

# IHMA PATENT NEWSLETTER

*Limited circulation patent news bulletin for the Holography Industry*

## DECEMBER 2021 – 102 PATENTS

Published and granted patents

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- Some patents can be indexed in several categories.
- Some old patents are sometimes introduced in the databases if they have not been included in the previous update.
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P34266

BANKNOTE

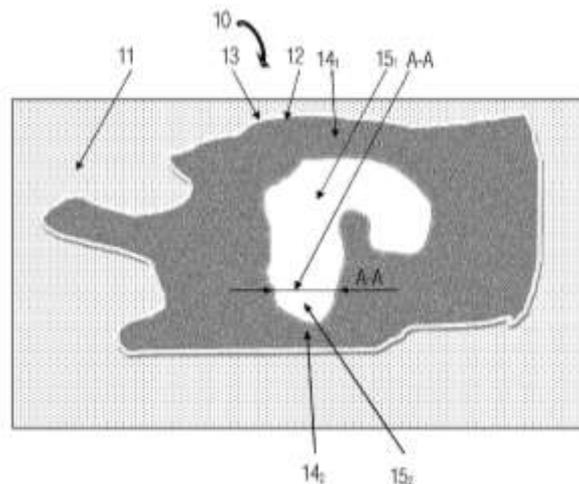
RU2759482

CRYPTEN

Priority Date: 29/12/2020

**MULTILAYER PROTECTIVE OPTICAL DIFFRACTION DEVICE, A METHOD FOR MANUFACTURING THE SPECIFIED DEVICE, A PROTECTED PRODUCT CONTAINING THE SPECIFIED MULTILAYER PROTECTIVE OPTICAL DIFFRACTION DEVICE**

FIELD: counterfeit protection. SUBSTANCE: group of inventions relates to protection against forgery of valuable documents, in particular to a method for manufacturing a multilayer protective optical diffraction device and to a protective device made according to the specified method, as well as to a protected product and a valuable document, each containing the specified protective device. A multilayer protective optical diffraction device contains at least two information-bearing elements; in this case, the first information-bearing element is made in the form of at least one diffraction grating and/or at least one relief hologram with a predetermined first picture distribution of stroke directions, depth and stroke periods in these diffraction gratings and/or relief holograms and with the provision of microcracks located along the strokes over the entire area occupied by these diffraction gratings and/or relief holograms; the second information-bearing element is made in the form of at least one relief hologram of the wallpaper type with a predetermined second picture distribution of stroke directions, depth and stroke periods in these relief holograms of the wallpaper type, while the design of at least one diffraction grating and/or relief hologram with a predetermined first picture distribution of stroke directions, the depth and periods of strokes in the specified diffraction gratings and/or relief holograms of the first information-bearing element differs from the design of at least one relief hologram of the wallpaper type with a predetermined second picture distribution of the directions of strokes, depth and periods of strokes in the specified relief hologram of the second information-bearing element. EFFECT: expansion of the range of optical instruments.



P34277

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

KR102332380

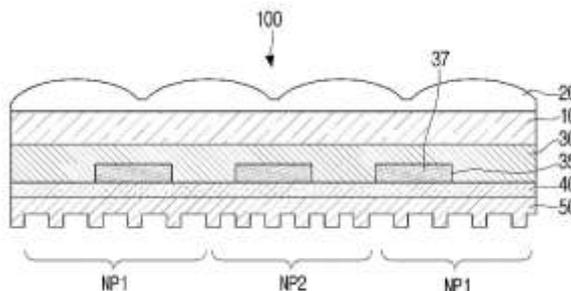
Priority Date: 31/07/2020

3SMK - KOREA INSTITUTE OF MACHINERY & MATERIALS

COLOR CONVERTED STEREOSCOPIC HOLOGRAM FILM HAVING COMPOSITE NANOPATTERN AND METHOD FOR PRODUCING THE SAME

There is provided a method of manufacturing a color conversion hologram film, the method including: preparing a composite nanopattern template; and forming a composite nanopattern on the hologram film using the composite nanopattern template, Wherein the composite nanopattern includes at least a first nanopattern and a second nanopattern different from the first nanopattern.

**CLAIM 1.** A method of manufacturing a color conversion hologram film, comprising: fabricating a composite nanopattern template; and forming a composite nanopattern on a hologram film using the composite nanopattern template, wherein the composite nanopattern comprises at least a first nanopattern and a second nanopattern different from the first nanopattern, A method of manufacturing a semiconductor device, comprising: fabricating a first reticle having a first nanopattern formed thereon and a second reticle having a second nanopattern formed thereon for a unit region; repeatedly forming the first nanopattern on a surface of a single substrate using the first reticle; repeatedly forming the second nanopattern on a region of the surface of the single substrate where the first nanopattern is not formed using the second reticle; And forming a nanopattern metal layer on at least a portion of a first nano-pattern and a second nano-pattern formed by the first reticle and the second reticle, wherein the holographic film includes a base substrate, a microlens formed on an upper portion of the base substrate, And a micropattern layer including a plurality of micropatterns filled therein with ink, wherein the composite nanopattern is formed under the micropattern layer or formed between the micropattern layer and the base substrate.



P34280

CARD – LABEL

JP2021182076

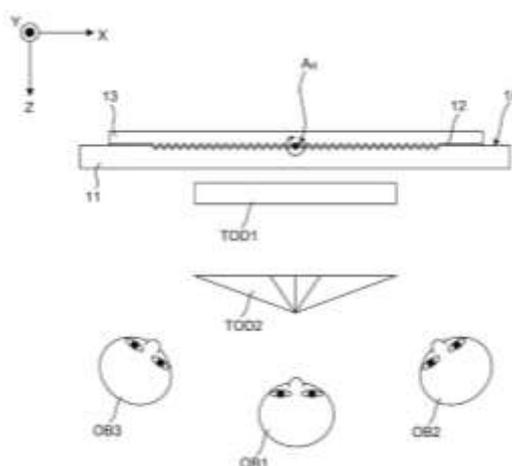
Priority Date: 19/05/2020

TOPPAN PRINTING

DISPLAY

TOPIC: To provide a display body capable of displaying a special three-dimensional image using a hologram or a diffraction grating.

INVENTION: a display 10 of the present invention is a display that displays a three-dimensional image including an image of a first target object and an image of a second target object as a diffraction image, wherein when a three-dimensional object is three-dimensionally restored from the three-dimensional image, The entire first three-dimensional object TOD1 corresponding to the first target object is restored to a distance of 4 mm or less from the display surface, and the entire second three-dimensional object TOD2 corresponding to the second target object is restored to a distance of 5 mm or more from the display surface.



**CLAIM 1.** A display member configured to display a three-dimensional image including an image of a first target object and an image of a second target object as a diffracted image, wherein when a three-dimensional object is three-dimensionally restored from the three-dimensional image, a first three-dimensional object corresponding to the first target object includes: The entire second three-dimensional object corresponding to the second target object is restored to a range of 4 mm or less in distance from the display surface, and the entire second three-dimensional object is restored to a range of 5 mm or more in distance from the display surface.

P34281

CARD – LABEL

JP2021182072

TOPPAN PRINTING

Priority Date: 19/05/2020

### DISPLAY

TOPIC: To provide a display capable of displaying a three-dimensional image that provides a strong stereoscopic effect to an observer.

INVENTION: a display 10 of the present invention is a display that displays a three-dimensional image including an image of a first target object and an image of a second target object as a diffraction image, wherein when a three-dimensional object is three-dimensionally restored from the three-dimensional image, A first three-dimensional object TOD1 corresponding to the first target object is located at a position in front of a display surface of the display body 10 when viewed from an observer OB1 observing the display body 10, Is restored so as to be separated from the display surface, and the second three-dimensional object TOD2 corresponding to the second target object is restored so as to be separated from the display surface to a position behind the display surface when viewed from the observer OB1, and no other three-dimensional object is restored between the first three-dimensional object TOD1 and the second three-dimensional object TOD2.

**CLAIM 1.** A display body configured to display a three-dimensional image including an image of a first target object and an image of a second target object as a diffraction image, wherein when a three-dimensional object is three-dimensionally restored from the three-dimensional image, a first three-dimensional object corresponding to the first target object is located at a position in front of a display surface of the display body when viewed from an observer observing the display body; Is restored to be away from the display surface, a second three-dimensional object corresponding to the second target object is restored to be away from the display surface to a position behind the display surface as viewed from the observer, and no other three-dimensional object is restored between the first three-dimensional object and the second three-dimensional object.

P34288

OVD – BANKNOTE – LUMINESCENCE – INFRARED

EP3922476

GIESECKE & DEVRIENT CURRENCY TECHNOLOGY

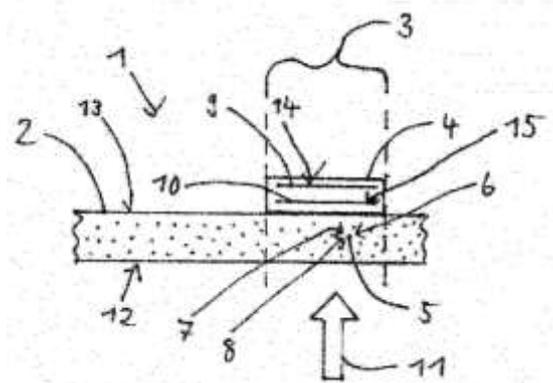
Priority Date: 10/06/2020

### VALUABLE DOCUMENT WITH A CARRIER ELEMENT AND A FILM ELEMENT, AND METHOD FOR CLASSIFYING A VALUABLE DOCUMENT

The invention relates to a value document (1) having a carrier element (2) and a film element (4) arranged in a partial region (3) of the carrier element (2), wherein the carrier element (2) has a luminescence marker (5) at least in the partial region (3), which is designed to emit luminescence radiation (6) which has at least a first wavelength (7) and a second wavelength (8) in each case in the infrared spectral range, and wherein the film element (4) has a reflection layer (9) and a spectral selection layer (10), wherein the selection layer (10) is arranged between the carrier element (2) and the reflection layer (9), wherein the reflection layer (9) is designed to reflect infrared radiation, and the selection layer (10) is designed to reflect infrared radiation, transmission of infrared radiation, wherein the inhibition of the transmission of the first wavelength (7) and the inhibition of the transmission of the second wavelength (8) are at least 10% different.

### DOCUMENT DE VALEUR DOTÉ D'UN SUBSTRAT ET D'UN FILM, ET PROCÉDÉ DE CLASSIFICATION D'UN DOCUMENT DE VALEUR

L'invention concerne un document de valeur (1) comprenant un élément support (2) et un élément film (4) disposé dans une zone partielle (3) de l'élément support (2), l'élément support (2) présentant, au moins dans la zone partielle (3), un marqueur luminescent (5) qui est conçu pour l'émission d'un rayonnement luminescent (6) présentant au moins une première longueur d'onde (7) et une deuxième longueur d'onde (8) situées respectivement dans la bande spectrale infrarouge, et l'élément film (4) présentant une couche de réflexion (9) et une couche de sélection spectrale (10), la couche de sélection (10) étant interposée entre l'élément support (2) et la couche de réflexion (9), la couche de réflexion (9) étant conçue pour réfléchir le rayonnement infrarouge, et la couche de sélection (10) étant conçue pour inhiber sélectivement par voie spectrale la transmission du rayonnement infrarouge, l'inhibition de la transmission de la première longueur d'onde (7) et l'inhibition de la transmission de la deuxième longueur d'onde (8) étant différentes d'au moins 10%.



P34289

**BANKNOTE**

EP3922475

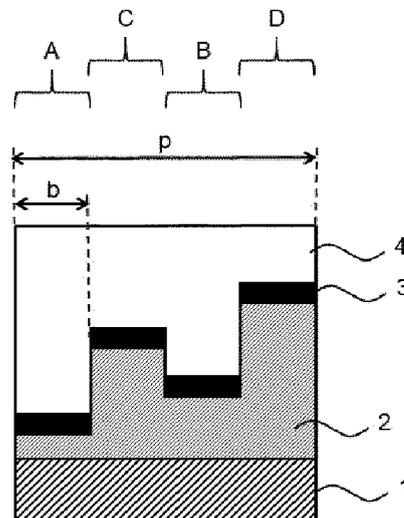
Priority Date: 10/06/2020

**GIESECKE & DEVRIENT CURRENCY TECHNOLOGY**

**COMPOSITE BODY, DECORATIVE FILM AND METHOD FOR PRODUCING THE SAME**

The invention relates to a flat composite body having a metallic appearance which is substantially transparent to electromagnetic radiation having a wavelength  $\geq 0.8 \mu\text{m}$ , comprising a plurality of layers (1, wherein the grids are arranged offset laterally, i.e. along the cross-section of the composite body, at different height steps, wherein each individual grid has the metallic microstructures in the form of metallic surface sections.

**CLAIM 1.** A sheet-like composite body having a metallic appearance which is substantially transparent to electromagnetic radiation having a wavelength  $0.8 \mu\text{m}$ , comprising a plurality of at least one electrically conductive, wherein the grids are arranged offset laterally, i.e. along the cross-section of the composite body, at different height steps, wherein each individual grid has the metallic microstructures in the form of metallic surface sections.



P34290

**PRINTING – CARD – PASSPORT**

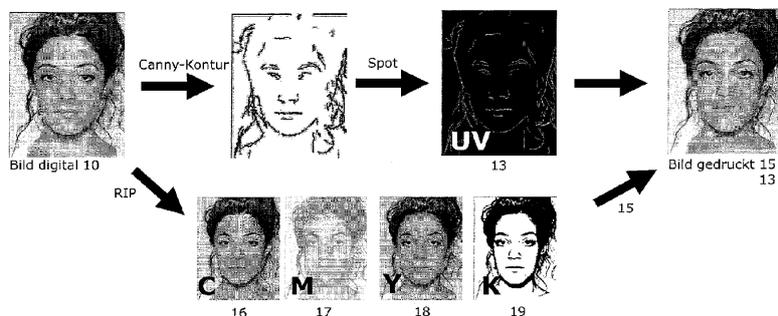
EP3922474

Priority Date: 12/06/2020

**BUNDESDRUCKEREI**

**METHOD FOR VERIFYING THE AUTHENTICITY OF AN IMAGE PRINTED ON A CARRIER FOR A SECURITY OR VALUE DOCUMENT**

The invention relates to a method for checking the authenticity of a visible image (15) printed on a data carrier (20) which is encoded with detectable image-specific results (12), wherein image-specific results (12 e) to be expected from the visible image (15) are calculated and then their correspondence with image-specific results (12) coded in the image (15) or in the region (25) of the layer (27) above the image (15) is checked.



**CLAIM 1.** A method for checking the authenticity of a visible image (15) printed on a data carrier (20), which is encoded with detectable image-specific results (12), characterized in that image-specific results (12) to be expected from the visible image (15)e) and then their correspondence with image-specific results (12) coded in the image (15) or in the region (25) of the layer (27) above the image (15) is checked.

P34291

**PRINTING – CARD – PASSPORT**

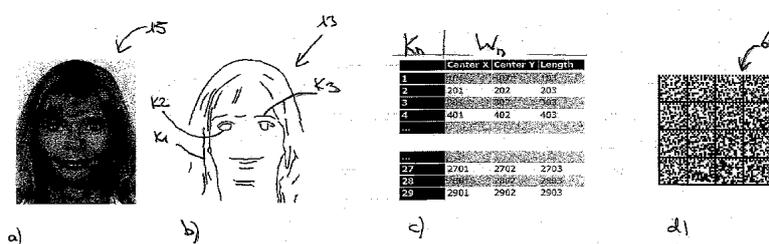
EP3922473

BUNDESDRUCKEREI

Priority Date: 12/06/2020

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

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



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

P34297

**BANKNOTE – THREAD**

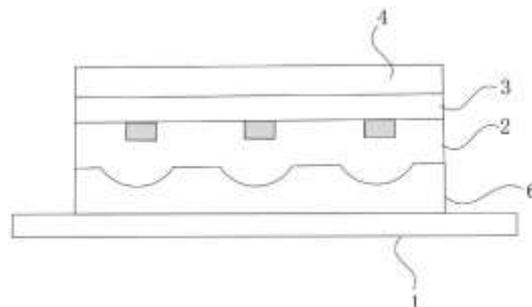
CN215164173U

SHEN BOZHONG - SHEN SU - YANG LI

Priority Date: 20/05/2021

**MOTION SAFETY LINE WATER TRANSFER PAPER AND PRODUCT WITH MOTION SAFETY LINE**

The utility model discloses a motion safety line water transfer paper and goods that have motion safety line, include water transfer carrier, shaping substrate, leave the type layer and leave the type protection film. The molding base material is disposed on the water transfer printing carrier. One side of the molding base material is provided with a spherical reflective bead, and the other side of the molding base material is provided with a pattern groove opposite to the reflective bead. The reflective beads face the water transfer carrier. The release layer is arranged on the other side of the molding substrate. The release protective film is arranged on the release layer. The utility model discloses a motion safety line water transfer printing paper can be so that the sintering of motion safety line is at products such as ceramic, glassware to can not the perk, drop, increased the range of application of motion safety line.



**CLAIM 1.** The utility model provides a motion safety line water transfer paper which characterized in that includes: a water transfer carrier; a forming substrate disposed on the water transfer carrier; one side of the light reflecting plate is provided with a spherical light reflecting bead, and the other side of the light reflecting plate is provided with a pattern groove opposite to the light reflecting bead; the light reflecting beads face the water transfer printing carrier; the release layer is arranged on the other side of the molding base material; and the release protective film is arranged on the release layer.

P34298

LABEL

CN215118071U

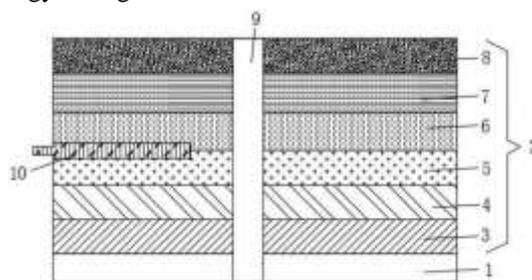
ANHUI HUAMA TECHNOLOGY

Priority Date: 30/06/2021

**HOLOGRAPHIC THERMOSENSITIVE ENVIRONMENT-FRIENDLY ADHESIVE LABEL PAPER**

The application relates to the technical field of adhesive sticker label paper, and discloses holographic heat-sensitive environment-friendly adhesive sticker label paper, including the barrier paper, the top of barrier paper is provided with label paper, label paper includes first adhesion layer, first peel off layer, second adhesion layer, second peel off layer, heat-sensitive paper layer and thin layer, the thin layer sets up at the top, heat-sensitive paper layer sets up the below on thin layer, the second peel off layer sets up the below on heat-sensitive paper layer, the second adhesion layer sets up the below on second peel off layer. This scheme is through setting up second adhesion layer and second peel off layer, and the writing on label paper is by the friction back of falling, cuts apart the card through stirring, and then separates second adhesion layer and second peel off layer, and the second adhesion layer is still fixed through first peel off layer and first adhesion layer, then on the surface on second adhesion layer take the word paper can, need not paste label paper again, the energy saving increases the feature of environmental protection.

**CLAIM 1.** The utility model provides a holographic heat-sensitive environment-friendly non-setting adhesive label paper, includes barrier paper (1), its characterized in that: the top of barrier paper (1) is provided with label paper (2), label paper (2) include first adhesion layer (3), first peel ply (4), second adhesion layer (5), second peel ply (6), heat-sensitive paper layer (7) and thin film layer (8), thin film layer (8) set up at the top, heat-sensitive paper layer (7) set up the below at thin film layer (8), second peel ply (6) set up the below at heat-sensitive paper layer (7), second adhesion layer (5) set up the below at second peel ply (6), first peel ply (4) are located the below of second adhesion layer (5), first adhesion layer (3) set up the below at first peel ply (4), first adhesion layer (3) and barrier paper (1) contact.



P34302

WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT

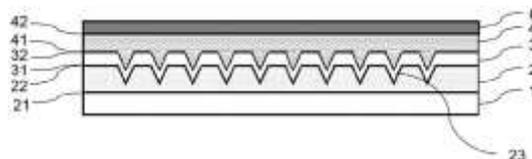
CN215096713U

Priority Date: 20/05/2021

**HOLOGRAPHIC THERMOPRINTING FILM WITH GLAZE COLOR JADE PORCELAIN EFFECT AND ANTI-COUNTERFEITING MEDIUM**

The utility model provides a holographic thermoprinting film with glaze color jade porcelain effect and an anti-counterfeiting medium, wherein the holographic thermoprinting film comprises a UV curing layer, a holographic glaze color layer and a jade porcelain color layer which are sequentially overlapped; the UV curing layer comprises a first surface and a second surface, and a holographic micro-groove structure is arranged on the second surface; the holographic glaze color layer is formed on the second surface of the UV curing layer and comprises a third surface and a fourth surface, and holographic micro-groove structures are copied on the third surface and the fourth surface; the jade porcelain color layer is formed on the fourth surface of the holographic glaze color layer and comprises a fifth surface and a sixth surface, and the fifth surface is attached to the holographic glaze color layer and is also copied with a holographic micro-groove structure; the utility model discloses add the holographic glaze color layer of anti-reflection blast between UV solidified layer and holographic chromatograph to the material formulation to holographic chromatograph improves, forms the jade porcelain chromatograph of new reaction solidification type, has realized existing gloss as jade porcelain and opaque holographic film again, and holographic pattern's wear resistance is good moreover.

**CLAIM 1.** A holographic thermoprinting film with an enamel jade porcelain effect is of a layered structure and is characterized by comprising a UV curing layer (2), a holographic enamel layer (3) and a jade porcelain color layer (4) which are sequentially overlapped; the UV cured layer (2) comprises a first surface (21) and a second surface (22), and a holographic micro-groove structure (23) is arranged on the second surface (22); said holographic enamel layer (3) being formed on the second surface (22) of said UV cured layer (2), said holographic enamel layer (3) comprising a third surface (31) and a fourth surface (32), said third surface (31) and fourth surface (32) each being replicated with said holographic micro-groove structure (23); the jade porcelain color layer (4) is formed on a fourth surface (32) of the holographic glaze color layer (3), the jade porcelain color layer (4) comprises a fifth surface (41) and a sixth surface (42), and the fifth surface (41) is attached to the holographic glaze color layer (3) and is also copied with the holographic micro-groove structure (23); the holographic glaze color layer (3) is a transparent, luminous or non-luminous, colorless or colored layer, and the jade porcelain color layer (4) is an opaque or semitransparent or transparent, luminous or non-luminous, white or colored layer.



P34311

RECORDING & MEMORY

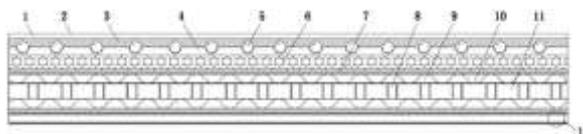
CN215005947U

SHENZHEN JINSHENGCAI PACKAGING MATERIAL

Priority Date: 22/06/2021

HOLOGRAPHIC RECORDING PHOTSENSITIVE ANTI-COUNTERFEITING POLYMERIC FILM

The utility model discloses a holographic recording sensitization polymembrane that guards against falsification, including the polymembrane main part, holographic recording photosensitive layer, basic unit and from the type structure, the inside central position department of polymembrane main part is provided with holographic recording photosensitive layer, and is provided with the basic unit in the polymembrane main part of holographic recording photosensitive layer one side, and the inside central position department of basic unit is provided with the enhancement layer, is provided with the reflector layer in the polymembrane main part of holographic recording photosensitive layer opposite side, and the bottom of polymembrane main part is provided with from the type structure, and includes first silicon oil layer from the type structure, from type paper and second silicon oil layer. The utility model discloses an install polymeric membrane main part, holographic recording photosensitive layer and basic unit, the basic unit includes enhancement layer, convex part and concave part, and the inside evenly distributed of enhancement layer has the strengthening groove, and the strengthening inslot is crisscross to be provided with glass fiber, does benefit to the structural strength who increases the basic unit, and the crushing resistance of basic unit improves greatly simultaneously.



**CLAIM 1.** The utility model provides a holographic recording sensitization polymer membrane that guards against falsification, its characterized in that, includes polymer membrane main part (2), holographic recording photosensitive layer (6), basic unit (7) and from type structure (12), the central point department of polymer membrane main part (2) inside is provided with holographic recording photosensitive layer (6), and is provided with basic unit (7) in the polymer membrane main part (2) of holographic recording photosensitive layer (6) one side, the central point department of basic unit (7) inside is provided with enhancement layer (11), be provided with reflector layer (4) in the polymer membrane main part (2) of holographic recording photosensitive layer (6) opposite side, and one side that holographic recording photosensitive layer (6) were kept away from to reflector layer (4) is provided with protective layer (3), the bottom of polymer membrane main part (2) is provided with from type structure (12), and from type structure (12) including first silicon oil layer (1201), A release paper (1202) and a second silicone oil layer (1203).

P34313

PRINTING

CN214955661U

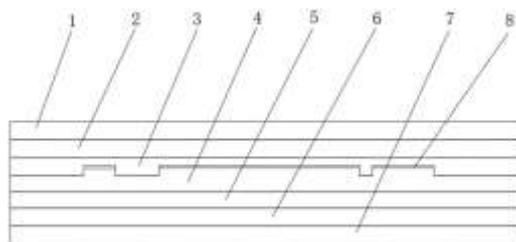
HUBEI GEDIAN DEVELOPMENT REGION CHENGUANG INDUSTRIAL

Priority Date: 09/03/2021

HOLOGRAPHIC RADIUM-SHINE REPLACEMENT SIGN OF DISCOLOURING

The utility model provides a color-changing holographic laser replacement-proof mark, which relates to the anti-counterfeiting technical field and comprises a hollow-out effect layer, wherein the top of the hollow-out effect layer is provided with a hollow-out covering layer, the top of the hollow-out covering layer is provided with a base layer, the bottom of the hollow-out effect layer is provided with a holographic pattern layer, the bottom of the holographic pattern layer is provided with an aluminum plating layer, the bottom of the aluminum plating layer is provided with a gum layer, the hollow-out effect layer and the hollow-out covering layer are mutually nested, and the surface of the hollow-out bulge of the hollow-out effect layer is provided with a color-changing ink layer, so that the color-changing ink layer achieves the suspended three-dimensional effect and is matched with the holographic pattern layer at the bottom for use, the process difficulty and the reliability of the anti-counterfeiting effect are improved, the top of the base layer is provided with a protective layer made of transparent hard resin material, so that the color-changing ink layer has good wear resistance, and the surface of the protective layer is processed by micro-grinding and hydrophobic and oleophobic properties, not only avoids the dirt caused by long-time use, but also has beautiful sanding effect.

**CLAIM 1.** The utility model provides a change colour holographic laser and prevent replacement sign, includes fretwork effect layer (4), its characterized in that: the top on fretwork effect layer (4) is equipped with fretwork overburden (3), the top on fretwork overburden (3) is equipped with basic unit (2), the top of basic unit (2) is equipped with protective layer (1), the bottom on fretwork effect layer (4) is equipped with holographic pattern layer (5), the bottom on holographic pattern layer (5) is equipped with aluminized layer (6), the bottom of aluminized layer (6) is equipped with gum layer (7).



P34315

BRAND PROTECTION

CN214932046U

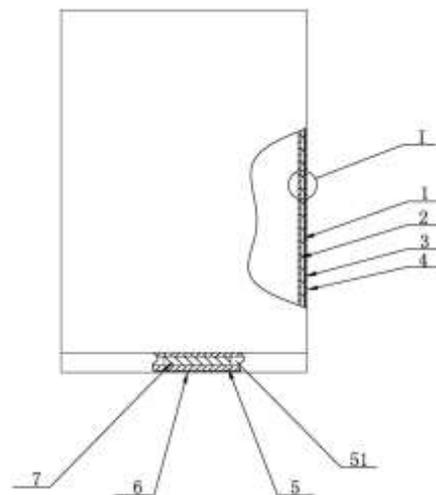
ZHEJIANG GANGFA SOFT PACKAGE

Priority Date: 04/02/2021

NOVEL COMPOUND FLEXIBLE PACKAGING BAG OF HOLOGRAPHIC RADIUM-SHINE PLASTICS

The utility model discloses a novel holographic laser plastic composite flexible packaging bag, which comprises a plastic film base layer, wherein an aluminum coating layer is fixedly arranged on the inner surface of the plastic film base layer, a holographic laser anti-counterfeiting pattern layer is fixedly arranged on the outer surface of the plastic film base layer, and an antibacterial film outer layer is fixedly arranged on the outer surface of the holographic laser anti-counterfeiting pattern layer; the outer local position of antibiotic film is fixed and is provided with the kraft paper layer, the fixed antibiotic film bottom that is provided with on the lower surface of kraft paper layer, be provided with one in the kraft paper layer and put the thing cavity, it is provided with passive electronic tags to put the thing cavity. Above-mentioned technical scheme, structural design is reasonable, difficult damaged, long service life, anti-fake performance are good, difficult counterfeit and the practicality is good.

CLAIM 1. The utility model provides a novel compound flexible packaging bag of radium-shine plastics of holography, includes plastic film basic unit (1), its characterized in that: an aluminum-plated layer (2) is fixedly arranged on the inner surface of the plastic film base layer (1), a holographic laser anti-counterfeiting pattern layer (3) is fixedly arranged on the outer surface of the plastic film base layer (1), and an antibacterial film outer layer (4) is fixedly arranged on the outer surface of the holographic laser anti-counterfeiting pattern layer (3); the antibacterial film is characterized in that a kraft paper layer (5) is fixedly arranged at the local position of the antibacterial film outer layer (4), an antibacterial film bottom layer (6) is fixedly arranged on the lower surface of the kraft paper layer (5), an article placing cavity (51) is formed in the kraft paper layer (5), and a passive electronic tag (7) is arranged in the article placing cavity (51).



P34320

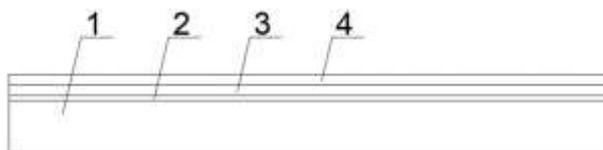
JIANGSU JINHENG NEW PACKAGING MATERIAL

CN214897285U

Priority Date: 16/06/2021

LASER MEDIUM WITH PROTECTIVE LAYER

The utility model provides a radium-shine medium with protective layer, include: a thin base material having a carrying surface for attaching content; the laser layer is compositely fixed on the bearing surface of the substrate and at least partially covers the bearing surface; the nano protective layer is made of nano-scale coating and covers the laser layer and the position, which is not covered by the laser layer, on the bearing surface; the upper color layer is coated on the nano protective layer; the laser layer comprises laser holographic patterns and/or text content information. The utility model discloses set up the nanometer protective layer in the outside on radium-shine layer, can keep apart the protection to radium-shine intraformational holographic content, prevent to be colored the layer in the manufacturing process and produce the influence and drop. Meanwhile, when the holographic content is irradiated by light, a highlight visual effect is formed through the nano protective layer, and anti-counterfeiting and sensory experience are improved.



CLAIM 1. A laser medium having a protective layer, comprising: a thin base material having a carrying surface for attaching content; the laser layer is compositely fixed on the bearing surface of the substrate and at least partially covers the bearing surface; the nano protective layer is made of nano-scale coating and covers the laser layer and the position, which is not covered by the laser layer, on the bearing surface; the upper color layer is coated on the nano protective layer; the laser layer comprises laser holographic patterns and/or text content information.

P34321

LABEL

CN214897276U

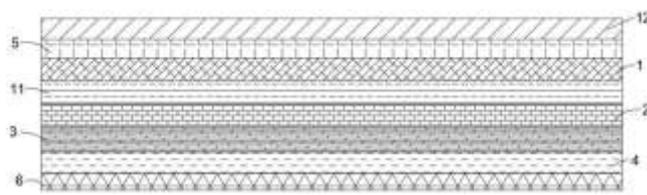
JINHUA HEHUA PLASTIC

Priority Date: 23/02/2021

**ANTI-COUNTERFEITING TRANSPARENT ADHESIVE TAPE**

The utility model discloses an anti-counterfeiting transparent adhesive tape, including the PET substrate layer, PET substrate layer lower surface is equipped with fire-retardant polyacrylate layer, fire-retardant polyacrylate layer is equipped with holographic laser coating in the one side that deviates from the PET substrate layer, holographic laser coating is equipped with anti-counterfeiting stamp-pad ink layer in the one side that deviates from the fire-retardant polyacrylate layer, the PET substrate layer is equipped with the super hydrophilic composite coating of nanometer in the one side that deviates from the fire-retardant polyacrylate layer, anti-counterfeiting stamp-pad ink layer is equipped with the antifalsification label in the one side that deviates from the holographic laser coating, the antifalsification label upper end is equipped with the product information mark, the antifalsification label lower extreme is equipped with the antifalsification bar code; the anti-counterfeiting transparent adhesive tape has flame-retardant and anti-counterfeiting functions, wherein the holographic laser coating increases the anti-counterfeiting effect of the transparent adhesive tape and the anti-counterfeiting protection capability, and the transparent adhesive tape is provided with the nano super-hydrophilic composite coating, so that the transparent adhesive tape has a good anti-fogging effect.

**CLAIM 1.** The utility model provides an anti-fake scotch tape, includes PET substrate layer (1), its characterized in that: the lower surface of the PET substrate layer (1) is provided with a flame-retardant polyacrylate layer (2), the flame-retardant polyacrylate layer (2) deviates from one side of the PET substrate layer (1) is provided with a holographic laser coating (3), the holographic laser coating (3) deviates from one side of the flame-retardant polyacrylate layer (2) is provided with an anti-counterfeiting mimeographing layer (4), the PET substrate layer (1) deviates from one side of the flame-retardant polyacrylate layer (2) is provided with a nano super-hydrophilic composite coating (5), the anti-counterfeiting mimeographing layer (4) deviates from one side of the holographic laser coating (3) is provided with an anti-counterfeiting label (6), the upper end of the anti-counterfeiting label (6) is provided with a product information mark (7), and the lower end of the anti-counterfeiting label (6) is provided with an anti-counterfeiting bar code (8).



