. Provided is a laminate comprising a substrate and a near-infrared ray-absorbing layer formed by using a near-infrared ray-absorbing ink composition including a near-infrared ray-absorbing material. The near-infrared ray-absorbing material includes cesium tungsten oxide or lanthanum hexaboride. Irradiating a target section in the near-infrared ray-absorbing layer with a laser beam lowers the near-infrared ray absorption at least in a predetermined wavelength range in the target section.

STRATIFIÉ, SUPPORT ET PROCÉDÉ

Le problème abordé par la présente invention est de fournir : un stratifié sur lequel peuvent être imprimées des informations représentant, par exemple, un motif variable qui est difficile à reconnaître avec une caméra à la lumière visible ou à l'œil nu à l'aide d'un faisceau laser ; un support ayant une propriété similaire ; et un procédé associé. L'invention concerne un stratifié comprenant un substrat et une couche absorbant les rayons dans le proche infrarouge formée à l'aide d'une composition d'encre absorbant les rayons dans le proche infrarouge comprenant un matériau absorbant les rayons dans le proche infrarouge. Le matériau absorbant les rayons dans le proche infrarouge comprend de l'oxyde de césium-tungstène ou de l'hexaborure de lanthane. L'exposition d'une section cible dans la couche absorbant les rayons dans le proche infrarouge à un rayonnement avec un faisceau laser abaisse l'absorption des rayons dans le proche infrarouge au moins dans une plage de longueurs d'onde prédéfinie dans la section cible.



L'invention concerne un stratifié comprenant un substrat et une couche absorbant les rayons dans le proche infrarouge formée à l'aide d'une composition d'encre absorbant les rayons dans le proche infrarouge comprenant un matériau absorbant les rayons dans le proche infrarouge. Le matériau absorbant les rayons dans le proche infrarouge comprend de l'oxyde de césium-tungstène ou de l'hexaborure de lanthane. L'exposition d'une section cible dans la couche absorbant les rayons dans le proche infrarouge à un rayonnement avec un faisceau laser abaisse l'absorption des rayons dans le proche infrarouge au moins dans une plage de longueurs d'onde prédéfinie dans la section cible.

CLAIM 1. A substrate layer and a near-infrared absorbent layer formed by using a near-infrared absorbent ink composition including a near-infrared absorbent material, the near-infrared absorbent material including cesium tungsten oxide or lanthanum hexaboride, Wherein when the target portion of the near infrared radiation absorbing layer is exposed to laser light, near infrared radiation absorption in at least a predetermined wavelength range of the target portion is reduced.

P33493

OVD – BANKNOTE – CARD – THREAD – WINDOW – LIQUID CRYSTALS

WO2021123177

OBERTHUR FIDUCIAIRE

Priority Date: 20/12/2019

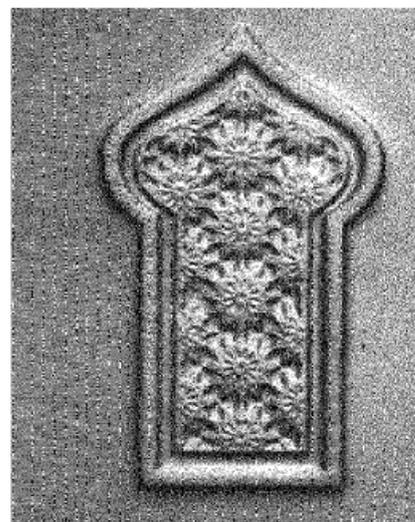
OPTICAL STRUCTURE HAVING A RELIEF EFFECT

The invention relates to an optical structure (5) having a relief effect, comprising: - a support (7) adapted for aligning liquid crystals, - a deposit (9) in contact with the support of a substance in the form of at least one pattern (11), which partially covers the support, and - a liquid crystal layer (13) which at least partially covers the support and said pattern and is in contact with the support.

STRUCTURE OPTIQUE A EFFET DE RELIEF

Structure optique (5) à effet de relief, comportant : - un support (7) adapté à l'alignement de cristaux liquides, - un dépôt (9) au contact du support d'une substance sous la forme d'au moins un motif (11) recouvrant partiellement le support, et - une couche de cristaux liquides (13) recouvrant au moins partiellement le support et ledit motif et au contact du support.

CLAIM 1. Optical Structure (5) with relief effect, comprising: - a support (7) suitable for aligning liquid crystals, - a deposit (9) in contact with the support of a substance in the form of at least one pattern (11) partially covering the support, the substance being an ink or a varnish, and - a liquid crystal layer (13) at least partially covering the support and the said pattern and in contact with the support.



P33499

BANKNOTE – CARD – RELIEF – MICROLENS

WO2021119754

CCL SECURE

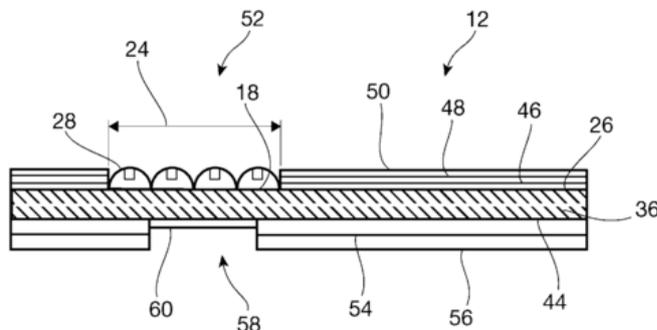
Priority Date: 19/12/2019

A MICRO-OPTIC DEVICE

The present invention relates to a micro-optic device for use in a micro-optic image presentation system. Specifically, the micro-optic device is formed as a single layer unitary structure arranged to generate various complex imagery effects.

DISPOSITIF MICRO-OPTIQUE

La présente invention concerne un dispositif micro-optique destiné à être utilisé dans un système de présentation d'image micro-optique. Plus précisément, le dispositif micro-optique est formé sous la forme d'une structure unitaire monocouche agencée pour générer divers effets d'imagerie complexes.



CLAIM 1. A micro-optic device including: a substrate including a first surface and a second surface; optical elements; and image elements, wherein the optical elements and the image elements are integrally formed as a unitary structure located on the first or the second surface of the substrate, and wherein the image elements are arranged to be sampled by the optical elements to produce a first optical effect observable from the first surface of the substrate, and a second optical effect observable from the second surface of the substrate.

P33500

BANKNOTE – CARD – RELIEF – MICROLENS

WO2021119744

CCL SECURE

Priority Date: 19/12/2019

MICRO-OPTIC DEVICE FOR PRODUCING A MAGNIFIED IMAGE

The present disclosure relates to a micro-optic device for producing a magnified image, including: a first unitary structure on one side of a substrate, the first unitary structure including a first group of focusing elements and a first group of imagery elements, wherein one of the first group of focusing elements and the first group of imagery elements is recessed with respect to the other, wherein the device further includes at least a first coating of ink overprinted on the first unitary structure, to at least partially fill the recessed group of elements, and wherein a property of the ink provides a visual contrast in the magnified image.

DISPOSITIF MICRO-OPTIQUE POUR PRODUIRE UNE IMAGE AGRANDIE

La présente invention concerne un dispositif micro-optique pour produire une image agrandie, comprenant : une première structure unitaire sur un côté d'un substrat, la première structure unitaire comprenant un premier groupe d'éléments de focalisation et un premier groupe d'éléments d'imagerie, l'un des éléments du premier groupe d'éléments de focalisation et du premier groupe d'éléments d'imagerie étant en retrait l'un par rapport à l'autre, le dispositif comprenant en outre au moins une première couche d'encre surimprimée sur la première structure unitaire, pour remplir au moins partiellement le groupe d'éléments en retrait, et une propriété de l'encre produit un contraste visuel dans l'image agrandie.

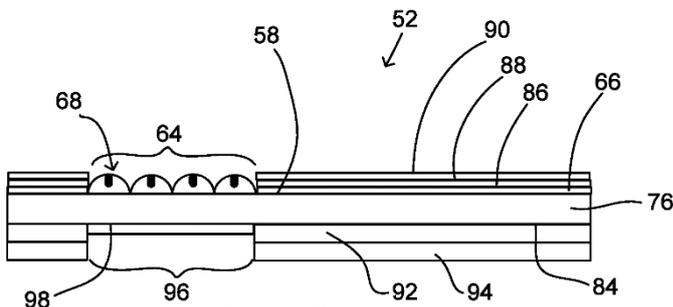


Figure 6

CLAIM 1. A micro-optic device for producing a magnified image, including: a first unitary structure on one side of a substrate, the first unitary structure including a first group of focusing elements and a first group of imagery elements, wherein one of the first group of focusing elements and the first group of imagery elements is recessed with respect to the other, wherein the device further includes a first coating of ink overprinted on the first unitary structure, to at least partially fill the recessed group of elements, and wherein a property of the ink provides a visual contrast in the magnified image.

METHOD FOR PRODUCING PLATELET-SHAPED EFFECT PIGMENTS

The present invention relates to a method for producing platelet-shaped effect pigments (4), comprising the steps: a) providing a carrier substrate (1) which has a water-soluble release layer (2); b) providing a thin film system (3), which has an optically variable effect, above the water-soluble release layer (2) of the carrier substrate (1); c) detaching the thin film system (3), which has an optically variable effect, from the carrier substrate (1) by washing with water by virtue of the water-soluble release layer (2) being dissolved in the water; d) structuring the detached thin film system (3), which has an optically variable effect, into a multiplicity of effect pigments (4).

PROCÉDÉ DE PRODUCTION DE PIGMENTS À EFFET EN FORME DE PLAQUETTES

La présente invention concerne un procédé de production de pigments à effet en forme de plaquettes (4), comprenant les étapes consistant : a) fournir un substrat de support (1) qui a une couche de libération soluble dans l'eau (2) ; b) à fournir un système de film mince (3), qui a un effet optiquement variable, au-dessus de la couche de libération soluble dans l'eau (2) du substrat de support (1) ; c) à détacher le système de film mince (3), qui a un effet optiquement variable, du substrat de support (1) par lavage avec de l'eau grâce à la couche de libération soluble dans l'eau (2) dissoute dans l'eau ; d) à structurer le système de film mince détaché (3), qui a un effet optiquement variable, en une multiplicité de pigments à effet (4).

FIG 1

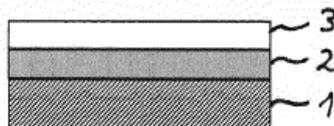
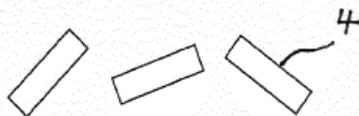


FIG 2



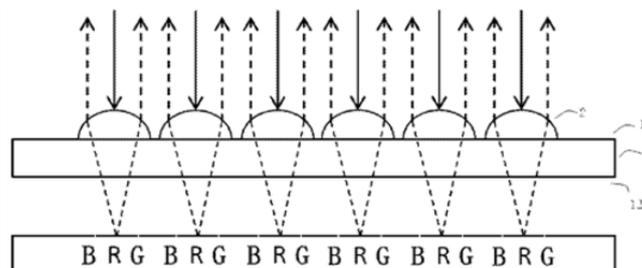
CLAIM 1. Method for producing flake-form effect pigments (4), comprising the steps of: a) providing a carrier substrate (1) having a water-soluble release layer (2); b) providing a thin-film system (3) having an optically variable effect above the water-soluble release layer (2) of the carrier substrate (1); C) detaching the thin film system (3) having an optically variable effect from the carrier substrate (1) by washing with water by dissolving the water-soluble release layer (2) in the water; d) structuring the detached thin film system (3) having an optically variable effect into a multiplicity of effect pigments (4).

OPTICAL ANTI-COUNTERFEITING ELEMENT AND ANTI-COUNTERFEITING PRODUCT

An optical anti-counterfeiting element and an anti-counterfeiting product, comprising: a substrate (1); and a sampling layer (2) formed on a first surface (11) of the substrate (1), wherein the sampling layer (2) is a sampling unit array composed of sampling units distributed according to preset graphic information, the sampling unit array is aligned in a preset manner with a light-emitting pixel array composed of light-emitting pixels located on the second surface (12) side of the substrate (1), the sampling unit array is used to sample the light-emitting pixel array so as to present preset graphic information of a single color or a combination of multiple colors among the colors of the light-emitting pixels, and the light-emitting pixels of a single color or a combination of multiple colors appear as having a moiré magnification effect. With the help of display screens such as mobile phones, preset graphic information of the preset color that appears as having a moiré magnification effect is achieved, and the portable reading capabilities of the optical anti-counterfeiting feature is improved.

ÉLÉMENT ANTI-CONTREFAÇON OPTIQUE ET PRODUIT ANTI-CONTREFAÇON

L'invention concerne un élément anti-contrefaçon optique et un produit anti-contrefaçon, comprenant : un substrat (1) ; et une couche d'échantillonnage (2) formée sur une première surface (11) du substrat (1), la couche d'échantillonnage (2) étant un réseau d'unités d'échantillonnage composé d'unités d'échantillonnage réparties selon des informations graphiques prédéfinies, le réseau d'unités d'échantillonnage étant aligné d'une manière prédéfinie avec un réseau de pixels électroluminescents composé de pixels électroluminescents situés sur la seconde surface (12) du substrat (1), le réseau d'unités d'échantillonnage étant utilisé pour échantillonner le réseau de pixels électroluminescents de façon à présenter des informations graphiques prédéfinies d'une seule couleur ou d'une combinaison de multiples couleurs parmi les couleurs des pixels électroluminescents, et les pixels électroluminescents d'une seule couleur ou d'une combinaison de multiples couleurs apparaissant comme ayant un effet de grossissement de moiré. À l'aide d'écrans d'affichage tels que des téléphones mobiles, des informations graphiques prédéfinies de la couleur prédéfinie qui apparaît comme ayant un effet de grossissement de moiré sont obtenues, et les capacités de lecture portables de la caractéristique anti-contrefaçon optique sont améliorées.



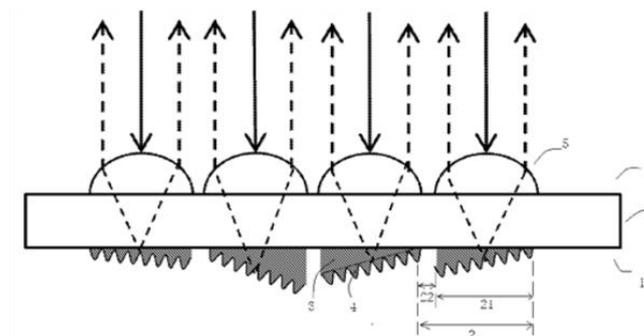
CLAIM 1. An optical security element, characterized in that, the optical security element comprises: Substrate, The substrate includes opposed first and second surfaces; A sampling layer, formed on a first surface of said substrate and being an array of sampling cells consisting of sampling cells distributed in accordance with preset teletext information Wherein, said array of sampling units is aligned in a preset manner with an array of light emitting pixels consisting of light emitting pixels located on the second surface side of said substrate, and the array of sampling units is used to sample said array of light emitting pixels, to render said preset text information of a single color or a combined color of a plurality of colors of said light emitting pixels, wherein said single color or a combined color of said plurality of colors of light emitting pixels exhibit a Moire magnification effect.

OPTICAL ANTI-COUNTERFEITING ELEMENT AND OPTICAL ANTI-COUNTERFEITING PRODUCT

Disclosed are an optical anti-counterfeiting element and an optical anti-counterfeiting product. The optical anti-counterfeiting element comprises: a substrate (1), the substrate comprising a first surface (11) and a second surface (12) which are opposite each other; a micro image layer (2) formed on the second surface of the substrate, the micro image layer comprising a micro image-text area (21) presenting preset image-text information and a background area (22), with the micro image-text area or the background area being at least partially covered with a small reflection surface (3), and the small reflection surface being covered with a color modulation structure (4); and a sampling layer (5) formed on the first surface of the substrate for carrying out sampling on the micro image layer and combining the sampled images into preset image-text information of a preset color presenting a moiré magnification effect. The anti-counterfeiting feature with colors and color changes presenting a moiré magnification effect can be generated without performing a coloring process, thereby improving the anti-counterfeiting capability and recognizability.

ÉLÉMENT ANTI-CONTREFAÇON OPTIQUE ET PRODUIT ANTI-CONTREFAÇON OPTIQUE

L'invention concerne un élément anti-contrefaçon optique et un produit anti-contrefaçon optique. L'élément anti-contrefaçon optique comprend : un substrat (1), le substrat comprenant une première surface (11) et une seconde surface (12) qui sont opposées l'une à l'autre ; une couche de micro-image (2) formée sur la seconde surface du substrat, la couche de micro-image comprenant une zone de micro-image-texte (21) présentant des informations d'image-texte prédéfinies et une zone d'arrière-plan (22), la zone de micro-image-texte ou la zone d'arrière-plan étant au moins partiellement recouverte d'une petite surface de réflexion (3) et la petite surface de réflexion étant recouverte d'une structure de modulation de couleur (4) ; et une couche d'échantillonnage (5) formée sur la première surface du substrat pour effectuer un échantillonnage sur la couche de micro-image et combiner les images échantillonnées en informations d'image-texte prédéfinies d'une couleur prédéfinie présentant un effet de grossissement de moiré. La caractéristique anti-contrefaçon avec des couleurs et des changements de couleur présentant un effet de grossissement de moiré peut être générée sans effectuer un processus de coloration, ce qui permet d'améliorer la capacité anti-contrefaçon et la capacité de reconnaissance.



CLAIM 1. An optical security element, characterized in that, the optical security element comprises: Substrate, The substrate includes opposed first and second surfaces; A microimage layer formed on a second surface of said substrate, the microimage layer comprising: a microteletext region presenting preset teletext information and a background region, wherein, said microteletext region or said background region is at least partially covered with a reflective facet, and the reflective facet is covered with a color modulation structure A sampling layer, formed on the first surface of the substrate is used to sample the microimage layer, and synthesize the sampled image into the preset picture information of a preset color exhibiting a Moire magnification effect.

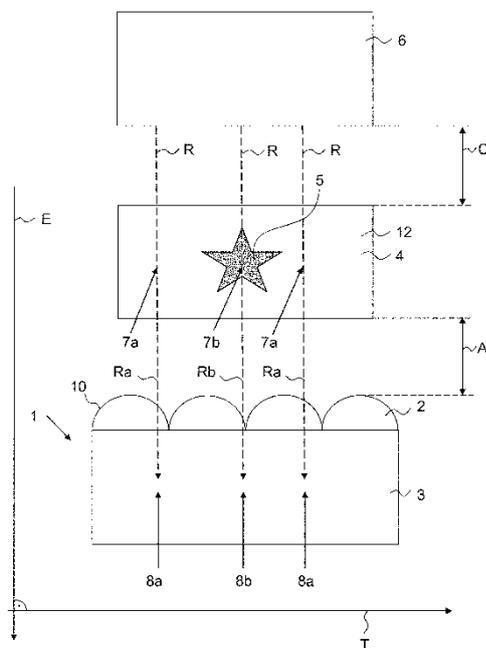
COVERT FLOATING IMAGE

A method of producing at least one security element (9) in a data carrier (1) comprises the steps of: Providing a source of radiation (6) that is configured to emit electromagnetic radiation (R), providing a data carrier (1) that comprises at least one guiding layer (2) and at least one processing layer (3), providing at least one masking layer (4) comprising at least one masking element (5), and irradiating electromagnetic radiation (R) from the source of radiation (6) through the masking layer (4) and onto the data carrier (1). Electromagnetic radiation (R) that impinges on a region (7a) of the masking layer (4) having no masking element (5) impinges on the at least one processing layer (3) as electromagnetic radiation having a first radiation property (Ra), whereby the at least one processing layer (3) is cured in said region of impingement (8a) into a first curing state. Electromagnetic radiation (R) that impinges on a region (7b) of the masking layer (4) comprising the at least one masking element (5) impinges on the at least one processing layer (3) as electromagnetic radiation having a second radiation (Rb) property being different from the first radiation property (Ra), whereby the at least one processing layer (3) is cured in said region of impingement (8b) into a second curing state. The second curing state of the processing layer (3) constitutes the security element (9).

IMAGE FLOTTANTE SECRÈTE

La présente invention concerne un procédé de production d'au moins un élément de sécurité (9) dans un support de données (1), lequel procédé consiste à : fournir une source de rayonnement (6) qui est configurée pour émettre un rayonnement électromagnétique (R), fournir un support de données (1) qui comprend au moins une couche de guidage (2) et au moins une couche de traitement (3), fournir au moins une couche de masquage (4) comprenant au moins un élément de masquage (5), et émettre un rayonnement électromagnétique (R) à partir de la source de rayonnement (6) à travers la couche de masquage (4) et sur le support de données (1). Le rayonnement électromagnétique (R) qui empiète sur une région (7a) de la couche de masquage (4) n'ayant pas d'élément de masquage (5) empiète sur l'au moins une couche de traitement (3) en tant que rayonnement électromagnétique ayant une première propriété de rayonnement (Ra), moyennant quoi l'au moins une couche de traitement (3) est durcie dans ladite région d'empiètement (8a) dans un premier état de durcissement. Le rayonnement électromagnétique (R) qui empiète sur une région (7b) de la couche de masquage (4) comprenant l'au moins un élément de masquage (5) empiète sur l'au moins une couche de traitement (3) en tant que rayonnement électromagnétique ayant une seconde propriété de rayonnement (Rb) qui est différente de la première propriété de rayonnement (Ra), moyennant quoi l'au moins une couche de traitement (3) est durcie dans ladite région d'empiètement (8b) dans un second état de durcissement. Le second état de durcissement de la couche de traitement (3) constitue l'élément de sécurité (9).

CLAIM 1. A method of producing at least one security element (9) in a data carrier (1) comprising the steps of: providing a source of radiation (6) that is configured to emit electromagnetic radiation (R); providing a data carrier (1) that comprises at least one guiding layer (2) and at least one processing layer (3), wherein the at least one processing layer (3) is arranged after the at least one guiding layer (2) with respect to an extension direction (E), wherein the at least one guiding layer (2) is configured to guide impinging electromagnetic radiation (R) into the at least one processing layer (3), and wherein the at least one processing layer (3) is curable upon an interaction with electromagnetic radiation; providing at least one masking layer (4) comprising at least one masking element (5), the at least one masking layer (4) being arranged before the at least one guiding layer (2) with respect to the extension direction (E); and irradiating electromagnetic radiation (R) from the source of radiation (6) through the masking layer (4) and onto the data carrier (1), wherein electromagnetic radiation (R) that impinges on a region (7 a) of the masking layer (4) having no masking element (5) impinges on the at least one processing layer (3) as electromagnetic radiation having a first radiation property (Ra), whereby the at least one processing layer (3) is cured in said region of impingement (8 a) into a first curing state, wherein electromagnetic radiation (R) that impinges on a region (7 b) of the masking layer (4) comprising the at least one masking element (5) impinges on the at least one processing layer (3) as electromagnetic radiation having a second radiation property (Rb) being different from the first radiation property (Ra), whereby the at least one processing layer (3) is cured in said region of impingement (8 b) into a second curing state, and wherein the second curing state of the processing layer (3) constitutes the security element (9).



P33525

PRINTING – BANKNOTE

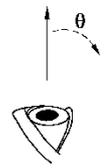
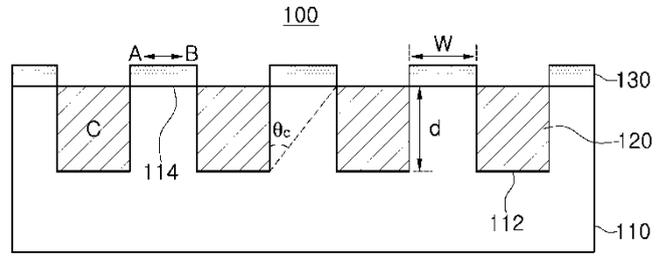
KR20210073139

Priority Date: 10/12/2019

KOREA SECURITY PRINTING & MINTING

COLOR CONVERSION SECURITY ELEMENT AND SECURITY PRODUCT COMPRISING THE SAME

A color conversion security element includes a transparent substrate having a recess portion and a flat portion repeatedly formed on one surface thereof, an ink layer filled in the recess portion, and a color conversion layer formed on the flat portion, wherein an observation area of the color conversion layer changes according to a viewing angle. The color conversion security element according to an exemplary embodiment of the present invention has a color conversion effect in which a color is changed according to a viewing angle, and the color of the ink layer is observed together with the color conversion effect, and an area in which the color conversion effect appears changes according to the viewing angle.



CLAIM 1. A color conversion security element comprising: a transparent substrate having a recess portion and a flat portion repeatedly formed on one surface thereof; an ink layer filled in the recess portion; and a color conversion layer formed on the flat portion, wherein an observation area of the color conversion layer changes according to a viewing angle.

P33526

PRINTING – BANKNOTE

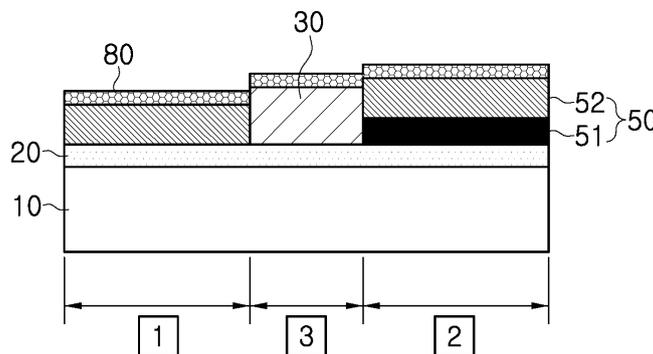
KR20210073138

Priority Date: 10/12/2019

KOREA SECURITY PRINTING & MINTING

SECURITY FILM AND SECURITY PRODUCT COMPRISING THE SAME

Disclosed is a security film including a substrate, a first color conversion layer and a second color conversion layer formed in a first region and a second region of the substrate, respectively, and a printing layer formed in a third region disposed adjacent to the first region or the second region, wherein the first region and the third region are viewed in a first color at a first viewing angle, and the second region and the third region are viewed in a first color at a second viewing angle. The security film according to the present disclosure has an effect of providing a visual effect of moving, enlarging or reducing a pattern of a first color according to a viewing angle.



CLAIM 1. A security film comprising: a substrate; a first color conversion layer and a second color conversion layer formed in a first region and a second region of the substrate, respectively; a printing layer formed in a third region disposed adjacent to the first region or the second region; wherein the first region and the third region are viewed in a first color at a first viewing angle, and the second region and the third region are viewed in a first color at a second viewing angle.

P33527

PRINTING – BANKNOTE – RELIEF

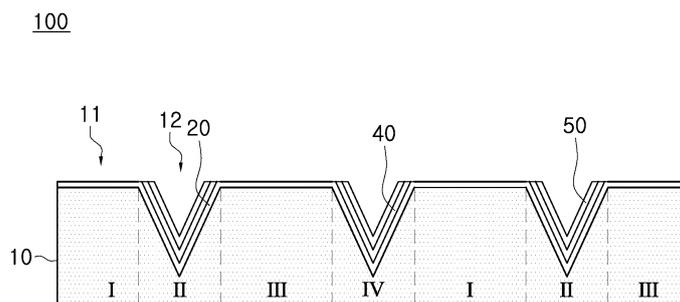
KR20210073137

Priority Date: 10/12/2019

KOREA SECURITY PRINTING & MINTING

COLOR CONVERSION SECURITY FILM AND SECURITY PRODUCT COMPRISING THE SAME

Disclosed herein is a color conversion security film including: a transparent substrate having a relief portion and a relief portion repeatedly formed on one surface thereof; and a color conversion layer formed in the relief portion, wherein a transparent region and an opaque region are provided by the relief portion and the relief portion, respectively. The color conversion security film according to the present invention has a color conversion effect of changing a color according to a viewing angle and a see-through effect through a transparent window, and has an effect of changing an area of the color conversion effect according to the viewing angle.



CLAIM 1. A color conversion security film comprising: a transparent base material having a relief portion and a relief portion repeatedly formed on one surface thereof; and a color conversion layer formed on the relief portion, wherein a transparent region and an opaque region are provided by the relief portion and the relief portion, respectively.

P33533

BANKNOTE – CARD – INFRARED

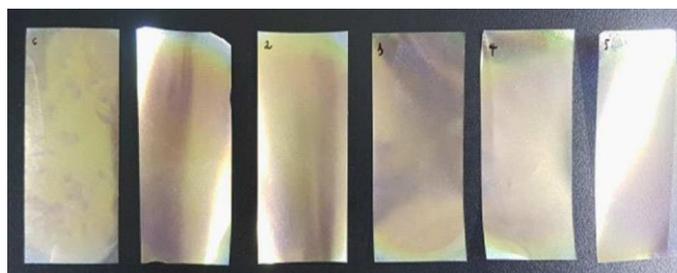
KR20210062268

Priority Date: 21/11/2019

KOREA SECURITY PRINTING & MINTING

CNCs (NANOCRYSTALLINE CELLULOSE) CHIRAL NEMATIC FILM EXHIBITING FLEXIBILITY AND RAINBOW COLOR AND METHOD FOR PRODUCING THE SAME

CNCs chiral nematic films exhibiting flexibility and rainbow color are produced by containing CNCs particles and a nitrogen atom-containing amine compound, and the films exhibit flexibility while maintaining properties of controllable color, and thus can be used in security industries, packaging industries, paper industries, hard coatings, printing industries, and the like.



CLAIM 1. A CNCs chiral nematic film exhibiting flexibility and rainbow color, characterized in that it comprises CNCs particles and an amine compound containing an NH group.

P33534

BANKNOTE – CARD – INFRARED

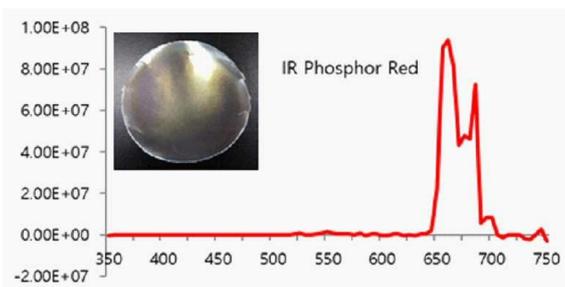
KR20210062267

KOREA SECURITY PRINTING & MINTING

Priority Date: 21/11/2019

FLEXIBLE IRIDESCENT NANOCRYSTALLINE CELLULOSE (CNCs) FILM WITH NOVEL INFRARED SECURITY FUNCTION AND METHOD FOR PRODUCING THE SAME

A flexible iridescent nanocrystalline cellulose (CNCs) film having an infrared security function, comprising nanocrystalline cellulose (CNCs) particles, an amine compound containing a nitrogen atom, and an infrared fluorescent substance, Since the film exhibits infrared fluorescent color and rainbow light wavelength and flexibility, it can be used as a security functional material in various industries requiring security such as money, security card, medicine, food, etc.



CLAIM 1. A flexible iridescent nanocrystalline cellulose (CNCs) film having an infrared security function, comprising nanocrystalline cellulose (CNCs) particles, an amine compound containing an NH group, and an infrared fluorescent substance.

P33539

PRINTING – CARD

JP2021088136

NATIONAL PRINTING BUREAU

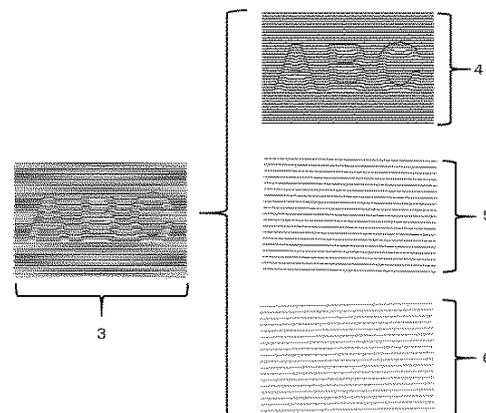
Priority Date: 05/12/2019

ANTI-COUNTERFEITING PRINTED MATERIAL

TOPIC: To provide an image forming body in which a plurality of latent images can be visually recognized by changing observation angles and directions, wherein the latent image pattern to be visually recognized is not only switched, but also has additional visual effects.

INVENTION: At least a part of an image region on a base material includes: a first element group formed by arranging first elements having concave or convex shapes and having a first color in a linear manner in the first direction, and dividing the first elements into a latent image part and a background part by partially differing phases; a second element group formed by arranging second elements having a second color in a linear manner in the second direction; and A third group of elements in which third elements of a third color are arranged in parallel lines in the third direction, the latent image pattern is formed by overlapping the second elements and/or the third elements with the first elements of the latent image part and/or the background part, the first direction, the second direction, and the third direction are different from each other, and the latent image pattern is visually recognized when the substrate is observed tilted.

CLAIM 1. An image display device comprising an image region on at least a portion of a substrate, wherein the image region includes first elements of concave or convex shape having a first color disposed linearly in a first direction, and A first group of elements divided into a latent image part and a background part by partially differing phases of the first elements, and a second group of elements in which second elements of a second color different from the first color are arranged linearly in a second direction; and A third group of elements in which third elements of a third color different from the first color are arranged in parallel lines in a third direction, wherein the first elements of the latent image portion and/or the background portion are provided with the second elements and/or the second elements and/or the background portion. Or the third element overlaps to form a latent image pattern, the first direction, the second direction, and the third direction are different from each other, and the latent image pattern is visually recognized when observing the substrate at an inclination.



P33552

LABEL

EP3835877

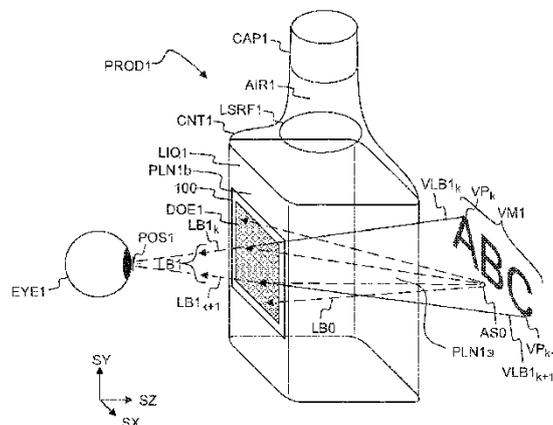
UPM RAFLATAC

Priority Date: 13/12/2019

SECURITY LABEL

A method for indicating authenticity of a product (PROD1) comprises:- providing a combination of a transparent container (CNT1) and a label (100) attached to the container (CNT1), the label (100) comprising a transmissive diffractive element (DOE1),- providing a non-coherent diverging illuminating light beam (LB0) from an illuminating area (AS0), and- forming a virtual image (VM1) observable from a viewing position (POS1) by illuminating the diffractive element (DOE1) with the illuminating light beam (LB0).

CLAIM 1. A method, comprising: - providing a combination of a transparent container (CNT1) and a label (100) attached to the container (CNT1), the label (100) comprising a transmissive diffractive element (DOE1), - providing a non-coherent diverging illuminating light beam (LB0) from an illuminating area (AS0), and - forming a virtual image (VM1) observable from a viewing position (POS1) by illuminating the diffractive element (DOE1) with the illuminating light beam (LB0).



P33553

CARD – RELIEF – MICROLENS

EP3835851

THALES DIS FRANCE

Priority Date: 10/12/2019

LASER ENGRAVABLE FLOATING IMAGE FOR SECURITY LAMINATES

A transparent microlens sheeting, a security article including a microlens sheeting, and method for producing a security article having a transparent microlens sheeting. The microlens sheeting has a layer of microlenses, the layer having a first broad face and a second broad face, and containing a first microlens array (107) and a second microlens array (109) on the first broad face of the layer of microlenses, wherein the first microlens array has a focal plane essentially coplanar to the second broad face and the second microlens array has a focal plane that lies beyond the layer of microlenses. The microlens sheeting further contains a first microimage array comprising a plurality of individual at least partially complete images (111) located on the second broad face of the microlens layer and associated with each of a plurality of the microlenses of said first microlens array, whereby a composite image, provided by the individual images, appears to the unaided eye to be floating above or below the sheeting, or both when the first microimage array is viewed through first microlens array.

CLAIM 1. A transparent microlens sheeting, comprising: at least one transparent layer collectively forming a stack of layers having a first broad face and a second broad face opposite to the first broad face located on a bottom layer of the stack of layers, the stack of layers comprising one or more layers including: a first transparent layer being a layer of microlenses; the layer of microlenses located on the first broad face of the transparent microlens sheeting and containing a first microlens array and a second microlens array on the first broad face of the transparent microlens sheeting, wherein the first microlens array has a focal plane essentially coplanar to the second broad face and the second microlens array has a focal plane that lies beyond the transparent microlens sheeting; and a first microimage array comprising a plurality of individual at least partially complete images located on the second broad face of the transparent microlens sheeting and associated with each of a plurality of the microlenses of said first microlens array, whereby a composite image, provided by the individual images, appears to the unaided eye to be floating above or below the sheeting, or both when the first microimage array is viewed through first microlens array.

