

# IHMA PATENT NEWSLETTER

*Limited circulation patent news bulletin for the Holography Industry*

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

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**P34128**

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

**WO2021228573**

**LEONHARD KURZ STIFTUNG - OVD KINEGRAM**

**Inventors:**

OLSZOWKA VIOLETTA | HASSE BENJAMIN | WALTER HARALD

**Application Nber / Date:**

WOEP2021/061324 2021-04-29

**Priority Nber / Date / Country:**

DE102020113144 2020-05-14

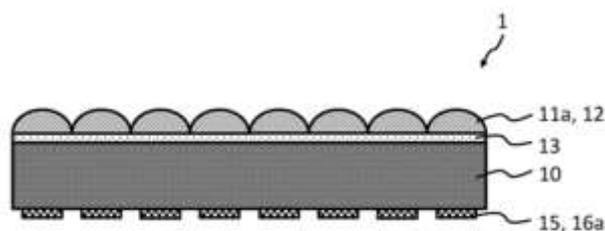
**METHOD FOR PRODUCING A MULTILAYER BODY, AND A MULTILAYER BODY**

The invention relates to a method for producing a multilayer body (1) and to a multilayer body (1). The method for producing a multilayer body (1) here comprises the following steps: - providing a carrier layer (10); - applying a first replicating lacquer layer (11) to the carrier layer (10); - moulding into the first replicating lacquer layer (11a) a multiplicity of micro-lenses (12) arranged in the form of a grid, - applying at least one layer (14) to be structured to the side of the carrier layer (10) opposite from the micro-lenses (12) arranged in the form of a grid; - structuring the at least one layer (14) to be structured by using a highly resolved separate mask (23) in such a way that a multiplicity of micro-images (15) arranged in the form of a grid are formed by removing in certain regions the at least one layer (14) to be structured. The invention also provides a multilayer body (1), comprising a carrier layer (10) and, applied to the carrier layer (10), a first replicating lacquer layer (11a), into which a multiplicity of micro-lenses (12) arranged in the form of a grid have been moulded, and comprising a multiplicity of micro-images (15), arranged in the form of a grid, on the side of the carrier layer (10) opposite from the multiplicity of micro-lenses (12) arranged in the form of a grid.

**PROCÉDÉ DE FABRICATION D'UN CORPS MULTICOUCHE ET CORPS MULTICOUCHE**

L'invention concerne un procédé de fabrication d'un corps multicouche (1) ainsi qu'un corps multicouche (1). Le procédé de fabrication d'un corps multicouche (1) comprend à cet effet les étapes suivantes : disposer d'une couche support (10), appliquer une première couche de vernis de répliation (11) sur la couche support (10), déformer une pluralité de microlentilles (12) agencées sous forme réticulaire dans la première couche de vernis de répliation (11a), appliquer au moins une couche à structurer (14) sur la face de la couche support (10) située à l'opposé de la pluralité de lentilles (12) agencées sous forme réticulaire, structurer ladite au moins une couche à structurer (14) au moyen d'un masque (23) à haute résolution séparé, de sorte qu'une pluralité de micro-images (15) agencées sous forme réticulaire sont formées par enlèvement par endroits de ladite au moins une couche à structurer (14). En outre, l'invention concerne un corps multicouche (1), doté d'une couche support (10) et d'une première couche de vernis de répliation (11a) appliquée sur la couche support (10), couche de vernis de répliation dans laquelle sont déformées une pluralité de microlentilles (12) agencées sous forme réticulaire, ainsi que d'une pluralité de micro-images (12) agencées sous forme réticulaire sur la face de la couche support (10) située à l'opposé de la pluralité de microlentilles (12) agencées sous forme réticulaire.

**CLAIM 1.** A method for producing a multilayer body (1), in particular a multilayer security element for securing security documents, wherein the method comprises the following steps, which are carried out in particular in the following order, comprises: a) providing a carrier layer (10); b) applying a first replication lacquer layer (11 a) to the carrier layer (10); c) moulding a plurality of microlenses (12) arranged in the form of a grid into the first replication lacquer layer (11 a); d) applying at least one layer (14) to be structured to the side of the carrier layer (10) opposite the plurality of microlenses (12) arranged in the form of a grid; e) structuring the at least one layer (14) to be structured using a high-resolution separate mask (23) in such a way that a multiplicity of microimages (15) arranged in the form of a grid are formed by removing the at least one layer (14) to be structured in regions.



**Equivalent: DE102020113144 A1**

**Status:** Pending

**Research Report:** Not available

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

**P34148**

**LABEL**

**KR20210131591**

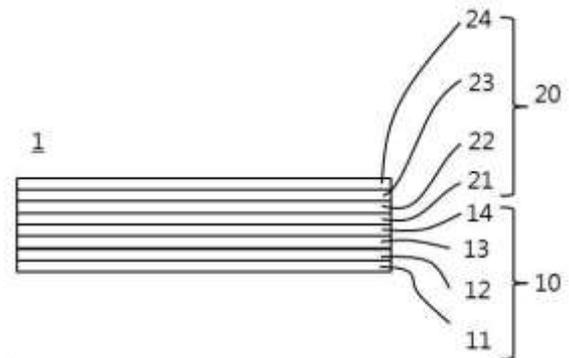
**MOOKOONGHWA LNB**

*Priority Date: 24/04/2020*

**AUTHENTIC AUTHENTICATION LABEL**

The invention relates to an authentic authentication label. The authentic authentication label according to a preferred embodiment of the present invention includes: a lower layer including a first release layer having a first hologram part formed on an upper surface thereof; and an upper layer including a second release layer having a second hologram part formed on the lower surface thereof.

**CLAIM 1.** A lower layer including a first release layer having a first hologram portion formed on the upper surface thereof; and an upper layer including a second release layer having a second hologram portion formed on the lower surface thereof.



**P34171**

**PRINTING – BRAND PROTECTON**

**CN214752608U**

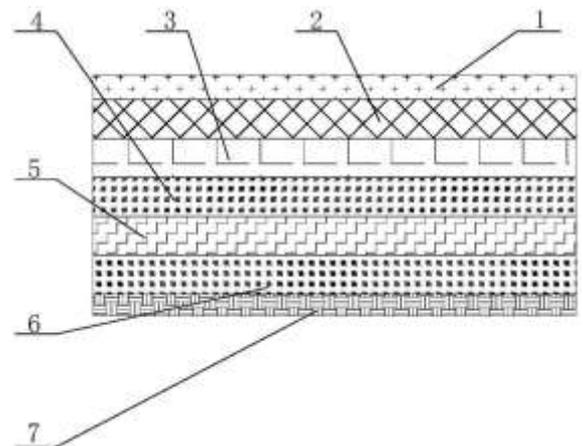
**SHANDONG TAIBAO PACKAGING PRODUCT**

*Priority Date: 31/05/2021*

**UNCOVERING HOLOGRAPHIC ANTI-COUNTERFEITING FANCY LANTERN**

The utility model belongs to the technical field of it is anti-fake, a take off and show holographic anti-fake mouth flower, its characterized in that includes from the top down and is gloss oil layer, printing layer, copper plate ply, impression composite coating, holographic information layer, transfer coating, not dry glue film in proper order. The utility model has the advantages that; the holographic anti-counterfeiting information is hidden inside the opening flower, the holographic anti-counterfeiting information can not be seen before and during use, and the holographic anti-counterfeiting information is displayed and destroyed after being uncovered.

**CLAIM 1.** The utility model provides an reveal holographic anti-fake flower of a cut, its characterized in that from the top down is in proper order for the gloss oil layer, the printing layer, the copper edition ply, impression composite coating, holographic information layer, transfer coating and non-setting adhesive layer, the flower of a cut is divided into anterior segment, middle section and back end, anterior segment and back end account for 1/5-1/4 of total length respectively, anterior segment and/or back end are in proper order for the gloss oil layer from the top down, the printing layer, copper edition ply, impression composite coating, holographic information layer, transfer coating and non-setting adhesive layer, the rest part of the flower of a cut is in proper order for the gloss oil layer from the top down, the printing layer, copper edition ply, impression composite coating, holographic information layer and non-setting adhesive layer.



P34176

**BRAND PROTECTION**

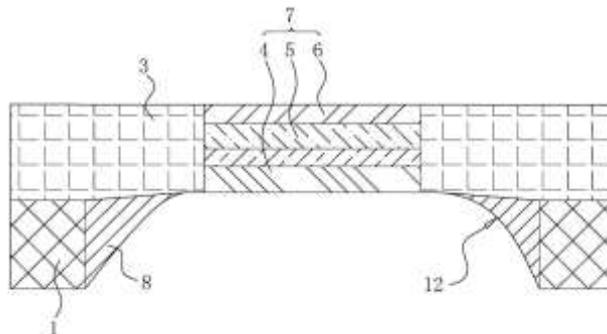
CN214731338U

Priority Date: 04/01/2021

**ANHUI ZIJIANG ALUMINIUM SPRAY ENVIRONMENTAL PROT  
MATERIAL - SHANGHAI ZIJIANG METALLIZATION ENV PROT MAT**

**NANOMETER REFRACTION THREE-DIMENSIONAL RELIEF LASER ANTI-COUNTERFEITING ALUMINUM-SPRAYED PACKAGING BOX**

The application relates to a nanometer refraction three-dimensional relief laser anti-counterfeiting aluminum-sprayed packing box, which relates to the technical field of packing boxes and comprises a box body and a bendable box cover, wherein one end of the box body is fixedly connected with one end of the bendable box cover, and the box body and the bendable box cover are covered to form a sealed space; the surface side of the box body is provided with an aluminum spraying layer, one side of the box body is also provided with an anti-counterfeiting layer, the anti-counterfeiting layer comprises a first anti-counterfeiting layer, a second anti-counterfeiting layer and a third anti-counterfeiting layer, and the first anti-counterfeiting layer, the second anti-counterfeiting layer and the third anti-counterfeiting layer are respectively provided with a nano refraction layer, a three-dimensional relief layer and a laser holographic layer; and the first anti-counterfeiting layer and the second anti-counterfeiting layer form a fourth anti-counterfeiting layer with a light-transmitting back surface after laser holographic composite transfer of the third anti-counterfeiting layer. In this application, when shining the fourth anti-fake layer from the back on fourth anti-fake layer, can see predetermined false proof mark from the front on fourth anti-fake layer, have the buyer of being convenient for and judge the product true and false, and can effectively improve the effect that the probability that the buyer differentiated the product true and false exactness.



**CLAIM 1.** The laser anti-counterfeiting aluminum-sprayed packing box with the nanometer refraction three-dimensional embossment is characterized by comprising a box body (1) and a bendable box cover (2), wherein one end of the box body (1) is fixedly connected with one end of the bendable box cover (2), and a sealed space is formed after the box body (1) and the bendable box cover (2) are covered; an aluminum spraying layer (3) is arranged on the surface side of the box body (1), an anti-counterfeiting layer is further arranged on one side of the box body (1), the anti-counterfeiting layer comprises a first anti-counterfeiting layer (4), a second anti-counterfeiting layer (5) and a third anti-counterfeiting layer (6), and the first anti-counterfeiting layer (4), the second anti-counterfeiting layer (5) and the third anti-counterfeiting layer (6) are respectively arranged to be a nano refraction layer, a three-dimensional relief layer and a laser holographic layer; the first anti-counterfeiting layer (4) and the second anti-counterfeiting layer (5) form a fourth anti-counterfeiting layer (7) with a light-transmitting back surface after laser holographic composite transfer of the third anti-counterfeiting layer (6).

P34179

PRINTING – LABEL – MAGNETISM

CN214705200U

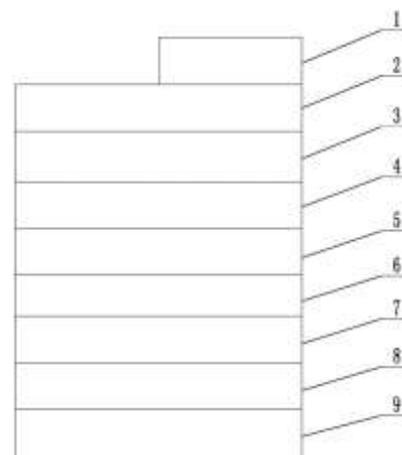
Priority Date: 25/05/2021

SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP

MAGNETIC LIGHT-VARIABLE ANTI-COUNTERFEITING HOLOGRAPHIC ANTI-COUNTERFEITING LABEL

The utility model relates to an antifalsification label, concretely relates to magnetism light becomes holographic antifalsification label of anti-fake effect. The magnetic light-variable anti-counterfeiting holographic anti-counterfeiting label comprises a magnetic light-variable anti-counterfeiting layer, a protective layer, a printing layer, a plastic film layer, a laser aluminizing coating, a mould pressing information layer, an aluminizing layer and a glue layer which are sequentially arranged from top to bottom; the magnetic light-variable anti-counterfeiting layer is printed by magnetic ink, and a field depth dynamic light-variable effect is formed by fixed magnetism and light curing. Antifalsification label, colorful, the light becomes the effect unique, the anti-fake information who contains is many, can multiple anti-fake, distinguish simply, the imitation degree of difficulty is big, anti-fake effectual, still have the function that is difficult for being shifted the use by the secondary.

CLAIM 1. The utility model provides a holographic antifalsification label of magnetic light variation anti-fake effect which characterized in that: the anti-counterfeiting laser printing device comprises a magnetic light-variable anti-counterfeiting layer (1), a protective layer (2), a printing layer (3), a plastic film layer (4), a laser aluminizing coating (5), a mould pressing information layer (6), an aluminizing layer (7) and a glue layer (8) which are arranged from top to bottom in sequence; the magnetic light-variable anti-counterfeiting layer (1) is printed by magnetic ink, and a field depth dynamic light-variable effect is formed through fixed magnetism and light curing.



P34180

PRINTING – LABEL – MAGNETISM

CN214705199U

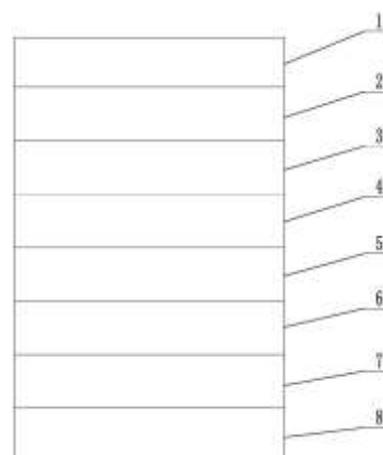
Priority Date: 25/05/2021

SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP

PRINTED HOLOGRAPHIC UNCOVERING INFORMATIZATION ANTI-COUNTERFEIT LABEL

The utility model relates to an antifalsification label, concretely relates to information-based antifalsification label is uncovered to printing holography. The printed holographic uncovering informatization anti-counterfeit label comprises a plastic film layer, a permanent laser aluminizing coating, a local positioning mould pressing information layer, a positioning aluminizing layer, a release layer, a printing layer, a color ink layer and a glue layer which are sequentially arranged from top to bottom; the anti-counterfeiting label can be uncovered and is divided into a stripping part and a bottom-retaining part, wherein the stripping part sequentially comprises a plastic film layer, a permanent laser aluminized coating, a local positioning mould pressing information layer and a positioning aluminized layer from top to bottom; the bottom-retaining part is sequentially provided with a release layer, a printing layer, a color ink layer and a glue layer from top to bottom. The utility model discloses a printing and holographic technique of revealing combine together, and the sign can realize that the commodity circulation traces back the equidirectional effect, can realize the score after revealing and convert functions such as award, anti-fake inquiry, still provide the information-based magnetism light and become anti-fake effect simultaneously.

CLAIM 1. A printed holographic uncovering informatization anti-counterfeit label is characterized in that: the laser aluminum plating device comprises a plastic film layer (1), a permanent laser aluminum plating coating (2), a local positioning mould pressing information layer (3), a positioning aluminum washing layer (4), a release layer (5), a printing layer (6), a color ink layer (7) and a glue layer (8) which are arranged from top to bottom in sequence; the anti-counterfeiting label can be uncovered and is divided into a stripping part and a bottom-retaining part, wherein the stripping part comprises a plastic film layer (1), a permanent laser aluminizing coating (2), a local positioning mould pressing information layer (3) and a positioning aluminum washing layer (4) from top to bottom in sequence; the bottom-retaining part is sequentially provided with a release layer (5), a printing layer (6), a color ink layer (7) and a glue layer (8) from top to bottom.