P34325

PRINTING

CN214825767U

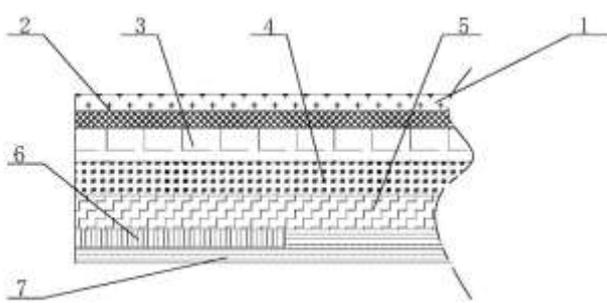
SHANDONG TAIBAO PACKAGING PRODUCT

Priority Date: 31/05/2021

**UNCOVERING HOLOGRAPHIC ANTI-COUNTERFEITING STAY WIRE**

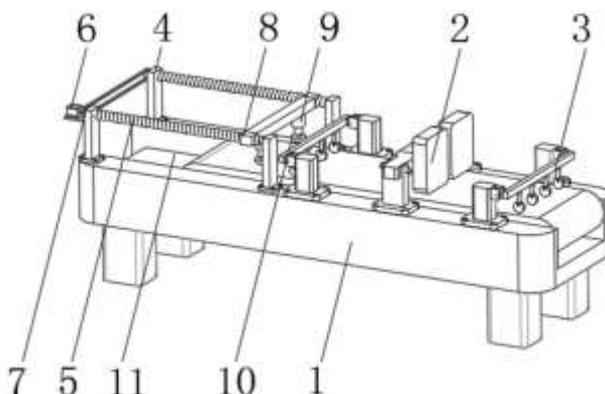
The utility model belongs to the technical field of anti-fake acting as go-between, concretely relates to take off and show holographic anti-fake acting as go-between, the anterior segment that its characterized in that acted as go-between is originated section, and originated section from the top down is in proper order for the gloss oil layer, acts as go-between base film layer, printing layer, impression composite coating, holographic information layer, transfer coating and non-setting adhesive layer, acts as go-between from the top down in proper order outside the originated section for the gloss oil layer, act as go-between base film layer, printing layer, impression composite coating, holographic information layer and not dry glue layer. The utility model has the advantages that: holographic anti-counterfeiting information is hidden in the acting line, the utility model discloses can't see holographic anti-counterfeiting information before using with in using, the originated section that has the transfer coating after revealing shows anti-counterfeiting information and can't recover, and anti-counterfeiting performance is good.

**CLAIM 1.** A uncovering holographic anti-counterfeiting stay wire is characterized in that the front section of the stay wire is an initial section, the initial section sequentially comprises a gloss oil layer, a stay wire base film layer, a printing layer, an imprinting composite coating, a holographic information layer, a transfer coating and a non-setting adhesive layer from top to bottom, and the stay wire outside the initial section sequentially comprises the gloss oil layer, the stay wire base film layer, the printing layer, the imprinting composite coating, the holographic information layer and a non-setting adhesive layer from top to bottom.



### DOUBLE-DECK HOLOGRAPHIC ANTI-COUNTERFEITING MEMBRANE TWO-DIMENSIONAL CODE LITHOGRAPHY APPARATUS OF TRACEABLE

The utility model provides a traceable two-dimensional code printing device with double-layer holographic anti-counterfeiting film, which relates to the technical field of printing devices and comprises a workbench and a printing device, wherein the top surface of the workbench is provided with fixed support legs, the fixed support legs are connected with the top surface of the workbench through bolts, a sliding screw rod is arranged between the two fixed support legs, a transmission belt is arranged between the two sliding screw rods, the transmission belt is respectively sleeved with one end of the sliding screw rod, one end of the sliding screw rod is connected with a servo motor through a key joint, a sliding connecting rod is arranged above the workbench and sleeved with the surface of the sliding screw rod, the sliding connecting rod is movably connected with the sliding screw rod, the bottom surface of the sliding connecting rod is connected with a pneumatic device through bolts, the working end of the pneumatic device is fixed with an electrostatic chuck, a storage device is arranged in a groove on the top surface of the workbench, the electrostatic chuck and the storage device are adopted, thereby realizing that the purpose that the worker does not need to wait for processing products, the automatic recovery and placement of the processed products can be realized, the labor force of workers is reduced, and the processing efficiency is improved.



**CLAIM 1.** The utility model provides a two-layer holographic anti-counterfeiting film traceable two-dimensional code lithography apparatus, includes workstation (1) and printing device (2), its characterized in that: the top surface of the workbench (1) is provided with fixed support legs (4), the fixed support legs (4) are connected with the top surface of the workbench (1) through bolts, a sliding screw rod (5) is arranged between the two fixed support legs (4), a transmission belt (7) is arranged between the two sliding screw rods (5), the transmission belt (7) is respectively sleeved with one end of the sliding screw rod (5), one end of the sliding screw rod (5) is provided with a servo motor (6), the working end of the servo motor (6) is in key joint with the sliding screw rod (5), a sliding connecting rod (8) is arranged above the workbench (1), the sliding connecting rod (8) is sleeved with the surface of the sliding screw rod (5), the sliding connecting rod (8) is movably connected with the sliding screw rod (5), the bottom surface of the sliding connecting rod (8) is provided with a pneumatic device (9), and the pneumatic device (9) is connected with the bottom surface of the sliding connecting rod (8) through bolts, the working end of the pneumatic device (9) is fixed with an electrostatic chuck (10), and a storage device (11) is arranged in a groove in the top surface of the workbench (1).

P34331

**PRINTING – BRAND PROTECTION**

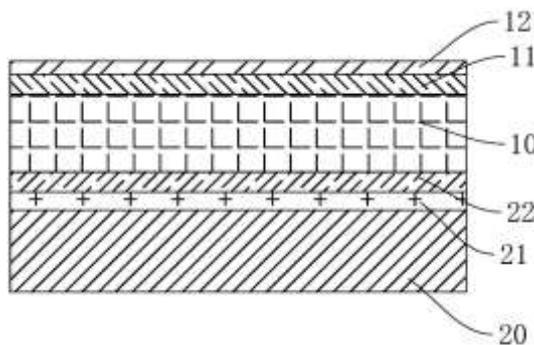
CN214777931U

Priority Date: 31/07/2020

ZHEJIANG INNOVA LIANBIN PACKAGING TECHNOLOGY

**MATTE GOLD STAMPING COMPOSITE FILM AND DIGITAL HOLOGRAPHIC HOT STAMPING ANTI-COUNTERFEITING PACKAGING BAG**

The utility model provides a mute gilt complex film of light and digital holographic thermoprint anti-fake wrapping bag, a mute gilt complex film of light, including from top to bottom setting gradually: the first PE film layer is sequentially provided with a gold stamping adhesive layer and a gold stamping transfer layer from bottom to top; the printing ink layer is arranged below the first PE film layer, and a solvent-free glue layer is arranged between the first PE film layer and the printing ink layer; and the second PE film layer is arranged below the ink layer. The utility model discloses have rational in infrastructure, heat-seal and mechanical properties good, excellent in use effect.



**CLAIM 1.** The utility model provides a mute light gilt complex film which characterized in that, including from top to bottom setting gradually: the PE composite film I (10), the PE composite film I (10) is sequentially provided with a gold stamping adhesive layer (11) and a gold stamping transfer layer (12) from bottom to top; the printing ink layer (21) is arranged below the first PE composite film (10), and a solvent-free glue layer (22) is arranged between the first PE composite film (10) and the printing ink layer (21); and a second multilayer PE composite film (20) arranged below the ink layer (21).

P34337

CN113793551

Priority Date: 14/09/2021

SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP

**HOLOGRAPHIC LASER INFORMATION LOW-TEMPERATURE DECORATION FIRING PRODUCT AND PREPARATION METHOD THEREOF**

The invention relates to a holographic laser information low-temperature decoration firing product and a preparation method thereof. The invention combines the holographic laser anti-counterfeiting technology and the digital information anti-counterfeiting technology with the baked stained paper product, and the laser holographic patterns and the digital information are tightly combined with products such as glass, ceramics and the like in a low-temperature baking mode, thereby increasing the anti-counterfeiting grade.



**CLAIM 1.** Holographic laser information low temperature decoration firing product, its characterized in that: the laser film comprises a tearable film layer (1), a surface oil layer (2), an information layer (3), a laser layer (4), a hydrosol layer (5) and a paper base layer (6) which are sequentially stacked from top to bottom.

P34341

CN113777900

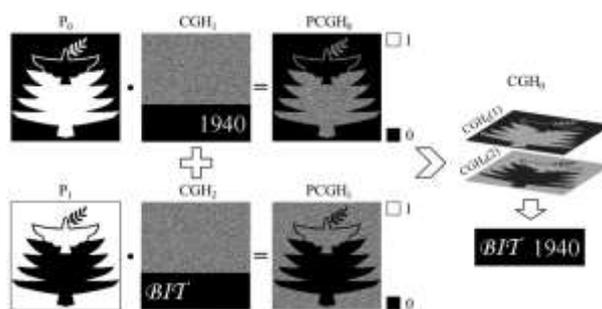
Priority Date: 17/09/2021

BEIJING UNIVERSITY OF TECHNOLOGY

### PATTERNED COMPUTER HOLOGRAM PREPARED BASED ON THREE-DIMENSIONAL SPACE SHAPING FEMTOSECOND LASER

The invention relates to a patterned computer hologram prepared based on a three-dimensional space shaping femtosecond laser, belonging to the technical field of laser application. The patterned hologram is composed of an array of micro-pit structures located on the surface of a transparent material and an array of cavity structures located inside the material. Under the irradiation of incident natural light at different angles, the patterned hologram presents a pattern with dynamic light and shade change characteristics; under the laser irradiation, the hologram presents holographic images recorded by the surface layer micro-pit structure and the internal cavity structure respectively. Meanwhile, liquid with the refractive index close to that of the transparent material is dripped on the patterned hologram, and holographic imaging corresponding to the micro-pit structure array can be erased, so that the conversion of the holographic imaging is realized. The patterned hologram has the characteristics of attractive appearance, easy identification, concealment of holographic projection, high imitation difficulty and the like of pattern printing, can change holographic imaging by dripping liquid, has multiple anti-counterfeiting functions, and can be used for product anti-counterfeiting and information encryption.

**CLAIM 1.** A patterned computer hologram prepared based on a three-dimensional space shaping femtosecond laser is characterized in that: the patterned hologram is a transparent material which is subjected to surface layer processing and internal processing; the surface layer is processed into a micro-pit structure on the surface of the transparent material by femtosecond laser; the internal processing is that femtosecond laser is used for processing a cavity structure in the transparent material; the micro-pit structure and the cavity structure are arranged into a gray pattern, the number of layers of the structure is the same as the gray order of the pattern, and the corresponding gray values of the pattern are sequentially increased from top to bottom; under the irradiation of incident natural light at different angles, the patterned hologram presents a pattern with dynamic light and shade change characteristics; under laser irradiation, the patterned hologram presents holographic images recorded by the surface micropit structure and the internal cavity structure, respectively.



P34349

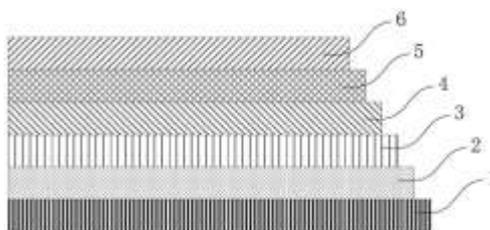
CN113752715

Priority Date: 05/06/2020

BEIJING PANPASS INFORMATION TECHNOLOGY

### HOLOGRAPHIC ANTI-COUNTERFEITING FILM AND PREPARATION METHOD THEREOF

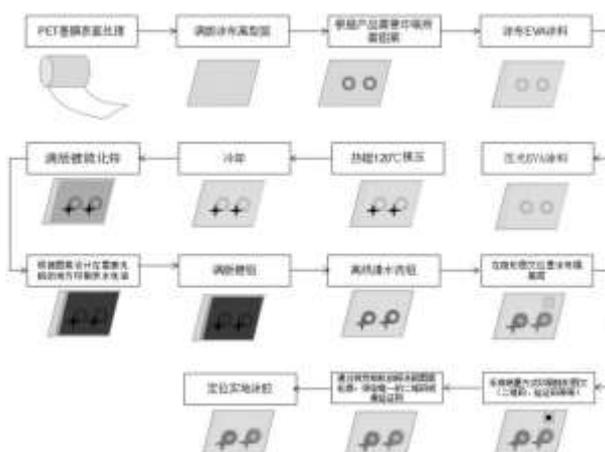
The application provides a holographic anti-counterfeiting film, including data information in the holographic anti-counterfeiting film, data information size is little, can be read by the correct recognition of recognition equipment to improve anti-fake reliability, the application still provides a preparation holographic anti-counterfeiting film's method, the method protects the picture and text resin layer through adding the non-metallic coating that plates, thereby makes the picture and text resin layer not take place to warp at the thermal condensation in-process image, thereby obtains the holographic anti-counterfeiting film that has readable data information.



**CLAIM 1.** The holographic anti-counterfeiting film is characterized by comprising a base material layer (1), a separation layer (2), an image-text resin layer (3), a non-metallic coating (4), a metal coating (5) and a hot melt adhesive layer (6) which are laminated in sequence.

**MICRO-NANO STRUCTURE ANTI-COUNTERFEITING HOLLOWED-OUT COLOR IMAGE-TEXT HOLOGRAPHIC HOT STAMPING FOIL AND PRODUCTION EQUIPMENT AND METHOD**

The invention discloses a micro-nano structure anti-counterfeiting hollowed color image-text holographic hot stamping foil and production equipment and a method. Wherein, the method comprises the steps of coating a release layer on the base film in a full-page manner; printing a color image-text printing layer on the release layer in a mirror image manner, and coating an EVA coating layer on the color image-text printing layer; making the EVA coating layer in a semi-molten state and performing press polishing treatment; then, forming a micro-nano structure die pressing holographic image-text layer by adopting hot roller die pressing; vacuum evaporating a zinc sulfide layer on the holographic image-text layer, and then coating a hydrophilic oil layer; vacuum evaporating a metal layer on the hydrophilic oil layer; cleaning the hydrophilic oil layer to strip part of the metal layer to form hollow-out pictures and texts; and arranging a hidden image-text layer on the metal layer, uploading anti-counterfeiting information of the hidden image-text layer, and finally coating an adhesive layer to prepare the micro-nano structure anti-counterfeiting hollowed color image-text holographic hot stamping foil. The invention adopts a mode of printing first and then stamping, improves the hot stamping quality, realizes the combination of photoetching film pressing effect, color image-text and anti-counterfeiting of various micro-nano structures, and increases the product expression diversity.



**CLAIM 1.** A production facility that is used for holographic thermoprinting of anti-fake fretwork colour picture and text of micro-nano structure, its characterized in that includes: the unwinding device is used for providing a base film; the satellite type printing device is used for coating a release layer on the base film in a full-page manner and printing a color image-text printing layer on the release layer in a mirror image manner; the coating and calendaring device is used for coating the EVA coating layer on the color image-text printing layer, enabling the EVA coating layer to be in a semi-molten state and calendaring the EVA coating layer; the hot roller die pressing device is used for forming a micro-nano structure die pressing holographic image-text layer by die pressing the EVA coating layer in a semi-molten state; the first evaporation device is used for carrying out vacuum evaporation on the micro-nano structure mould pressing holographic image-text layer to form a zinc sulfide layer; the first coating device is used for coating a hydrophilic oil layer on the zinc sulfide layer according to the hollow pictures and texts; the second evaporation device is used for evaporating the metal layer on the hydrophilic oil layer in vacuum; the off-line cleaning device is used for cleaning the hydrophilic oil layer to strip part of the metal layer to form hollow-out pictures and texts; the anti-counterfeiting processing device is used for arranging the hidden image-text layer on the metal layer and uploading anti-counterfeiting information of the hidden image-text layer; the second coating device is used for coating an adhesive layer on the cleaned metal layer to prepare the micro-nano structure anti-counterfeiting hollowed color image-text holographic hot stamping foil; and the winding device is used for winding the micro-nano structure anti-counterfeiting hollowed color image-text holographic hot stamping foil.

*Click on the title to return to table of contents*

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

**P34241**

**BANKNOTE – RELIEF – EMBOSSING**

**WO2021249609**

Priority Date: 09/06/2020

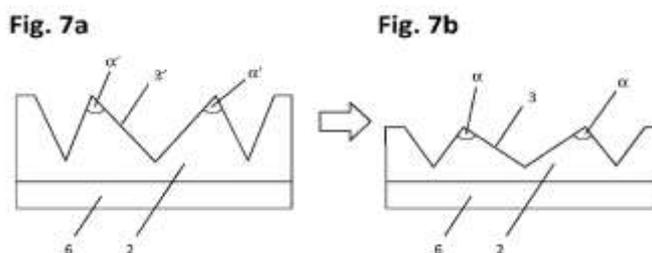
**GIESECKE & DEVRIENT CURRENCY TECHNOLOGY**

### RETROREFLECTIVE RELIEF STRUCTURE IN EMBOSSING COATING

The invention relates to an embossing die for producing a flat retroreflector, which has a retroreflective corner cube relief structure formed in a curable embossing coating, in particular a UV coating, and retroreflects electromagnetic radiation incident from an incidence side. The embossing die has a number  $n$  of mutually adjacent depressions and/or elevations on one side, wherein each of the  $n$  depressions and/or elevations is formed from three faces arranged at a certain angle ( $\alpha'$ ) to one another. The invention also relates to a method for producing an embossing die of this kind. According to the invention, the certain angle ( $\alpha'$ ) is smaller than  $90^\circ$  by a certain value  $X$ , i.e.,  $\alpha' = 90^\circ - X$ , so that the number  $n$  of mutually adjacent elevations and/or depressions moulded into the embossing coating by the embossing die each consist of three faces arranged at an angle of  $90^\circ$  to one another after the curable embossing coating has cured. Elevations of the embossing die correspond to depressions in the embossing coating, and depressions in the embossing die correspond to elevations of the embossing coating.

### STRUCTURE EN RELIEF RÉTRORÉFLÉCHISSANTE DANS UN REVÊTEMENT DE GAUFRAGE

L'invention se rapporte à une matrice de gaufrage destinée à la fabrication d'un rétrorefléteur plat, qui présente une structure en relief de cube de coin rétrofléchissante formée dans un revêtement de gaufrage durcissable, en particulier un revêtement UV, et qui rétrofléchit un rayonnement électromagnétique incident depuis un côté d'incidence. La matrice de gaufrage présente un nombre  $n$  de creux et/ou d'élévations mutuellement adjacents sur un côté, chacun des  $n$  creux et/ou  $n$  élévations étant formé à partir de trois faces agencées selon un certain angle ( $\alpha'$ ) les unes par rapport aux autres. L'invention se rapporte également à un procédé permettant de produire une matrice de gaufrage de ce type. Selon l'invention, l'angle ( $\alpha'$ ) est inférieure à  $90^\circ$  par une certaine valeur  $X$ , à savoir,  $\alpha' = 90^\circ - X$ , de telle sorte que le nombre  $n$  d'élévations et/ou de creux mutuellement adjacents moulés dans le revêtement de gaufrage par la matrice de gaufrage se composent chacun de trois faces agencées selon un angle de  $90^\circ$  les unes par rapport aux autres après que le revêtement de gaufrage durcissable a durci. Des élévations de la matrice de gaufrage correspondent à des creux dans le revêtement de gaufrage et des creux dans la matrice de gaufrage correspondent à des élévations du revêtement de gaufrage.



**CLAIM 1.** Embossing tool for producing a planar retroreflector which has a retroreflective corner-cube relief structure formed in a curable embossing lacquer, in particular a UV lacquer, and retroreflects electromagnetic radiation incident from an incident side, wherein the embossing tool has on one side a number  $n$  of adjacent depressions and/ or elevations, wherein each of the  $n$  depressions and/ or elevations is formed from three plane surfaces arranged at a specific angle ( $\alpha'$ ) to one another, characterized in that the specific angle ( $\alpha'$ ) by a specific value  $X$  is less than  $90^\circ$ , so that the  $n$  depressions/ and/ or elevations formed into the curable embossing lacquer by the embossing tool each consist of three planar surfaces arranged at an angle of  $90^\circ$  to one another after curing of the embossing lacquer.

P34242

CARD

WO2021247353

COMPOSECURE

Priority Date: 01/06/2020

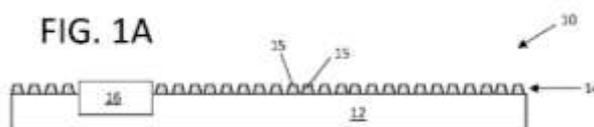
### TRANSACTION CARDS WITH DISCONTINUOUS METAL STRATA

A transaction card having a discontinuous metal stratum (14) with a desired degree of electrical eddy current disruption disposed on a surface of a first layer (12), such as a glass or other transparent layer. A transaction module (16) disposed in the first layer is electrically isolated from the discontinuous metal stratum. The discontinuous metal stratum may include a plurality of isolated metal features (15) that form a halftone pattern, such as a pattern that is visibly opaque to the naked eye.

### CARTES DE TRANSACTION AVEC STRATES MÉTALLIQUES DISCONTINUES

Une carte de transaction ayant une strate métallique discontinue (14) avec un degré souhaité de rupture de courant électrique de Foucault est disposée sur une surface d'une première couche (12), telle qu'un verre ou une autre couche transparente. Un module de transaction (16) disposé dans la première couche est électriquement isolé de la strate métallique discontinue. La strate métallique discontinue peut comprendre une pluralité de caractéristiques métalliques isolées (15) qui forment un motif en demi-teinte, tel qu'un motif qui est visiblement opaque à l'œil nu.

**CLAIM 1.** A transaction card, comprising: at least a first glass layer; a discontinuous metal stratum disposed on a first surface of the glass layer and having a desired degree of electrical eddy current disruption; and a contact, contactless, or dual interface transaction module disposed in the first glass layer and electrically isolated from the discontinuous metal stratum.



P34243

BRAND PROTECTION – PHOTONIC CRYSTALS

WO2021247344

UNIVERSITY OF FLORIDA RESEARCH FOUNDATION

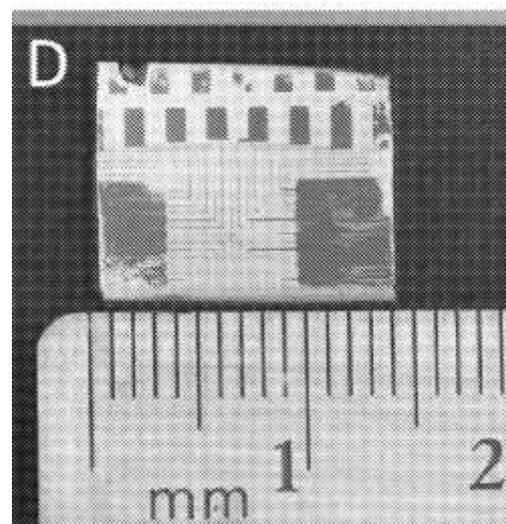
Priority Date: 01/06/2020

### PHOTONIC CRYSTAL MICROPATTERNS AND ANTI-COUNTERFEITING FILMS, METHODS OF MAKING, AND METHODS OF USE

Provided herein are methods for fabricating a porous polymer material, methods for revealing hidden anti-counterfeiting patterns, chromogenic sensors having hidden anti-counterfeiting patterns, and the like. Chromogenic sensors including porous polymer materials are provided. The chromogenic sensors can reveal hidden patterns such as anti-counterfeiting patterns and the pattern can be re-hidden.

### MICROMOTIFS DE CRISTAUX PHOTONIQUES ET FILMS ANTI-CONTREFAÇON, PROCÉDÉS DE FABRICATION ET PROCÉDÉS D'UTILISATION

L'invention concerne des procédés de fabrication d'un matériau polymère poreux, des procédés pour révéler des motifs anti-contrefaçon cachés, des capteurs chromogènes ayant des motifs anti-contrefaçon cachés, et similaires. L'invention concerne également des capteurs chromogènes comprenant des matériaux polymères poreux. Les capteurs chromogènes peuvent révéler des motifs cachés tels que des motifs anti-contrefaçon et le motif peut être re-caché.



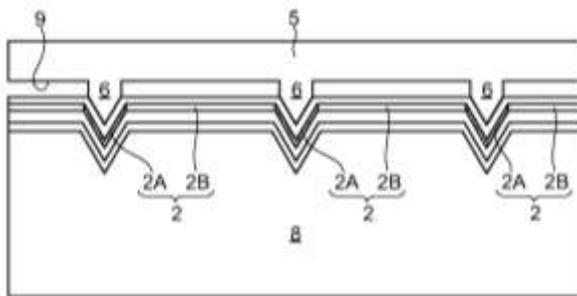
**CLAIM 1.** A method for fabricating a porous polymer material, comprising: providing a plurality of particles in a volume between a first surface of a first substrate and at least one opposing second surface of a second substrate, wherein the plurality of particles includes an ordered array of nanoparticles; adding a shape memory polymerizable material into the volume between the opposing first and second surfaces to surround the particles; polymerizing the shape memory polymerizable material to form a polymer framework around the particles; removing the particles to form an ordered array of voids in the polymer framework; transitioning the porous polymer material to a deformed state in which the array of voids is in a collapsed state by applying a first stimulus, causing the voids to collapse; placing a mask over the porous polymer material to form masked regions and exposed regions; and exposing the porous polymer material to UV radiation, causing the voids in the exposed regions to remain permanently in the collapsed state.

**METHOD OF APPLYING A PATTERN, AND SECURITY DEVICE FOR AN ARTICLE**

Methods of applying a pattern and security devices are disclosed. In one arrangement, a receiving member (10) having a layered structure (12) is provided. The layered structure (12) comprises a layer of phase change material (PCM, 2). The phase change material (PCM, 2) is thermally switchable between a plurality of stable states having different refractive indices relative to each other. An embossing member (5) is stamped into the receiving member (10). The embossing member (5) heats a selected portion of the layer of phase change material (PCM, 2) via contact with the receiving member (10) during the stamping. The heating thermally switches phase change material (PCM, 2) in the selected portion and thereby applies a pattern of different refractive indices to the layer of phase change material (PCM, 2).

**PROCÉDÉ D'APPLICATION D'UN MOTIF, ET DISPOSITIF DE SÉCURITÉ POUR UN ARTICLE**

L'invention concerne des procédés d'application d'un motif et des dispositifs de sécurité. Dans un agencement, un élément de réception (10) ayant une structure en couches (12) est fourni. La structure en couches (12) comprend une couche de matériau à changement de phase (PCM, 2). Le matériau à changement de phase (PCM, 2) est commutable thermiquement entre une pluralité d'états stables présentant des indices de réfraction différents les uns des autres. Un élément de gaufrage (5) est estampé dans l'élément de réception (10). L'élément de gaufrage (5) chauffe une partie sélectionnée de la couche de matériau à changement de phase (PCM, 2) par contact avec l'élément de réception (10) pendant l'estampage. Le chauffage commute thermiquement le matériau à changement de phase (PCM, 2) dans la partie sélectionnée et applique ainsi un motif d'indices de réfraction différents à la couche de matériau à changement de phase (PCM, 2).



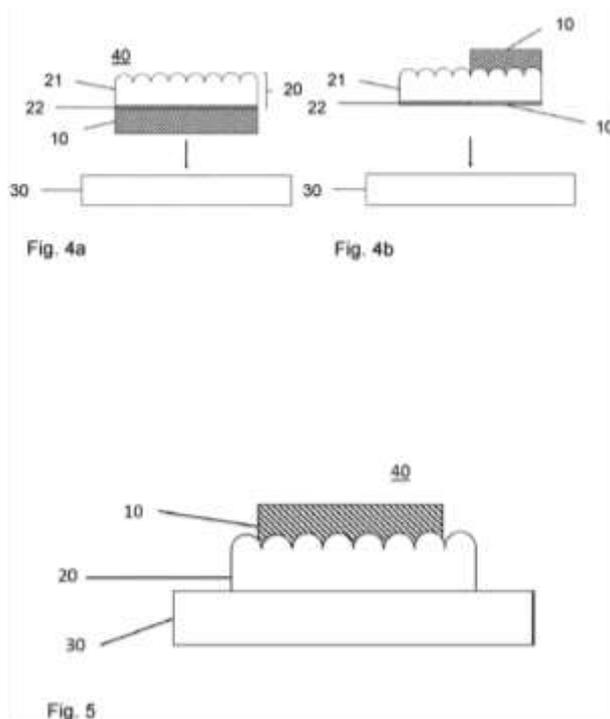
**CLAIM 1.** A method of applying a pattern, comprising: providing a receiving member having a layered structure, the layered structure comprising a layer of phase change material, the phase change material being thermally switchable between a plurality of stable states having different refractive indices relative to each other; and stamping an embossing member into the receiving member, wherein: the embossing member heats a selected portion of the layer of phase change material via contact with the receiving member during the stamping, the heating being such as to thermally switch phase change material in the selected portion and thereby apply a pattern of different refractive indices to the layer of phase change material.

**METHOD FOR PRODUCING A MULTILAYER BODY, AND MULTILAYER BODY**

The invention relates to a method for producing a multilayer body (40) and to a multilayer body. The method for producing a multilayer body comprises the following steps: - providing at least one base film (20); - providing at least one transfer film; - applying at least partially at least one transfer layer (10) of the transfer film onto and/or under the base film (20). The multilayer body (40) comprises at least one base film (20) and at least one transfer layer (10) of a transfer film, which is applied onto and/or under the base film (20).

**PROCÉDÉ POUR FABRIQUER UN CORPS MULTICOUCHE ET CORPS MULTICOUCHE**

L'invention concerne un procédé pour fabriquer un corps multicouche (40) et un corps multicouche. Le procédé de fabrication d'un corps multicouche comprend les étapes suivantes : fourniture d'au moins une feuille de base (20); fourniture d'au moins une feuille de transfert; application au moins partielle d'au moins une couche de transfert (10) de la feuille de transfert sur et/ou sous la feuille de base (20). Le corps multicouche (40) comporte au moins une feuille de base (20) et au moins une couche de transfert (10) d'une feuille de transfert appliquée sur et/ou sous la feuille de base (20).



**CLAIM 1.** A method for producing a multilayer body (40), preferably a security element, particularly preferably a value document, wherein the following steps are carried out in particular in the following sequence: a) providing at least one base film (20) b) providing at least one transfer film c) at least partially applying at least one transfer layer (10) of the transfer film to and/or under the base film (20).

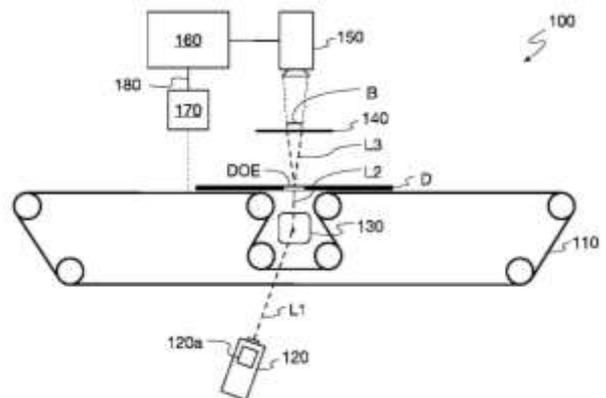
## DEVICE AND SYSTEM FOR INSPECTING AT LEAST ONE DIFFRACTIVE OPTICAL ELEMENT OF A DOCUMENT

The invention relates to a device for inspecting at least one diffractive optical element DOE of a document, said device having: a document support means for supporting a document to be inspected; a radiation source for coherent electromagnetic radiation; a deflection unit, which is arranged on a first side of the document support means, for deflecting radiation emitted by the radiation source onto the document supported by the document support means; a screen, which is arranged on a side of the document support means opposite the first side, for displaying an image projected onto the screen by transmissive diffractive interaction of the deflected radiation with a DOE provided on or in the document; an image sensor for sensing the image projected on the screen and for providing image data representing the sensed image; and an evaluation means for evaluating the image data in respect of at least one inspection criterion. The deflection unit is configured to be movable in an adjustable manner relative to the document support means such that, during operation of the device, it deflects the radiation emitted by the radiation source onto a corresponding point on the document to be inspected, supported by the document support means, variably depending on the currently set position of the deflection unit.

## DISPOSITIF ET SYSTÈME D'INSPECTION D'AU MOINS UN ÉLÉMENT OPTIQUE DIFFRACTIF D'UN DOCUMENT

L'invention concerne un dispositif d'inspection d'au moins un élément optique diffractif (DOE) d'un document, ledit dispositif présentant : un moyen de support de document destiné à soutenir un document devant être inspecté ; une source de rayonnement pour un rayonnement électromagnétique cohérent ; une unité de déviation, qui est agencée sur un premier côté du moyen de support de document, destinée à dévier un rayonnement émis par la source de rayonnement sur le document soutenu par le moyen de support de document ; un écran, qui est agencé sur un côté du moyen de support de document opposé au premier côté, destiné à afficher une image projetée sur l'écran par interaction diffractive transmissive du rayonnement dévié avec un DOE disposé sur ou dans le document; un capteur d'image destiné à détecter l'image projetée sur l'écran et destiné à fournir des données d'image représentant l'image détectée ; et un moyen d'évaluation destiné à évaluer les données d'image par rapport à au moins un critère d'inspection. L'unité de déviation est configurée pour être mobile d'une manière réglable par rapport au moyen de support de document de sorte que, pendant le fonctionnement du dispositif, elle dévie le rayonnement émis par la source de rayonnement sur un point correspondant sur le document devant être inspecté, soutenu par le moyen de support de document, de façon variable en fonction de la position actuellement définie de l'unité de déviation.

**CLAIM 1.** An apparatus (100; 200) for inspecting at least one diffractive optical element, DOE, of a document (D), the apparatus (100; 200) comprising: a document support device (110) for supporting a document (D) to be inspected provided with a DOE; a radiation source (120) for coherent electromagnetic radiation; a deflection unit (130) arranged on a first side of the document carrier device (110) for deflecting radiation (L1) emitted by the radiation source (120) onto the document (D) carried by the document carrier device (110); an image wall (140; 190) arranged on a side of the document carrier device (110) opposite to the first side for representing an image formed by transmissive diffractive interaction of the deflected radiation (L2) with a DOE provided on or in the document (D) on the image wall (140; 190); an image sensor (150) for sensorially capturing the image (B) projected on the image wall (140; 190) and for providing image data representing the captured image (B); and an evaluation device (160) for evaluating the image data with regard to at least one inspection criterion; wherein the deflection unit (130) is configured to be movable relative to the document carrier device (110) in an adjustable manner, during operation of the apparatus (100; 200), it deflects the radiation (L1) emitted by the radiation source (120) variably as a function of the currently set position of the deflection unit (130) onto a corresponding location on the document (D) to be inspected which is carried by the document carrier device (110).