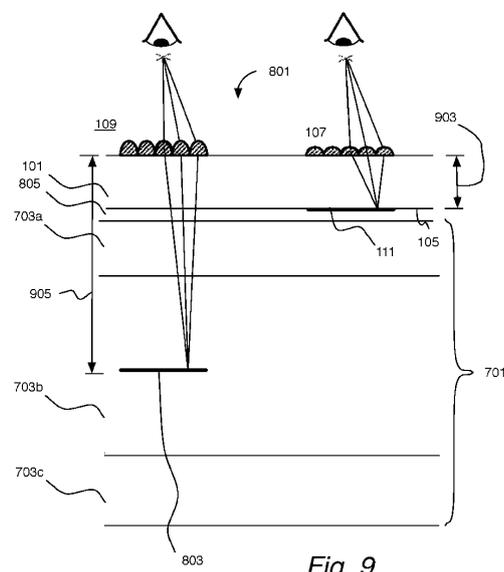


Fig. 9

P33562

LABEL – MAGNETISM

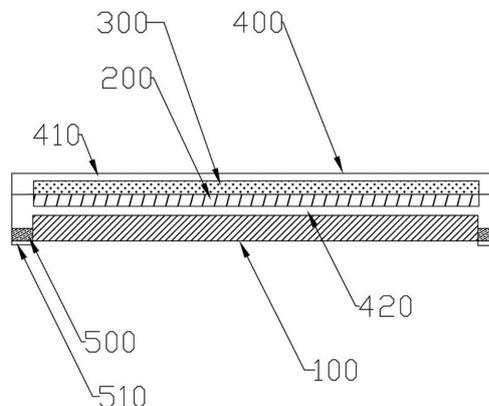
CN213458718U

Priority Date: 21/12/2020

GUANGDONG SHUNDE JINMEI INTELLIGENT IDENTIFICATION TECHNOLOGY

MAGNETIC ADSORPTION TYPE ANTI-COUNTERFEIT LABEL

The utility model discloses a magnetic adsorption type anti-counterfeit label, which comprises a magnet layer, a mark layer, a laser layer and a waterproof layer; the bottom surface of the magnet layer is provided with a magnetic attraction force; the laser layer is arranged on the upper surface of the identification layer; the waterproof layer wraps the identification layer and the laser layer and is compounded on the upper surface of the magnetic sheet layer, the area of the waterproof layer is larger than that of the magnetic sheet layer, the waterproof layer covers the upper surface of the magnetic sheet layer, and the bottom surface of the waterproof layer exceeds the edge of the magnetic sheet layer and is provided with non-setting adhesive; the adhesive sticker is provided with release paper; the anti-counterfeit label bottom that is equipped with the magnet layer has magnetic attraction, can directly adsorb on the part has metal parts or metal package's product, has made things convenient for anti-counterfeit label's installation still to distinguish the anti-counterfeit label mounting means in the past simultaneously, and special mounting means provides the triple anti-fake effect of discerning except that identification layer and radium-shine, also can tear out anti-counterfeit label when utilizing the non-setting adhesive to install and observe and whether can adsorb the metal article and judge true and false after the non-metal package product.



CLAIM 1. A magnetic adsorption type anti-counterfeiting label is characterized in that: the laser mark comprises a magnet layer, a mark layer, a laser layer and a waterproof layer; the bottom surface of the magnet layer is provided with a magnetic attraction force; the laser layer is arranged on the upper surface of the identification layer; the waterproof layer wraps the identification layer and the laser layer and is compounded on the upper surface of the magnetic sheet layer, the area of the waterproof layer is larger than that of the magnetic sheet layer, the waterproof layer covers the upper surface of the magnetic sheet layer, and the bottom surface of the waterproof layer exceeds the edge of the magnetic sheet layer and is provided with non-setting adhesive; the adhesive sticker is provided with release paper.

P33564

LABEL

CN213458103U

Priority Date: 16/09/2020

HUBEI YINLANGXING TECHNOLOGY DEVELOPMENT

OPTICAL COLOR-CHANGING ANTI-COUNTERFEIT LABEL

The utility model discloses an optics antifalsification label that discolours, include: the PET substrate is coated with a release layer on the upper surface; the upper surface of the release layer is covered with an imaging layer through a film pressing technology; the upper surface of the imaging layer is plated with a light-changing layer through PVD; the upper surface of the optically variable layer is coated with an adhesive layer; the lower surface of the imaging layer is etched with an anti-counterfeiting pattern; the light change layer is an optical interference color change film. The utility model discloses a plating system light on the formation of image layer upper surface and becoming the layer, according to light becomes layer multilayer complex film optics interference principle, can realize following different angles when surveing the formation of image layer, show the anti-fake pattern of different colours, improve antifalsification label's anti-fake effect.



CLAIM 1. An optically variable security label, comprising: the PET substrate is coated with a release layer on the upper surface; the upper surface of the release layer is covered with an imaging layer through a film pressing technology; the upper surface of the imaging layer is plated with a light-changing layer through PVD; the upper surface of the optically variable layer is coated with an adhesive layer; the lower surface of the imaging layer is etched with an anti-counterfeiting pattern; the light change layer is an optical interference color change film.

P33591

CN112946800

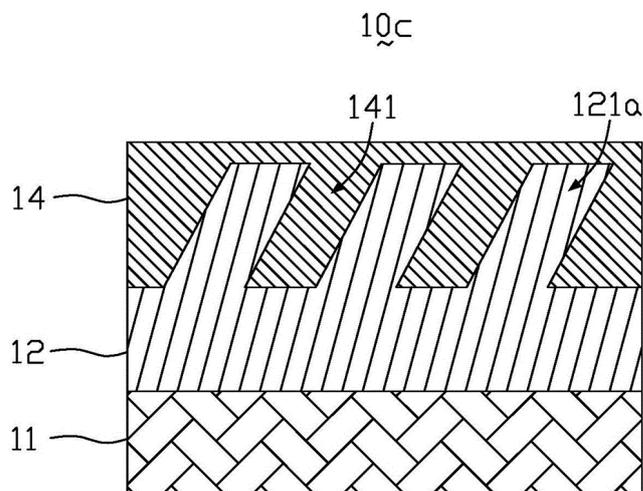
Priority Date: 10/12/2019

SVG TECHNOLOGY

ANTI-COUNTERFEITING STRUCTURE AND ANTI-COUNTERFEITING METHOD

The anti-counterfeiting structure comprises a substrate, a grating layer and a protective layer, wherein the grating layer is arranged on the substrate, the protective layer is arranged on the grating layer, and the grating layer is provided with a grating structure for generating asymmetric diffraction. The anti-counterfeiting structure can realize the same emergent position and different brightness of diffracted light under the condition of symmetrical incident angles, has the contrast effect of light and shade difference, has the anti-counterfeiting effect, and has the advantages of simple structure, easy batch manufacturing and lower cost. The invention also relates to an anti-counterfeiting method.

CLAIM 1. The anti-counterfeiting structure is characterized by comprising a substrate, a grating layer and a protective layer, wherein the grating layer is arranged on the substrate, the protective layer is arranged on the grating layer, and the grating layer is provided with a grating structure for generating asymmetric diffraction.



P33619

BANKNOTE – CARD – RELIEF

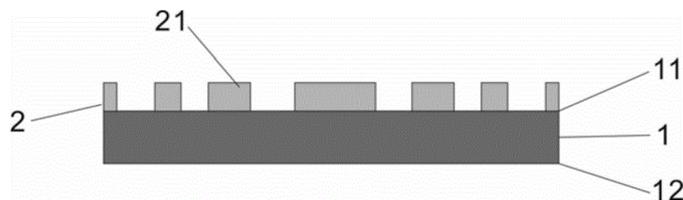
CN112848744

Priority Date: 28/11/2019

CHINA BANKNOTE PRINTING & MINT

OPTICAL ANTI-COUNTERFEITING ELEMENT AND ANTI-COUNTERFEITING PRODUCT

The embodiment of the invention provides an optical anti-counterfeiting element and an anti-counterfeiting product, and belongs to the technical field of anti-counterfeiting. The optical security element comprises: a substrate comprising a first surface and a second surface opposite to each other; a surface microstructure formed on at least a portion of the first surface of the substrate, at least a portion of the surface microstructure comprising a plurality of focusing elements, wherein each of the focusing elements constitutes a first full parallax dynamic image and the plurality of focusing elements constitutes a second full parallax dynamic image, the surface microstructure being defined such that when a light beam impinges the surface microstructure at an angle of incidence, light of a wavelength or range of wavelengths in the light beam interferes with constructive and/or plasmon absorption in the direction of reflected light, thereby causing the focusing elements to have a color characteristic. The optical anti-counterfeiting element can provide a clear full parallax image with dynamic characteristics; and any focusing unit constituting the full parallax image has any selectable color feature.



CLAIM 1. An optical security element, comprising: a substrate comprising a first surface and a second surface opposite to each other; a surface microstructure formed on at least a portion of the first surface of the substrate, at least a portion of the surface microstructure comprising a plurality of focusing elements, wherein each of the focusing elements constitutes a first full parallax dynamic image and the plurality of focusing elements constitutes a second full parallax dynamic image, the surface microstructure is defined such that when a light beam impinges the surface microstructure at an angle of incidence, light of a wavelength or wavelength range in the light beam interferes with constructive and/or plasmon absorption in the direction of reflected light, thereby imparting a color characteristic to the focusing element.

Click on the title to return to table of contents

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

N7874

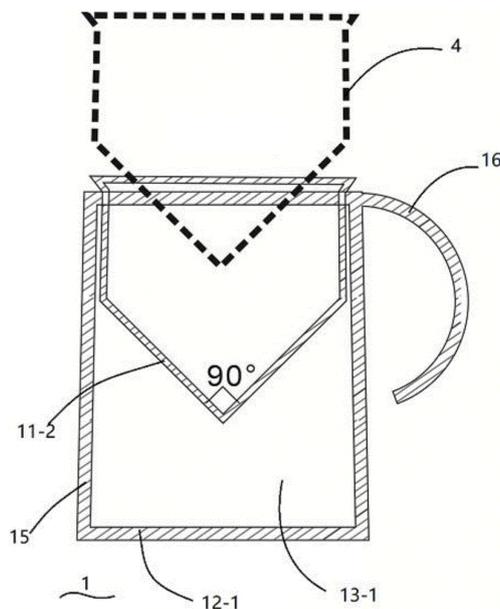
CN213405639U

Priority Date: 14/05/2020

LIU CHENGFANG

HOLOGRAPHIC IMAGING CUP

The utility model provides a holographic imaging cup, comprising a cup body, the interior bottom of cup includes the interior bottom surface of four triangles, connects in order between four interior bottoms and forms interior bottom of positive pyramid or the interior bottom of inverted pyramid shape. The utility model discloses use pyramid holographic projection principle, four videos or pictures before using promptly, back, left and right, give holographic image's illusion through four transparent surface reflections of centrum. The utility model discloses a holographic imaging cup can realize that cup utensil decorative pattern changes at any time and decorates the kinematization, and the user can be according to hobby, selects the pattern of oneself liking for the cup utensil, perhaps projects the animation of oneself liking and plays the music simultaneously, has increased its sight and has used the enjoyment, for the user brings new experience, has also increased the fresh sense of user to the cup utensil, has prolonged the time that the cup utensil was changed, increases its life. When the holographic imaging cup is used as a drinking cup, the mood can be relaxed, and the psychological pressure brought by life can be relieved.



CLAIM 1. The holographic imaging cup is characterized by comprising a cup body (1), wherein the inner bottom of the cup body (1) comprises four triangular inner bottom surfaces, and the four inner bottom surfaces are sequentially connected to form a regular pyramid-shaped inner bottom (11-1) or an inverted pyramid-shaped inner bottom (11-2).

Click on the title to return to table of contents

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

N7842

WO2021118850

Priority Date: 12/12/2019

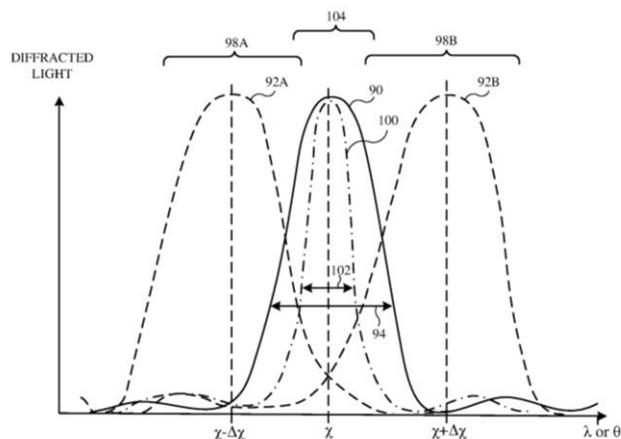
AKALANA MANAGEMENT

OPTICAL SYSTEMS WITH RESOLUTION-ENHANCING HOLOGRAPHIC ELEMENTS

An electronic device may include an optical system that redirects light from a display module towards an eye box along an optical path. The optical path may include a holographic coupler and a resolution-enhancing holographic element. The holographic element may include a first set of holograms and the coupler may include a second set of holograms. The first set of holograms may be characterized by a first set of selectivity curves having first primary lobes. The second set of holograms may be characterized by a second set of selectivity curves having second primary lobes that overlap the first primary lobes. This may configure the holographic element to narrow the second selectivity curves by diffracting some of the light out of the optical path, thereby optimizing the resolution of images in the light provided to the eye box.

SYSTÈMES OPTIQUES À ÉLÉMENTS HOLOGRAPHIQUES AMÉLIORANT LA RÉOLUTION

La présente invention concerne un dispositif électronique qui peut comprendre un système optique qui redirige la lumière d'un module d'affichage vers une zone oculaire le long d'un trajet optique. Le trajet optique peut comprendre un coupleur holographique et un élément holographique améliorant la résolution. L'élément holographique peut comprendre un premier ensemble d'hologrammes et le coupleur peut comprendre un second ensemble d'hologrammes. Le premier ensemble d'hologrammes peut être caractérisé par un premier ensemble de courbes de sélectivité ayant des premiers lobes primaires. Le second ensemble d'hologrammes peut être caractérisé par un second ensemble de courbes de sélectivité ayant des seconds lobes primaires qui chevauchent les premiers lobes primaires. Ceci peut configurer l'élément holographique de façon à ce qu'il rétrécisse les secondes courbes de sélectivité en diffractant une partie de la lumière hors du trajet optique, ce qui permet d'optimiser la résolution d'images dans la lumière fournie à la zone oculaire.



CLAIM 1. An optical system configured to direct image light generated by a display module towards an eye box along an optical path, the optical system comprising: first and second holograms in the optical path; a waveguide; and an optical coupler on the waveguide and having a third hologram in the optical path, the third hologram being configured to receive the image light from the first and second holograms, wherein: the first hologram has a first selectivity curve with a first primary lobe, the second hologram has a second selectivity curve with a second primary lobe, the third hologram has a third selectivity curve with a third primary lobe, and the first and second primary lobes overlap the third primary lobe.

METHOD FOR ENCODING A DIGITAL HOLOGRAM, METHOD FOR ENCODING A GROUP OF DIGITAL HOLOGRAMS AND ASSOCIATED ENCODING DEVICE

A method for encoding a digital hologram represented by values associated respectively with pixels in a plane defining the digital hologram, comprises the following steps: - forming (E4) matrix blocks (Bi, j) associated respectively with regions composed of contiguous pixels, each matrix block (Bi, j) containing elements determined as a function of the values of the pixels in the region associated with the matrix block in question (Bi, j); - applying (E6) a space-to-frequency transformation to each of the matrix blocks (Bi, j) so as to produce, for each matrix block (Bi, j), a set (Ci, j) of coefficients that correspond respectively to different two-dimensional spatial frequencies within the matrix block in question (Bi, j); - constructing (E8) a plurality of two-dimensional structures (Sp, q) each comprising coefficients from a plurality of sets (Ci, j) of coefficients and associated with two-dimensional spatial frequencies meeting a criteria that is dependent on the two-dimensional structure in question (Sp, q); - encoding the two-dimensional structures (Sp, q) that have been constructed. A method for encoding a group of digital holograms and an encoding device are also described.

PROCÉDÉ DE CODAGE D'UN HOLOGRAMME NUMÉRIQUE, PROCÉDÉ DE CODAGE D'UN GROUPE D'HOLOGRAMMES NUMÉRIQUES ET DISPOSITIF DE CODAGE ASSOCIÉ

Un procédé de codage d'un hologramme numérique représenté par des valeurs respectivement associées à des pixels d'un plan de définition de l'hologramme numérique, comprend les étapes suivantes : - formation (E4) de blocs matriciels (Bi,j) respectivement associés à des régions formées de pixels contigus, chaque bloc matriciel (Bi,j) contenant des éléments déterminés en fonction des valeurs des pixels de la région associée au bloc matriciel (Bi,j) concerné; - application (E6) à chacun des blocs matriciels (Bi,j) d'une transformation espace- fréquence de sorte à obtenir, pour chaque bloc matriciel (Bi,j), un ensemble (Ci,j) de coefficients correspondant respectivement à différentes fréquences spatiales bidimensionnelles au sein du bloc matriciel (Bi,j) concerné; - construction (E8) d'une pluralité de structures bidimensionnelles (Sp,q) comprenant, chacune, des coefficients issus d'une pluralité d'ensembles (Ci,j) de coefficients et associés à des fréquences spatiales bidimensionnelles respectant un critère dépendant de la structure bidimensionnelle (Sp,q) concernée; - codage des structures bidimensionnelles (Sp,q) construites. Un procédé de codage d'un groupe d'hologrammes numériques et un dispositif de codage sont également décrits.

CLAIM 1. Method for encoding a digital hologram (H)t represented by values respectively associated with pixels of a definition plane of the digital hologram (Ht), comprising the following steps: - forming (E4) matrix blocks (BjJ) respectively associated with regions (RjJ) formed of contiguous pixels, each matrix block (BjJ) containing elements determined as a function of the values of the pixels of the region (RjJ) associated with the matrix block (BjJ) concerned; - application (E6) to each of the matrix blocks (BjJ) of a space-frequency transformation so as to obtain, for each matrix block (BjJ), a set (CiJ) of coefficients corresponding respectively to different two-dimensional spatial frequencies within the matrix block (BjJ) concerned; - construction (E8) of a plurality of two-dimensional structures (S)p,Q each comprising coefficients from a plurality of sets (CiJ) of coefficients and associated with two-dimensional spatial frequencies satisfying a criterion dependent on the two-dimensional structure (Sp,Q) concerned; - encoding (E12, E14, E16) two-dimensional structures (S)p,Q constructed.

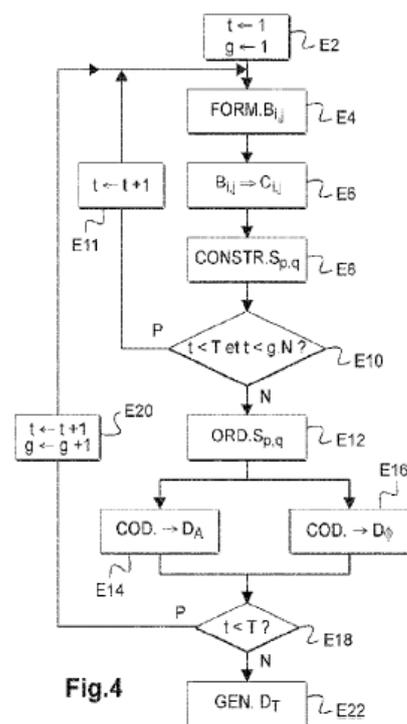


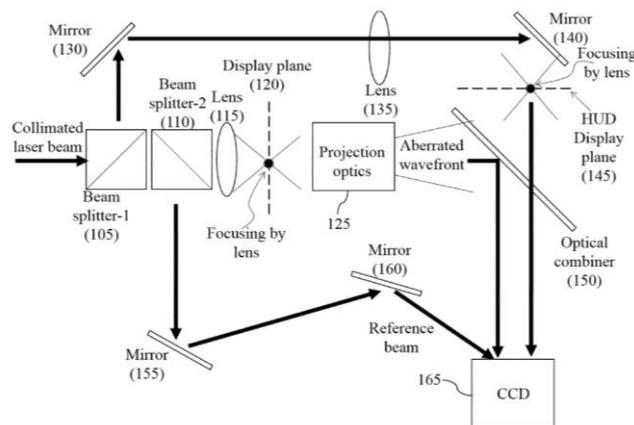
Fig.4

METHOD FOR RECORDING HOLOGRAPHIC OPTICAL ELEMENT FOR HEAD-UP DISPLAY

Provided is a method in which, when configuring an HUD that produces a holographic image at a distance using a holographic optical element (HOE), an HOE capable of correcting aberrations generated by a projection optical system is manufactured and used to improve the quality of an HUD image. A method for manufacturing an HOE for HUD according to an embodiment of the present invention comprises the steps of: measuring aberrations generated by an optical system that projects an image of a display device; recording the measured aberrations in a master HOE; reproducing an aberrated wavefront of the optical system by playing the master HOE on a display plane on which the image of the display device is expressed; and causing an interference of the reproduced aberrated wavefront and a spherical wavefront irradiated from the HUD image plane on which the image of the display device is created, and recording the interference in the HOE. Accordingly, when configuring the HUD producing an image at a distance using the HOE, the quality of the HUD image can be improved by measuring aberrations in the projection optical system, creating a master HOE that reproduces the measured aberrations, and manufacturing a HOE that corrects the aberrations, and correcting aberrations generated in the projection optical system.

PROCÉDÉ D'ENREGISTREMENT D'UN ÉLÉMENT OPTIQUE HOLOGRAPHIQUE POUR AFFICHAGE TÊTE HAUTE

L'invention concerne un procédé dans lequel, lors de la configuration d'un affichage tête haute (HUD) qui produit une image holographique à une certaine distance à l'aide d'un élément optique holographique (HOE), un HOE apte à corriger des aberrations générées par un système optique de projection est fabriqué et utilisé pour améliorer la qualité d'une image de HUD. Un procédé de fabrication d'un HOE pour HUD selon un mode de réalisation de la présente invention comprend les étapes consistant : à mesurer des aberrations générées par un système optique qui projette une image d'un dispositif d'affichage ; à enregistrer des aberrations mesurées dans un HOE maître ; à reproduire un front d'onde aberrant du système optique par lecture du HOE maître sur un plan d'affichage sur lequel l'image du dispositif d'affichage est exprimée ; et à provoquer une interférence du front d'onde aberrant reproduit et un front d'onde sphérique rayonné par le plan d'image de HUD sur lequel l'image du dispositif d'affichage est créée, et à enregistrer l'interférence dans le HOE. En conséquence, lors de la configuration du HUD produisant une image à une certaine distance à l'aide du HOE, la qualité de l'image de HUD peut être améliorée par la mesure d'aberrations dans le système optique de projection, par la création d'un HOE maître qui reproduit les aberrations mesurées, et la fabrication d'un HOE qui corrige les aberrations, et par la correction des aberrations générées dans le système optique de projection.



CLAIM 1. A method comprising: measuring an aberration caused by an optical system projecting an image of a display device; Recording the measured aberration to a master Holographic Optical Element (hoe); Reproducing the master hoe at a display plane at which an image of the display device is displayed, reproducing an aberrated wavefront of the optical system; Recording the reproduced aberrated wavefront and the spherical wave irradiated on the HUD image plane on which the image of the display device is formed in the hoe.

METHOD FOR PRODUCING A HOLOGRAPHIC OPTICAL ELEMENT

The invention relates to a method for producing a holographic optical element (13). This involves firstly providing a light-transmissive carrier substrate (6) and a layer of a holographic material (8) arranged on a surface of the carrier substrate (6). Afterward, at least one partial region (28) of the layer of the holographic material (8) is exposed with light beams (20, 21, 22, 23, 24, 25) of at least three different wavelengths in such a way that hologram structures are produced in the at least one exposed partial region (28) of the layer (8) depending on the wavelength of the light beams (20, 21, 22, 23, 24, 25). An angle of incidence ($\alpha_1, \alpha_2, \alpha_3$) of a respective object beam (20, 21, 22) of the light beams (20, 21, 22, 23, 24, 25) of different wavelengths of greater than 50° , in particular between 50° and 80° , is chosen during the exposure of the at least one partial region (28) of the layer (8). In this case, the angle of incidence ($\alpha_1, \alpha_2, \alpha_3$) is formed between a surface normal (15) of the layer of the holographic material (8) and the object beam (20, 21, 22). The at least one partial region (29) of the layer of the holographic material (8) is exposed with the light beams (20, 21, 22, 23, 24, 25) of different wavelengths in temporal succession. This process begins with the light beam (20, 21, 22, 23, 24, 25) having the longest wavelength.

PROCÉDÉ DE PRODUCTION D'UN ÉLÉMENT OPTIQUE HOLOGRAPHIQUE

L'invention concerne un procédé de production d'un élément optique holographique (13). Le procédé comprend tout d'abord la fourniture d'un substrat porteur transmettant la lumière (6) et d'une couche d'un matériau holographique (8) disposé sur une surface du substrat porteur (6). Ensuite, au moins une région partielle (28) de la couche du matériau holographique (8) est exposée à des faisceaux lumineux (20, 21, 22, 23, 24, 25) d'au moins trois longueurs d'onde différentes, de sorte que des structures d'hologramme sont produites dans ladite région partielle (28) exposée de la couche (8) en fonction de la longueur d'onde des faisceaux lumineux (20, 21, 22, 23, 24, 25). Un angle d'incidence ($\alpha_1, \alpha_2, \alpha_3$) d'un faisceau objet respectif (20, 21, 22) des faisceaux lumineux (20, 21, 22, 23, 24, 25) de longueurs d'onde différentes supérieur à 50° , en particulier compris entre 50° et 80° , est choisi au cours de l'exposition de ladite région partielle (28) de la couche (8). Dans ce cas, l'angle d'incidence ($\alpha_1, \alpha_2, \alpha_3$) est formé entre une normale de surface (15) de la couche de matériau holographique (8) et le faisceau objet (20, 21, 22). Ladite région partielle (29) de la couche de matériau holographique (8) est exposée aux faisceaux lumineux (20, 21, 22, 23, 24, 24, 25) de différentes longueurs d'ondes selon une succession temporelle. Ce processus commence par le faisceau lumineux (20, 21, 22, 23, 24, 25) ayant la longueur d'onde la plus longue.

CLAIM 1. A method for producing a holographic optical element (13, 59, 84), the method comprising the following method steps: Providing (2) a transparent carrier substrate (6, 52) and a layer of a holographic material (8, 51), in particular a photopolymer layer, arranged on a surface of the carrier substrate (6, 52), and Exposing (4) at least one partial region (28) of the layer of the holographic material (8, 51) to light beams (20, 21, 22, 23, 24, 25) of at least three different wavelengths in such a way that in the at least one exposed partial region (28) of the layer of the holographic material (8, 21, 22, 23, 24, 25), hologram structures are produced as a function of the wavelength of the light beams (20, 21, 22, 23, 24, 25), wherein, during the exposure (4) of the at least one subregion (28) of the layer made of the holographic material (8, 51), an angle of incidence ($\alpha_1, \alpha_2, \alpha_3$) of a respective object beam (20, 21, 22) of the light beams (20, 21, 22, 23, 24, 25) of different wavelength is selected to be greater than 50° , in particular between 50° and 80° , wherein the angle of incidence ($\alpha_1, \alpha_2, \alpha_3$) between a surface normal (15) of the layer of the holographic material (8, 51) and the object beam (20, 21, 22, 23, 24, 25), wherein the at least one partial region (28) of the layer of the holographic material (8, 51) is exposed successively in time to the light beams (20, 21, 22, 23, 24, 25) of different wavelengths, wherein the light beam (20, 21, 22, 23, 24, 25) which has the greatest wavelength is started.

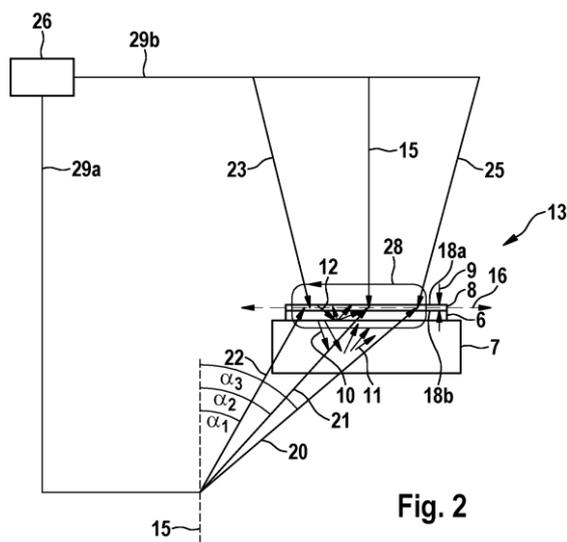


Fig. 2

wherein the light beam (20, 21, 22, 23, 24, 25) of different wavelengths, wherein the light beam (20, 21, 22, 23, 24, 25) which has the greatest wavelength is started.

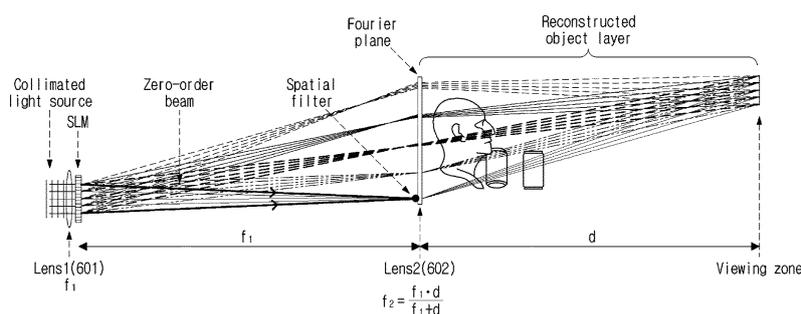
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US20210181677
Priority Date: 11/12/2019

ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE

HOLOGRAPHIC OPTICAL SYSTEM STRUCTURE AND HOLOGRAPHIC DISPLAY APPARATUS USING SPATIAL LIGHT MODULATOR

Disclosed herein are a holographic optical system structure and a holographic display method. In particular, disclosed herein are a holographic optical system and a holographic display method that can be efficiently applied when using a spatial light modulator (SLM). The holographic display apparatus includes a spatial light modulator (SLM) configured to reproduce a hologram, and an optical system configured to perform Fourier transform with respect to the hologram of the SLM using a pair of first and second lenses, the first and second lenses being confocal. A Fourier plane which is a display reference image plane is positioned in the same plane space as the second lens.



CLAIM 1. A holographic display apparatus comprising: a spatial light modulator (SLM) configured to reproduce a hologram; and an optical system configured to perform Fourier transform with respect to the hologram of the SLM using a pair of first and second lenses, the first and second lenses being confocal, wherein a Fourier plane which is a display reference image plane is positioned in the same plane space as the second lens.

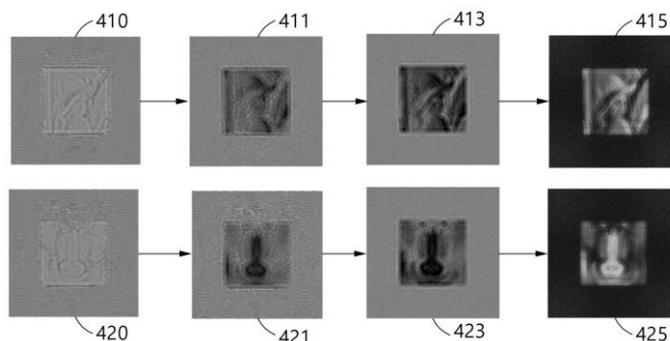
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KR20210060017
Priority Date: 18/11/2019

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE

BINARY PHASE HOLOGRAM GENERATING APPARATUS AND METHOD FOR GENERATING BINARY PHASE HOLOGRAM WITHOUT DETERIORATION OF IMAGE QUALITY

An apparatus and method for generating a binary phase hologram are provided. A method of generating a binary phase hologram may include generating a phase hologram from a complex hologram, quantizing the phase hologram, and binarizing the quantized phase hologram to generate a binary phase hologram.



CLAIM 1. A method of generating a binary phase hologram comprising: generating a phase hologram from a complex hologram; quantizing the phase hologram; and binarizing the quantized phase hologram to generate a binary phase hologram.

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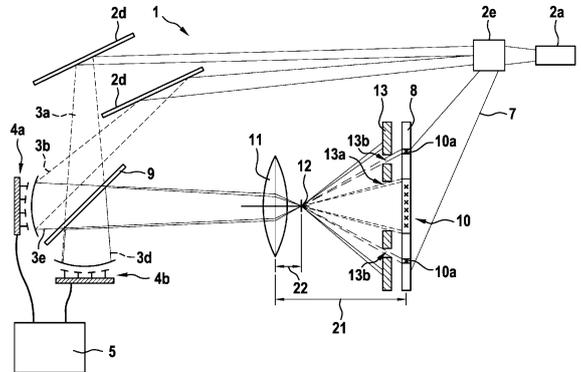
DE102019220511

ROBERT BOSCH

Priority Date: 23/12/2019

DEVICE AND METHOD FOR PRODUCING HOLOGRAPHIC OPTICAL ELEMENTS

The invention relates to a device (1) and a method for producing holographic optical elements (10). The device (1) comprises at least two partial light beams (3 a, 3 b) and an interference light beam (7), in each case one deformable mirror (4 a, 4 b) per partial light beam (3 a, 3 b), a control device (5), which is configured to actuate the deformable mirrors (4 a, 4 b) for adapting a wavefront of the partial light beam (2 a, 3 b), and a holographic film (8), wherein the deformable mirrors (4 a, 4 b) are arranged in such a way that in each case exactly one partial light beam (3 a, 3 b) is reflected and the reflected partial light beam (3 d, 3 e) is directed onto the holographic film (8), and wherein the interference light beam (7) is directed onto the holographic film (8) in order to interfere with the reflected partial light beams (3 d, 3 e) for simultaneously generating at least two holographic optical elements (10).



CLAIM 1. Device for producing holographic optical elements (10), comprising: - at least two partial light beams (3 a, 3 b) and one interference light beam (7), - in each case one deformable mirror (4 a, 4 b) per partial light beam (3 a, 3 b), - a control device (5), which is configured to actuate the deformable mirrors (4 a, 4 b), for adapting a wavefront of the partial light beam (2 a, 3 b), and - a holographic film (8), - wherein the deformable mirrors (4 a, 4 b) are arranged in such a way that in each case exactly one partial light beam (3 a, 3 b) is reflected and the reflected partial light beam (3 d, 3 e) is directed onto the holographic film (8), and - wherein the interference light beam (7) is directed onto the holographic film (8) in order to interfere with the reflected partial light beams (3 d, 3 e) for simultaneously generating at least two holographic optical elements (10).

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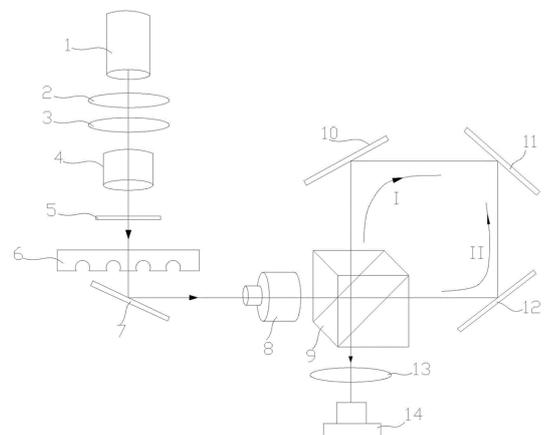
HEFEI UNIVERSITY OF TECHNOLOGY

Priority Date: 04/02/2021

OFF-AXIS DIGITAL HOLOGRAPHIC IMAGING DEVICE AND IMAGING METHOD

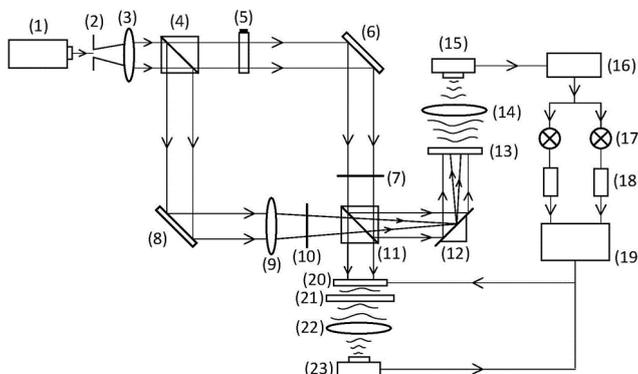
The invention relates to the technical field of holographic imaging, in particular to an off-axis digital holographic imaging device and an off-axis digital holographic imaging method. The device comprises the following components: the laser is used for emitting laser beams to an object to be measured; the grating is used for diffracting the laser beam emitted from the object to be measured; the polarization beam splitter prism is used for enabling the laser beams after diffraction to form interference fringes; the camera is used for acquiring the interference fringes to construct an image of the object to be detected; the laser, the grating, the polarization beam splitter prism and the camera are sequentially arranged along the direction of a light path; the size of the plane where the interference fringes are located corresponds to the size of the cross section of the laser beam after diffraction, and the projection of the area formed by the interference fringes on the camera along the optical path direction is located in the target surface of the camera. According to the invention, all light beams carrying information of the object to be detected are collected, so that the resolution of an image obtained through interference fringes is improved, and the shape reduction degree of the object to be detected through image reduction is further improved.

CLAIM 1. An off-axis digital holographic imaging device, comprising: the laser (1) is used for emitting laser beams to an object to be measured (5); a grating (6) for diffracting a laser beam emitted from the object (5) to be measured; a polarization beam splitter prism (9) for forming the diffracted laser beam into interference fringes; a camera (14) for capturing the interference fringes to construct an image of the object (5) to be measured; the laser (1), the grating (6), the polarization beam splitter prism (9) and the camera (14) are sequentially arranged along the direction of a light path; the interference fringes are in a plane, the size of the plane of the interference fringes corresponds to the size of the cross section of the laser beam after diffraction, and the projection of the area formed by the interference fringes on the camera (14) along the optical path direction is positioned in the target surface of the camera (14).



OPTICAL SCANNING HOLOGRAPHIC THREE-DIMENSIONAL OBJECT REAL-TIME IDENTIFICATION SYSTEM AND METHOD

The invention discloses a real-time identification system and method for an optical scanning holographic three-dimensional object, which comprises a laser, a spatial filter, a first lens, a first beam splitter, an acousto-optic frequency shifter, a first reflector, a first shutter, a second reflector, a second lens, a second shutter, a second beam splitter, a two-dimensional scanning vibrating mirror, an object, a third lens, a photoelectric detector, a band-pass filter, a multiplier, a low-pass filter, a computer, a spatial light modulator, a photopolymer, a fourth lens and a CCD. The optical scanning holography has lower requirement on the stability of the system when recording the three-dimensional object information, and the recorded hologram has high signal-to-noise ratio, so that the identification efficiency of the three-dimensional object can be improved; the method reduces the dependence of the identification process on a computer, realizes the real-time identification of the three-dimensional object through experiments, and increases the application possibility of the three-dimensional object; the optical scanning holographic technology can record the amplitude and phase information of the three-dimensional object in real time, and real-time identification of the three-dimensional object is realized.