P34181

PRINTING – LABEL

CN214693987U

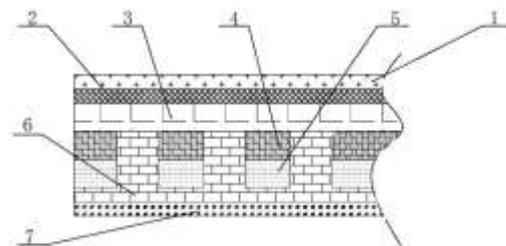
Priority Date: 31/05/2021

SHANDONG TAIBAO PACKAGING PRODUCT

UNCOVERING HOLOGRAPHIC ANTI-COUNTERFEITING ADHESIVE TAPE

The utility model belongs to the technical field of it is anti-fake, a take off and show holographic anti-fake sticky tape is related to, its characterized in that from the top down is sticky tape base film layer, impression composite coating, holographic information layer, the fretwork layer of aluminizing, alkali-fast light oil reservoir, transfer coating, not dry glue film in proper order, the fretwork layer of aluminizing is equipped with the fretwork and windows, and its part covers on holographic information layer, and alkali-fast light oil reservoir covers on the fretwork layer of aluminizing, and it is equipped with and windows with the fretwork that the fretwork layer of aluminizing is the same, and the transfer coating covers on the holographic information layer of alkali-fast light oil reservoir and fretwork windowing position. The utility model has the advantages that: the decoration is good, and holographic anti-counterfeiting information is hidden inside the adhesive tape, so that the anti-counterfeiting performance is good.

CLAIM 1. The utility model provides a reveal holographic anti-fake sticky tape, its characterized in that from the top down is sticky tape base film layer, impression composite coating, holographic information layer, the fretwork layer of aluminizing, alkali-fast light oil reservoir, transfer coating, not dry glue film in proper order, the fretwork layer of aluminizing is equipped with the fretwork and windows, and its part covers on holographic information layer, and alkali-fast light oil reservoir covers on the fretwork layer of aluminizing, and it is equipped with the fretwork windowing the same with the fretwork layer of aluminizing, and the transfer coating covers on alkali-fast light oil reservoir and the holographic information layer of fretwork windowing position.



P34185

LABEL

CN214671459U

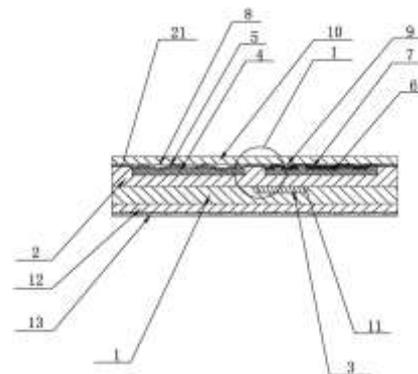
Priority Date: 26/04/2021

SHANGHAI HAOGUO FALSE PROOF TECHNOLOGY

CONCAVE-CONVEX VARIABLE ANTI-COUNTERFEITING DIGITAL LABEL

The utility model discloses a concave-convex variable anti-counterfeiting digital label, which comprises a paper base layer, wherein an anti-counterfeiting information layer is fixedly bonded on the upper surface of the paper base layer, a storage groove is arranged at the local position of the upper surface of the paper base layer, the lower surface of the anti-counterfeiting information layer covers the groove opening of the storage groove, and a passive electronic anti-counterfeiting label is embedded in the storage groove; the upper surface of the anti-counterfeiting information layer is provided with a laser holographic anti-counterfeiting layer, a first anti-counterfeiting groove and a second anti-counterfeiting groove are sequentially arranged on the upper surface of the anti-counterfeiting information layer from left to right, a first concave-convex base layer is embedded in the first anti-counterfeiting groove, and a temperature-sensing color-changing anti-counterfeiting information layer is fixedly bonded on the upper surface of the first concave-convex base layer; the embedded type of second anti-fake recess is provided with the unsmooth basic unit of second, the fixed bonding has the photosensitive anti-fake information layer that discolours on the upper surface of the unsmooth basic unit of second. Above-mentioned technical scheme, structural design is reasonable, the user judges that the true and false is convenient, anti-fake effectual and the practicality is good.

CLAIM 1. The utility model provides a unsmooth variable anti-fake digital label, includes paper substrate (1), its characterized in that: an anti-counterfeiting information layer (2) is fixedly bonded on the upper surface of the paper base layer (1), an article placing groove (11) is formed in a local position of the upper surface of the paper base layer (1), the lower surface of the anti-counterfeiting information layer (2) covers a groove opening of the article placing groove (11), and a passive electronic anti-counterfeiting label (3) is embedded in the article placing groove (11); the upper surface of the anti-counterfeiting information layer (2) is provided with a laser holographic anti-counterfeiting layer (21), the upper surface of the anti-counterfeiting information layer (2) is sequentially provided with a first anti-counterfeiting groove and a second anti-counterfeiting groove from left to right, a first concave-convex base layer (4) is embedded in the first anti-counterfeiting groove, and a temperature-sensing color-changing anti-counterfeiting information layer (5) is fixedly bonded on the upper surface of the first concave-convex base layer (4); the embedded type of the second anti-counterfeiting groove is provided with a second concave-convex base layer (6), and a photosensitive color-changing anti-counterfeiting information layer (7) is fixedly bonded on the upper surface of the second concave-convex base layer (6).



P34186

**PRINTING – LABEL**

CN214671452U

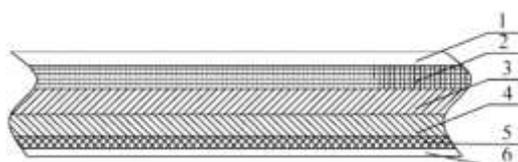
Priority Date: 09/01/2021

SHANGHAI NUOBIO INFORMATION TECHNOLOGY

**DOUBLE-LAYER PURCHASE-REMOVAL TYPE COLOR CODE ANTI-COUNTERFEITING MARK FOR COLD STAMPING OF LOOSE FLOWERS**

The utility model discloses a double-deck knot of flower cold wave scalds purchases and takes off formula color code anti-counterfeit marking, including the PET membrane, the lower extreme surface of PET membrane is provided with transparent isolation layer, the lower extreme surface of transparent isolation layer is provided with the cold wave information layer, the lower extreme surface of cold wave information layer is provided with UV solidification viscose layer, the lower extreme surface of UV solidification viscose layer is provided with UV printing ink information layer. A double-deck knot of cold perm of scattered flower is bought and is taken off formula color code anti-fake label, structural design is reasonable, simple structure, the location is accurate when pasting, convenient operation, difficult fold and easy differentiation true and false, the practicality is good, two-layer sign printing about the bilayer, the top layer combines cold perm technique of scattered flower and radium-shine effect coating holographic location thermoprint in addition the random variable color two-dimensional code of bottom and multiple senior anti-fake technologies such as multi-media color digital, anti-fake coefficient is high, anti-destruction and anti-shifting bring better use prospect.

**CLAIM 1.** The utility model provides a scattered flower cold wave double-deck knot is bought and is taken off formula color code false proof mark, includes PET membrane (1), its characterized in that: the lower extreme surface of PET membrane (1) is provided with transparent isolation layer (2), the lower extreme surface of transparent isolation layer (2) is provided with cold wave information layer (3), the lower extreme surface of cold wave information layer (3) is provided with UV solidification viscose layer (4), the lower extreme surface of UV solidification viscose layer (4) is provided with UV printing ink information layer (5), the lower extreme surface of UV printing ink information layer (5) is provided with base member layer (6).



P34197

**PRINTING – LABEL – BRAND PROTECTION**

CN214567531U

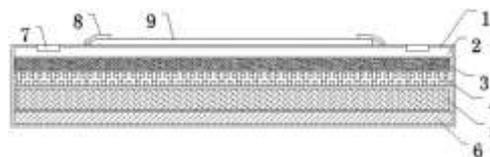
Priority Date: 11/03/2021

LU QINGYU

**LASER ANTI-COUNTERFEITING LABEL FOR ARTICLE PACKAGING**

The utility model discloses a belong to holographic anti-fake packaging material technical field of laser, specifically be a laser anti-fake label subsidies for article packing, including the non-setting adhesive main part, non-setting adhesive main part upper surface all is equipped with the pressure point all around, non-setting adhesive main part upper surface middle part evenly is connected with four and glues the adhesive paper, four the downside is glued and is glued the printing opacity membrane between the adhesive paper, the printing opacity membrane downside is connected with the second protective layer, be equipped with radium-shine light reflection zone between non-setting adhesive main part and the second protective layer, the inside first protective layer that includes of non-setting adhesive main part, first protective layer upper surface contacts with radium-shine light reflection zone lower surface, first protective layer downside is connected with the film, through the common cooperation of four adhesive paper, makes the film be difficult for droing, makes article packing use time increase with laser anti-fake label subsidies, through waterproof layer, insulating layer, The first protective layer and the second protective layer act together to enable the laser anti-counterfeiting label for packaging the article to have waterproof and heat-insulating properties.

**CLAIM 1.** The utility model provides a laser false proof mark subsidies for article packaging, includes non-setting adhesive main part (1), its characterized in that: pressing points (7) are arranged on the periphery of the upper surface of the non-setting adhesive main body (1), four pieces of adhesive paper (8) are uniformly connected to the middle of the upper surface of the non-setting adhesive main body (1), a light-transmitting film (9) is adhered to the lower side among the four pieces of adhesive paper (8), a second protective layer (10) is connected with the lower side of the light-transmitting film (9), a laser light reflection area (11) is arranged between the self-adhesive main body (1) and the second protective layer (10), the self-adhesive main body (1) comprises a first protective layer (2) inside, the upper surface of the first protective layer (2) is contacted with the lower surface of the laser reflection area (11), a film (3) is connected with the lower side of the first protective layer (2), a heat insulation layer (4) is connected with the lower side of the film (3), the waterproof layer (5) is connected with the lower side of the heat insulation layer (4), and the adhesive layer (6) is connected with the lower side of the waterproof layer (5).



P34200

**LABEL – BRAND PROTECTION**

CN214525463U

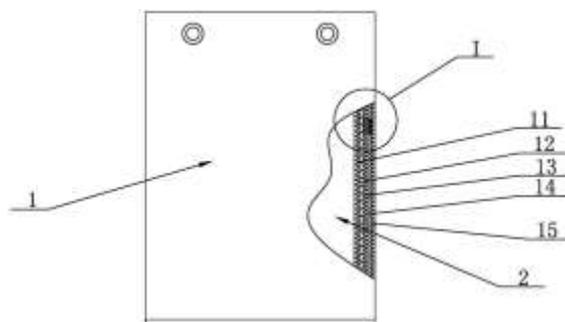
ZHEJIANG MEGA TECHNOLOGY

Priority Date: 12/03/2021

**NOVEL HOLOGRAPHIC ANTI-FAKE VACUUM PACKAGING BAG OF ALUMINIZING**

The utility model discloses a novel holographic anti-fake vacuum packaging bag of aluminizing, including the wrapping bag body, the wrapping bag body is the rectangle structure, and this internal thing cavity of putting that is provided with of wrapping bag, wrapping bag body from interior to exterior has set gradually non-woven fabrics waterproof inlayer, rubber wearing layer, kraft paper location layer, vacuum aluminizing paper layer and transparent protection film skin, vacuum aluminizing paper layer local position is provided with a first thing through-hole of putting, kraft paper location layer aims at first thing through-hole position of putting and is provided with the second and puts the thing through-hole, first thing through-hole of putting and second put the thing through-hole and constitute the antifalsification label installation cavity together, and the embedded holographic antifalsification label that is provided with in this antifalsification label installation cavity. Above-mentioned technical scheme, structural design is reasonable, difficult damaged, anti-counterfeit performance is good, decorative effect is good and the practicality is good.

**CLAIM 1.** The utility model provides a novel holographic anti-fake vacuum packaging bag of aluminizing, includes packaging bag body (1), packaging bag body (1) is the rectangle structure, is provided with in packaging bag body (1) and puts thing cavity (2), its characterized in that: the packaging bag comprises a packaging bag body (1), and is characterized in that a non-woven fabric waterproof inner layer (11), a rubber wear-resistant layer (12), a kraft paper positioning layer (13), a vacuum aluminum-plated paper layer (14) and a transparent protective film outer layer (15) are sequentially arranged from inside to outside, a first object through hole (141) is arranged at the local position of the vacuum aluminum-plated paper layer (14), the kraft paper positioning layer (13) is aligned to the first object through hole (141) and a second object through hole (131) is arranged, the first object through hole (141) and the second object through hole (131) are arranged to form an anti-counterfeit label installation cavity together, and a holographic anti-counterfeit label (3) is embedded in the anti-counterfeit label installation cavity.



P34203

**PRINTING**

CN214476015U

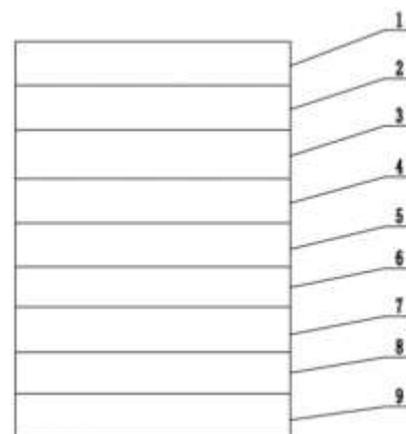
SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP

Priority Date: 30/04/2021

**TRANSPARENT HOLOGRAPHIC INFORMATION ANTI-COUNTERFEITING MARK**

The utility model belongs to the technical field of the false proof mark, concretely relates to transparent holographic information false proof mark. Transparent holographic information false proof mark, including from the top down set gradually mould rete, radium-shine dope layer of aluminizing, the holographic information layer of mould pressing, ZnS layer, polyamide layer, printing layer, color ink layer and pressure sensitive adhesive layer, this sign has transparent holographic effect. The transparent holographic information anti-counterfeiting mark of the utility model has a transparent holographic effect, is difficult to forge and can be identified rapidly, and the mark is damaged in a layered way when the whole is transferred, thereby effectively preventing secondary use; meanwhile, the laser holographic effect is achieved, the mark has the copy prevention effect, and the hologram interferes with the copy effect during copying.

**CLAIM 1.** A transparent holographic information anti-counterfeiting mark is characterized in that: including from the top down mould rete (1), laser aluminize dope layer (2), mould pressing holographic information layer (3), ZnS layer (4), polyamide layer (5), printing layer (6), color ink layer (7) and pressure sensitive adhesive layer (8) that set gradually, this sign has transparent holographic effect.



P34204

**PRINTING – LABEL**

CN214476014U

Priority Date: 30/04/2021

**SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP**

**FILMLESS LASER INFORMATION ANTI-COUNTERFEIT LABEL**

The utility model belongs to the technical field of anti-fake product, concretely relates to no membrane laser information ization antifalsification label. The film-free laser information anti-counterfeiting label comprises a mould pressing information layer, a gloss oil layer, a first printing layer and a base material layer which are sequentially arranged from top to bottom; the die pressing information layer is transferred onto the gloss oil layer through a transfer laser film, the gloss oil layer corresponds to the die pressing information layer one to one, and the die pressing information comprises transparent holographic anti-counterfeiting information. Filmless laser information ization antifalsification label, transparent holographic effect has, antifalsification information is unique, both be difficult to forge and can distinguish fast, has the holographic effect of laser simultaneously, has the effect of preventing duplicating, holographic can disturb the effect of duplicating during the duplication.

**CLAIM 1.** A filmless laser informationized anti-counterfeit label is characterized in that: the printing ink comprises a mould pressing information layer (1), a gloss oil layer (2), a first printing layer (3) and a base material layer (4) which are arranged from top to bottom in sequence; the die pressing information layer (1) is transferred onto the gloss oil layer (2) through a transfer laser film, the gloss oil layer (2) corresponds to the die pressing information layer (1) one by one, and the die pressing information comprises transparent holographic anti-counterfeiting information.

P34205

**PRINTING – LABEL**

CN214476007U

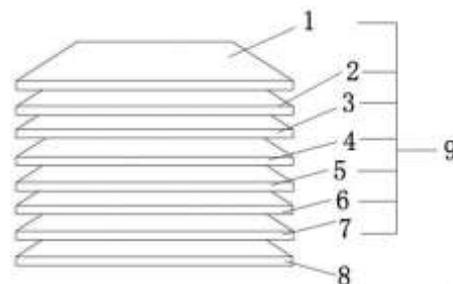
Priority Date: 29/03/2021

**HENAN PROVINCE WELLKING TECHNOLOGY DEVELOPMENT**

**DOUBLE-SIDED WATER-PASTING FLOWER ANTI-COUNTERFEITING LABEL**

The utility model relates to a two-sided water applique antifalsification label, including drawing of patterns base stock and the strippable label that glues on drawing of patterns base stock, the strippable label includes: sticking a blocking layer, a plurality of layers of colorful overprint pictures and texts, a gold stamping layer, a holographic laser relief aluminum coating layer, a spacing layer and a picture and text printing layer; the sticking blocking layer is printed on the demoulding base paper in a screen printing mode and is used for separating the double-sided water decal anti-counterfeiting label from the demoulding base paper after the double-sided water decal anti-counterfeiting label is immersed in water and the demoulding base paper absorbs moisture, so that the separation of the peelable label and the demoulding base paper is realized, and the sticking of the peelable label and the transparent container is realized after high-temperature baking; when in use, the multilayer colorful overprinting graphics and texts, the gold stamping layer and the holographic laser relief aluminum plating layer are in a visible state through the transparent container. The double-sided water-pasting anti-counterfeiting label has the advantages of unique processing procedure, difficult imitation, good anti-counterfeiting effect, visible pictures and texts on two sides, and attractive and elegant appearance.