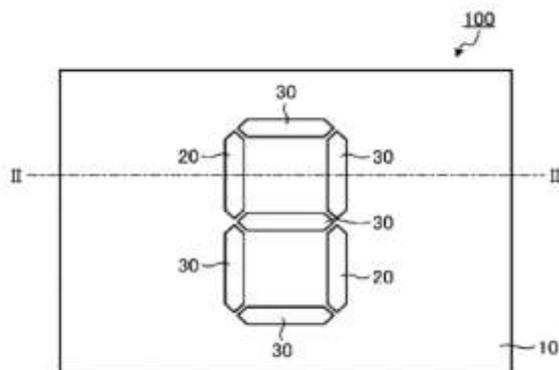


### AUTHENTICITY DETERMINATION MEMBER AND AUTHENTICITY DETERMINATION METHOD THEREFOR

The authenticity determination member includes: a base material layer, which is a reflective circular polarizer; a first printed layer provided on the base material layer, comprising a resin pigment that is a fragment from a resin layer A1 having cholesteric regularity; and a second printed layer provided on the base material layer, comprising a metal pigment having no circularly polarized light separation function. The authenticity determination method for the authenticity determination member comprises: the step (1) of injecting a nonpolarized light from one main surface of the authenticity determination member, to perform an observation and obtain a reflected image (1); the step (2) of injecting a nonpolarized light from the other main surface of the authenticity determination member, to perform an observation and obtain a reflected image (2); and the step (3) of determining that the reflected image (1) and the reflected image (2) are different.

### ÉLÉMENT DE DÉTERMINATION D'AUTHENTICITÉ ET PROCÉDÉ DE DÉTERMINATION D'AUTHENTICITÉ S'Y RAPPORTANT

L'élément de détermination d'authenticité comprend : une couche de matériau de base, qui est un polariseur circulaire réfléchissant ; une première couche imprimée disposée sur la couche de matériau de base, comprenant un pigment de résine qui est un fragment d'une couche de résine A1 ayant une régularité cholestérique ; et une seconde couche imprimée disposée sur la couche de matériau de base, comprenant un pigment métallique n'ayant pas de fonction de séparation de lumière à polarisation circulaire. Le procédé de détermination d'authenticité pour l'élément de détermination d'authenticité comprend : l'étape (1) d'injection d'une lumière non polarisée à partir d'une surface principale de l'élément de détermination d'authenticité, pour effectuer une observation et obtenir une image réfléchie (1) ; l'étape (2) d'injection d'une lumière non polarisée à partir de l'autre surface principale de l'élément de détermination d'authenticité, pour effectuer une observation et obtenir une image réfléchie (2) ; et l'étape (3) consistant à déterminer que l'image réfléchie (1) et l'image réfléchie (2) sont différentes.



**CLAIM 1.** An authenticity determining member comprising: a substrate layer that is a reflective circular polarizer; a first printed layer provided on the substrate layer, the first printed layer containing a resin pigment that is a fragment of a resin layer A1 having cholesteric regularity; and a second printed layer provided on the substrate layer, the second printed layer containing a metal pigment that does not have a circularly polarized light separating function.

P34260

**LABEL – BRAND PROTECTION – RELIEF – MICROLENS**

US20210382202

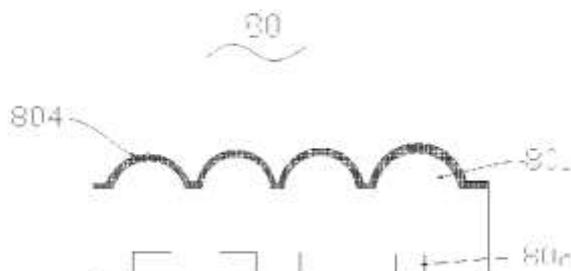
SHINE OPTOELECTRONICS

Priority Date: 08/07/2015

**OPTICAL FILM**

Disclosed is an optical film of a double-sided structure, comprising: a body which comprises a polymer, having a first surface and a second surface opposite to each other; an accommodation mechanism provided on the first surface and the second surface; and a filler filled in the accommodation mechanism for forming a graphic structure, wherein the upper surface of the filler is just flush with the first surface and the second surface respectively to form a plane structure; or, the upper surface of the filler is lower than the first surface and the second surface respectively to form a sag structure; the body comprising the accommodation mechanism is an integral structure; the polymer comprises a thermosetting resin, a photocurable resin or a mixture of the thermosetting resin and the photocurable resin. The present application provides the optical film, so as to advantageously reduce a thickness of a film.

**CLAIM 1.** An optical film of a double-sided structure, comprising: a body which comprises a polymer, having a first surface and a second surface opposite to each other; an accommodation mechanism provided on the first surface and the second surface; and a filler filled in the accommodation mechanism for forming a graphic structure, wherein the upper surface of the filler is just flush with the first surface and the second surface respectively to form a plane structure; or, the upper surface of the filler is lower than the first surface and the second surface respectively to form a sag structure; the body comprising the accommodation mechanism is an integral structure; the polymer comprises a thermosetting resin, a photocurable resin or a mixture of the thermosetting resin and the photocurable resin.



P34276

**PRINTING – LABEL**

KR102333137

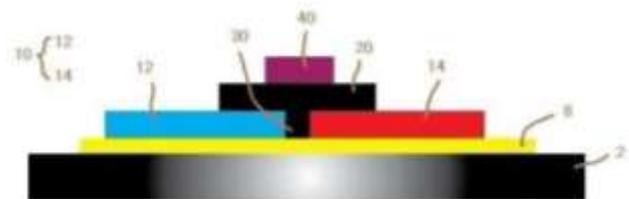
PARK, JUNG-HOON

Priority Date: 08/06/2021

**MULTIPLE COMPOSITE PRINTED STRUCTURE AND SPECIAL PRINTED SHEET FORMED WITH THE PRINTED STRUCTURE**

The present invention has advantages in that image conversion or color conversion effects are made more clearly depending on viewing positions, angles, etc., or light entry directions, angles, positions, etc., and thus the perception of image conversion or color conversion of consumers is high, The present invention relates to a multi-composite printed structure having a novel configuration in which a dynamic feeling image can be extracted, thereby stimulating the exhalation of consumers according to the differentiation of products, improving the promotion and purchase baths of products, and more easily distinguishing fake products, and a special printed sheet having the printed structure. According to the present invention, there is provided a reflective layer (8) formed on a top surface or a bottom surface of a substrate (2) and reflecting incident light, a first element (10) printed on the top surface or the substrate (2) to have a smaller area than the reflective layer (8), the first element (10) being divided into two or more regions having different colors, And a second element (20) printed on the first element (10) so as to partially overlap the respective areas forming the first element (10), so that a portion where the first element (20) overlaps the second element (30) varies depending on a viewing angle, so that a design or color is visible differently, and a special printing sheet formed with the printed structure.

**CLAIM 1.** A reflective layer (8) formed on an upper surface or a lower surface of a substrate (2) and reflecting incident light; a printed circuit board (10) on the upper surface or the substrate of said reflective layer (8) so as to have a smaller area than said reflective layer (8), A display device comprising: a first element divided into two or more regions having different colors; and a second element having a color different from that of the first element and printed on an upper surface of a boundary of regions forming the first element, A second element (20) partially overlapping the respective regions of the first element (10), wherein the regions forming the first element (10) are printed spaced apart from each other, between which regions a third element (30) having a different colour from the regions is printed, And a portion where the first element (20) overlaps the second element (20) varies depending on the viewing angle, so that the design or color is differently visible.



P34277

PATENT OF THE MONTH

HOLOGRAM – PRINTING – BANKNOTE – CARD – RELIEF – MICROLENS

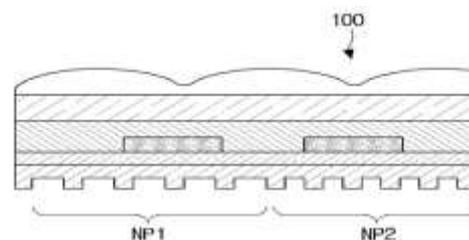
KR102332380

3SMK - KOREA INSTITUTE OF MACHINERY & MATERIALS

Priority Date: 31/07/2020

COLOR CONVERTED STEREOSCOPIC HOLOGRAM FILM HAVING COMPOSITE NANOPATTERN AND METHOD FOR PRODUCING THE SAME

There is provided a method of manufacturing a color conversion hologram film, the method including: preparing a composite nanopattern template; and forming a composite nanopattern on the hologram film using the composite nanopattern template, Wherein the composite nanopattern includes at least a first nanopattern and a second nanopattern different from the first nanopattern.



CLAIM 1. A method of manufacturing a color conversion hologram film, comprising: fabricating a composite nanopattern template; and forming a composite nanopattern on a hologram film using the composite nanopattern template, wherein the composite nanopattern comprises at least a first nanopattern and a second nanopattern different from the first nanopattern, A method of manufacturing a semiconductor device, comprising: fabricating a first reticle having a first nanopattern formed thereon and a second reticle having a second nanopattern formed thereon for a unit region; repeatedly forming the first nanopattern on a surface of a single substrate using the first reticle; repeatedly forming the second nanopattern on a region of the surface of the single substrate where the first nanopattern is not formed using the second reticle; And forming a nano-pattern metal layer on at least a portion of a first nano-pattern and a second nano-pattern formed by the first reticle and the second reticle, wherein the holographic film includes a base substrate, a microlens formed on an upper portion of the base substrate, And a micropattern layer including a plurality of micropatterns filled therein with ink, wherein the composite nanopattern is formed under the micropattern layer or formed between the micropattern layer and the base substrate.

P34288

HOLOGRAM – BANKNOTE – LUMINESCENCE – INFRARED

EP3922476

GIESECKE & DEVRIENT CURRENCY TECHNOLOGY

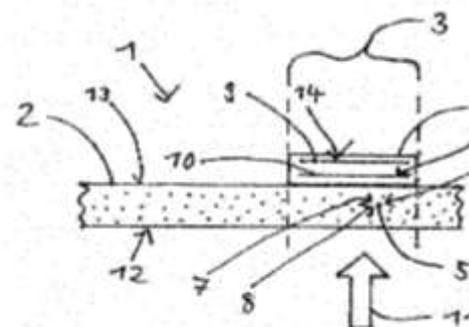
Priority Date: 10/06/2020

VALUABLE DOCUMENT WITH A CARRIER ELEMENT AND A FILM ELEMENT, AND METHOD FOR CLASSIFYING A VALUABLE DOCUMENT

The invention relates to a value document (1) having a carrier element (2) and a film element (4) arranged in a partial region (3) of the carrier element (2), wherein the carrier element (2) has a luminescence marker (5) at least in the partial region (3), which is designed to emit luminescence radiation (6) which has at least a first wavelength (7) and a second wavelength (8) in each case in the infrared spectral range, and wherein the film element (4) has a reflection layer (9) and a spectral selection layer (10), wherein the selection layer (10) is arranged between the carrier element (2) and the reflection layer (9), wherein the reflection layer (9) is designed to reflect infrared radiation, and the selection layer (10) is designed to reflect infrared radiation, transmission of infrared radiation, wherein the inhibition of the transmission of the first wavelength (7) and the inhibition of the transmission of the second wavelength (8) are at least 10% different.

DOCUMENT DE VALEUR DOTÉ D'UN SUBSTRAT ET D'UN FILM, ET PROCÉDÉ DE CLASSIFICATION D'UN DOCUMENT DE VALEUR

L'invention concerne un document de valeur (1) comprenant un élément support (2) et un élément film (4) disposé dans une zone partielle (3) de l'élément support (2), l'élément support (2) présentant, au moins dans la zone partielle (3), un marqueur luminescent (5) qui est conçu pour l'émission d'un rayonnement luminescent (6) présentant au moins une première longueur d'onde (7) et une deuxième longueur d'onde (8) situées respectivement dans la bande spectrale infrarouge, et l'élément film (4) présentant une couche de réflexion (9) et une couche de sélection spectrale (10), la couche de sélection (10) étant interposée entre l'élément support (2) et la couche de réflexion (9), la couche de réflexion (9) étant conçue pour réfléchir le rayonnement infrarouge, et la couche de sélection (10) étant conçue pour inhiber sélectivement par voie spectrale la transmission du rayonnement infrarouge, l'inhibition de la transmission de la première longueur d'onde (7) et l'inhibition de la transmission de la deuxième longueur d'onde (8) étant différentes d'au moins 10%.



P34293

PRINTING – INK – BANKNOTE

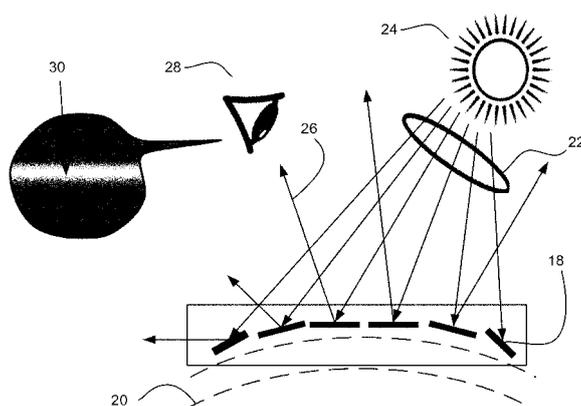
EP3919286

VIAMI SOLUTIONS

Priority Date: 05/06/2020

SECURITY PIGMENT

A flake including a layer of a diamagnetic material; and at least one additional layer is disclosed. The flake, such as a plurality of flakes, can be dispersed in a liquid medium to form a composition. The composition can be applied to a surface of a substrate to form a security device. A method of making the security device is also disclosed.



CLAIM 1. A flake, comprising: a layer of a diamagnetic material; and at least one additional layer.

P34301

PRINTING – BRAND PROTECTION

CN215104280U

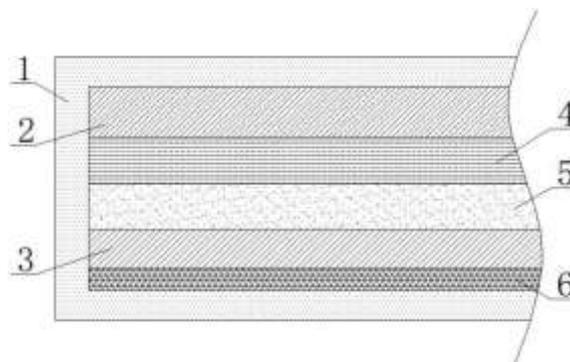
ANHUI JIUSHUN PHOTOELECTRIC TECHNOLOGY

Priority Date: 28/06/2021

LASER ENVIRONMENT-FRIENDLY 3D THREE-DIMENSIONAL ANTI-COUNTERFEITING PACKAGING PAPER

The utility model discloses a laser environment-friendly 3D three-dimensional anti-counterfeiting packaging paper, which comprises a biodegradable coating and a paper base layer, wherein the printing layer, the bonding layer, a laser anti-counterfeiting layer, a metal coating and the paper base layer have the same size and area, and the laser anti-counterfeiting layer and the paper base layer are covered layer by layer to respectively complete respective functions, and also form the whole packaging paper body, the bonding layer adopts a degradable water-based adhesive, can be naturally degraded without polluting the environment, the metal coating is an independent aluminum foil layer, the metal coating can automatically fall off after the degradation of the bonding layer is finished, the biodegradable coating completely wraps the covering packaging paper layer, so that the packaging paper is used as a whole, after the degradation of the biodegradable coating and the bonding layer, the paper base layer can be separated from the metal coating, personnel can recycle the paper of the paper base layer and the metallic aluminum of the metal coating, the laser anti-counterfeiting packaging paper adopts the integral forming of degradable environment-friendly materials, can be recycled after being degraded, and is very environment-friendly.

CLAIM 1. The utility model provides a three-dimensional anti-fake wrapping paper of laser environmental protection 3D, includes biodegradable diolame (1) and paper basic unit (6), its characterized in that: the biodegradable coating is characterized in that a paper base layer (6) is arranged inside the biodegradable coating (1), an adhesive layer (3) is arranged at the upper end of the paper base layer (6), a metal coating (5) is arranged at the upper end of the adhesive layer (3), a laser anti-counterfeiting layer (4) is arranged at the upper end of the metal coating (5), and a printing layer (2) is arranged at the upper end of the laser anti-counterfeiting layer (4).



P34303

### LIQUID CRYSTALS

CN215068925U

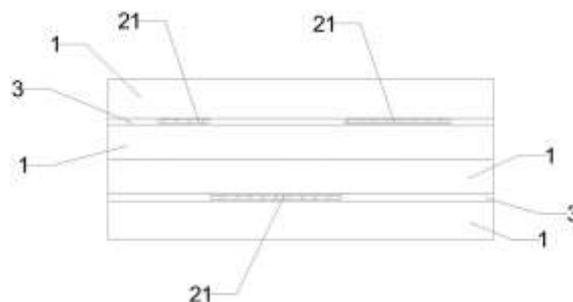
Priority Date: 16/06/2021

EAST CHINA UNIVERSITY OF SCIENCE & TECHNOLOGY – SUZHOU  
KUNHUANG NEW MATERIAL TECHNOLOGY

#### REVERSIBLE, COLOR-CHANGEABLE AND MULTI-STABLE ANTI-COUNTERFEITING COUPLING LAYER SHEET

The utility model relates to a reversible, color-changeable and multistable anti-counterfeiting coupling layer sheet, which comprises a light-transmitting sheet, cholesteric liquid crystal which changes color along with illumination and an integral pattern, wherein the integral pattern is formed by coupling at least two parts of sub-patterns; the two light transmission sheets are stacked to form a top layer, cholesteric liquid crystal is filled between the two light transmission sheets of the top layer, and a box body shaped as a part of the sub-pattern is further arranged in the cholesteric liquid crystal between the two light transmission sheets of the top layer; the two light transmission sheets are stacked to form a bottom layer, cholesteric liquid crystal is filled between the two light transmission sheets of the bottom layer, and a box body shaped as the other part of the sub-pattern is clamped in the cholesteric liquid crystal between the two light transmission sheets of the bottom layer; the top layer and the bottom layer are superposed and fixed. The beneficial effects of the utility model are that accessible illumination is hidden and is shown selected pattern to realize the decoupling and the coupling of pattern, both strengthened anti-counterfeit marking's security, simplified process flow again, showing and having reduced the cost of manufacture.

**CLAIM 1.** A reversible, color-changeable and multistable anti-counterfeiting coupling layer sheet comprises a light-transmitting sheet and cholesteric liquid crystal which changes color along with illumination, and is characterized by also comprising an integral pattern, wherein the integral pattern is formed by coupling at least two parts of sub-patterns; the two light transmission sheets are stacked to form a top layer, cholesteric liquid crystal is filled between the two light transmission sheets of the top layer, and a box body shaped as a part of the sub-pattern is further arranged in the cholesteric liquid crystal between the two light transmission sheets of the top layer; the two light transmission sheets are stacked to form a bottom layer, cholesteric liquid crystal is filled between the two light transmission sheets of the bottom layer, and a box body shaped as the other part of the sub-pattern is clamped in the cholesteric liquid crystal between the two light transmission sheets of the bottom layer; the top layer and the bottom layer are superposed and fixed.



P34330

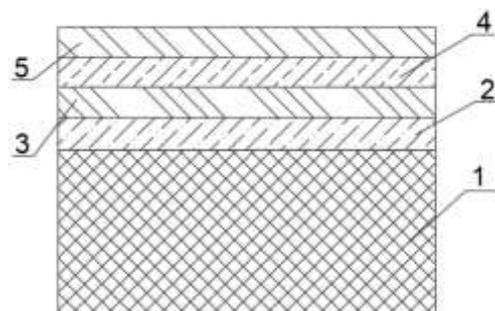
CN214782928U

Priority Date: 15/03/2021

### ZHEJIANG BENKETE TIPPING PAPER

#### HIGH OPACITY TIPPING PAPER

The utility model discloses a high opacity china cypress paper, including china cypress paper matrix layer, china cypress paper matrix layer upside is equipped with the anticorrosive coating, the anticorrosive coating upside is equipped with the stretch-proofing layer, the stretch-proofing layer constitutes for bamboo charcoal fiber, stretch-proofing layer upside is equipped with the waterproof layer, the waterproof layer upside is equipped with the anti-fake layer of light variability memory. The utility model discloses added anticorrosive coating, waterproof layer, stretch-proofing layer and the anti-fake layer of light change memory on the basis of original china cypress paper matrix layer, can improve holistic waterproof nature of china cypress paper, anticorrosive, can improve the holistic tensile strength of china cypress paper, can make the whole certain tensile that bears of china cypress paper to through the anti-fake layer of light change memory, improve the holistic false degree of falsification of china cypress paper, reduce corresponding counterfeit and inferior product, the practicality is extremely strong.



**CLAIM 1.** The high-opacity tipping paper comprises a tipping paper substrate layer (1), and is characterized in that an anti-corrosion layer (2) is arranged on the upper side of the tipping paper substrate layer (1), a stretch-resistant layer (3) is arranged on the upper side of the anti-corrosion layer (2), the stretch-resistant layer (3) is made of bamboo charcoal fiber, a waterproof layer (4) is arranged on the upper side of the stretch-resistant layer (3), and an optical variable memory anti-counterfeiting layer (5) is arranged on the upper side of the waterproof layer (4).

P34347

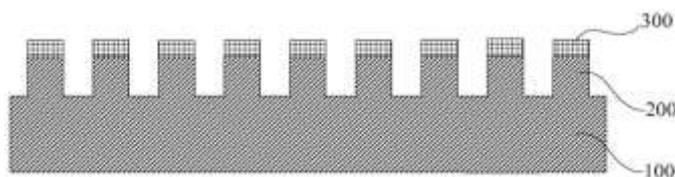
CN113763801

Priority Date: 08/09/2021

INSTITUTE OF MICROELECTRONICS CHINESE ACADEMY OF SCIENCES

### ANTI-COUNTERFEITING STRUCTURE, PREPARATION METHOD OF ANTI-COUNTERFEITING STRUCTURE AND CHIP

The embodiment of the application discloses an anti-counterfeiting structure, a preparation method of the anti-counterfeiting structure and a chip, wherein the anti-counterfeiting structure comprises: a base layer; a plurality of raised structures formed on the base layer, wherein a refractive index of a material used to prepare the raised structures is greater than 1.4. When incident light shines on anti-fake structure, the incident light can produce the mie resonance phenomenon with a plurality of protruding structures, make the light of different angle reflections on anti-fake structure different, and then can present different colours when making the angle of seeing to anti-fake structure via difference, can realize anti-fake effect based on this, the anti-fake structure that this application embodiment provided carries out the colour development based on structural color, need not to rely on pigment, the resolution ratio is high, make anti-fake structure be difficult to be imitated, and the anti-fake structure that this application embodiment provided need not to rely on chemical dye, can reduce the pollution to the environment.



**CLAIM 1.** A security feature, comprising: a base layer; a plurality of raised structures formed on the base layer, wherein a refractive index of a material used to prepare the raised structures is greater than 1.4.

P34363

BANKNOTE – RELIEF

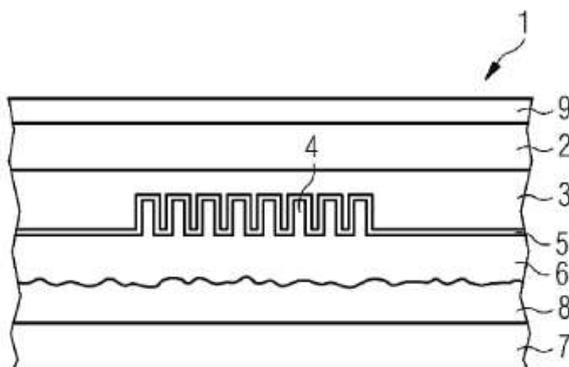
AT-523745

Priority Date: 12/05/2020

HUECK FOLIEN

### SECURITY ELEMENT

The invention relates to a security element (1), comprising a) a first carrier substrate (2), b) a first embossing lacquer layer (3) with an optically active structure (4), c) a reflection-enhancing layer (5), d) a second embossing lacquer layer (6), e) a second carrier substrate (7), wherein the optically active structure (4) of the first embossing lacquer layer (3) is a structural ink. This makes it possible to increase the security against forgery in comparison with the known elements having structures which are active in terms of diffraction optics.



*Click on the title to return to table of contents*

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

**N8279**

**WO2021246255**

**SONY GROUP**

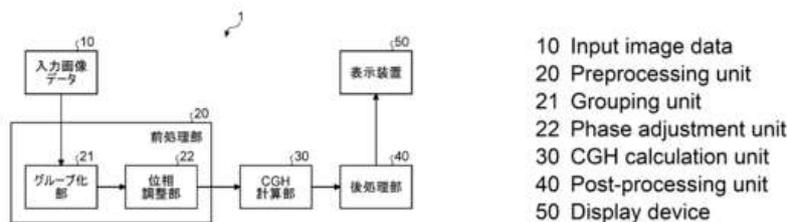
Priority Date: 02/06/2020

**INFORMATION PROCESSING DEVICE, INFORMATION PROCESSING METHOD, PROGRAM, AND HOLOGRAM DISPLAY SYSTEM**

The present invention improves user experience. This information processing device comprises: a grouping unit (21) which groups, into one or more groups, a plurality of pixels that compose one or more objects included in one piece of image data; a phase adjustment unit (22) which allocates phase patterns, which have different phase differences, to the plurality of pixels for each of the one or more groups; and a calculation unit (30) which generates hologram data from the image data to which the phase patterns are imparted.

**DISPOSITIF DE TRAITEMENT D'INFORMATIONS, PROCÉDÉ DE TRAITEMENT D'INFORMATIONS, PROGRAMME ET SYSTÈME D'AFFICHAGE D'HOLOGRAMME**

La présente invention améliore l'expérience de l'utilisateur. Ce dispositif de traitement d'informations comprend : une unité de regroupement (21) qui regroupe, en un ou plusieurs groupes, une pluralité de pixels qui composent un ou plusieurs objets compris dans un élément de données d'image ; une unité de réglage de phase (22) qui attribue des motifs de phase qui présentent des différences de phase différentes à la pluralité de pixels pour chacun du ou des groupes ; et une unité de calcul (30) qui génère des données d'hologramme à partir des données d'image auxquelles les motifs de phase sont attribués.



**CLAIM 1.** A grouping unit that groups a plurality of pixels constituting one or more objects included in one image data into one or more groups; A phase adjustment unit configured to assign phase patterns having different phase differences for each of the one or more groups to the plurality of pixels; and a calculation unit configured to generate hologram data from the image data to which the phase pattern is added.

N8284

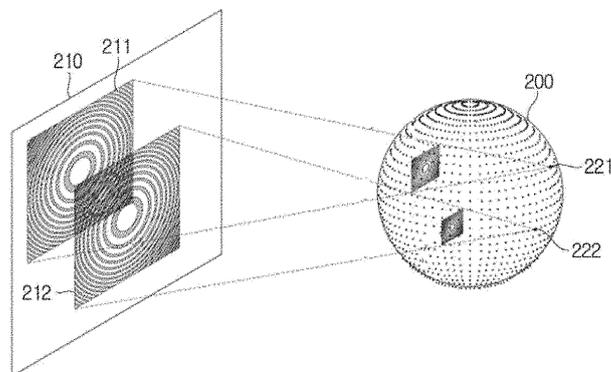
US20210382437

Priority Date: 05/06/2020

ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE

METHOD FOR GENERATING HOLOGRAM BASED ON SEPARATING AXIS AND APPARATUS FOR THE SAME

Disclosed herein is an apparatus for generating a hologram. The apparatus for generating a hologram according to an embodiment of the present disclosure may include: a first pattern generator configured to generate a first hologram pattern that is constructed by modeling a first lens capable of collecting incident light onto a first axis; a second pattern generator configured to generate a second hologram pattern that is constructed by modeling a second lens capable of collecting the incident light onto a second axis; and a hologram pattern combination unit configured to construct a final hologram pattern by combining the first and second patterns.



CLAIM 1. An apparatus for generating a hologram, the apparatus comprising: a first pattern generator configured to generate a first hologram pattern that is constructed by modeling a first lens capable of collecting incident light on a first axis; a second pattern generator configured to generate a second hologram pattern that is constructed by modeling a second lens capable of collecting the incident light on a second axis; and a hologram pattern combination unit configured to construct a final hologram pattern by combining the first and second patterns.

N8297

JP2021184002

Priority Date: 21/05/2020

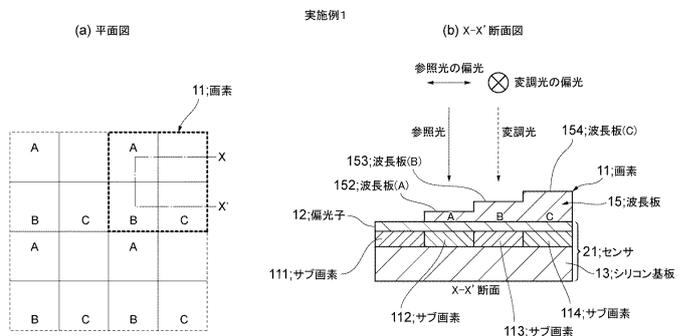
JAPAN BROADCASTING

IMAGING ELEMENT FOR INCOHERENT DIGITAL HOLOGRAM, IMAGING DEVICE, AND METHOD FOR MANUFACTURING IMAGING ELEMENT

TOPIC: To provide an imaging element for an incoherent digital hologram capable of acquiring interference fringe information necessary for calculating the intensity and phase of the hologram in a single shot, an imaging device, and a method for manufacturing the imaging element.

INVENTION: Light from an object (1) is split into two systems, one of which is modulated light and the other of which is reference light, and an interference fringe image obtained by interference between the modulated light and the reference light is captured. from the interference fringe image, an interference fringe image is captured. An imaging element

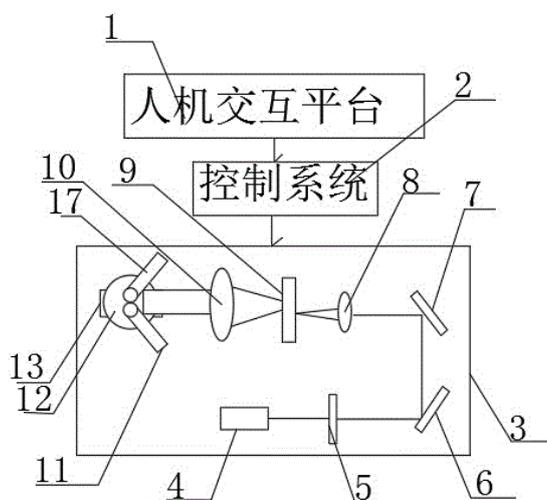
5 that can be able to obtain a hologram of an object 1 using a n step phase shift method and obtain a reconstructed image of the object 1 from the hologram, wherein an imaging surface 5 a includes: The n number of subpixels 111 and the like are arranged in an array, and each of the n number of subpixels 111 and the like constituting each of the n number of subpixels 111 and the like constituting each of the n number of subpixels 111 and the like is defined as a reference with respect to incident light, A wave plate 15 having a thickness that can impart a phase difference of 2π/n and 4π/n... 2 (n-1) π/n between the modulated light and the reference light is disposed on the light incident side of the corresponding subpixel 111 or the like.



CLAIM 1. Low-coherent light from an object is split into two systems, one of which is modulated light and the other of which is reference light, captures an interference fringe image obtained by superimposing and interfering with the modulated light and the reference light, and obtains a hologram of the object from the interference fringe image using a n step phase shift method (n is an integer of 2 or greater); An imaging element for an incoherent digital hologram capable of obtaining a reconstructed image of the object from the hologram, wherein an imaging surface includes pixels formed by subpixels of a type corresponding to the number of n arranged at a predetermined period, Each subpixel of a type corresponding to the number of n constituting each of the pixels is configured so that, with respect to incident light, when a predetermined subpixel is used as a reference, between the modulated light and the reference light: 2m+ 2/n, 2m+ 4/n..... 2m+ 2 (n-1) /n (where A wave plate having a thickness capable of imparting a phase difference of m is an integer of 0 or greater, and n is an integer of 2 or greater) is disposed on a light incident side of the corresponding subpixel.

**AUTOMATIC HOLOGRAPHIC EXPOSURE DEVICE OF DIFFRACTION GRATING**

The utility model relates to an automatic holographic exposure device of diffraction grating, including optics bread board and human-computer interaction platform, the internally mounted of human-computer interaction platform has control system, the surface mounting of optics bread board has laser light source, the optics bread board's upper surface and the output that is located laser light source install the optics shutter, control system controls the operation of optics shutter, the upper surface of optics bread board and the output that is located the optics shutter install plane reflector one. The utility model provides an automatic holographic exposure device of diffraction grating, the motor controller among the control system who sets up passes through PLC control servo motor and rotates, and servo motor drives No. two bevel gear rotations, and No. two bevel gear and the bevel gear meshing transmission of rotating the bench output shaft to the whole rotation that three constitutions of drive rotating bench, sample holder and plane mirror, thereby the contained angle of two bundles of interference light in the quick change interference field, with the image that obtains higher definition fast.



**CLAIM 1.** An automatic holographic exposure device of diffraction grating is characterized in that: including optics bread board (3) and human-computer interaction platform (1), the internally mounted of human-computer interaction platform (1) has control system (2), the surface mounting of optics bread board (3) has laser light source (4), optics bread board's (3) upper surface and the output that is located laser light source (4) install optical shutter (5), control system (2) control optical shutter's (5) operation, the upper surface of optics bread board (3) and the output that is located optical shutter (5) install plane mirror (6), plane mirror two (7) are installed to the upper surface of optics bread board (3) and the output that is located plane mirror (6), convex lens (8) are installed to the upper surface of optics bread board (3) and the output that is located convex lens (8), the pinhole is installed to the upper surface of optics bread board (3) and the output that is located convex lens (8) Wave filter (9), convex lens two (10) are installed to the upper surface of optics bread board (3) and the output that is located pinhole wave filter (9), the upper surface of optics bread board (3) and the output that is located convex lens two (10) install three (17) of plane mirror, the bottom fixed mounting of three (17) of plane mirror has rotation platform (12), the side-mounting that the upper surface of rotation platform (12) and is located three (17) of plane mirror has sample frame (11), control system (2) control rotates platform (12) and rotates.

N8320

CN113777902

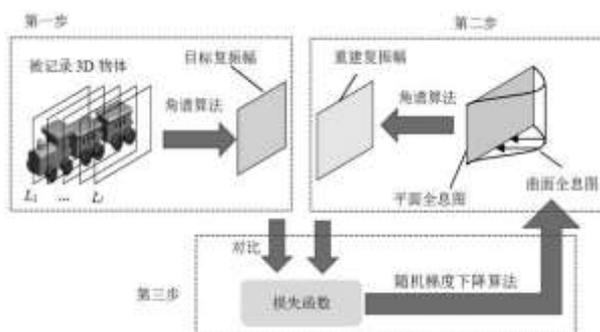
Priority Date: 01/09/2021

BEIHANG UNIVERSITY OF AERONAUTICS & ASTRONAUTICS

### CURVED SURFACE HOLOGRAPHIC NOISE SUPPRESSION METHOD BASED ON RANDOM GRADIENT DESCENT ALGORITHM

The invention provides a curved surface holographic noise suppression method based on a random gradient descent algorithm. The method comprises three steps: the method comprises the following steps that firstly, for a single 3D object, the recorded object is divided into different layers, and the complex amplitude distribution of a target light field of the 3D object is calculated by utilizing an angular spectrum algorithm; setting the phase distribution of the initial curved surface hologram as a random phase, obtaining the complex amplitude distribution of the corresponding plane hologram after phase approximate compensation, and obtaining the complex amplitude distribution of the reconstructed image by using an angular spectrum algorithm on the basis; and thirdly, comparing the complex amplitudes of the reconstructed image and the target light field to obtain a loss function, performing iterative optimization on the phase distribution of the curved surface hologram by using a random gradient descent algorithm, and obtaining the curved surface hologram after the phase optimization when a cyclic output condition is met. When the reconstruction light irradiates the curved hologram with the optimized phase, a holographic reconstruction image corresponding to the bending center angle is seen.