CLAIM 1. An optical scanning holographic real-time identification system for three-dimensional objects, comprising in sequence along an optical path: the device comprises a laser (1), a spatial filter (2), a first lens (3) and a first beam splitter (4); the first beam splitter (4) is then divided into two optical paths, namely a first transmission optical path and a first reflection optical path; the acousto-optic frequency shifter comprises an acousto-optic frequency shifter (5), a first reflector (6) and a first shutter (7) along a first transmission light path in sequence; the optical lens system sequentially comprises a second reflector (8), a second lens (9) and a second shutter (10) along a first reflection optical path; then, the first light path and the second light path respectively vertically enter a second beam splitter (11); the second beam splitter (11) is then split into two light paths, namely a second transmission light path and a second reflection light path; the device comprises a spatial light modulator (20), a photopolymer (21), a fourth lens (22) and a CCD (23) along a second transmission light path in sequence; the two-dimensional scanning galvanometer (12), the object (13), the third lens (14) and the photoelectric detector (15) are sequentially arranged along the second reflection light path; the photoelectric detector (15) is sequentially connected with a band-pass filter (16), a multiplier (17) and a low-pass filter (18); the spatial light modulator (20), the CCD (23), and the low-pass filter (18) are connected to a computer (19), respectively.

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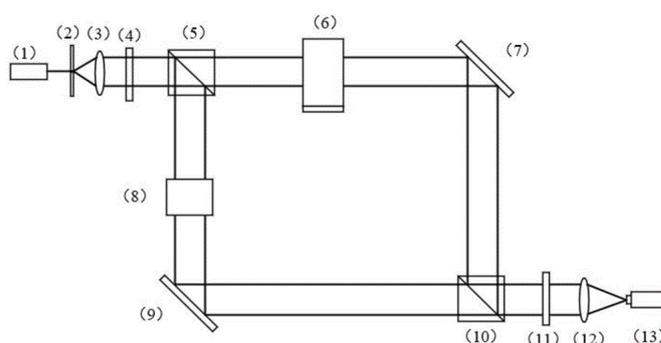
Priority Date: 29/01/2021

KUNMING UNIVERSITY OF SCIENCE & TECHNOLOGY

HOLOGRAPHIC IMAGE RECONSTRUCTION METHOD AND RECONSTRUCTION SYSTEM BASED ON DOUBLE ACOUSTO-OPTIC MODULATORS

The invention discloses a holographic image reconstruction method and a holographic image reconstruction system based on a double-acousto-optic modulator. Wherein the reconstruction method comprises: the method comprises the steps of splitting a point source pulse signal obtained through Fourier modulation, filtering and modulating the split light through two acousto-optic modulators which are orthogonal to each other, coupling the split light after filtering and modulating, obtaining a reconstructed light field through diffraction and Fourier modulation of a holographic diffraction optical element, and finally receiving the reconstructed light field through an image sensor and reconstructing a holographic image. The reconstruction method and the reconstruction system can effectively extract the edge information of the object and generate an enhancement effect on the edge information, and have better signal-to-noise ratio and real-time property.

CLAIM 1. The holographic image reconstruction method based on the double acoustic-optical modulator is characterized by comprising the following steps: it includes: converting laser emitted by a laser into a point source pulse; fourier modulation is carried out on the point source pulse to obtain an initial light field; splitting the initial light field to obtain mutually vertical split light beams; performing acousto-optic modulation on the two split light beams respectively through two acousto-optic modulators which are orthogonal to each other; coupling the two emergent light fields subjected to acousto-optic modulation to obtain emergent light fields; diffracting the emergent light field by a holographic diffraction optical element to obtain a diffracted light field; fourier modulation is carried out on the diffraction light field to obtain a reconstructed light field; the reconstructed light field is received by an image sensor and converted into a holographic image.



N7922

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Priority Date: 21/01/2021

NANJING UNIVERSITY OF POSTS & TELECOMMUNICATIONS

METHOD FOR OBTAINING ACCURATE RECONSTRUCTION DISTANCE DURING AUTOMATIC FOCUSING OF DIGITAL HOLOGRAPHIC IMAGING

The invention discloses a method for acquiring an accurate reconstruction distance during automatic focusing of digital holographic imaging, which comprises the following steps: acquiring the mean energy of the high-frequency part of the original hologram and the statistical distribution data of the high-frequency energy of the original hologram; calculating digital holographic imaging automatic focusing criterion based on the acquired data; taking the digital holographic imaging automatic focusing criterion as a vertical coordinate, taking the reconstruction distance as a horizontal coordinate to draw a curve chart: and the reconstruction distance corresponding to the low peak value of the curve is the accurate reconstruction distance. The invention can quickly obtain the accurate reconstruction distance, quickly and efficiently realize the reconstruction process of the digital holography, and improve the adaptability, stability and controllability of the digital holography imaging automatic focusing.

CLAIM 1. A method for obtaining accurate reconstruction distance during automatic focusing of digital holographic imaging is characterized by comprising the following steps: acquiring the mean energy of the high-frequency part of the original hologram and the statistical distribution data of the high-frequency energy of the original hologram; calculating digital holographic imaging automatic focusing criterion based on the acquired data; taking the digital holographic imaging automatic focusing criterion as a vertical coordinate, taking the reconstruction distance as a horizontal coordinate to draw a curve chart: and the reconstruction distance corresponding to the low peak value of the curve is the accurate reconstruction distance.

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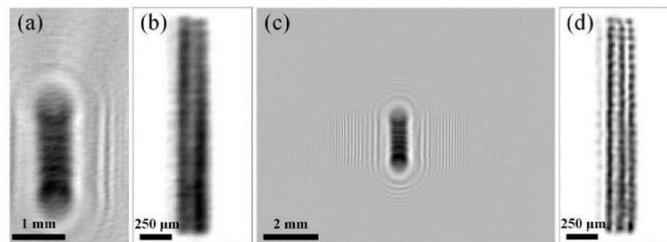
CN112862682

Priority Date: 05/02/2021

LASER FUSION RESEARCH CENTER CHINA ACADEMY OF
ENGINEERING PHYSICS

MULTI-CONSTRAINT COAXIAL DIGITAL HOLOGRAPHIC RESOLUTION ENHANCEMENT METHOD AND SYSTEM

The invention relates to a multi-constraint coaxial digital holographic resolution enhancement method and a multi-constraint coaxial digital holographic resolution enhancement system, belongs to the technical field of optical coaxial digital holography and digital reconstruction, and mainly solves the problems that the coaxial digital holographic imaging resolution is limited by a detection aperture and a traditional method needs to obtain an object plane limited support domain in advance. The invention combines the sparse constraint and the forward absorption constraint, completely does not need the constraint of an object plane limited support domain, realizes the enhancement of the coaxial holographic reconstruction resolution and effectively inhibits conjugate images, and has higher accuracy.



CLAIM 1. A method of multi-constrained in-line digital holographic resolution enhancement, the method comprising: calculating a normalized hologram and an amplitude of the normalized hologram based on a Gabor coaxial holographic planar illumination structure; according to the amplitude values of the normalized hologram and the normalized hologram, combining sparse constraint and forward absorption constraint, and performing iterative computation to obtain the complex amplitude distribution of the sample with the optimized object plane background and the optimized object plane background being 0; and calculating the reconstructed object plane complex amplitude with enhanced resolution according to the optimized object plane background and the sample complex amplitude distribution with the optimized object plane background of 0.

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

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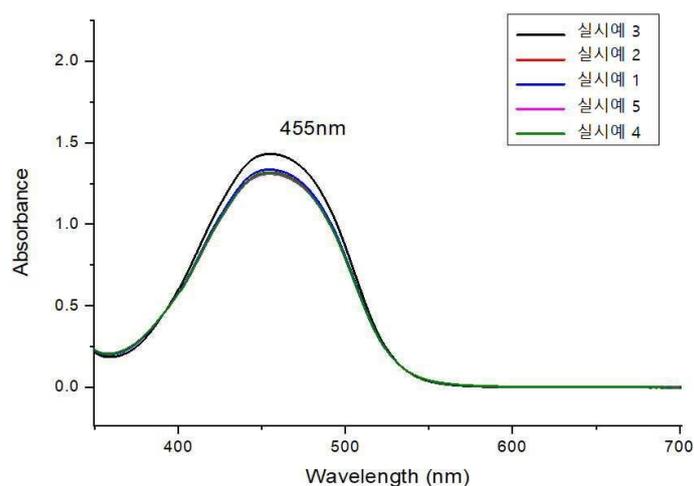
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Priority Date: 22/11/2019

**KRICT KOREA RESEARCH INSTITUTE OF CHEMICAL TECHNOLOGY
- KYUNGPOOK NATIONAL UNIVERSITY INDUSTRY ACADEMIC
COOPERATION FOUNDATION**

AZOBENZENE COMPOUND CONTAINING NITROGEN HETEROAROMATIC AND COMPOSITION FOR RECORDING GREEN HOLOGRAM COMPRISING THE SAME

The present invention relates to a nitrogen-containing heteroaromatic containing azobenzene compound, a hologram recording composition comprising the same, a hologram recording medium, a hologram recording material using the same, and a hologram recording or rerecording method. the azobenzene monomer compound of the present invention has an isomerization point at a green wavelength and photoisomerizes the azobenzene monomer compound, The polymer including the azobenzene monomer compound can be usefully used as a hologram recording/rerecording material by green laser irradiation since the polymer includes a high birefringence portion capable of increasing a refractive index change even by a small amount of light irradiation.



CLAIM 1. An azobenzene monomer represented by the following formula (1): In the above general formula (1), R1Is a straight or branched chain C1-20Alkyl; R2Is hydrogen or a straight-chain or branched-chain C1-20Alkyl, wherein n is an integer from 1 to 4; and R3Is a 5 to 10 membered heteroaryl containing at least one nitrogen; and L is a straight or branched chain C1-20Alkylene; and Q is a photocrosslinkable functional group containing at least one radically polymerizable double bond in the molecule.

N7857

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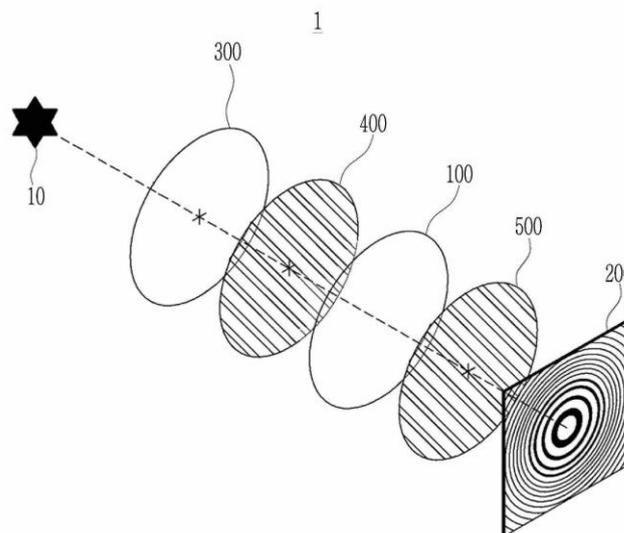
Priority Date: 19/11/2019

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH
INSTITUTE

HOLOGRAM RECORDING SYSTEM

A hologram recording system is provided. The hologram recording system includes an objective lens configured to collect light incident from a light source, a meta-lens having no wavelength selectivity represented by a fine nanostructure, an image sensor configured to generate an interference pattern, A first polarizing plate configured to first polarize the light passing through the objective lens; and a second polarizing plate disposed between the meta-lens and the image sensor, and configured to second polarize the light passing through the meta-lens.

CLAIM 1. An image pickup apparatus includes an objective lens configured to collect light incident from a light source, a metalens having no wavelength selectivity represented by a fine nanostructure, an image sensor configured to generate an interference pattern, A first polarizing plate configured to first polarize the light passing through the objective lens; and a second polarizing plate disposed between the meta-lens and the image sensor, and configured to second polarize the light passing through the meta-lens.



N7898

CN112980424

Priority Date: 04/02/2021

NORTHEAST NORMAL UNIVERSITY

PREPARATION METHOD OF FAST PHOTOCHROMIC HOLOGRAPHIC STORAGE MATERIAL UNDER LOW-POWER WRITING

A preparation method of a fast photochromic holographic storage material under low-power writing relates to the technical field of optical information storage, and solves the problems of the existing Ag/TiO₂The nano composite film has low response speed in holographic storage, and the preparation method comprises preparing the titanium dioxide film attached with tannic acid under the condition of keeping out of the sun; immersing the film in silver nitrate solution in a dark condition, and soaking the film in a water bath at 30 °C to obtain a silver/titanium dioxide film; then visible laser irradiation is carried out and the silver/titanium dioxide film is dipped in silver nitrate solution to obtain a silver/titanium dioxide film under the combined action of laser and tannic acid; final immersionAnd (3) in a potassium chloride solution, obtaining the silver/titanium dioxide film modified by the potassium chloride. The invention adopts potassium chloride for modification, creates a new photochemical reaction environment, further regulates and controls the photochromic speed, realizes the quick photochromic of low-power monochromatic light, obtains the holographic storage material with higher response speed, and is suitable for the quick and efficient holographic storage of blue light under low power.

CLAIM 1. The preparation method of the fast photochromic holographic storage material under low-power writing is characterized by comprising the following steps: s1, soaking the titanium dioxide film in a tannic acid solution under the dark condition to obtain the titanium dioxide film attached with tannic acid; s2, immersing the titanium dioxide film attached with the tannic acid obtained in the step S1 in a silver nitrate solution under the condition of keeping out of the sun, and soaking in a water bath at the temperature of 30 for 10min to obtain a silver/titanium dioxide film; s3, irradiating the silver/titanium dioxide film immersed in the silver nitrate solution by using visible laser to obtain a silver/titanium dioxide film under the combined action of the laser and the tannic acid; s4, immersing the silver/titanium dioxide film which is obtained by the combined action of the laser and the tannic acid and is obtained in the S3 into a potassium chloride solution, and obtaining the silver/titanium dioxide film modified by the potassium chloride.

N7903

CN112965332

Priority Date: 22/02/2021

BEIJING RISTON TECHNOLOGY DEVELOPMENT

LASER HOLOGRAPHIC ULTRAMICRON SILVER SALT PHOTSENSITIVE MATERIAL AND PREPARATION METHOD THEREOF

The invention discloses a laser holographic ultramicro silver salt photosensitive material and a preparation method thereof, relating to the technical field of silver salt photosensitive materials and being prepared from the following raw material components: distilled water, gelatin, benzotriazole, chromium potassium sulfate dodecahydrate, nitromethyl imidazole, silver nitrate, citric acid, p-tert-butylphenol, sodium benzene sulfinate, potassium bromide, magnesium chloride, disodium ethylene diamine tetraacetate, nitrophenylhydrazine, sodium sulfonate, phenol, formamide, thymol, methanol and ethanol. The laser holographic ultramicro silver salt photosensitive material provided by the invention has excellent performances of low noise, high resolution, high sensitivity and high transparency, is respectively sensitive to red light spectral line wavelength of 630nm, green light spectral line wavelength of 545nm and blue light spectral line wavelength of 450nm, and has the sensitivity of 10-20 $\mu\text{J}/\text{cm}^2$.

CLAIM 1. A laser holographic ultramicro silver salt photosensitive material is characterized in that: the laser holographic ultramicro silver salt photosensitive material is prepared from the following raw materials in parts by weight: 290 parts of distilled water, 310 parts of distilled water, 6.20-6.30 parts of gelatin, 2.30-2.40 parts of benzotriazole, 1.850-1.900 parts of chromic potassium sulfate dodecahydrate, 2.30-2.40 parts of methyl nitroimidazole, 2.20-2.30 parts of silver nitrate, 4.270-4.280 parts of citric acid, 2.20-2.30 parts of p-tert-butylphenol, 1.6-1.7 parts of sodium benzenesulfonate, 2.5-2.6 parts of potassium bromide, 1.370-1.380 parts of magnesium chloride, 1.70-1.80 parts of ethylene diamine tetraacetic acid disodium, 5.610-5.620 parts of nitrobenzene hydrazine, 3.720-3.730 parts of sodium sulfonate, 0.370-0.380 part of phenol, 1.000-1.010 part of formamide, 1.130-1.140g of thymol, 0.790-0.795 part of methanol and 0.80-0.90 part of ethanol.

N7921

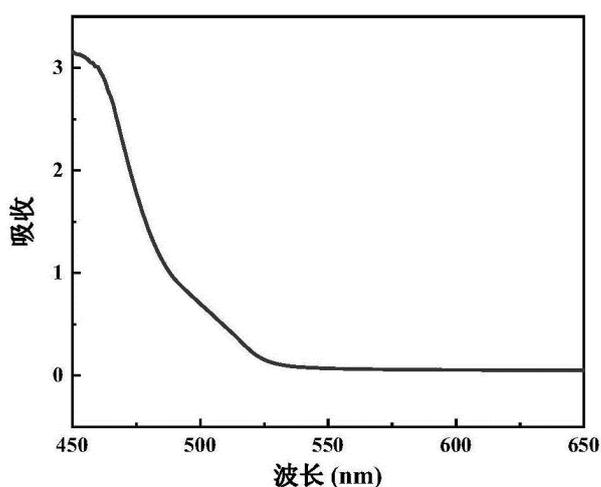
CN112885417

Priority Date: 21/01/2021

FUJIAN NORMAL UNIVERSITY

GO-DOPED PQ-PMMA (POLYMETHYL METHACRYLATE) PHOTOPOLYMER HOLOGRAPHIC STORAGE MATERIAL, PREPARATION METHOD THEREOF AND HOLOGRAPHIC OPTICAL DISK

The invention discloses a GO-doped PQ-PMMA photopolymer holographic storage material, a preparation method thereof and a holographic optical disk, wherein the GO-doped PQ-PMMA photopolymer holographic storage material comprises the following raw materials in parts by weight: MMA: 100 wt%, AIBN: 0.7-1 wt%, PQ: 1-1.3 wt%, GO: 0.0005-0.002 wt%; the preparation cost is low, the polarization selectivity and the polarization sensitivity are good, and the thickness of the prepared material is accurate and controllable but the photoinduced shrinkage is negligible; the novel photopolymer material has excellent diffraction efficiency and refractive index modulation degree, is suitable for serving as a core recording material required in the field of holographic imaging and data storage, can remarkably improve the information storage capacity, and has wide application prospect in coaxial polarization holographic information storage. In addition, the good optical characteristics of the material make the material have application potential in the field of traditional volume holographic recording.



CLAIM 1. The GO-doped PQ-PMMA photopolymer holographic storage material is characterized by comprising the following raw materials in parts by weight: MMA: 100 wt%, AIBN: 0.7-1 wt%, PQ: 1-1.3 wt%, GO: 0.0005-0.002 wt%.

Click on the title to return to table of contents

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

N7844

WO2021113719

Priority Date: 06/12/2019

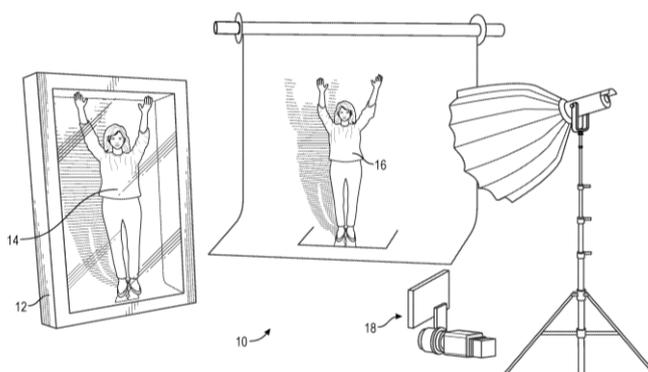
PORTL

HOLOGRAPHIC DISPLAY DEVICE AND METHOD OF USE

A holographic display device for presenting a hologram-like image and a method of use are disclosed. The holographic display device includes a box-like structure, a translucent panel, and light panels extending the entire length of the box-like structure. The light panels position between the box-like structure and the translucent panel. The holographic display device includes a transparent monitor connecting the box-like structure at its front end. The transparent monitor receives and displays an image. The light panels illuminate light and the translucent panel diffuses, blends, and evenly distributes the light in the interior. Transmitted shadowing to the monitor provides a realistic appearance. A unique image capturing system for capturing the image to be displayed on the transparent monitor is also disclosed. The image capturing system transmits the image to the holographic display device in real-time or as a pre-recorded image using wired or wireless protocols.

DISPOSITIF D'AFFICHAGE HOLOGRAPHIQUE ET PROCÉDÉ D'UTILISATION

L'invention concerne un dispositif d'affichage holographique destiné à présenter une image de type hologramme, et un procédé d'utilisation. Le dispositif d'affichage holographique comprend une structure de type boîte, un panneau translucide et des panneaux lumineux s'étendant sur toute la longueur de la structure de type boîte. Les panneaux lumineux sont positionnés entre la structure de type boîte et le panneau translucide. Le dispositif d'affichage holographique comprend un moniteur transparent connecté à la structure de type boîte au niveau de son extrémité avant. Le moniteur transparent reçoit et affiche une image. Les panneaux lumineux produisent de la lumière et le panneau translucide diffuse, mélange et distribue uniformément la lumière à l'intérieur. L'ombrage transmis au moniteur fournit un aspect réaliste. L'invention concerne également un système de capture d'image unique servant à capturer l'image à afficher sur le moniteur transparent. Le système de capture d'image transmet l'image au dispositif d'affichage holographique en temps réel ou en tant qu'image préenregistrée à l'aide de protocoles câblés ou sans fil.



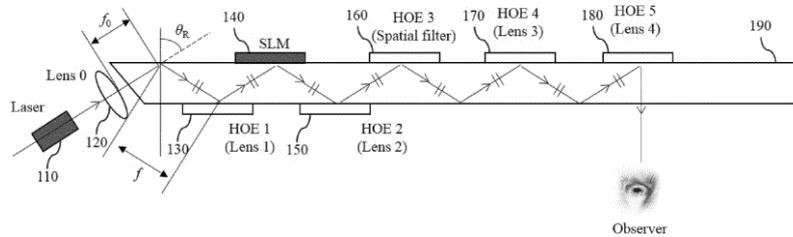
CLAIM 1. A holographic display device for presenting a hologram-like image, said holographic display device comprising: a box-like structure; a translucent panel; light panels extending substantially an entire length of said box-like structure, wherein said light panels position between said box-like structure and said translucent panel; and, a transparent monitor connecting said box-like structure at its front end, wherein said transparent monitor and said translucent panel form an interior for said box-like structure, wherein said transparent monitor receives and displays an image, wherein said light panels illuminate light and said translucent panel diffuses, blends and evenly distributes the light in the interior for presenting the image displayed on said transparent monitor as a hologram-like image.

AUGMENTED REALITY HOLOGRAPHIC DISPLAY USING OPTICAL WAVEGUIDE AND HOLOGRAPHIC OPTICAL ELEMENT

Provided is a technology for implementing an AR optical waveguide display capable of showing a hologram image by means of a small and simple system configuration by using an HOE. A holographic display according to an embodiment of the present invention comprises: a light source module for emitting a beam; an optical waveguide through which the emitted beam is incident and propagated; a plurality of holographic optical elements (HOEs) for propagating the beam incident to the optical waveguide inside the optical waveguide while totally reflecting the beam; and a modulator for expressing a holographic image through the progressing beam and propagating the beam to the inside of the optical waveguide while totally reflecting the beam. Accordingly, it is possible to implement, as a small and simple system, an optical waveguide display showing an AR hologram by using an optical waveguide and an HOE.

AFFICHAGE HOLOGRAPHIQUE À RÉALITÉ AUGMENTÉE UTILISANT UN GUIDE D'ONDES OPTIQUE ET UN ÉLÉMENT OPTIQUE HOLOGRAPHIQUE

Selon l'invention, il est prévu une technologie pour la mise en œuvre d'un affichage à guide d'ondes optique AR capable de présenter une image d'hologramme au moyen d'une configuration de système petite et simple en utilisant un HOE. Un dispositif d'affichage holographique selon un mode de réalisation de la présente invention comprend : un module de source de lumière pour émettre un faisceau ; un guide d'ondes optique à travers lequel le faisceau émis est incident et propagé ; une pluralité d'éléments optiques holographiques (HOE) pour propager le faisceau incident sur le guide d'ondes optique à l'intérieur du guide d'ondes optique tout en réfléchissant totalement le faisceau ; et un modulateur pour exprimer une image holographique à travers le faisceau de progression et propager le faisceau vers l'intérieur du guide d'ondes optique tout en réfléchissant totalement le faisceau. En conséquence, il est possible de mettre en œuvre, sous forme de système petit et simple, un affichage à guide d'ondes optique présentant un hologramme AR en utilisant un guide d'ondes optique et un HOE.



CLAIM 1. A light source module configured to irradiate a beam; An optical waveguide on which the irradiated beam is incident and proceeds; A plurality of hoe (Holographic Optical Elements) configured to propagate inside the optical waveguide while totally reflecting a beam incident on the optical waveguide; And a modulator configured to display a holographic image on the propagating beam and propagate the propagated beam into the optical waveguide while totally reflecting the propagated beam.

N7848

US20210191125

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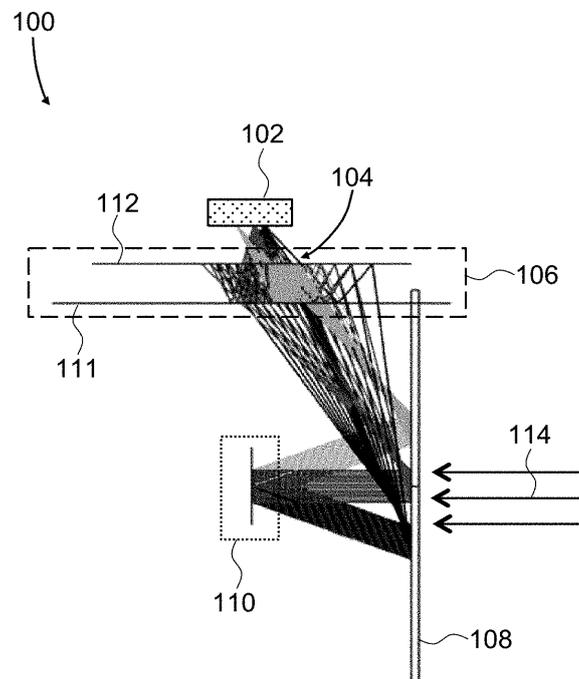
FACEBOOK TECHNOLOGIES

DISPLAY WITH HOLOGRAPHIC RELAY AND HOLOGRAPHIC IMAGE COMBINER

A display device includes an image source, a holographic relay, and a holographic image combiner in an off-axis configuration. The holographic relay may include a pair of freeform holographic reflectors relaying light of the image source to an intermediate image plane. The holographic image combiner receives and redirects the relayed light from the holographic relay, forming an image in angular domain at an eyebox of the display device, the image in angular domain corresponding to the image in linear domain generated by the image source.

AFFICHAGE À RELAIS HOLOGRAPHIQUE ET COMBINA TEUR D'IMAGES HOLOGRAPHIQUES

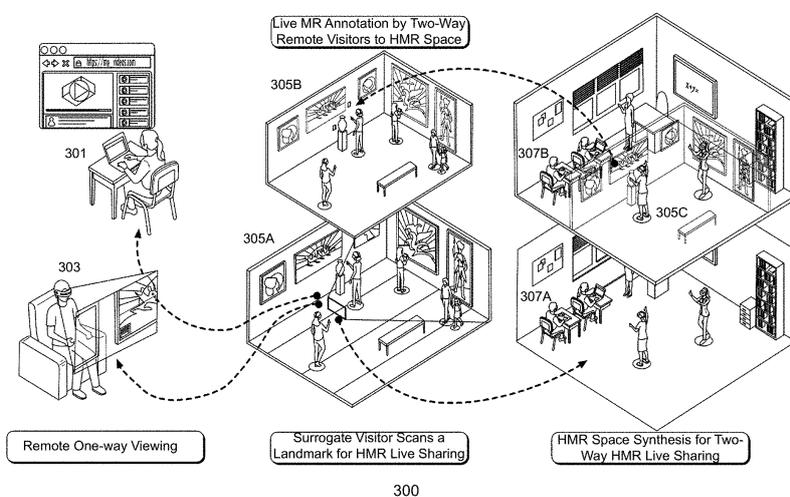
Un dispositif d'affichage comprend une source d'image, un relais holographique et un combinateur d'images holographiques dans une configuration hors axe. Le relais holographique peut comprendre une paire de réflecteurs holographiques de forme libre relayant la lumière de la source d'image vers un plan d'image intermédiaire. Le combinateur d'images holographiques reçoit et redirige la lumière relayée depuis le relais holographique, formant une image dans le domaine angulaire au niveau d'une région oculaire du dispositif d'affichage, l'image dans le domaine angulaire correspondant à l'image dans le domaine linéaire générée par la source d'image.



CLAIM 1. A display device comprising: an image source for providing light carrying an image in linear domain; a holographic relay coupled to the image source for relaying the light provided by the image source; and a holographic image combiner coupled to the holographic relay for receiving and redirecting the relayed light from the holographic relay, so as to form an image in angular domain at an eyebox of the display device, the image in angular domain corresponding to the image in linear domain.

REAL-WORLD OBJECT HOLOGRAPHIC TRANSPORT AND COMMUNICATION ROOM SYSTEM

A novel holographic transport and communication room system utilizes a single red-green-blue (RGB)-depth (RGB-D) camera to capture the motion of a dynamic target, which is required to rotate around the RGB-D camera, instead of capturing three-dimensional volume of the dynamic target conventionally with a plurality of multi-angle cameras positioned around the dynamic target. The captured 3D volume of the dynamic target subject undergoes relighting, subject depth calculations, geometrical extrapolations, and volumetric reconstructions in a machine-learning graphical transformation feedback loop to synthesize a refined real-time hologram. The resulting hologram in one holographic room system is shared with other users occupying other holographic room systems equipped with similar holographic capabilities for live bilateral or multilateral holographic visualization and collaboration. Preferably, each holographic room system also integrates a mixed-reality content synthesis table for real-time remote participant collaboration in manipulating holographic contents and a one-to-one ratio life-size holographic display and capture tubular device.



CLAIM 1. A real-world object holographic transport and communication room system comprising: a holographic transport and communication room with a vertical wall; a hologram bilateral monitoring device mounted on the vertical wall; a single red-green-blue (RGB)-depth (RGB-D) camera installed near the hologram bilateral monitoring device, wherein the single RGB-D camera captures real-time z-axis depth parameters of a target object, in addition to conventional RGB color data; the target object standing and self-rotating 360-degrees at least once in front of the single RGB-D camera to enable the single RGB-D camera to capture three-dimensional (3D) volume information of the target object over a specified duration; a graphics server receiving a continuous stream of the 3D volume information of the target object over the specified duration while the target object is self-rotating 360-degrees at least once in front of the single RGB-D camera, wherein the specified duration of the continuous stream of the 3D volume information provides sufficient time-variable volumetric information of the target object to create, sharpen, and display a computerized hologram of the target object by the graphics server in a real-time bilateral holographic communication with a remote user outside the holographic transport and communication room; a mixed-reality (MR) headset worn by a local user located inside the holographic transport and communication room; a remote hologram from the remote user projected in the holographic transport and communication room, wherein the remote hologram from the remote user is visible through the MR headset worn by the local user inside the holographic transport and communication room; and an autostereoscopic holographic display and capture tubular device that does not require a separate headset gear to visualize the remote hologram for other local users in the holographic transport and communication room.

N7853

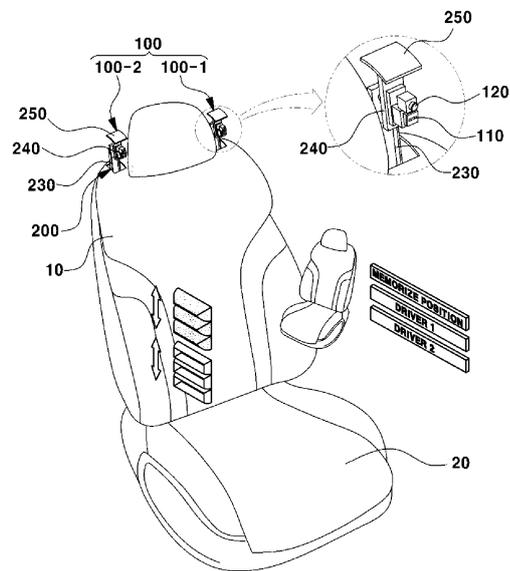
US20210162888
Priority Date: 02/12/2019

HYUNDAI MOTOR - KIA MOTORS

HOLOGRAM SWITCH SYSTEM OF SEAT FOR VEHICLES

A hologram switch system of a seat for vehicles generates hologram switch images for adjusting movement of the seat and air-conditioning of the seat in front of a passenger sitting on the seat, and allows the passenger to perform selection and operation in the generated hologram switch images through the position and motion of a passenger's hand, so that the passenger may more intuitively approach and easily operate the switch images and thereby easily operate various seat moving apparatuses and seat air-conditioning apparatuses.

CLAIM 1. A hologram switch system of a seat for vehicles, the hologram switch system comprising: one or more hologram image reproducers mounted on an upper end of a seat back so as to be received therein and withdrawn therefrom, and configured to generate hologram images for adjusting the seat in front of a user; one or more cameras mounted on the upper end of the seat back so as to be received therein and withdrawn therefrom, and configured to recognize a position and motion of a user's hand with respect to the hologram images for adjusting the seat, generated in front of the user, as a seat adjustment switching signal; an input device configured to input an operation start signal of the one or more hologram image reproducers and the one or more cameras; and a controller configured to apply an operation signal to the one or more hologram image reproducers and the cameras in response to the operation start signal input through the input device, and to apply a drive control signal to at least one of seat moving apparatuses or seat air-conditioning apparatuses corresponding to the seat adjustment switching signal from the one or more cameras.



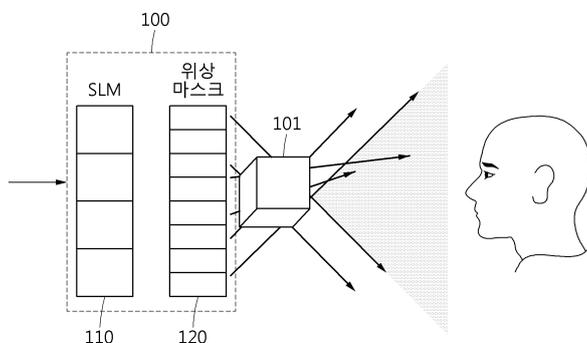
N7854

KR20210070719
Priority Date: 05/12/2019

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH
INSTITUTE

HOLOGRAPHIC DISPLAY DEVICE AND METHOD WITH EXTENDED VIEWING ANGLE USING TRANSMISSIVE PHASE MASK

A holographic display apparatus and a method of expanding a viewing angle using a transmissive phase mask are provided. The holographic display apparatus includes a spatial light modulator (SLM) configured to modulate incident light according to a hologram pattern and output the modulated light, and a transmissive phase mask configured to modulate light output from the SLM and output the modulated light, wherein a pixel pitch of the transmissive phase mask is smaller than a pixel pitch of the SLM.



CLAIM 1. A holographic display device comprising: a spatial light modulator (SLM) that modulates incident light according to a hologram pattern and outputs the modulated light; and a transmissive phase mask that modulates light output from the SLM and outputs the modulated light, wherein the transmissive phase mask has a smaller pixel pitch than the SLM.

N7862

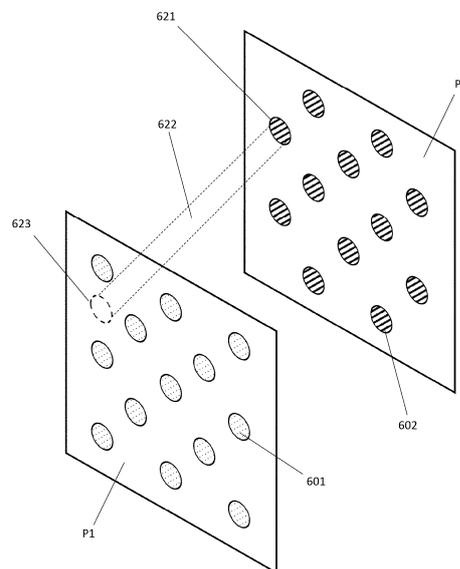
EP3839639

Priority Date: 20/12/2019

DUALITAS - TOURE RITA J

A PROJECTOR FOR FORMING IMAGES ON MULTIPLE PLANES

A projector arranged to form a plurality of image reconstructions on different planes disposed on a common projection axis and a corresponding method is disclosed. A hologram engine is arranged to determine a hologram corresponding to each image for image reconstruction, and to form a diffractive pattern including the corresponding hologram for each image. A display engine is arranged to display each diffractive pattern and receive light such that an image reconstruction corresponding to each hologram is formed on a plane of the plurality of different planes. Each image reconstruction comprises image spots arranged in a pattern. Image spots of a first image reconstruction formed on a first plane are interposed between image spots of a second image reconstruction formed on a second plane.



CLAIM 1. A projector arranged to form a plurality of image reconstructions on different planes disposed on a common projection axis, wherein the projector comprises: a hologram engine arranged to determine a plurality of holograms corresponding to at least one image for image reconstruction, and, for each hologram of the plurality of holograms, to form a diffractive pattern including the corresponding hologram; a display engine arranged to display each diffractive pattern and receive light such that an image reconstruction corresponding to each hologram is formed on a plane of the plurality of different planes, wherein each image reconstruction comprises image spots arranged in a pattern, and wherein image spots of a first image reconstruction formed on a first plane are interposed between image spots of a second image reconstruction formed on a second plane.

N7863

EP3835878

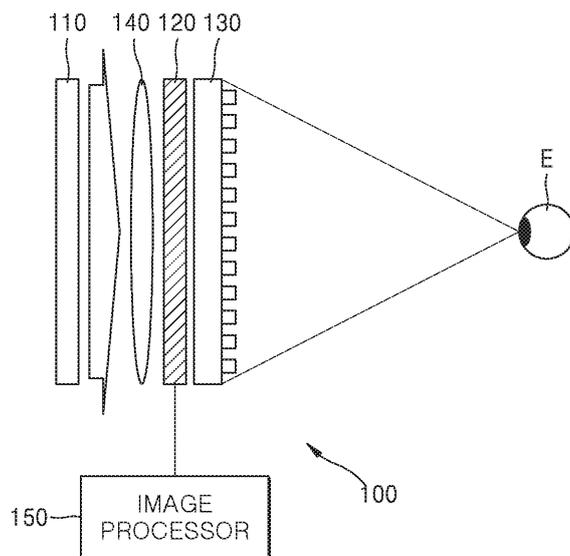
Priority Date: 11/12/2019

KOREA UNIVERSITY INDUSTRIAL & ACADEMIC COLLABORATION FOUNDATION - KOREA UNIVERSITY RESEARCH & BUSINESS FOUNDATION SEJONG CAMPUS - SAMSUNG ELECTRONICS - UNIVERSITY KOREA RESEARCH BUSINESS FOUNDATION SEJONG CAMPUS

HOLOGRAPHIC DISPLAY APPARATUS FOR PROVIDING EXPANDED VIEWING WINDOW

Provided is a holographic display apparatus capable of providing an expanded viewing window when reproducing a holographic image via an off-axis technique. The holographic display apparatus includes a spatial light modulator comprising a plurality of pixels arranged two-dimensionally; and an aperture enlargement film configured to enlarge a beam diameter of a light beam coming from each of the plurality of pixels of the spatial light modulator. The beam diameter of each light beam enlarged by the aperture enlargement film may be greater than the width of an aperture of each pixel of the spatial light modulator.