**CLAIM 1.** The utility model provides a two-sided water applique antifalsification label, characterized by, include drawing of patterns base stock and glue the strippable label on drawing of patterns base stock, the strippable label includes in proper order in the direction of keeping away from drawing of patterns base stock: sticking a blocking layer, a plurality of layers of colorful overprint pictures and texts, a gold stamping layer, a holographic laser relief aluminum coating layer, a spacing layer and a picture and text printing layer; the sticking blocking layer is printed on the demoulding base paper in a screen printing mode and is used for separating the double-sided water decal anti-counterfeiting label from the demoulding base paper after the double-sided water decal anti-counterfeiting label is immersed in water and the demoulding base paper absorbs moisture, so that the separation of the peelable label and the demoulding base paper is realized, and the sticking of the peelable label and the transparent container is realized after high-temperature baking; the gold stamping layer is hot stamped on one side of the multilayer color overprinting graph-text, which is back to the sticking blocking layer, and the holographic laser embossment aluminum plating layer is arranged on one side of the gold stamping layer, which is back to the multilayer color overprinting graph-text; the material of the spacing layer is the same as that of the sticking blocking layer, the spacing layer is used for separating the graph printing layer from the holographic laser relief aluminum coating and is used as a processing substrate of the graph printing layer, and the graph printing layer comprises two-dimensional codes and/or bar codes for anti-counterfeiting; when in use, the multilayer colorful overprinting graphics and texts, the gold stamping layer and the holographic laser relief aluminum plating layer are in a visible state through the transparent container.



P34210

**PRINTING – EQUIPMENT – LABEL**

CN214474408U

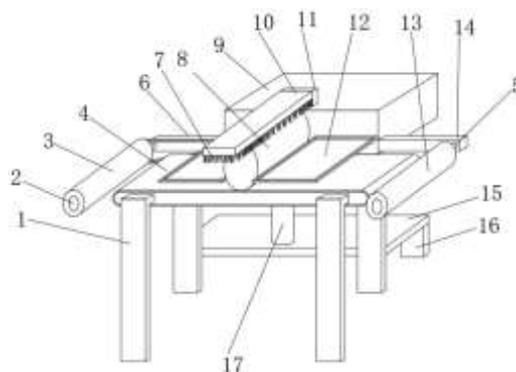
SEMJON PAPER SHANGHAI

Priority Date: 28/12/2020

**IMPRESSION EQUIPMENT OF HOLOGRAPHIC ANTIFALSIFICATION LABEL HOLLOW PAPER**

The utility model discloses an impression equipment of holographic antifalsification label fretwork paper, including box, four cylinders, the bottom fixed mounting of box inner wall has two base blocks, two there is same platform motor at the top of base block through bolt fixed mounting, the top of motor output shaft is fixed with the motor shaft, the top of motor shaft is fixed with the seal wheel, the circumference outer wall fixed mounting of seal wheel has the seal tooth, the top of box is fixed with the fixed block, the front end of fixed block has the brush board through bolt fixed mounting, the bottom of brush board is provided with the brush, the equal fixed mounting in both sides of box front end has the collection board, and two collection boards are located the both sides of seal wheel. The utility model discloses a be provided with devices such as motor, seal wheel, brush, utilize the motor to drive the seal wheel rotatory, the brush carries out the automatic screening and removes garrulous end, reaches the purpose of handling the waste material, has guaranteed lasting impression fretwork effect.

**CLAIM 1.** An impression device of holographic anti-counterfeiting label hollow paper comprises a box body (9) and four cylinders (1), it is characterized in that the bottom of the inner wall of the box body (9) is fixedly provided with two base blocks (23), the tops of the two base blocks (23) are fixedly provided with the same motor (22) through bolts, a motor shaft (21) is fixed at the top end of an output shaft of the motor (22), a printing wheel (8) is fixed at the top end of the motor shaft (21), the circumferential outer wall of the print wheel (8) is fixedly provided with print teeth (18), the top of the box body (9) is fixedly provided with a fixed block (11), the front end of the fixing block (11) is fixedly provided with a brush plate (10) through a bolt, the bottom of the brush plate (10) is provided with a brush (7), the two sides of the front end of the box body (9) are fixedly provided with collecting plates (12), and the two collecting plates (12) are positioned on the two sides of the printing wheel (8).



P34214

JIANGSU YINHE LASER TECHNOLOGY

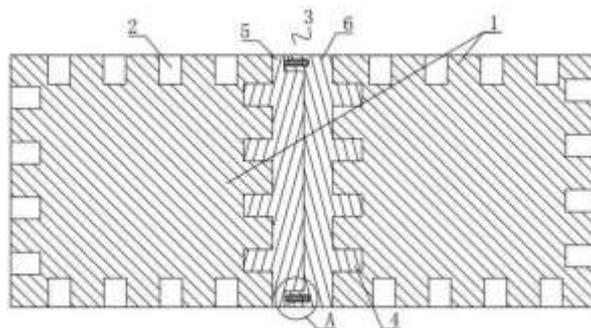
CN214449308U

Priority Date: 23/12/2020

**LASER HOLOGRAPHIC ANTI-COUNTERFEITING MOLDED PLATE WITH FULL IMAGE**

The utility model discloses a full laser holography anti-fake moulded board of image relates to moulded board technical field, its technical essential: the die pressing plate comprises a die pressing plate main body, wherein the die pressing plate main body is rectangular, a plurality of connecting holes are formed in four sides of the main body, the two die pressing plate main bodies are connected through a bendable connecting piece, the connecting piece comprises a connecting plate, and a plurality of connecting blocks corresponding to the connecting holes are arranged on two sides of the connecting plate; the utility model discloses a connecting piece that the setting can be buckled has solved the inconvenient equipment of current moulded board, can not be applicable to the problem of more occasions.

**CLAIM 1.** The utility model provides a full laser holography anti-fake moulded board of image, includes moulded board main part (1), its characterized in that: the die pressing plate comprises a die pressing plate body (1) and is characterized in that the die pressing plate body (1) is rectangular, a plurality of connecting holes (2) are formed in four sides of the die pressing plate body (1), the two die pressing plate bodies (1) are connected through a bendable connecting piece, the connecting piece comprises a connecting plate (3), and a plurality of connecting blocks (4) corresponding to the connecting holes (2) are arranged on two sides of the connecting plate (3).



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

**P34125**

**PRINTING – LABEL – BRAND PROTECTION – LIQUID CRYSTALS**

**WO2021230619**

**NBST**

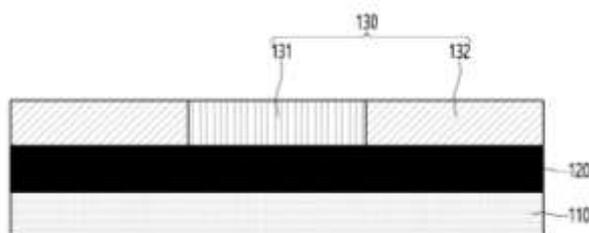
*Priority Date: 13/05/2020*

#### **FORGERY PREVENTION MEANS INCLUDING CHOLESTERIC LIQUID CRYSTAL DISPLAY LAYER**

The present invention relates to a forgery prevention means including a cholesteric liquid crystal display layer, characterized by comprising: a base layer; a design print layer laminated on the base layer and printed with a specific pattern; and a display layer laminated on the design print layer and including a cholesteric liquid crystal having a latent identification pattern that cannot be identified with the naked eye when non-polarized light is irradiated.

#### **MOYEN DE PRÉVENTION DE CONTREFAÇON COMPRENANT UNE COUCHE D’AFFICHAGE À CRISTAUX LIQUIDES CHOLESTÉRIQUES**

La présente invention concerne un moyen de prévention de contrefaçon comprenant une couche d’affichage à cristaux liquides cholestériques, caractérisé en ce qu’il comprend : une couche de base; une couche d’impression de conception stratifiée sur la couche de base et imprimée avec un motif spécifique; et une couche d’affichage stratifiée sur la couche d’impression de conception et comprenant un cristal liquide cholestérique ayant un motif d’identification latent qui ne peut pas être identifié à l’œil nu lorsque la lumière non polarisée est irradiée.



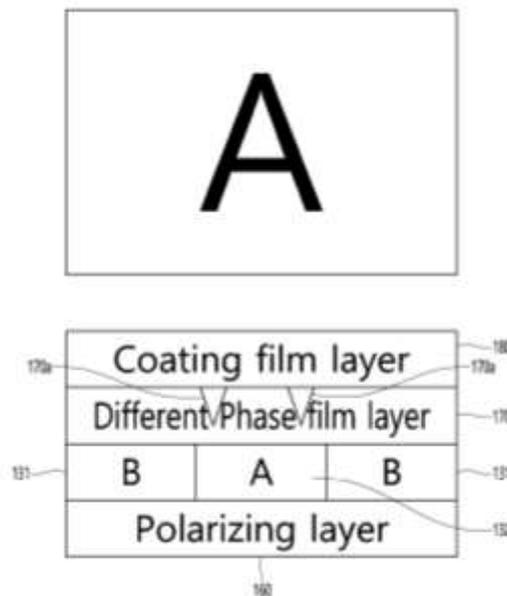
**CLAIM 1.** A substrate layer; A design printed layer laminated to the substrate layer and printed with a specific shape; and A display layer stacked on the design print layer and including cholesteric liquid crystals in which latent identification characters that are not identified by the naked eye are embedded in a state in which unpolarized light is irradiated. A phase modulation prevention means including a cholesteric liquid crystal display layer.

### COUNTERFEITING/FALSIFICATION PREVENTION MEANS COMPRISING POLARIZING MATERIAL AND METHOD FOR UTILIZING SAME

The present invention relates to a counterfeiting/falsification prevention means comprising a polarizing material, the counterfeiting/falsification prevention medium comprising a polarizing layer in which the polarizing material is included and on which a specific shape is printed for determining whether there is counterfeiting or falsification, wherein whether there is counterfeiting or falsification is identified by irradiating the counterfeiting/falsification prevention medium with a counterfeiting/falsification identification means capable of emitting polarized light or by using a polarizing film.

### MOYEN DE PRÉVENTION DE CONTREFAÇON/FALSIFICATION COMPRENANT UN MATÉRIAU POLARISANT ET SON PROCÉDÉ D'UTILISATION

La présente invention concerne un moyen de prévention de contrefaçon/falsification comprenant un matériau polarisant, le support de prévention de contrefaçon/falsification comprenant une couche polarisante dans laquelle le matériau polarisant est inclus et sur laquelle une forme spécifique est imprimée pour déterminer s'il y a contrefaçon ou falsification, le fait de savoir s'il y a contrefaçon ou falsification étant identifié par l'irradiation du support de prévention de contrefaçon/falsification avec un moyen d'identification de contrefaçon/falsification capable d'émettre une lumière polarisée ou en utilisant un film polarisant.



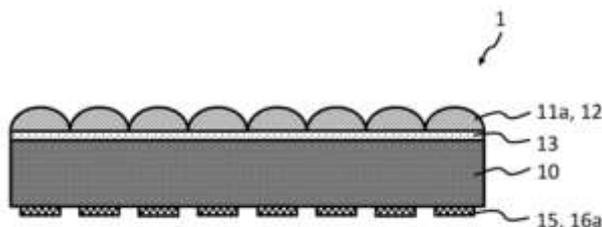
**CLAIM 1.** A forgery prevention medium comprising a polarizing substance, A polarizing layer including the polarizing material and printed with a specific shape capable of discriminating whether or not a false modulation is performed, Whether or not the false modulation comprises: A false modulation confirmation means capable of irradiating polarized light is irradiated to the false modulation prevention medium or confirmed by using a polarizing film A false modulation preventing means comprising a polarizing substance.

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

The invention relates to a method for producing a multilayer body (1) and to a multilayer body (1). The method for producing a multilayer body (1) here comprises the following steps: - providing a carrier layer (10); - applying a first replicating lacquer layer (11) to the carrier layer (10); - moulding into the first replicating lacquer layer (11a) a multiplicity of micro-lenses (12) arranged in the form of a grid, - applying at least one layer (14) to be structured to the side of the carrier layer (10) opposite from the micro-lenses (12) arranged in the form of a grid; - structuring the at least one layer (14) to be structured by using a highly resolved separate mask (23) in such a way that a multiplicity of micro-images (15) arranged in the form of a grid are formed by removing in certain regions the at least one layer (14) to be structured. The invention also provides a multilayer body (1), comprising a carrier layer (10) and, applied to the carrier layer (10), a first replicating lacquer layer (11a), into which a multiplicity of micro-lenses (12) arranged in the form of a grid have been moulded, and comprising a multiplicity of micro-images (15), arranged in the form of a grid, on the side of the carrier layer (10) opposite from the multiplicity of micro-lenses (12) arranged in the form of a grid.

### PROCÉDÉ DE FABRICATION D'UN CORPS MULTICOUCHE ET CORPS MULTICOUCHE

L'invention concerne un procédé de fabrication d'un corps multicouche (1) ainsi qu'un corps multicouche (1). Le procédé de fabrication d'un corps multicouche (1) comprend à cet effet les étapes suivantes : disposer d'une couche support (10), appliquer une première couche de vernis de réplique (11) sur la couche support (10), déformer une pluralité de microlentilles (12) agencées sous forme réticulaire dans la première couche de vernis de réplique (11a), appliquer au moins une couche à structurer (14) sur la face de la couche support (10) située à l'opposé de la pluralité de lentilles (12) agencées sous forme réticulaire, structurer ladite au moins une couche à structurer (14) au moyen d'un masque (23) à haute résolution séparé, de sorte qu'une pluralité de micro-images (15) agencées sous forme réticulaire sont formées par enlèvement par endroits de ladite au moins une couche à structurer (14). En outre, l'invention concerne un corps multicouche (1), doté d'une couche support (10) et d'une première couche de vernis de réplique (11a) appliquée sur la couche support (10), couche de vernis de réplique dans laquelle sont déformées une pluralité de microlentilles (12) agencées sous forme réticulaire, ainsi que d'une pluralité de micro-images (15) agencées sous forme réticulaire sur la face de la couche support (10) située à l'opposé de la pluralité de microlentilles (12) agencées sous forme réticulaire.



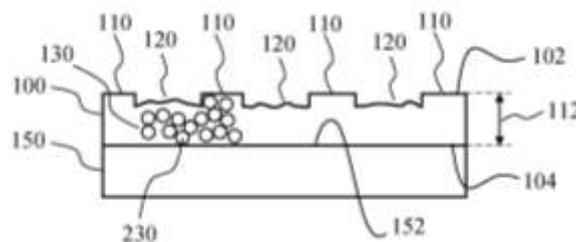
**CLAIM 1.** A method for producing a multilayer body (1), in particular a multilayer security element for securing security documents, wherein the method comprises the following steps, which are carried out in particular in the following order, comprises: a) providing a carrier layer (10); b) applying a first replication lacquer layer (11 a) to the carrier layer (10); c) moulding a plurality of microlenses (12) arranged in the form of a grid into the first replication lacquer layer (11 a); d) applying at least one layer (14) to be structured to the side of the carrier layer (10) opposite the plurality of microlenses (12) arranged in the form of a grid; e) structuring the at least one layer (14) to be structured using a high-resolution separate mask (23) in such a way that a multiplicity of microimages (15) arranged in the form of a grid are formed by removing the at least one layer (14) to be structured in regions.

**THIN FILM, METHOD OF PRODUCING THE THIN FILM, AND PRODUCT COMPRISING THE THIN FILM**

An aspect of the disclosure relates to a thin film including an amorphous array of particles including a top surface and a bottom surface opposing each other, the thin film exhibiting thin film interference and further coherent scattering from the amorphous array of particles, wherein the thin film may include first regions and second regions, wherein the thin film interference of the second regions may be suppressed as compared to the first regions. Another aspect of the disclosure relates to a product including an indicium including a thin film in accordance with any of the previous claims, wherein the indicium may include an encoded pattern encoded by the relative position of the second regions to the first regions, wherein the encoded pattern may be visible under specular reflection of light of a pre-determined wavelength. Another aspect of the disclosure relates to a method of producing a thin film.