**CLAIM 1.** A curved surface holographic noise suppression method based on a random gradient descent algorithm is characterized by comprising the following three steps: the method comprises the following steps that firstly, for a single 3D object, the recorded object is divided into different layers, and the complex amplitude distribution of a target light field of the 3D object is calculated by utilizing an angular spectrum algorithm; setting the phase distribution of the initial curved surface hologram as a random phase, obtaining the complex amplitude distribution of the corresponding plane hologram after phase approximate compensation, and obtaining the complex amplitude distribution of the reconstructed image by using an angular spectrum algorithm on the basis; and thirdly, comparing the complex amplitudes of the reconstructed image and the target light field to obtain a loss function, performing iterative optimization on the phase distribution of the curved surface hologram by using a random gradient descent algorithm, obtaining the curved surface hologram after the phase optimization when a cyclic output condition is met, and seeing the holographic reconstruction image corresponding to the bending center angle when the reconstruction light irradiates the curved surface hologram after the phase optimization.



N8328

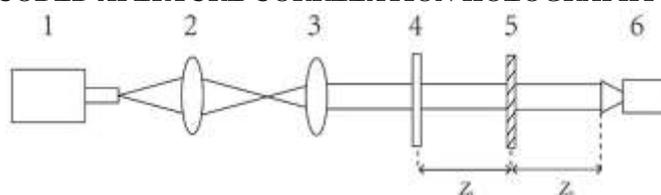
CN113704774

Priority Date: 07/07/2021

HARBIN UNIVERSITY OF SCIENCE & TECHNOLOGY

### OPTICAL IMAGE ENCRYPTION METHOD BASED ON CODED APERTURE CORRELATION HOLOGRAPHY

The invention discloses an optical image encryption method based on coded aperture correlation holography, and belongs to the technical field of information security and digital image processing. The optical image encryption mode adopting coherent light illumination has the problems of experimental device alignment and sensitivity to coherent pseudo noise. Furthermore, some of these systems involve the recording and conversion of complex valued images, which increases the complexity of the optical implementation. The invention realizes the encryption and decryption process of the image based on the coded aperture correlation holography, the coded aperture correlation holography adopts incoherent light illumination, and four different coded phase masks are used for constructing point spread holograms to enhance the reconstruction effect of the image. And a point spread function is adopted to increase the encryption speed during encryption. Compared with other optical image encryption modes of incoherent light illumination, the method has the advantages of simple experimental device and good reconstruction quality.



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

## N8277

WO2021252665

Priority Date: 10/06/2020

UNIVERSITY OF COLORADO

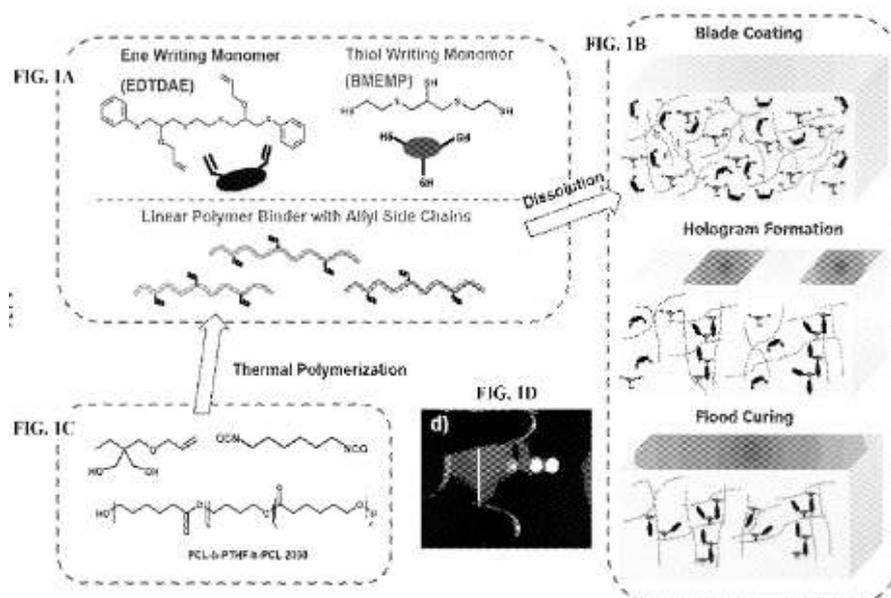
### HOLOGRAPHIC RECORDING MATERIALS AND METHODS OF MAKING SAME

Provided herein are compositions suitable for recording holograms containing thiol and/or thioether functionality, and optionally including additional allyl and/or propargyl functional groups. These monomers can be used to synthesize holographic polymers having high  $\Delta n$  values. Also provided herein are methods of making holographic polymers and methods recording holograms using these polymers.

### MATÉRIAUX D'ENREGISTREMENT HOLOGRAPHIQUES ET LEURS PROCÉDÉS DE FABRICATION

L'invention concerne des compositions appropriées pour enregistrer des hologrammes contenant une fonctionnalité thiol et/ou thioéther, et comprenant éventuellement des groupes fonctionnels allyle et/ou propargyle supplémentaires. Ces monomères peuvent être utilisés pour synthétiser des polymères holographiques ayant des valeurs  $\Delta n$  élevées. L'invention concerne également des procédés de fabrication de polymères holographiques et des procédés d'enregistrement d'hologrammes à l'aide de ces polymères.

**CLAIM 1.** A composition comprising: at least one polymer; a polymer binder comprising a plurality of allyl groups; and at least one monomer of formula (I): and at least one monomer of formula (II): wherein: each occurrence of X is independently H or optionally substituted C6-14 aryl; each Y is independently -S-, -CH<sub>2</sub>-, -CH<sub>2</sub>CH<sub>2</sub>-, -CH(CH<sub>3</sub>)CH<sub>2</sub>-, -CH<sub>2</sub>CH(CH<sub>3</sub>)-, -CH(SH)-, -CH[O-CH<sub>2</sub>-CH=CH<sub>2</sub>]-, or -CH[O-CH<sub>2</sub>-C≡CH]-; each YT is independently H, -SH, -CH=CH<sub>2</sub>, -C≡CH, or optionally substituted C6-14 aryl; each Z is independently -S-, -CH<sub>2</sub>-, -CH<sub>2</sub>CH<sub>2</sub>-, -CH(CH<sub>3</sub>)CH<sub>2</sub>-, -CH<sub>2</sub>CH(CH<sub>3</sub>)-, or -CH(SH)-; each ZT is independently H, -SH or -CH<sub>2</sub>SH; m is an integer ranging from 0 to 100; and n is an integer ranging from 0 to 100.

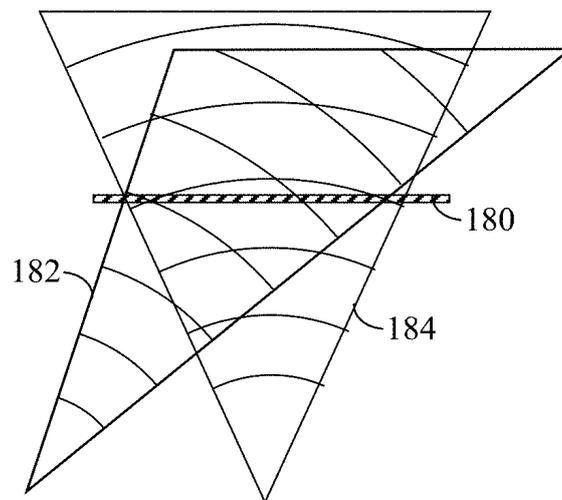


**SYSTEM AND METHOD FOR HOLOGRAPHIC WAVE-FRONT PRINTING**

A holographic recording system includes a linear translation stage configured to position a holographic material layer, a light source configured to emit a laser beam, a beam splitting subsystem configured to split the laser beam into a first light beam and a second light beam and direct the second light beam towards the holographic material layer, a spatial-light modulator configured to implement a fringe pattern that modulates the first light beam to generate an object beam, a filter configured to filter the object beam, a demagnification optical subsystem configured to demagnify the object beam, and a switchable grating stack configurable to direct the object beam to a set of directions towards the holographic material layer to interfere with the second light beam. In some embodiments, the switchable grating stack includes a plurality of polarization gratings and/or a plurality of switchable waveplates arranged in a stack.

**SYSTÈME ET PROCÉDÉ D'IMPRESSION HOLOGRAPHIQUE DE FRONT D'ONDE**

Un système d'enregistrement holographique comprend un étage de translation linéaire conçu pour positionner une couche de matériau holographique, une source de lumière conçue pour émettre un faisceau laser, un sous-système de division de faisceau conçu pour diviser le faisceau laser en un premier faisceau lumineux et en un second faisceau lumineux et diriger le second faisceau lumineux vers la couche de matériau holographique, un modulateur spatial de lumière conçu pour mettre en oeuvre un réseau de franges qui module le premier faisceau lumineux afin de générer un faisceau objet, un filtre conçu pour filtrer le faisceau objet, un sous-système optique de démagnification conçu pour démagnifier le faisceau objet, et un empilement de réseaux commutables configurable pour diriger le faisceau objet vers un ensemble de directions vers la couche de matériau holographique afin d'interférer avec le second faisceau lumineux. Dans certains modes de réalisation, l'empilement de réseaux commutables comprend une pluralité de réseaux de polarisation et/ou une pluralité de lames-ondes commutables agencées sous forme d'un empilement.



**CLAIM 1** . A holographic recording system comprising: a linear translation stage configured to position a holographic material layer; a light source configured to emit a laser beam; a beam splitting subsystem configured to: split the laser beam into a first light beam and a second light beam; and direct the second light beam towards the holographic material layer; a spatial-light modulator configured to implement a fringe pattern that modulates the first light beam to generate an object beam; a demagnification optical subsystem configured to demagnify the object beam; and a switchable grating stack configurable to direct the object beam to a set of directions towards the holographic material layer to interfere with the second light beam.

N8301

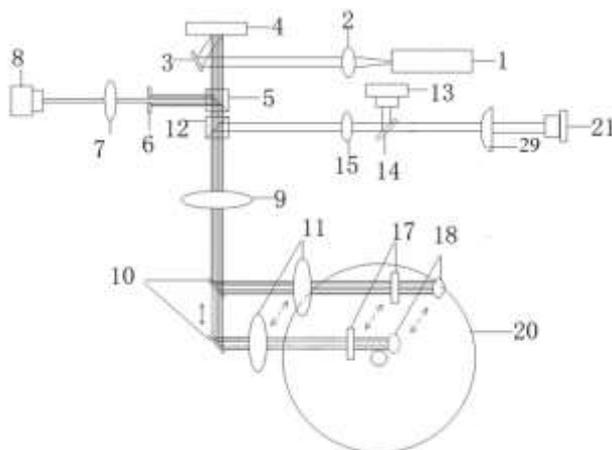
CN215183076U

Priority Date: 15/06/2021

TAN XIAODI

### HOLOGRAPHIC OPTICAL DISK TRACK CHANGING DEVICE

The utility model belongs to the technical field of holographic optical storage, a holographic optical disk orbital transfer device is disclosed, which comprises a polarization beam splitter prism, a two-color beam splitter, a first relay lens, a reflection component positioned between the first relay lens and a second relay lens, the second relay lens and an information reading and writing component comprising the second relay lens, which are arranged in sequence along the propagation direction of signal light; the information reading and writing component is arranged on a first moving track, and the direction of the first moving track is the radial direction of the holographic disk; the reflection assembly is arranged on a second moving track, and the direction of the second moving track is the incident direction of the reading and writing light; when the information reading and writing component and the reflection component are moved, the direction of the reading and writing light optical path is unchanged, and the optical path of the reading and writing light between the first relay lens and the second relay lens is unchanged; the stable imaging of the holographic optical disk optical system is ensured, the number of optical components is reduced, and the track-changing read-write information is realized; the system complexity is reduced, the mechanical control is simplified, the miniaturization of the holographic storage read-write device is realized, and the practicability is improved.



**CLAIM 1.** The holographic optical disc track switching device comprises a polarization beam splitter prism (5), a two-color beam splitter (12), a first relay lens (9), a reflection assembly positioned between the first relay lens (9) and a second relay lens (11), the second relay lens (11) and an information reading and writing assembly comprising the second relay lens (11), which are sequentially arranged along the propagation direction of signal light; the information reading and writing component is arranged on a first moving track (22), and the direction of the first moving track (22) is the radial direction of the holographic disk (20); the reflection assembly is arranged on a second moving track (23), and the direction of the second moving track (23) is the incidence direction of the reading and writing light.

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

**N8280**

**WO2021245407**

Priority Date: 03/06/2020

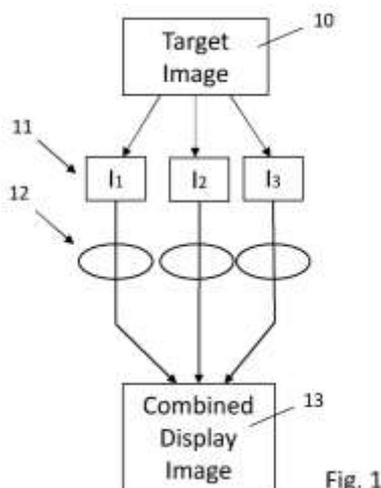
**VIVIDQ**

### A METHOD AND DISPLAY APPARATUS FOR REDUCING HOLOGRAPHIC SPECKLE

A method and display apparatus for reducing holographic speckle when displaying holographic images are described. A target image (10) is decomposed into input images (11). A first input image includes higher spatial frequency components of the target image and is imaged using a first display method (12) to generate a first holographic display image. The second input image includes lower spatial frequency components of the target image and is imaged using a second display method (12) to generate a second display image. The first and second display images are combined for display to a user. The second display method (12) is adapted to reduce holographic speckle or include no holographic speckle compared to the first holographic display method (12) thereby reducing holographic speckle in the combined display image (13).

### PROCÉDÉ ET APPAREIL D'AFFICHAGE POUR RÉDUIRE LA GRANULARITÉ HOLOGRAPHIQUE

L'invention concerne un procédé et un appareil d'affichage destinés à réduire la granularité holographique lors de l'affichage d'images holographiques. Une image cible (10) est décomposée en images d'entrée (11). Une première image d'entrée comprend des composantes de l'image cible qui ont une fréquence spatiale plus élevée et elle est imagée à l'aide d'un premier procédé d'affichage (12) pour générer une première image d'affichage holographique. La seconde image d'entrée comprend des composantes de l'image cible qui ont une fréquence spatiale plus basse et elle est imagée à l'aide d'un second procédé d'affichage (12) pour générer une seconde image d'affichage. Les première et seconde images d'affichage sont combinées pour être présentées à un utilisateur. Le second procédé d'affichage (12) est conçu pour réduire la granularité holographique ou pour ne comprendre aucune granularité holographique par rapport au premier procédé d'affichage holographique (12), ce qui permet de réduire la granularité holographique dans l'image d'affichage combinée (13).



**CLAIM 1.** A method for reducing holographic speckle when displaying an image, the method comprising: displaying the image by combining a first holographic display image and a second display image, the first holographic display image comprising higher spatial frequency components of the image and being generated using a first holographic display method and the second display image comprising lower spatial frequency components of the image and being generated using a second display method, wherein the second display method is adapted to reduce holographic speckle or include no holographic speckle compared to the first holographic display method.

N8281

WO2021245031

SAINT GOBAIN GLASS

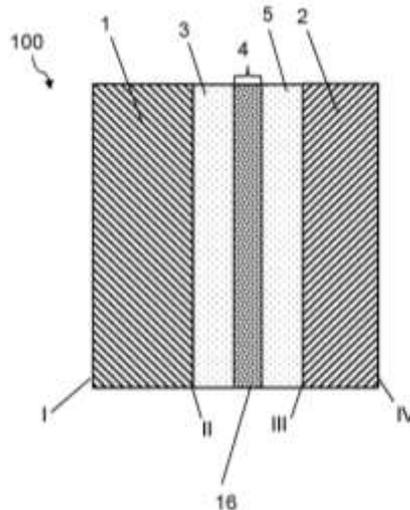
Priority Date: 03/06/2020

### COMPOSITE PANE WITH HOLOGRAM ELEMENT

The invention relates to a composite pane (100) at least comprising a stack sequence of: - an outer pane (1), - a first intermediate layer (3), - a hologram element (4) comprising at least one hologram or at least one set of holograms produced in one or more layers of a holographic material (16), - a second intermediate layer (5), and - an inner pane (2), wherein the hologram element (4) consists of - at least one layer of a holographic material (16) or - at least one layer of a holographic material (16) and a substrate layer (15), and the holographic material (16) and the first intermediate layer (3) and/or the holographic material (16) and the second intermediate layer (5) are directly connected together.

### VITRE COMPOSITE DOTÉE D'UN ÉLÉMENT HOLOGRAMME

La présente invention concerne une vitre composite (100) comprenant au moins une suite d'empilement de : - une vitre externe (1), - une première couche intermédiaire (3), - un élément hologramme (4) comprenant au moins un hologramme ou au moins un ensemble d'hologrammes produits dans une ou plusieurs couches d'un matériau holographique (16), - une seconde couche intermédiaire (5), et - une vitre interne (2), l'élément hologramme (4) consistant en - au moins une couche d'un matériau holographique (16) ou - au moins une couche d'un matériau holographique (16) et une couche de substrat (15), et le matériau holographique (16) et la première couche intermédiaire (3) et/ou le matériau holographique (16) et la seconde couche intermédiaire (5) étant directement raccordées entre eux.



**CLAIM 1.** Composite pane (100), at least comprising a stack sequence of an outer pane (1), a first intermediate layer (3), a hologram element (4) comprising at least one hologram or at least one set of holograms, produced in one or more layers of a holographic material (16), a second intermediate layer (5) and an inner pane (2) wherein the hologram element (4) consists of at least one layer of a holographic material (16) or of at least one layer of a holographic material (16) and a Substrate layer (15) and wherein the holographic material (16) and the first intermediate layer (3) and/or the holographic material (16) and the second intermediate layer (5) are directly connected to one another.

N8282

WO2021235976

SOLOVEV, EVGENII ALEKSANDROVICH

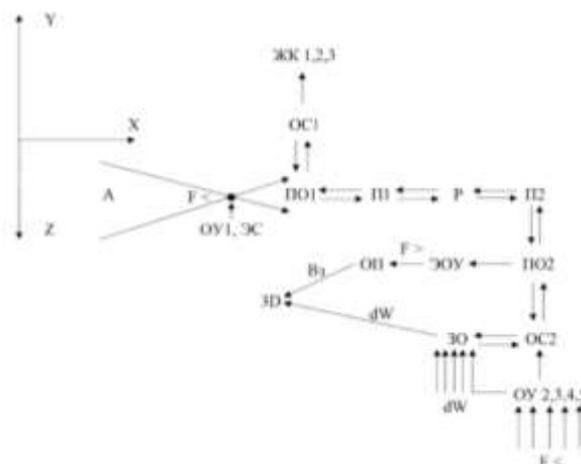
Priority Date: 18/05/2020

### REAL-TIME 3D HOLOGRAM

Telecommunication carried out by directly broadcasting an object at a point A and receiving a signal, with the aid of high-resolution projectors, in the form of a 3D hologram with sound at points B, C and D in real time using 5G mobile communications technology, with the possibility of two-way communication.

### HOLOGRAMME 3D EN TEMPS RÉEL

L'invention concerne des télécommunications selon un format de retransmission en direct d'un objet en un point "A" et de réception d'un signal à l'aide de projecteurs autofocus dans un format d'hologramme 3D avec du son aux points "B", "C" et "D" en temps réel en utilisant une communication mobile 5G afin d'obtenir une liaison retour.



**CLAIM 1.** "3 D real-time hologram" Forward TV telecommunication of the object at point "A" and signal reception using 3 D hologram format light projectors with sound at point "B", "C" and "D" in real time using 5 G mobile communications with feedback capability.

**COMPOSITE PANE FOR A HOLOGRAPHIC HEAD-UP DISPLAY**

The present invention relates to a composite pane (100) comprising at least: an outer pane (1) having an outer surface (I) and an inner surface (II); a first thermoplastic intermediate layer (3); a hologram element (4) comprising a first set of holograms produced in one or more layers of a holographic material, the first set of holograms comprising a blue hologram which can be activated by blue light having a wavelength in a first range and is not responsive to light of other wavelengths, a green hologram which can be activated by green light having a wavelength in a second range and is not responsive to light of other wavelengths, and a red hologram which can be activated by red light having a wavelength in a third range and is not responsive to light of other wavelengths; an inner pane (2) having an outer surface (III) and an inner surface (IV); and a colour-selective optical filter (6) for selectively absorbing light having a wavelength in the first range, light having a wavelength in the second range, and light having a wavelength in the third range. The hologram element (4) is located between the outer pane (1) and the inner pane (2), the first thermoplastic layer (3) is located between the outer pane (1) and the hologram element (4) or between the hologram element (4) and the inner pane (2), and the colour-selective optical filter (6) is located in front of the hologram element (4) as seen from the outside.

**VITRE COMPOSITE POUR UN AFFICHAGE TÊTE HAUTE HOLOGRAPHIQUE**

La présente invention concerne une vitre composite (100) comprenant au moins: une vitre extérieure (1) ayant une surface extérieure (I) et une surface intérieure (II); une première couche intermédiaire thermoplastique (3); un élément holographique (4) comprenant un premier ensemble d'hologrammes produits dans une ou plusieurs couches d'un matériau holographique, le premier ensemble d'hologrammes comprenant un hologramme bleu qui peut être activé par de la lumière bleue ayant une longueur d'onde dans une première plage et qui n'est pas sensible à la lumière d'autres longueurs d'onde, un hologramme vert qui peut être activé par de la lumière verte ayant une longueur d'onde dans une deuxième plage et qui n'est pas sensible à la lumière d'autres longueurs d'onde, et un hologramme rouge qui peut être activé par une lumière rouge ayant une longueur d'onde dans une troisième plage et qui n'est pas sensible à la lumière d'autres longueurs d'onde; une vitre intérieure (2) ayant une surface extérieure (III) et une surface intérieure (IV); et un filtre optique à sélection de couleur (6) pour absorber sélectivement la lumière ayant une longueur d'onde dans la première plage, la lumière ayant une longueur d'onde dans la deuxième plage, et la lumière ayant une longueur d'onde dans la troisième plage. L'élément holographique (4) est situé entre la vitre extérieure (1) et la vitre intérieure (2), la première couche thermoplastique (3) est située entre la vitre extérieure (1) et l'élément holographique (4) ou entre l'élément d'holographique (4) et la vitre intérieure (2), et le filtre optique à sélection de couleur (6) est situé devant l'élément holographique (4) comme vu de l'extérieur.

**CLAIM 1.** Composite pane (100) at least comprising an outer pane (1) having an outer surface (I) and an inner surface (II), a first thermoplastic intermediate layer (3), a hologram element (4) comprising a first set of holograms made in one or more layers of a holographic material (16), wherein the first set of holograms is a blue hologram, a green hologram activatable by blue light having a wavelength in a first range and not responsive to light of other wavelengths, a green hologram activatable by green light having a wavelength in a second range and not responsive to light of other wavelengths, and a red hologram activatable by red light having a wavelength in a third range and not responsive to light of other wavelengths, an inner pane (2) having an outer surface (III) and an inner surface (IV), and a color-selective optical filter (6) for selectively absorbing light having a wavelength in the first region, light having a wavelength in the second region, and light having a wavelength in the third region, wherein the hologram element (4) is arranged between the outer pane (1) and the inner pane (2), the first thermoplastic layer (3) is arranged between the outer pane (1) and the hologram element (4) or between the inner pane (2) and the hologram element (4), and the colour-selective optical filter (6) is arranged in front of the hologram element (4) when viewed from the outside.

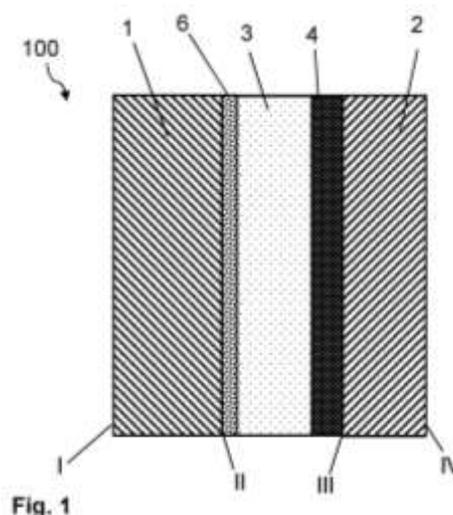


Fig. 1

N8285

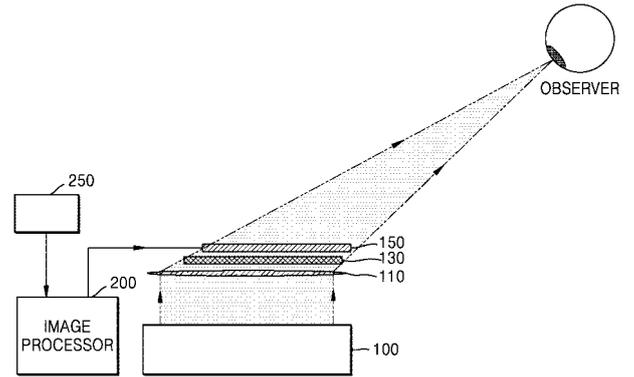
US20210373493  
Priority Date: 28/05/2020

SAMSUNG ELECTRONICS

**HOLOGRAPHIC DISPLAY APPARATUS**

Provided is a holographic display apparatus including: a spatial light modulator that modulates a wavefront of a reference beam to form a hologram image; an optical element arranged to change a position of a viewing window of the hologram image off-axis by a first angle; and an image processor that generates hologram data according to the position of the viewing window of the hologram image and a hologram image to be reproduced, and provides the hologram data to the spatial light modulator. The hologram image formed by the spatial light modulator is viewable from a side of the spatial light modulator.

**CLAIM 1.** A holographic display apparatus comprising: a spatial light modulator configured to modulate a wavefront of a reference beam to form a hologram image; an optical element arranged to bend an incident beam onto at least one of a light incident surface and a light exit surface of the spatial light modulator to change a position of a viewing window of the hologram image off-axis by a first angle; and an image processor configured to generate hologram data according to the position of the viewing window of the hologram image and a hologram image to be reproduced, and provide the hologram data to the spatial light modulator, wherein the hologram image formed by the spatial light modulator is viewable from a side of the spatial light modulator.



N8286

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Priority Date: 27/05/2020

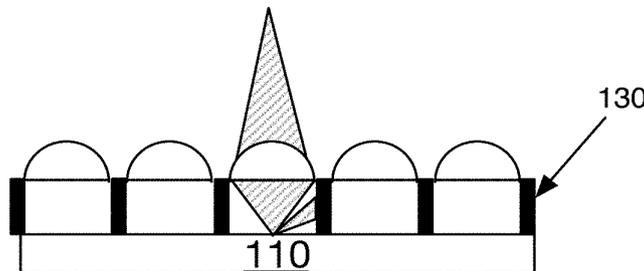
LOOKING GLASS FACTORY

**SYSTEM AND METHOD FOR HOLOGRAPHIC DISPLAYS**

A holographic display can include a light source configured to output light; a parallax generator optically coupled to the light source; an optical volume, where the light is perceivable as a three dimensional image within the optical volume; optionally, a flip controller; and, optionally, a viewcone expander.

**SYSTÈME ET PROCÉDÉ POUR DES DISPOSITIFS D’AFFICHAGE HOLOGRAPHIQUE**

Un dispositif d’affichage holographique peut comprendre une source de lumière configurée pour émettre de la lumière ; un générateur de parallaxe couplé optiquement à la source de lumière ; un volume optique, la lumière étant perceptible sous la forme d’une image tridimensionnelle à l’intérieur du volume optique ; éventuellement, un dispositif de commande de basculement ; et, éventuellement, un élargisseur de cône de visualisation.



**CLAIM 1.** An autostereoscopic display comprising: a light source configured to output light associated with a plurality of views; a lenticular array optically coupled to the light source, wherein each view of the plurality of views is directed in a different direction by the lenticular array; a frame defining an optical volume optically coupled to the lenticular array, wherein the plurality of views are perceivable as a three dimensional image within the optical volume; and a privacy screen comprising a microlouver array a predetermined distance from the lenticular array.

N8287

US20210364988

Priority Date: 21/05/2020

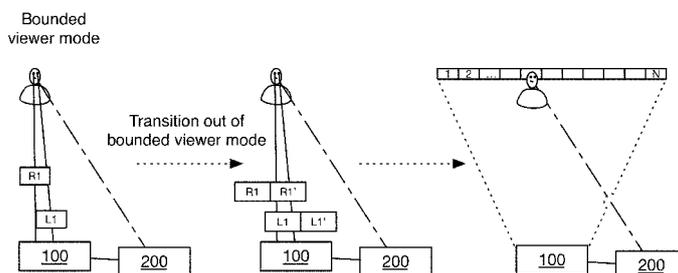
### LOOKING GLASS FACTORY

#### SYSTEM AND METHOD FOR HOLOGRAPHIC IMAGE DISPLAY

A holographic display and method for operating the holographic display can include: a holographic display operable in a plurality of modes, a computing system, and a sensor. The holographic display can option include a user interface device. Views displayed by the display can optionally be processed or modified based on a viewer pose relative to the display.

#### SYSTÈME ET PROCÉDÉ ASSOCIÉS À UN AFFICHEUR D'IMAGE HOLOGRAPHIQUE

L'invention concerne un afficheur holographique et un procédé d'exploitation de l'afficheur holographique pouvant faire appel à : un afficheur holographique pouvant fonctionner dans une pluralité de modes, un système informatique et un capteur. L'afficheur holographique peut éventuellement comprendre un dispositif d'interface utilisateur. Des vues affichées par l'afficheur peuvent éventuellement être traitées ou modifiées sur la base d'une pose de spectateur par rapport à l'afficheur.



**CLAIM 1.** A system comprising: a display configured to project a plurality of views; and a tracking sensor proximal the display configured to determine a pose of one or more viewers; wherein the plurality of views are modified based on the pose of the one or more viewers when a number of viewers is at most a threshold number of viewers; and wherein the plurality of views are not modified based on the pose of the one or more viewers when the number of viewers is greater than the threshold number.

N8289

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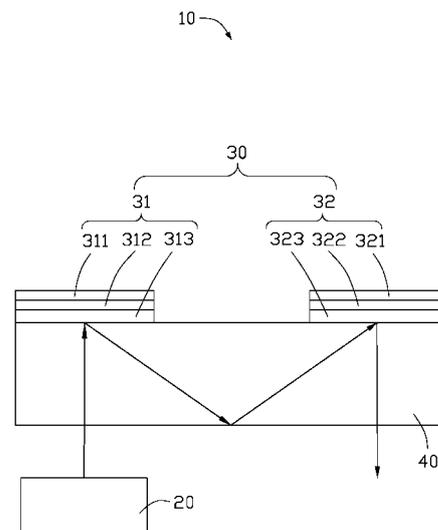
Priority Date: 22/05/2020

### HON HAI PRECISION INDUSTRY

#### HOLOGRAPHIC DISPLAY DEVICE

A holographic display device with reduced color shifting in relation to different colors includes a display panel and a diffraction component. The display panel emits a first color light having a first emission efficiency and a second color light having a second emission efficiency. The first emission efficiency is greater than the second emission efficiency. The diffraction component on an optical path of the first and second colors of light diffracts the first color light at a first diffraction efficiency and the second color light at a second diffraction efficiency to generate a holographic image, the first diffraction efficiency is less than the second diffraction efficiency.

**CLAIM 1.** A holographic display device comprising: a display panel configured for emitting a first color light having a first emission efficiency and a second color light having a second emission efficiency, the first emission efficiency being greater than the second emission efficiency; and a diffraction component on an optical path of the first color light and the second color light, the diffraction component configured for diffracting the first color light at a first diffraction efficiency and the second color light at a second diffraction efficiency to generate holographic images; wherein the first diffraction efficiency is less than the second diffraction efficiency.



N8292

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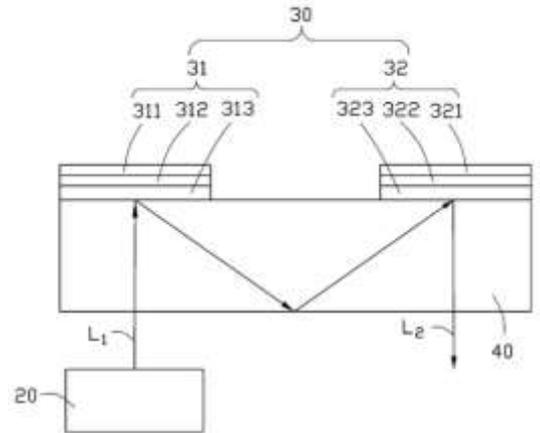
Priority Date: 22/06/2020

HON HAI PRECISION INDUSTRY

**HOLOGRAPHIC DISPLAY DEVICE**

The present invention provides a holographic display device comprising: a display module for emitting a first light, the first light comprising a first color light and a second color light; The first color light and the second color light are mixed as a second light exit through a diffraction module, the second light being used to generate a holographic image. When the display module exits the first color light and the second color light at the same gray scale value, the ratio of the luminous intensity of the first color light to the second color light and the ratio of the first diffraction efficiency to the second diffraction efficiency are inversely proportional such that the luminous intensity of the first color light in the second light is the same as the luminous intensity of the second color light.

**CLAIM 1.** A holographic display device, the improvement comprising: a display module for emitting a first light, said first light comprising a first color light and a second color light; When the first color light and the second color light after being diffracted by the diffraction module are mixed as second light for generating a holographic image, and the display module exits the first color light and the second color light in the first light at the same grayscale value, the first color light and the second color light are emitted at the same grayscale value. The ratio of the luminous intensity of the first color light in the first light to the second color light and the ratio of the first diffraction efficiency to the second diffraction efficiency are inversely proportional such that the luminous intensity of the first color light in the second light is the same as the luminous intensity of the second color light.



N8293

KR20210142333

Priority Date: 18/05/2020

FTC - OMA Y LEADERS

**VEHICLE STATE DISPLAY DEVICE USING 3 D HOLOGRAM**

The present invention is intended to more clearly inform the state of the current car to the rear driver, and also to deliver a more variety of contents to the rear driver, thereby preventing accidents from being accidents.