CLAIM 1. A holographic display apparatus comprising: a spatial light modulator comprising a plurality of pixels disposed two-dimensionally; and an aperture enlargement film configured to enlarge a beam diameter of a light beam transmitted from each of the plurality of pixels of the spatial light modulator.



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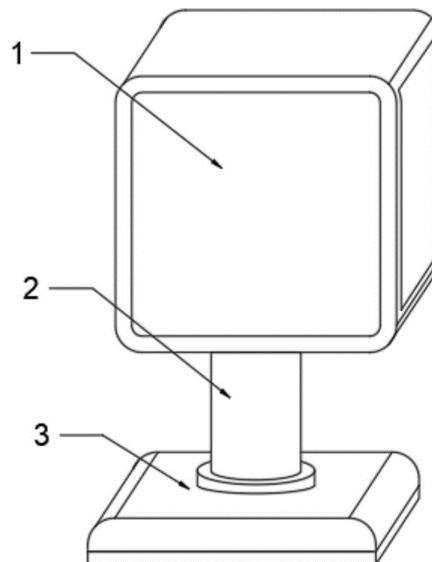
Priority Date: 05/11/2020

SHENZHEN YINGNA TECHNOLOGY

ROTARY 3D HOLOGRAPHIC ADVERTISEMENT MACHINE

The utility model discloses a rotary 3D holographic advertisement machine, which comprises a fixed base; a support column is arranged in the center of the top of the fixed base; a protective glass box is arranged at the top of the supporting column; and a rotary working mechanism is arranged in the protective glass box. The utility model discloses convenient to use can height-adjusting and angle, is convenient for observe and show.

CLAIM 1. A rotary 3D holographic advertisement machine comprises a fixed base (3); the device is characterized in that a support column (2) is arranged at the center of the top of the fixed base (3); the top of the supporting column (2) is provided with a protective glass box (1); the protective glass box (1) is internally provided with a rotary working mechanism.



N7867

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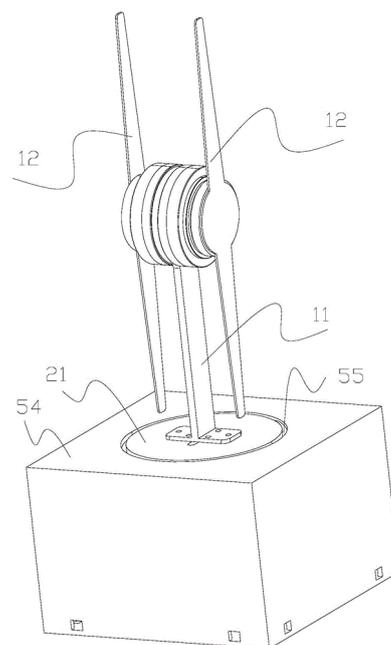
Priority Date: 18/09/2020

DONGGUAN DENGHENG ELECTRONIC TECHNOLOGY

ROTATORY HOLOGRAPHIC ADVERTISEMENT OF 3D MACHINE

The utility model relates to the technical field of advertisement machines, in particular to a rotary 3D holographic advertisement machine, which comprises a 3D holographic display device, a rotary table, a rotary shaft, a rotary power device, a transmission frame and a rotary power supply device for supplying power to the 3D holographic display device; the 3D holographic display device is arranged on the turntable; the rotary table is rotationally connected with the transmission frame through the rotating shaft; the rotary power device and the rotary power supply device are both arranged on the transmission frame; and the output end of the rotary power device is connected with the rotating shaft. The utility model discloses 360 degrees annular show advertisements can be realized.

CLAIM 1. The utility model provides a rotatory holographic advertisement of 3D machine which characterized in that: the three-dimensional holographic display device comprises a 3D holographic display device (1), a turntable (21), a rotating shaft (22), a rotary power device (3), a transmission frame and a rotary power supply device for supplying power to the 3D holographic display device (1); the 3D holographic display device (1) is arranged on the turntable (21); the rotary table (21) is rotationally connected with the transmission frame through the rotating shaft (22); the rotary power device (3) and the rotary power supply device are arranged on the transmission frame; the output end of the rotary power device (3) is connected with the rotating shaft (22).



N7868

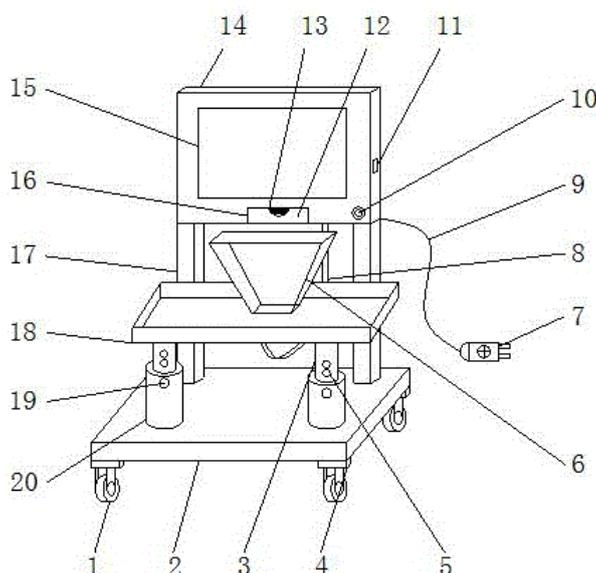
CN213518711U

Priority Date: 29/11/2020

GUANGZHOU TRUMPS ELECTRONIC TECHNOLOGY

EDUCATION ALL-IN-ONE MACHINE WITH HOLOGRAPHIC PROJECTION FUNCTION

The utility model discloses an education all-in-one that possesses holographic projection function, including base, installation frame, display screen and projecting apparatus, the universal wheel is all installed to the bottom of installation piece, flexible loop bar is installed at the base top, the telescopic link is all installed at the top of flexible loop bar, the projecting apparatus is installed at the top of telescopic link, the four sides cone is installed at the top of projecting apparatus, the support column is installed at the base top of flexible loop bar one side, the installation frame of installing of support column, the surface mounting of installation frame has the display screen, one side of installation frame is provided with the USB interface, the installation frame surface of display screen below is provided with the mounting groove, the inside of mounting groove is provided with the laser pen. The utility model discloses a set up universal wheel, telescopic link, USB interface, projecting apparatus, laser pen and four sides cone structure, have the advantage of realizing function diversification, laser teaching and 360 degrees holographic projections.



CLAIM 1. The utility model provides an education all-in-one that possesses holographic projection function, includes base (2), installation frame (14), display screen (15) and projecting apparatus (18), its characterized in that: the universal wheel type telescopic road sign is characterized in that four ends of the bottom of the base (2) are provided with mounting blocks (4), universal wheels (1) are mounted at the bottoms of the mounting blocks (4), telescopic loop bars (20) are mounted at the top of the base (2), telescopic rods (3) are mounted at the tops of the telescopic loop bars (20), limiting bolts (19) are arranged on the surfaces of the telescopic loop bars (20), limiting holes (5) formed in the surfaces of the telescopic rods (3) are matched with the limiting bolts (19), a projector (18) is mounted at the top of the telescopic rods (3), a four-side cone (6) is mounted at the top of the projector (18), supporting columns (17) are mounted at the top of the base (2) on one side of the telescopic loop bars (20), mounting frames (14) are mounted on the supporting columns (17), and the bottoms of the mounting frames (14) are connected with the projector (18) through connecting wires (, the utility model discloses a solar energy charging device, including installation frame (14), surface mounting have control chip (27), the surface mounting of installation frame (14) has display screen (15), one side of installation frame (14) is provided with USB interface (11), installation frame (14) side surface of USB interface (11) below is provided with power connecting wire (9), charging plug (7) are installed to the one end of power connecting wire (9), installation frame (14) surface of display screen (15) below is provided with mounting groove (12), installation frame (14) surface mounting of mounting groove (12) one side has switch (10), mounting groove (12) department is provided with installation lid (16), the surface of installation lid (16) is provided with screw thread (13), the inside of mounting groove (12) is provided with laser pen (21), the surface of laser pen (21) is provided with control button (23) and control switch (24), the inside of laser pen (21) is provided with charging electron (25), the one end of laser pen (21) is provided with laser hole (22), battery cover (26) are installed to the other end of laser pen (21).

N7869

CN213518097U

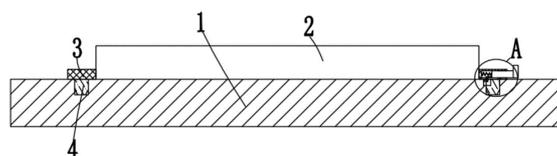
Priority Date: 17/10/2020

SHANGHAI MENG YUN HOLOGRAPHIC POLYTRON TECHNOLOGIES

HOLOGRAPHIC DISPLAY CHIP FIXING STRUCTURE FOR HOLOGRAPHIC DISPLAY PANEL

The utility model discloses a holographic display chip fixed knot that holographic display panel used constructs, including setting up the holographic display chip at the display panel top, the equal fixed mounting in both sides of holographic display chip has the fixed block, and the bottom fixed mounting of fixed block has the fixture block, and two draw-in grooves have been seted up at display panel's top, and the bottom of fixture block extends to in the draw-in groove that corresponds and establishes to the toper structure, has seted up the fixed slot on the left side inner wall of the draw-in groove that lies in the right side in two draw-in grooves, and the first groove that the top set up for the opening is seted up in the left side of the fixture block that lies in the right side in two fixture blocks, and movable contact has the kelly on the. The utility model relates to a rationally, convenient operation is convenient for realize holographic display chip's dismounting operation fast, labour saving and time saving, and the holographic display chip after taking off can install and use on other display panel, improves its utilization ratio, satisfies the user demand.

CLAIM 1. A holographic display chip fixing structure for a holographic display panel comprises a holographic display chip (2) arranged at the top of the display panel (1), and is characterized in that fixed blocks (3) are fixedly arranged on two sides of the holographic display chip (2), fixture blocks (4) are fixedly arranged at the bottoms of the fixed blocks (3), two clamping grooves (5) are formed in the top of the display panel (1), the bottoms of the fixture blocks (4) extend into the corresponding clamping grooves (5) and are of a conical structure, a fixing groove (6) is formed in the left inner wall of the clamping groove (5) on the right side in the two clamping grooves (5), a first groove (7) with an opening at the top is formed in the left side of the fixture block (4) on the right side in the two fixture blocks (4), a clamping rod (8) is movably contacted on the inner wall of the top of the fixing groove (6), and the right end of the clamping rod (8) extends into the first groove, the top of each fixed block (3) is fixedly provided with a connecting rod (9) positioned in the first groove (7), the right side of the fixed block (3) positioned on the right side in the two fixed blocks (3) is provided with a rectangular groove (13), the bottom inner wall of the rectangular groove (13) is provided with a first through hole, a rotating shaft (10) is rotatably arranged between the front inner wall and the rear inner wall of the first through hole, a gear (11) is fixedly sleeved on the rotating shaft (10), the top of the gear (11) extends into the rectangular groove (13), the top end of the connecting rod (9) extends into the first through hole and is fixedly connected with the bottom of the rotating shaft (10), a rack (12) meshed with the gear (11) is arranged in the rectangular groove (13), a rectangular rod (14) is sleeved in the rectangular groove (13) in a sliding manner, the left bottom of the rectangular rod (14) is fixedly connected with the right end of the rack (12), a plurality of springs (16) are fixedly arranged between the left side of the rectangular rod, the right end of the rectangular rod (14) extends to the outside of the right fixed block (3) and is fixedly provided with a push block (15).



N7870

CN213517870U

Priority Date: 25/04/2021

NANJING XINSHIYUAN ELECTRONICS

HOLOGRAPHIC PROJECTION INTERACTION EQUIPMENT

The utility model provides a holographic projection interaction device, which relates to the technical field of projection and comprises a frame, a light source system, an imaging system, a projection system, an image acquisition system and a processing module, wherein the light source system, the imaging system, the projection system, the image acquisition system and the processing module are arranged on the frame; imaging system and projection system set gradually along light source system's light-emitting direction, so, alright at first gather and analyze user's mutual information with the holographic projection interaction equipment through this application, thereby correspond the holographic image of adjustment target area, make holographic image and user's mutual information match, and then realize man-machine interaction, effectively improve the multifunctionality of equipment, make equipment not only be used as in holographic projection, simultaneously, can also carry out the interdynamic of content with the user, satisfy the user to resource content and functional demand.

CLAIM 1. A holographic projection interactive device is characterized by comprising a base, and a light source system, an imaging system, a projection system, an image acquisition system and a processing module which are arranged on the base; the imaging system and the projection system are sequentially arranged along the light emitting direction of the light source system, the image acquisition system is used for acquiring interactive information, and the processing module is respectively electrically connected with the image acquisition system, the light source system and the imaging system and is used for controlling the light source system and the imaging system to project holographic images to a target area through the projection system according to the interactive information.

N7871

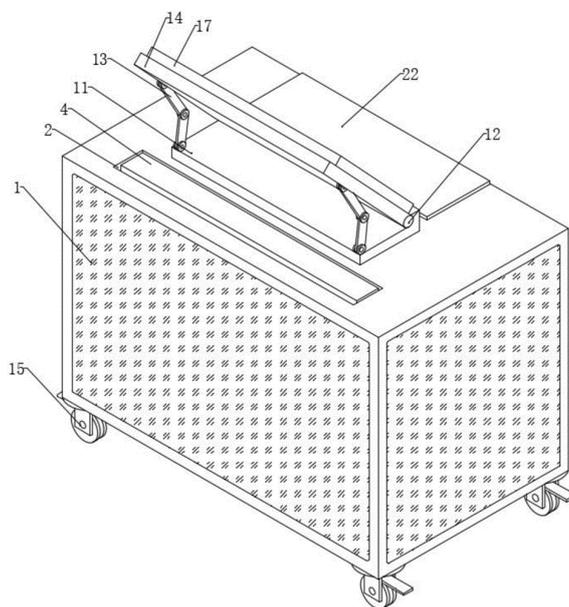
CN213512909U

Priority Date: 19/11/2020

SHANGHAI HUIZAI EXHIBITION DISPLAY

HOLOGRAPHIC PROJECTION INTERACTION DEVICE BASED ON PRESSURE SENSING

The utility model discloses a holographic projection interactive installation based on forced induction, including workstation and mounting groove, the inside fixed mounting of first installation cavity has the motor, the output fixedly connected with threaded rod of motor, the inside of first fixed frame is provided with first pivot, the upper surface of mounting panel is provided with the second pivot, one side of second pivot is provided with the movable rod. The utility model discloses a motor during operation drives the threaded rod and rotates, it carries out horizontal longitudinal movement to drive thread bush and first fixed frame simultaneously, show from the inside of mounting groove, it is more convenient to make accomodating of first fixed frame, and can prevent that first fixed frame from exposing in the outside, cause the damage, its life has been prolonged effectively, rotate the angle with the fixed frame of second through first pivot and adjust, make it adjust the angle of show screen according to viewer's angle, the area of exhibition has still been increased effectively simultaneously, the practicality of device has been improved effectively.



CLAIM 1. The utility model provides a holographic projection interactive installation based on forced induction, includes workstation (1) and mounting groove (2), its characterized in that: the upper surface of the workbench (1) is provided with a mounting groove (2), one side of the mounting groove (2) is provided with a first mounting cavity (3), the inside of the mounting groove (2) is provided with a first fixed frame (4), the inside of the first mounting cavity (3) is fixedly provided with a motor (5), the output end of the motor (5) is fixedly connected with a threaded rod (6), the surface of the threaded rod (6) is movably connected with a threaded sleeve (7), one side of the threaded sleeve (7) is fixedly connected with a first connecting rod (8) with one end fixedly connected with the bottom of the first fixed frame (4), the inside of the first fixed frame (4) is provided with a first rotating shaft (9), one side of the first rotating shaft (9) is rotatably connected with a second fixed frame (10), the upper surface of the workbench (1) is positioned on one side of the mounting groove (2) and is fixedly connected with a mounting plate (11), the upper surface of mounting panel (11) is provided with second pivot (12), one side of second pivot (12) is provided with movable rod (13), the tip fixedly connected with fixed plate (14) of movable rod (13).

N7872

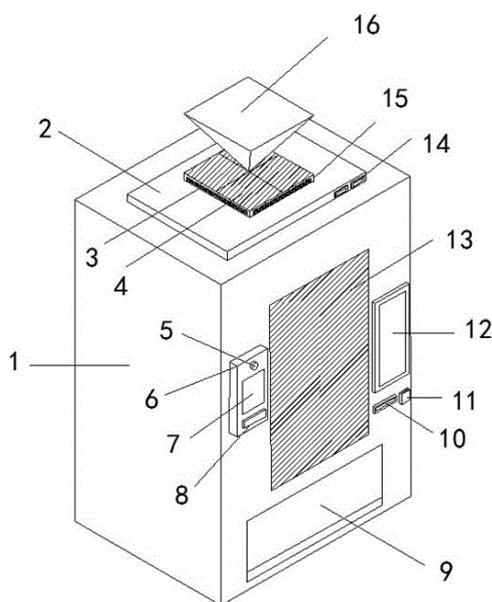
CN213464526U

Priority Date: 29/09/2020

SUZHOU HUA FENG INTERACTIVE TECHNOLOGY

360-DEGREE HOLOGRAPHIC PHANTOM IMAGING MAN-MACHINE INTERACTION DISPLAY CABINET

The utility model discloses a 360-degree holographic phantom imaging man-machine interaction display cabinet, which comprises a display cabinet, wherein a plurality of goods shelves are uniformly distributed in the display cabinet, a containing cavity is arranged at the bottom side in the display cabinet, a display window is arranged at the front side of the display cabinet, a face recognition machine is arranged at the left side of the display window at the front side of the display cabinet, a first camera, a second camera and an interaction interface are arranged on the face recognition machine, a touch screen is arranged at the right side of the display window at the front side of the display cabinet, a paper ticket putting port and a coin putting port are arranged below the touch screen, an output port matched with the containing cavity is arranged at the bottom side of the front side of the display cabinet, a base is arranged at the top of the display cabinet, a plurality of USB interfaces are arranged at the front side of the base, omnibearing product display is realized, and the autonomous operation of a customer is realized, so that the inquiry time, the efficiency of selling is improved.



CLAIM 1. The utility model provides a 360 mutual show cupboard of holographic phantom formation of image man-machine, includes show cupboard (1), its characterized in that: the novel paper ticket display cabinet is characterized in that a plurality of goods shelves (17) which are uniformly distributed are arranged in the display cabinet (1), a containing cavity (18) is arranged at the bottom side in the display cabinet (1), a display window (13) is arranged on the front side of the display cabinet (1), a face recognition machine (6) is arranged on the left side, located on the display window (13), of the front side of the display cabinet (1), a first camera (5), a second camera (8) and an interactive interface (7) are arranged on the face recognition machine (6), a touch screen (12) is arranged on the right side, located on the display window (13), of the front side of the display cabinet (1), a paper ticket input port (10) and a coin input port (11) are arranged below the touch screen (12), an output port (9) matched with the containing cavity (18) for use is arranged at the bottom side of the front side of the display cabinet (1), a base (2) is arranged at the, the front of base (2) is equipped with a plurality of USB interfaces (14), the top center department of base (2) is equipped with multimedia apparatus (15), multimedia apparatus (15) include four liquid crystal display (4) of the same size, the front, the back, the left side and the right side of multimedia apparatus (15) all are equipped with speaker (3), the top center department of multimedia apparatus (15) is inverted and is equipped with the three-dimensional imaging equipment (16) of four pyramid shape.

N7873

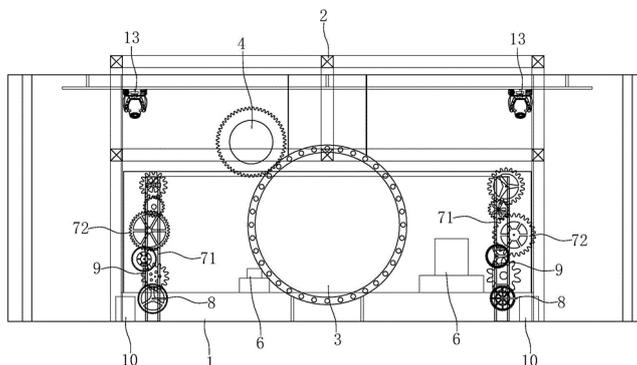
CN213407754U

Priority Date: 20/10/2020

3D NEW CULTURE

HOLOGRAPHIC INTERACTIVE TALK SHOW THEATER

The utility model discloses a holographic interactive talk show theater, which comprises a performance platform (1); the projection system (2) can put a virtual image on the performance platform (1); a first display screen (3); a second display screen (4); two third display screens (5); two fourth display screens (6); two groups of gear assemblies (7) are respectively positioned at two sides of the front of the performance platform (1) and comprise a bracket (71) and at least two gears (72) which are sequentially arranged on the bracket (71) from top to bottom; the two rocking handles (8) correspond to the gear assemblies (7) one by one; the two table tennis sprayers (9) correspond to the gear assemblies (7) one by one; and the air outlets of the two fans (10) face the outlets of the table tennis sprayers (9). Compared with the prior art, the utility model discloses a holographic interactive talk show theater presentation form is abundant and with low costs.



CLAIM 1. A holographic interactive talk show theater comprises A performance platform (1); and the projection system (2) is arranged above the performance platform (1) and can put a virtual image on the performance platform (1); the method is characterized in that: also comprises A first display screen (3) vertically and centrally arranged on the rear side of the performance platform (1); the second display screen (4) is vertically arranged at the front side of the performance platform (1), and the projection of the second display screen (4) on the plane where the first display screen (3) is located is staggered with the first display screen (3); the two third display screens (5) are respectively and vertically arranged on the left side and the right side of the performance platform (1); two fourth display screens (6) which are vertically arranged on the performance platform (1) and are respectively positioned at two sides of the first display screen (3); two groups of gear assemblies (7) are respectively positioned at two sides of the front of the performance platform (1) and comprise a bracket (71) and at least two gears (72) which are sequentially arranged on the bracket (71) from top to bottom; the two rocking handles (8) correspond to the gear assemblies (7) one by one, and the end parts of the two rocking handles penetrate through the centers of the gears (72) at the lowest part in the corresponding gear assemblies (7) and are rotationally connected with the corresponding brackets (71); the two table tennis sprayers (9) correspond to the gear assemblies (7) one by one and are arranged on the brackets (71) of the corresponding gear assemblies (7); and the two fans (10) are respectively positioned on two sides in front of the performance platform (1), and the air outlet faces to the outlet of the table tennis ejector (9).

N7875

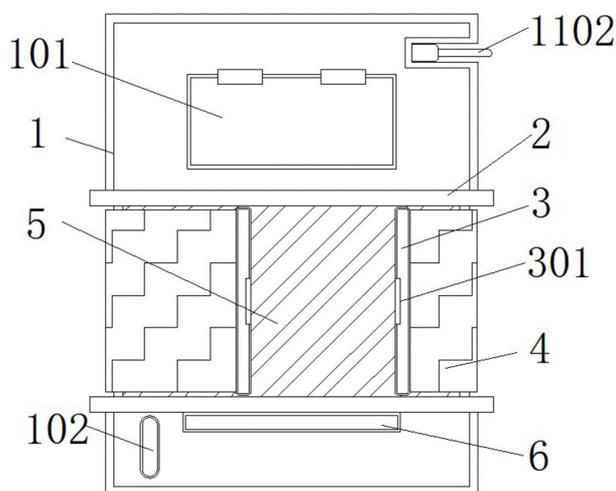
CN213400485U

Priority Date: 24/11/2020

YIBIN UNIVERSITY

VIRTUAL SIMULATION DEVICE BASED ON URBAN CONSTRUCTION TECHNOLOGY HOLOGRAPHIC PROJECTION

The utility model relates to a virtual simulation device based on city construction technology holographic projection, including the show case, the slide rail is installed to show case outer wall one side, and slide rail one side sliding connection has the slide bar, slide bar outer wall one side fixedly connected with magnet, and slide bar outer wall opposite side veneer is connected with sealed black cloth. The utility model discloses a slide plate has been set up, the slide plate can drive transparent refraction board through second spout and connecting rod and carry out lateral motion on equipment slot, when anticlockwise rotation slide plate, transparent refraction board will draw close to the centre of a circle of equipment slot up end, the user can insert electronic equipment into equipment slot, distance between the transparent refraction board of four groups is more close, just can form images to the electronic equipment of littleer screen, for example, the cell-phone, interval when between the transparent refraction board of four groups is big more, just can form images to the electronic equipment of bigger screen, for example, it is dull and stereotyped, thereby the holistic suitability of device has been improved.



CLAIM 1. The utility model provides a virtual simulation device based on urban construction technology holographic projection, includes show case (1), its characterized in that: the device is characterized in that a sliding rail (2) is installed on one side of the outer wall of the display box (1), a sliding rod (3) is connected to one side of the sliding rail (2) in a sliding mode, a magnet (301) is fixedly connected to one side of the outer wall of the sliding rod (3), a sealing black cloth (4) is connected to the other side of the outer wall of the sliding rod (3) in a gluing mode, perspective glass (5) is installed in the middle of the display box (1), an equipment slot (6) is formed in one side of the outer wall of the display box (1), a high-frequency vibrator (7) is installed at the upper end of the outer wall of the equipment slot (6), a first sliding chute (601) is formed in the upper end of the outer wall of the equipment slot (6), a sliding block (8) is connected to the inner wall of the first sliding chute (601) in a sliding mode, a transparent refraction plate (9) is fixedly, and second spout (1101) have been seted up to sliding tray (11) inner wall, sliding tray (11) outer wall one side fixedly connected with handle (1102), show case (1) fixedly connected with flexible pole (12), and projector (13) are installed to the flexible pole (12) other end.

N7876

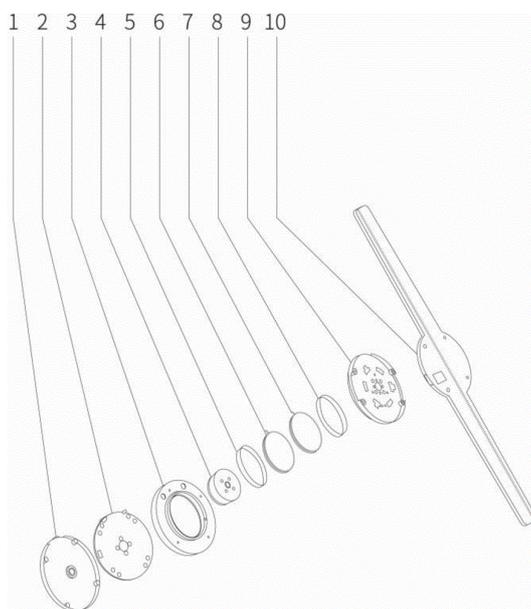
CN213400402U

Priority Date: 09/10/2020

SHENZHEN JIWOKOS TECHNOLOGY

LIGHT AND THIN HOLOGRAPHIC ROTARY DISPLAY DEVICE

The utility model discloses a light and thin holographic rotary display device, which comprises a device body, wherein the device body consists of a fixed component and a rotating component, the fixed component comprises a shell fixing base, a motor driving plate protective shell, a brushless driving motor, a wireless power supply transmitting end magnetism isolating sheet and a wireless power supply transmitting end coil, the rotating component comprises a wireless power supply receiving end coil, a wireless power supply receiving end magnetism isolating sheet, a rotating part main control lamp plate fixing member and a main control lamp plate, the brushless driving motor comprises a stator part and a rotor part, the utility model realizes the nested assembly of the components by optimizing the structural components, simplifying the components and the circuit structure, saving electronic components and reducing complex components on the premise of realizing the holographic rotary display function, and the side thickness of the optimized holographic rotary display device is only 3cm, far beyond prior art holographic rotary display devices.



CLAIM 1. The utility model provides a frivolous holographic rotatory display device, includes the equipment body, its characterized in that: the equipment body comprises fixed subassembly (11) and rotating part subassembly (12), fixed subassembly (11) include shell unable adjustment base (1), motor drive plate (2), motor drive plate protective housing (3), brushless driving motor (4), wireless power supply transmitting terminal magnetism isolating sheet (5) and wireless power supply transmitting terminal coil (6), rotating part subassembly (12) include wireless power supply receiving terminal coil (7), wireless power supply receiving terminal magnetism isolating sheet (8), rotating part main control lamp plate mounting (9) and main control lamp plate (10), brushless driving motor (4) include stator part and rotor part, the hollow department in the middle of motor drive plate (2) is fixed to the stator part, rotating part subassembly (12) is connected to the rotor part, motor drive plate (2) are high strength PCB circuit board, motor drive plate (2) include power and protection circuit, motor drive plate (2) are including power and protection circuit, The wireless power supply transmission device comprises a single chip microcomputer, a brushless motor driver, a wireless power supply transmitting circuit, an infrared positioning module and an infrared communication conditioning circuit, wherein a wireless power supply transmitting end coil (6) is of a circular ring type hollow structure, the wireless power supply transmitting end coil (6) is connected with the wireless power supply transmitting circuit of a motor driving plate (2), and a wireless power supply transmitting end magnetism isolating sheet (5) is attached to the outer ring wall of the wireless power supply transmitting end coil (6).

N7877

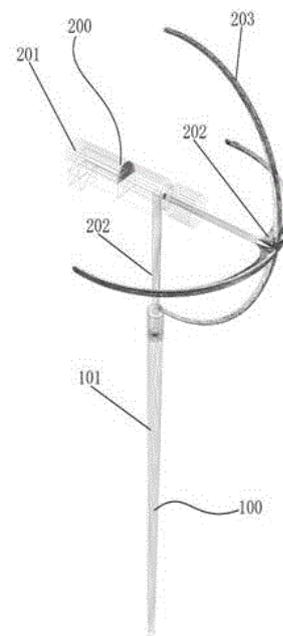
CN213399090U

SHENZHEN FRIDA LCD

Priority Date: 27/10/2020

3D HOLOGRAPHIC HEMISPHERICAL FAN SCREEN

The utility model discloses a holographic hemisphere face fan screen of 3D, include: the support column, the top of support column is provided with a fan and shields the body, the fan screen body includes: the LED lamp comprises a driving motor arranged at the top of a supporting column, a rotating block arranged at an output shaft of the driving motor, and a plurality of semicircular lamp strips arranged on the rotating block, wherein a plurality of LED lamp beads are arranged on one surfaces of the semicircular lamp strips, which are far away from the driving motor, and the LED lamp beads are arranged into a semicircle; the semicircular lamp strip deviates from the driving motor and is arranged in a protruding mode, and the top point of the semicircular lamp strip is located in the middle of the rotating block. The utility model discloses a semi-circular lamp strip is under the pivoted condition, and the track point of these LED lamp pearl strokes is located different planes, and the picture that consequently its demonstration shows has three-dimensional nature more, and display effect is better.



CLAIM 1. The utility model provides a 3D holographic hemisphere face fan screen which characterized in that includes: the support column, the top of support column is provided with a fan and shields the body, the fan screen body includes: the LED lamp comprises a driving motor arranged at the top of a supporting column, a rotating block arranged at an output shaft of the driving motor, and a plurality of semicircular lamp strips arranged on the rotating block, wherein a plurality of LED lamp beads are arranged on one surfaces of the semicircular lamp strips, which are far away from the driving motor, and the LED lamp beads are arranged into a semicircle; the semicircular lamp strip deviates from the driving motor and is arranged in a protruding mode, and the top point of the semicircular lamp strip is located in the middle of the rotating block.

N7878

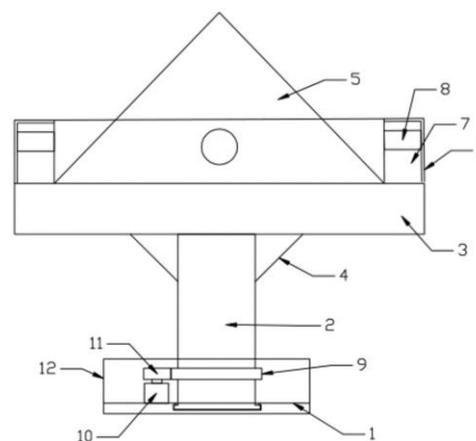
CN213338335U

XIAMEN FENGYUN INTELLIGENT SPACE CONSTRUCTION

Priority Date: 26/11/2020

FULL-VIEW HOLOGRAPHIC PROJECTION DISPLAY INSTRUMENT

The utility model discloses a full visual angle holographic projection display instrument rotates above the base to be connected and is equipped with the stand, be equipped with the brace table above the stand, four side departments all are equipped with holographic projection screen above the brace table, holographic projection screen free end intersects in a bit, the contained angle between two liang of relative sides of holographic projection screen is established to ninety degrees, and the contained angle is 45 degrees between holographic projection screen projection point and the holographic projection screen, and the projection image then slightly upper end tilt reflection, and the motor can drive the stand then drive the rotation of holographic projection screen and holographic projection appearance, and the video in the holographic projection appearance can be established to different contents, perhaps sets up to the video that links up, and the video is broadcast to the rotation type, improves the interest of show.



CLAIM 1. The utility model provides a holographic projection display instrument of full angle of view, includes base (1), its characterized in that: an upright post (2) is rotatably connected on the base (1), a supporting platform (3) is arranged on the upright post (2), the four sides of the upper surface of the support table (3) are provided with holographic projection screens (5), the free ends of the holographic projection screens (5) are intersected at one point, the included angle between every two opposite side surfaces of the holographic projection screen (5) is set to be ninety degrees, the four side edges on the upper surface of the support table (3) are respectively and vertically provided with a fixing plate (6), grooves (7) are arranged on the inner side surfaces of the fixing plates (6), holographic projectors (8) are vertically arranged on the inner bottom surfaces of the grooves (7), a first gear (9) is sleeved outside the upright post (2), a motor (10) is arranged on the base (1), the output end of the motor (10) is sleeved with a second gear (11) meshed with the first gear (9), and a loudspeaker is arranged on the support table (3).

N7879

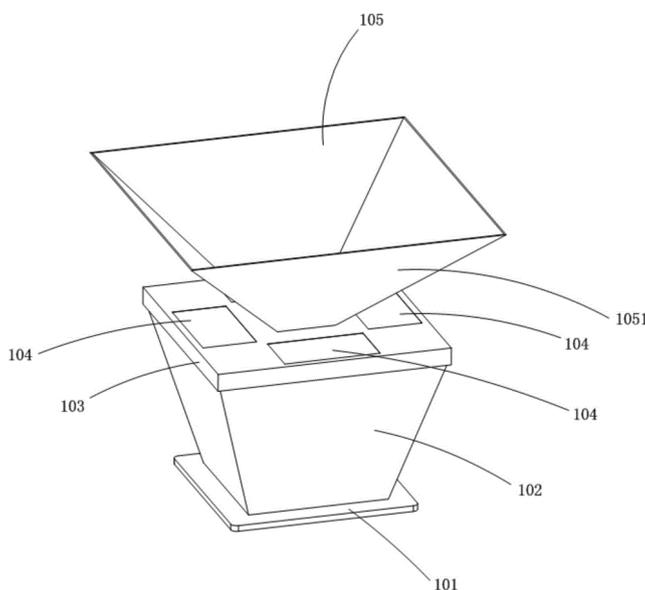
CN213338334U

Priority Date: 17/11/2020

SHENZHEN DUOWEI XINCHENG DIGIT DISPLAY TECHNOLOGY

HOLOGRAPHIC STEREO IMAGE DISPLAY CABINET

The utility model relates to a digital exhibition hall technical field discloses a holographic three-dimensional image show cupboard, the on-line screen storage device comprises a base, the cabinet body, the upper cover, display screen module and transparent four-sided cone of falling, the vertical setting of the cabinet body is on the base, the upper end setting of the cabinet body is located to the upper cover lid, transparent four-sided cone of falling has four high printing opacity mirror surfaces, transparent four-sided cone's lower end wall is the planar structure setting, fixed connection can be dismantled with the upper end wall of upper cover to transparent four-sided cone's lower end wall, display screen module is provided with four, the display screen module is relative respectively inlays the front and back and the left and right sides of locating the upper end wall of upper cover, and the display screen module is located the below setting of high printing opacity. The technical scheme of the utility model can form the stereoscopic image that has true dimension space in the centre of transparent reverse tetrahedron cone, effectively improve the old science and technology of exhibition and feel, attract spectator's eyeball more easily, help promoting brand and product grade, the practicality is strong.



CLAIM 1. The utility model provides a holographic stereoscopic image show cupboard, its characterized in that, includes base, the cabinet body, upper cover, display screen module and transparent four-sided cone of falling, the cabinet body vertical set up in on the base, the upper cover lid is located the upper end setting of the cabinet body, transparent four-sided cone of falling has four high printing opacity mirror surfaces, transparent four-sided cone's lower end wall is the planar structure setting, transparent four-sided cone's lower end wall with fixed connection can be dismantled to the upper end wall of upper cover, the display screen module is provided with four, the display screen module is relative respectively inlays and locates around the upper end wall of upper cover and the left and right sides, just the display screen module does not lie in the below setting of high printing opacity mirror surface.