**FILM MINCE, PROCÉDÉ DE PRODUCTION DU FILM MINCE ET PRODUIT COMPRENANT LE FILM MINCE**

Un aspect de la divulgation concerne un film mince comprenant un réseau amorphe de particules comprenant une surface supérieure et une surface inférieure opposées l'une à l'autre, le film mince présentant une interférence à film mince et subissant en outre une diffusion cohérente à partir du réseau amorphe de particules, le film mince pouvant comprendre des premières régions et des secondes régions, l'interférence à film mince des secondes régions pouvant être supprimée par comparaison avec les premières régions. Un autre aspect de la divulgation concerne un produit comprenant un timbre comprenant un film mince selon l'une quelconque des revendications précédentes, le timbre pouvant comprendre un motif codé, codé par la position relative des secondes régions par rapport aux premières régions, le motif codé pouvant être visible en réflexion spéculaire d'une lumière ayant une longueur d'onde prédéterminée. Un autre aspect de la divulgation concerne un procédé de production d'un film mince.



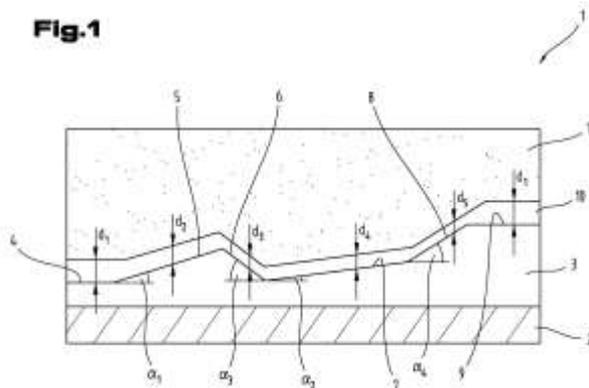
**CLAIM 1.** A thin film comprising an amorphous array of particles, the thin film further comprising a top surface and a bottom surface opposing each other, the thin film exhibiting thin film interference and further coherent scattering from the amorphous array of particles, wherein the thin film comprises first regions and second regions, wherein the thin film interference of the second regions is suppressed as compared to the first regions.

**SECURITY ELEMENT**

The invention relates to a security element (1) for a value document, a security paper and the like, having at least one carrier film (2), wherein the security element has at least one image as a security feature, wherein the image preferably depicts at least one character, in particular at least one alphanumeric character and/or an icon and/or a geometric figure and/or a symbol and/or a portrait and/or a landscape and/or a building and/or an animal, wherein the security element has embossed structures (3), the embossed structures (3) having portions (4, 5, 6, 7, 8, 9) which are inclined differently relative to a surface of the carrier film (2) and at least one coating (10) which produces the image and has regions of differing opacity is applied to the structures (3), and a layer thickness (d1, d2, d3, d4) of the at least one coating (10) depends on an inclination of the portions (4, 5, 6, 7, 8, 9) of the embossed structures (3).

**ÉLÉMENT DE SÉCURITÉ**

L'invention concerne un élément de sécurité (1) pour un document de valeur, un papier de sécurité et similaire, présentant au moins un film de support (2), l'élément de sécurité présentant au moins une image en tant que caractéristique de sécurité, l'image représentant de préférence au moins un caractère, en particulier au moins un caractère alphanumérique et/ou une icône et/ou une figure géométrique et/ou un symbole et/ou un portrait et/ou un paysage et/ou un bâtiment et/ou un animal, l'élément de sécurité présentant des structures gaufrées (3), les structures gaufrées (3) présentant des parties (4, 5, 6, 7, 8, 9) qui sont inclinées différemment par rapport à une surface du film de support (2) et au moins un revêtement (10) qui produit l'image et qui présente des régions d'opacité différente est appliqué sur les structures (3), et une épaisseur de couche (d1, d2, d3, d4) du ou des revêtements (10) dépend d'une inclinaison des parties (4, 5, 6, 7, 8, 9) des structures gaufrées (3).

**Fig.1**

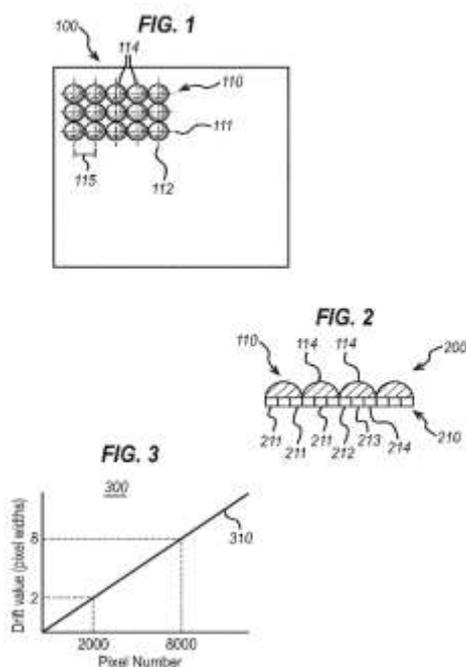
**CLAIM 1.** A security element (1) for a value document, a security paper and the like with at least one carrier film (2), wherein the security element has at least one image as a security feature, wherein the image preferably has at least one character, in particular at least one alphanumeric character and/or an icon and/or a geometric figure and/or a symbol and/or a portrait and/or a landscape and/or a building and/or an animal, characterized in that the security element has embossed structures (3), wherein the embossed structures (3) have portions (4, 5, 6, 7, 8, 9) which are inclined differently with respect to a surface of the carrier film (2), 9) And at least one image-generating coating (10) with regions of different opacity is applied to the structures (3) and a layer thickness (d1, d2, d3, d4) of the at least one coating (10) depends on an inclination of the sections (4, 5, 6, 7, 8, 9) of the embossed structures (3).

**METHODS FOR DESIGNING AND PRODUCING A SECURITY FEATURE**

Methods for designing and producing a security feature are provided. In general, the present disclosure provides methods of designing a printed image in a security feature, the security feature comprising an array of optical elements overlaying the printed image, wherein the printed image comprises a two dimensional matrix of rows and columns of pixels, the method comprising; correcting for a mismatch between the pixels of the printed image and the array of optical elements by doing one or more of: adding one or more pixels; removing one or more pixels; and moving one or more pixels.

**PROCÉDÉS DE CONCEPTION ET DE PRODUCTION D'UNE CARACTÉRISTIQUE DE SÉCURITÉ**

L'invention concerne des procédés de conception et de production d'une caractéristique de sécurité. En général, la présente divulgation concerne des procédés de conception d'une image imprimée dans une caractéristique de sécurité, la caractéristique de sécurité comprenant un réseau d'éléments optiques recouvrant l'image imprimée, l'image imprimée comprenant une matrice bidimensionnelle de rangées et de colonnes de pixels, le procédé consistant à ; corriger une non-concordance entre les pixels de l'image imprimée et le réseau d'éléments optiques au moyen d'au moins l'une des actions suivantes : ajouter au moins un pixel ; éliminer au moins un pixel ; et déplacer au moins un pixel.



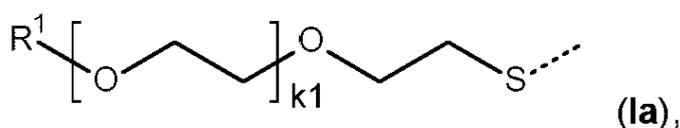
**CLAIM 1.** A method of designing a printed image in a security feature, the security feature comprising an array of optical elements overlaying the printed image, wherein the printed image comprises a two dimensional matrix of rows and columns of pixels, the method comprising: calculating for each row and column at least one drift value, wherein the drift value for any pixel is equal to the difference between an actual position for said pixel and the desired position for said pixel; determining, based on said at least one drift value, one or more locations in the printed image to remove a pixel from the printed image and/or to add a pixel to the printed image; and adding or removing at least one pixel at the one or more locations; wherein the one or more locations are determined by calculating a number of pixels to be removed from or added to the printed image and randomly selecting that number of locations.

**PROCESS FOR PRODUCING DICHROIC SECURITY FEATURES FOR SECURING VALUE DOCUMENTS**

The present invention provides a process for manufacturing a security feature for securing a value document, wherein said security feature exhibits a blue color upon viewing in transmitted light and a metallic yellow color upon viewing in incident light. The manufacturing process comprises the following steps: a) printing a specific UV-Vis radiation curable ink on a transparent or partially transparent region of a substrate of a value document; b) heating the ink layer obtained at step a) at a temperature of about 55 °C to about 100 °C for at least one second so that the ink layer exhibits a metallic yellow color upon viewing in incident light; and c) UV-Vis curing the ink layer obtained at step b) to form the security feature. The manufacturing process according to the present invention enables the expedient production of security features exhibiting a blue color upon viewing in transmitted light and a metallic yellow color upon viewing in incident light and is particularly useful for industrial printing of value documents.

**PROCÉDÉ DE FABRICATION D'ÉLÉMENTS DE SÉCURITÉ DICHROÏQUES POUR LA SÉCURISATION DE DOCUMENTS DE VALEUR**

La présente invention a trait à un procédé de fabrication d'un élément de sécurité pour sécuriser un document de valeur, ledit élément de sécurité présentant une couleur bleue lors de l'observation en lumière transmise et une couleur jaune métallique lors de l'observation en lumière incidente. Le procédé de fabrication comprend les étapes suivantes: a) l'impression d'une encre spécifique durcissable par rayonnement UV-Vis sur une région transparente ou partiellement transparente d'un substrat d'un document de valeur; b) le chauffage de la couche d'encre obtenue à l'étape a) à une température d'environ 55 °C à environ 100 °C pendant au moins une seconde de telle sorte que la couche d'encre présente une couleur jaune métallique lors de l'observation en lumière incidente; et c) e durcissement par UV-Vis de la couche d'encre obtenue à l'étape b) pour former l'élément de sécurité. Le procédé de fabrication selon la présente invention permet la production rapide d'éléments de sécurité présentant une couleur bleue lors de l'observation en lumière transmise et une couleur jaune métallique lors de l'observation en lumière incidente et est particulièrement utile pour l'impression industrielle de documents de valeur.



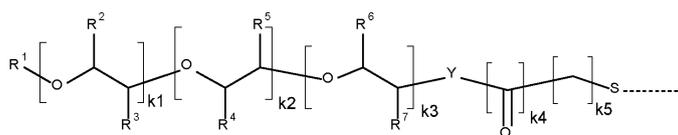
**CLAIM 1.** A process for producing a security feature for securing a value document, wherein said security feature exhibits a blue color upon viewing in transmitted light and a metallic yellow color upon viewing in incident light, said process comprising the following steps: a) printing, preferably by screen printing, rotogravure, or flexography, a UV-Vis radiation curable ink on a transparent or partially transparent region of a substrate of a value document to provide an ink layer; b) heating the ink layer obtained at step a) at a temperature of about 55 °C to about 100 °C for at least one second so that the ink layer exhibits a metallic yellow color upon viewing in incident light; and c) UV-Vis curing the ink layer obtained at step b) to form the security feature; wherein the UV-Vis radiation curable ink comprises: i) silver nanoplatelets having a mean diameter in the range of 50 to 150 nm with a standard deviation of less than 60%, a mean thickness in the range of 5 to 30 nm with a standard deviation of less than 50%, and a mean aspect ratio higher than 2.0, wherein the mean diameter is determined by transmission electron microscopy and the mean thickness is determined by transmission electron microscopy; ii) from about 40 wt-% to about 75 wt-% of either a cycloaliphatic epoxide, or a mixture of a cycloaliphatic epoxide and one or more UV-Vis radiation curable compounds other than the cycloaliphatic epoxide; iii) one or more cationic photoinitiators; iv) a polyvinyl chloride copolymer containing at least about 69 wt-% of vinyl chloride; v) a perfluoropolyether surfactant functionalized with one or more functional groups selected from the group consisting of: hydroxyl, acrylate, and methacrylate; and optionally vi) up to 25 wt-% of an organic solvent; the weight percent of ii), and vi) being based on the total weight of the UV-Vis radiation curable ink.

### COMPOSITIONS, COMPRISING PLATELET-SHAPED TRANSITION METAL PARTICLES

The present invention relates to compositions, comprising platelet-shaped transition metal particles, wherein the number mean diameter of the platelet-shaped transition metal particles, present in the composition, is in the range of 15 nm to 1000 nm and the number mean thickness of the platelet-shaped transition metal particles, present in the composition, is in the range of 2 to 40 nm, the transition metal is selected from silver, copper, gold and palladium and the platelet-shaped transition metal particles bear a surface modifying agent of formula A-(CHR<sup>9</sup>)<sub>r</sub>-R<sup>10</sup> (V), wherein if r is 1, A is a C1-C25alkyl group substituted with one, or more fluorine atoms; a C2-C25alkenyl substituted with one, or more fluorine atoms; a C2-C25alkynyl group substituted with one, or more fluorine atoms; a C3-C20cycloalkyl group substituted with one, or more fluorine atoms; or a C6-C24aryl group substituted with one, or more fluorine atoms, CF<sub>3</sub> or -O-CF<sub>3</sub> groups; if r is 0, A is a C6-C24aryl group substituted with one, or more fluorine atoms, CF<sub>3</sub> or -O-CF<sub>3</sub> groups; or a C7-C24aralkyl group substituted with one, or more fluorine atoms, CF<sub>3</sub> or -O-CF<sub>3</sub> groups; R<sup>9</sup> is H, or a C1-C4alkyl group; and R<sup>10</sup> is a thiol group, or an amino group. Surface modification with fluorinated thiols/amines allows to tune the surface properties of silver nanoplatelets in such a way, as to, on the one hand, make them dispersible and colloidally stable in the finished printing ink system, and on the other hand, allow them to migrate to the substrate and print surfaces upon drying of the solvent in the printed layer.

### COMPOSITIONS COMPRENANT DES PARTICULES DE MÉTAL DE TRANSITION EN FORME DE PLAQUETTES

La présente invention concerne des compositions, comprenant des particules de métal de transition en forme de plaquettes, le diamètre moyen en nombre des particules de métal de transition en forme de plaquettes, présentes dans la composition, se situant dans la plage de 15 nm à 1000 nm et l'épaisseur moyenne en nombre des particules de métal de transition en forme de plaquettes, présentes dans la composition, se situant dans la plage de 2 à 40 nm, le métal de transition étant choisi parmi l'argent, le cuivre, l'or et le palladium et les particules de métal de transition en forme de plaquettes portent un agent de modification de surface de formule A-(CHR<sup>9</sup>)<sub>r</sub>-R<sup>10</sup> (V), dans lesquelles si r est 1, A est un groupe alkyle en C1-C25 substitué par un ou plusieurs atomes de fluor ; un alcényle en C2-C25 substitué par un ou plusieurs atomes de fluor ; un groupe alcynyle en C2-C25 substitué par un ou plusieurs atomes de fluor ; un groupe cycloalkyle en C3-C20 substitué par un ou plusieurs atomes de fluor ; ou un groupe aryle en C6-C24 substitué par un ou plusieurs atomes de fluor, des groupes CF<sub>3</sub> ou -O-CF<sub>3</sub> ; si r est égal à 0, A est un groupe aryle en C24 substitué par un ou plusieurs atome de fluor, des groupes en CF<sub>3</sub> ou -O-CF<sub>3</sub> ; ou un groupe aralkyle en C7-C24 substitué par un ou plusieurs atomes de fluor, des groupes en CF<sub>3</sub> ou -O-CF<sub>3</sub> ; R<sup>9</sup> est H, ou un groupe alkyle en C1-C4 ; et R<sup>10</sup> est un groupe thiol, ou un groupe amino. La modification de surface avec des thiols/amines fluorés permet d'accorder les propriétés de surface de nanoplaquettes d'argent de manière à, d'une part, les rendre dispersibles et stables de manière colloïdale dans le système d'encre d'impression fini, et d'autre part, leur permettre de migrer vers le substrat et les surfaces d'impression lors du séchage du solvant dans la couche imprimée.



**CLAIM 1.** A composition, comprising platelet-shaped transition metal particles, wherein the number mean diameter of the platelet-shaped transition metal particles, present in the composition, is in the range of from 15 nm to 1000 nm and the number mean thickness of the platelet-shaped transition metal particles, present in the composition, is in the range of from 2 to 40 nm, the transition metal is selected from silver, copper, gold and palladium, especially silver and copper, very especially silver and the platelet-shaped transition metal particles bear a surface modifying agent of formula A-(CHR<sup>9</sup>)<sub>r</sub>-R<sup>10</sup> (V), wherein if r is 1, A is a C<sub>i</sub>-C<sub>25</sub>alkyl group substituted with one, or more fluorine atoms; a C2-C25alkenyl substituted with one, or more fluorine atoms; a C2-C25alkynyl group substituted with one, or more fluorine atoms; a C3-C20cycloalkyl group substituted with one, or more fluorine atoms; or a C6-C24aryl group substituted with one, or more fluorine atoms, CF<sub>3</sub> groups, or -O-CF<sub>3</sub> groups; or a C7-C24aralkyl group substituted with one, or more fluorine atoms, CF<sub>3</sub> groups, or -O-CF<sub>3</sub> groups; if r is 0, A is a C6-C24aryl group substituted with one, or more fluorine atoms, CF<sub>3</sub> or -O-CF<sub>3</sub> groups; R<sup>9</sup> is H, or a C4alkyl group; and R<sup>10</sup> is a thiol group, or an amino group.