**CLAIM 1.** A 3 D hologram display device of a windshield type incorporating an SDcard is installed behind the interior of a vehicle, and the SDcard is interlocked with a flashing signal of an emergency lamp of the vehicle, and a flashing current of a current applied to a brake lamp of the vehicle is connected to the SDcard and interlocked with the SDcard; various contents of a current state of the vehicle are input to the SDcard, So that the rear driver can more accurately know the state of the front vehicle; and the SDcard determines the priority of the image displayed through the 3 D hologram display apparatus, A vehicle state display device using a 3 D hologram, wherein an image related to emergency lighting of the vehicle is highest priority, and then an image related to brake lighting of the vehicle is displayed in order of order.

N8295

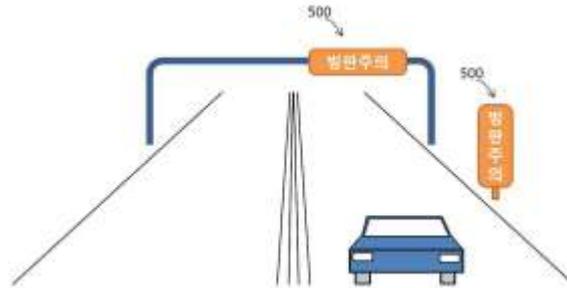
KR102329616

Priority Date: 08/04/2021

SEJINANJEON

### ROAD CONDITION AUTOMATIC WARNING DEVICE USING HOLOGRAM

The present invention is intended to notify a driver of an outside air condition including a strong state of a road, and the present invention includes: a road condition warning plate (500) installed on a road side or a road and notifying the driver of the outside air condition including the strong state of the road; Wherein the road condition warning plate 500 is displayed in 3 D using a hologram.



**CLAIM 1.** A road condition warning plate (500) installed on a road side or a road to notify the driver of the outside air condition including the road's state, the road condition warning plate (500) configured to notify the driver of the outside air condition including the road's state, Characterized in that the road condition warning plate (500) is displayed in 3 D by means of holograms, the road condition warning plate (500) is connected in real time with an automatically recognizable saline spray integrated system which is sensed via a strong sensor (100) or a temperature and humidity sensor (200), Wherein various contents including warning phrases and warning images are displayed to suit situations through a control unit using a dedicated application, The automatic recognition type brine spray integration system is for spraying and controlling brine into roads, comprising: a brine tank 10; a brine injection pipe 20 connected to the brine tank 10; a brine discharge pipe 30 having one end connected to the brine pipe 30; a spray nozzle 40 installed at an end of the brine discharge pipe 30; a discharge driving pump 50 installed at an interruption of the brine discharge pipe 30; A control valve 60 configured to adjust opening and closing of the brine discharge pipe 30, wherein at least one of the discharge driving pump 50 and the control valve 60 is driven by sensing an external air state including an external strong state, and a control unit using a dedicated application is separately provided, And the controller determines whether to drive the discharge driving pump (50) or the control valve (60) by determining the state of the outside air sensed, wherein the sensing is performed through a strong sensor (100) or a temperature and humidity sensor (200), As long as only one side or two sides of the sensing unit 110 is formed on the steel sensor 100, the eye temporarily lowering in any specific direction can be caused by malfunction, so that the steel sensor 100 is characterized in that a three-sided sensing unit 110 is formed in a triangular pyramid shape and operates when eyes are sensed on all of the three-sided sensing units, thereby preventing malfunction, Since the dedicated application may analyze the respective sensing amounts sensed by each of the three sided sensing units 110, a direction and a speed of eyes may be detected, and an amount of discharged saline may be adjusted in consideration of a direction and a position of a road inputted beforehand, one or more cameras 300 may be installed in multiple directions, Wherein a sensing amount through the sensing unit (110) can be visually confirmed through the camera (300), and the dedicated application can sense a direction and speed of eyes observed by the camera (300) and verify the direction and speed of the eyes compared with the sensing amount through the sensing unit (110).

N8296

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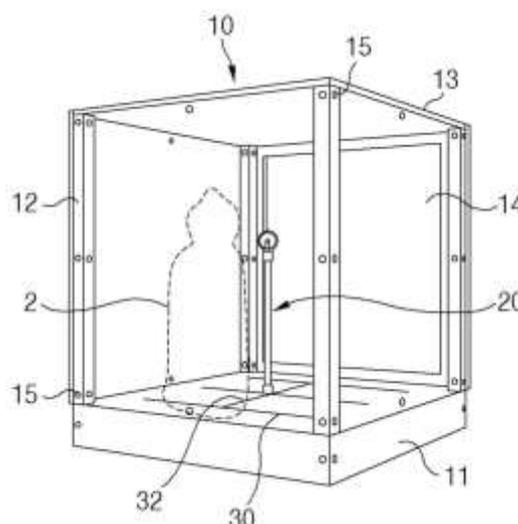
I-TECH

Priority Date: 08/02/2021

### PREFABRICATED ORNAMENTAL FIELD FOR OZING HOLOGRAM BACKLIGHTING EFFECT

The prefabricated ornamental field for stretching a hologram backlighting effect of the present invention is characterized in that the corners and intermediate portions of the bottom plate, the top plate, the side plate and the background plate are fastened by magnets and fixed; the intermediate portions of columns forming the three side plates and the background plate are fastened by magnets; A support is provided at an upper end of a center of the bottom plate, and the support is coupled with a bolt and a nut formed at a lower end; the illumination member comprises an electric device capable of emitting light by applying a power source separately from the device to an electric device embedded in the bottom surface; The illumination member attaching a magnet to the bottom surface to attach the illumination member to the top and side surfaces of the prefabricated ornamental field in which the magnet is fastened other than the bottom of the ornamental field; and the illumination member including a compact light emitting device having a rectangular parallelepiped or conical self-light emitting function, Wherein the lighting member is installed on the top plate, and the lighting member is configured to be integrally formed with a flexible java and a led, thereby deforming various shapes of the lighting unit and radiating heat. According to the present invention, a rail is formed on the bottom plate so that a user can adjust the position of the light emitting device, and thus a circular back-lighting effect can be extracted at various positions.

**CLAIM 1.** An illumination device comprising: an illumination member (20) in which a shaped object (2) is provided inside a decorative field (10), and is provided on a bottom plate (11) spaced apart from the shaped object (2); a background member in which a background plate (14), a light reflection member (18) in which glass beads are coated on a paper fabric (17), and a protection member (19) for protecting the light reflection member (18) are sequentially attached; Left and right guide grooves (30) formed in rails of the bottom plate (11) so as to allow the illumination member (20) to move left and right; up and down guide grooves (32) formed in rails of the bottom plate (11) so as to allow the illumination member (20) to move up and down; A decorative sheet (10) comprising: a bottom plate (11) made of transparent or opaque acrylic panels, four columns (12) erected on the bottom plate (11), a top plate (13) made of transparent or opaque acrylic panels, three side plates made of transparent or opaque acrylic panels, and a background plate (14) made of transparent or opaque acrylic panels; Corners and intermediate portions (16) of the bottom plate (11), the top plate (13), the side plate and the background plate (14) are fixed by magnets; intermediate portions (16) of pillars (12) constituting the three side plates and the background plate (14) are coupled by magnets (15); A support 22 is installed on an upper end of a center of the bottom plate 11, and the support 22 is coupled with a bolt 24 and a nut 23 formed on a lower end thereof; the lighting member 20 includes an electric device capable of emitting light by applying a power source separately from the electric device to the electric device embedded in the bottom surface 11; Wherein the illumination member (20) attaches a magnet to the bottom surface (11) so as to attach the illumination member to the top and side surfaces of the prefabricated ornamental field in which the magnet is fastened other than the bottom of the ornamental field; and wherein the illumination member (20) comprises a compact light emission device having a rectangular parallelepiped or conical self-light emission function, When the illumination member (20) emits light from the rear surface of the upper end of the shaped object, the light is reflected so that a circular hologram exhibits a backlighting effect on the background plate (14), the illumination member (20) is provided on the bottom plate (11), Wherein the illumination member (20) is configured integrally with a flexible java (26) and an led (21) to deform various shapes of the illumination member (20) and to heat dissipation.



N8298

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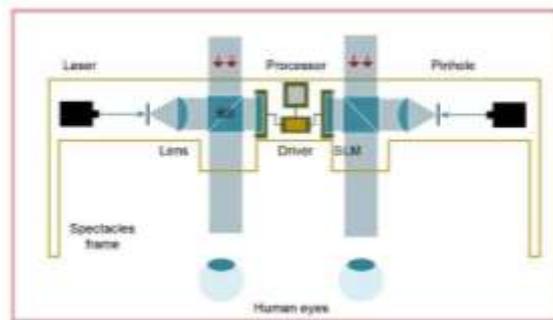
Priority Date: 18/10/2021

HALLUR VISHWESHWARAYYA C ET AL

### POP-OUT & SINK-IN HOLOGRAPHIC AUGMENTED REALITY AND VIRTUAL REALITY DEVICE FOR USE WITHOUT 3D GLASSES FOR SIMULTANEOUS VIEWING BY MULTIPLE PERSONS

The virtual reality (VR) and augmented reality (AR) industries' history, present, and future prospects are proposed. By comparing holographic VR/AR to binocular vision VR/AR and light field VR/AR, the future of holographic VR/AR technology may be anticipated. Research on holographic displays for virtual reality and augmented reality has been summarized. High-resolution holographic display advancements in VR/AR seem promising.

**CLAIM 1.** The visual display of the multimedia device is combined with the - camera (optical) -software for the multimedia device 3D pop-out and sink-in effect software a visual display that, when seen by the 3D AR device's user, generates a 3D pop-out and sink-in effect. Inserting new items into the live picture recorded by the imaging device's camera results in a pop-out & sink-in 3D display of the new object and the live image. Add a new video to the live picture recorded by the imaging device's camera, and both the new video and the live image will be shown in pop-out and sink-in 3D on the imaging device. Visual display transformed to a 3D capable pop-out and sink-in display by putting an optical device on top of the normal visual display and thus allowing glasses-free 3D viewing. A unique optical screen is placed on top of the normal visual display screen, converting it to a pop-out and sink-in 3D capable display. This allows for glasses-free 3D viewing. In order to make a normal visual display 3D capable, an optical filter is placed on top of the ordinary visual display screen. This allows for 3D viewing without the need of spectacles. In order to see the pop-out and sink-in 3D pictures on the visual display screen, polarising material is placed on top of the normal visual display screen, and eye wear glasses are used. All the pictures taken by the camera are transformed into 3D-friendly visuals that jump out and sink in. pictures that may be seen as 3-Dimensional images that burst out and sink into 3-dimensional space, similar to how people perceive real-world things 3-dimensionally when they are moved in 3d visual displays. To make 3D compatible pop-out & sink-in 3D pictures, images overlaid on camera images are transformed to 3D friendly pop-outs & sinks.



N8299

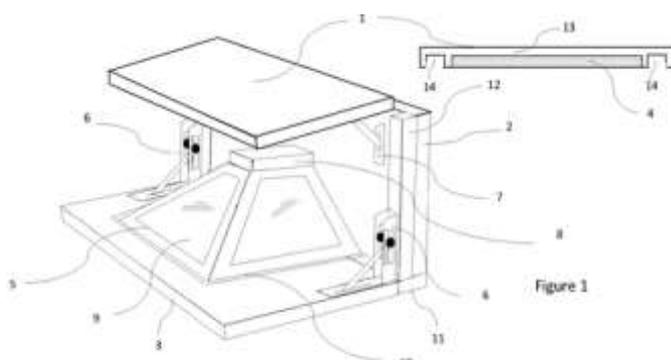
GB2595276

Priority Date: 20/05/2020

AHMED A H AL-HABAIBEH

### A FOLDABLE 3D HOLOGRAM APPARATUS

Apparatus providing 2D or 3D hologram visualisation using the Pepper's Ghost technique, the image being displayed on a partly reflective, partly transparent surface 9. Two or more panels or frames 1,2,3 are capable of pivoting, detaching or disassembling to a flat arrangement in order to facilitate easier storage or transport. Preferably the image is produced by means of a digital or analogue screen or monitor 4 that is removably attached to the top panel 1. The apparatus may be secured when assembled and also when deconstructed for stowage by one or more of mechanical, magnetic, hydraulic and pneumatic means.



**CLAIM 1.** A foldable apparatus which provides 2D or 3D hologram visualisation by means of reflecting an image of digital or analogue nature on one or more partially-reflective and partially-transparent surface, where the structure of the said apparatus which consists of two or more pivoted panels or frames can be folded, and any other non-pivoted panels or frames can be detached or disassembled, to form a flat-pack structure with reduced total volume in comparison to the functioning conditions; where other non-structural components can be dismantled, detached or folded to be part of the said flat-pack folded structure or to form a separate entity for storage and transportation; where the said structural pivoted panels or frames, or non-pivoted structural panels or frames, can be made rigid and stable when unfolded or erected via the use of one or a combination of mechanical, magnetic, hydraulic and pneumatic means.

N8300

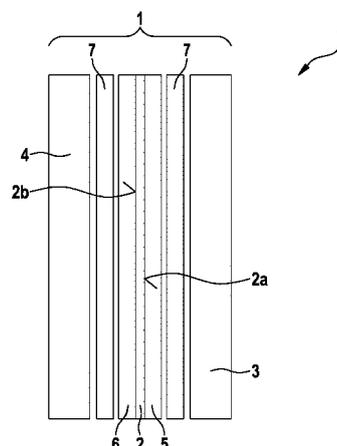
DE102020114693

Priority Date: 03/06/2020

BMW - BAYERISCHE MOTOREN WERKE

### COMPOSITE PANE WITH AN INTEGRATED HOLOGRAPHIC OPTICAL ELEMENT FOR A FIELD OF VIEW DISPLAY DEVICE FOR USE IN A VEHICLE

The invention relates to a window assembly for a visual field display device for use in a vehicle, in particular a vehicle window or a combiner window. In this case, the composite pane is designed for reflecting a projection light beam with a display content to the user for generating a virtual image in its field of view behind the composite pane and is at least partially transparent. For this purpose, the composite pane comprises at least two interconnected panes made of plastic or glass with a holographic optical element integrated between them in the form of a polarization hologram extending along the two panes, which effects a predetermined phase shift in the projection light beam which is locally variable in a hologram surface on a wavelength scale of the projection light.



**CLAIM 1.** Composite pane (1) for a visual field display device for use in a vehicle, in particular a vehicle pane or a combiner pane, wherein the composite pane (1) - is designed for reflecting a projection light beam with a display content to a user for generating a virtual image in the field of view thereof behind the composite pane (1) and is at least partially transparent and for this purpose - at least two interconnected panes (3, 4) Made of plastic or glass with a holographic optical element integrated in between in the form of a polarization hologram (2) extending along the two panes, which effects a predetermined phase shift in the projection light beam which is locally variable in a hologram surface (2 a) on a wavelength scale of the projection light.

N8302

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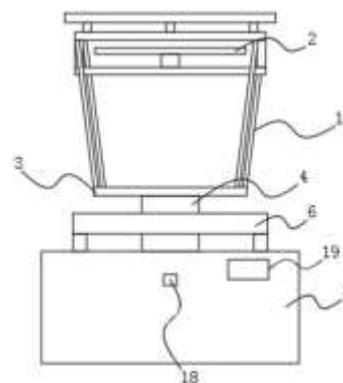
Priority Date: 16/04/2021

JIANGSU DEHUI COMPUTER TECHNOLOGY

### HOLOGRAPHIC IMAGE EMOTION CAPTURING INTERACTION DEVICE

A holographic image emotion capturing and interacting device solves the problems that the prior holographic image emotion capturing and interacting device can not better enable a user to observe in multiple angles when holographic images are formed, and some devices with rotation have poor rotation stability and are not beneficial to use, and comprises a holographic image device body, a projection screw propeller, a base, a rotating shaft, a supporting seat, an auxiliary device, a bearing, a driven gear, a servo motor and a driving gear, wherein the projection screw propeller is arranged in the middle of the top end of the holographic image device body, the base is arranged at the bottom of the holographic image device body, the rotating shaft is arranged in the middle of the bottom end of the base, the supporting seat is arranged at the bottom end of the rotating shaft, and the auxiliary device is arranged in the middle of the rotating shaft. The observation effect is good, and simultaneously, the stability when holographic image device body rotates is good.

**CLAIM 1.** The utility model provides an interactive installation is caught to holographic image mood, includes holographic image device body (1), projection screw (2), base (3), pivot (4), supporting seat (5), auxiliary device (6), bearing (7), driven gear (8), servo motor (9) and driving gear (10), its characterized in that: the middle part of the top end of the holographic image device body (1) is provided with a projection propeller (2), the bottom of the holographic image device body (1) is provided with a base (3), the middle part of the bottom end of the base (3) is provided with a rotating shaft (4), the bottom end of the rotating shaft (4) is provided with a supporting seat (5), the middle part of the rotating shaft (4) is provided with an auxiliary device (6), the position of the bottom end of the rotating shaft (4), which is close to one end, is provided with a driven gear (8), one side of the bottom end of the rotating shaft (4) is provided with a servo motor (9), one end of the servo motor (9) is provided with a driving gear (10), the auxiliary device (6) comprises a connecting block (11), a round sleeve (12), a disc (13), a ball (14), a groove (15), a mounting hole (16) and a guide groove (17), the connecting block (11) is fixed on the supporting seat (5), and the top end of the connecting block (11) is welded with the round sleeve (12), disc (13) welding is close to top position department in pivot (4), and the inside embedding of circle cover (12) is provided with a plurality of ball (14), and circle cover (12) inboard corresponds ball (14) position department and has seted up fluted (15), and the middle part of disc (13) corresponds pivot (4) position department and has seted up mounting hole (16), and RGB sensor (18) are all installed at supporting seat (5) top middle part all around, and one side of RGB sensor (18) is provided with plc controller (19).



N8303

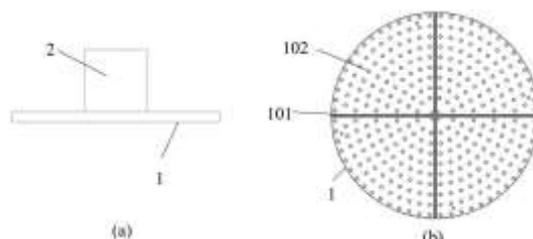
CN215118267U

Priority Date: 25/05/2021

ZHAI JUNMING

### HOLOGRAPHIC PROJECTION DEVICE CAPABLE OF BEING USED FOR ILLUMINATION

The utility model provides a holographic projection arrangement that can be used to illumination, include: a lamp panel and a 3D holographic drive motor; the lamp panel is connected with the 3D holographic driving motor; the 3D holographic driving motor is configured to drive the lamp panel to rotate so as to realize holographic projection; the surface of the lamp panel plate is provided with a holographic LED lamp bar and an LED lamp bead for illumination; when holographic projection is carried out, the LED lamp bar for holography and the 3D holographic driving motor work, and the LED lamp bead for illumination does not work; when lighting, the LED lamp beads for lighting work, and the LED lamp strips for holography and the 3D holographic driving motor do not work. The utility model discloses use lamp panel formula structure to replace current fan formula structure for holographic projection arrangement can be provided with holographic LED lamp strip and for the illumination LED lamp pearl simultaneously, when not carrying out holographic projection but carrying out conventional illumination, holographic LED lamp strip outage for, LED lamp pearl circular telegram for the illumination, sufficient, the even and resources are saved of light of luminance when making holographic projection arrangement carry out conventional illumination.



N8305

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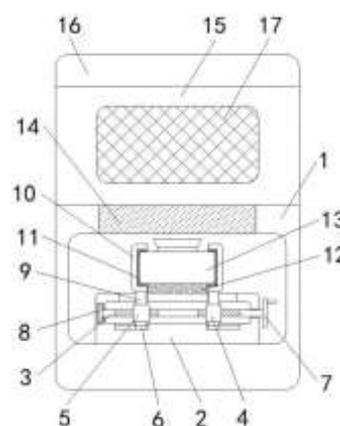
Priority Date: 09/06/2021

SHANDONG TOUCH ELECTRONIC TECHNOLOGY

### HOLOGRAPHIC PROJECTION ARRANGEMENT CONVENIENT TO INSTALLATION

The utility model relates to a holographic projection arrangement technical field just discloses a holographic projection arrangement convenient to installation, including the projection cabinet body, the interior diapire fixedly connected with installation block of the projection cabinet body, the inboard swing joint of installation block has the threaded rod, the outside threaded connection of threaded rod has first thread piece, the outside threaded connection of threaded rod has second thread piece, the equal fixedly connected with sliding block in bottom of first thread piece and second thread piece, the manual turning handle of right-hand member fixedly connected with of threaded rod, the left end fixedly connected with roll block of threaded rod. This holographic projection device convenient to installation, overall structure is simple, has realized the purpose that holographic projection device is convenient for install, and the staff is very convenient at the in-process of installing holographic projection device, can not consume a large amount of installation time of staff, has improved staff's work efficiency, has improved holographic projection device's availability factor and result of use.

**CLAIM 1.** The utility model provides a holographic projection arrangement convenient to installation, includes the projection cabinet body (1), its characterized in that: the inner bottom wall of the projection cabinet body (1) is fixedly connected with a mounting block body (2), the inner side of the mounting block body (2) is movably connected with a threaded rod (3), the outer side of the threaded rod (3) is in threaded connection with a first threaded block (4), the outer side of the threaded rod (3) is in threaded connection with a second threaded block (5), the bottoms of the first threaded block (4) and the second threaded block (5) are both fixedly connected with a sliding block (6), the right end of the threaded rod (3) is fixedly connected with a manual rotating handle (7), the left end of the threaded rod (3) is fixedly connected with a rolling block (8), the tops of the first threaded block (4) and the second threaded block (5) are both fixedly connected with a moving block (9), the top of the moving block (9) is fixedly connected with a fixing clamp block (10), and the inner side of the fixing clamp block (10) is fixedly connected with a protective pad (11), the utility model discloses a projection cabinet, including installation block body (2), the top fixedly connected with fixed block (12), the top swing joint of fixed block (12) has projector body (13), the top fixedly connected with transparent plate (14) of the projection cabinet body (1), the top fixedly connected with projection frame (15) of the projection cabinet body (1), the top fixedly connected with top display screen (16) of projection frame (15), the inboard fixedly connected with holographic glass (17) of projection frame (15), the positive swing joint of the projection cabinet body (1) has cabinet body door (18), the bottom fixedly connected with movable pulley (19) of fixed clamp splice (10), the positive fixedly connected with touch display (20) of the projection cabinet body (1).



N8306

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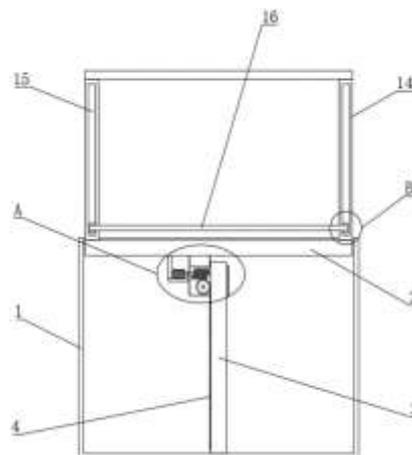
Priority Date: 06/05/2021

SHANGHAI XILIN DIGITAL TECHNOLOGY

### SPECIAL-SHAPED 180-DEGREE HOLOGRAPHIC DISPLAY CABINET

The utility model discloses a 180 degrees holographic show cupboard of abnormal shape, including the device main part, the device main part inboard is provided with the bottom plate, the device main part bottom surface is provided with the fixed column, the fixed column surface is provided with the rack, bottom plate bottom surface is provided with fixed box, bottom plate bottom surface is provided with the connecting block, connecting block bottom surface is provided with the connecting plate, connecting plate top surface is provided with the motor, motor one end is provided with first bearing, first bearing one end is provided with the scroll bar, the scroll bar surface meshes has the turbine, the fixed box inside surface is provided with the second bearing, second bearing one end is provided with the pivot; through the turbine that sets up, let the show area on bottom plate and bottom plate top can remove and accomodate, can remove to equipment inside when not using and seal the protection, effectively avoided being in the foreign object striking that the outside probably caused or advancing the circumstances such as ash always.

**CLAIM 1.** The utility model provides a 180 degrees holographic show cupboard of abnormal shape, includes device main part (1), its characterized in that: the device is characterized in that a bottom plate (2) is arranged on the inner side of a device main body (1), a fixing column (3) is arranged on the bottom surface of the inner side of the device main body (1), a rack (4) is arranged on the surface of the fixing column (3), a fixing box body (5) is arranged on the bottom surface of the bottom plate (2), a connecting block (6) is arranged on the bottom surface of the bottom plate (2), a connecting plate (7) is arranged on the bottom surface of the connecting block (6), a motor (8) is arranged on the top surface of the connecting plate (7), a first bearing (9) is arranged at one end of the motor (8), a worm rod (10) is arranged at one end of the first bearing (9), a turbine (11) is meshed on the surface of the worm rod (10), a second bearing (12) is arranged on the inner side surface of the fixing box body (5), and a rotating shaft (13) is arranged at one end of the second bearing (12).



N8307

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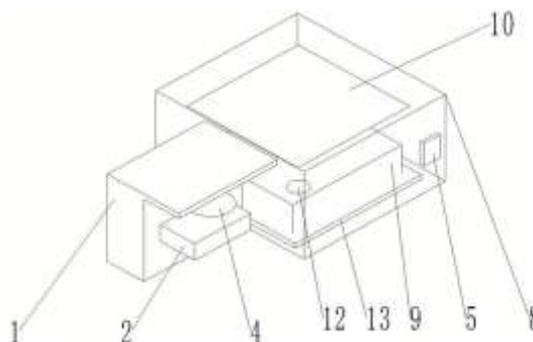
Priority Date: 07/05/2021

ZHANG YE

### HOLOGRAPHIC VISUAL INTELLECTUAL PROPERTY DISPLAY WALL

The utility model discloses a holographic visual intellectual property show wall, including wall body, support frame, punching press cylinder, light, touch-sensitive screen, projecting apparatus, host computer and glass showcase, its characterized in that, punching press cylinder fixed mounting is on the wall body, light fixed mounting is on the wall body, support frame and punching press cylinder fixed connection, the glass showcase is installed subaerial and is connected with wall body one side, the touch-sensitive screen is installed at the glass showcase, the projecting apparatus is installed in the glass showcase, the host computer is installed in the glass showcase. The utility model relates to a holographic visual technical field realizes just can watching 3D holographic phantom stereoscopic display special effect as far as the situation under not tying completely, gives the impact in the vision, has strong depth sense, can combine the material object in the middle of the aerial phantom of formation, realizes the combination of image and material object.

**CLAIM 1.** Holographic visual intellectual property show wall, including wall body, support frame, punching press cylinder, light, touch-sensitive screen, projecting apparatus, host computer and glass showcase, its characterized in that, punching press cylinder fixed mounting is on the wall body, light fixed mounting is on the wall body, support frame and punching press cylinder fixed connection, the glass showcase is installed subaerial and is connected with wall body one side, the touch-sensitive screen is installed at glass showcase, the projecting apparatus is installed in the glass showcase, the host computer is installed in the glass showcase.



N8308

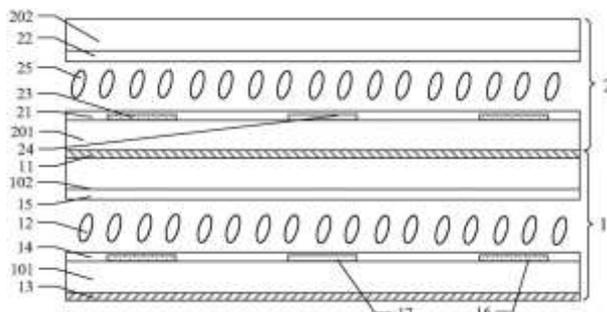
CN215006256U

Priority Date: 12/04/2021

BEIJING BOE DISPLAY TECHNOLOGY - BOE TECHNOLOGY GROUP

### DISPLAY DEVICE AND HOLOGRAPHIC DISPLAY APPARATUS

The present disclosure relates to a display device and a holographic display apparatus. The display device includes: a display panel including a first linear polarizer on a light-emitting side to cause the display panel to emit linearly polarized image light; and a phase modulation panel disposed on a light emitting side of the display panel and configured to phase-modulate the linearly polarized image light. The holographic display device comprises the display device. The display device can synchronously adjust and represent the amplitude and the phase, and realizes holographic three-dimensional display with high resolution and high definition.



**CLAIM 1.** A display device, comprising: a display panel including a first linear polarizer on a light-emitting side to cause the display panel to emit linearly polarized image light; and a phase modulation panel disposed on a light emitting side of the display panel and configured to phase-modulate the linearly polarized image light.

N8312

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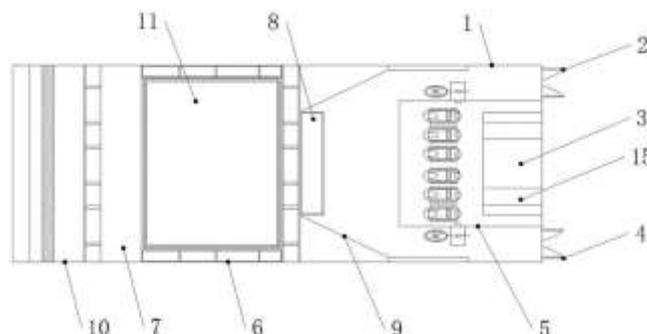
Priority Date: 21/07/2021

SHANGHAI YUDI CULTURE & TECHNOLOGY DEVELOPMENT

### IMMERSIVE EXPERIENCE HOLOGRAPHIC THEATER

The utility model discloses an immersion experience holographic theater, which comprises a theater body and a holographic theater system, wherein one side of the theater body is fixedly provided with a background curtain, the theater body is divided into a stage area and a watching area, the stage area comprises a rear stage, a holographic layer and a front stage, the rear stage is positioned at the back of the holographic layer, and the front stage is positioned in front of the holographic layer; the opposite side of theatre body is fixed and is provided with the control area, and the inside of control area sets up a controller, and the controller includes a holographic theatre system, and holographic theatre system includes a multimedia server, and multimedia server includes that culture experience facility uses teaching content management system and a culture experience facility operation and maintenance management system respectively, and multimedia server and controller electric connection. The utility model discloses a, increase holographic reflectance coating and high definition laser projector through the stage region and carry out virtual formation of image through the diffraction light principle to this visual and the more shock of listening sensation in making the drama field, make spectator's visual impact force stronger.

**CLAIM 1.** A holographic theater for immersion experience comprises a theater body (1) and a holographic theater system (15), and is characterized in that a background curtain (10) is fixedly arranged on one side of the theater body (1), the theater body (1) is divided into a stage area (6) and a watching area (5), the stage area (6) comprises a rear stage (7), a holographic layer (11) and a front stage (8), the rear stage (7) is positioned on the back of the holographic layer (11), and the front stage (8) is positioned in front of the holographic layer (11); the intelligent theater system is characterized in that a control area (3) is fixedly arranged on the other side of the theater body (1), a controller is arranged inside the control area (3), the controller comprises a



holographic theater system (15), the holographic theater system (15) comprises a multimedia server (18), the multimedia server (18) comprises a teaching content management system (16) for cultural experience facilities and a cultural experience facility operation and maintenance management system (17), and the multimedia server (18) is electrically connected with the controller.

N8315

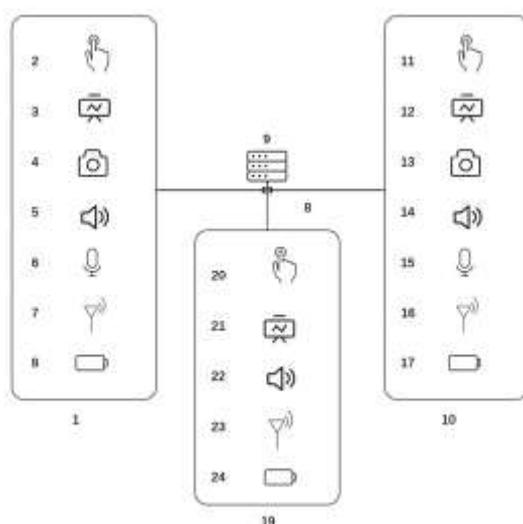
CN214847172U

Priority Date: 24/03/2021

SHANGHAI DUNLU BIO MEDICINE TECHNOLOGY

SYSTEM FOR PLAYING INTERACTIVE TEACHING BY USING 3D HOLOGRAPHIC PROJECTION

The utility model provides a system for utilize 3D holographic projection to carry out interactive teaching of drama, its characterized in that is based on the internet, connects four big modules, teacher's module, student's module, the teaching aid module and server module promptly, constitutes an whole online classroom system. Each on-line classroom system comprises 1 teacher module, one teaching assistant module, one server module and at least one student module; the teacher module comprises a control interface, 3D holographic projection equipment, 3D holographic photographing equipment, audio playing equipment, recording equipment, network communication equipment and a power supply component; the student module comprises a control interface, a 3D holographic projection device, a 3D holographic photographing device, an audio playing device, a recording device, a network communication device and a power supply component; the teaching assistant module comprises a control interface, a 3D holographic projection device, an audio playing device, a network communication device and a power supply component; the server module is an online server of an online classroom; the teacher module, the teaching assistant module and the student module are all connected to the server module through the internet.



**CLAIM 1.** The utility model provides a system for utilize 3D holographic projection to carry out opera interactive teaching which characterized in that includes four big modules at least: the teaching aid comprises a single teacher module, a single teaching aid module, a server module and at least one student module; the teacher module comprises a control interface, 3D holographic projection equipment, 3D holographic photographing equipment, audio playing equipment, recording equipment, network communication equipment and a power supply component; the student module comprises a control interface, a 3D holographic projection device, a 3D holographic photographing device, an audio playing device, a recording device, a network communication device and a power supply component; the teaching assistant module comprises a control interface, a 3D holographic projection device, an audio playing device, a network communication device and a power supply component; the server module is an online server of an online classroom; the teacher module, the teaching assistant module and the student module are all connected to the server module through the internet.