N7880

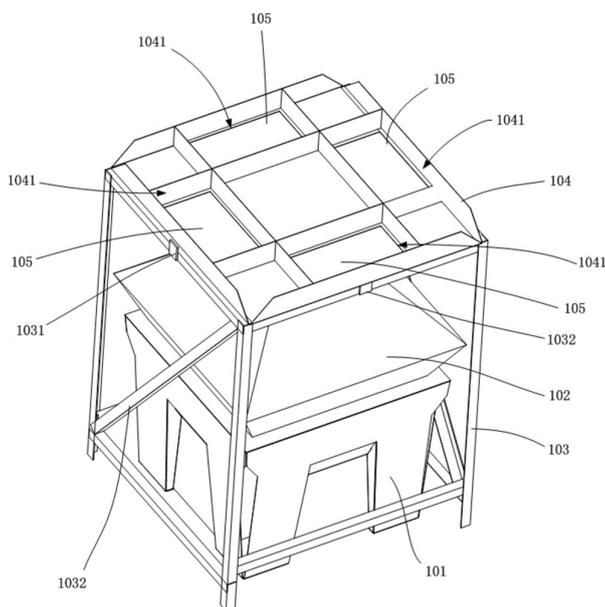
CN213338333U

Priority Date: 16/11/2020

SHENZHEN DUOWEI XINCHENG DIGIT DISPLAY TECHNOLOGY

3D HOLOGRAPHIC PROJECTION DISPLAY DEVICE FOR DIGITAL EXHIBITION HALL

The utility model relates to a digital exhibition hall technical field discloses a holographic projection display device of 3D for digital exhibition hall, the on-line screen storage device comprises a base, transparent four sides cone, braced frame, upper cover and the holographic liquid crystal display of 3D, braced frame is the rectangle structure setting, base and transparent four sides cone all set up in braced frame, transparent four sides cone sets up on the base, upper cover detachable sets up in braced frame's top, and transparent four sides cone is located the below of upper cover, both sides and the left and right sides are concave respectively and are equipped with a projection groove around the upper cover, projection groove is located the top of four conical surfaces of transparent four sides cone respectively, and the holographic liquid crystal display of 3D inlays respectively to locate and throws the inslot and set up. The technical scheme of the utility model can present the stereovision effect that need not to wear 3D glasses, and the show picture is clear lifelike, and the third dimension is strong, effectively improves the old science and technology of exhibition and feels, attracts spectator's eyeball more easily, and the practicality is strong.



CLAIM 1. The utility model provides a holographic projection display device of 3D for digital exhibition hall, a serial communication port, including base, transparent four sides cone, braced frame, upper cover and the holographic liquid crystal display of 3D, braced frame is the rectangle structure setting, base and transparent four sides cone all set up in the braced frame, transparent four sides cone set up in on the base, upper cover detachable set up in braced frame's top, just transparent four sides cone is located the below of upper cover, both sides and the left and right sides concave relative respectively around the upper cover be equipped with one with the projection tank of the holographic liquid crystal display looks adaptation of 3D, the projection tank is located respectively the top of four conical surfaces of transparent four sides cone, just the holographic liquid crystal display of 3D inlays respectively to be located set up in the projection tank.

N7881

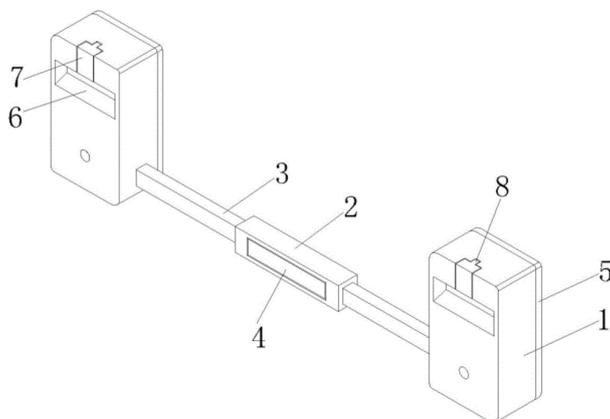
CN213338299U

Priority Date: 10/10/2020

QUAN YIMING

HOLOGRAPHIC IMAGING NAKED EYE 3D PROJECTION INTERACTION DEVICE

The utility model discloses a holographic formation of image bore hole 3D projection is mutual device, including mutual projecting apparatus body, dead lever and extension rod, mutual projecting apparatus body symmetry is provided with two sets of fly, and is two sets of mutual projecting apparatus body all is rectangle box form structure, and is two sets of mutual projecting apparatus body side bottom all is provided with power button, and is two sets of the rectangle jack has all been seted up to the relative side bottom of mutual projecting apparatus body, the dead lever is horizontal setting between two sets of these mutual projecting apparatus bodies, the inside installation cavity of having all seted up in dead lever both ends, the extension rod symmetry is provided with two sets of fly, and is two sets of the extension rod runs through respectively to in two sets of installation cavities, and is two sets of all back of the body is provided with electric putter in the installation. This mutual device of holographic formation of image bore hole 3D projection on the basis that makes things convenient for the projection to use, not only has the function of spacing, and is convenient for neatly place, prevents the skew, improves projected parallel and level degree.



CLAIM 1. The utility model provides a mutual device of holographic formation of image bore hole 3D projection, includes mutual projecting apparatus body (1), dead lever (2) and extension rod (3), its characterized in that: two groups of interactive projector bodies (1) are symmetrically arranged, and the two groups of interactive projector bodies (1) are both in a rectangular box-shaped structure; a power button is arranged at the bottom of one side face of each of the two groups of interactive projector bodies (1), rectangular jacks (14) are arranged at the bottom of the opposite side face of each of the two groups of interactive projector bodies (1), the fixing rod (2) is horizontally arranged between the two groups of interactive projector bodies (1), mounting cavities (9) are arranged in the two ends of the fixing rod (2), two groups of extension rods (3) are symmetrically arranged, the two groups of extension rods (3) respectively penetrate through the two groups of mounting cavities (9), electric push rods (10) are arranged in the two groups of mounting cavities (9) in a back-to-back manner, a limiting disc (11) is welded at the pushing end of each electric push rod (10), the other side face of each limiting disc (11) is welded with the corresponding extension rod (3), and the other ends of the two groups of extension rods (3) respectively extend into the two groups of rectangular jacks (14), and a maintenance window (4) is clamped on one side surface of the fixed rod (2).

N7882

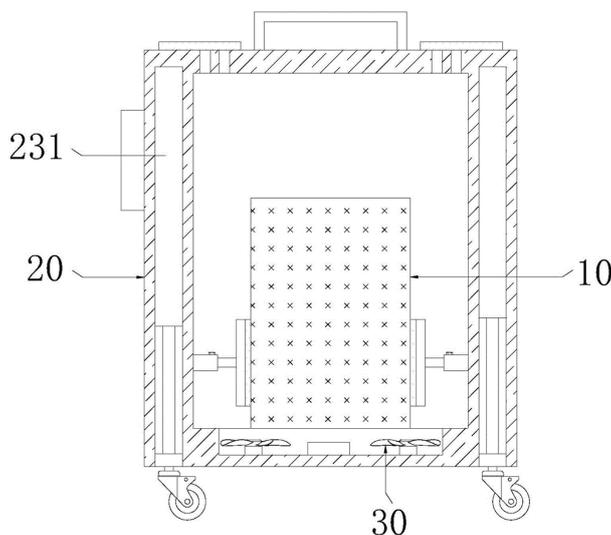
CN213333499U

Priority Date: 04/09/2020

LI YAO

VISUAL THREE-DIMENSIONAL HOLOGRAPHIC PROJECTION SYSTEM

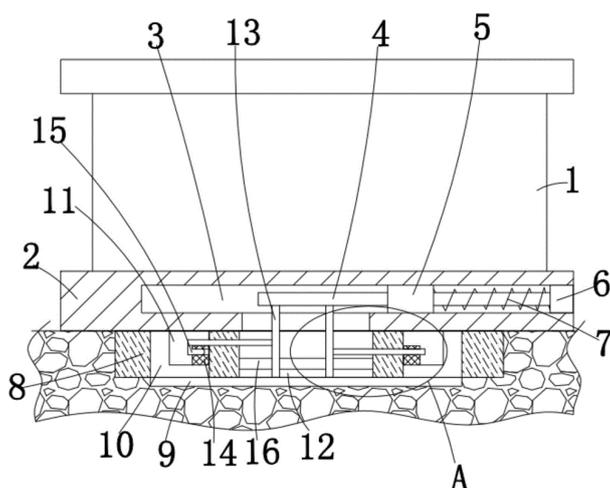
The utility model provides a visual three-dimensional holographic projection system belongs to holographic projection system technical field. The visual three-dimensional holographic projection system comprises a holographic projector body and a projector storage assembly. Projector storage assembly includes box spare and supports tight piece and adjusts the moving member, box spare includes shell and installation cavity, the installation cavity is equipped with two, two the installation cavity is seted up respectively shell both sides wall, holographic projector body is located inside the shell, it all establishes to two to support the piece and adjust the moving member, it all includes electric putter and rectangular plate to adjust the moving member, electric putter all is connected to the correspondence the installation cavity. The utility model discloses during the use, projector storage assembly not only makes things convenient for the stable removal of holographic projector body to carry, can also reduce the space area occupied that the structure was accomodate to holographic projector body when need not carrying.



CLAIM 1. A visual stereo holographic projection system is characterized by comprising A holographic projector body (10); the projector accommodating component (20) comprises a box body (210), a resisting part (220) and an adjusting moving part (230), wherein the box body (210) comprises a shell (211) and an installation cavity (212), the installation cavity (212) is provided with two, the two installation cavities (212) are respectively arranged on two side walls of the shell (211), the holographic projector body (10) is positioned in the shell (211), the resisting part (220) and the adjusting moving part (230) are respectively provided with two, the two resisting parts (220) respectively comprise a sleeve (221), a sleeve rod (222) and a locking bolt (223), the two sleeves (221) are respectively connected to two sides of the inner wall of the shell (211), the two sleeve rods (222) are respectively sleeved in the corresponding sleeves (221), and the two locking bolts (223) are respectively connected to the corresponding sleeves (221), threaded holes (224) matched with the locking bolts (223) are formed in the two sleeve rods (222) at equal intervals, and the outer ends of the two sleeve rods (222) are connected with abutting plates (225); two adjust moving member (230) and all include electric putter (231) and rectangular plate (232), two electric putter (231) all are connected to the correspondence top in installation cavity (212), two rectangular plate (232) activity respectively accomodate to corresponding in installation cavity (212), and two rectangular plate (232) all with correspond electric putter (231) are connected, every rectangular plate (232) bottom all is connected with from locking-type universal wheel (233) in pairs.

INTERACTIVE HOLOGRAPHIC PROJECTION EQUIPMENT IN REPUTATION SCENIC SPOT

The utility model discloses an interactive holographic projection equipment in reputation electric scenic spot, including holographic projection equipment body, the bottom fixed mounting of holographic projection equipment body has the mount pad, the bottom fixed mounting of mount pad has the fixing base, and the bottom movable contact of fixing base has the dress to inlay at subaerial bottom plate, and the equal fixed mounting in top both sides of bottom plate has L shape kelly, and first rectangular hole has all been seted up to the bottom both sides of fixing base, and in the top of L shape kelly extended to the first rectangular hole that corresponds, the rectangular channel has been seted up on the right side of mount pad, and fixed mounting has the uide bushing between the top inner wall of rectangular channel and the bottom inner wall, and the slip cap is equipped with the push rod in the uid. The utility model relates to a rationally, be convenient for realize the dismounting operation of holographic projection equipment body fast through the mode of simple push-and-pull, need not demolish the bolt one by one with the help of the instrument, labour saving and time saving improves work efficiency, is favorable to the use.



CLAIM 1. An interactive holographic projection device for an acousto-optic and electro-optical scenic spot comprises a holographic projection device body (1), wherein a mounting seat (2) is fixedly mounted at the bottom of the holographic projection device body (1), and is characterized in that a fixing seat (8) is fixedly mounted at the bottom of the mounting seat (2), a bottom plate (9) embedded on the ground is movably contacted with the bottom of the fixing seat (8), L-shaped clamping rods (10) are fixedly mounted on two sides of the top of the bottom plate (9), first rectangular holes (11) are formed in two sides of the bottom of the fixing seat (8), the top ends of the L-shaped clamping rods (10) extend into corresponding first rectangular holes (11), a rectangular groove (3) is formed in the right side of the mounting seat (2), a guide sleeve (5) is fixedly mounted between the inner wall of the top of the rectangular groove (3) and the inner wall of the bottom, and a push rod (4) is, a push block (6) is fixedly arranged at the right end of the push rod (4), the right side of the push block (6) is flush with the right side of the mounting seat (2), the same spring (7) is fixedly arranged between the left side of the push block (6) and the right side of the guide sleeve (5), the spring (7) is movably sleeved on the push rod (4), a mounting hole (12) is formed in the top of the fixing seat (8), the mounting hole (12) is positioned between the two first rectangular holes (11), a positioning rod (16) is fixedly arranged between the inner walls of the two sides of the mounting hole (12), two moving rods (13) are slidably sleeved on the positioning rod (16), the top ends of the moving rods (13) extend into the rectangular grooves (3) and are fixedly connected with the bottom of the push rod (4), rectangular rods (17) are fixedly arranged on the sides, away from each other, one ends, away from each other, of the two rectangular rods (17) extend into the corresponding first rectangular holes (11) respectively, the clamping sleeve (14) is fixedly installed on the inner wall of the bottom of the L-shaped clamping rod (10), the L-shaped inserted rod (15) is fixedly installed at the left end of the left rectangular rod (17) in the two rectangular rods (17), the clamping sleeve (14) on the left side in the two clamping sleeves (14) is movably sleeved on the L-shaped inserted rod (15), and the clamping sleeve (14) on the right side is movably sleeved on the rectangular rod (17) on the right side.

N7884

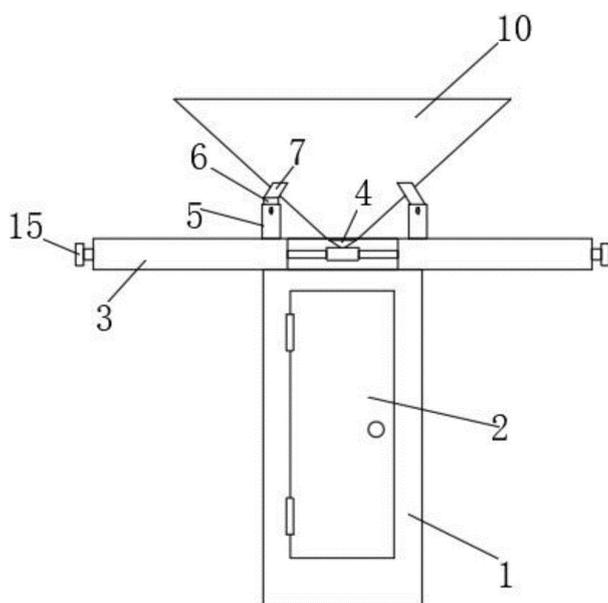
CN213303601U

Priority Date: 12/11/2020

SHIJIAZHANG JIANHAO TECHNOLOGY

HOLOGRAPHIC PROJECTION EQUIPMENT OF ANIMATION DESIGN GAME MODEL

The utility model discloses a holographic projection device of animation design game model, which comprises a display cabinet and a clamping device, wherein the front end outer surface of the display cabinet is provided with an opening and closing door, the upper end outer surface of the display cabinet is fixedly connected with a display platform near the central position, the upper end outer surface of the display platform is provided with a glass cover near the central position, the front end outer surface of the display platform is provided with a projection device near the central position, the upper end outer surface of the display platform is provided with a second chute near the left side, the inside of the second chute is connected with the clamping device in a sliding way, the front end outer surface of the second chute is provided with a first chute, the device can display product models with different sizes by replacing glass covers with different sizes, thereby improving the practicability of the device, and simultaneously can clamp glass covers with different sizes, therefore, the stability of the device is improved, the falling caused by collision is prevented, and the safety of the device is improved.



CLAIM 1. A holographic projection equipment of animation design game model, includes show cupboard (1), its characterized in that: the outer surface of the front end of the display cabinet (1) is provided with an opening and closing door (2), the outer surface of the upper end of the display cabinet (1) is fixedly connected with a display platform (3) close to the central position, the outer surface of the upper end of the display platform (3) is provided with a glass cover (10) close to the central position, the outer surface of the front end of the display platform (3) is provided with a projection device (4) close to the central position, the outer surface of the upper end of the display platform (3) is provided with a second sliding chute (16) close to the left side, the inside of the second sliding chute (16) is slidably connected with a clamping device (5), the outer surface of the front end of the second sliding chute (16) is provided with a first sliding chute (13), the inside of the first sliding chute (13) is slidably connected with a first rack (14), and the; the clamping device (5) comprises a telescopic block (6), a clamping plate (7), a rotating shaft (8), a gear (9), a threaded hole (11) and a threaded rod (12); gear (9) are connected for cup jointing with pivot (8), flexible piece (6) set up in the inside of clamping device (5), and clamping device (5) and flexible piece (6) match each other, the upper end surface fixed connection of flexible piece (6) has splint (7), the front end surface of clamping device (5) is close to upper end position set up threaded hole (11), and threaded hole (11) internal thread is connected with threaded rod (12), and threaded rod (12) run through into the inside one end of threaded hole (11) and support to the surface at flexible piece (6).

N7885

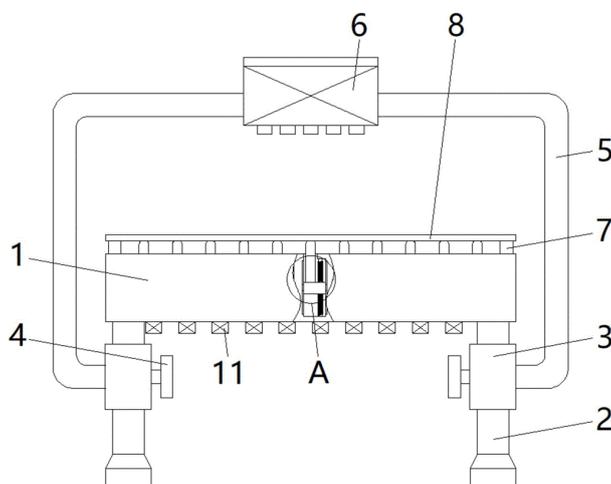
CN213303454U

Priority Date: 02/11/2020

SHANGHAI UNIVERSITY OF ENGINEERING SCIENCE

INTELLIGENT GEOGRAPHIC INFORMATION EXHIBITION STAND BASED ON HOLOGRAPHIC PROJECTION TECHNOLOGY

The utility model relates to a holographic projection technical field just discloses an intelligence geographic information stand based on holographic projection technique, comprises a workbench, workstation bottom both sides fixedly connected with support column, the sleeve has been cup jointed to the outer wall of support column, telescopic outer wall fixedly connected with mounting bracket, the top fixedly connected with full system projector of mounting bracket. The operation of control motor can make the stand rise or descend, because the top of stand is connected with the elastic projection cloth, so can make the elastic projection cloth protruding or sunken when the stand rises or descends to simulate actual topography, the bandwagon effect is better, no longer restricts the two-dimensional show, and spectator can the information such as the topography and geomorphic appearance, vegetation condition and building distribution of omnidirectional understanding this place, and the bandwagon effect is outstanding, the utility model relates to a novelty, simple structure, easy operation has that the bandwagon effect is good, makes things convenient for spectator to observe the advantage.



CLAIM 1. The utility model provides an intelligence geographic information stand based on holographic projection technique, includes workstation (1), its characterized in that: two sides of the bottom of the workbench (1) are fixedly connected with supporting columns (2), the outer wall of each supporting column (2) is sleeved with a sleeve (3), the outer wall of each sleeve (3) is fixedly connected with a mounting frame (5), and the top end of each mounting frame (5) is fixedly connected with a full-length projector (6); the novel workbench is characterized in that a cavity (9) is formed in the workbench (1), a lead screw (10) is movably connected to the inner wall of the cavity (9), a screw nut (12) is connected to the outer wall of the lead screw (10) in a threaded mode, and an upright post (15) is fixedly connected to the top of the screw nut (12).

N7886

CN213302771U

Priority Date: 03/11/2020

HEBEI UNIVERSITY OF TECHNOLOGY

INDOOR DESIGN SYSTEM CAPABLE OF REALIZING HOLOGRAPHIC PROJECTION DISPLAY

The utility model provides an indoor design system capable of displaying by holographic projection, belonging to the technical field of design systems and aiming at solving the problem that the current indoor design is mostly planar display and has poor effect; the device comprises a processor module, and a data access unit, a display unit, a memory module, a data generation unit, a scaling module and a controller module which are electrically connected with the processor module; the utility model provides a design can realize the three-dimensional holographic effect show of indoor design scheme, and more vivid show directly perceived gives the customer, promotes customer's experience and feels, improves customer and designer's communication efficiency, reduces the communication cost.

N7887

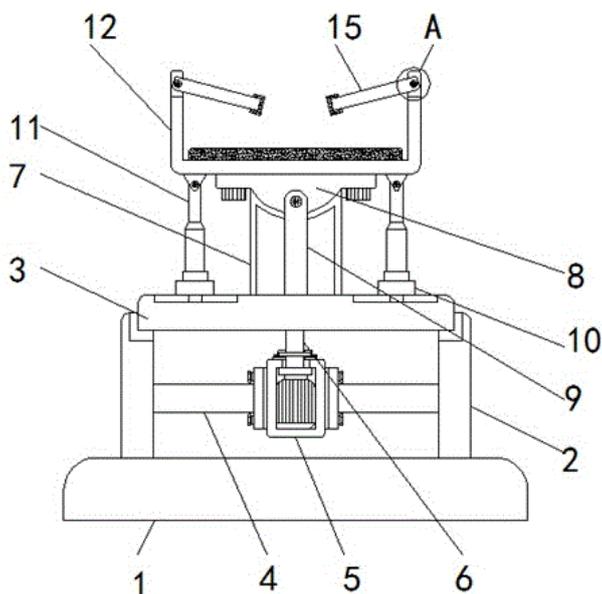
CN213282335U

Priority Date: 01/08/2020

CHANGYUAN TEFA TECHNOLOGY

3D HOLOGRAPHIC DISPLAY CABINET

The utility model relates to a show cupboard technical field just discloses a 3D holographically exhibits cupboard, including mounting substrate, mounting substrate's top fixed mounting has spacing cylinder, spacing cylindrical top swing joint has the connecting plate, spacing cylindrical internal surface fixed mounting has the fixed bolster, the inside fixed mounting of fixed bolster has the motor, the output shaft department fixed mounting of motor has the axis of rotation with connecting plate fixed connection, the top fixed mounting of connecting plate has fixed frame, the top swing joint of fixed frame has the movable block, the top fixed mounting of connecting plate has quantity to be two and is located the fixed plate of the front and back surface of fixed frame respectively. This holographic show cupboard of 3D, through setting up motor and electric putter, when the user is using this show cupboard, the user at first places the inner chamber diapire department at the show cupboard with show article to make this show cupboard conveniently show the product comprehensively, made things convenient for the user to use.



CLAIM 1. A 3D holographic display cabinet, includes mounting substrate (1), its characterized in that: the top fixed mounting of mounting substrate (1) has spacing cylinder (2), the top swing joint of spacing cylinder (2) has connecting plate (3), the internal fixed surface of spacing cylinder (2) installs fixed bolster (4), the inside fixed mounting of fixed bolster (4) has motor (5), the output shaft department fixed mounting of motor (5) has axis of rotation (6) with connecting plate (3) fixed connection, the top fixed mounting of connecting plate (3) has fixed frame (7), the top swing joint of fixed frame (7) has movable block (8), the top fixed mounting of connecting plate (3) has fixed plate (9) that quantity is two and be located the front and back surface of fixed frame (7) respectively, the top sliding connection of connecting plate (3) has sliding block (10) that quantity is two, the top fixed mounting of sliding block (10) has electric putter (11), the top fixed mounting of movable block (8) has display cabinet (12) of being connected with two electric putter (11) rotation, mounting groove (13) have been seted up at the top of display cabinet (12), the inside of mounting groove (13) is rotated and is connected with electronic bull stick (14), the outside fixed mounting of electronic bull stick (14) has and compresses tightly frame (15).

N7891

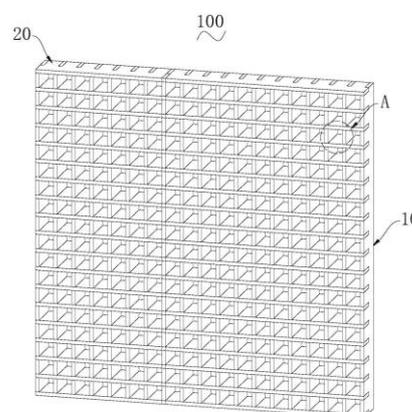
CN112987531

Priority Date: 12/12/2019

ZHEJIANG PRISM HOLOGRAPHIC TECHNOLOGY

HOLOGRAPHIC LENS ASSEMBLY AND DISPLAY SYSTEM HAVING THE SAME

The invention provides a holographic lens assembly, which comprises a first lens assembly and a second lens assembly, wherein the first lens assembly comprises a first lens which is sequentially linearly arrayed along the transverse direction, the second lens assembly comprises a second lens which is sequentially linearly arrayed along the longitudinal direction, both the first lens and the second lens are plated with a reflecting layer, and the first lens and the second lens are mutually vertical and connected to form a reflecting unit which is arranged in a row and column manner and is in a square grid shape. According to the holographic lens assembly provided by the invention, the first lens and the second lens are arranged in a transverse and longitudinal array mode, the first lens and the second lens are vertical to each other, the first lens and the second lens form a plurality of square grid-shaped reflection units, and the reflection units can reflect and project an image source to a space, so that real holographic projection on the space can be realized. The invention also provides a display system which comprises an image source and the holographic lens component. The display system provided by the invention realizes real holographic projection in space by arranging the holographic lens component.



CLAIM 1. The holographic lens assembly (100) is characterized by comprising a first lens assembly (10) and a second lens assembly (20), wherein the first lens assembly (10) comprises a plurality of first lenses (11) in a sequential linear array, the second lens assembly (20) comprises a plurality of second lenses (21) in a sequential linear array, a plurality of reflecting units (30) which are transversely and longitudinally arranged between the first lenses (11) and the second lenses (21) and are arranged in rows and columns are formed, two side surfaces of each of the first lenses (11) and the second lenses (21) are plated with reflecting layers, and the cross sections of the reflecting units (30) are square.

N7893

CN112987529

Priority Date: 28/01/2021

XUZHOU GERUI ENERGY TECHNOLOGY

THREE-DIMENSIONAL PHOTOELECTRIC HOLOGRAPHIC DISPLAY BASED ON TOPOLOGICAL INSULATOR MATERIAL

A three-dimensional electro-optical holographic display based on topological insulator materials comprises light source means, phase modulation means, control means, wherein an array of light sources is aligned with an array of phase modulation regions such that coherent light emitted by each light source is transmitted through a respective one of the phase modulation regions. Receiving, by a control component, an image signal representing a three-dimensional moving image and processing the image signal to generate a light source control signal for a planar light source and a phase modulation control signal for a phase modulation component, whereby the light source control signal determines an amplitude of coherent light emitted by the light source and the phase modulation control signal determines a phase shift of coherent light emitted by the light source and transmitted through the phase modulation region such that a display device emits light corresponding to a motion holographic image representing a three-dimensional moving image. The invention has the characteristics of large visual angle of the image, large image size and high spatial resolution.

CLAIM 1. A three-dimensional photoelectric holographic display based on topological insulator materials is characterized in that: the method comprises the following steps: a light source component comprising a two-dimensional array of independently addressable light sources on the nanoscale in the plane of the array, each light source of the array being a coherent light source whose amplitude can be modulated independently of the other light sources of the array; a phase modulation component comprising a two-dimensional array of independently addressable phase modulation regions of nanometer scale in a plane of the array; wherein the array of light sources is aligned with the array of phase modulation regions such that coherent light emitted by each light source is transmitted through a respective one of the phase modulation regions; and a control component that receives an image signal representing a three-dimensional moving image and processes the image signal to generate a light source control signal for a planar light source and a phase modulation control signal for a phase modulation component, whereby the light source control signal determines an amplitude of coherent light emitted by the light source and the phase modulation control signal determines a phase shift of coherent light emitted by the light source and transmitted through the phase modulation region such that a display device emits light corresponding to a motion holographic image representing a three-dimensional moving image.

N7894

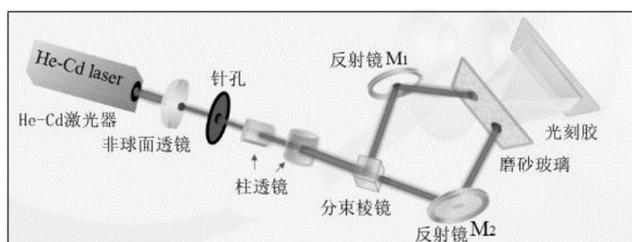
CN112987476

Priority Date: 08/03/2021

CHONGQING INSTITUTE OF GREEN & INTELLIGENT TECHNOLOGY
CHINESE ACADEMY OF SCIENCES

HOLOGRAPHIC SPECKLE SCREEN FOR PROJECTION DISPLAY SYSTEM

The invention relates to a holographic speckle screen for a projection display system, and belongs to the technical field of holographic display. The holographic speckle screen comprises a laser, a lens, a beam splitting prism, a reflector, frosted glass and photoresist; the laser emits a light source, after the light source is filtered by the aspheric lens and the small hole, the two cylindrical lenses are respectively collimated in two directions, the two cylindrical lenses are irradiated on the ground glass through the beam splitting prism at an included angle theta by the plurality of reflectors, and speckles formed by two beams of scattered light of the ground glass on the photoresist are recorded. The invention can control the size of the microstructure of the holographic speckle screen below 20um, and provides high-resolution display effect and energy utilization rate.



CLAIM 1. A holographic speckle screen for a projection display system is characterized by comprising a laser, a lens, a beam splitter prism, a reflector, ground glass and photoresist; the laser emits a light source, after the light source is filtered by the aspheric lens and the small hole, the two cylindrical lenses are respectively collimated in two directions, the two cylindrical lenses are irradiated on the ground glass through the beam splitting prism at an included angle theta by the plurality of reflectors, and speckles formed by two beams of scattered light of the ground glass on the photoresist are recorded.

N7895

CN112987306

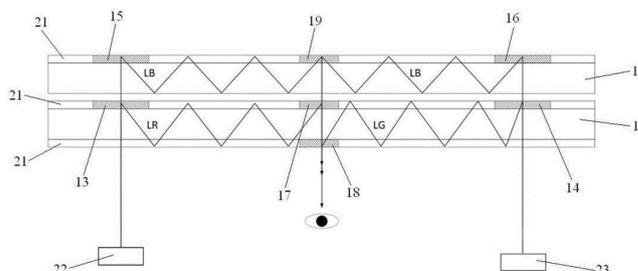
Priority Date: 25/02/2021

BOE TECHNOLOGY - FUZHOU BOE OPTOELECTRONICS
TECHNOLOGY

AUGMENTED REALITY DISPLAY DEVICE, VOLUME HOLOGRAPHIC OPTICAL WAVEGUIDE STRUCTURE AND PREPARATION METHOD THEREOF

The invention provides augmented reality display equipment, a volume holographic optical waveguide structure and a preparation method thereof, wherein the volume holographic optical waveguide structure comprises a plurality of coupling-in gratings, a plurality of coupling-out gratings and an optical waveguide, wherein the plurality of coupling-in gratings are arranged in the optical waveguide and are used for coupling light of different colors into the optical waveguide; the optical waveguide is used for generating total internal reflection of light coupled into the optical waveguide; the coupled-out light gratings are oppositely arranged in the optical waveguide, correspond to the coupled-in light gratings and are used for coupling in light of the corresponding coupled-in light gratings, and the coupled-in light is coaxially and homodromously coupled-out light waveguide. The augmented reality display device, the volume holographic optical waveguide structure and the preparation method thereof provided by the invention can realize the display of color images, improve the display effect and improve the user experience.

CLAIM 1. A volume holographic optical waveguide structure, comprising a plurality of incoupling gratings, a plurality of outcoupling gratings and an optical waveguide, wherein a plurality of incoupling gratings are arranged in the optical waveguide for incoupling light of different colors into the optical waveguide; the optical waveguide is used for generating total internal reflection of light coupled into the optical waveguide; the plurality of coupled-out light gratings are oppositely arranged in the optical waveguide, correspond to the plurality of coupled-in light gratings and are used for coaxially and codirectionally coupling out the light coupled in by the corresponding coupled-in light gratings from the optical waveguide.



N7896

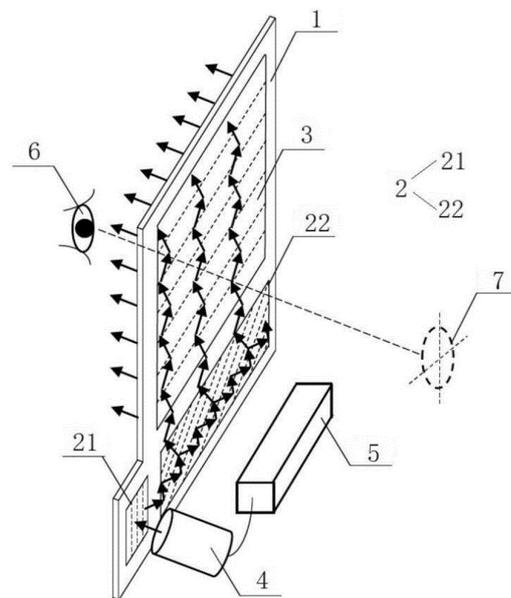
CN112987277

Priority Date: 29/03/2021

AOTIZAN GUANGJING SHANDONG DISPLAY TECHNOLOGY

HOLOGRAPHIC AIMING SYSTEM, LIGHT PATH PREPARATION DEVICE OF DISPLAY ELEMENT OF HOLOGRAPHIC AIMING SYSTEM AND USING METHOD

The invention provides a holographic aiming system, which comprises a waveguide, a light source, a holographic grating and a display element, wherein the holographic grating and the display element are arranged in the waveguide, and the holographic grating comprises a coupling input holographic grating and a folding holographic grating; light emitted by the light source is coupled and input into the holographic grating, the waveguide, the folded holographic grating and the display element to realize two-dimensional pupil expansion; the display element is a coupling-out holographic grating in which hologram information is recorded. The holographic sighting telescope integrates the holographic grating and the display element on the waveguide, and realizes two-dimensional pupil expansion through the holographic grating, the waveguide and the display element, so that the holographic sighting telescope has the characteristics of small-diameter light source input and large-area illumination, and the light rays at the display element are large-area illumination light rays.



CLAIM 1. A holographic aiming system, comprising a waveguide, a light source, a holographic grating and a display element, the holographic grating and the display element are arranged in the waveguide, and the holographic grating comprises a coupling-in holographic grating and a folding holographic grating; the light emitted by the light source is coupled into the holographic grating, the waveguide, the folded holographic grating and the display element to realize two-dimensional pupil expansion; wherein the display element is a coupling-out holographic grating in which hologram information is recorded.

N7899

CN112977469

Priority Date: 12/03/2021

LETV ZHIXIN INFORMATION TECHNOLOGY WUHAN

NAVIGATION DEVICE BASED ON VEHICLE-MOUNTED HOLOGRAPHIC PROJECTION AND CONTROL METHOD THEREOF

The present disclosure provides a navigation device based on vehicle-mounted holographic projection, including: the system comprises a control system, a holographic projector and an image acquisition device; the image acquisition device is used for acquiring a real-time image of a sight line area blocked by a target vehicle part, and the control system is used for processing the real-time image and projecting the processed real-time image on the target area through the holographic projector. In this way, the blind area of the driver's field of vision can be eliminated to some extent, thereby improving the traveling safety of the vehicle.

CLAIM 1. A navigation device based on vehicle-mounted holographic projection is characterized by comprising: control system, holographic projector and image acquisition device The image acquisition device is used for acquiring a real-time image of a sight line area blocked by a target vehicle part, and the control system is used for processing the real-time image and projecting the processed real-time image on the target area through the holographic projector.

N7900

CN112969061

Priority Date: 29/01/2021

SHAANXI HONGXING SHANSHAN NETWORK TECHNOLOGY

RESTAURANT EXPERIENCE SYSTEM BASED ON HOLOGRAPHIC IMAGE TECHNOLOGY

The invention relates to the field of holographic images, in particular to a restaurant experience system based on a holographic image technology. The holographic environment simulation device and the remote controller are connected with the cloud server through wireless transmission equipment, and the holographic environment simulation device is used for displaying 3d naked eye holography of image data for a eater. In this way, the cloud server stores various recorded scenes, wherein the cloud server is connected with the holographic environment simulation device through the wireless transmission device; the remote controller sends a control instruction of a guest so as to control the holographic environment simulation equipment to work according to the guest control instruction; this system is experienced in dining room shows the holographic image that has bore hole 3D effect through holographic environment simulation equipment, and the system is experienced in dining room uses the humanity life as the notion, and will experience the performance with immersive experience and dribble and make full and full, bring brand-new dining experience for the user, effectively improve the comfort level of having a dinner.

CLAIM 1. A restaurant experience system based on holographic image technology is characterized in that: the holographic environment simulation device and the remote controller are connected with the cloud server through wireless transmission equipment, and the holographic environment simulation device is used for displaying 3d naked eye holography of image data for a eater.

N7901

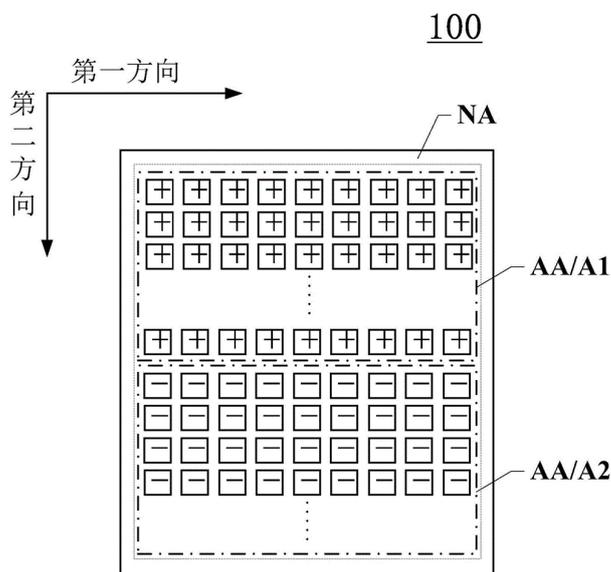
CN112967698

Priority Date: 31/03/2021

TIANMA

LIQUID CRYSTAL PANEL, DRIVING METHOD THEREOF AND HOLOGRAPHIC 3D DISPLAY DEVICE

The invention discloses a liquid crystal panel, a driving method thereof and a holographic 3D display device, and relates to the technical field of display, wherein the liquid crystal panel is provided with a display area and a non-display area, and comprises: the scanning lines extend along the first direction and are arranged along the second direction, the data lines extend along the second direction and are arranged along the first direction, and the first direction is intersected with the second direction; the display panel comprises sub-pixels arranged in an array along a first direction and a second direction, wherein the sub-pixels are positioned in a display area, and each sub-pixel is electrically connected with a scanning line and a data line respectively; the display area comprises a first display area and a second display area which are arranged along a second direction, signals received by the sub-pixels in the first display area through the data lines are of a first polarity, signals received by the sub-pixels in the second display area through the data lines are of a second polarity, and the first polarity and the second polarity are opposite. This is advantageous to avoid alternating amplitudes and phases in the first direction.