P34138

WO2021212803

SVG TECHNOLOGY

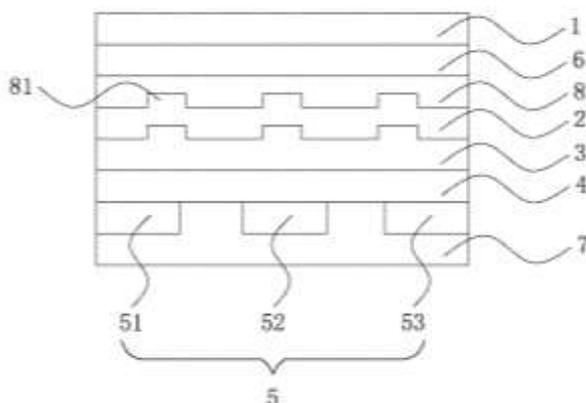
Priority Date: 24/04/2020

### COLORFUL COLOR-CHANGING FILM

Disclosed is a colorful color-changing film, comprising a base film layer, a first film layer provided on the surface of one side of the base film layer, an organic layer provided on the surface of the side of the first film layer away from the base film layer, a second film layer provided on the surface of the side of the organic layer away from the first film layer, and a color layer provided on the surface of the side of the second film layer away from the organic layer. The first film layer, the organic layer, and the second film layer form a planar waveguide resonance structure. By means of the structure, colors presented by the original first film layer, the organic layer, and a second transparent medium are changed, so that the colorful color-changing film has a rich and complex color-changing effect; moreover, the anti-counterfeiting effect of the colorful color-changing film is enhanced by means of superposition, and the anti-counterfeiting performance of a product is greatly improved.

### FILM COLORÉ CHANGEANT DE COULEUR

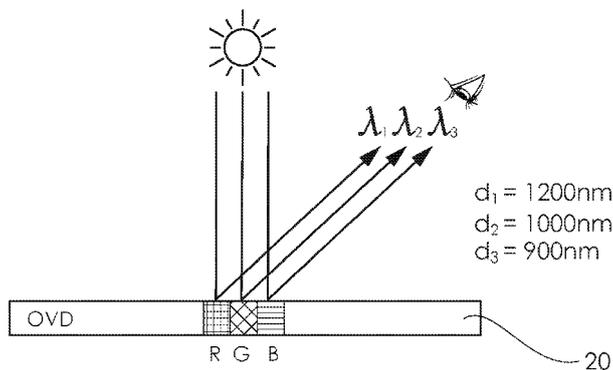
L'invention concerne un film coloré changeant de couleur qui comprend une couche de film de base, une première couche de film disposée sur la surface d'un côté de la couche de film de base, une couche organique disposée sur la surface du côté de la première couche de film qui est éloigné de la couche de film de base, une seconde couche de film disposée sur la surface du côté de la couche organique qui est éloigné de la première couche de film, et une couche de couleur disposée sur la surface du côté de la seconde couche de film qui est éloigné de la couche organique. La première couche de film, la couche organique et la seconde couche de film forment une structure de résonance de guide d'ondes planaire. Au moyen de la structure, les couleurs présentées par la première couche de film originale, par la couche organique et par un second milieu transparent sont modifiées, de telle sorte que le film coloré changeant de couleur présente un effet de changement de couleur riche et complexe ; de plus, l'effet anti-contrefaçon du film coloré changeant de couleur est amélioré par superposition, et les performances anti-contrefaçon d'un produit sont considérablement améliorées.



**CLAIM 1.** A multicolor color-changing film comprising a base film layer, a first film layer disposed on a side surface of said base film layer, an organic layer disposed on a side surface of said first film layer remote from said base film layer, a second film layer disposed on a side surface of said organic layer remote from said first film layer, and a color layer disposed on a side surface of said second film layer remote from said organic layer, said first film layer, said organic layer, and said second film layer forming a flat waveguide resonance structure.

**OPTICAL SECURITY DEVICE AND METHOD OF MANUFACTURE**

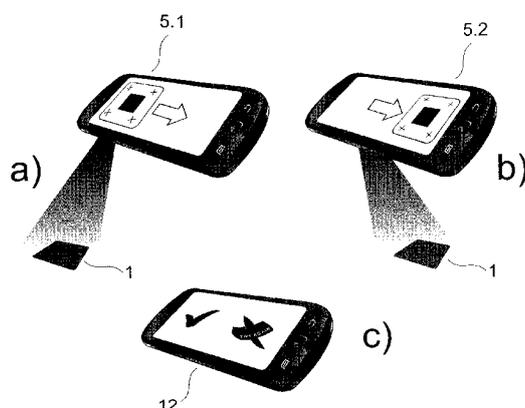
A security device is disclosed including a substrate and one or more focusing elements or lens structures located on one side of the substrate. The security device includes a plurality of image elements associated with each focusing element wherein the image elements include at least first and second groups of image elements. Each image element may be composed of pixels located in an object plane to be viewable through the associated focusing element. Each image element comprises a diffractive grating element or sub-wavelength grating element which when illuminated by a light source generates a diffraction image observable at a range of viewing angles around the device. Image elements of the first group are visible in a first range of viewing angles and image elements of the second group are visible in a second range of viewing angles. The security device is particularly suitable for use on security documents, such as banknotes. A method of forming a security device is also disclosed.



**CLAIM 1.** A security device including: a plurality of focusing elements; a plurality of image elements associated with each focusing element wherein said image elements include at least a first and a second group of image elements, wherein the plurality of image elements are located in an object plane to be viewable through the associated focusing element; wherein the plurality of image elements comprise sub-elements including red, green and blue sub-elements, which produce a predetermined primary colour upon illumination at predefined angles, wherein the sub-elements comprise diffraction grating elements or sub-wavelength grating elements which when illuminated by a light source generate a diffraction image observable at a range of viewing angles around the security device wherein a frequency and/or a pitch of the diffraction grating elements or sub-wavelength grating elements are different in the red, green and blue sub-elements; and wherein image elements of the first group are visible in a first range of viewing angles and image elements of the second group are visible in a second range of viewing angles.

**METHOD FOR CHECKING VARIABLE DIFFRACTIVE OPTICAL ELEMENT**

The method relates to the security of the documents and goods from forgery. Its application enhances the protective properties of the diffractive optical variable device by improving the inspection procedure, with automatic recognition of machine-readable features added to visually controlled ones. The following operations are performed: after forming the diffractive optical variable element, it is subjected to verification by launching an application using the algorithm on a smartphone with a camera. The user manually positions the smartphone over the optical variable device (1) and shoots it at two substantially different observation conditions. The images are geometrically straightened and correlated with the original one. From the straightened images, color characteristics are found, dynamic effect parameters are measured and hidden information is decrypted. Upon a successful comparison of the characteristics and parameters with predefined values, the originality of the captured diffractive optical variable device is determined.



**CLAIM 1.** A method for checking a diffractive optical variable identification device (1), comprising machine readable features, comprising capturing the device (1) at two substantially different viewing angles, characterized in that the following are performed for checking the diffractive optical variable identification device operations: (a) The diffractive optical variable identification device (1) is implemented comprising binary random-texture image (3) containing hidden information (10, 11); b) On the binary random-texture image (3) at four vertices of the square centered with it, additional marks (4) shall be placed, consisting of alternating color concentric square contours with ratios 1:1:1:2:1:1:1; c) At least two regions (3.1, 3.2) are formed on the device (1), comprising binary diffraction diffusers reproducing different non-spectral colors; d) Four rotating dynamic crosses (A2.1, A2.2, A2.3, A2.4) with different ranges of angles of rotation are placed outside the random-texture image (3) at vertices of the square centered with respect to it; e) The diffractive optical variable identification device (1) thus formed is subjected to verification procedure by launching an algorithm application on a smartphone with a camera having a minimum focal length of typically about 10 cm, with the smartphone positioned horizontally above the device (1) parallel to its plane; f) The app switches the flash of the smartphone into torch mode and uses its light to take pictures; g) The user manually positions the smartphone so that the DOVID image positions into a frame that appears on the left side of the smartphone screen; h) The camera makes autofocus and autoexposure and captures the first picture (5.1), which is stored in a 24-bit RGB format for further processing. (i) The geometric deformations are corrected using the additional marks to obtain the straightened image (6); j) The straightened image (6) is correlatively compared with the original one, and if correlation level is greater than the threshold value of 0.8 (the correlation function is normalized to 1 for full coincidence case), it is concluded that the binary image (3) with a random texture is original; k) The straightened image (6) is converted to HSV format and the histogram (7.1) of the chromaticity is plotted from which the maxima H1.1, H1.2 are found and are compared with predefined values and if the differences do not exceed a preselected threshold value, it is concluded that the first picture (5.1) is valid and a second one at substantially different observation conditions can be taken; l) The frame on the screen of the smartphone is moved to the right side of the screen and the second picture (5.2) is taken, the processing of which is the same as for the first picture; m) The dynamic effect is identified from the two pictures and parameters of the dynamic effect (A2.1, A2.2, A2.3, A2.4) are calculated, and when the values are within preset values ranges, it follows that the dynamic effect is original; n) The hidden information (10, 11) is decrypted and displayed at the screen; o) If all checks are passed successfully: the binary image with random texture (3) and dynamic effect (A2.1, A2.2, A2.3, A2.4) are original and the hidden information (10, 11) is decrypted, it's made the decision that the diffractive optical variable identification device (1) is original and the corresponding message is displayed on the smartphone's screen.

P34190

CARD

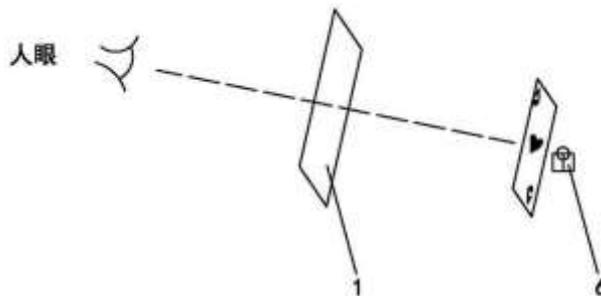
CN214633896U

Priority Date: 16/06/2020

XIAMEN WEIERSHENG TECHNOLOGY

CARD PLATE WITH MICRO-NANO STRUCTURE

The utility model provides a micro-nano structure card tablet, it includes the card tablet body that a plurality of transparent or translucent plastic membrane made, one side surface of plastic membrane is the structural plane, and its back is the unstructured face the structural plane is equipped with the grating micro-nano structure of thermoforming or UV rendition, grating micro-nano structure uploads different information, and the content on each card tablet of this difference information is different. A set of game cards can be formed by a plurality of cards, and a set of cards with the distinguishing characteristics which are mutually logically related can also be formed, so that the interestingness of the cards is increased, and the peep prevention of the cards can be improved by various means.



**CLAIM 1.** The utility model provides a micro-nano structure card tablet which characterized in that: it includes the card tablet body that a plurality of transparent or translucent plastic membrane made, one side surface of plastic membrane is the structural plane, and its back is non-structural plane the structural plane is equipped with the grating micro-nano structure of thermoforming or UV rendition, grating micro-nano structure uploads distinguishing information, and the content on each card tablet of this distinguishing information is different.

P34206

PRINTING – LABEL – RELIEF – MICROLENS

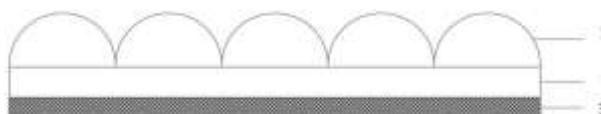
CN214476004U

Priority Date: 18/03/2021

SHENZHEN YUTONG PACKAGING SCIENCE & TECHNOLOGY

MULTIPLE ANTIFALSIFICATION LABEL OF GREEN

The utility model provides a multiple antifalsification label of green relates to anti-fake technical field. The multiple anti-counterfeiting label consists of a micro-lens array layer, a transparent substrate layer and a micro-image-text array layer which are sequentially laminated, and has a three-dimensional anti-counterfeiting function based on a Moire amplification effect and a fluorescent anti-counterfeiting function under ultraviolet lamp irradiation on one hand, so that the anti-counterfeiting level of a commodity is greatly improved; on the other hand, each layer of the prepared multiple anti-counterfeiting label is green, low-carbon and environment-friendly, and accords with the development trend of the packaging and printing industry and the green development concept in the world.



**CLAIM 1.** The green and environment-friendly multiple anti-counterfeiting label is characterized by comprising a micro-lens array layer, a transparent substrate layer and a micro-image-text array layer which are sequentially stacked.

P34212

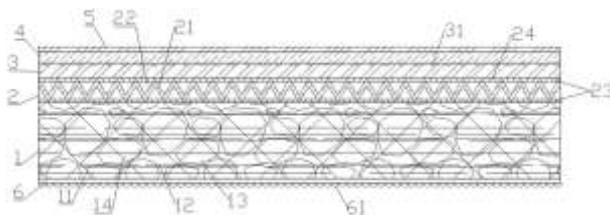
CN214459218U

Priority Date: 22/03/2021

## SHANTOU JIAMING ENVIRONMENTAL PROTECTION MATERIAL

### RADIUM-SHINE TRANSFER PAPER OF ALUMINIZING

The utility model discloses a radium-shine transfer paper of aluminizing, including substrate layer, enhancement layer, compound dope layer, aluminize the layer, shift layer and waterproof layer, the substrate layer includes matrix, fibre and filling material, and the enhancement layer includes cusp layer and colloid, the utility model discloses a radium-shine transfer paper of aluminizing has adopted compound multilayer structure, has the substrate layer as the main part, has the fibre that increases paper toughness in the substrate layer and increases the filling material of hardness, including can increasing the cusp layer of paper body bending resistance ability and can increase the glue of anti-tensile ability of dragging in the enhancement layer, substrate layer and enhancement layer combined action can increase the intensity of paper by a wide margin, have solved the easy fold of current radium-shine transfer paper of aluminizing, buckled even damaged problem.



**CLAIM 1.** A laser aluminized transfer paper is characterized in that, the composite coating comprises a substrate layer, an enhancement layer, a composite coating layer, an aluminized layer, a transfer layer and a waterproof layer, wherein the substrate layer comprises a substrate, a fiber and a filling material, the fiber is evenly distributed inside the substrate, the filling material is evenly distributed inside the substrate, the enhancement layer comprises a tooth-shaped layer and a colloid, the tooth-shaped layer is fixedly connected with the substrate and is positioned on one side of the substrate, the colloid is fixedly connected with the tooth-shaped layer and is filled in gaps of the tooth-shaped layer, the composite coating layer is fixedly connected with the tooth-shaped layer and is positioned on one side of the tooth-shaped layer far away from the substrate layer, the aluminized layer is fixedly connected with the composite coating layer and is positioned on one side of the composite coating layer far away from the enhancement layer, the transfer layer is fixedly connected with the aluminized layer and is positioned on one side of the aluminized layer far away from the composite coating layer, the waterproof layer is fixedly connected with the base material layer and is positioned on one side, far away from the enhancement layer, of the base material layer.

P34224

## BANKNOTE

CN113593399

Priority Date: 23/08/2021

## CHINA BANKNOTE PRINTING & MINT - CHINA BANKNOTE PRINTING TECHNOLOGY RESEARCH INSTITUTE

### ANTI-COUNTERFEITING MATERIAL, MANUFACTURING METHOD OF ANTI-COUNTERFEITING MATERIAL, ANTI-COUNTERFEITING ELEMENT AND ANTI-COUNTERFEITING PIGMENT

The invention provides an anti-counterfeiting material, a manufacturing method of the anti-counterfeiting material, an anti-counterfeiting element and an anti-counterfeiting pigment. The anti-counterfeiting material can be in a first color under natural light when the humidity value of the environment is smaller than a first humidity value; and when the humidity value of the environment is greater than or equal to the first humidity value and less than or equal to the second humidity value, responding to the change of the humidity value, and generating at least two color changes on the basis of the first color, wherein the at least two color changes can be identified under natural light, and the anti-counterfeiting material can present different colors under different humidity environments, so that the anti-counterfeiting material can be identified by using the characteristic.

**CLAIM 1.** The anti-counterfeiting material is characterized in that the anti-counterfeiting material can be in a first color under natural light when the humidity value of the environment is smaller than a first humidity value; and when the humidity value of the environment is larger than or equal to a first humidity value and smaller than or equal to a second humidity value, at least two color changes occur on the basis of the first color in response to the change of the humidity value, wherein the at least two color changes can be identified under the natural light.