N8316

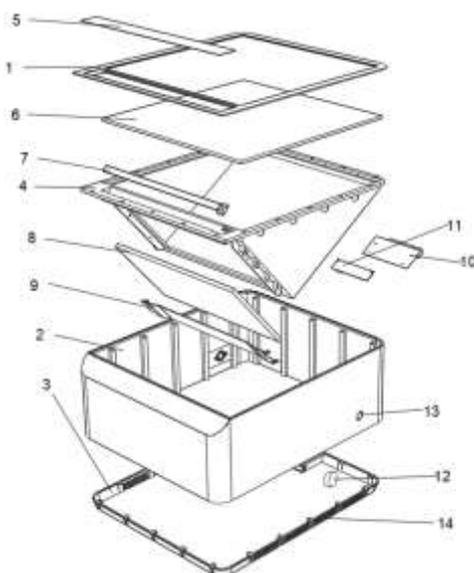
CN214846459U

Priority Date: 14/04/2021

SUZHOU YANSHITONG ELECTRONIC TECHNOLOGY

### SCREEN EQUIPMENT CAPABLE OF REALIZING CONTACT-FREE HOLOGRAPHIC AIR IMAGING TOUCH CONTROL

The utility model discloses a screen equipment that can realize touch-control of contact-free holographic air imaging, including first apron, shell, second apron, optics inner bag, gesture apron, optical lens, gesture sensor, screen fixed bolster, first screen control panel, second screen control panel, loudspeaker, horn hole, louvre, external interface, the top of shell pastes fixed connection with the bottom of first apron, the bottom of shell passes through screw fixed connection with the top of second apron, top one side of first apron begins the recess, and pastes inside the recess and be fixed with the gesture apron; the utility model realizes the feedback signal to the human body through the sound, the optical color and the brightness; the device is controlled to achieve close-range human-computer interaction, the function of directly and accurately clicking the screen in the touch air without directly contacting a physical screen is achieved, and the insanitary problems of cross infection and the like caused by the fact that a common touch screen needs physical contact are avoided.



**CLAIM 1.** Can realize exempting from screen equipment of contact holographic air formation of image touch-control, including first apron (1), shell (2), second apron (3), optics inner bag (4), gesture apron (5), optical lens (6), gesture sensor (7), screen (8), screen fixed bolster (9), first screen control panel (10), second screen control panel (11), loudspeaker (12), horn hole (13), louvre (14) and external interface (15), its characterized in that: the top of the shell (2) is fixedly connected with the bottom end of the first cover plate (1) in a sticking mode, the bottom of the shell (2) is fixedly connected with the top end of the second cover plate (3) through screws, a groove is formed in one side of the top end of the first cover plate (1), and a gesture cover plate (5) is fixedly stuck in the groove; an external interface (15) is arranged on one side of the bottom of the second cover plate (3); fixedly connected with optics inner bag (4) and loudspeaker (12) respectively in shell (2), and loudspeaker (12) correspond each other with loudspeaker hole (13) that the both sides bottom of shell (2) was seted up and be connected, the top of optics inner bag (4) is fixed with optical lens (6), the opposite side of optics inner bag (4) is fixedly connected with first screen control board (10) and second screen control board (11) respectively, screen (8) are connected with first screen control board (10) and second screen control board (11) respectively through the wire, and are connected through the wire between first screen control board (10) and second screen control board (11), first screen control board (10) and second screen control board (11) are connected with external tapping (15) respectively.

N8317

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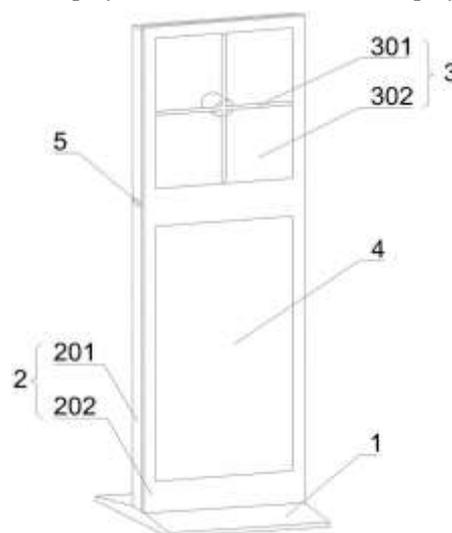
Priority Date: 01/03/2021

DASKI CHONGQING DIGITAL TECHNOLOGY

### 3D HOLOGRAPHIC DISPLAY TOUCH CONTROL ALL-IN-ONE MACHINE

The utility model belongs to the field of advertisement machines, and particularly discloses a 3D holographic display touch control all-in-one machine, which comprises a base and a machine body, wherein the machine body is divided into an upper part and a lower part, a first display device is arranged on the front surface of the upper part, and a second display device is arranged on the front surface of the lower part; the first display device is a 3D holographic fan display screen, and the second display device is a liquid crystal nano touch screen; the industrial control host is further installed inside the machine body and is electrically connected with the first display device and the second display device respectively. The structure is simple, the stability is good, and the practicability is strong; the functions are rich, 3D and 2D synchronous display, networking centralized control and touch interaction functions are achieved, the visual effect is shocked, and the rendering effect is good; the device also has the advantages of low cost, low power consumption, energy conservation, environmental protection, remote control, convenience and the like.

**CLAIM 1.** A 3D holographic display touch control integrated machine comprises a base (1) and a machine body (2), and is characterized in that the machine body (2) is divided into an upper part and a lower part, a first display device (3) is arranged on the front surface of the upper part, and a second display device (4) is arranged on the front surface of the lower part; the first display device (3) is a 3D holographic display device, and the second display device (4) is a liquid crystal nano touch screen; the industrial control host (6) is further installed inside the machine body (2), and the industrial control host (6) is electrically connected with the first display device (3) and the second display device (4) respectively.



N8318

CN113791529

Priority Date: 13/08/2021

BEIHANG UNIVERSITY OF AERONAUTICS & ASTRONAUTICS

### CROSTALK-FREE HOLOGRAPHIC 3D DISPLAY METHOD BASED ON DIFFRACTION FUZZY IMAGING PRINCIPLE

The invention provides a crosstalk-free holographic 3D display method based on a diffraction fuzzy imaging principle. The method comprises three steps: step one, for a 3D object, calculating fuzzy light field distribution of the object according to an Abbe secondary imaging theory and a Fresnel diffraction principle, and calculating secondary diffraction fuzzy imaging conditions of the object; secondly, establishing a crosstalk relation of light fields with different depth surfaces based on the secondary diffraction fuzzy imaging characteristics, and calculating a crosstalk light field; and thirdly, for the light field crosstalk between different depth surfaces, the space frequency spectrum of the crosstalk light field forms a window matrix by superposing the grating phases, so that the crosstalk light field is separated from the target light field in the form of the window matrix, thereby generating a complex amplitude hologram and realizing the holographic 3D display effect without crosstalk.

**CLAIM 1.** A crosstalk-free holographic 3D display method based on a diffraction fuzzy imaging principle is characterized by comprising the following three steps of: step one, for a 3D object, calculating fuzzy light field distribution of the object according to an Abbe secondary imaging theory and a Fresnel diffraction principle, and calculating secondary diffraction fuzzy imaging conditions of the object; secondly, establishing a crosstalk relation of light fields of different depth surfaces based on the secondary diffraction fuzzy imaging characteristics, calculating a crosstalk light field, and obtaining that the crosstalk of one plane to another plane is actually a secondary diffraction fuzzy image of the space frequency spectrum of the plane on the other plane; and thirdly, for the light field crosstalk between different depth surfaces, the space frequency spectrum of the crosstalk light field forms a window matrix by superposing the grating phases, so that the crosstalk light field is separated from the target light field in the form of the window matrix, thereby generating a complex amplitude hologram and realizing the holographic 3D display effect without crosstalk for the target light field.

N8321

CN113763246

Priority Date: 25/08/2021

FUDAN UNIVERSITY

### MUSEUM EXHIBITION SCREEN HOLOGRAPHIC PROJECTION DISPLAY METHOD

The invention relates to a holographic projection display method of a yarn screen for exhibition of a museum, which specifically comprises the following steps: s1: scanning the cultural relics, and processing, restoring and creating to obtain a new cultural relic image; s2: the cultural relic image is subjected to dynamic manufacturing, special effect processing and sound processing in sequence, and then is output to obtain art resources; s3: and introducing the art resources into the interactive system, and outputting after completion. Compared with the prior art, the invention gets rid of the limitation of the wall surface, can be laid out in any space of a museum, can create a full immersion environment and a full immersion type audio-visual experience environment, enables audiences to see objects on the back through the screen, can also use light transmission for secondary imaging, has higher permeability than the traditional projection screen, and can enable the cultural relic image to suspend in the air.

**CLAIM 1.** A holographic projection display method of a yarn screen for exhibition of a museum is characterized by comprising the following steps: s1: scanning the cultural relics, and processing, restoring and creating to obtain a new cultural relic image; s2: the cultural relic image is subjected to dynamic manufacturing, special effect processing and sound processing in sequence, and then is output to obtain art resources; s3: and introducing the art resources into the interactive system, and outputting after completion.

N8323

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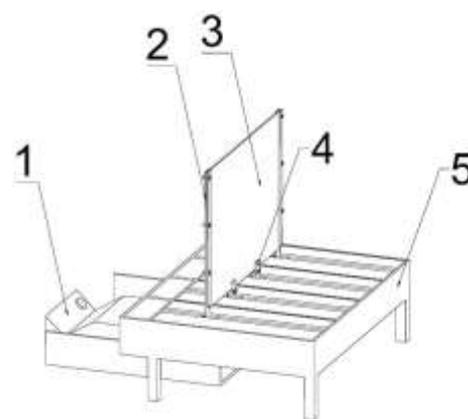
Priority Date: 01/09/2021

SHENZHEN SHENKUN TECHNOLOGY

### INTELLIGENT INTERACTIVE DISPLAY DEVICE WITH HOLOGRAPHIC EFFECT

The invention provides an intelligent interactive display device with holographic effect, which relates to the technical field of interactive display devices and comprises the following components: interactive projection box, flexible projection display screen adjusting device and flexible projection display screen, flexible projection display device is provided with and holds the chamber, it all is provided with lead screw slip table device to hold the intracavity, be provided with the mount on lead screw slip table device's the slip table, fixedly connected with flexible projection display screen on the mount, laser ranging module sets up on the medial surface that holds the one end in chamber, be provided with host system in the interactive projection box, host system all establishes with lead screw slip table's motor and laser ranging module and is connected, can control flexible projection display screen and produce bending effect, strengthen the holographic effect of the image of projection, the 3D effect that makes its projected image demonstrate is more lifelike.

**CLAIM 1.** An intelligent interactive display device with holographic effect, comprising: interactive projection box, flexible projection display screen adjusting device and flexible projection display screen, be provided with host system, first wireless communication module, projection control module in the interactive projection box, first wireless communication module projection control module all with host system connects, flexible projection display screen adjusting device includes: the flexible projection display screen comprises a box body, a lead screw sliding table device, a second wireless communication module and a laser ranging module, wherein a containing cavity is arranged in the box body, the lead screw sliding table device is arranged in the containing cavity, a fixing frame is arranged on a sliding table of the lead screw sliding table device, the fixing frame is fixedly connected with the flexible projection display screen, the laser ranging module is arranged on the inner side surface of one end of the containing cavity, the laser ranging module and a motor of the lead screw sliding table are connected with the second wireless communication module, the laser ranging module is used for detecting the distance between the sliding table of the screw rod sliding table device and the inner side surface of the laser ranging module, the first wireless communication module and the second wireless communication module are used for establishing wireless connection between the interactive projection box and the flexible projection display screen adjusting device, the main control module is used for receiving the electric signal transmitted by the laser ranging module and controlling the starting or closing of the screw sliding table motor according to the electric signal.



N8324

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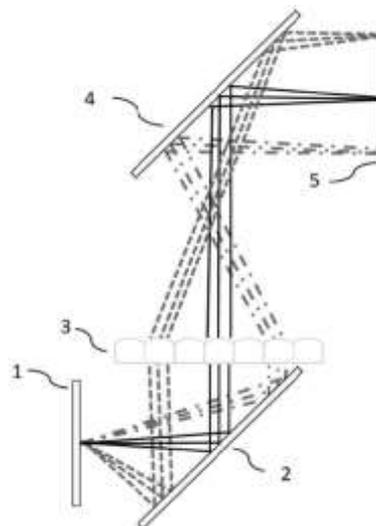
Priority Date: 29/05/2020

ZHEJIANG PRISM HOLOGRAPHIC TECHNOLOGY

ARRAY TYPE AIR IMAGING HOLOGRAPHIC OPTICAL SYSTEM

The invention discloses an array type air imaging holographic optical system, which comprises: an image source for displaying a pattern; the array lens group is used for refracting light rays emitted by the image source and then amplifying real images in the air; the array lens group comprises a plurality of lenses, and all the lenses are arranged in a matrix form. The invention has the advantages that: compared with the single Fresnel lens adopted as an imaging unit, the array lens group is composed of a plurality of lenses arranged in a matrix mode, so that an imaged real image is finer and finer, aberration can be effectively reduced, and a clearer image can be obtained.

CLAIM 1. An array type air imaging holographic optical system is characterized in that: the method comprises the following steps: an image source for displaying a pattern; the array lens group is used for refracting light rays emitted by the image source and then amplifying real images in the air; the array lens group comprises a plurality of lenses, and all the lenses are arranged in a matrix form.



N8326

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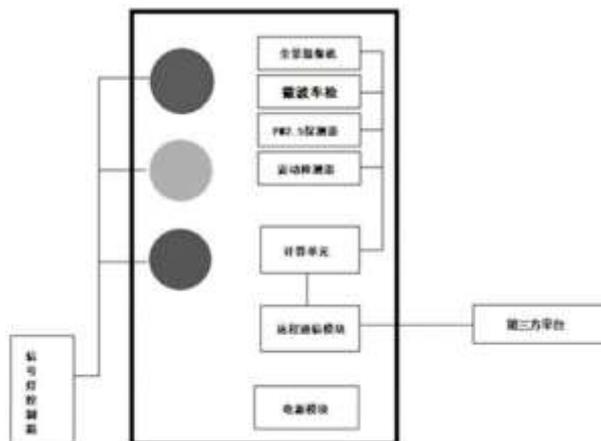
Priority Date: 27/08/2021

JIANGSU UTIS NEW TECHNOLOGY

HOLOGRAPHIC TRAFFIC SIGNAL LAMP SYSTEM

The invention provides a holographic traffic signal lamp system, which comprises a panoramic camera, a microwave vehicle inspection device, a PM2.5 detector, a vibration detector, a computing unit, a remote communication module and a power supply module, wherein the power supply module is connected with the panoramic camera; the panoramic camera, the microwave car inspection, the PM2.5 detector, the shock detector, the computational element, the remote communication module, power module integration is installed on the signal lamp, the panoramic camera, the microwave car inspection, the PM2.5 detector, the shock detector is connected with the computational element, the computational element is connected with the remote communication module and is established remote communication with the third party platform, power module is holographic traffic signal lamp system power supply, brand-new traffic signal lamp system has integrated road panorama camera, the microwave car inspection detects, the function of air quality analysis and earthquake monitoring, provide powerful basic traffic measure for the application in wisdom city, make full use of road best position gathers road safety information, life safety information, promote wisdom city construction.

CLAIM 1. The utility model provides a holographic traffic signal lamp system, is including installing the signal lamp and signal lamp control box at the crossing which characterized in that: the system also comprises a panoramic camera, a microwave vehicle inspection device, a PM2.5 detector, a vibration detector, a computing unit, a remote communication module and a power supply module; the panoramic camera, the microwave car inspection, PM2.5 detector, the shock detector, the computational element, remote communication module, power module integration are installed on the signal lamp, signal lamp control box, panoramic camera, the microwave car inspection, PM2.5 detector, the shock detector is connected with the computational element, the computational element is connected with remote communication module and establishes remote communication through remote communication module and third party's platform, power module is the power supply of holographic traffic signal lamp system.



N8327

CN113706720

LENOVO

Priority Date: 06/09/2021

### IMAGE DISPLAY METHOD AND DEVICE

The application provides an image display method and an image display device, which are applied to control equipment in a holographic projection system, wherein the holographic projection system further comprises a transparent holographic display screen, a projection device and an image acquisition device, the projection device and the image acquisition device are positioned on one side of a first display surface of the transparent holographic display screen, and the method comprises the following steps: obtaining a scene freeze instruction; obtaining a mixed reality image corresponding to a mixed reality scene, wherein the mixed reality scene comprises a virtual scene presented by a transparent holographic display screen and at least one real figure positioned on one side of a second display surface of the transparent holographic display screen; extracting a user image of at least one user belonging to a real person from the mixed reality image; superposing a user image of at least one user onto a virtual scene image to be projected to obtain a real stop-motion image to be projected; and projecting the realistic stop-motion image to the first display surface of the transparent holographic display screen through the projection device. The scheme can present the action image before the current time of the real character in the virtual scene.

N8329

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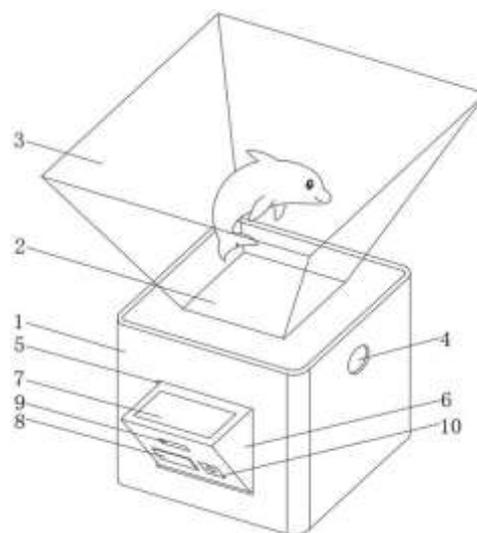
SHENZHEN JIMEI CULTURE TECHNOLOGY

Priority Date: 31/12/2020

### AR DYNAMIC PICTURE BOOK INTERACTION DEVICE BASED ON HOLOGRAPHIC PROJECTION TECHNOLOGY AND INTERACTION MODE THEREOF

The invention discloses an AR dynamic picture book interaction device based on holographic projection technology and an interaction mode thereof. The AR dynamic picture book interaction device based on the holographic projection technology can be conveniently stored, can effectively avoid the device from being damaged by impact force, dust and water stains when not used, improves the safety of the device, realizes the voice interaction function and the somatosensory interaction function, and has multiple interaction modes such as sound, light, scanning, drawing and writing by matching with a touch screen and an AR scanning camera.

**CLAIM 1.** The utility model provides a this interactive installation is painted to AR developments based on holographic projection technique which characterized in that: comprises a base (1), a transparent window (2) is arranged at the middle position of the upper surface of the base (1), a transparent film (3) is arranged at the outer side of the transparent window (2) at the upper part of the base (1), a somatosensory camera (4) is arranged at one side of the base (1) close to the top position in the middle in an embedded manner, a groove (5) is arranged on the front surface of the base (1), a shell (6) is arranged in the groove (5), a touch screen (7) is arranged at the top of the shell (6), a drawing pen storage box (8) is arranged at the position of one side of the front part of the shell (6) close to the bottom, a handle groove (9) is arranged at the position of the upper part of the drawing pen storage box (8) at the front part of the shell (6), an AR scanning camera (10) is arranged at the position of one side of the front part of the drawing pen storage box (8) in an embedded manner, a storage mechanism (11) is arranged between the shell (6) and the base (1), a fixed frame (20) is fixedly arranged in the base (1) through supporting legs (19), and a holographic projector (21) is fixedly arranged on the inner side of the fixed frame (20); the inside of casing (6) is equipped with the PCB board, install CPU, bluetooth module, WIFI module, AR scanning module, power module, sensing module, storage module, voice interaction module and power amplifier on the PCB board.



N8331

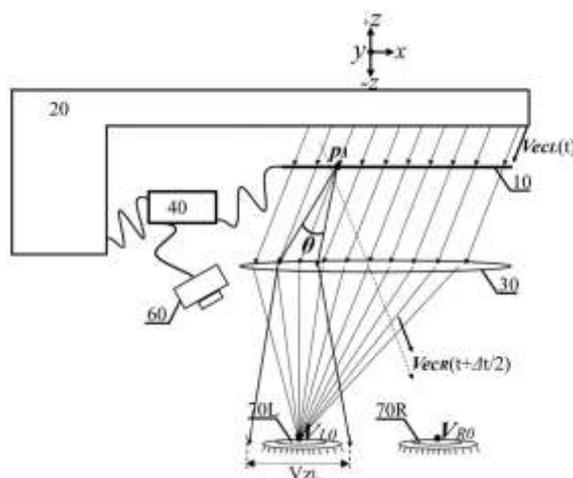
CN113703164

Priority Date: 16/07/2021

SUN YAT SEN UNIVERSITY

### OPTICAL WAVEGUIDE DIRECTIONAL BACKLIGHT HOLOGRAPHIC DISPLAY MODULE

The invention discloses an optical waveguide pointing backlight holographic display module which comprises an optical waveguide pointing backlight assembly, an optical modulation device, a convergence device, a control device and other assemblies, wherein the optical waveguide pointing backlight assembly comprises a light source structure, a collimation device and an optical waveguide device. The light source structure projects light through the related components, can project backlight to the light modulation device along different directions, and is converged to a corresponding visual area through the convergence device; the control device synchronously loads the holographic coding information of the scene to be displayed to the light modulation device, and the holographic three-dimensional scene in the corresponding visual area is presented. The introduction of the optical waveguide device realizes thinning of the directional backlight projection structure, and tracking coverage of the observer eyes by the vision areas corresponding to different backlights provides a reasonable observation area for the observer eyes. The optical waveguide pointing backlight holographic display module can be applied to portable display terminals, such as mobile phones, iPads, head-wearing VR/AR and the like.



**CLAIM 1.** Optical waveguide directional backlight holographic display module, its characterized in that includes: the light modulation device (10), the light modulation device (10) includes arranging and forming the pixel array by a plurality of pixel, the light modulation device (10) is to the modulation of each correspondent incident beam through the pixel, carry on the optical information and load; an optical waveguide directed to a backlight assembly (20), the optical waveguide directed to the backlight assembly (20) capable of projecting backlights having the same color characteristics in different directions to be incident on the light modulation device (10), wherein: the optical waveguide directional backlight assembly (20) comprises a light source structure (21) consisting of M time sequence light sources emitting light with the same color characteristic, a collimating device (22) and an optical waveguide device (23), wherein projection light of different time sequence light sources in the light source structure (21) is modulated by the collimating device (22) and guided by the optical waveguide device (23) to serve as backlight and enter the light modulation device (10) along respectively corresponding different directions, wherein M is more than 1; or, the light guide directional backlight assembly (20) comprises a light source structure (21) constructed by sequential light sources, a collimating device (22), a light guide device (23) and a controllable deflection device (50), wherein the light source structure (21) projects light which is modulated by the collimating device (22) and guided by the light guide device (23), is deflected by the controllable deflection device (50) and is used as backlight to be incident to the light modulation device (10) along different directions; the converging device (30) is used for converging the light guide to point to the backlight assembly (10) and projecting the backlight projected along each direction, and guiding the modulated light of the light modulating device (10) to project to corresponding visual areas, wherein each visual area corresponds to each backlight and the backlight direction thereof one by one; the control device (40), the control device (40) is connected with the light modulation device (10) and the light waveguide pointing backlight assembly (20) respectively, the control device (40) is used for controlling the light waveguide pointing backlight assembly (20) to project backlight, and synchronously loading the holographic code of the scene to be displayed corresponding to the backlight to the light modulation device (20); the light guide points to each backlight projected by the backlight component (20), and the light is modulated by the light modulation device (10) to project the corresponding holographic scene to the corresponding visual area.

N8332

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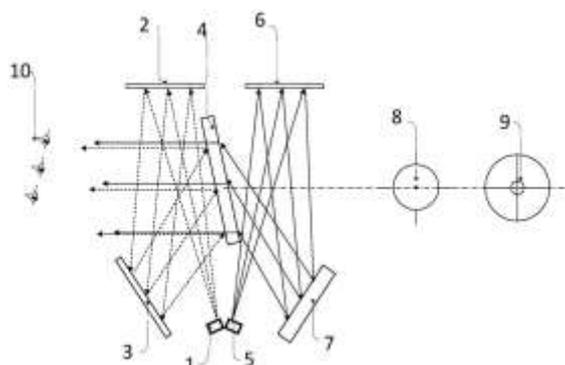
Priority Date: 30/08/2021

SANSUI OPTICAL TECHNOLOGY SUZHOU

### LIGHT PATH SYSTEM OF HOLOGRAPHIC AIMING DEVICE WITH DOUBLE-COLOR SWITCHABLE DIVISION PATTERNS

The invention relates to an optical path system of a holographic aiming device with a two-color switchable division pattern, which comprises a first optical path system, a second optical path system and a volume phase holographic grating; the first light path system is provided with a first light source, a first collimating device and a first holographic sheet; the second light path system is provided with a second light source, a second collimating device and a second holographic sheet; the first light source emission beam sequentially passes through the first collimating device and the first holographic plate, then obliquely enters the position phase holographic grating and then is emitted in parallel; the second light source emission beam sequentially passes through the second collimating device and the second holographic plate, then obliquely enters the position phase holographic grating and then is emitted in parallel. The invention utilizes light sources with different wavelengths and different holographic films to realize the switching use of the division colors and patterns of the holographic gun sight in different battle scenes, and solves the problems of single division colors and patterns and limited battle environment of the holographic gun sight.

**CLAIM 1.** An optical path system of a holographic aiming device with a two-color switchable division pattern is characterized by comprising a first optical path system, a second optical path system and a volume phase holographic grating; the first light path system is sequentially provided with a first light source, a first collimating device and a first holographic sheet along the propagation direction of a light beam in the first light path system; the second light path system is sequentially provided with a second light source, a second collimating device and a second holographic plate along the light velocity propagation direction in the second light path system; the first light source emission beam sequentially passes through the first collimating device and the first holographic plate, then obliquely enters the body position phase holographic grating and then is emitted in parallel; the second light source emission beam sequentially passes through a second collimating device and a second holographic plate, then obliquely enters the position phase holographic grating and then is emitted in parallel; and the light beam emitted by the first light source and the light beam emitted by the second light source are emitted out in parallel from the same side of the posture phase holographic grating.



N8333

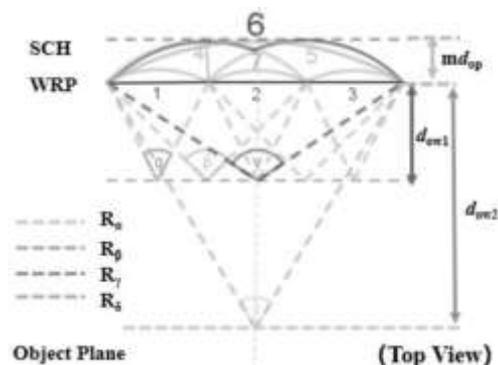
CN113687586

Priority Date: 23/07/2021

SICHUAN UNIVERSITY

### LARGE-FIELD-ANGLE HOLOGRAPHIC DISPLAY METHOD FOR SEAMLESSLY SPLICING MULTI-SEGMENT CYLINDRICAL SURFACES

The invention provides a large-field angle holographic display method for seamlessly splicing multi-segment cylindrical surfaces. Aiming at the problem that the field angle of holographic display of the segment cylindrical surface is still limited due to the fact that the segment cylindrical surface hologram generated by the approximate phase compensation method cannot break through the limitation, the method provides that a plurality of small segment cylindrical surface holograms are generated based on the approximate phase compensation method, and the plurality of segment cylindrical surface holograms are spliced into a large segment cylindrical surface hologram by adopting a seamless splicing algorithm, so that the horizontal field angle of holographic display is enlarged. The method comprises a splicing method for expanding the field angle of the cylindrical hologram and a seamless splicing algorithm for eliminating splicing seams. Compared with the method for directly splicing the segment cylindrical holograms, the segment cylindrical hologram generated by the method has a larger field angle, and the reconstructed image has no splicing seams, so that the reconstruction quality of cylindrical holographic display is improved.



**N8335**

**CN113671813**

*Priority Date: 20/08/2021*

**CHINESE PEOPLE S LIBERATION GROUND FORCE ARMORED TROOP  
ACADEMY**

**VIRTUAL AND REAL SCENE FUSED FULL-PARALLAX HOLOGRAPHIC VOLUME VIEW MANUFACTURING METHOD AND SYSTEM**

The invention discloses a method and a system for manufacturing a full-parallax holographic view fused with virtual and real scenes. The method comprises the following steps: carrying out full-view shooting on a real scene to obtain a plurality of view angle images; reconstructing three-dimensional point cloud data of a real scene by adopting a plurality of view angle images; importing the three-dimensional point cloud data into three-dimensional modeling software to construct a three-dimensional model of a real scene, and adjusting the spatial position relationship between the three-dimensional model and a virtual scene to obtain a plurality of scene fusion images; carrying out full parallax sampling and coding on the multiple scene fusion images to obtain a plurality of exposure image arrays; and controlling a printing mechanism to perform full parallax printing on the plurality of exposure image arrays to obtain a full parallax holographic view. The method and the device can improve the reconstruction quality of the holographic volume view and improve the display effect of the holographic volume view.

**CLAIM 1.** A method for making a virtual and real scene fused full-parallax holographic view is characterized by comprising the following steps: carrying out full-view shooting on a real scene to obtain a plurality of view angle images; reconstructing three-dimensional point cloud data of the real scene by adopting a plurality of view angle images; importing the three-dimensional point cloud data into three-dimensional modeling software to construct a three-dimensional model of the real scene, and adjusting the spatial position relationship between the three-dimensional model and a virtual scene in the three-dimensional modeling software to obtain a plurality of scene fusion images; carrying out full parallax sampling and coding on the plurality of scene fusion images to obtain a plurality of exposure image arrays; and controlling a printing mechanism to perform full parallax printing on the plurality of exposure image arrays to obtain a full parallax holographic view.

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**N8336**

**CN113671812**

*Priority Date: 14/09/2021*

**CHINA UNICOM**

**HOLOGRAPHIC IMAGE IMAGING METHOD, HOLOGRAPHIC PROJECTION EQUIPMENT, OBSERVATION EQUIPMENT AND SYSTEM**

The invention provides a holographic image imaging method, holographic projection equipment, observation equipment and a system, wherein the holographic image imaging method comprises the following steps: determining the imaging position of holographic projection imaging according to the position information of the master user and other users in the preset area; performing holographic image imaging according to the imaging position, and adding a virtual grating with a blank opening and a fence in the peripheral area of the holographic image imaging, wherein the blank opening is aligned to the main user, and part or all of the fence is aligned to other users; synchronizing the imaging location to a viewing device. According to the method, the holographic projection equipment, the observation equipment and the system, the virtual grating is arranged aiming at the master user and other users in the preset area, the blank opening of the virtual grating is aligned to the master user, and the fence is aligned to other users, so that only the master user can see 360-degree panorama, and the privacy and safety of the master user when the master user uses the holographic video are protected.

**CLAIM 1.** A holographic image imaging method is applied to holographic projection equipment, and is characterized by comprising the following steps: determining the imaging position of holographic projection imaging according to the position information of the master user and other users in the preset area; performing holographic image imaging according to the imaging position, and adding a virtual grating with a blank opening and a fence in the peripheral area of the holographic image imaging, wherein the blank opening is aligned to the main user, and part or all of the fence is aligned to other users; synchronizing the imaging location to a viewing device.

N8338

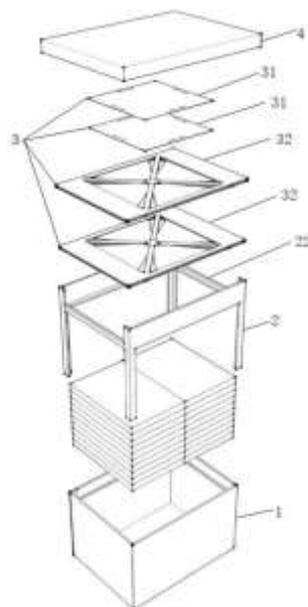
CN113665993

Priority Date: 23/09/2021

CHINA TOBACCO YUNNAN INDUSTRIAL

### FOLDABLE PYRAMID HOLOGRAPHIC PROJECTION IMAGING BODY AND PACKAGING BOX COMPRISING SAME

The invention provides a foldable pyramid holographic projection imaging body and a packaging box comprising the same, wherein the foldable pyramid holographic projection imaging body comprises: a pyramid imaging member (32) and a bottom fixture (31); the pyramid imaging piece (32) comprises two layers of supporting plates (321) and a layer of holographic projection film (322), the middle of each supporting plate (321) is in a cross-shaped framework shape, and the holographic projection film (322) is fixed between the two layers of supporting plates (321); four pre-cuts (311) are arranged on the bottom fixing piece (31); when the foldable pyramid holographic projection imaging body is in a folded state, the pyramid imaging piece (32) and the bottom fixing piece (31) are separately placed in a sheet mode; when the foldable pyramid holographic projection imaging body is in an unfolded state, the foldable pyramid holographic projection imaging body is assisted to the image generation device, and after videos or image pictures played by the image generation device are projected onto the foldable pyramid holographic projection imaging body (3), a 3D image is formed. The packaging box containing the foldable pyramid holographic projection imaging body is novel in structure and strong in display effect.



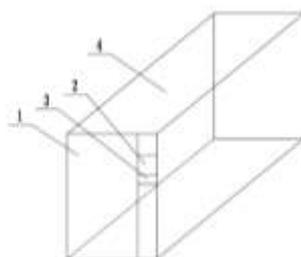
**CLAIM 1.** A foldable pyramid holographic projection imaging volume, comprising: a pyramid imaging member (32) and a bottom fixture (31); the pyramid imaging piece (32) comprises two layers of supporting plates (321) and one layer of holographic projection film (322), the middle of each supporting plate (321) is in a cross-shaped framework shape, the holographic projection film (322) is fixed between the two layers of supporting plates (321), four projection surfaces (323) with connected tops are pre-cut on the holographic projection film (322), and the tops of the projection surfaces (323) are fixed at the intersection parts of the cross-shaped frameworks of the supporting plates (321); four pre-cuts (311) are arranged on the bottom fixing piece (31); the bottom of each projection surface (323) is provided with a pin corresponding to the pre-cut (311); when the foldable pyramid holographic projection imaging body is in a folded state, the pyramid imaging piece (32) and the bottom fixing piece (31) are separately placed in a sheet mode; when the foldable pyramid holographic projection imaging body is in an unfolded state, the projection surfaces (323) are pushed out from the hollow parts among the cross-shaped frameworks of the supporting plate (321), pins of the projection surfaces (323) are inserted into the corresponding pre-cuts (311), the bottom of the holographic projection film (322) can be fixed, and two adjacent sides of the four projection surfaces (323) are sequentially connected to form a pyramid shape.

**HOLOGRAPHIC EXPERIENCE CLOTHES SELF-SERVICE SELLING ALL-IN-ONE MACHINE AND METHOD**

The present disclosure relates to a holographic experience clothes self-service selling all-in-one machine and method. The all-in-one machine includes a function selection module, a holographic projection module, a goods sorting module, and a payment module. The holographic projection module, the goods sorting module, and the payment module are all connected to the function selection module. The function selection module is configured to acquire goods information and send the goods information to the holographic projection module. The function selection module is further configured to acquire a payment mode and send the payment mode to the payment module. The holographic projection module is configured to perform holographic projection on a customer according to the goods information. The payment module is configured to determine payment information according to the payment mode and payment amount and send the payment information to the function selection module. The function selection module is further configured to send the payment information to the goods sorting module. The goods sorting module is configured to sort goods according to the goods information and the payment information. According to the present disclosure, by trying on the clothes with the holographic technology, the flexibility of the self-service selling machine is improved.