CLAIM 1. A liquid crystal panel provided with a display region and a non-display region, comprising: the scanning lines extend along a first direction and are arranged along a second direction, the data lines extend along the second direction and are arranged along the first direction, and the first direction and the second direction are intersected; the sub-pixels are arranged in an array along the first direction and the second direction, are positioned in the display area, and are respectively and electrically connected with one scanning line and one data line; the display area comprises a first display area and a second display area which are arranged along the second direction, signals received by the sub-pixels in the first display area through the data lines are of a first polarity, signals received by the sub-pixels in the second display area through the data lines are of a second polarity, and the first polarity is opposite to the second polarity.

N7902

CN112967402

Priority Date: 02/02/2021

HENAN PINGGAO ELECTRIC - PING GAO - SGCC - STATE GRID CORPORATION OF CHINA

SWITCH EQUIPMENT INTERACTIVE TRAINING SYSTEM BASED ON HOLOGRAPHIC IMAGE

The invention relates to a holographic-image-based switch equipment interactive training system, which comprises a teacher-end holographic image terminal, a student-end holographic image terminal, a switch, a server, action capturing devices matched with the holographic image terminal, 3D glasses and handheld control equipment, wherein the teacher-end holographic image terminal and the student-end holographic image terminal are respectively in communication connection with the switch, the switch is in communication connection with the server, the server is in communication connection with each action capturing device, each action capturing device acquires positioning information of each 3D glass, and the server controls the corresponding holographic image terminal to perform holographic display on switch equipment through the switch according to the information, so that man-machine interaction is realized; and the teacher end holographic image terminal is in control connection with the student end holographic image terminal and is used for controlling and managing the student end holographic image terminal. The training system provided by the invention can be used for intuitively operating the three-dimensional model of the switch equipment in the holographic image terminal in a holographic form, so that the actual operation skill level of a student is effectively improved.

CLAIM 1. Interactive training system of switchgear based on holographic image, its characterized in that includes: the system comprises a teacher-end holographic image terminal, a student-end holographic image terminal, a switch, a server, motion capture devices matched with the holographic image terminals, 3D glasses with positioning devices and handheld control equipment, wherein the teacher-end holographic image terminal and the student-end holographic image terminal are respectively in communication connection with the switch, the switch is in communication connection with the server, the server is in communication connection with the motion capture devices, the motion capture devices are used for acquiring positioning information of the 3D glasses, the server is used for acquiring the positioning information of the motion capture devices, and the corresponding holographic image terminals are controlled by the switch to perform holographic display of a three-dimensional model of the switching equipment, so that man-machine interaction is realized; the teacher end holographic image terminal is connected with the student end holographic image terminal in a control mode and used for controlling and managing the student end holographic image terminal; the server is in communication connection with the handheld control device and used for acquiring a control instruction of a user, controlling corresponding components of the switch device to act according to the control instruction and controlling the student-side holographic image terminal to display 3D actions.

N7905

CN112946989

Priority Date: 11/12/2019

LIU JIAN

THEORETICAL ANALYSIS METHOD FOR HOLOGRAPHIC SPACE STEREOSCOPIC VISION SENSE AND HOLOGRAPHIC IMAGE SHOOTING DISPLAY DEVICE

The invention changes the thinking mode of the 'parallax' of the existing 3D film and television shooting technology, and innovatively changes the thinking mode into the thinking mode of a '5-dimensional space three-dimensional information element group': the space exists in the form of energy, the energy exists in the form of interface, the set of atom action energy lines on the space interface forms a positive triangle energy action line, an inverse triangle energy action line and a straight line energy action line in the holographic space to form a '5-dimensional space three-dimensional information element group', according to the technical characteristics, an angle mathematical set method is adopted for the interface elements to manufacture an imaging interface of the 5-dimensional space three-dimensional information element group, and according to the method, a holographic display device is manufactured; when shooting and displaying, the image video of the 5-dimensional space three-dimensional information imaging element group automatically divides the frequency to enter the left eye and the right eye through the natural physiological attributes of ergonomics, corresponding space images are formed on the left brain and the right brain, the holographic visual effect of the 5-dimensional space three-dimensional information element group of the two eyes is realized according to the information difference, and the holographic image watching is realized.

N7906

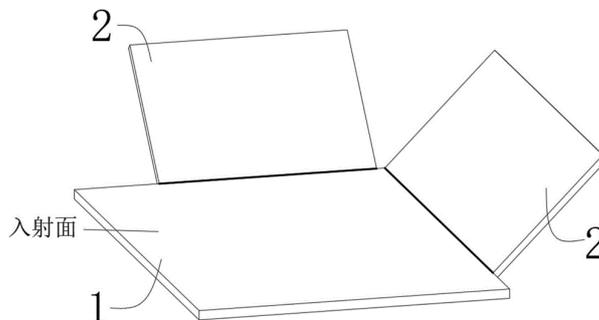
CN112946915

Priority Date: 23/02/2021

JINGMEN CITY DREAM EXPLORATION TECHNOLOGY

REFLECTIVE GEOMETRIC HOLOGRAPHIC SCREEN WITH FIELD ANGLE AND APPLICATION THEREOF

The invention relates to the technical field of optical display, and discloses a reflective geometric holographic screen machine with a field angle and an application thereof, wherein the reflective geometric holographic screen machine comprises a reflective geometric holographic screen, at least one field angle mirror is arranged along the periphery of the edge of the reflective geometric holographic screen, and the field angle mirror is used for reflecting part of light rays exceeding the edge of the reflective geometric holographic screen onto the reflective geometric holographic screen and participating in imaging through optical conversion of the reflective geometric holographic screen; the horizontal projection area of the reflection type geometric holographic screen is S_1 The sum of the horizontal projection areas of all the angle-expanding mirrors is S_2 , S_1 And S_2 The unit is mm^2 And satisfies the following conditions: the invention employs relatively small components This just can realize showing the increase of display window, can also increase the mechanical strength of reflection-type geometric holography screen simultaneously, improve stability.



N7907

CN112946914

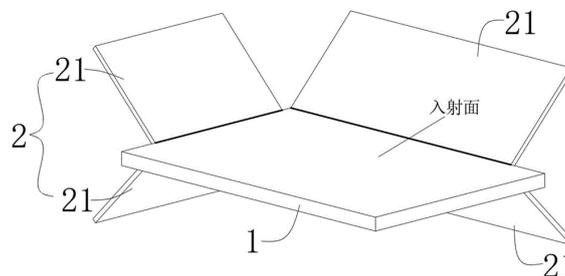
Priority Date: 23/02/2021

JINGMEN CITY DREAM EXPLORATION TECHNOLOGY

TRANSMISSION TYPE GEOMETRIC HOLOGRAPHIC SCREEN WITH FIELD ANGLE AND APPLICATION THEREOF

The invention relates to the technical field of optical display, and discloses a transmission-type geometric holographic screen with an opening angle, which comprises a transmission-type geometric holographic screen, wherein at least one group of opening angle mirror groups is arranged around the edge of the transmission-type geometric holographic screen, and the opening angle mirror groups are used for reflecting part of light rays exceeding the edge of the transmission-type geometric holographic screen onto the transmission-type geometric holographic screen and participate in imaging through optical transformation of the transmission-type geometric holographic screen; each group of field angle lens group consists of a pair of field angle lenses arranged at an angle θ , wherein the angle between one field angle lens and the incident surface of the transmission type geometric holographic screen is α , and the included angle between the other field angle lens and the emergent surface of the transmission type geometric holographic screen is β , so that the requirements are met: α is more than or equal to 90 degrees and less than or equal to 160 degrees, and β is more than or equal to 90 degrees and less than or equal to 160 degrees. The invention can realize the obvious enlargement of the display window with relatively low cost, and simultaneously can increase the mechanical strength of the transmission type geometric holographic screen and improve the stability.

CLAIM 1. A transmission-type geometric holographic screen with an opening angle comprises a transmission-type geometric holographic screen (1), and is characterized in that: at least one group of field angle lens groups (2) are arranged along the periphery of the transmission type geometric holographic screen (1), and the field angle lens groups (2) are used for reflecting part of light rays exceeding the periphery of the transmission type geometric holographic screen (1) onto the transmission type geometric holographic screen (1) and participating in imaging through optical transformation of the transmission type geometric holographic screen (1); each group of field angle lens group (2) consists of a pair of field angle lenses (21) arranged at an angle θ , wherein the angle between one field angle lens (21) and the incident surface of the transmission type geometric holographic screen (1) is α , and the included angle between the other field angle lens (21) and the emergent surface of the transmission type geometric holographic screen (1) is β , so that the requirements are met: α is more than or equal to 90 degrees and less than or equal to 160 degrees, β is more than or equal to 90 degrees and less than or equal to 160 degrees, $\alpha - \beta$ is less than or equal to 5 degrees, and $\alpha - \beta$ represents the absolute value of $\alpha - \beta$.



N7909

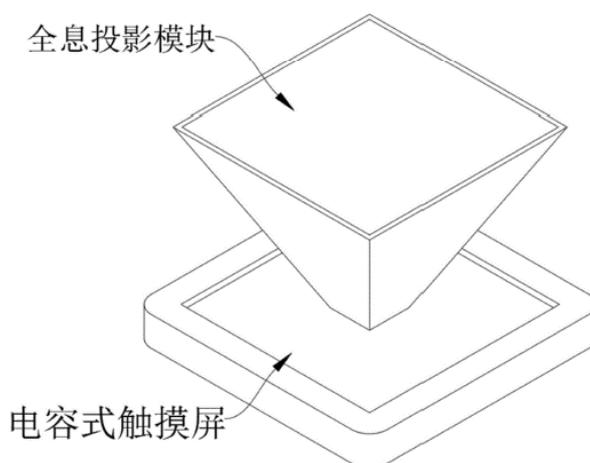
CN112927030

Priority Date: 05/01/2021

YANGZHOU TIANPENG NETWORK TECHNOLOGY

HUMAN-COMPUTER INTERACTIVE INTELLIGENT SHOPPING SERVICE SYSTEM BASED ON HOLOGRAPHIC PROJECTION TECHNOLOGY

The invention discloses a holographic projection technology-based man-machine interactive intelligent shopping service system, and relates to the technical field of shopping. The system comprises a scanning terminal used by a merchant, a shopping terminal used by a shopper and a cloud end used for data storage, wherein the scanning terminal comprises a merchant login module, a scanning module, an information input module, a preview module, an uploading module, a communication module, a money collection module and a 4G or 5G module, and the shopping terminal comprises a shopper login module, a searching module, a downloading module, a display module, a holographic projection module, an adjusting module, a consultation module, an ordering module, an inquiring module and a 4G or 5G module. The invention can enable a shopper to know the information of the commodity in more detail through the matching of all accessories, has smaller volume and is more convenient for the shopper to carry, thereby providing great convenience for the shopper.



CLAIM 1. A human-computer interactive intelligent shopping service system based on holographic projection technology is characterized by comprising a scanning terminal used by a merchant, a shopping terminal used by a shopper and a cloud end used for data storage; the scanning terminal includes: the merchant login module is used for logging in by a merchant; the scanning module is used for scanning the structure, size and color of the commodity so as to conveniently establish a three-dimensional model and derive an image for holographic projection; (ii) a The information input module is used for inputting specific information of the commodity; the previewing module previews the structure, the size, the color and the specific information of the input commodity; the uploading module is used for uploading the information of the commodities; the communication module is used for communicating with a shopper; the payment module is used for receiving the payment paid by the shopper; the shopping terminal includes: the shopper login module is used for logging in by a shopper; the search module is used for searching commodities; the downloading module is used for downloading the data of the cloud end; the display module is used for displaying detailed information of the commodities; the holographic projection module is used for projecting three-dimensional holographic projection of the commodity and displaying the structure, the size and the color; the adjusting module is used for adjusting the three-dimensional holographic projection angle and the local detail zooming of the commodity; the consultation module is used for communicating with the merchant; the ordering module is used for ordering the payment of the shopper; and the query module is used for querying the logistics information of the commodity.

N7912

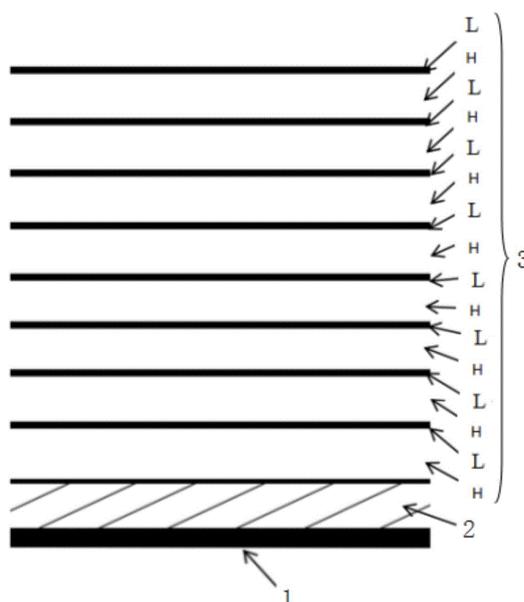
CN112925111

Priority Date: 15/01/2021

EYEPOL POLARIZING TECHNOLOGY

TRANSMISSION TYPE POLARIZATION DIFFRACTION GRATING HOLOGRAPHIC GLASSES LENS AND PREPARATION METHOD THEREOF

The invention discloses a transmission type polarization diffraction grating holographic spectacle lens and a preparation method thereof. The polarization diffraction grating and the periodic oblique angle nano-pillar array super-surface (Metasurface) technology are adopted in the polarization diffraction grating, the defect that parameter adjustment of a traditional polarization diffraction grating only has one degree of freedom is overcome, distribution of grating transmission light is controlled from three degrees of freedom, and therefore the beam splitting/combining function of any light beam is achieved, theoretical beam splitting/combining efficiency reaches 99%, imaging quality is high, processing is easy, cost is low, realization is easy, the grating structure is flexible, diffraction efficiency is high, and grating combination freedom is high. The holographic three-dimensional visual field display device has the characteristics of double-axis pupil expansion, simple and light structure, high yield and the like, solves the problem that a holographic three-dimensional visual field effect can be generated when a plane electronic screen image is watched, and has good application prospect and huge potential.



CLAIM 1. A transmissive polarization diffraction grating holographic eyeglass lens, comprising: the lens comprises a lens substrate and a plurality of coating film layers, wherein the coating film layers are mutually overlapped and formed on one side of the lens substrate; the first layer of the plurality of coating film layers is an antireflection film layer, and the antireflection film layer is provided with a nanoscale polarization diffraction grating with equal groove line width and is used for deflecting an incident light source to form circularly polarized light waves; the second layer of the multiple coating film layers is a periodic oblique angle nano-pillar array super-surface film layer used for converting incident circularly polarized light into axisymmetric polarized light beams and synchronously rotating the polarization plane so as to form a lens effect required by three-dimensional display.

N7913

CN112923217

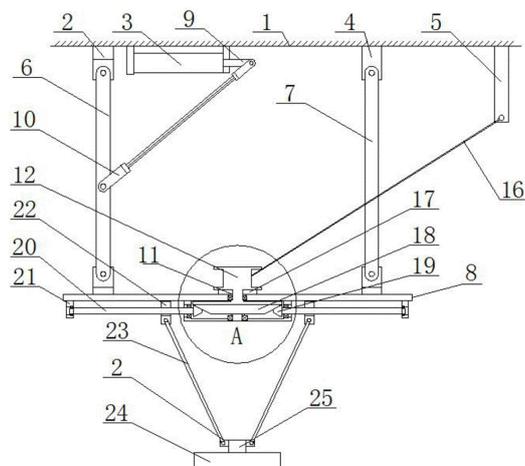
Priority Date: 12/01/2021

JINAN RULIAN ELECTRONIC TECHNOLOGY

EDUCATIONAL SCENE APPLICATION DEVICE AND METHOD BASED ON HOLOGRAPHIC PROJECTION

The invention belongs to the technical field of projection equipment, and particularly relates to an educational scene application device and an educational scene application method based on holographic projection. The device comprises a projection lens, and the device comprises a fixed seat I, an air cylinder, a fixed seat II and a fixed seat III which are sequentially arranged on a ceiling; a support rod I is hinged on the fixing seat I, a support rod II is hinged on the fixing seat II, and a fixing plate is connected between the support rod I and the support rod II; the tail end of a telescopic rod of the air cylinder is hinged with a pull rod, and the other end of the pull rod is hinged with the middle part of the support rod I; a through hole is formed in the middle of the fixing plate, a rotating wheel is embedded in the through hole, and a volute spiral spring is arranged between the rotating wheel and the fixing plate; the rotating wheel is connected with the fixing seat III through a pull rope. The device can be automatically lifted and folded, the projection device is synchronously opened during lifting, the application scene space is saved, the operation is simple, and the device is suitable for popularization in an education scene.

CLAIM 1. An educational scene application device based on holographic projection comprises a projection lens (24) and is characterized by comprising a fixed seat I (2), a cylinder (3), a fixed seat II (4) and a fixed seat III (5) which are sequentially arranged on a ceiling (1); a supporting rod I (6) is hinged on the fixing seat I (2), a supporting rod II (7) is hinged on the fixing seat II (4), and a fixing plate (8) is connected between the supporting rod I (6) and the supporting rod II (7); the tail end of a telescopic rod (9) of the air cylinder (3) is hinged with a pull rod (10), and the other end of the pull rod (10) is hinged with the middle part of the support rod I (6); a through hole (11) is formed in the middle of the fixed plate (8), a rotating wheel (12) is embedded in the through hole (11), and a volute spiral spring (17) is arranged between the rotating wheel (12) and the fixed plate (8); the rotating wheel (12) is connected with the fixed seat III (5) through a pull rope (16).



N7916

CN112904692

Priority Date: 25/01/2021

SHENZHEN MAITERI PHOTOELECTRIC TECHNOLOGY

INTERACTIVE HOLOGRAPHIC PROJECTION SYSTEM

The invention provides an interactive holographic projection system, which comprises a sampling device, a sensing device, an adjusting device, an interactive device, a processing device, a display device and a processor, wherein the sampling device is constructed to analyze a video source and perform self-inspection on the whole system; the sensing device is configured to sense the area and form of the display; the adjusting device is configured to adjust the display position based on the data of the sensing device; the interaction means is configured to detect a motion signal or a trigger signal; the processing device is configured to process a signal for controlling the operation; the display device is configured to display content corresponding to the signal based on the signal of the processing device. The invention is used for limiting the height range of the display area of the display device by adopting a limiting mechanism, namely: the difference in the change in the pitch angle is made by the steering unit of the limiting mechanism, and the display content in the height range is limited based on the difference in height.

CLAIM 1. An interactive holographic projection system, comprising a sampling device, a sensing device, an adjustment device, an interaction device, a processing device, a display device and a processor, wherein the sampling device is configured to resolve a video source and perform self-inspection of the entire system; the sensing device is configured to sense an area and a form of a display; the adjusting device is configured to adjust the display position based on data of the sensing device; the interaction means is configured to detect a motion signal or a trigger signal; the processing device is configured to process a signal controlling an operation; the display device is configured to display content corresponding to the signal based on the signal of the processing device.

N7919

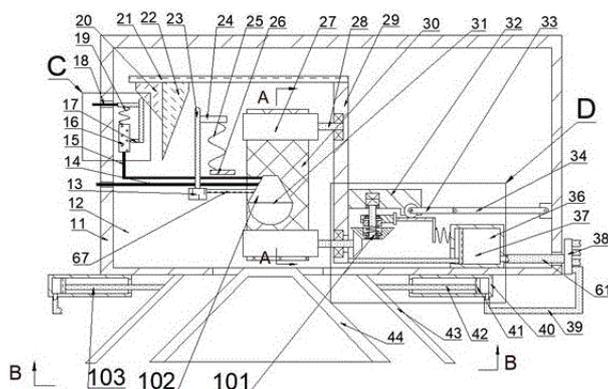
CN112902084

Priority Date: 09/03/2021

XIE YUANLIN

LED INTELLIGENT LAMP WITH HOLOGRAPHIC PROJECTION ADVERTISEMENT FUNCTION AND USE METHOD THEREOF

The invention discloses an LED intelligent lamp with holographic projection advertisement function and a using method thereof, the LED intelligent lamp comprises a shell, an inner cavity with a downward opening is arranged in the shell, a glass tetrahedron is fixedly connected with the opening at the lower side of the inner cavity, a holographic projection mode switching mechanism is arranged in the inner cavity, and an illumination brightness adjusting mechanism positioned at the left side of the holographic projection mode switching mechanism is arranged in the inner cavity. Thereby reducing energy consumption.



CLAIM 1. The utility model provides a Led wisdom lamps and lanterns with holographic projection advertisement function, includes the casing, its characterized in that: an inner cavity with a downward opening is arranged in the shell, a glass tetrahedron is fixedly connected to the opening at the lower side of the inner cavity, a holographic projection mode switching mechanism is arranged in the inner cavity and can realize the switching between an illumination mode and a holographic projection advertisement mode, an illumination brightness adjusting mechanism positioned at the left side of the holographic projection mode switching mechanism is arranged in the inner cavity, a light reflecting mechanism is arranged on the end surface at the lower side of the shell, and both the illumination brightness adjusting mechanism and the light reflecting mechanism can be linked with the holographic projection mode switching mechanism, so that when the holographic projection mode switching mechanism is switched to the holographic projection advertisement mode, the illumination brightness is improved to adapt to the illumination intensity loss when light penetrates through an advertisement projection film, thereby ensuring the brightness and the quality of a holographic projection image, and when the illumination mode is adopted, the illumination brightness adjusting mechanism can reduce the height of the LED lamp and the illumination brightness, the holographic projection mode switching mechanism comprises a transverse moving plate which is connected to the inner wall of the rear side of the inner cavity in a sliding mode, the left end face of the transverse moving plate is connected with two rotating shafts I which are symmetrical front and back in a rotating mode, the rotating shafts I are distributed symmetrically up and down, the rotating shafts I are fixedly connected to rotating drums located on the left side of the transverse moving plate, the advertisement projection film is wound among the four rotating drums, the rotating shafts I on the lower front side are fixedly connected to bevel gears I located on the right side of the transverse moving plate, a supporting plate is fixedly connected to the right end face of the transverse moving plate, and a rotating shaft II extending downwards is connected to the lower end face of the supporting plate in a rotating mode.

N7923

CN112882334

Priority Date: 21/01/2021

ZHANG JIANGUO

HOLOGRAPHIC PROJECTION SYSTEM

The invention discloses a holographic projection system, which aims at the technical defect that the prior art is lack of real-time property because a memory is used for preset playing, can play in real time without limiting the addresses of live-action shooting and projection playing, and can greatly improve the transmission efficiency and reduce the playing delay after being transmitted by adding a 5G cloud server. Aiming at the technical defect that the memory is used for presetting and playing and operability is lacked in the prior art, the system simultaneously collects an AR real scene and a VR real scene, constructs an AR hologram and a VR hologram, and finally can realize the combined projection of the AR hologram and the VR hologram, so that the operability is increased, and the user experience is improved. The system does not need to edit the 3D material image in the background through a professional person, can enjoy the three-dimensional display effect of 5G plus VR plus 3D phantom without wearing any polarized glasses during display, gives visual impact to people, and has strong depth sense.

N7924

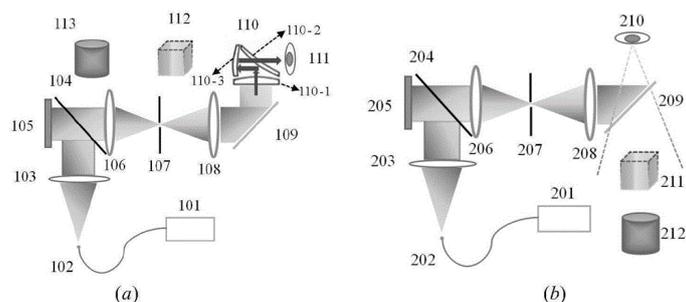
CN112882228

Priority Date: 29/11/2019

BEIHANG UNIVERSITY OF AERONAUTICS & ASTRONAUTICS

COLOR HOLOGRAPHIC NEAR-EYE AR DISPLAY SYSTEM BASED ON WHITE LIGHT ILLUMINATION AND COLOR HOLOGRAPHIC CALCULATION METHOD

The invention discloses a color holographic near-eye AR display system based on white light illumination, which comprises: the device comprises a white light source, a collimating lens, a spatial light modulator, a 4f optical filtering system and an AR eyepiece. Also disclosed is a color hologram calculation method applied to the display system: for the two-dimensional color hologram, after Fourier transformation is respectively carried out on different color components of a color image, effective frequency spectrum information is extracted and converted into a space domain, and the space domain is subjected to interference encoding with corresponding reference light and superposition to obtain the two-dimensional color hologram; and for the three-dimensional color hologram, calculating color projection images of the color three-dimensional object at different angles, convolving and superposing different color components with corresponding point spread functions respectively, and then interfering and superposing the different color components with corresponding reference light respectively to obtain the three-dimensional color hologram. The display system can realize the color holographic near-eye AR display without speckle noise under white light illumination, and has important application value.



CLAIM 1. A color holographic near-eye AR display system based on white light illumination, comprising: light source: for providing illumination light; a collimating lens: the device is used for collimating the illumination light from the light source to form a plane wave; spectroscop: reflecting the portion of the plane wave impinging thereon for illuminating the spatial light modulator; the spatial light modulator: the color hologram is loaded and modulates the plane wave irradiated on the color hologram to generate a modulated color light field; 4f optical filtering system: the color filter is arranged on the back focal plane of the first lens, and is used for filtering a color light field modulated by the spatial light modulator, eliminating the influence of zero-order light, high-order diffracted light and other stray light, and forming a two-dimensional color image or a three-dimensional color image near the back focal plane of the second lens; an AR eyepiece: and imaging the two-dimensional color image or the three-dimensional color image to enable human eyes to see the amplified two-dimensional color image or the three-dimensional color image which is positioned at a distance, and enabling ambient light to enter the human eyes without interference to realize an augmented reality display effect.

N7930

CN112863453

Priority Date: 07/01/2021

TCL CHINA STAR OPTOELECTRONIC TECHNOLOGY

HOLOGRAPHIC DISPLAY METHOD AND HOLOGRAPHIC DISPLAY SYSTEM

The embodiment of the application discloses a holographic display method and a holographic display system, wherein the holographic display method comprises the following steps: acquiring target scene information; recognizing face area information in the target scene information; determining the pupil position in the face region information; calculating a side-view angle between each pixel region and the pupil position inside the display panel, and a driving voltage value of each pixel region under the corresponding side-view angle; applying the driving voltage value to the corresponding pixel region; the holographic display system further comprises a light beam control system, a light guide system, a display and a target scene acquisition system; the embodiment of the application can improve the visual angle of the liquid crystal display panel and ensure that the penetration rate of the liquid crystal display panel is not influenced.

CLAIM 1. A holographic display method, characterized in that the method comprises: s10, acquiring target scene information; s20, recognizing the face region information in the target scene information; s30, determining the pupil position in the face region information; s40, calculating a side-view angle between each pixel region and the pupil position inside the display panel, and a driving voltage value of each pixel region corresponding to the side-view angle; s50, applying the driving voltage value to the corresponding pixel region.

N7932

CN112859564

Priority Date: 05/01/2021

TIANJIN CHUANCHI TECHNOLOGY GROUP

DIGITAL INTELLIGENT HOLOGRAPHIC PROJECTION ONLINE AND OFFLINE EXHIBITION METHOD FOR AUTOMOBILE

The invention provides a digital intelligent holographic projection online and offline exhibition method for an automobile, which comprises an acquisition module, a data analysis processing module, a projection exhibition module and a media player, wherein the acquisition module and the projection exhibition module are used for playing automobile structure and function introduction languages, and the media player is matched with the exhibition of a hologram. The spatial light modulator comprises a human body infrared sensor for identifying the distance of a user from the spatial light modulator. Through with projection exhibition module removes indoor and cooperates live equipment to realize the online exhibition, through with projection exhibition module removes the online exhibition of realizing of lower exhibition of lower line venue. The invention has the advantages that the virtual automobile exhibition is realized, the media player plays the automobile structure and the function introduction language to replace manual explanation, and the high-level screening is carried out on purchasers.

CLAIM 1. The utility model provides a digital intelligent holographic projection online-offline exhibition method of car, which is characterized in that, includes collection module, data analysis processing module, projection exhibition module, data analysis processing module is used for matching and customizing according to the user, projection exhibition module utilizes holographic projection technique and artificial intelligence technique, collection module includes following step: step 1: scanning each structure of the automobile through a scanning device, and establishing a 3D automobile model in unity; step 2: storing the established 3D automobile model, and then reproducing the hologram after processing in unity; and step 3: the obtained holograms are screened according to brands, different holograms are classified after screening, and the classified different types of holograms form a car hologram database of each type in a computer.

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

N7889

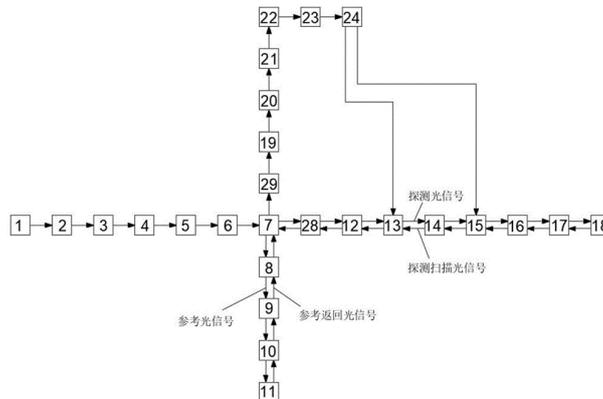
CN113009801

Priority Date: 26/02/2021

ZHEJIANG UNIVERSITY OF SCIENCE & TECHNOLOGY

HIGH-SPEED MULTI-DIRECTIONAL LINE CONFOCAL DIGITAL HOLOGRAPHIC THREE-DIMENSIONAL MICROSCOPIC IMAGING METHOD AND DEVICE

The invention discloses a high-speed multidirectional linear confocal digital holographic three-dimensional microscopic imaging method and a device, wherein optical signals are divided into reference optical signals and detection optical signals after polarization, beam expansion and focusing; relaying the reference light signal to a holophote and receiving a reference return light signal; relaying the detection light signal to a sample platform and receiving a detection scanning light signal; after the reference return light signal and the detection scanning light signal are combined, stray light is filtered, and the stray light is relayed to a photosensitive surface of the high-speed linear array camera to obtain a multi-frame one-dimensional line confocal interference pattern; the multi-frame one-dimensional line confocal interference patterns are collected and overlapped to generate reconstructed interference fields in multiple scanning directions, then the reconstructed interference fields are processed to realize object light spectrum expansion of the sample platform, and then the expanded object light spectrum is processed to reconstruct three-dimensional phase distribution of an object light wave field. The invention can effectively realize high-speed multidirectional line confocal digital holographic microscopic imaging and has the advantage of high resolution.



CLAIM 1. The high-speed multidirectional line confocal digital holographic three-dimensional microscopic imaging method is characterized by comprising the following steps of: after polarization, beam expansion and focusing, the laser signal is divided into a reference light signal and a detection light signal by a polarization beam splitter prism; relaying the reference light signal to a holophote through a first lens group and receiving a reference return light signal; relaying the detection light signal to a sample platform through a second lens group and receiving the detection scanning light signal, wherein the detection light signal passes through a one-dimensional fast scanner and a line scanning direction fast conversion unit in the relaying process, the one-dimensional fast scanner is used for realizing line scanning on the sample platform, the line scanning direction fast conversion unit is used for realizing fast switching of a plurality of scanning directions, and confocal multi-directional line scanning on a sample is completed; combining the reference return light signal and the detection scanning light signal at a polarization beam splitter prism to enter a receiving light path; in a receiving light path, signals are firstly filtered by a slit except stray light of a non-focusing plane, then an off-axis interference field is formed by polarization detection, then the signals are relayed to a high-speed linear array camera through a receiving lens group, a multi-frame one-dimensional line confocal interference image is obtained, after high-speed digital acquisition, the signals are superposed in a main control computer to generate a multi-direction reconstruction interference field, and high-speed multi-direction line confocal digital holographic microscopic imaging is realized through frequency spectrum superposition and angular spectrum backward transmission processing.

N7897

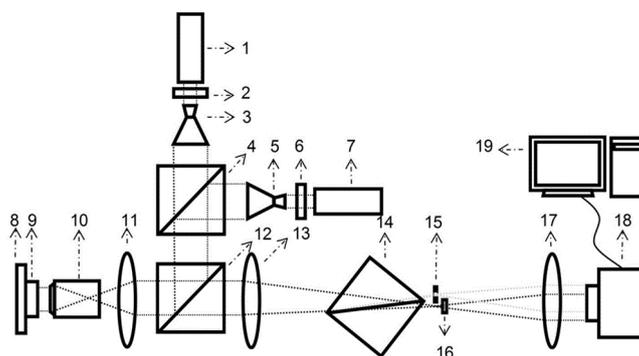
CN112985297

Priority Date: 07/02/2021

XI'AN JIAOTONG UNIVERSITY - XINYU UNIVERSITY

REFLECTION-TYPE MEASUREMENT-BASED DUAL-WAVELENGTH COMMON-PATH DIGITAL HOLOGRAPHIC MICROSCOPIC DEVICE AND MEASUREMENT METHOD

The invention discloses a dual-wavelength common-path digital holographic microscopic device and a measuring method, and belongs to the field of optical interference detection. The device comprises a laser, an adjustable neutral density filter, a beam expanding collimating lens, a cubic prism, an achromatic lens, a microscope objective, an object to be detected, an objective table, a pinhole filter, a camera and a computer. In the dual-wavelength common-path digital holographic microscope device, object light and reference light come from the same optical path and interfere on a camera, and phase information is obtained by solving interference fringes. The measuring device has strong anti-interference capability, low sensitivity to environmental vibration and high flexibility and stability. The method is suitable for the real-time detection occasion of the three-dimensional morphology of the reflective samples such as micro-nano devices with complex and discontinuous characteristics.



CLAIM 1. A dual-wavelength common-path digital holographic microscopy device based on reflection measurement is characterized by comprising a first beam plane light generating unit, a first cubic prism (4), a second beam plane light generating unit, an object stage (8) for placing a measured object (9), a microobjective (10), a first achromatic lens (11), a second cubic prism (12), a second achromatic lens (13), a third cubic prism (14), a pinhole filter (15), a third adjustable neutral density filter (16), a third achromatic lens (17), a camera (18) and a computer (19); the microscope objective (10) is arranged in a confocal manner with the first achromat (11); the second achromatic lens (13) and the third achromatic lens (17) are arranged in a confocal manner, and the pinhole filter (15) is arranged at the focus of the first light split by the third cubic prism (14); the first beam of plane light generated by the first beam of plane light generating unit and the second beam of plane light generated by the second beam of plane light generating unit are combined by the first cubic prism (4), reflected by the second cubic prism (13) to enter the first achromatic lens (11), and then modulated by a measured object (9) which passes through the micro objective (10) and is placed on the objective table (8); the light reflected by the measured object (9) penetrates through the micro objective (10), the achromatic lens (11) and the second cubic prism (12), is converged by the second achromatic lens (13), and is divided into two beams by the third cubic prism (14); the first beam of light is filtered by a pinhole filter (15) and is collected by a third achromatic lens (17) as reference light to enter a camera (18), and the second beam of light is modulated by a third adjustable neutral density filter (16) in light intensity and is collected by the third achromatic lens (17) as object light to enter the camera (18); two beams of light entering the camera (18) interfere, and an interference pattern is captured by the camera (18) and displayed and stored in the computer (19).

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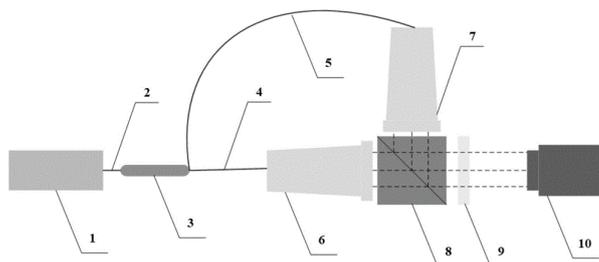
Priority Date: 29/01/2021

CHANGCHUN INSTITUTE OF OPTICS FINE MECHANICS & PHYSICS
CHINESE ACADEMY OF SCIENCES

PARALLEL PHASE SHIFT DIGITAL HOLOGRAPHIC MICROSCOPIC IMAGING SYSTEM WITH OPTICAL FIBER INTERCONNECTION

A parallel phase shift digital holographic microscopic imaging system of optical fiber interconnection relates to the technical field of digital holography, and solves the problems that the application range of the existing phase shift digital holographic imaging system is small, and the influence of phase shift errors on reproduced images is difficult to completely eliminate; the optical fiber polarization beam splitter can split the light beam into S polarized light and P polarized light, and the beam splitting prism can combine the light beams collimated by the first optical fiber collimator and the second optical fiber collimator; the first optical fiber collimator, the beam splitter prism, the quarter wave plate and the polarization imaging camera are sequentially arranged. The invention has wide application range and realizes the real-time measurement with miniaturization, high robustness and high precision.