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

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

**N8218**

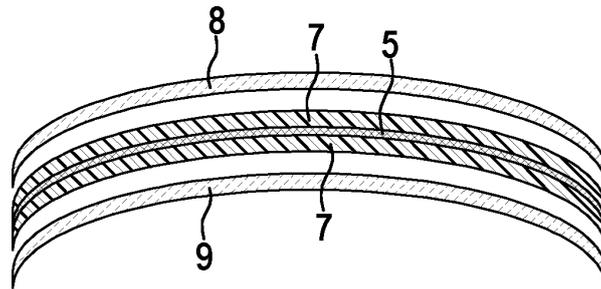
**DE102020112447**

*Priority Date: 07/05/2020*

**BMW - BAYERISCHE MOTOREN WERKE - SAINT GOBAIN**

**METHOD FOR INTEGRATING A HOLOGRAM IN A RIGID COMPONENT OF A PREDETERMINED CURVED DESIRED SURFACE GEOMETRY, IN PARTICULAR A VEHICLE WINDOW, A RESULTING COMPONENT AND A VEHICLE CONTAINING THE SAME**

The invention relates to a method for integrating a hologram, in particular a HOE, in a rigid component of a predetermined curved desired surface geometry, in particular in a vehicle window, comprising the following steps: - providing a hologram master having a rigid master surface provided for hologram replication with the predetermined curved desired surface geometry; - applying a first hologram recording layer of a predetermined constant layer thickness, in particular of a liquid photopolymer, to said master surface; -exposing the first hologram recording layer in this hologram recording arrangement to coherent light, thereby becoming a first hologram layer with a hologram formed therein and defined by the hologram master; and - connecting the resulting first hologram layer, which can in particular be supplemented by one or more further hologram layers and/or other functional layers, while retaining its surface geometry corresponding to the master surface with at least one rigid disc of the future component.



**CLAIM 1.** Method for integrating a hologram, in particular a holographic optical element, in a rigid component having a predetermined curved desired surface geometry, in particular in a vehicle window, having the steps of: - providing a hologram master (2) with a rigid master surface (3) provided for hologram replication and having the predetermined curved desired surface geometry; - applying a first hologram recording layer (1) of a predetermined constant layer thickness, in particular of a liquid photopolymer, to said master surface (3); - exposing the first hologram recording layer (1) in this hologram recording arrangement to coherent light (4), as a result of which it becomes a first hologram layer (5) with a hologram formed therein and defined by the hologram master (2); and - connecting the resulting first hologram layer (5), which can be supplemented in particular by one or more further hologram layers (12, 14) and/or other functional layers, while retaining its surface geometry corresponding to the master surface (3), with at least one rigid disc (8, 9) of the future component which has the predetermined curved desired surface geometry.

N8233

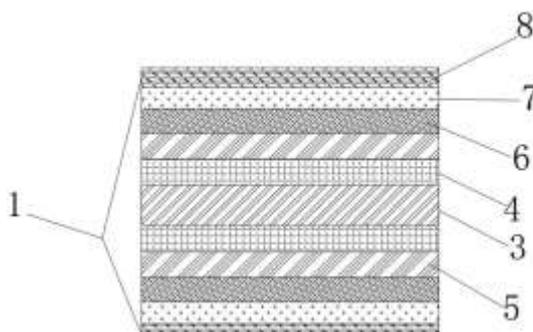
CN214610541U

Priority Date: 15/12/2020

HUAI AN FUYUAN PACKAGING MATERIALS

### DOUBLE-SIDED VACUUM ALUMINIZED LASER FOOD COMPOSITE PAPER

The utility model relates to the technical field of aluminized paper, and discloses double-sided vacuum aluminized laser food composite paper, which comprises a paper main body and an auxiliary paper roll component, wherein the auxiliary paper roll component is spliced with one side of the paper main body, a polyester film layer is arranged in the middle of the paper main body, holographic laser layers are arranged at the upper end and the lower end of the polyester film layer, one side of the holographic laser layer, which is far away from the polyester film layer, is fixedly provided with a vacuum aluminized layer, and one side of the vacuum aluminized layer, which is far away from the holographic laser layers, is provided with a waterproof breathable layer. Thus, the composite paper is convenient for operators to roll up.



**CLAIM 1.** The utility model provides a two-sided vacuum aluminize radium-shine food composite paper, includes paper main part (1) and supplementary stock form part (2), its characterized in that: the auxiliary roll paper component (2) is provided with one side of a paper main body (1) in an inserting mode, a polyester film layer (3) is arranged in the middle of the paper main body (1), holographic laser layers (4) are arranged at the upper end and the lower end of the polyester film layer (3), one side, away from the polyester film layer (3), of each holographic laser layer (4) is fixedly provided with a vacuum aluminum-plated layer (5), one side, away from the holographic laser layers (4), of each vacuum aluminum-plated layer (5) is provided with a waterproof breathable layer (6), one side, away from the vacuum aluminum-plated layers (5), of each waterproof breathable layer (6) is provided with an anti-aging layer (7), and one side, away from the waterproof breathable layers (6), of each anti-aging layer (7) is provided with an anti-oxidation layer (8).

N8247

CN214452619U

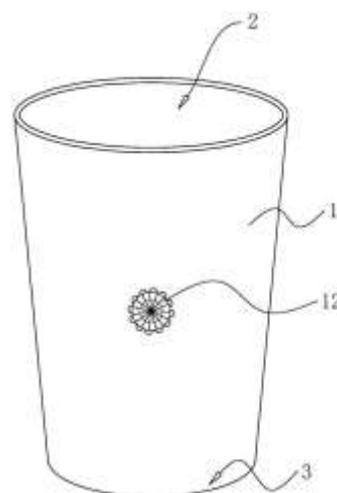
Date: 04/01/2021

ANHUI ZIJIANG ALUMINIUM SPRAY ENVIRONMENTAL PROT MATERIAL - SHANGHAI ZIJIANG METALLIZATION ENV PROT MAT *Priority*

### LASER HOLOGRAPHIC THERMAL INSULATION PAPER CUP

The utility model relates to a radium-shine holographic heat preservation paper cup relates to the field of paper cup, and it includes hollow cup, and the tip fixedly connected with base of cup, the periphery fixedly connected with of cup are used for producing electromagnetic induction's first coil with wireless charging seat, and first coil electricity is connected with a plurality of resistance wires, and the surface of cup is equipped with radium-shine holographic layer. This application can make the resistance wire generate heat through electromagnetic induction, produces the heat preservation effect to the aquatic products in the paper cup.

**CLAIM 1.** The utility model provides a radium-shine holographic heat preservation paper cup, collocation wireless charging seat uses, its characterized in that: the novel cup comprises a hollow cup body (1), wherein a base (3) is fixedly connected to the end portion of the cup body (1), a first coil (6) which is used for generating electromagnetic induction with a wireless charging seat is fixedly connected to the periphery of the cup body (1), the first coil (6) is electrically connected with a plurality of resistance wires (7), and a laser holographic layer (9) is arranged on the surface of the cup body (1).



**N8251**

**CN113650446**

Priority Date: 30/07/2021

**JIANGSU DAYA PRINTING**

### **HOLOGRAPHIC EFFECT IMITATING 3D MICRO-CARVING GOLD STAMPING PROCESS**

The invention belongs to the technical field of printing, and discloses a holographic-effect-imitated 3D micro-engraving gold stamping process, which comprises the following process steps: firstly, a flat ironing plate is used for ironing patterns on a printing stock; and then pressing out the pictures and texts on the patterns by using a 3D micro-carving gold stamping plate. The invention adopts the form of combining the flat stamping plate and the 3D micro-carving stamping plate, thereby showing holographic three-dimensional effect, low cost, good effect and high efficiency.

**CLAIM 1.** A 3D micro-carving gold stamping process with holographic effect simulation, which is characterized in that, the process steps comprise: hot stamping a pattern on a printing stock by using a flat hot plate; and (5) pressing the pattern with a 3D micro-engraving gold stamping plate to form the image-text.

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**N8252**

**CN113635701**

Priority Date: 09/08/2021

**MA YUJUAN - SONG ZHIXU**

### **DRAWING TECHNIQUE ON ANCIENT MURAL HOLOGRAPHIC COPYING SUBSTRATE MATERIAL**

The invention provides a drawing technique on an ancient mural holographic copying substrate material, which comprises the following steps: according to the picture in the image information of the ancient mural to be copied, carrying out double-hooking of the contour line on the picture on the ancient mural holographic copying substrate material, and then carrying out color filling on the internal area of the double-hooking line to finish drawing of the real color area in the ancient mural to be copied; etching: according to the imprinting trace condition in the image information of the ancient mural to be copied, carrying out shallow scribing in the drawn solid color area, and filling the shallow scribing area by using diluted clear plate soil aqueous solution to complete copying of the imprinting trace; printing and copying: according to the surface print condition in the image information of the ancient mural painting to be copied, firstly, utilizing a mixed glue solution or a mixed glue solution composition to draw the outline of the surface print in a drawn real-color area, then filling alum water in the outline of the surface print, covering a color area with light mineral pigment, and then performing point drawing to finish copying of the surface print.



**CLAIM 1.** A drawing technique on an ancient mural holographic replica substrate material, said drawing technique comprising: syntax: according to the picture in the image information of the ancient mural to be copied, carrying out double-hooking of the contour line on the graph in the picture on the ancient mural holographic copying substrate material, and then carrying out color filling on the internal area of the double-hooking line to finish drawing of the real color area in the ancient mural to be copied; etching: according to the imprinting trace condition in the image information of the ancient mural to be copied, carrying out shallow scribing in the drawn solid color area, and filling the shallow scribing area by using diluted clear plate soil aqueous solution to complete copying of the imprinting trace; printing and copying: according to the surface print condition in the image information of the ancient mural painting to be copied, firstly, utilizing a mixing glue solution or a mixing glue solution composition to draw the outline of the surface print in a drawn real color area, then filling alum water in the outline of the surface print, covering a color area with light mineral pigment, and then performing point drawing to finish copying of the surface print.

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

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

**N8201**

**WO2021228120**

Priority Date: 13/05/2020

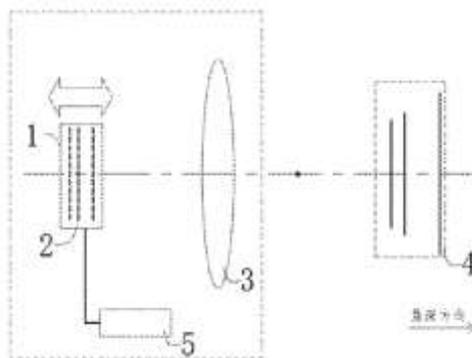
**JINGMEN CITY DREAM EXPLORATION TECHNOLOGY**

### SCANNING-TYPE HOLOGRAPHIC IMAGING DEVICE AND RELATED SYSTEM

A Bragg periodic scanning-type holographic imaging device, comprising an imaging element (1), an imaging lens group (3) and a focal depth scanning mechanism (5), which are respectively arranged inside the holographic imaging device, wherein the imaging element (1) is used for providing a plurality of equivalent image planes (2) that do not overlap or are mutually parallel; the imaging lens group (3) is used for optical imaging, and a plurality of two-dimensional tangent planes (4) are formed thereon; and the focal depth scanning mechanism (5) is respectively connected to the imaging element (1) and/or the imaging lens group (3), and is used for controlling the spatial position change of the imaging element (1) and/or the imaging lens group (3), so as to realize the voxel scanning of the two-dimensional tangent planes (4). By means of introducing a multi-focal plane and a Bragg periodic scanning mode, a 3D imaging/projection display function with an ultra-high resolution and an ultra-fast frame frequency can be stably realized, thereby improving the user experience.

### DISPOSITIF D'IMAGERIE HOLOGRAPHIQUE DE TYPE À BALAYAGE PÉRIODIQUE DE BRAGG ET SYSTÈME ASSOCIÉ

La présente invention concerne un dispositif d'imagerie holographique de type à balayage périodique de Bragg, comprenant un élément d'imagerie (1), un groupe de lentilles d'imagerie (3) et un mécanisme de balayage à profondeur focale (5) qui sont respectivement disposés à l'intérieur du dispositif d'imagerie holographique, l'élément d'imagerie (1) étant utilisé pour fournir une pluralité de plans d'image équivalents (2) qui ne se chevauchent pas ou qui sont mutuellement parallèles; le groupe de lentilles d'imagerie (3) est utilisé pour l'imagerie optique, et une pluralité de plans tangents bidimensionnels (4) sont formés sur celui-ci; et le mécanisme de balayage à profondeur focale (5) est connecté à l'élément d'imagerie (1) et/ou au groupe de lentilles d'imagerie (3), respectivement, et il est utilisé pour commander le changement de position spatiale de l'élément d'imagerie (1) et/ou du groupe de lentilles d'imagerie (3) de façon à réaliser le balayage de voxels des plans tangents bidimensionnels (4). Grâce à l'introduction d'un plan multi-focal et d'un mode de balayage périodique de Bragg, une fonction d'affichage d'imagerie/de projection en 3D avec une résolution ultra-élevée et une fréquence de trame ultra-rapide peut être réalisée de manière stable, ce qui permet d'améliorer l'expérience de l'utilisateur.



**CLAIM 1.** A Bragg periodical scanning holographic imager, comprising: An imaging element (1) for providing a plurality of non-coincident or mutually parallel equivalent image planes (2), the number of said equivalent image planes (2) being  $n$ ; An imaging mirror set (3) having a position corresponding to an equivalent image plane (2) for optical imaging and formed with a plurality of two-dimensional cut planes (4); A focal depth scanning mechanism (5) is connected to the imaging element (1) and/or the imaging mirror group (3), respectively, for controlling the spatial position variation of the imaging element (1) and/or the imaging mirror group (3) to achieve a bulk scan of the two-dimensional tangential plane (4).

N8203

WO2021221742

Priority Date: 01/05/2020

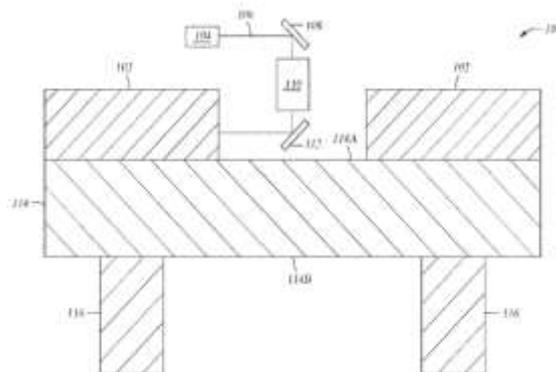
APPLIED MATERIALS

### MULTIPLEX HOLOGRAM GENERATING SYSTEM

The present disclosure provides an apparatus and method for fabricating optical devices. The apparatus includes a support table having process chambers and a laser used to direct a beam along a propagation path to each of the process chambers. A central mirror is centrally disposed among the process chambers and is rotatable to reflect the beam to each of the process chambers for processing. A beam splitter is disposed within each of process chambers, each beam splitter is used to receive beams from the central mirror and emits a first beam in a first direction and a second beam in a second direction. A first mirror directs the first beam to a device and a second mirror directs the second beam to the device. Each of the first and second mirror is rotatable in at least three axes.

### SYSTÈME DE GÉNÉRATION D'HOLOGRAMME MULTIPLEX

La présente invention concerne un appareil et un procédé de fabrication de dispositifs optiques. L'appareil comprend une table de support ayant des chambres de traitement et un laser servant à diriger un faisceau le long d'un trajet de propagation vers chacune des chambres de traitement. Un miroir central est disposé de façon centrale parmi les chambres de traitement et peut tourner pour réfléchir le faisceau vers chacune des chambres de traitement pour le traitement. Un diviseur de faisceau est disposé à l'intérieur de chacune des chambres de traitement, chaque diviseur de faisceau sert à recevoir des faisceaux provenant du miroir central et émet un premier faisceau dans une première direction et un second faisceau dans une seconde direction. Un premier miroir dirige le premier faisceau vers un dispositif et un second miroir dirige le second faisceau vers le dispositif. Chacun des premier et second miroirs peut tourner selon au moins trois axes.



N8204

WO2021216747

Priority Date: 21/04/2020

MIT - MASSACHUSETTS INSTITUTE OF TECHNOLOGY

### REAL-TIME PHOTOREALISTIC 3D HOLOGRAPHY WITH DEEP NEURAL NETWORKS

A method for producing a hologram representative of a subject three-dimensional scene includes receiving and storing input digital data characterizing a first image of the subject three-dimensional scene. The method further includes processing the data in a neural network that has been trained to transform the input digital data into a holographic representation of the subject three-dimensional scene, the representation containing phase information characterizing depth and parallax of the scene. The method also includes providing an output of the holographic representation of the subject three-dimensional scene.

### HOLOGRAPHIE 3D PHOTORÉALISTE EN TEMPS RÉEL AVEC RÉSEAUX NEURONAUX PROFONDS

La présente invention concerne un procédé de production d'un hologramme représentatif d'une scène tridimensionnelle d'intérêt incluant la réception et le stockage de données numériques d'entrée caractérisant une première image de la scène tridimensionnelle d'intérêt. Le procédé inclut en outre le traitement des données dans un réseau neuronal qui a été entraîné pour transformer les données numériques d'entrée en une représentation holographique de la scène tridimensionnelle d'intérêt, la représentation contenant des informations de phase caractérisant la profondeur et la parallaxe de la scène. Le procédé consiste également à fournir une sortie de la représentation holographique de la scène tridimensionnelle d'intérêt.