FIG. 1



**CLAIM 1.** A holographic experience clothes self-service selling all-in-one machine, comprising a function selection module, a holographic projection module, a goods sorting module, and a payment module, wherein the holographic projection module, the goods sorting module, and the payment module are all connected to the function selection module; the function selection module is configured to acquire goods information and send the goods information to the holographic projection module, and the function selection module is further configured to acquire a payment mode and send the payment mode to the payment module; the holographic projection module is configured to perform holographic projection on a customer according to the goods information; the payment module is configured to determine payment information according to the payment mode and payment amount and send the payment information to the function selection module, and the function selection module is further configured to send the payment information to the goods sorting module; and the goods sorting module is configured to sort goods according to the goods information and the payment information.

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

**N8319****CN113791019***Priority Date: 06/07/2021***CHINA UNIVERSITY OF GEOSCIENCES WUHAN****DIGITAL COAXIAL HOLOGRAPHIC FLOW CYTOMETRY DETECTION METHOD, DEVICE AND STORAGE EQUIPMENT**

The invention provides a digital coaxial holographic flow cytometry detection method, a device and a storage medium, wherein the method comprises the following steps: emitting laser to irradiate the sample cell particle fluid and collecting cell hologram; cropping the cell hologram; denoising the cut cell hologram; extracting the axial length ratio of concentric ellipses of the denoised cell hologram; changing the reproduction distance to obtain the real reproduction distance of the sample cell; and according to the axial length ratio of the concentric ellipses and the real reproduction distance, compensating the phase distortion of the denoised cell hologram by using an improved angular spectrum reproduction method to obtain a cell holographic reconstruction map.

**CLAIM 1.** A digital coaxial holographic flow cytometry detection method is characterized by comprising the following steps: emitting laser to irradiate the sample cell particle fluid and collecting cell hologram; cropping the cell hologram; denoising the cut cell hologram to obtain a denoised hologram; extracting the axial length ratio of the concentric ellipses of the de-noised hologram; changing the reproduction distance, introducing the axial length ratio of the concentric ellipse, compensating the phase distortion of the denoised cell hologram by using the axial length ratio of the concentric ellipse, and performing holographic reconstruction on the cell hologram compensated for the phase distortion; and (4) selecting a clear cell holographic reconstruction image from the reconstructed cell holograms by using an absolute gradient operator.

**N8337****CN113671684***Priority Date: 03/09/2021***GUANGZHOU KAIJIA OPTICAL TECHNOLOGY****MULTICOLOR IMAGING SYSTEM BASED ON HOLOGRAPHIC OPTICS AND HOLOGRAPHIC OPTICAL TWEEZERS DEVICE**

The application discloses polychrome imaging system and holographic optical tweezers device based on holographic optics includes: the laser is used for emitting laser used for light capture; the polarization modulation part is used for modulating the polarization state of the laser emitted by the laser so as to realize the control of the laser intensity; the spatial light modulator is used for carrying out light field modulation on light from the polarization modulation part, and the modulated light field is tightly focused by the objective lens to form the optical tweezers. The system comprises: the multi-wavelength optical module is used for exciting dyes in different wave bands and carrying out multi-color imaging and tracking on a sample; a microscope, a stage to magnify and observe the sample; the image acquisition module is used for optical moment analysis and multicolor fluorescence imaging; the control terminal is used for controlling the holographic optical tweezers module, reading imaging information of the image acquisition module and controlling an electromechanical shutter in the microscope. The problem of the capacity limitation of the optical tweezers system in the aspect of microscopic imaging is solved through the application, the holographic optical tweezers are used for capturing and moving the sample, and the multidimensional structure and the dynamic analysis of the sample are carried out.

**CLAIM 1.** A holographic optical tweezers device, comprising: a laser for emitting laser light; the polarization modulation part is used for modulating the polarization state of the laser emitted by the laser so as to realize the control of the laser intensity; and the spatial light modulator is used for carrying out light field modulation on the laser from the polarization modulation part, wherein the modulated light field forms optical tweezers on a focal plane of a microscope objective lens.

**INTELLIGENT ANALYSIS METHOD AND DEVICE BASED ON HOLOGRAPHIC EVANESCENT WAVE OPTICAL TWEEZERS**

The application discloses an intelligent analysis method based on holographic evanescent wave optical tweezers, which comprises the steps of executing laser generation operation to respectively generate first laser and second laser; executing laser modulation operation to correspondingly generate two groups of spherical waves; performing a first evanescent wave excitation operation to tweeze the first particles; performing a second evanescent wave excitation operation to tweeze second particles; executing rotation and image acquisition operation to correspondingly obtain a first microscopic image sequence and a second microscopic image sequence; obtaining a first difference value set; modifying the type of the second particles for multiple times to obtain multiple sample data; obtaining a particle type classification model; obtaining a third microscopic image sequence and a fourth microscopic image sequence; obtaining a second difference value set; and inputting the difference set II into the particle type classification model to obtain a classification result, thereby realizing the reutilization of image data, preliminarily classifying the particles and being beneficial to reducing the possibility of false detection of the particles.

**CLAIM 1.** An intelligent analysis method based on holographic evanescent wave optical tweezers is characterized by comprising the following steps: s1, executing laser generation operation to control the first laser generator and the second laser generator to generate the first laser and the second laser respectively and to enable the first laser and the second laser to be emitted into the first spatial light modulator and the second spatial light modulator respectively; s2, executing laser modulation operation to control the first spatial light modulator and the second spatial light modulator to respectively modulate the first laser and the second laser according to a preset first hologram and a preset second hologram so as to correspondingly generate two groups of spherical waves; the first group of spherical waves consists of a first spherical wave and a second spherical wave, and the second group of spherical waves consists of a third spherical wave and a fourth spherical wave; the first spherical wave and the second spherical wave have different focuses, and the third spherical wave and the fourth spherical wave have different focuses; s3, performing a first evanescent wave excitation operation to inject a first set of spherical waves into a pre-set first slide, such that a first spherical wave is focused within a liquid range on the first slide, and a second spherical wave is focused within a glass range on the first slide, to excite the first evanescent wave, thereby trapping a specified number of first particles in the first region; s4, performing a second evanescent wave excitation operation to inject a second set of spherical waves into the first slide, such that a third spherical wave is focused within the liquid range on the first slide, and a fourth spherical wave is focused within the glass range on the first slide, to excite the second evanescent wave, thereby trapping a specified number of second particles in the second region; wherein the first slide carries a prescribed liquid that mixes the first microparticles and the second microparticles; s5, performing rotation and image acquisition operations to apply the same orbital angular momentum to the first spherical wave and the third spherical wave, so that the first particles in the first area and the second particles in the second area respectively rotate, and acquiring images of the first area and the second area in real time by adopting a preset CCD camera, so as to correspondingly obtain a first microscopic image sequence and a second microscopic image sequence; s6, obtaining a first rotation parameter set corresponding to the first particles by comparing the first microscopic image sequence; obtaining a second set of rotation parameters corresponding to the first particles by comparing the second sequence of microscopy images; correspondingly subtracting the first rotation parameter set from the second rotation parameter set to obtain a first difference set; marking the type of the second particle on the first difference value set to serve as sample data; s7, modifying the type of the second particles for multiple times, and repeating the steps S1-S6 to obtain multiple sample data; s8, training a preset neural network model in a supervised learning mode according to the plurality of sample data to obtain a particle type classification model; s9, mixing the first particles and the particles to be detected in a specified liquid, dripping the mixture on a preset second glass slide, sequentially performing laser generation operation, laser modulation operation, first evanescent wave excitation operation and second evanescent wave excitation operation on the second glass slide, enabling the first evanescent wave to clamp a specified number of the first particles and the second evanescent wave to clamp a specified number of the particles to be detected, and then performing rotation and image acquisition operation to correspondingly obtain a third microscopic image sequence and a fourth microscopic image sequence; s10, obtaining a third rotation parameter set corresponding to the first particles by comparing the third microscopic image sequences; obtaining a fourth rotation parameter set corresponding to the particles to be detected by comparing the fourth microscopic image sequence; correspondingly subtracting the first rotation parameter set by adopting a fourth rotation parameter set to obtain a second difference set; and S11, inputting the difference value set II into the particle type classification model to obtain a classification result corresponding to the particles to be detected.

*Click on the title to return to table of contents*

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

**N8278**

**WO2021247686**

Priority Date: 02/06/2020

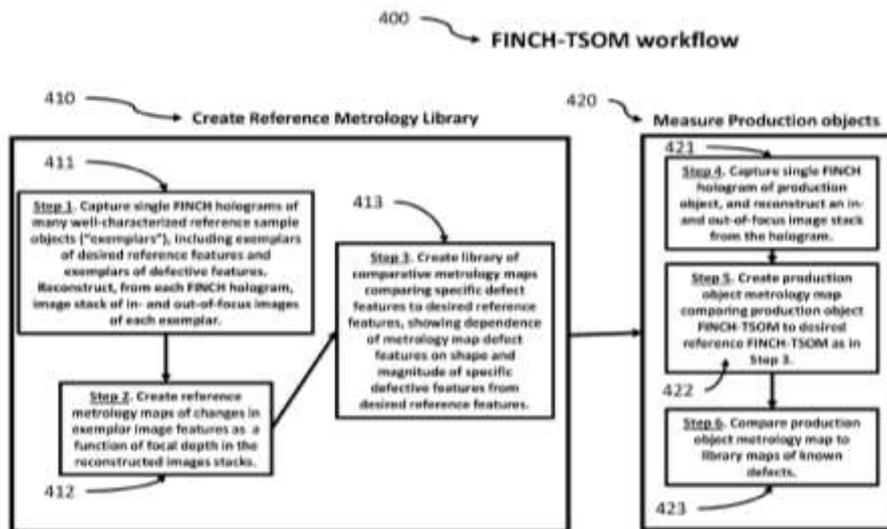
**CELLOPTIC**

**OPTICAL METROLOGY WITH INCOHERENT HOLOGRAPHY**

An advance in high-resolution optical metrology has been achieved by the introduction of incoherent holographic imaging. FINCH, an example of incoherent holography, is shown to simplify the process, eliminating many steps in metrology and at the same time increasing throughput, resolution and accuracy of the method. A proposed technique requires only a single image capture with a non-moving camera rather than the capture of multiple stacks of images requiring many camera exposures and movement of the camera or sample in the conventional techniques.

**MÉTROLOGIE OPTIQUE AVEC HOLOGRAPHIE INCOHÉRENTE**

Une avancée dans la métrologie optique à haute résolution a été obtenue par l'introduction d'une imagerie holographique incohérente. Le FINCH, un exemple d'holographie incohérente, est montré pour simplifier le procédé, éliminant de nombreuses étapes de métrologie et en même temps augmentant le débit, la résolution et la précision du procédé. Une technique proposée ne nécessite qu'une seule capture d'image avec une caméra non mobile plutôt que la capture de multiples piles d'images nécessitant de nombreuses expositions de caméra et le mouvement de la caméra ou de l'échantillon dans les techniques classiques.



**CLAIM 1.** A metrology method for determining the manufacturing quality of an object under inspection, comprising: recording, using a FINCH camera controlled by a computer comprising one or more processors, an incoherent FINCH hologram of an object at a single focal position; deriving, using the one or more processors, three-dimensional volume information about the object from the incoherent hologram; extracting, using the one or more processors, metrology information about a specific feature of the object located throughout the three-dimensional volume; comparing, using the one or more processors, the metrology information about the specific feature to a library of reference metrology information about a plurality of exemplars of the same type as the specific feature; and outputting information from the comparing to a display device or digital storage device, and passing or rejecting the object based on the outputted information comparison.

N8290

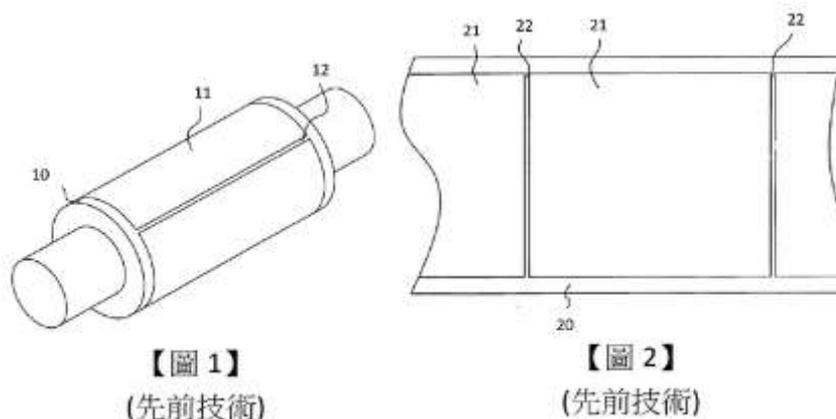
TW202142966

Priority Date: 11/05/2020

GUANGQUN LASER SCIENCE & TEC

**PATTERN TRANSFER METHOD FOR SEAMLESS HOLOGRAM**

A seamless full image pattern transfer method for forming a pattern on a metal roller, comprising the steps of: forming a photoresist layer on the metal roller; Good rates and cost optimization can be achieved using the pattern transfer method of the present invention.



N8291

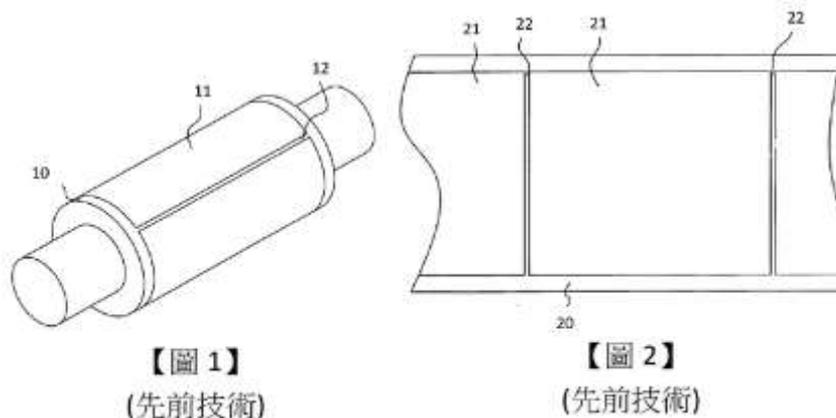
TW202142965

Priority Date: 08/05/2020

GUANGQUN LASER SCIENCE & TEC

**PATTERN TRANSFER METHOD FOR SEAMLESS HOLOGRAM**

A seamless full image pattern transfer method comprising the steps of: providing a cylindrical roller having a first photosensitive adhesive layer thereon, subjecting the first photosensitive adhesive layer to a microlithography process with a default pattern of light of a first wavelength to form a first patterned photosensitive adhesive layer, providing a master carrier, and performing a thin film patterning process to transfer the pattern of the first patterned photosensitive adhesive layer to the master carrier. Good rates and costs can be optimized using the spin printing process of the photosensitive adhesive of the present invention.



N8294

KR20210141268

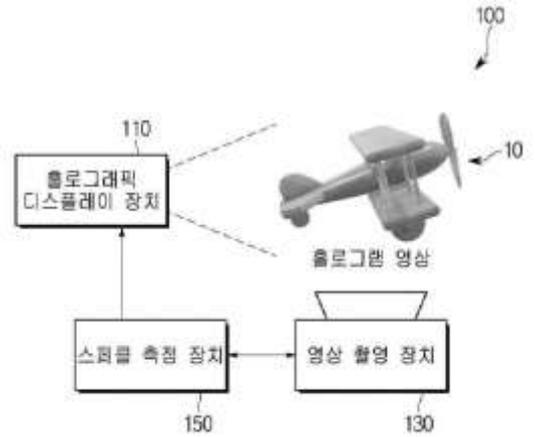
Priority Date: 15/05/2020

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE

HOLOGRAM IMAGE QUALITY MEASUREMENT APPARATUS AND METHOD

A holographic image quality measurement system is provided. An image quality measurement system according to one embodiment of the present disclosure includes a computer generated hologram (CGH), A holographic display device configured to output a hologram image by performing optical restoration on the CGH, an image capturing device configured to capture the hologram image output on a hologram plane provided in the holographic display device, Control the hologram image output through the holographic display device and including a speckle test pattern including a Snellen measurement table and a USAF test pattern, and measure quality by analyzing the hologram image captured through the image capturing device.

CLAIM 1. A holographic display device which constitutes a computer-generated hologram (CGH) and outputs a hologram image by performing optical restoration on the CGH, an image photographing device which photographs the hologram image output on a hologram plane provided in the holographic display device, A speckle measuring device configured to control the hologram image outputted through the holographic display device and including a speckle test pattern including a Snellen measurement table and a USAF test pattern, and measure quality by analyzing the hologram image captured through the image capturing device.



N8309

CN215006082U

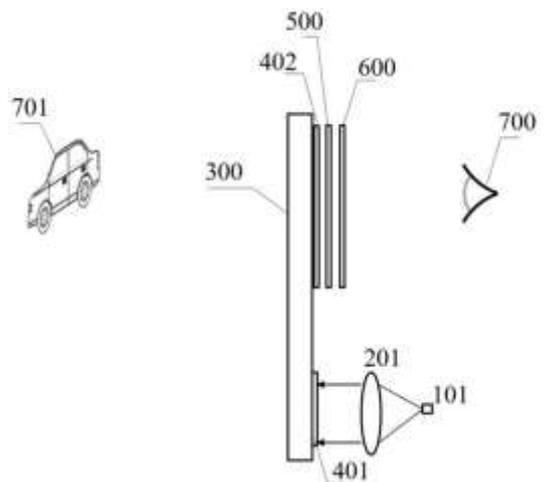
Priority Date: 21/04/2021

NANCHANG SANJI PHOTOELECTRIC

OPTICAL SYSTEM AND HOLOGRAPHIC AIMING EQUIPMENT

The utility model discloses an optical system and holographic aiming equipment. An optical system comprising: a light source emitting light; the coupling input element receives the light emitted by the light source and converts the light; a waveguide for receiving the light deflected by the coupling-in element and propagating the light in the waveguide in a manner of being larger than a total reflection angle; a coupling-out grating for coupling light propagating in the waveguide out of the waveguide; a wavefront modulation element having opposing first and second surfaces, the first surface for receiving a first optical wave exiting the waveguide without a complete planar wavefront, the second surface for exiting a second optical wave having a complete planar wavefront that is amplitude and phase beam shaped by the wavefront modulation element to the first optical wave; and the layer element receives the second light wave and presents a target image recorded by the layer element. The utility model discloses optical system and holographic aiming equipment can reduce each component size restraint of optical system, guarantees simultaneously that target image quality does not reduce.

CLAIM 1. An optical system, comprising: a light source for emitting light; the coupling input element is used for receiving the light emitted by the light source and converting the light; a waveguide for receiving the light deflected by the coupling-in element and propagating the light within the waveguide at an angle greater than the angle of total reflection; a coupling-out grating for coupling light propagating within the waveguide out of the waveguide; a wavefront modulating element having opposing first and second faces, the first face of the wavefront modulating element for receiving a first optical wave exiting the waveguide without a complete planar wavefront, the second face of the wavefront modulating element for exiting a second optical wave having a complete planar wavefront that is amplitude and phase beam shaped by the wavefront modulating element for the first optical wave; and the layer element is used for receiving the second light wave and presenting a target image recorded by the layer element.



N8310

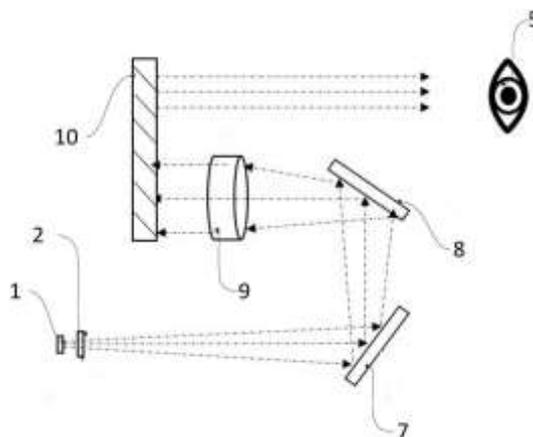
CN214950883U

Priority Date: 31/05/2021

SANSUI OPTICAL TECHNOLOGY SUZHOU

### RED SPOT AIMING SYSTEM WITH VERTICAL CAVITY SURFACE EMITTING LASER AND HOLOGRAPHIC AIMING SYSTEM

The utility model relates to a red spot aiming system with vertical cavity surface emitting lasers, which comprises a plurality of vertical cavity surface emitting lasers, a reticle and an analyzing mirror; the reticle is provided with a pattern area for light to pass through; the vertical cavity surface emitting lasers are distributed according to the shape of the pattern area and are arranged in front of the reticle; the pattern formed by the arrangement of the vertical cavity surface emitting lasers is matched with the shape of the pattern area; the light analyzing mirror is positioned above the reticle in an inclined mode, the concave surface of the light analyzing mirror faces the reticle, and one or more layers of light absorbing films are plated on the concave surface of the light analyzing mirror. The utility model discloses still relate to a holographic aiming system with vertical cavity surface emitting laser. According to the red spot aiming system and the holographic aiming system with the vertical cavity surface emitting lasers, the vertical cavity surface emitting lasers are arranged in the transmission area of the reticle, most of light rays transmit through the transmission area of the reticle and are utilized by the following optical system, and the light efficiency is high.



**CLAIM 1.** The red point aiming system with the vertical cavity surface emitting laser is characterized by comprising a plurality of vertical cavity surface emitting lasers, a reticle and an analyzing mirror; the reticle is provided with a pattern area for light to pass through; the pattern area can be a hollow-out area or a transmission area; the vertical cavity surface emitting lasers are distributed according to the shape of the pattern area and are arranged in front of the reticle; the pattern formed by the arrangement of the plurality of vertical cavity surface emitting lasers is matched with the shape of the pattern area; the light analysis mirror is positioned above the reticle in an inclined mode, the concave surface of the light analysis mirror faces the reticle, and one or more layers of light absorption films are plated on the concave surface of the light analysis mirror.

N8311

CN214947919U

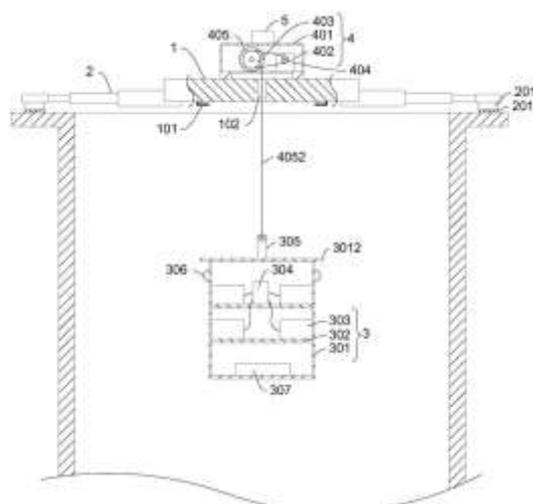
Priority Date: 29/04/2021

LIAONING HONGTU CHUANGZHAN SURVEYING & MAPPING SURVEY

### THREE-DIMENSIONAL HOLOGRAPHIC MAPPING EQUIPMENT OF OUTDOOR SCENE

The utility model provides a three-dimensional holographic mapping equipment of outdoor scene relates to the survey and drawing technical field, and through adopting including base and tertiary flexible foot rest, the one end of tertiary flexible foot rest and the bottom of base are articulated, and the other end of tertiary flexible foot rest is provided with fills up the foot, and the base bottom is provided with the survey and drawing structure, and the base top is provided with elevation structure, and elevation structure and the technical scheme of survey and drawing structural connection have the beneficial effect of improving workman measuring environment, convenient to use.

**CLAIM 1.** The utility model provides a three-dimensional holographic mapping equipment of outdoor scene, its characterized in that, includes base and tertiary flexible foot rest, the one end of tertiary flexible foot rest with the bottom of base is articulated, the other end of tertiary flexible foot rest is provided with fills up the foot, the base bottom is provided with the survey and drawing structure, the base top is provided with elevation structure, elevation structure with the survey and drawing structural connection.



**N8313**

**CN214893389U**

Priority Date: 10/04/2021

**SHANDONG SHENGJING YAPIN INTELLIGENT TECHNOLOGY GROUP**

### **HOLOGRAPHIC IMAGE MULTI-POINT ACQUISITION SYSTEM**

The utility model belongs to the technical field of projection system technique and specifically relates to be holographic image multiple spot collection system, including collection module: the data acquisition unit is used for acquiring data of user actions; the signal processing module: the data acquisition module is used for acquiring data and outputting the data to the imaging module; an imaging module: for outputting image information to a user; the holographic image multipoint acquisition system of the scheme utilizes a plurality of infrared signal sensors to acquire actions of a user, and is higher in precision and faster in response; the projector device uses the top mounting frame, so that the frame body and the projector are mounted step by step, the mounting difficulty is reduced, the damping rotating shaft is used for adjusting the angle, and the debugging difficulty is further reduced.

**CLAIM 1.** Holographic image multiple spot collection system, its characterized in that: the device comprises an acquisition module: the data acquisition unit is used for acquiring data of user actions; the signal processing module: the data acquisition module is used for acquiring data and outputting the data to the imaging module; an imaging module: for outputting image information to a user; the imaging module include a plurality of projecting apparatus device, the projecting apparatus device include projecting apparatus and top mounting bracket, the top of top mounting bracket pass through the bolt and install on the wall or roof downside, the upper portion at the projecting apparatus is installed to the opposite side of top mounting bracket.

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**N8314**

**CN214890326U**

Priority Date: 10/04/2021

**SHANDONG SHENGJING YAPIN INTELLIGENT TECHNOLOGY GROUP**

### **THREE-DIMENSIONAL HOLOGRAPHIC IMAGE INTERACTION SYSTEM**

The utility model belongs to the technical field of projection system technique and specifically relates to be exactly three-dimensional holographic image interactive system, including collection module: the data acquisition unit is used for acquiring data of user actions; the signal processing module: the data acquisition module is used for acquiring data and outputting the data to the imaging module; an imaging module: for outputting image information to a user; the acquisition module comprises an infrared signal sensor, a nano touch film and a camera, and the imaging module comprises a plurality of projector devices; the projecting apparatus device include projecting apparatus and rack, the top of rack pass through flange mounting on the wall or roof downside, the projecting apparatus arrange in on the rack, the holographic image multiple spot collection system of this scheme utilizes a plurality of different collection module to carry out the action collection to the user, the precision is higher, corresponding faster, utilizes the axial ball joint to carry out the direction adjustment of projecting apparatus, angle of adjustment broad, simple effective.

**CLAIM 1.** Three-dimensional holographic image interactive system, its characterized in that: the device comprises an acquisition module: the data acquisition unit is used for acquiring data of user actions; the signal processing module: the data acquisition module is used for acquiring data and outputting the data to the imaging module; an imaging module: for outputting image information to a user; the acquisition module comprises an infrared signal sensor, a nano touch film and a camera, and the imaging module comprises a plurality of projector devices; the projector device comprises a projector and a placing frame, the top of the placing frame is installed on the wall surface or the lower side of the roof through a flange, and the projector is arranged on the placing frame.

N8322

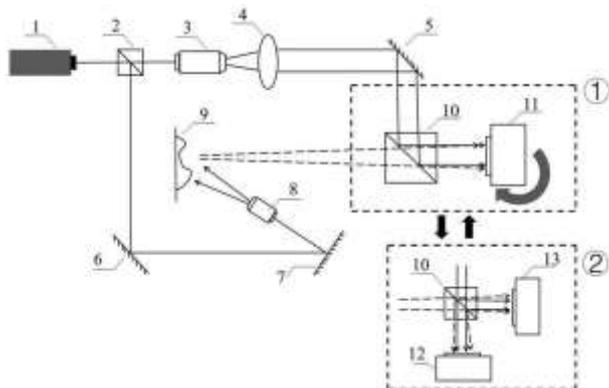
CN113758440

Priority Date: 08/09/2021

KUNMING UNIVERSITY OF SCIENCE & TECHNOLOGY

### DIGITAL HOLOGRAPHIC THREE-DIMENSIONAL SHAPE MEASUREMENT METHOD AND DEVICE FOR CHANGING OBSERVATION VECTOR

The invention discloses a digital holographic three-dimensional shape measuring method and device for changing an observation vector, and belongs to the technical field of holographic detection. The method comprises the steps of adjusting the observation direction of a sensor in an acquisition system, wherein the acquisition system comprises a single sensor acquisition system and a system for simultaneously acquiring by two sensors; starting the laser to acquire holographic information of the reference light and the reflected light which are interfered; and reconstructing the digital hologram, and obtaining the three-dimensional appearance of the object to be detected through data processing. According to the method, the interference phase of the object light field under different observation vectors is utilized, the phase difference information only containing the object morphology is obtained after the inclination component is removed, and the surface morphology information of the three-dimensional object is obtained according to the linear relation between the phase difference and the surface morphology; the high-precision, non-contact, rapid and real-time morphology measurement is realized, and the phase unwrapping process can be avoided by setting a reasonable rotation angle.



**CLAIM 1.** A digital holographic three-dimensional shape measurement method for changing observation vectors is characterized by comprising the following steps: s1, adjusting the position of the sensor in the acquisition system: for a single sensor acquisition system: the relative position of the sensor detection surface and the electric control rotating platform is adjusted through the dovetail type translation platform, so that the center of the sensor detection surface is positioned on a rotating shaft of the electric control rotating platform; for a dual sensor simultaneous acquisition system: one sensor adjusts the relative position of the sensor detection surface and the electric control rotating platform through the dovetail type translation platform, so that the center of the sensor detection surface is positioned on the rotating shaft of the electric control rotating platform, the other sensor is arranged at the other side of the beam combining mirror, the position of the other sensor is adjusted to ensure that the information received by the two sensors is consistent except that the information is reversed left and right, namely, the two sensors are reset and adjusted, and then one sensor is rotated to ensure that the observation directions of the two sensors have slight difference and the included angle is known; s2, starting the laser to acquire holographic information of the interfered reference light and the reflected light; s3, reconstructing the digital hologram, and obtaining the three-dimensional appearance of the object to be measured through data processing: s31, reconstructing two digital holograms obtained by shooting in an acquisition system through a computer simulation light wave diffraction process to obtain complex amplitude object optical field information for extracting phase information; s32, processing the object light field information based on the predetermined parameter information and the angle information to obtain a phase difference which only contains morphology information after the inclination component is removed; and S33, obtaining the three-dimensional shape of the object to be measured according to the linear relation between the phase difference and the surface shape.

**N8330**

**CN113703166**

*Priority Date: 30/07/2021*

**DILU TECHNOLOGY**

### **AR-HUD METHOD AND SYSTEM THROUGH DIFFRACTION HOLOGRAPHIC IMAGING**

The invention discloses an AR-HUD method and system through diffraction holographic imaging, which comprises the following steps of collecting input parameters of optical design; setting the positions of the diffraction grating and the convex lens according to the optical characteristics, and adjusting the optical properties of the diffraction grating and the convex lens; combining the input parameters, designing a light path diagram, simulating a light path and observing the realization effect; adjusting the positions and optical properties of the diffraction grating and the convex lens according to the realization effect, and repeatedly simulating until the design requirements are met; optical devices were produced and the optical imaging effect was verified. The invention has the beneficial effects that: according to the invention, through the optical amplifying device, the defects of the diffraction grating on the amplified imaging are made up, so that the optical imaging meets different requirements and is clearer.

**CLAIM 1.** An AR-HUD method by diffractive holographic imaging, characterized by: comprises the following steps of (a) carrying out, collecting input parameters of an optical design; setting the positions of the diffraction grating and the convex lens according to the optical characteristics, and adjusting the optical properties of the diffraction grating and the convex lens; combining the input parameters, designing a light path diagram, simulating a light path and observing the realization effect; adjusting the positions and optical properties of the diffraction grating and the convex lens according to the realization effect, and repeatedly simulating until the design requirements are met; optical devices were produced and the optical imaging effect was verified.

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**N8334**

**CN113674365**

*Priority Date: 06/07/2021*

**GUANGDONG UNIVERSITY OF TECHNOLOGY**

### **IMAGE BLOCK ENCRYPTION METHOD AND SYSTEM BASED ON CHAOS AND COMPUTER GENERATED HOLOGRAPHY**

The invention provides an image block encryption method and system based on chaos and computer holography, which solves the problem that the current image encryption mode can not take encryption security and encryption operation flexibility into consideration, firstly, three channels are decomposed on a plaintext image to be encrypted, three single-channel gray-scale images are respectively divided into sub-images with the same size, part of the sub-images are randomly selected, a pseudo-random sequence is generated based on a hyperchaotic system, the sub-images are respectively subjected to pixel scrambling, then pixel diffusion is carried out, the difficulty of decoding is improved by scrambling and diffusion operation, in addition, the above process uses a block encryption technology, the encryption key space is larger, therefore, the effect is better, then, a phase recovery GS algorithm in computer holography is utilized to convert the residual sub-images into holograms, the process of converting into holograms is another encryption process, and the operation in a computer system is easy, the encryption operation flexibility is improved from another aspect.

**CLAIM 1.** An image block encryption method based on chaos and computer generated holography, characterized in that the method at least comprises: s1, performing three-channel RGB decomposition on a plaintext image to be encrypted to obtain three single-channel gray level images; s2, respectively dividing three single-channel gray-scale maps into Z sub-images with the same size, randomly selecting N sub-images, constructing a Lorenz hyper-chaotic system, generating a pseudo-random sequence through the Lorenz hyper-chaotic system, respectively performing pixel scrambling on the N sub-images, and then performing pixel diffusion; s3, converting the residual Z-N sub-images into a hologram by utilizing a phase recovery GS algorithm in the computer generated hologram; s4, splicing N sub-images after pixel scrambling and diffusion and Z-N sub-images which are transformed into holograms into a complete single-channel encrypted image, and obtaining the complete encrypted image by utilizing three-channel RGB synthesis.