CLAIM 1. The parallel phase-shift digital holographic microscopic imaging system with the interconnected optical fibers is characterized by comprising an optical fiber coupling laser (1), a first single-mode polarization maintaining optical fiber (2) with one end connected with the optical fiber coupling laser (1), an optical fiber polarization beam splitter (3) connected with the other end of the first single-mode polarization maintaining optical fiber (2), a first optical fiber collimator (6) connected with the optical fiber polarization beam splitter (3), a second optical fiber collimator (7) connected with the optical fiber polarization beam splitter (3), a beam splitting prism (8), a quarter wave plate (9) and a polarization imaging camera (10); the optical fiber polarization beam splitter (3) can split the light beam into S polarized light and P polarized light, and the beam splitting prism (8) can combine the light beams collimated by the first optical fiber collimator (6) and the second optical fiber collimator (7); the first optical fiber collimator (6), the beam splitting prism (8), the quarter-wave plate (9) and the polarization imaging camera (10) are sequentially arranged.



N7928

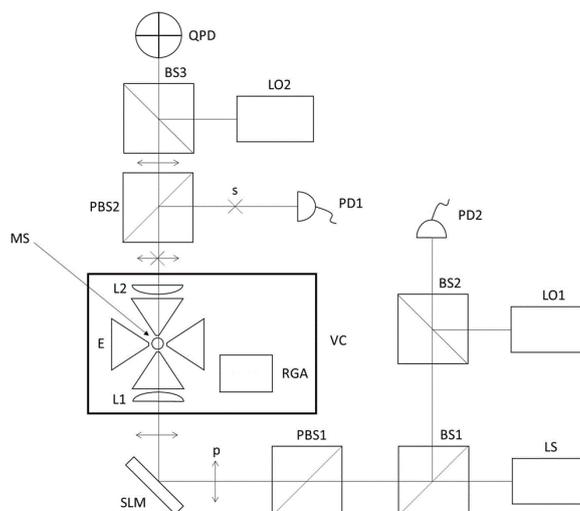
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Priority Date: 08/01/2021

ZHEJIANG LAB - ZHEJIANG UNIVERSITY

SPACE RESOLUTION PRESSURE MEASUREMENT SYSTEM AND METHOD BASED ON VACUUM HOLOGRAPHIC OPTICAL TWEEZERS

The invention discloses a system and a method for measuring space resolution pressure intensity based on vacuum holographic optical tweezers. The device comprises a vacuum cavity, micro-nano particles, an optical tweezers device, a feedback cooling device, a driving electric field device, a spatial light modulator, a polarization control and detection device and a residual gas analyzer; laser light is emitted from a laser source, is incident to a first polarization spectroscopy through a first spectroscopy and is transmitted, is reflected and modulated through a spatial light modulator and is transmitted and converged through a first convex lens to form capture light, the capture light irradiates micro-nano particles to form a light trap capture area, the capture light is incident to a second polarization spectroscopy after being transmitted and converged through a second convex lens after passing through the micro-nano particles to be reflected and transmitted, and light beams reflected by the second polarization spectroscopy are incident to a first photodiode; six electrodes are arranged around the optical trap trapping region. According to the invention, the pressure distribution measurement of the micro-nano scale spatial resolution under high vacuum can be realized by utilizing the control flexibility of the holographic optical tweezers and combining the local detection means of the micro-nano particles.



Click on the title to return to table of contents

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

N7851

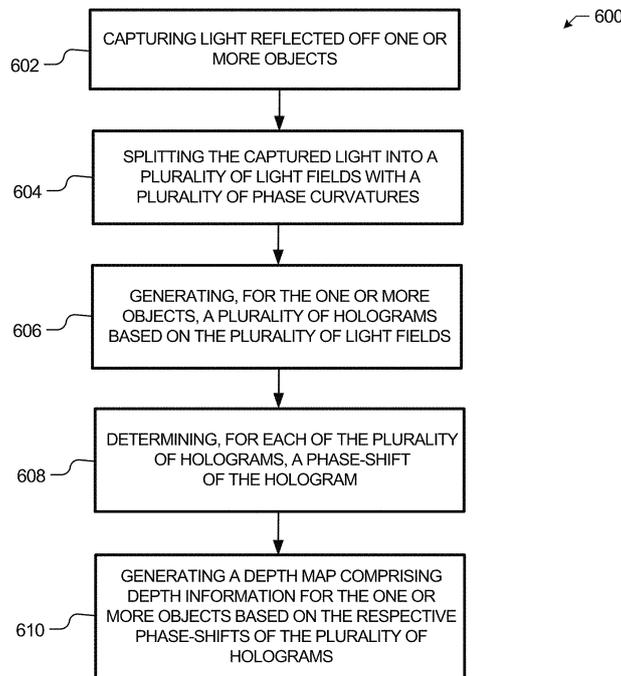
US20210166409

Priority Date: 03/12/2019

SAMSUNG ELECTRONICS

INCOHERENT DIGITAL HOLOGRAPHY BASED DEPTH CAMERA

A method includes capturing light reflected off one or more objects and splitting the captured light into a plurality of light fields with a plurality of phase curvatures. The method further includes generating, for the one or more objects, a plurality of holograms based on the plurality of light fields and determining, for each of the plurality of holograms, an intensity and a phase-shift of the hologram. The method thus includes generating a depth map comprising depth information for the one or more objects based at least in part on a function determined by the respective phase-shifts of the plurality of holograms.



CLAIM 1. A method comprising, by an electronic device: capturing light reflected off one or more objects; splitting the captured light into a plurality of light fields with a plurality of phase curvatures; generating, for the one or more objects, a plurality of holograms based on the plurality of light fields; determining, for each of the plurality of holograms, an intensity and a phase-shift of the hologram; and generating a depth map comprising depth information for the one or more objects based at least in part on a function determined by the respective phase-shifts of the plurality of holograms.

N7852

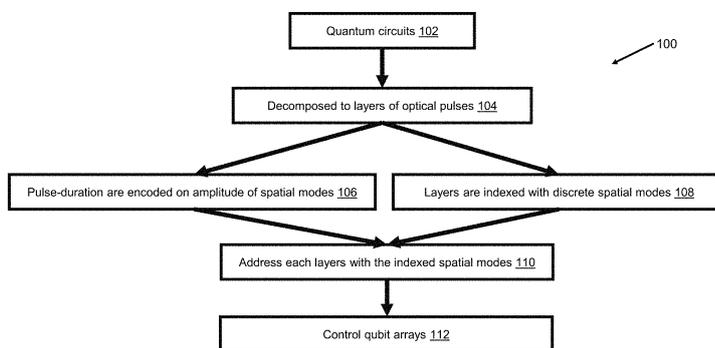
US20210166147
Priority Date: 02/12/2019

KIM DONGGYU - ENGLUND DIRK ROBERT

OPTICAL HOLOGRAPHIC ADDRESSING OF ATOMIC QUANTUM BITS

Systems based on atom and atom-like quantum emitters are promising platforms for quantum sensing, computing, and communications. State-of-the-art lasers and optical microscopy enable high-fidelity quantum control of the atomic quantum bits (qubits). However, it is challenging to scale up such individual quantum control to hundreds or thousands of atomic quantum nodes for implementing useful and practical quantum algorithms. Here, we introduce methods and systems to holographically implement large-scale quantum circuits that individually address atomic quantum nodes for various applications. These methods enable implementation of quantum circuits over large 2D and 3D arrays of atomic qubits at rates of thousands to millions of quantum circuit layers per second. The quantum circuit layers are encoded in multiplexed holograms displayed on a slow SLM and retrieved by fast interrogation to produce spatial distributions that operate on the qubit array. This technology can also be used for optically addressing objects such as biological cells and on-chip photonic components for optical tweezers, optogenetics, optical computing, and optical neural networks.

CLAIM 1. A method of addressing an array of atomic quantum bits (qubits), the method comprising: illuminating a first multiplexed hologram in an array of multiplexed holograms with a laser beam, the laser beam diffracting off the first multiplexed hologram to produce a first spatial-mode distribution representing a first layer in a quantum circuit to be executed by the array of atomic qubits; and illuminating the array of atomic qubits with the first spatial-mode distribution, the first spatial-mode distribution initializing, manipulating, and/or measuring a first state of the array of atomic qubits.



N7858

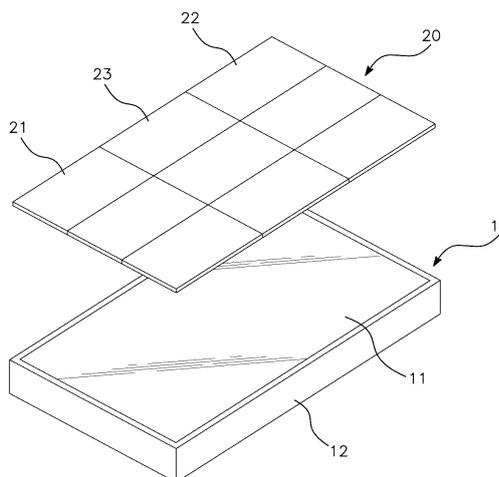
KR20210060848
Priority Date: 19/11/2019

FUTURE TECHNOLOGY

HOLOGRAPHIC LIGHT-CONTAINING FILM WITH SOLAR PANEL

The present invention relates to a holographic light collecting film attached to an upper surface of a solar panel (10) and guiding incident sunlight to the solar panel (10), wherein the holographic light collecting film comprises a transmissive diffraction grating film (20) divided into first, second, and third diffraction grating film portions (21, 22, 23) for diffracting incident sunlight at different angles, wherein the first diffraction grating film unit 21 is provided along one side portion of the transmission type diffraction grating film 20, and the second diffraction grating film unit 22 is provided along the other side portion of the transmission type diffraction grating film 20 while being spaced apart from the first diffraction grating film unit 21 by a certain distance, and wherein the third diffraction grating film part 23 is provided between the first and second diffraction grating film parts 21, 22.

CLAIM 1. A holographic light collecting film attached to an upper surface of a solar panel (10) for guiding incident sunlight to the solar panel (10), the holographic light collecting film comprising a transmissive diffraction grating film (20) divided into first, second, and third diffraction grating film portions (21, 22, 23) for diffracting incident sunlight at different angles, wherein the first diffraction grating film unit 21 is provided along one side portion of the transmission type diffraction grating film 20, and the second diffraction grating film unit 22 is provided along the other side portion of the transmission type diffraction grating film 20 while being spaced apart from the first diffraction grating film unit 21 by a certain distance, and wherein the third diffraction grating film part 23 is provided between the first and second diffraction grating film parts 21, 22.



N7861

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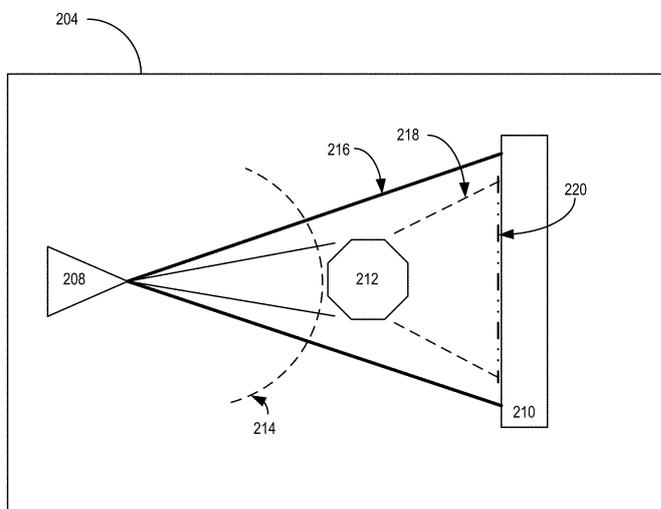
FEI

Priority Date: 17/12/2019

COMPARATIVE HOLOGRAPHIC IMAGING

Apparatuses and methods for comparative holographic imaging to improve structural and molecular information of reconstructions is disclosed herein. An example method at least includes acquiring a plurality of holograms of a sample, wherein each hologram of the plurality of holograms is acquired at a different electron beam energy, and determining atomic and structural information of the sample based at least on a comparison of at least two of the holograms of the plurality of holograms.

CLAIM 1 . A method comprising: acquiring, with an electron beam, a plurality of holograms of a sample, wherein each hologram of the plurality of holograms is acquired at a different electron beam energy; and determining atomic and structural information of the sample based at least on a comparison of at least two of the holograms of the plurality of holograms.



N7865

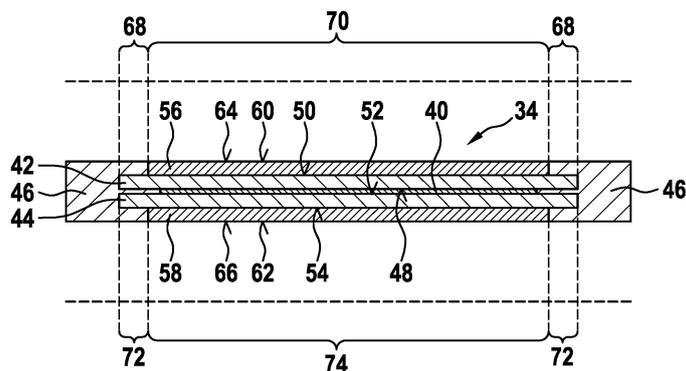
DE102019220075

ROBERT BOSCH

Priority Date: 18/12/2019

OPTICAL ELEMENT

The invention relates to an optical element (34) comprising a holographic structure (40), two transparent covers (42, 44), wherein the holographic structure (40) is arranged between the two transparent covers (42, 44), and a frame (46), wherein the frame (46) is arranged at an edge of the translucent covers (42, 44) such that the frame (46) and the two translucent covers (42, 44) enclose the holographic structure (40). Furthermore, on the surface (50, 54) of the transparent coverings (42, 44) opposite the holographic structure (40), in each case one coating (56, 58) with an antireflective microstructure (60, 62), wherein the antireflective microstructure (60, 62) is arranged on the surface (64, 66) of the coating (56, 58) opposite the transparent covers (42, 44).



CLAIM 1. Optical element (34) having - a holographic structure (40), - two transparent covers (42, 44), wherein the holographic structure (40) is arranged between the two transparent covers (42, 44), and - a frame (46), wherein the frame (46) is arranged at an edge of the translucent covers (42, 44) such that the frame (46) and the two translucent covers (42, 44) enclose the holographic structure (40), characterized in that , in that on the surface (50, 54) of the transparent covers (42, 44) opposite the holographic structure (40) in each case one coating (56, 58) with an antireflective microstructure (60, 62), wherein the antireflective microstructure (60, 62) is arranged on the surface (64, 66) of the coating (56, 58) opposite the transparent covers (42, 44).

N7888

CN113014901

Priority Date: 25/02/2021

SHENZHEN ZHENXIANG TECHNOLOGY

PARALLAX IMAGE SEQUENCE SYNTHESIS METHOD AND SYSTEM FOR HOLOGRAPHIC VOLUME VIEW PRINTING AND STORAGE MEDIUM

The invention relates to a parallax image sequence synthesis method, a system and a storage medium for holographic volume view printing, wherein the method comprises the following steps: acquiring a sub-parallax image sequence; establishing a world coordinate system by taking the synthesized parallax image sequence as a reference; importing the sub parallax image sequence into a three-dimensional modeling platform; generating a view field plane by any point on the optical axis of the synthetic camera, and dividing the view field plane into a plurality of cells; connecting the original point of the synthetic camera with the central point of the cell to generate a ray, calculating intersection points of the ray extension line and corresponding images in each sub parallax image sequence, if the intersection points exist, calculating the distance between the original point of the synthetic camera and each intersection point, selecting a coordinate point corresponding to the minimum distance, and extracting four adjacent pixel values of the coordinate point to calculate to obtain a result pixel value; and sequentially calculating the parallax image pixel values corresponding to each synthesis camera to generate a synthesis parallax image sequence. The method can be directly operated in the three-dimensional modeling platform, has low limitation and strong operability, and is convenient for users to observe, set and operate.

CLAIM 1. A method of synthesizing a sequence of parallax images for holographic volume view printing, comprising the steps of: s100: obtaining N generated sub-parallax image sequences A, wherein the jth image in the ith sub-parallax image is The number of cameras of each sub parallax image sequence A is M; s200: recording the synthesized parallax image sequence as B, establishing a world coordinate system by taking the synthesized parallax image sequence B as a reference, wherein the origin of the world coordinate system is positioned at the position of a central camera of the synthesized parallax image sequence B, and the optical axis of the central camera is designated as the Z axis; s300: importing the sub parallax image sequences A into a three-dimensional modeling platform, wherein the origin of a central camera of each sub parallax image sequence A is located at the origin of a world coordinate system, and each sub optical axis is superposed with a Z axis; s400: setting the field angle of the synthesized parallax image sequence B According to the field angle B Generating a view field plane by any point on the optical axis of the synthetic camera, dividing the view field plane into a plurality of cells according to the image resolution of the synthetic parallax image sequence B, wherein each cell corresponds to a pixel point; s500: connecting the original point of the synthetic camera and the central point of the cell to generate a ray, calculating the intersection point of the ray extension line and the corresponding image in each sub parallax image sequence, if the intersection point exists, calculating the distance between the original point of the synthetic camera and each intersection point, selecting a coordinate point corresponding to the minimum distance, extracting four adjacent pixel values of the coordinate point, and obtaining a result pixel value by using a bilinear interpolation algorithm; s600: and sequentially calculating the parallax image pixel values corresponding to each synthesis camera to generate a synthesis parallax image sequence.

N7890

CN112995629

Priority Date: 10/03/2021

INBO SUPERCOMPUTING NANJING TECHNOLOGY

INTELLIGENT SELF-SHOOTING HALL REALIZATION METHOD BASED ON HOLOGRAPHIC TECHNOLOGY

The invention relates to the field of self-photographing museums, and discloses an intelligent self-photographing museums realization method based on holographic photography technology.

CLAIM 1. The utility model provides an intelligence is from shooting hall implementation method based on holography, includes holographic projection end (1) and shoots end (2), its characterized in that: the holographic projection end (1) comprises a curtain (11), a projection module (12) and a background module (13), wherein the background module (13) comprises a storage unit, the storage unit is used for storing a background picture, the projection module (12) comprises a projection unit, and the projection unit is used for holographically projecting the background picture in the storage unit to the front of the curtain (11); the shooting end (2) comprises a controller (21), a shooting module (22) and a display module (23), wherein the shooting module (22) comprises a shooting unit and a capturing unit, the controller (21) is used for controlling the shooting unit to shoot, and the display module (23) is used for synchronously displaying shooting contents of the shooting module (22); the capturing unit is used for capturing the motion of the hand of the user and generating capturing information, the capturing information comprises capturing data, the capturing data comprises transverse data and vertical data, the transverse data represents the distance of the transverse motion of the hand of the user, and the vertical data represents the distance of the vertical motion of the hand of the user; the projection unit comprises a projection strategy, and the projection strategy respectively adjusts the width and the height of the holographic projection according to the transverse data and the vertical data through an algorithm.

N7910

CN112926231

Priority Date: 27/11/2020

HARBIN ENGINEERING UNIVERSITY

NEAR-FIELD ACOUSTIC HOLOGRAPHY MEASUREMENT METHOD IN FINITE SPACE BASED ON EQUIVALENT SOURCE METHOD

The invention discloses a near-field acoustic holography measuring method in a finite space based on an equivalent source method, which comprises the following steps: establishing a near-field acoustic holography measurement model in a finite space, and acquiring the sound pressure vibration velocity of a sound source on a measurement surface in the finite space; step two: configuring the number of virtual sources and the position of the virtual source; step three: establishing a near-field acoustic holography measurement model of monopole point sources in a limited space, and obtaining the acoustic pressure vibration velocity of each monopole point source on a measurement surface in the limited space; step four: solving a Green function in a finite space; step five: the sound pressure vibration speed information on the structure sound source measuring surface is known, and the equivalent source intensity in the structure can be solved through the transfer relation solved in the previous step. Step six: and calculating information such as sound pressure and the like of the structure in the free field through the solved equivalent source intensity. The invention considers the finite space test environment, improves the traditional equivalent source method, and considers the influence of the interface in the finite space on the source surface sound pressure and the vibration velocity field, thereby improving the reconstruction precision.

CLAIM 1. A near-field acoustic holography measuring method in a limited space based on an equivalent source method is characterized by comprising the following steps: the method comprises the following steps: establishing a near-field acoustic holography measurement model in a limited space, and acquiring information such as sound pressure vibration velocity of a sound source on a measurement surface in the limited space; step two: configuring the number of virtual sources and the position of the virtual source; step three: establishing a near-field acoustic holography measurement model of monopole point sources in a limited space, and obtaining the acoustic pressure vibration velocity of each monopole point source on a measurement surface in the limited space; step four: solving a Green function in a finite space; step five: the sound pressure vibration speed information on the structure sound source measuring surface is known, and the equivalent source intensity in the structure can be solved through the transfer relation solved in the previous step; step six: and calculating information such as sound pressure and the like of the structure in the free field through the solved equivalent source intensity.

N7914

CN112914540

Priority Date: 29/01/2021

SHENZHEN TECHNOLOGY UNIVERSITY

HOLOGRAPHIC MICROWAVE IMAGING SYSTEM BASED ON PXIE BUS AND IMAGING METHOD THEREOF

The invention relates to a PXIe bus-based holographic microwave imaging system and an imaging method thereof, wherein the PXIe bus-based holographic microwave imaging system comprises: the system comprises a PXIe control module, a PC (personal computer), a high-speed serial port module, a bus expansion module, a clock synchronization module, a switch module, a vector network analysis module and a microwave antenna array, wherein all the modules are connected through a PXIe bus; the system also comprises a system software module; the system software module is accessed to the PXIe bus through the PXIe control module. The holographic microwave imaging system is based on the PXIe bus, has the characteristics of modularization, reconfigurability, standardized bus interface and diversified control interface, adopts the PXIe high-speed bus interface based on the FPGA, has the characteristics of flexible interface design and various control modes, can realize the control of various peripheral interfaces, and has strong universality.

CLAIM 1. A holographic microwave imaging system based on a PXIe bus is characterized by comprising: the system comprises a PXIe control module, a PC (personal computer), a high-speed serial port module, a bus expansion module, a clock synchronization module, a switch module, a vector network analysis module and a microwave antenna array, wherein all the modules are connected through a PXIe bus; further comprising: a system software module; the system software module is accessed to a PXIe bus through the PXIe control module; the PXIe control module is used for compiling the control information into data conforming to a PXIe bus protocol so that the data can be transmitted on the PXIe bus; the device is also used for analyzing data acquired from the PXIe bus; the vector network analysis module is used for generating microwave signals with corresponding frequency, phase and amplitude under the control of the PXIe control module, and the microwave signals are transmitted to a measured object through a transmitting switch board card of the switch module by a microwave transmitting antenna to form a sensitive electric field; a receiving switch board card in the switch module selects a microwave receiving antenna according to program setting; the microwave receiving antenna synchronously collects scattering electric field signals of a sensitive electric field and transmits the scattering electric field signals to the PC through the PXIe bus by the high-speed serial port module, the bus expansion module and the clock synchronization module; and the PC machine processes the received scattered electric field signal, performs curve drawing, image reconstruction and data analysis according to the processed data, and displays the results of the curve drawing, the image reconstruction and the data analysis in real time through a human-computer interaction interface.

N7915

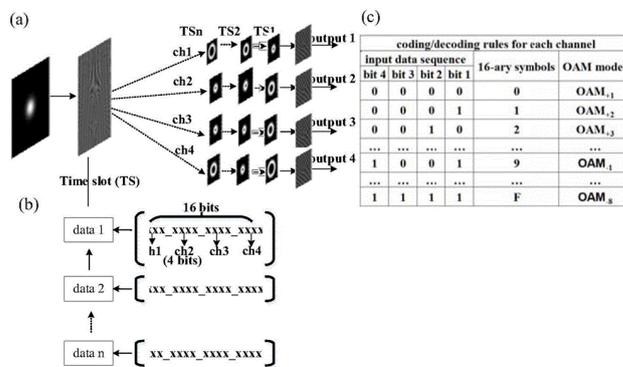
CN112910551

Priority Date: 21/01/2021

HUAIYIN INSTITUTE OF TECHNOLOGY

MULTI-CHANNEL ORBITAL ANGULAR MOMENTUM CODING AND DECODING METHOD BASED ON HOLOGRAM

The invention discloses a multi-channel orbital angular momentum coding and decoding method based on holograms, which belongs to the technical field of multi-channel coding and decoding, and is characterized in that a plurality of OAM channels are fused into one hologram for the first time to construct 4 independent OAM coding channels, different OAM modes are sent to be transmitted along the 4 independent channels by changing the OAM mode in each hologram, a decoding hologram based on a Dammann vortex grating is designed, various OAM modes received by each channel are decoded at the same time and converted into corresponding data, and therefore the multi-channel data transmission method based on the hologram and the OAM coding/decoding is realized.



CLAIM 1. The method for encoding and decoding the multi-channel orbital angular momentum based on the hologram is characterized by comprising the following steps of: step 1: data partitioning Dividing binary data to be transmitted into 16-bit groups; step 2: data encoding According to the encoding rule, 4 bits of data are represented as 16-ary symbols 0-F, and each 1-ary 16-ary symbol is encoded into 1 of 16 OAM modes; and step 3: generating an encoded hologram; and 4, step 4: data transmission Generating a corresponding encoded hologram in advance based on each set of transmitted 16-bit data; and 5: data demodulation In order to demodulate vortex beams of up to 16 OAM modes of each channel, a Dammann vortex grating hologram with a 4 x 4 array is designed to support the demodulation of the 16 OAM modes.

N7920

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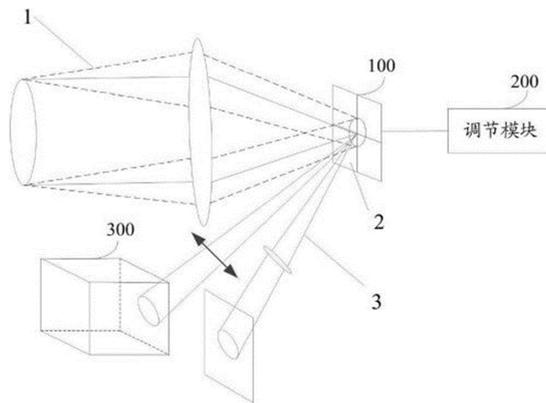
Priority Date: 13/01/2021

DONGGUAN UNIVERSITY OF TECHNOLOGY

MEMS MICRO-REFLECTION PROCESSING DEVICE FOR VOLUME HOLOGRAPHIC IMAGING

The invention relates to a processing device of MEMS micro-reflection for volume holographic imaging, which comprises a micro-reflector array, an adjusting module and a detecting module, wherein the micro-reflector array consists of 2 multiplied by 2 tilting mirrors, the 2 multiplied by 2 tilting mirrors are positioned on an optical focal plane of a receiving antenna of an optical communication system, and the adjusting module is connected with the 2 multiplied by 2 tilting mirrors; compared with the prior art, the detection module can realize wavefront sensing only by one pupil image, reduces the delay of the wavefront sensing, is insensitive to light wave flicker, and has higher sensing efficiency compared with the traditional wavefront sensing method particularly for a free space optical communication system. The adaptive optical system based on the sensing method or the sensing device can effectively improve the reliability of the communication system, so that the adaptive optical based optical communication system is more suitable for the technical fields of long-distance wireless communication, airborne wireless communication and the like.

CLAIM 1. A MEMS micro-reflection processing device for volume holographic imaging comprises a micro-mirror array, an adjusting module and a detecting module, wherein the micro-mirror array consists of 2 x 2 tilting mirrors, the 2 x 2 tilting mirrors are positioned on an optical focal plane of a receiving antenna of an optical communication system, and the adjusting module is connected with the 2 x 2 tilting mirrors; the micro-mirror array receives laser carrier signal beams in free space optical communication and reflects the laser carrier signal beams to the detection module; the adjusting module adjusts any one tilting mirror in the micro-mirror array and reflects three quarters of the laser carrier signal light beam to the detecting module; and the detection module calculates the phase information of the laser carrier signal light beam according to the light intensity of the received three-quarter laser carrier signal light beam.



N7925

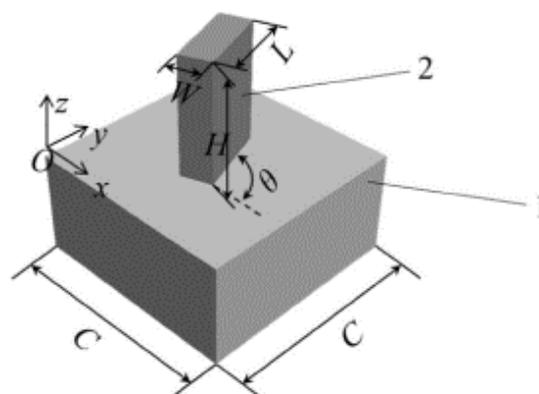
CN112882141

Priority Date: 27/01/2021

WUHAN UNIVERSITY

COLOR NANO PRINTING AND HOLOGRAPHIC MULTIPLEXING THREE-CHANNEL SUPER SURFACE AND DESIGN METHOD THEREOF

The invention belongs to the technical field of micro-nano optics, and discloses a three-channel super surface for color nano printing and holographic multiplexing and a design method thereof. The super surface is composed of a plurality of nano brick structure units, and the nano brick structure units of different groups have different reflection spectrum responses under the incidence of white light; non-polarized white light is incident to the super surface, and reflected light displays a color nano printing image in a near field; linearly polarized light with the polarization angle of θ is incident to the super surface, and emergent light passes through the light transmission axis in the direction of the analyzer displays a first far field in a Fraunhofer diffraction region. A holographic image; and the emergent light displays a second far-field holographic image in a Fraunhofer diffraction area by the incident of the circularly polarized light to the super surface. The invention can display a colorful nano printing image and a plurality of far-field holographic images through one super surface.



N7926

CN112882140

Priority Date: 27/01/2021

WUHAN UNIVERSITY

DUAL-FUNCTIONAL SUPER SURFACE FOR REALIZING COLOR NANO PRINTING AND HOLOGRAPHY AND DESIGN METHOD THEREOF

The invention belongs to the technical field of micro-nano optics, and discloses a bifunctional super surface for realizing color nano printing and holography and a design method thereof. The super surface is composed of a plurality of nano brick structure units, and each nano brick structure unit comprises a substrate and a nano brick; the nano brick structure units of different groups have different reflection spectrum responses under the incidence of white light, and present different structure colors; each nano-brick unit structure is used as a pixel unit, and a plurality of groups of nano-brick structure units are arranged according to the color of the color nano-printing image; arranging the steering angle of each nano brick according to the holographic amplitude distribution correspondingly calculated by the far-field holographic image; the unpolarized white light is incident to the super surface, and the reflected light displays a color printing image on the plane of the super surface; linearly polarized light is incident to the super surface, and emergent light passes through the analyzer to display a far-field holographic image in a Fraunhofer diffraction area. The invention can realize color nano printing and far-field holographic multiplexing through one super surface.

CLAIM 1. The double-functional super surface for realizing color nano printing and holography is characterized in that the super surface is composed of a plurality of nano brick structure units; the nano brick structure unit comprises a substrate and a nano brick arranged on the working surface of the substrate; setting the directions of two edges parallel to the working surface of the substrate as an x axis and a y axis respectively to establish an xoy coordinate system, wherein the nano brick is in a cuboid structure, the long axis and the short axis of the nano brick are parallel to the working surface of the substrate, and the steering angle of the nano brick is the included angle between the long axis of the nano brick and the x axis; the dimension parameters of the long axis or the short axis of the nano brick corresponding to the nano brick structure units of different groups are different, and the height dimensions of the nano brick corresponding to the nano brick structure units of different groups are the same; the nano brick structure units of different groups have different reflection spectrum responses under the incidence of white light, and present different structure colors; each nano-brick unit structure is used as a pixel unit, and a plurality of groups of nano-brick structure units are arranged according to the color of the color nano-printing image; arranging the steering angle of each nano brick according to the holographic amplitude distribution correspondingly calculated by the far-field holographic image; the unpolarized white light is incident to the super surface, and the reflected light displays a color nano printing image on the plane of the super surface; linearly polarized light with the polarization angle of θ is incident to the super surface, and emergent light passes through the light transmission axis in the direction of the analyzer of (1) displays a far-field holographic image in the fraunhofer diffraction zone.

N7927

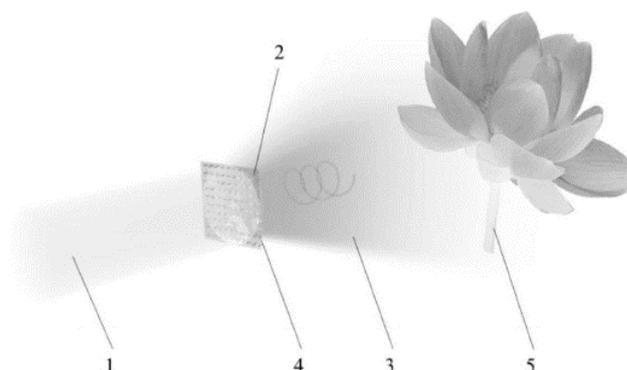
CN112882139

Priority Date: 27/01/2021

WUHAN UNIVERSITY

SUPER SURFACE FOR REALIZING NEAR-FIELD STRUCTURAL COLOR DISPLAY AND HOLOGRAPHIC MULTIPLEXING AND DESIGN METHOD THEREOF

The invention belongs to the technical field of micro-nano optics, and discloses a super surface for realizing near-field structural color display and holographic multiplexing and a design method thereof. The super surface is composed of a plurality of nano brick structure units, and each nano brick structure unit comprises a substrate and a nano brick; the nano brick structure units of different groups have different reflection spectrum responses under the incidence of white light, and present different structure colors; each nano-brick unit structure is used as a pixel unit, and a plurality of groups of nano-brick structure units are arranged according to the color of the near-field structure color display image; arranging the steering angle of each nano brick according to the complex amplitude distribution correspondingly calculated



by the far-field holographic image; the unpolarized white light is incident to the super surface, and the reflected light displays a near-field structural color display image on the plane of the super surface; the circularly polarized light is incident to the super surface, and the transmitted light displays a far-field holographic image in a Fraunhofer diffraction area. The invention can realize near-field structural color display and far-field holographic multiplexing through one super surface.

N7929

CN112877002

Priority Date: 26/02/2021

SHANTOU JIAXIN PACKING MATERIAL

PRODUCTION PROCESS OF HOLOGRAPHIC POSITIONING FILM FOR LOCALLY WASHING ALUMINUM

A production process of a holographic positioning film for locally washing aluminum comprises the following steps: (1) sequentially coating a release layer and an information layer on the base film; (2) directly molding a holographic pattern layer on the information layer; (3) coating a first protective layer on the information layer to fully cover the information layer; (4) plating an aluminum plating layer on the first protective layer to fully cover the first protective layer; (5) coating a second protective layer on the aluminum-plated layer outside the area where the holographic pattern layer is located; (6) performing alkaline washing on the aluminum-plated layer in the area not covered by the second protective layer to form an aluminum-removed area; (7) plating a zinc sulfide dielectric layer on the upper surface of the first protective layer and the upper surface of the second protective layer in the aluminum removing area; (8) and coating a back glue layer on the upper surface of the zinc sulfide dielectric layer. The invention can realize local aluminum washing, not only can make the manufactured holographic positioning film have exquisite patterns and strong transparent effect, but also can completely reserve the positioning cursor for gold stamping, and is beneficial to improving the gold stamping positioning precision.

CLAIM 1. A production process of a holographic positioning film for locally washing aluminum is characterized by comprising the following steps: the method sequentially comprises the following steps: (1) sequentially coating a release layer and an information layer on the upper surface of the base film; (2) directly embossing a holographic pattern layer on the upper surface of the information layer; (3) coating a first protective layer on the upper surface of the information layer to fully cover the information layer; (4) plating an aluminum plating layer on the first protective layer to fully cover the first protective layer; (5) coating a second protective layer on the upper surface of the aluminum-plated layer outside the area where the holographic pattern layer is located; (6) performing alkali washing on the aluminum plating layer in the area which is not covered by the second protective layer, and removing the aluminum plating layer above the holographic pattern layer to form an aluminum-removed area; (7) plating a zinc sulfide dielectric layer on the upper surface of the first protective layer and the upper surface of the second protective layer in the aluminum removing area, so that the upper surface of the zinc sulfide dielectric layer plated on the first protective layer and the upper surface of the peripheral aluminum-plated layer are positioned on the same plane; (8) and coating a back glue layer on the upper surface of the zinc sulfide dielectric layer, and slitting to obtain the holographic positioning film.

N7933

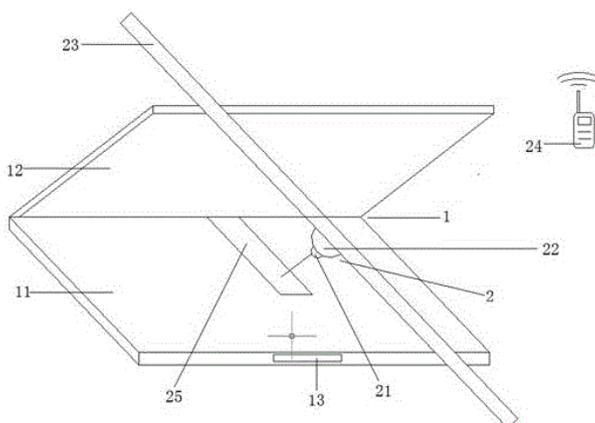
CN112857756

Priority Date: 23/04/2021

GUANGZHOU NUOYIDE MEDICAL TECHNOLOGY DEVELOPMENT

HOLOGRAPHIC FIXED PARALLAX STEREOSCOPIC VISION DEGREE QUANTIZING DEVICE

The invention relates to a holographic fixed parallax stereoscopic vision degree quantification device which comprises a holographic projection mechanism and a measurement mechanism, wherein the measurement mechanism is arranged on the holographic projection mechanism and is used for directly quantifying the stereoscopic vision degree of a fixed parallax target in a holographic image. The holographic projection mechanism puts in the holographic image, and operating personnel observes the holographic image, according to the actual unsmooth condition of the virtual image of seeing, controls measuring mechanism and measures the relative distance of fixed parallax target in the holographic image in reality, quantifies the stereoscopic vision degree of fixed parallax target in the holographic image of own both eyes through operating personnel's independent operation measuring mechanism, and the practicality is strong.