**CLAIM 1.** A method for producing a hologram representative of a subject three-dimensional scene, the method comprising: receiving and storing input digital data characterizing a first image of the subject three-dimensional scene; processing the data in a neural network that has been trained to transform the input digital data into a holographic representation of the subject three-dimensional scene, the representation containing phase information characterizing depth and parallax of the scene; and providing an output of the holographic representation of the subject three-dimensional scene.

N8216

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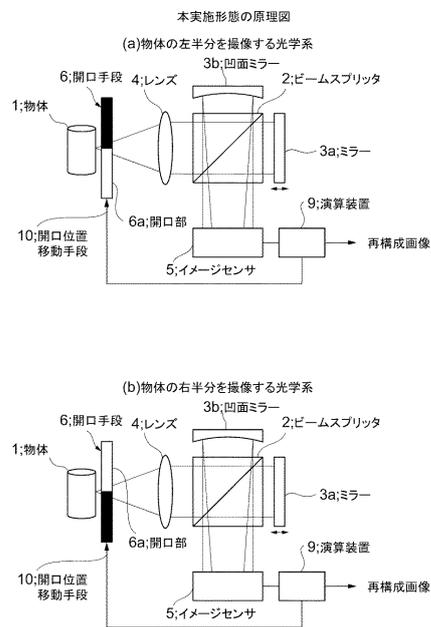
Priority Date: 22/04/2020

JAPAN BROADCASTING

### INCOHERENT DIGITAL HOLOGRAM IMAGING APPARATUS AND IMAGING METHOD THEREOF

TOPIC: To provide an incoherent digital hologram imaging apparatus capable of improving SNR of a reconstructed image and a method for imaging the incoherent digital hologram imaging apparatus.

INVENTION: a beamsplitter (2) that splits and resynthesizes incoherent light waves from an object (1); two mirrors (3 a, 3 b) that modulate a radius of curvature of a wavefront of one of the first split beams and the second split beams obtained by splitting and impart a relative spherical phase distribution to the wavefronts of the light waves; An image sensor 5 that captures an image of interference fringes obtained by interference between the two split beams multiplexed by the beam splitter 2; an opening means 6 that guides light of a portion of the object 1 in the direction of the beam splitter 2; Opening position moving means 10 that moves the opening portion 6 a of the opening means 6; and computing means 9 that obtains a reconstructed image of the entire object based on a plurality of holograms formed by interference fringes obtained by the image sensor 5 each time the opening position moving means 10 moves the opening portion 6 a of the opening means 6.



N8222

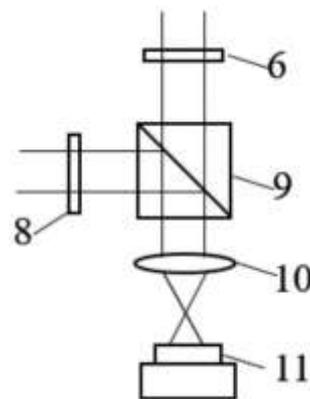
CN214747811U

Priority Date: 18/03/2021

NORTHWESTERN POLYTECHNICAL UNIVERSITY

### LIGHT PATH OF COMPOSITE HOLOGRAM WITH TWO GROUPS OF ORTHOGONAL INTERFERENCE FRINGES

The invention relates to a light path of a compound hologram of two groups of orthogonal interference fringes, wherein one beam of collimated parallel light is modulated by a sample to be used as an object beam, and the other beam of collimated parallel light coherent with the sample is converted into periodic polarized structure light to be used as a reference beam after passing through a polarization grating; the object beam and the reference beam are combined by a depolarization beam splitter prism, and simultaneously, the plane of the included angle of the two beams is parallel to the grid line of the polarization grating and generates off-axis interference; the lens images the sample and the polarization grating on the recording surface of the image acquisition device to obtain a composite hologram. The light path related by the method has the advantages of simple structure, easy adjustment, high real-time measurement precision and the like, is suitable for dynamically measuring the three-dimensional complete information of any light beam and representing optical polarization samples and elements, and is also suitable for dynamic measurement and real-time monitoring of other complex physical systems.



**CLAIM 1.** An optical path of a composite hologram of two sets of orthogonal interference fringes, characterized in that the sample (6) is a transmission sample; the light path comprises a polarization grating (8), a second depolarization beam splitter prism (9), a lens (10) and an image acquisition device (11); one laser beam passes through the sample (6) and then is used as an object beam, and the other beam of the collimated parallel light coherent with the laser beam passes through the polarization grating (8) and then is converted into periodic polarization structure light which is used as a reference beam; the object beam and the reference beam are subjected to off-axis interference after being combined by a second depolarization beam splitter prism (9), and the plane of the included angle of the two beams is parallel to the grid line of the polarization grating (8); the lens (10) images the sample (6) and the polarization grating (8) on the recording surface of the image acquisition device (11) to obtain a composite hologram.

N8263

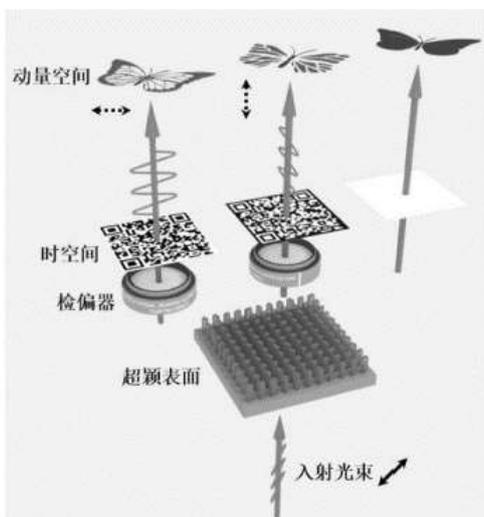
CN113591357

Priority Date: 01/04/2021

BEIJING UNIVERSITY OF TECHNOLOGY

### METHOD FOR SIMULTANEOUSLY STORING GRAY SCALE AND VECTOR HOLOGRAPHIC IMAGE BASED ON MEDIUM METASURFACE

The invention discloses a simultaneous storage method of gray scale and vector holographic images based on a medium metasurface, belonging to the technical field of micro-nano optics, image storage and holographic imaging application. The metasurface designed by the invention is composed of medium nano-pillar arrays with rectangular cross sections, different sizes and different azimuth angles. The Jones matrix of each unit is customized by combining the polarization rotation matrix with the birefringence characteristics of the metamaterial surface of the medium, so that the phase and polarization of the emergent light beam can be simultaneously regulated and controlled. Under the irradiation of incident light with a specific polarization state, the function of respectively storing a gray-scale image and a vector holographic image in a time space and a momentum space can be realized. The method provided by the invention is beneficial to improving the information capacity of the hologram, and can be applied to the application occasions of vector holography, dynamic holographic display, information storage, optical anti-counterfeiting, optical encryption and the like.



**CLAIM 1.** The simultaneous storage method of the gray scale and vector holographic image based on the medium metasurface is characterized in that: the method comprises the following steps: the method comprises the following steps: the metasurface for realizing simultaneous storage of gray scale and vector holographic images is composed of medium nano-pillar arrays with rectangular cross sections and different geometric dimensions and different azimuth angles; the Jones matrix of each unit is customized by combining the polarization rotation matrix with the birefringence characteristics of the metamaterial surface of the medium, so that the phase and polarization of the emergent light beam can be simultaneously regulated and controlled; the geometric dimensions comprise the length  $L$  of the long axis of the nano column, the length  $W$  of the short axis of the nano column, the height  $H$  of the nano column and the period length  $P$  of the metamaterial surface unit; step two: selecting gray scale and holographic image to be stored, and obtaining the holographic image by using an improved GS algorithm; according to the obtained hologram and the polarization state distribution corresponding to the gray level image, encoding and determining the geometric dimension and the azimuth angle of the nano-pillar unit so as to generate a processing file of a corresponding medium metamaterial surface structure; step three: preparing the transmission type medium metasurface by utilizing the processing file of the medium metasurface structure obtained in the step two and a micro-nano processing method of electron beam etching; the function of respectively storing gray images and vector holographic images in a time space and a momentum space is realized by simultaneously regulating and controlling the phase and polarization state distribution of the emergent light beam by the metasurface.

N8265

CN113589670

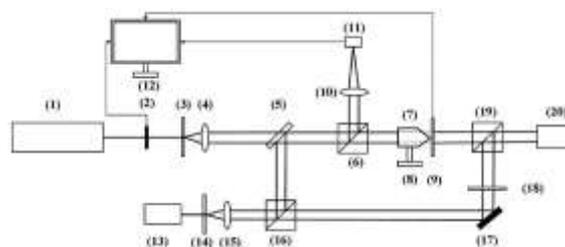
Priority Date: 29/07/2021

KUNMING UNIVERSITY OF SCIENCE & TECHNOLOGY

### METHOD FOR RECORDING AND DISPLAYING PHOTOPOLYMER BASED ON COMPUTATIONAL HOLOGRAPHIC SURFACE ELEMENT ALGORITHM

The invention discloses a method for recording and displaying a photopolymer based on a computer holographic surface element algorithm, which comprises the following steps of S1: after one beam of light emitted by the femtosecond pulse laser is expanded and collimated, the pulse laser is focused on the photopolymer material through an objective lens, so that the refractive index of the photopolymer is changed, the position of the photopolymer is controlled by controlling the translation stage, and the three-dimensional recording of the two materials is realized; s2: calculating the complex amplitude distribution of the object by a calculation holographic surface element algorithm, coding the two materials, controlling parameters such as exposure time and the like by a computer, and writing the photopolymer into a kinoform of the calculated code by femtosecond laser; s3: after recording, taking down the second beam splitter and an objective lens in front of the recording position, and simultaneously irradiating two inscribed photopolymer merging beams by using plane waves to obtain a reproduced image of the three-dimensional object; the recording and displaying of the three-dimensional object can be realized.

**CLAIM 1.** A method for recording and displaying a photopolymer based on a computational holographic binning algorithm is characterized in that, s1: after one beam of light emitted by the femtosecond pulse laser is expanded and collimated, the pulse laser is focused on the photopolymer material through an objective lens, so that the refractive index of the photopolymer is changed, the position of the photopolymer is controlled by controlling the translation stage, and the three-dimensional recording of the two materials is realized; s2: calculating the complex amplitude distribution of the object by a calculation holographic surface element algorithm, coding the two materials, controlling parameters such as exposure time and the like by a computer, and writing the photopolymer into a kinoform of the calculated code by femtosecond laser; s3: after recording, the second beam splitter and the objective lens in front of the recording position are taken down, and the two inscribed photopolymer beams are simultaneously irradiated by plane waves and combined to obtain a reproduced image of the three-dimensional object.



N8268

CN113568295

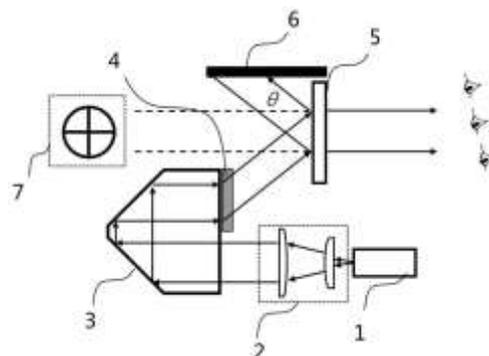
Priority Date: 27/07/2021

SANSUI OPTICAL TECHNOLOGY SUZHOU

### VOLUME HOLOGRAM, PREPARATION METHOD AND APPLICATION IN AIMING DEVICE

The invention mainly relates to a volume hologram, a preparation method and application in a sighting device, and the volume hologram with a smooth surface is prepared by using photo-thermal conversion glass, because photo-thermal conversion glass material has excellent temperature stability, the volume hologram has high data redundancy characteristic and high angle selectivity, the problems of high cost, insufficient definition and poor environmental stability in the holographic gun sighting process can be well solved.

**CLAIM 1.** The preparation method of the volume hologram is characterized by comprising the preparation of photothermal conversion glass and the preparation of volume grating; the preparation of the photothermal conversion glass comprises the following steps, the burdening process comprises the following steps: weighing, grinding and stirring glass raw materials according to a specific ratio to fully mix the glass raw materials, wherein the glass raw materials and the ratio thereof are SiO<sub>2</sub>,5060%; B<sub>2</sub>O<sub>3</sub>,26%; Al<sub>2</sub>O<sub>3</sub>,512%; Li<sub>2</sub>O<sub>6</sub>,20%; ZrO<sub>2</sub>+TiO<sub>2</sub>,25%; AgCl,0.0010.5%; Na<sub>2</sub>O+K<sub>2</sub>O,115%; InF<sub>3</sub>,310%; The glass smelting process comprises the following steps: adding the ingredient powder into a quartz crucible in batches to melt the mixture into glassy clinker; clarification and homogenization process: adding the glassy clinker into a platinum crucible and stirring to clarify and homogenize the glass; the annealing process comprises the following steps: pouring the homogenized glass material into a grinding tool, and putting the grinding tool into a rocking furnace for annealing; preparing the volume grating; and cutting and polishing the prepared photo-thermal conversion glass into a body holographic recording glass sheet with the thickness required by the body grating, and then preparing the body grating.



N8270

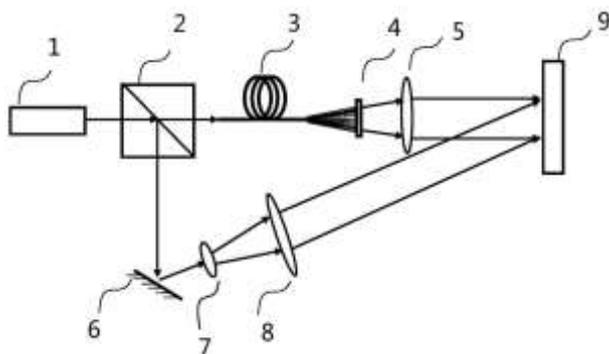
CN113568085

Priority Date: 27/07/2021

SANSUI OPTICAL TECHNOLOGY SUZHOU

### HOLOGRAPHIC PLATE AND PROCESSING DEVICE AND PROCESSING METHOD THEREOF AND APPLICATION OF HOLOGRAPHIC PLATE IN AIMING DEVICE

The invention relates to a holographic plate and a processing method thereof. A processing device comprises a laser exposure light source, a beam splitter, a light-transmitting optical fiber bundle, a reticle, a first collimator, a reflector, a beam expander, a second collimator and a holographic plate; laser beams emitted by the laser exposure light source are divided into object light and reference light through the light splitter; a light transmission optical fiber bundle, a reticle, a first collimator and a holographic dry plate are sequentially arranged on a propagation path of the object light; the object light vertically irradiates the holographic dry plate after passing through the light-transmitting optical fiber bundle and the reticle in sequence; a reflector, a beam expander and a second collimator are sequentially arranged on the propagation path of the reference light; the reference light reaches the beam expander after being reflected by the reflector, and is irradiated on the holographic dry plate under the action of the second collimator after being expanded by the beam expander. The invention also provides an application of the holographic plate in a transmission type aiming device. The invention adopts the mode of directional light guide of the optical fiber bundle to greatly improve the exposure efficiency and improve the pattern definition of the holographic plate.



**CLAIM 1.** A processing device of a holographic plate is characterized by comprising a laser exposure light source, a beam splitter, a light transmitting optical fiber bundle, a reticle, a first collimator, a reflector, a beam expander, a second collimator and a holographic plate; the laser beam emitted by the laser exposure light source is divided into object light and reference light by the light splitter; a light transmission optical fiber bundle, a reticle, a first collimator and a holographic dry plate are sequentially arranged on a propagation path where the object light is located; the reticle is placed at a focus of the first collimator; a reflector, a beam expander, a second collimator and a holographic dry plate are sequentially arranged on a propagation path where the reference light is located; the holographic dry plate on the propagation path of the object light and the holographic dry plate on the propagation path of the reference light are the same holographic dry plate.

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

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

**N8253****CN113634831***Priority Date: 11/05/2020***GUANGQUN LASER SCIENCE & TEC****SEAMLESS HOLOGRAM PATTERN TRANSFER METHOD**

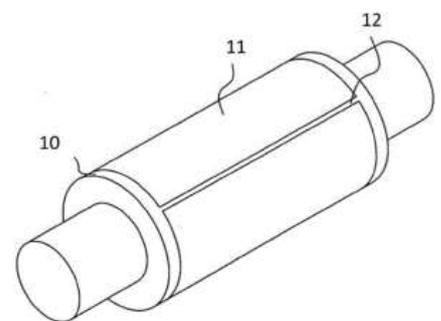
A seamless hologram pattern transfer method for forming a pattern on a metal roller, comprising the steps of: forming a photoresist layer on the metal roller; performing a photolithography process on the photoresist layer to pattern the photoresist layer into a patterned photoresist layer; applying an electric field to the metal roller, and performing an anisotropic etching step by using the patterned photoresist layer as a mask to etch the pattern on the metal roller; and removing the patterned photoresist layer. By using the pattern transfer method of the invention, the yield and the cost can be optimized.