N8340

AU2021104957

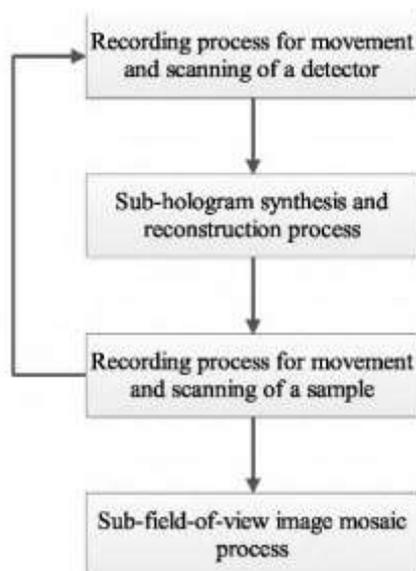
Priority Date: 05/08/2021

CHINA UNIVERSITY OF GEOSCIENCES BEIJING

### LARGE-FIELD-OF-VIEW HIGH-RESOLUTION TERAHERTZ WAVE DIGITAL HOLOGRAPHIC IMAGING METHOD AND SYSTEM

The present invention discloses a large-field-of-view and high-resolution Terahertz wave coaxial digital holographic imaging method and system. The method includes a recording process for movement and scanning of a detector, a sub-hologram synthesis and reconstruction process, a recording process for movement and scanning of a sample, and a sub-field-of-view image mosaic process, wherein (1) in the recording process for movement and scanning of the detector, a detector two-dimensional translation stage moves in a rectangular raster scanning order, so that a Terahertz wave detector performs two-dimensional movement in a plane perpendicular to the direction of a Terahertz wave; (2) in the sub-hologram synthesis and reconstruction process, recorded sub-holograms are subjected to a mosaic operation, and a composite hologram is subjected to a diffraction propagation reconstruction algorithm to obtain a complex amplitude image; (3) in the recording process for movement and scanning of the sample, a sample two-dimensional translation stage moves in the rectangular raster scanning order, so that the sample performs two-dimensional movement in the plane perpendicular to the direction of the Terahertz wave, and sample information in a corresponding field-of-view is obtained; and (4) in the sub-field-of-view image mosaic process, image mosaic operation is performed according to a movement order, a final result, namely, a composite field-of-view complex amplitude image is obtained.

- 14- Recording process for movement and scanning of a detector Sub-hologram synthesis and reconstruction process Recording process for movement and scanning of a sample Sub-field-of-view image mosaic process Fig. 1 -Fig. 2 0 \*0 0\*\*-15 Fig. 2 -15-



**CLAIM 1.** A large-field-of-view high-resolution Terahertz wave coaxial digital holographic imaging method, characterized by comprising the following steps: a recording process for movement and scanning of a detector, a sub-hologram synthesis and reconstruction process, a recording process for movement and scanning of a sample, and a sub-field-of-view image mosaic process; (1) recording process for movement and scanning of a detector: placing a Terahertz wave detector on a detector two-dimensional translation stage, which moves in a rectangular raster scanning order to allow the Terahertz wave detector to perform two-dimensional movement in a plane perpendicular to the direction of a Terahertz wave, wherein a transverse movement distance is set as  $d_1$ , the number of movement is set as  $K$ , a longitudinal movement distance is set as  $d_2$ , and the number of movement is set as  $L$ ; in a Terahertz wave coaxial digital holographic imaging process, interfering a Terahertz object light wave modulated by the sample and a transmitted Terahertz reference light wave to form a Terahertz sub-hologram, recording the sub-hologram for each movement of the Terahertz wave detector, wherein a total of  $K+L+1$  sub-holograms are recorded; and then returning the Terahertz wave detector to an initial position through the detector two-dimensional translation stage;

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**HOLOGRAMS - 23 PATENTS**

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
<a href="#">P34266</a>	RU	2759482	15/11/2021	CRYPTEN	RU	29/12/2020	RU2020000143842	RU2759482	MULTILAYER PROTECTIVE OPTICAL DIFFRACTION DEVICE, A METHOD FOR MANUFACTURING THE SPECIFIED DEVICE, A PROTECTED PRODUCT CONTAINING THE SPECIFIED MULTILAYER PROTECTIVE OPTICAL DIFFRACTION DEVICE	
<a href="#">P34277</a>	KR	102332380	01/12/2021	3SMK - KOREA INSTITUTE OF MACHINERY & MATERIALS	KR	31/07/2020	KR2020000096186	KR102332380	COLOR CONVERTED STEREOSCOPIC HOLOGRAM FILM HAVING COMPOSITE NANOPATTERN AND METHOD FOR PRODUCING THE SAME	OVD - Microlens
<a href="#">P34280</a>	JP	2021182076	25/11/2021	TOPPAN PRINTING	JP	19/05/2020	JP2020000087521	JP2021182076	DISPLAY	
<a href="#">P34281</a>	JP	2021182072	25/11/2021	TOPPAN PRINTING	JP	19/05/2020	JP2020000087346	JP2021182072	DISPLAY	
<a href="#">P34288</a>	EP	3922476	15/12/2021	GIESECKE & DEVRIENT CURRENCY TECHNOLOGY	EP	10/06/2020	EP2020000020273	EP3922476 EP3922476 WO2021249671	VALUABLE DOCUMENT WITH A CARRIER ELEMENT AND A FILM ELEMENT, AND METHOD FOR CLASSIFYING A VALUABLE DOCUMENT	OVD
<a href="#">P34289</a>	EP	3922475	15/12/2021	GIESECKE & DEVRIENT CURRENCY TECHNOLOGY	DE	10/06/2020	DE202010003493	EP3922475 EP3922475 DE102020003493	COMPOSITE BODY, DECORATIVE FILM AND METHOD FOR PRODUCING THE SAME	
<a href="#">P34290</a>	EP	3922474	15/12/2021	BUNDESDRUCKEREI	DE	12/06/2020	DE202010115635	EP3922474 EP3922474 DE102020115635	METHOD FOR VERIFYING THE AUTHENTICITY OF AN IMAGE PRINTED ON A CARRIER FOR A SECURITY OR VALUE DOCUMENT	Passport
<a href="#">P34291</a>	EP	3922473	15/12/2021	BUNDESDRUCKEREI	DE	12/06/2020	DE202010115635	EP3922473 EP3922473	METHOD FOR PRODUCING A PRINTED IMAGE ON A DATA CARRIER FOR A SECURITY OR VALUABLE DOCUMENT	Passport
<a href="#">P34297</a>	CN	215164173	14/12/2021	SHEN BOZHONG - SHEN SU - YANG LI	CN	20/05/2021	CN2021001091050	CN215164173U	MOTION SAFETY LINE WATER TRANSFER PAPER AND PRODUCT WITH MOTION SAFETY LINE	
<a href="#">P34298</a>	CN	215118071	10/12/2021	ANHUI HUAMA TECHNOLOGY	CN	30/06/2021	CN2021001473525	CN215118071U	HOLOGRAPHIC THERMOSENSITIVE ENVIRONMENT-FRIENDLY ADHESIVE LABEL PAPER	
<a href="#">P34302</a>	CN	215096713	10/12/2021	WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT	CN	20/05/2021	CN2021001093502	CN215096713U	HOLOGRAPHIC THERMOPRINTING FILM WITH GLAZE COLOR JADE PORCELAIN EFFECT AND ANTI-COUNTERFEITING MEDIUM	
<a href="#">P34311</a>	CN	215005947	03/12/2021	SHENZHEN JINSHENGCAI PACKAGING MATERIAL	CN	22/06/2021	CN2021001385106	CN215005947U	HOLOGRAPHIC RECORDING PHOTSENSITIVE ANTI-COUNTERFEITING POLYMERIC FILM	
<a href="#">P34313</a>	CN	214955661	30/11/2021	HUBEI GEDIAN DEVELOPMENT REGION CHENGUANG INDUSTRIAL	CN	09/03/2021	CN2021000505354	CN214955661U	HOLOGRAPHIC RADIUM-SHINE REPLACEMENT SIGN OF DISCOLOURING	
<a href="#">P34315</a>	CN	214932046	30/11/2021	ZHEJIANG GANGFA SOFT PACKAGE	CN	04/02/2021	CN2021000323270	CN214932046U	NOVEL COMPOUND FLEXIBLE PACKAGING BAG OF HOLOGRAPHIC RADIUM-SHINE PLASTICS	
<a href="#">P34320</a>	CN	214897285	26/11/2021	JIANGSU JINHENG NEW PACKAGING MATERIAL	CN	16/06/2021	CN2021001337419	CN214897285U	LASER MEDIUM WITH PROTECTIVE LAYER	
<a href="#">P34321</a>	CN	214897276	26/11/2021	JINHUA HEHUA PLASTIC	CN	23/02/2021	CN2021000397417	CN214897276U	ANTI-COUNTERFEITING TRANSPARENT ADHESIVE TAPE	
<a href="#">P34325</a>	CN	214825767	23/11/2021	SHANDONG TAIBAO PACKAGING PRODUCT	CN	31/05/2021	CN2021001184223	CN214825767U	UNCOVERING HOLOGRAPHIC ANTI-COUNTERFEITING STAY WIRE	
<a href="#">P34331</a>	CN	214777931	19/11/2021	ZHEJIANG INNOVA LIANBIN PACKAGING TECHNOLOGY	CN	31/07/2020	CN2020001566234	CN214777931U	MATTE GOLD STAMPING COMPOSITE FILM AND DIGITAL HOLOGRAPHIC HOT STAMPING ANTI-COUNTERFEITING PACKAGING BAG	
<a href="#">P34335</a>	CN	214774730	19/11/2021	HUBEI GEDIAN DEVELOPMENT REGION CHENGUANG INDUSTRIAL	CN	18/03/2021	CN2021000554611	CN214774730U	DOUBLE-DECK HOLOGRAPHIC ANTI-COUNTERFEITING MEMBRANE TWO-DIMENSIONAL CODE LITHOGRAPHY APPARATUS OF TRACEABLE	
<a href="#">P34337</a>	CN	113793551	14/12/2021	SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP	CN	14/09/2021	CN2021001073344	CN113793551	HOLOGRAPHIC LASER INFORMATION LOW-TEMPERATURE DECORATION FIRING PRODUCT AND PREPARATION METHOD THEREOF	
<a href="#">P34341</a>	CN	113777900	10/12/2021	BELJING UNIVERSITY OF TECHNOLOGY	CN	17/09/2021	CN2021001095124	CN113777900	PATTERNED COMPUTER HOLOGRAM PREPARED BASED ON THREE-DIMENSIONAL SPACE SHAPING FEMTOSECOND LASER	
<a href="#">P34349</a>	CN	113752715	07/12/2021	BELJING PANPASS INFORMATION TECHNOLOGY	CN	05/06/2020	CN2020000504769	CN113752715	HOLOGRAPHIC ANTI-COUNTERFEITING FILM AND PREPARATION METHOD THEREOF	
<a href="#">P34356</a>	CN	113715541	30/11/2021	SHENZHEN JINJIA	CN	10/09/2021	CN2021001063671	CN113715541	MICRO-NANO STRUCTURE ANTI-COUNTERFEITING HOLLOWED-OUT COLOR IMAGE-TEXT HOLOGRAPHIC HOT STAMPING FOIL AND PRODUCTION EQUIPMENT AND METHOD	

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### VARIOUS OPTICAL EFFECTS - 17 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
<a href="#">P34241</a>	WO	2021249609	16/12/2021	GIESECKE & DEVRIENT CURRENCY TECHNOLOGY	WO	09/06/2020	WO2020250000271	WO2021249609	RETROREFLECTIVE RELIEF STRUCTURE IN EMBOSsing COATING	Embossing
<a href="#">P34242</a>	WO	2021247353	09/12/2021	COMPOSECURE	US	01/06/2020	US2020000032911	WO2021247353	TRANSACTION CARDS WITH DISCONTINUOUS METAL STRATA	
<a href="#">P34243</a>	WO	2021247344	09/12/2021	UNIVERSITY OF FLORIDA RESEARCH FOUNDATION	US	01/06/2020	US2020000032835	WO2021247344	PHOTONIC CRYSTAL MICROPATTERNS AND ANTI-COUNTERFEITING FILMS, METHODS OF MAKING, AND METHODS OF USE	Photonic crystals
<a href="#">P34247</a>	WO	2021245373	09/12/2021	BODLE TECHNOLOGIES	GB	01/06/2020	GB202000008165	WO2021245373 GB202008165	METHOD OF APPLYING A PATTERN, AND SECURITY DEVICE FOR AN ARTICLE	Embossing
<a href="#">P34251</a>	WO	2021244842	09/12/2021	LEONHARD KURZ STIFTUNG	DE	05/06/2020	DE202010114967	WO2021244842 DE102020114967	METHOD FOR PRODUCING A MULTILAYER BODY, AND MULTILAYER BODY	Micro lenses
<a href="#">P34252</a>	WO	2021244807	09/12/2021	MUEHLBAUER	DE	05/06/2020	DE202010114980	WO2021244807 DE102020114980	DEVICE AND SYSTEM FOR INSPECTING AT LEAST ONE DIFFRACTIVE OPTICAL ELEMENT OF A DOCUMENT	
<a href="#">P34253</a>	WO	2021241226	02/12/2021	ZEON	JP	28/05/2020	JP2020000093633	WO2021241226	AUTHENTICITY DETERMINATION MEMBER AND AUTHENTICITY DETERMINATION METHOD THEREFOR	
<a href="#">P34260</a>	US	20210382202	09/12/2021	SHINE OPTOELECTRONICS	CN	08/07/2015	CN2015000397170	US20210382202 US20180299584 US11131792 WO201705206	OPTICAL FILM	Micro lenses
<a href="#">P34276</a>	KR	102333137	01/12/2021	PARK, JUNG-HOON	KR	08/06/2021	KR2021000073993	KR102333137	MULTIPLE COMPOSITE PRINTED STRUCTURE AND SPECIAL PRINTED SHEET FORMED WITH THE PRINTED STRUCTURE	
<a href="#">P34277</a>	KR	102332380	01/12/2021	3SMK - KOREA INSTITUTE OF MACHINERY & MATERIALS	KR	31/07/2020	KR2020000096186	KR102332380	COLOR CONVERTED STEREOSCOPIC HOLOGRAM FILM HAVING COMPOSITE NANOPATTERN AND METHOD FOR PRODUCING THE SAME	Hologram - Micro lenses
<a href="#">P34288</a>	EP	3922476	15/12/2021	GIESECKE & DEVRIENT CURRENCY TECHNOLOGY	EP	10/06/2020	EP2020000020273	EP3922476 EP3922476 WO2021249671	VALUABLE DOCUMENT WITH A CARRIER ELEMENT AND A FILM ELEMENT, AND METHOD FOR CLASSIFYING A VALUABLE DOCUMENT	Hologram
<a href="#">P34293</a>	EP	3919286	08/12/2021	VIAVI SOLUTIONS	US	05/06/2020	US2020000894517	EP3919286 US20210380812 CN113755050	SECURITY PIGMENT	
<a href="#">P34301</a>	CN	215104280	10/12/2021	ANHUI JIUSHUN PHOTOELECTRIC TECHNOLOGY	CN	28/06/2021	CN2021001442584	CN215104280U	LASER ENVIRONMENT-FRIENDLY 3D THREE-DIMENSIONAL ANTI-COUNTERFEITING PACKAGING PAPER	
<a href="#">P34303</a>	CN	215068925	07/12/2021	EAST CHINA UNIVERSITY OF SCIENCE & TECHNOLOGY - SUZHOU KUNHUANG NEW MATERIAL TECHNOLOGY	CN	16/06/2021	CN2021001340813	CN215068925U	REVERSIBLE, COLOR-CHANGEABLE AND MULTI-STABLE ANTI-COUNTERFEITING COUPLING LAYER SHEET	
<a href="#">P34330</a>	CN	214782928	19/11/2021	ZHEJIANG BENKETE TIPPING PAPER	CN	15/03/2021	CN2021000532461	CN214782928U	HIGH OPACITY TIPPING PAPER	
<a href="#">P34347</a>	CN	113763801	07/12/2021	INSTITUTE OF MICROELECTRONICS CHINESE ACADEMY OF SCIENCES	CN	08/09/2021	CN2021001052314	CN113763801	ANTI-COUNTERFEITING STRUCTURE, PREPARATION METHOD OF ANTI-COUNTERFEITING STRUCTURE AND CHIP	
<a href="#">P34363</a>	AT	523745	15/11/2021	HUECK FOLIEN	AT	12/05/2020	AT2020000050409	AT-523745	SICHERHEITSELEMENT	

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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
<a href="#">N8277</a>	WO	2021252665	16/12/2021	UNIVERSITY OF COLORADO	US	10/06/2020	US2020000037296	WO2021252665	HOLOGRAPHIC RECORDING MATERIALS AND METHODS OF MAKING SAME	
<a href="#">N8278</a>	WO	2021247686	09/12/2021	CELLOPTIC	US	02/06/2020	US2020000033401	WO2021247686	OPTICAL METROLOGY WITH INCOHERENT HOLOGRAPHY	
<a href="#">N8279</a>	WO	2021246255	09/12/2021	SONY GROUP	JP	02/06/2020	JP2020000096399	WO2021246255	INFORMATION PROCESSING DEVICE, INFORMATION PROCESSING METHOD, PROGRAM, AND HOLOGRAM DISPLAY SYSTEM	

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<a href="#">N8280</a>	WO	2021245407	09/12/2021	VIVIDQ	GB	03/06/2020	GB202000008316	WO2021245407 GB202008316	A METHOD AND DISPLAY APPARATUS FOR REDUCING HOLOGRAPHIC SPECKLE	
<a href="#">N8281</a>	WO	2021245031	09/12/2021	SAINT GOBAIN GLASS	EP	03/06/2020	EP2020000177936	WO2021245031	COMPOSITE PANE WITH HOLOGRAM ELEMENT	
<a href="#">N8282</a>	WO	2021235976	25/11/2021	SOLOVEV, EVGENII ALEKSANDROVICH	RU	18/05/2020	RU2020000141128	WO2021235976 RU2020141128 RU2020141128	REAL-TIME 3D HOLOGRAM	
<a href="#">N8283</a>	WO	2021233713	25/11/2021	SAINT GOBAIN GLASS	EP	18/05/2020	EP2020000175125	WO2021233713	COMPOSITE PANE FOR A HOLOGRAPHIC HEAD-UP DISPLAY	
<a href="#">N8284</a>	US	20210382437	09/12/2021	ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	05/06/2020	KR2020000068650	US20210382437	METHOD FOR GENERATING HOLOGRAM BASED ON SEPARATING AXIS AND APPARATUS FOR THE SAME	
<a href="#">N8285</a>	US	20210373493	02/12/2021	SAMSUNG ELECTRONICS	KR	28/05/2020	KR2020000064613	US20210373493 KR20210147408	HOLOGRAPHIC DISPLAY APPARATUS	
<a href="#">N8286</a>	US	20210373205	02/12/2021	LOOKING GLASS FACTORY	US	27/05/2020	US2020000030799	US20210373205 WO2021243037	SYSTEM AND METHOD FOR HOLOGRAPHIC DISPLAYS	
<a href="#">N8287</a>	US	20210364988	25/11/2021	LOOKING GLASS FACTORY	US	21/05/2020	US2020000028344	US20210364988 WO2021237065	SYSTEM AND METHOD FOR HOLOGRAPHIC IMAGE DISPLAY	
<a href="#">N8288</a>	US	20210364987	25/11/2021	FACEBOOK TECHNOLOGIES	US	19/05/2020	US2020000878018	US20210364987 WO2021236320	SYSTEM AND METHOD FOR HOLOGRAPHIC WAVE-FRONT PRINTING	
<a href="#">N8289</a>	US	20210364801	25/11/2021	HON HAI PRECISION INDUSTRY	CN	22/05/2020	CN202000044326	US20210364801 CN113703174	HOLOGRAPHIC DISPLAY DEVICE	
<a href="#">N8290</a>	TW	202142966	16/11/2021	GUANGQUN LASER SCIENCE & TEC	TW	11/05/2020	TW2020000115630	TW202142966	PATTERN TRANSFER METHOD FOR SEAMLESS HOLOGRAM	
<a href="#">N8291</a>	TW	202142965	16/11/2021	GUANGQUN LASER SCIENCE & TEC	TW	08/05/2020	TW2020000115442	TW202142965	PATTERN TRANSFER METHOD FOR SEAMLESS HOLOGRAM	
<a href="#">N8292</a>	TW	748529	01/12/2021	HON HAI PRECISION INDUSTRY	TW	22/06/2020	TW2020000121206	TW748529	HOLOGRAPHIC DISPLAY DEVICE	
<a href="#">N8293</a>	KR	20210142333	25/11/2021	FTC - OMA Y LEADERS	KR	18/05/2020	KR2020000059031	KR20210142333	VEHICLE STATE DISPLAY DEVICE USING 3 D HOLOGRAM	
<a href="#">N8294</a>	KR	20210141268	23/11/2021	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	15/05/2020	KR2020000058692	KR20210141268	HOLOGRAM IMAGE QUALITY MEASUREMENT APPARATUS AND METHOD	
<a href="#">N8295</a>	KR	102329616	23/11/2021	SEJINANJEON	KR	08/04/2021	KR2021000045817	KR102329616	ROAD CONDITION AUTOMATIC WARNING DEVICE USING HOLOGRAM	
<a href="#">N8296</a>	KR	102328909	19/11/2021	I-TECH	KR	08/02/2021	KR2021000017916	KR102328909	PREFABRICATED ORNAMENTAL FIELD FOR OZING HOLOGRAM BACKLIGHTING EFFECT	
<a href="#">N8297</a>	JP	2021184002	02/12/2021	JAPAN BROADCASTING	JP	21/05/2020	JP2020000088670	JP2021184002	IMAGING ELEMENT FOR INCOHERENT DIGITAL HOLOGRAM, IMAGING DEVICE, AND METHOD FOR MANUFACTURING IMAGING ELEMENT	
<a href="#">N8298</a>	IN	202141047296	29/10/2021	HALLUR VISHWESHWARAYYA C ET AL	IN	18/10/2021	IN2021041047296	IN202141047296	POP-OUT & SINK-IN HOLOGRAPHIC AUGMENTED REALITY AND VIRTUAL REALITY DEVICE FOR USE WITHOUT 3D GLASSES FOR SIMULTANEOUS VIEWING BY MULTIPLE PERSONS	
<a href="#">N8299</a>	GB	2595276	24/11/2021	AHMED A H AL-HABAIBEH	GB	20/05/2020	GB2020000007531	GB202007531 GB2595276	A FOLDABLE 3D HOLOGRAM APPARATUS	
<a href="#">N8300</a>	DE	102020114693	09/12/2021	BMW - BAYERISCHE MOTORENWERKE	DE	03/06/2020	DE202010114693	DE102020114693	COMPOSITE PANE WITH AN INTEGRATED HOLOGRAPHIC OPTICAL ELEMENT FOR A FIELD OF VIEW DISPLAY DEVICE FOR USE IN A VEHICLE	
<a href="#">N8301</a>	CN	215183076	14/12/2021	TAN XIAODI	CN	15/06/2021	CN2021001323100	CN215183076U	HOLOGRAPHIC OPTICAL DISK TRACK CHANGING DEVICE	
<a href="#">N8302</a>	CN	215182971	14/12/2021	JIANGSU DEHUI COMPUTER TECHNOLOGY	CN	16/04/2021	CN2021000793796	CN215182971U	HOLOGRAPHIC IMAGE EMOTION CAPTURING INTERACTION DEVICE	

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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
<a href="#">N8303</a>	CN	215118267	10/12/2021	ZHAI JUNMING	CN	25/05/2021	CN2021001164611	CN215118267U	HOLOGRAPHIC PROJECTION DEVICE CAPABLE OF BEING USED FOR ILLUMINATION	
<a href="#">N8304</a>	CN	215067392	07/12/2021	SUZHOU KANGQI ENVIRONMENTAL TECHNOLOGY	CN	01/08/2021	CN2021001769051	CN215067392U	AUTOMATIC HOLOGRAPHIC EXPOSURE DEVICE OF DIFFRACTION GRATING	
<a href="#">N8305</a>	CN	215060738	07/12/2021	SHANDONG TOUCH ELECTRONIC TECHNOLOGY	CN	09/06/2021	CN2021001282869	CN215060738U	HOLOGRAPHIC PROJECTION ARRANGEMENT CONVENIENT TO INSTALLATION	
<a href="#">N8306</a>	CN	215015608	07/12/2021	SHANGHAI XILIN DIGITAL TECHNOLOGY	CN	06/05/2021	CN2021000941182	CN215015608U	SPECIAL-SHAPED 180-DEGREE HOLOGRAPHIC DISPLAY CABINET	
<a href="#">N8307</a>	CN	215007450	03/12/2021	ZHANG YE	CN	07/05/2021	CN2021000959947	CN215007450U	HOLOGRAPHIC VISUAL INTELLECTUAL PROPERTY DISPLAY WALL	
<a href="#">N8308</a>	CN	215006256	03/12/2021	BEIJING BOE DISPLAY TECHNOLOGY - BOE TECHNOLOGY GROUP	CN	12/04/2021	CN2021000739812	CN215006256U	DISPLAY DEVICE AND HOLOGRAPHIC DISPLAY APPARATUS	
<a href="#">N8309</a>	CN	215006082	03/12/2021	NANCHANG SANJI PHOTOELECTRIC	CN	21/04/2021	CN2021000824161	CN215006082U	OPTICAL SYSTEM AND HOLOGRAPHIC AIMING EQUIPMENT	
<a href="#">N8310</a>	CN	214950883	30/11/2021	SANSUI OPTICAL TECHNOLOGY SUZHOU	CN	31/05/2021	CN2021001192539	CN214950883U	RED SPOT AIMING SYSTEM WITH VERTICAL CAVITY SURFACE EMITTING LASER AND HOLOGRAPHIC AIMING SYSTEM	
<a href="#">N8311</a>	CN	214947919	30/11/2021	LIAONING HONGTU CHUANGZHAN SURVEYING & MAPPING SURVEY	CN	29/04/2021	CN2021000922806	CN214947919U	THREE-DIMENSIONAL HOLOGRAPHIC MAPPING EQUIPMENT OF OUTDOOR SCENE	
<a href="#">N8312</a>	CN	214896192	26/11/2021	SHANGHAI YUDI CULTURE & TECHNOLOGY DEVELOPMENT	CN	21/07/2021	CN2021001670994	CN214896192U	IMMERSIVE EXPERIENCE HOLOGRAPHIC THEATER	
<a href="#">N8313</a>	CN	214893389	26/11/2021	SHANDONG SHENGJING YAPIN INTELLIGENT TECHNOLOGY GROUP	CN	10/04/2021	CN2021000734473	CN214893389U	HOLOGRAPHIC IMAGE MULTI-POINT ACQUISITION SYSTEM	
<a href="#">N8314</a>	CN	214890326	26/11/2021	SHANDONG SHENGJING YAPIN INTELLIGENT TECHNOLOGY GROUP	CN	10/04/2021	CN2021000734389	CN214890326U	THREE-DIMENSIONAL HOLOGRAPHIC IMAGE INTERACTION SYSTEM	
<a href="#">N8315</a>	CN	214847172	23/11/2021	SHANGHAI DUNLU BIO MEDICINE TECHNOLOGY	CN	24/03/2021	CN2021000586527	CN214847172U	SYSTEM FOR PLAYING INTERACTIVE TEACHING BY USING 3D HOLOGRAPHIC PROJECTION	
<a href="#">N8316</a>	CN	214846459	23/11/2021	SUZHOU YANSHITONG ELECTRONIC TECHNOLOGY	CN	14/04/2021	CN2021000751666	CN214846459U	SCREEN EQUIPMENT CAPABLE OF REALIZING CONTACT-FREE HOLOGRAPHIC AIR IMAGING TOUCH CONTROL	
<a href="#">N8317</a>	CN	214795752	19/11/2021	DASKI CHONGQING DIGITAL TECHNOLOGY	CN	01/03/2021	CN2021000439195	CN214795752U	3D HOLOGRAPHIC DISPLAY TOUCH CONTROL ALL-IN-ONE MACHINE	
<a href="#">N8318</a>	CN	113791529	14/12/2021	BEIHANG UNIVERSITY OF AERONAUTICS & ASTRONAUTICS	CN	13/08/2021	CN2021000930000	CN113791529	CROSSTALK-FREE HOLOGRAPHIC 3D DISPLAY METHOD BASED ON DIFFRACTION FUZZY IMAGING PRINCIPLE	
<a href="#">N8319</a>	CN	113791019	14/12/2021	CHINA UNIVERSITY OF GEOSCIENCES WUHAN	CN	06/07/2021	CN2021000764788	CN113791019	DIGITAL COAXIAL HOLOGRAPHIC FLOW CYTOMETRY DETECTION METHOD, DEVICE AND STORAGE EQUIPMENT	
<a href="#">N8320</a>	CN	113777902	10/12/2021	BEIHANG UNIVERSITY OF AERONAUTICS & ASTRONAUTICS	CN	01/09/2021	CN2021001018439	CN113777902	CURVED SURFACE HOLOGRAPHIC NOISE SUPPRESSION METHOD BASED ON RANDOM GRADIENT DESCENT ALGORITHM	
<a href="#">N8321</a>	CN	113763246	07/12/2021	FUDAN UNIVERSITY	CN	25/08/2021	CN2021000980187	CN113763246	MUSEUM EXHIBITION SCREEN HOLOGRAPHIC PROJECTION DISPLAY METHOD	
<a href="#">N8322</a>	CN	113758440	07/12/2021	KUNMING UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	08/09/2021	CN2021001049800	CN113758440	DIGITAL HOLOGRAPHIC THREE-DIMENSIONAL SHAPE MEASUREMENT METHOD AND DEVICE FOR CHANGING OBSERVATION VECTOR	
<a href="#">N8323</a>	CN	113744647	03/12/2021	SHENZHEN SHENKUN TECHNOLOGY	CN	01/09/2021	CN2021001021597	CN113744647	INTELLIGENT INTERACTIVE DISPLAY DEVICE WITH HOLOGRAPHIC EFFECT	
<a href="#">N8324</a>	CN	113741055	03/12/2021	ZHEJIANG PRISM HOLOGRAPHIC TECHNOLOGY	CN	29/05/2020	CN2020000475735	CN113741055	ARRAY TYPE AIR IMAGING HOLOGRAPHIC OPTICAL SYSTEM	
<a href="#">N8325</a>	CN	113740214	03/12/2021	SHENZHEN UNIVERSITY	CN	08/11/2021	CN2021001310256	CN113740214	INTELLIGENT ANALYSIS METHOD AND DEVICE BASED ON HOLOGRAPHIC EVANESCENT WAVE OPTICAL TWEEZERS	

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<a href="#">N8326</a>	CN	113724512	30/11/2021	JIANGSU UTIS NEW TECHNOLOGY	CN	27/08/2021	CN2021000996618	CN113724512	HOLOGRAPHIC TRAFFIC SIGNAL LAMP SYSTEM	
<a href="#">N8327</a>	CN	113706720	26/11/2021	LENOVO	CN	06/09/2021	CN2021001037944	CN113706720	IMAGE DISPLAY METHOD AND DEVICE	
<a href="#">N8328</a>	CN	113704774	26/11/2021	HARBIN UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	07/07/2021	CN2021000769310	CN113704774	OPTICAL IMAGE ENCRYPTION METHOD BASED ON CODED APERTURE CORRELATION HOLOGRAPHY	
<a href="#">N8329</a>	CN	113703566	26/11/2021	SHENZHEN JIMEI CULTURE TECHNOLOGY	CN	31/12/2020	CN2020001634202	CN113703566	AR DYNAMIC PICTURE BOOK INTERACTION DEVICE BASED ON HOLOGRAPHIC PROJECTION TECHNOLOGY AND INTERACTION MODE THEREOF	
<a href="#">N8330</a>	CN	113703166	26/11/2021	DILU TECHNOLOGY	CN	30/07/2021	CN2021000876181	CN113703166	AR-HUD METHOD AND SYSTEM THROUGH DIFFRACTION HOLOGRAPHIC IMAGING	
<a href="#">N8331</a>	CN	113703164	26/11/2021	SUN YAT SEN UNIVERSITY	CN	16/07/2021	CN2021000807795	CN113703164	OPTICAL WAVEGUIDE DIRECTIONAL BACKLIGHT HOLOGRAPHIC DISPLAY MODULE	
<a href="#">N8332</a>	CN	113701559	26/11/2021	SANSUI OPTICAL TECHNOLOGY SUZHOU	CN	30/08/2021	CN2021001002710	CN113701559	LIGHT PATH SYSTEM OF HOLOGRAPHIC AIMING DEVICE WITH DOUBLE-COLOR SWITCHABLE DIVISION PATTERNS	
<a href="#">N8333</a>	CN	113687586	23/11/2021	SICHUAN UNIVERSITY	CN	23/07/2021	CN2021000841018	CN113687586	LARGE-FIELD-ANGLE HOLOGRAPHIC DISPLAY METHOD FOR SEAMLESSLY SPLICING MULTI-SEGMENT CYLINDRICAL SURFACES	
<a href="#">N8334</a>	CN	113674365	19/11/2021	GUANGDONG UNIVERSITY OF TECHNOLOGY	CN	06/07/2021	CN2021000764433	CN113674365	IMAGE BLOCK ENCRYPTION METHOD AND SYSTEM BASED ON CHAOS AND COMPUTER GENERATED HOLOGRAPHY	
<a href="#">N8335</a>	CN	113671813	19/11/2021	CHINESE PEOPLE S LIBERATION GROUND FORCE ARMORED TROOP ACADEMY	CN	20/08/2021	CN2021000958979	CN113671813	VIRTUAL AND REAL SCENE FUSED FULL-PARALLAX HOLOGRAPHIC VOLUME VIEW MANUFACTURING METHOD AND SYSTEM	
<a href="#">N8336</a>	CN	113671812	19/11/2021	CHINA UNICOM	CN	14/09/2021	CN2021001072653	CN113671812	HOLOGRAPHIC IMAGE IMAGING METHOD, HOLOGRAPHIC PROJECTION EQUIPMENT, OBSERVATION EQUIPMENT AND SYSTEM	
<a href="#">N8337</a>	CN	113671684	19/11/2021	GUANGZHOU KAJIA OPTICAL TECHNOLOGY	CN	03/09/2021	CN2021001035768	CN113671684	MULTICOLOR IMAGING SYSTEM BASED ON HOLOGRAPHIC OPTICS AND HOLOGRAPHIC OPTICAL TWEEZERS DEVICE	
<a href="#">N8338</a>	CN	113665993	19/11/2021	CHINA TOBACCO YUNNAN INDUSTRIAL	CN	23/09/2021	CN2021001110469	CN113665993	FOLDABLE PYRAMID HOLOGRAPHIC PROJECTION IMAGING BODY AND PACKAGING BOX COMPRISING SAME	
<a href="#">N8339</a>	AU	2021106938	25/11/2021	UNIVERSITY SHANDONG MANAGEMENT	AU	24/08/2021	AU2021000106938	AU2021106938	HOLOGRAPHIC EXPERIENCE CLOTHES SELF-SERVICE SELLING ALL-IN-ONE MACHINE AND METHOD	
<a href="#">N8340</a>	AU	2021104957	18/11/2021	CHINA UNIVERSITY OF GEOSCIENCES BEIJING	AU	05/08/2021	AU2021000104957	AU2021104957	LARGE-FIELD-OF-VIEW HIGH-RESOLUTION TERAHERTZ WAVE DIGITAL HOLOGRAPHIC IMAGING METHOD AND SYSTEM	