CLAIM 1. The device for quantizing the stereoscopic vision degree of the holographic fixed parallax is characterized by comprising a holographic projection mechanism (1) and a measuring mechanism (2), wherein the measuring mechanism (2) is arranged on the holographic projection mechanism (1) and is used for directly quantizing the stereoscopic vision degree of a fixed parallax target in a holographic image; the holographic projection mechanism (1) comprises a display screen (11), a holographic screen (12) and a holographic projection chip (13), wherein the display screen (11) is connected to one side of the holographic screen (12) and arranged at an angle of 45 degrees; the holographic projection chip (13) is arranged in the display screen (11) and used for putting a holographic image, and the measuring mechanism (2) is arranged above the display screen (11) and the holographic screen (12); the measuring mechanism (2) comprises a light beam emitter (21), a rail slider (22), a sliding rail (23) and a remote controller (24); the sliding rail (23) is arranged above the display screen (11) and the holographic screen (12); the rail sliding device (22) is connected with the sliding rail (23) in a sliding way; the light beam emitter (21) is fixedly connected with the track glider (22); the remote controller (24) is wirelessly connected with the rail glider (22).

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HOLOGRAMS - 12 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P33518	US	20210174159	10/06/2021	FEDERAL CARD SERVICES	US	05/10/2019	US2019062911236	US20210174159	RFID-ENABLED METAL TRANSACTION CARDS WITH FOIL, SPECIAL TEXTURE, COLOR AND CARBON FIBER	
P33541	JP	2021081705	27/05/2021	NATIONAL PRINTING BUREAU	JP	18/11/2019	JP2019000207907	JP2021081705	PHOTOLUMINESCENT VIDEO PATTERN	
P33557	EP	3828000	02/06/2021	IDEMIA FRANCE	FR	29/11/2019	FR2019000013513	EP3828000 WO2021105582 FR3103736	SECURITY DOCUMENT AND MANUFACTURING PROCESS OF A SECURITY DOCUMENT INVOLVING A PERSONALISED IMAGE WITH A METALLIC HOLOGRAM	Passport
P33573	CN	113002212	22/06/2021	SVG TECHNOLOGY	CN	20/12/2019	CN2019001323487	CN113002212	COMPOSITE MATERIAL WITH HOLOGRAPHIC ANTI-COUNTERFEITING EFFECT AND MANUFACTURING METHOD THEREOF	
P33577	CN	112980310	18/06/2021	SUZHOU BAICONG TECHNOLOGY	CN	04/03/2021	CN2021000239106	CN112980310	COMBINED COATING FOR LASER HOLOGRAPHIC HOT STAMPING LABEL AND APPLICATION METHOD THEREOF	
P33583	CN	112967590	15/06/2021	SUZHOU BAICONG TECHNOLOGY	CN	04/03/2021	CN2021000238839	CN112967590	CONTINUOUSLY COILED LASER HOLOGRAPHIC LABEL AND PREPARATION METHOD THEREOF	
P33587	CN	112951071	11/06/2021	SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP	CN	31/03/2021	CN2021000348161	CN112951071	HOLOGRAPHIC RAINBOW LASER SECRET TYPE ANTI-COUNTERFEITING MARK AND PREPARATION METHOD THEREOF	
P33595	CN	112937144	11/06/2021	HENGFENG MATERIAL TECHNOLOGY ZHEJIANG	CN	29/01/2021	CN2021000124491	CN112937144	HOLOGRAPHIC ANTI-COUNTERFEITING HOT STAMPING FILM AND PREPARATION METHOD THEREOF	
P33598	CN	112925183	08/06/2021	HUBEI YINLANGXING TECHNOLOGY DEVELOPMENT	CN	05/12/2019	CN2019001233855	CN112925183	HOLOGRAPHIC ANTI-COUNTERFEITING COMPOSITE FILM	
P33600	CN	112918145	08/06/2021	HUBEI YINLANGXING TECHNOLOGY DEVELOPMENT	CN	05/12/2019	CN2019001234680	CN112918145	REUSABLE UV TRANSFER FILM AND PRODUCTION METHOD THEREOF	
P33602	CN	112907435	04/06/2021	LIAONING TECHNICAL UNIVERSITY	CN	09/04/2021	CN2021000384745	CN112907435	HIGH-ROBUSTNESS HOLOGRAPHIC BLIND WATERMARKING ALGORITHM BASED ON IMPROVED BOQI CODING AND DATA INTERVAL MAPPING	
P33610	CN	112882369	01/06/2021	BEIJING UNIVERSITY OF TECHNOLOGY	CN	09/02/2021	CN2021000177646	CN112882369	OPTICAL SECRET SHARING METHOD BASED ON CASCADE METASURFACE HOLOGRAPHY	

VARIOUS OPTICAL EFFECTS - 21 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P33488	WO	2021127241	24/06/2021	CRANE	US	18/12/2019	US2019062950054	WO2021127241	MICRO-OPTIC SECURITY DEVICE WITH PHASE ALIGNED IMAGE LAYERS	Microlens
P33490	WO	2021124759	24/06/2021	DAI NIPPON PRINTING	JP	19/12/2019	JP2019000229108	WO2021124759	LAMINATE, MEDIUM, AND METHOD	Microlens
P33493	WO	2021123177	24/06/2021	OBERTHUR FIDUCIAIRE	FR	20/12/2019	FR2019000015573	WO2021123177	OPTICAL STRUCTURE HAVING A RELIEF EFFECT	
P33499	WO	2021119754	24/06/2021	CCL SECURE	AU	19/12/2019	AU2019000904819	WO2021119754	A MICRO-OPTIC DEVICE	Microlens
P33500	WO	2021119744	24/06/2021	CCL SECURE	AU	19/12/2019	AU2019000904818	WO2021119744	MICRO-OPTIC DEVICE FOR PRODUCING A MAGNIFIED IMAGE	Microlens
P33503	WO	2021115628	17/06/2021	GIESECKE & DEVRIENT CURRENCY TECHNOLOGY	DE	13/12/2019	DE201910008642	WO2021115628 DE102019008642	METHOD FOR PRODUCING PLATELET-SHAPED EFFECT PIGMENTS	
P33513	WO	2021103671	03/06/2021	CHINA BANKNOTE PRINTING & MINT - ZHONGCHAO SPECIAL SECURITY TECHNOLOGY	CN	27/11/2019	CN2019001184160	WO2021103671 CN112848743	OPTICAL ANTI-COUNTERFEITING ELEMENT AND ANTI-COUNTERFEITING PRODUCT	Microlens
P33514	WO	2021103670	03/06/2021	CHINA BANKNOTE PRINTING & MINT - ZHONGCHAO SPECIAL SECURITY TECHNOLOGY	CN	27/11/2019	CN2019001184133	WO2021103670 CN112848742	OPTICAL ANTI-COUNTERFEITING ELEMENT AND OPTICAL ANTI-COUNTERFEITING PRODUCT	Microlens

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VARIOUS OPTICAL EFFECTS - 21 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P33516	US	20210182638	17/06/2021	GEMALTO - THALES DIS FRANCE	US	12/12/2019	US2019016712157	US20210182638 WO2021116440	COVERT FLOATING IMAGE	Microlens
P33525	KR	20210073139	18/06/2021	KOREA SECURITY PRINTING & MINTING	KR	10/12/2019	KR2019000163648	KR20210073139	COLOR CONVERSION SECURITY ELEMENT AND SECURITY PRODUCT COMPRISING THE SAME	
P33526	KR	20210073138	18/06/2021	KOREA SECURITY PRINTING & MINTING	KR	10/12/2019	KR2019000163647	KR20210073138	SECURITY FILM AND SECURITY PRODUCT COMPRISING THE SAME	
P33527	KR	20210073137	18/06/2021	KOREA SECURITY PRINTING & MINTING	KR	10/12/2019	KR2019000163646	KR20210073137	COLOR CONVERSION SECURITY FILM AND SECURITY PRODUCT COMPRISING THE SAME	
P33533	KR	20210062268	31/05/2021	KOREA SECURITY PRINTING & MINTING	KR	21/11/2019	KR2019000150282	KR20210062268	CNCS (NANOCRYSTALLINE CELLULOSE) CHIRAL NEMATIC FILM EXHIBITING FLEXIBILITY AND RAINBOW COLOR AND METHOD FOR PRODUCING THE SAME	
P33534	KR	20210062267	31/05/2021	KOREA SECURITY PRINTING & MINTING	KR	21/11/2019	KR2019000150281	KR20210062267	FLEXIBLE IRIDESCENT NANOCRYSTALLINE CELLULOSE (CNCS) FILM WITH NOVEL INFRARED SECURITY FUNCTION AND METHOD FOR PRODUCING THE SAME	
P33539	JP	2021088136	10/06/2021	NATIONAL PRINTING BUREAU	JP	05/12/2019	JP2019000220369	JP2021088136	ANTI-COUNTERFEITING PRINTED MATERIAL	
P33552	EP	3835877	16/06/2021	UPM RAFLATAC	EP	13/12/2019	EP2019000397533	EP3835877	SECURITY LABEL	
P33553	EP	3835851	16/06/2021	THALES DIS FRANCE	EP	10/12/2019	EP2019000306618	EP3835851 WO2021115954	LASER ENGRAVABLE FLOATING IMAGE FOR SECURITY LAMINATES	Microlens
P33562	CN	213458718	15/06/2021	GUANGDONG SHUNDE JINMEI INTELLIGENT IDENTIFICATION TECHNOLOGY	CN	21/12/2020	CN2020003086238	CN213458718U	MAGNETIC ADSORPTION TYPE ANTI-COUNTERFEIT LABEL	
P33564	CN	213458103	15/06/2021	HUBEI YINLANGXING TECHNOLOGY DEVELOPMENT	CN	16/09/2020	CN2020002026655	CN213458103U	OPTICAL COLOR-CHANGING ANTI-COUNTERFEIT LABEL	
P33591	CN	112946800	11/06/2021	SVG TECHNOLOGY	CN	10/12/2019	CN2019001261583	CN112946800	ANTI-COUNTERFEITING STRUCTURE AND ANTI-COUNTERFEITING METHOD	
P33619	CN	112848744	28/05/2021	CHINA BANKNOTE PRINTING & MINT	CN	28/11/2019	CN2019001192698	CN112848744	OPTICAL ANTI-COUNTERFEITING ELEMENT AND ANTI-COUNTERFEITING PRODUCT	

NON SECURITY HOLOGRAMS - 92 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N7842	WO	2021118850	17/06/2021	AKALANA MANAGEMENT	US	12/12/2019	US2019062947390	WO2021118850	OPTICAL SYSTEMS WITH RESOLUTION-ENHANCING HOLOGRAPHIC ELEMENTS	
N7843	WO	2021115935	17/06/2021	FONDATION B COM	FR	13/12/2019	FR2019000014334	WO2021115935 FR3104747	METHOD FOR ENCODING A DIGITAL HOLOGRAM, METHOD FOR ENCODING A GROUP OF DIGITAL HOLOGRAMS AND ASSOCIATED ENCODING DEVICE	
N7844	WO	2021113719	10/06/2021	PORTL	US	06/12/2019	US2019062944546	WO2021113719	HOLOGRAPHIC DISPLAY DEVICE AND METHOD OF USE	
N7845	WO	2021112302	10/06/2021	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	06/12/2019	KR2019000161228	WO2021112302 KR20210071244	METHOD FOR RECORDING HOLOGRAPHIC OPTICAL ELEMENT FOR HEAD-UP DISPLAY	
N7846	WO	2021112301	10/06/2021	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	06/12/2019	KR2019000161225	WO2021112301 KR102264211	AUGMENTED REALITY HOLOGRAPHIC DISPLAY USING OPTICAL WAVEGUIDE AND HOLOGRAPHIC OPTICAL ELEMENT	
N7847	WO	2021104828	03/06/2021	ROBERT BOSCH	DE	28/11/2019	DE201910218438	WO2021104828 DE102019218438	METHOD FOR PRODUCING A HOLOGRAPHIC OPTICAL ELEMENT	
N7848	US	20210191125	24/06/2021	FACEBOOK TECHNOLOGIES	US	19/12/2019	US2019062950724	US20210191125 WO2021126473	DISPLAY WITH HOLOGRAPHIC RELAY AND HOLOGRAPHIC IMAGE COMBINER	

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NON SECURITY HOLOGRAMS - 92 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N7849	US	20210181677	17/06/2021	ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	11/12/2019	KR2019000164491	US20210181677 KR20210074191	HOLOGRAPHIC OPTICAL SYSTEM STRUCTURE AND HOLOGRAPHIC DISPLAY APPARATUS USING SPATIAL LIGHT MODULATOR	
N7850	US	20210173340	10/06/2021	DOUBLEME	US	31/10/2018	US2018016177328	US20210173340	REAL-WORLD OBJECT HOLOGRAPHIC TRANSPORT AND COMMUNICATION ROOM SYSTEM	
N7851	US	20210166409	03/06/2021	SAMSUNG ELECTRONICS	US	03/12/2019	US2019062943006	US20210166409 WO2021112448	INCOHERENT DIGITAL HOLOGRAPHY BASED DEPTH CAMERA	
N7852	US	20210166147	03/06/2021	KIM DONGGYU - ENGLUND DIRK ROBERT	US	02/12/2019	US2019062942273	US20210166147 WO2021112948	OPTICAL HOLOGRAPHIC ADDRESSING OF ATOMIC QUANTUM BITS	
N7853	US	20210162888	03/06/2021	HYUNDAI MOTOR - KIA MOTORS	KR	02/12/2019	KR2019000158007	US20210162888 KR20210068702 CN112977292	HOLOGRAM SWITCH SYSTEM OF SEAT FOR VEHICLES	
N7854	KR	20210070719	15/06/2021	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	05/12/2019	KR2019000160807	KR20210070719	HOLOGRAPHIC DISPLAY DEVICE AND METHOD WITH EXTENDED VIEWING ANGLE USING TRANSMISSIVE PHASE MASK	
N7855	KR	20210064006	02/06/2021	GUMI ELECTRONICS & INFORMATION TECHNOLOGY RESEARCH INSTITUTE	KR	25/11/2019	KR2019000151955	KR20210064006	THREE-DIMENSIONAL IMAGE OUTPUT METHOD AND APPARATUS USING HOLOGRAPHIC OPTICAL ELEMENT	
N7856	KR	20210063058	01/06/2021	KRICT KOREA RESEARCH INSTITUTE OF CHEMICAL TECHNOLOGY - KYUNGPOOK NATIONAL UNIVERSITY INDUSTRY ACADEMIC COOPERATION FOUNDATION	KR	22/11/2019	KR2019000151507	KR20210063058	AZOBENZENE COMPOUND CONTAINING NITROGEN HETEROAROMATIC AND COMPOSITION FOR RECORDING GREEN HOLOGRAM COMPRISING THE SAME	
N7857	KR	20210061292	27/05/2021	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	19/11/2019	KR2019000148883	KR20210061292	HOLOGRAM RECORDING SYSTEM	
N7858	KR	20210060848	27/05/2021	FUTURE TECHNOLOGY	KR	19/11/2019	KR2019000148337	KR20210060848	HOLOGRAPHIC LIGHT-CONTAINING FILM WITH SOLAR PANEL	
N7859	KR	20210060017	26/05/2021	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	18/11/2019	KR2019000147538	KR20210060017	BINARY PHASE HOLOGRAM GENERATING APPARATUS AND METHOD FOR GENERATING BINARY PHASE HOLOGRAM WITHOUT DETERIORATION OF IMAGE QUALITY	
N7860	KR	102258183	28/05/2021	INDUSTRY ACADEMIC COOPERATION FOUNDATION OF HONAM UNIVERSITY	KR	28/11/2019	KR2019000155507	KR102258183	DEVICE FOR PROJECTING A PSEUDO-HOLOGRAM IMAGE, METHOD THEREFOR AND COMPUTER-READABLE RECORDING MEDIUM HAVING PROGRAM RECORDED THEREON FOR PERFORMING THE METHOD	
N7861	EP	3839641	23/06/2021	FEI	US	17/12/2019	US2019016717748	US20210183610 EP3839641 CN112987532	COMPARATIVE HOLOGRAPHIC IMAGING	
N7862	EP	3839639	23/06/2021	DUALITAS - TOURE RITA J	GB	20/12/2019	GB2019000018966	EP3839639 US20210195146 GB201918966 CN113009710	A PROJECTOR FOR FORMING IMAGES ON MULTIPLE PLANES	
N7863	EP	3835878	16/06/2021	KOREA UNIVERSITY INDUSTRIAL & ACADEMIC COLLABORATION FOUNDATION - KOREA UNIVERSITY RESEARCH & BUSINESS FOUNDATION SEJONG CAMPUS - SAMSUNG ELECTRONICS - UNIVERSITY KOREA RESEARCH BUSINESS FOUNDATION SEJONG CAMPUS	KR	11/12/2019	KR2019000164803	EP3835878 US20210181678 CN112946911 KR20210074157	HOLOGRAPHIC DISPLAY APPARATUS FOR PROVIDING EXPANDED VIEWING WINDOW	
N7864	DE	102019220511	24/06/2021	ROBERT BOSCH	DE	23/12/2019	DE201910220511	DE102019220511	DEVICE AND METHOD FOR PRODUCING HOLOGRAPHIC OPTICAL ELEMENTS	
N7865	DE	102019220075	24/06/2021	ROBERT BOSCH	DE	18/12/2019	DE201910220075	DE102019220075	OPTICAL ELEMENT	
N7866	CN	213519111	22/06/2021	SHENZHEN YINGNA TECHNOLOGY	CN	05/11/2020	CN2020002536857	CN213519111U	ROTARY 3D HOLOGRAPHIC ADVERTISEMENT MACHINE	
N7867	CN	213519078	22/06/2021	DONGGUAN DENGHENG ELECTRONIC TECHNOLOGY	CN	18/09/2020	CN2020002065689	CN213519078U	ROTATORY HOLOGRAPHIC ADVERTISEMENT OF 3D MACHINE	

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NON SECURITY HOLOGRAMS - 92 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N7868	CN	213518711	22/06/2021	GUANGZHOU TRUMPS ELECTRONIC TECHNOLOGY	CN	29/11/2020	CN2020002804963	CN213518711U	EDUCATION ALL-IN-ONE MACHINE WITH HOLOGRAPHIC PROJECTION FUNCTION	
N7869	CN	213518097	22/06/2021	SHANGHAI MENG YUN HOLOGRAPHIC POLYTRON TECHNOLOGIES	CN	17/10/2020	CN2020002318916	CN213518097U	HOLOGRAPHIC DISPLAY CHIP FIXING STRUCTURE FOR HOLOGRAPHIC DISPLAY PANEL	
N7870	CN	213517870	22/06/2021	NANJING XINSHIYUAN ELECTRONICS	CN	25/04/2021	CN2021000855679	CN213517870U	HOLOGRAPHIC PROJECTION INTERACTION EQUIPMENT	
N7871	CN	213512909	22/06/2021	SHANGHAI HUIZAI EXHIBITION DISPLAY	CN	19/11/2020	CN2020002678605	CN213512909U	HOLOGRAPHIC PROJECTION INTERACTION DEVICE BASED ON PRESSURE SENSING	
N7872	CN	213464526	18/06/2021	SUZHOU HUAFENG INTERACTIVE TECHNOLOGY	CN	29/09/2020	CN2020002174558	CN213464526U	360-DEGREE HOLOGRAPHIC PHANTOM IMAGING MAN-MACHINE INTERACTION DISPLAY CABINET	
N7873	CN	213407754	11/06/2021	3D NEW CULTURE	CN	20/10/2020	CN2020002346836	CN213407754U	HOLOGRAPHIC INTERACTIVE TALK SHOW THEATER	
N7874	CN	213405639	11/06/2021	LIU CHENGFANG	CN	14/05/2020	CN2020000801582	CN213405639U	HOLOGRAPHIC IMAGING CUP	
N7875	CN	213400485	08/06/2021	YIBIN UNIVERSITY	CN	24/11/2020	CN2020002743718	CN213400485U	VIRTUAL SIMULATION DEVICE BASED ON URBAN CONSTRUCTION TECHNOLOGY HOLOGRAPHIC PROJECTION	
N7876	CN	213400402	08/06/2021	SHENZHEN JIWOKOS TECHNOLOGY	CN	09/10/2020	CN2020002233344	CN213400402U	LIGHT AND THIN HOLOGRAPHIC ROTARY DISPLAY DEVICE	
N7877	CN	213399090	08/06/2021	SHENZHEN FRIDA LCD	CN	27/10/2020	CN2020002426205	CN213399090U	3D HOLOGRAPHIC HEMISPHERICAL FAN SCREEN	
N7878	CN	213338335	01/06/2021	XIAMEN FENGYUN INTELLIGENT SPACE CONSTRUCTION	CN	26/11/2020	CN2020002770722	CN213338335U	FULL-VIEW HOLOGRAPHIC PROJECTION DISPLAY INSTRUMENT	
N7879	CN	213338334	01/06/2021	SHENZHEN DUOWEI XINCHENG DIGIT DISPLAY TECHNOLOGY	CN	17/11/2020	CN2020002681333	CN213338334U	HOLOGRAPHIC STEREO IMAGE DISPLAY CABINET	
N7880	CN	213338333	01/06/2021	SHENZHEN DUOWEI XINCHENG DIGIT DISPLAY TECHNOLOGY	CN	16/11/2020	CN2020002661948	CN213338333U	3D HOLOGRAPHIC PROJECTION DISPLAY DEVICE FOR DIGITAL EXHIBITION HALL	
N7881	CN	213338299	01/06/2021	QUAN YIMING	CN	10/10/2020	CN2020002237116	CN213338299U	HOLOGRAPHIC IMAGING NAKED EYE 3D PROJECTION INTERACTION DEVICE	
N7882	CN	213333499	01/06/2021	LI YAO	CN	04/09/2020	CN2020001921448	CN213333499U	VISUAL THREE-DIMENSIONAL HOLOGRAPHIC PROJECTION SYSTEM	
N7883	CN	213333265	01/06/2021	XIAMEN EXPOSURE TECHNOLOGY	CN	27/09/2020	CN2020002150563	CN213333265U	INTERACTIVE HOLOGRAPHIC PROJECTION EQUIPMENT IN REPUTATION SCENIC SPOT	
N7884	CN	213303601	28/05/2021	SHIJIAZHUANG JIANHAO TECHNOLOGY	CN	12/11/2020	CN2020002612021	CN213303601U	HOLOGRAPHIC PROJECTION EQUIPMENT OF ANIMATION DESIGN GAME MODEL	
N7885	CN	213303454	28/05/2021	SHANGHAI UNIVERSITY OF ENGINEERING SCIENCE	CN	02/11/2020	CN2020002502218	CN213303454U	INTELLIGENT GEOGRAPHIC INFORMATION EXHIBITION STAND BASED ON HOLOGRAPHIC PROJECTION TECHNOLOGY	
N7886	CN	213302771	28/05/2021	HEBEI UNIVERSITY OF TECHNOLOGY	CN	03/11/2020	CN2020002511564	CN213302771U	INDOOR DESIGN SYSTEM CAPABLE OF REALIZING HOLOGRAPHIC PROJECTION DISPLAY	
N7887	CN	213282335	28/05/2021	CHANGYUAN TEFA TECHNOLOGY	CN	01/08/2020	CN2020001568192	CN213282335U	3D HOLOGRAPHIC DISPLAY CABINET	
N7888	CN	113014901	22/06/2021	SHENZHEN ZHENXIANG TECHNOLOGY	CN	25/02/2021	CN2021000211641	CN113014901	PARALLAX IMAGE SEQUENCE SYNTHESIS METHOD AND SYSTEM FOR HOLOGRAPHIC VOLUME VIEW PRINTING AND STORAGE MEDIUM	
N7889	CN	113009801	22/06/2021	ZHEJIANG UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	26/02/2021	CN2021000218940	CN113009801	HIGH-SPEED MULTI-DIRECTIONAL LINE CONFOCAL DIGITAL HOLOGRAPHIC THREE-DIMENSIONAL MICROSCOPIC IMAGING METHOD AND DEVICE	
N7890	CN	112995629	18/06/2021	INBO SUPERCOMPUTING NANJING TECHNOLOGY	CN	10/03/2021	CN2021000261628	CN112995629	INTELLIGENT SELF-SHOOTING HALL REALIZATION METHOD BASED ON HOLOGRAPHIC TECHNOLOGY	

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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
N7891	CN	112987531	18/06/2021	ZHEJIANG PRISM HOLOGRAPHIC TECHNOLOGY	CN	12/12/2019	CN2019001272030	CN112987531	HOLOGRAPHIC LENS ASSEMBLY AND DISPLAY SYSTEM HAVING THE SAME	
N7892	CN	112987530	18/06/2021	HEFEI UNIVERSITY OF TECHNOLOGY	CN	04/02/2021	CN2021000153734	CN112987530	OFF-AXIS DIGITAL HOLOGRAPHIC IMAGING DEVICE AND IMAGING METHOD	
N7893	CN	112987529	18/06/2021	XUZHOU GERUI ENERGY TECHNOLOGY	CN	28/01/2021	CN2021000115679	CN112987529	THREE-DIMENSIONAL PHOTOELECTRIC HOLOGRAPHIC DISPLAY BASED ON TOPOLOGICAL INSULATOR MATERIAL	
N7894	CN	112987476	18/06/2021	CHONGQING INSTITUTE OF GREEN & INTELLIGENT TECHNOLOGY CHINESE ACADEMY OF SCIENCES	CN	08/03/2021	CN2021000251841	CN112987476	HOLOGRAPHIC SPECKLE SCREEN FOR PROJECTION DISPLAY SYSTEM	
N7895	CN	112987306	18/06/2021	BOE TECHNOLOGY - FUZHOU BOE OPTOELECTRONICS TECHNOLOGY	CN	25/02/2021	CN2021000211858	CN112987306	AUGMENTED REALITY DISPLAY DEVICE, VOLUME HOLOGRAPHIC OPTICAL WAVEGUIDE STRUCTURE AND PREPARATION METHOD THEREOF	
N7896	CN	112987277	18/06/2021	AOTIZAN GUANGJING SHANDONG DISPLAY TECHNOLOGY	CN	29/03/2021	CN2021000335590	CN112987277	HOLOGRAPHIC AIMING SYSTEM, LIGHT PATH PREPARATION DEVICE OF DISPLAY ELEMENT OF HOLOGRAPHIC AIMING SYSTEM AND USING METHOD	
N7897	CN	112985297	18/06/2021	XI'AN JIAOTONG UNIVERSITY - XINYU UNIVERSITY	CN	07/02/2021	CN2021000179713	CN112985297	REFLECTION-TYPE MEASUREMENT-BASED DUAL-WAVELENGTH COMMON-PATH DIGITAL HOLOGRAPHIC MICROSCOPIC DEVICE AND MEASUREMENT METHOD	
N7898	CN	112980424	18/06/2021	NORTHEAST NORMAL UNIVERSITY	CN	04/02/2021	CN2021000153779	CN112980424	PREPARATION METHOD OF FAST PHOTOCHROMIC HOLOGRAPHIC STORAGE MATERIAL UNDER LOW-POWER WRITING	
N7899	CN	112977469	18/06/2021	LETV ZHIXIN INFORMATION TECHNOLOGY WUHAN	CN	12/03/2021	CN2021000269470	CN112977469	NAVIGATION DEVICE BASED ON VEHICLE-MOUNTED HOLOGRAPHIC PROJECTION AND CONTROL METHOD THEREOF	
N7900	CN	112969061	15/06/2021	SHAANXI HONGXING SHANSHAN NETWORK TECHNOLOGY	CN	29/01/2021	CN2021000126720	CN112969061	RESTAURANT EXPERIENCE SYSTEM BASED ON HOLOGRAPHIC IMAGE TECHNOLOGY	
N7901	CN	112967698	15/06/2021	TIANMA	CN	31/03/2021	CN2021000347203	CN112967698	LIQUID CRYSTAL PANEL, DRIVING METHOD THEREOF AND HOLOGRAPHIC 3D DISPLAY DEVICE	
N7902	CN	112967402	15/06/2021	HENAN PINGGAO ELECTRIC - PING GAO - SGCC - STATE GRID CORPORATION OF CHINA	CN	02/02/2021	CN2021000145474	CN112967402	SWITCH EQUIPMENT INTERACTIVE TRAINING SYSTEM BASED ON HOLOGRAPHIC IMAGE	
N7903	CN	112965332	15/06/2021	BELING RISTON TECHNOLOGY DEVELOPMENT	CN	22/02/2021	CN2021000197708	CN112965332	LASER HOLOGRAPHIC ULTRAMICRON SILVER SALT PHOTSENSITIVE MATERIAL AND PREPARATION METHOD THEREOF	
N7904	CN	112947023	11/06/2021	KUNMING UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	03/02/2021	CN2021000149175	CN112947023	OPTICAL SCANNING HOLOGRAPHIC THREE-DIMENSIONAL OBJECT REAL-TIME IDENTIFICATION SYSTEM AND METHOD	
N7905	CN	112946989	11/06/2021	LIU JIAN	CN	11/12/2019	CN2019001263177	CN112946989	THEORETICAL ANALYSIS METHOD FOR HOLOGRAPHIC SPACE STEREOSCOPIC VISION SENSE AND HOLOGRAPHIC IMAGE SHOOTING DISPLAY DEVICE	
N7906	CN	112946915	11/06/2021	JINGMEN CITY DREAM EXPLORATION TECHNOLOGY	CN	23/02/2021	CN2021000200569	CN112946915	REFLECTIVE GEOMETRIC HOLOGRAPHIC SCREEN WITH FIELD ANGLE AND APPLICATION THEREOF	
N7907	CN	112946914	11/06/2021	JINGMEN CITY DREAM EXPLORATION TECHNOLOGY	CN	23/02/2021	CN2021000200554	CN112946914	TRANSMISSION TYPE GEOMETRIC HOLOGRAPHIC SCREEN WITH FIELD ANGLE AND APPLICATION THEREOF	
N7908	CN	112945083	11/06/2021	CHANGCHUN INSTITUTE OF OPTICS FINE MECHANICS & PHYSICS CHINESE ACADEMY OF SCIENCES	CN	29/01/2021	CN2021000123477	CN112945083	PARALLEL PHASE SHIFT DIGITAL HOLOGRAPHIC MICROSCOPIC IMAGING SYSTEM WITH OPTICAL FIBER INTERCONNECTION	
N7909	CN	112927030	08/06/2021	YANGZHOU TIANPENG NETWORK TECHNOLOGY	CN	05/01/2021	CN2021000008647	CN112927030	HUMAN-COMPUTER INTERACTIVE INTELLIGENT SHOPPING SERVICE SYSTEM BASED ON HOLOGRAPHIC PROJECTION TECHNOLOGY	
N7910	CN	112926231	08/06/2021	HARBIN ENGINEERING UNIVERSITY	CN	27/11/2020	CN2020001352340	CN112926231	NEAR-FIELD ACOUSTIC HOLOGRAPHY MEASUREMENT METHOD IN FINITE SPACE BASED ON EQUIVALENT SOURCE METHOD	
N7911	CN	112925184	08/06/2021	KUNMING UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	29/01/2021	CN2021000128697	CN112925184	HOLOGRAPHIC IMAGE RECONSTRUCTION METHOD AND RECONSTRUCTION SYSTEM BASED ON DOUBLE ACOUSTO-OPTIC MODULATORS	
N7912	CN	112925111	08/06/2021	EYEPOL POLARIZING TECHNOLOGY	CN	15/01/2021	CN2021000053304	CN112925111	TRANSMISSION TYPE POLARIZATION DIFFRACTION GRATING HOLOGRAPHIC GLASSES LENS AND PREPARATION METHOD THEREOF	
N7913	CN	112923217	08/06/2021	JINAN RULIAN ELECTRONIC TECHNOLOGY	CN	12/01/2021	CN2021000038237	CN112923217	EDUCATIONAL SCENE APPLICATION DEVICE AND METHOD BASED ON HOLOGRAPHIC PROJECTION	

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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
N7914	CN	112914540	08/06/2021	SHENZHEN TECHNOLOGY UNIVERSITY	CN	29/01/2021	CN2021000126617	CN112914540	HOLOGRAPHIC MICROWAVE IMAGING SYSTEM BASED ON PXIE BUS AND IMAGING METHOD THEREOF	
N7915	CN	112910551	04/06/2021	HUAIYIN INSTITUTE OF TECHNOLOGY	CN	21/01/2021	CN2021000080171	CN112910551	MULTI-CHANNEL ORBITAL ANGULAR MOMENTUM CODING AND DECODING METHOD BASED ON HOLOGRAM	
N7916	CN	112904692	04/06/2021	SHENZHEN MAITERI PHOTOELECTRIC TECHNOLOGY	CN	25/01/2021	CN2021000096853	CN112904692	INTERACTIVE HOLOGRAPHIC PROJECTION SYSTEM	
N7917	CN	112904691	04/06/2021	SHENZHEN MAITERI PHOTOELECTRIC TECHNOLOGY	CN	25/01/2021	CN2021000096141	CN112904691	3D MODEL HOLOGRAPHIC PROJECTION SYSTEM	
N7918	CN	112904556	04/06/2021	SHI XUANJIE	CN	19/11/2019	CN2019001137357	CN112904556	HOLOGRAPHIC DISPLAY AND PROJECTION INTELLIGENT GLASSES OPTICAL SCHEME	
N7919	CN	112902084	04/06/2021	XIE YUANLIN	CN	09/03/2021	CN2021000256073	CN112902084	LED INTELLIGENT LAMP WITH HOLOGRAPHIC PROJECTION ADVERTISEMENT FUNCTION AND USE METHOD THEREOF	
N7920	CN	112887021	01/06/2021	DONGGUAN UNIVERSITY OF TECHNOLOGY	CN	13/01/2021	CN2021000040105	CN112887021	MEMS MICRO-REFLECTION PROCESSING DEVICE FOR VOLUME HOLOGRAPHIC IMAGING	
N7921	CN	112885417	01/06/2021	FUJIAN NORMAL UNIVERSITY	CN	21/01/2021	CN2021000085034	CN112885417	GO-DOPED PQ-PMMA (POLYMETHYL METHACRYLATE) PHOTOPOLYMER HOLOGRAPHIC STORAGE MATERIAL, PREPARATION METHOD THEREOF AND HOLOGRAPHIC OPTICAL DISK	
N7922	CN	112882370	01/06/2021	NANJING UNIVERSITY OF POSTS & TELECOMMUNICATIONS	CN	21/01/2021	CN2021000079943	CN112882370	METHOD FOR OBTAINING ACCURATE RECONSTRUCTION DISTANCE DURING AUTOMATIC FOCUSING OF DIGITAL HOLOGRAPHIC IMAGING	
N7923	CN	112882334	01/06/2021	ZHANG JIANGUO	CN	21/01/2021	CN2021000082835	CN112882334	HOLOGRAPHIC PROJECTION SYSTEM	
N7924	CN	112882228	01/06/2021	BEIHANG UNIVERSITY OF AERONAUTICS & ASTRONAUTICS	CN	29/11/2019	CN2019001196129	CN112882228	COLOR HOLOGRAPHIC NEAR-EYE AR DISPLAY SYSTEM BASED ON WHITE LIGHT ILLUMINATION AND COLOR HOLOGRAPHIC CALCULATION METHOD	
N7925	CN	112882141	01/06/2021	WUHAN UNIVERSITY	CN	27/01/2021	CN2021000113552	CN112882141	COLOR NANO PRINTING AND HOLOGRAPHIC MULTIPLEXING THREE-CHANNEL SUPER SURFACE AND DESIGN METHOD THEREOF	
N7926	CN	112882140	01/06/2021	WUHAN UNIVERSITY	CN	27/01/2021	CN2021000112364	CN112882140	DUAL-FUNCTIONAL SUPER SURFACE FOR REALIZING COLOR NANO PRINTING AND HOLOGRAPHY AND DESIGN METHOD THEREOF	
N7927	CN	112882139	01/06/2021	WUHAN UNIVERSITY	CN	27/01/2021	CN2021000112348	CN112882139	SUPER SURFACE FOR REALIZING NEAR-FIELD STRUCTURAL COLOR DISPLAY AND HOLOGRAPHIC MULTIPLEXING AND DESIGN METHOD THEREOF	
N7928	CN	112880912	01/06/2021	ZHEJIANG LAB - ZHEJIANG UNIVERSITY	CN	08/01/2021	CN2021000025166	CN112880912	SPACE RESOLUTION PRESSURE MEASUREMENT SYSTEM AND METHOD BASED ON VACUUM HOLOGRAPHIC OPTICAL TWEEZERS	
N7929	CN	112877002	01/06/2021	SHANTOU JIAXIN PACKING MATERIAL	CN	26/02/2021	CN2021000217453	CN112877002	PRODUCTION PROCESS OF HOLOGRAPHIC POSITIONING FILM FOR LOCALLY WASHING ALUMINUM	
N7930	CN	112863453	28/05/2021	TCL CHINA STAR OPTOELECTRONIC TECHNOLOGY	CN	07/01/2021	CN2021000018233	CN112863453	HOLOGRAPHIC DISPLAY METHOD AND HOLOGRAPHIC DISPLAY SYSTEM	
N7931	CN	112862682	28/05/2021	LASER FUSION RESEARCH CENTER CHINA ACADEMY OF ENGINEERING PHYSICS	CN	05/02/2021	CN2021000164102	CN112862682	MULTI-CONSTRAINT COAXIAL DIGITAL HOLOGRAPHIC RESOLUTION ENHANCEMENT METHOD AND SYSTEM	
N7932	CN	112859564	28/05/2021	TIANJIN CHUANCHI TECHNOLOGY GROUP	CN	05/01/2021	CN2021000006708	CN112859564	DIGITAL INTELLIGENT HOLOGRAPHIC PROJECTION ONLINE AND OFFLINE EXHIBITION METHOD FOR AUTOMOBILE	
N7933	CN	112857756	28/05/2021	GUANGZHOU NUOYIDE MEDICAL TECHNOLOGY DEVELOPMENT	CN	23/04/2021	CN2021000440324	CN112857756	HOLOGRAPHIC FIXED PARALLAX STEREOSCOPIC VISION DEGREE QUANTIZING DEVICE	