**CLAIM 1.** A seamless hologram pattern transfer method for forming a pattern on a metal roller, comprising the steps of: forming a photoresist layer on the metal roller; performing a photolithography process on the photoresist layer to pattern the photoresist layer into a patterned photoresist layer; applying an electric field to the metal roller, and performing an anisotropic etching step by using the patterned photoresist layer as a mask to etch the pattern on the metal roller; and removing the patterned photoresist layer.

**N8255****CN113625526***Priority Date: 08/05/2020***GUANGQUN LASER SCIENCE & TEC****SEAMLESS HOLOGRAM PATTERN TRANSFER METHOD**

A seamless hologram pattern transfer method comprises the following steps: providing a cylindrical roller, wherein the cylindrical roller is provided with a first photosensitive adhesive layer; performing a photolithography process on the first photosensitive adhesive layer by using a default pattern and light with a first wavelength to form a first patterned photosensitive adhesive layer; providing a mother set carrier; and performing a film-to-film patterning process to transfer the pattern of the first patterned photosensitive adhesive layer to the master carrier. The transfer printing process of the photosensitive glue can achieve the optimization of yield and cost.

**CLAIM 1.** A seamless hologram pattern transfer method is characterized in that the seamless hologram pattern transfer method comprises the following steps: providing a cylindrical roller, wherein the cylindrical roller is provided with a first photosensitive adhesive layer; performing a photolithography process on the first photosensitive adhesive layer by using a default pattern and light with a first wavelength to form a first patterned photosensitive adhesive layer; providing a mother set carrier; and performing a film-to-film patterning process to transfer the pattern of the first patterned photoresist layer to the master carrier, comprising: coating a second photosensitive adhesive layer on the master carrier; imprinting the first patterned photosensitive adhesive layer on the second photosensitive adhesive layer; and curing the imprinted second photosensitive adhesive layer by using light with a second wavelength to pattern the second photosensitive adhesive layer into a second patterned photosensitive adhesive layer, wherein the first wavelength is different from the second wavelength.



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

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

**N8207**

**RU2758151**

Priority Date: 02/03/2021

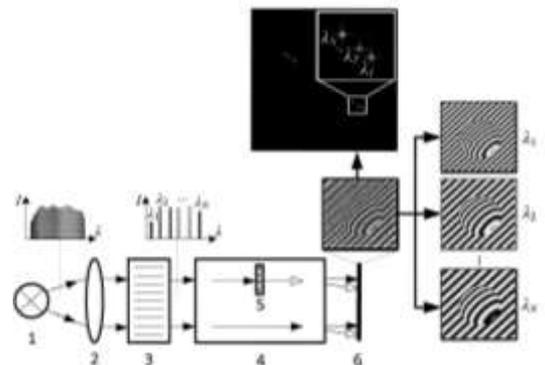
**FEDERALNOE GOSUDARSTVENNOE BYUDZHETNOE  
UCHREZHDIENIE NAUKI NAUCHNO TEKHNOLOGICHESKIJ TSENTR  
UNIKALNOGO PRIBOROSTROENIYA ROSSIJSKOJ AKADEMII NAUK**

**METHOD FOR SINGLE-FRAME REGISTRATION OF SEVERAL SPECTRAL DIGITAL HOLOGRAPHIC IMAGES**

FIELD: optical digital holography.

SUBSTANCE: invention relates to optical digital holography technologies and is intended for recording spectral digital holographic images. The method for recording phase images of micro-objects in arbitrary narrow spectral intervals consists in the formation of a collimated light beam of broadband radiation, the isolation of a set of several wavelengths from it using an acousto-optic polychromator filter, the direction of filtered radiation to the input of a two-beam interferometer, in one of the channels of which the object under study is located, the reduction of wave fronts from the object and reference arms of the interferometer, the registration of interference of these fronts by a monochrome matrix radiation receiver. In this case, the integral intensities of the transmission windows of the acousto-optic filter and their frequency positions are selected so that the Fourier images of interferograms formed by radiation from different spectral transmission windows are close in intensity and spaced by position in the Fourier plane so that they can be isolated separately. By digitally processing each of them, the spatial distribution of the phase delay introduced by the object under study is calculated, and, as a consequence, the spectral dependence of this value at each point of the object.

EFFECT: increased speed of data collection and reduced error of restoring the amplitude-phase structure of the studied objects due to the joint processing of several spectral holograms.



**N8208**

**RU2758003**

Priority Date: 13/01/2021

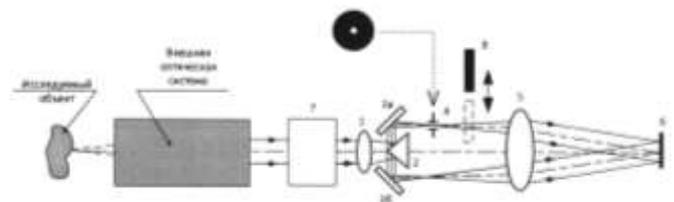
**FEDERALNOE GOSUDARSTVENNOE BYUDZHETNOE  
UCHREZHDIENIE NAUKI NAUCHNO TEKHNOLOGICHESKIJ TSENTR  
UNIKALNOGO PRIBOROSTROENIYA ROSSIJSKOJ AKADEMII NAUK**

**METHOD FOR REGISTRATION OF HOLOGRAPHIC IMAGES OF OBJECTS**

FIELD: digital holography technologies.

SUBSTANCE: invention relates to digital holography technologies and is intended to measure the spatial distribution of the phase delay introduced by the test object into a light wave by forming two interfering light beams from one light beam reflected from the test object or passing through it. The method for registering holographic images of objects consists in the fact that the object under study is illuminated with narrow-band linearly polarized radiation; a light beam is formed from the radiation reflected and scattered by the object under study, which transfers its optical image; using a triangular mirror reflector, this beam is spatially divided into two, one of which is spatially filtered using a pinhole diaphragm; using flat mirrors, the separated beams are directed along identical paths and converge them on a matrix radiation detector; the holographic image formed by the combined beams is recorded by the matrix radiation detector.

EFFECT: ensuring the possibility of adjusting the convergence angle of interfering beams, registration of topographic images of an object in arbitrary narrow spectral intervals, the possibility of recording spectral and spectral interference images of the same area of the object.





N8225

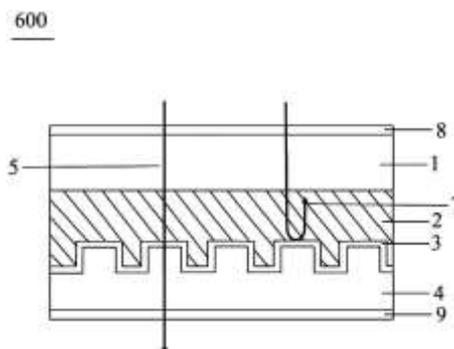
CN214671804U

Priority Date: 17/06/2021

## GUANGDONG ZIJING INFORMATION STORAGE TECHNOLOGY

### TRANSMISSION TYPE HOLOGRAPHIC STORAGE MEDIUM AND DEVICE

The utility model provides a transmission-type holographic storage medium and device, transmission-type holographic storage medium, including first base plate, second base plate, record bed and two to the chromatograph, the record bed is used for reading and writing the hologram that the light recording carried data information, and concave-convex structure is carved with on the surface of one side of second base plate orientation record bed and is used for servo beam location reading and writing position, realizes servo cable rail function simultaneously. The dichroic layer can reflect the servo beam and transmit the read-write light, and the thickness of the dichroic layer is between 600nm and 760 nm. According to the utility model discloses a storage medium is difficult for receiving external environment's influence, and is more stable for the holographic storage medium of traditional reflection type, and does not have the interval design between first base plate, second base plate, record level and the two to the chromatograph, need not design the record level respectively in the storage medium both sides just can realize two-sided reading and writing, and processing technology is simple.



**CLAIM 1.** A transmission type holographic storage medium is characterized by comprising a first substrate, a second substrate, a recording layer and a dichroic layer, wherein the recording layer is used for reading and writing a hologram carrying data information, a concave-convex structure is engraved on the surface of one side, facing the recording layer, of the second substrate and used for positioning a reading and writing position through a servo light beam and realizing a servo track seeking function, the dichroic layer can reflect the servo light beam and transmit the reading and writing light, and the thickness of the dichroic layer is 600nm-760 nm.

N8239

CN214545233U

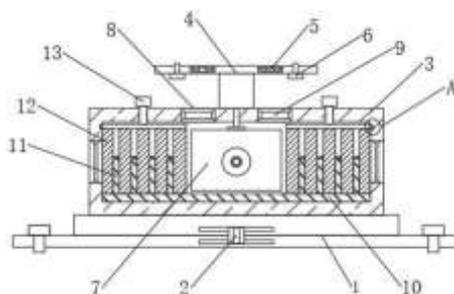
Priority Date: 27/01/2021

## ANHUI CHAOCUN TECHNOLOGY

### LASER EMITTING DEVICE FOR HOLOGRAM IN DISC TYPE HOLOGRAPHIC STORAGE MEDIUM

The application discloses a laser emission device of a hologram in a disc-type holographic storage medium, which belongs to the field of laser emission devices and comprises a fixed base, wherein the upper end of the fixed base is fixedly connected with a dust cover, a laser emitter is arranged in the dust cover, the upper end of the dust cover is fixedly connected with an upper connecting plate, the upper connecting plate is provided with a pair of fans, the lower end of the upper connecting plate is fixedly connected with the upper end of the laser emitter, the lower inner wall of the dust cover is fixedly connected with a heat conducting plate, the upper end of the heat conducting plate is fixedly connected with a plurality of uniformly distributed radiating fins, a pair of connecting plates are arranged in the dust cover, the lower ends of the connecting plates are fixedly connected with cleaning cotton corresponding to the radiating fins, the upper ends of the connecting plates are fixedly connected with a shifting block, the upper end of the dust cover is provided with a sliding hole matched with the shifting block, and the scheme can realize the increase of the radiating performance of the laser emission device, the accumulation of dust is reduced, thereby increasing the service life.

**CLAIM 1.** Laser emitting device for holograms in disc-like holographic storage media, comprising a stationary base (1), characterized in that: the upper end of the fixed base (1) is fixedly connected with a dust cover (3), a laser emitter (7) is arranged in the dust cover (3), the upper end of the dust cover (3) is fixedly connected with an upper connecting plate (4), a pair of fans (5) is arranged on the upper connecting plate (4), the lower end of the upper connecting plate (4) is fixedly connected with the upper end of the laser emitter (7), the lower inner wall of the dust cover (3) is fixedly connected with a heat conducting plate (10), the upper end of the heat conducting plate (10) is fixedly connected with a plurality of radiating fins (11) which are uniformly distributed, a pair of connecting plates (14) is arranged in the dust cover (3), the lower ends of the connecting plates (14) are fixedly connected with cleaning cotton (12) corresponding to the radiating fins (11), the upper end of the connecting plate (14) is fixedly connected with a shifting block (13), and the upper end of the dust cover (3) is provided with a sliding hole (17) matched with the shifting block (13).



N8250

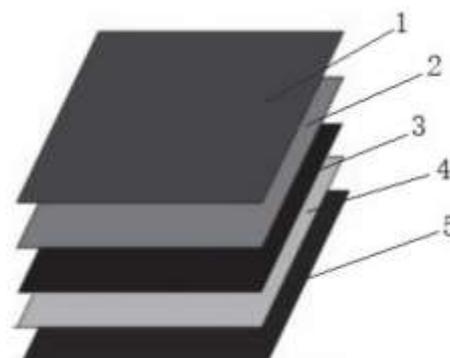
CN113652107

Priority Date: 06/07/2021

HEBEI ZHISHENG GREEN TECHNOLOGY

### ALUMINUM-CONVERSION HOLOGRAPHIC PHOTOCUREABLE COATING AND PREPARATION METHOD AND APPLICATION THEREOF

The invention belongs to the field of coatings, and discloses an aluminum-conversion holographic photocurable coating which comprises the following raw materials in percentage by mass: 10-15% of oligomer polyurethane resin, 10-15% of oligomer polypropylene ester resin, 20-30% of photocuring silicon-containing organic-inorganic hybrid, 20-60% of reactive diluent and 0.1-0.3% of flattening agent. The PET mother film can be recycled, aluminum plating can be repeatedly performed after one-time die pressing, the use of plastic films is reduced, resource consumption and environmental pollution are reduced, the process is cold die pressing, the temperature of the film surface is 55-60 °C, the deformation of the PET film cannot be caused, the positioning precision is accurate, and only the aluminum plating layer is transferred by the adhesive, so that the material is saved; finally, the coating can realize the information copying and displaying of different (1-10 μm) depths, and is formed in one step, the production speed can reach more than 100m/min, and the production efficiency is greatly improved.



**CLAIM 1.** The aluminum-conversion holographic photocurable coating is characterized by comprising the following raw materials in percentage by mass:

N8266

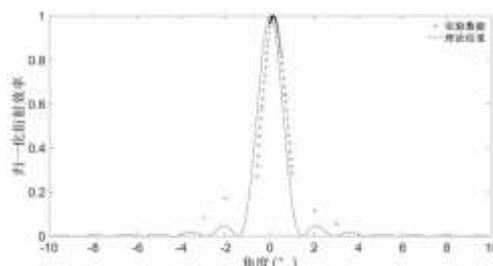
CN113589648

Priority Date: 14/07/2021

UNIVERSITY OF SHANGHAI FOR SCIENCE & TECHNOLOGY

### DOUBLE-MONOMER HOLOGRAPHIC PHOTOPOLYMER AND METHOD FOR PREPARING HOLOGRAPHIC RECORDING FILM MATERIAL FROM SAME

The invention relates to a double-monomer holographic photopolymer and a method for preparing a holographic recording film material from the same, wherein the double-monomer holographic photopolymer material is prepared by taking EPIKOTE 828EL epoxy resin as a polymer matrix and trimethylolpropane triacrylate (TMPTA) as a prepolymer monomer, and mixing the prepolymer monomer with a photoinitiator, a co-initiator, a cross-linking agent and the like under certain conditions. The material can improve the diffraction efficiency of the obtained holographic grating to 93.5%, and the modulation degree of the refractive index is as high as  $3.07 \times 10^{-3}$ . The preparation method of the invention adopts a planar process, can be used for large-scale production, does not need solvent wet treatment during preparation, and is easy to form a thick film. The double-monomer holographic photopolymer holographic material prepared by the technology has good holographic recording and high resolution performance, and is better than that of the prior art. Low shrinkage and good thermal stability, and has good application prospect in permanent storage of holograms and big data.



**CLAIM 1.** The double-monomer holographic photopolymer is characterized by comprising the following raw materials in percentage by mass: photoinitiator (2): 0.7 percent of the total weight of the mixture, a co-initiator: 1.15 percent of the total weight of the mixture, a crosslinking agent: 15.2 percent of the total weight of the mixture, prepolymer monomer: 36.84 to 50.66 percent of the total weight of the mixture, polymer matrix: 32.24 to 46.06 percent.

N8275

CN113527929

Priority Date: 20/04/2020

HANGZHOU GUANGLI TECHNOLOGY

### PHOTOPOLYMER COMPOSITION AND OPTICAL GRATING

The present invention relates to a photopolymer composition and a grating, wherein the photopolymer composition comprises: a monomer, a crosslinker, a film-forming component, a photoinitiator system, and a solvent; the monomer comprises a structure shown in the following general formula (I), wherein: q, which is the same or different at each occurrence, independently represents a group comprising an epoxy group or a (meth) acryloyl group; n is the same or different at each occurrence and represents an integer of 0-3, and the total number of n is not 0; x, which is the same or different at each occurrence, independently represents a heteroatom; y represents a heteroatom or a hydrocarbyl group; ar, which is the same or different at each occurrence, independently represents an aryl-containing group, and the content of the monomer is 8 to 25% by mass based on the total mass of the composition.



**CLAIM 1.** A photopolymer composition for a diffraction grating, comprising: a monomer, a crosslinker, a film-forming component, a photoinitiator system, and a solvent; the monomer comprises a structure shown in the following general formula (I), wherein: q, for each occurrence, is the same or different and independently represents a group comprising an epoxy group or a (meth) acryloyl group, n, for each occurrence, is the same or different and independently represents an integer of 0 to 3, and the total number of n is not 0; x, which is the same or different at each occurrence, independently represents a heteroatom; y represents a heteroatom or a hydrocarbyl group; ar, which is the same or different at each occurrence, independently represents an aryl-containing group, and the content of the monomer is 8-25% by mass of the total composition.

N8276

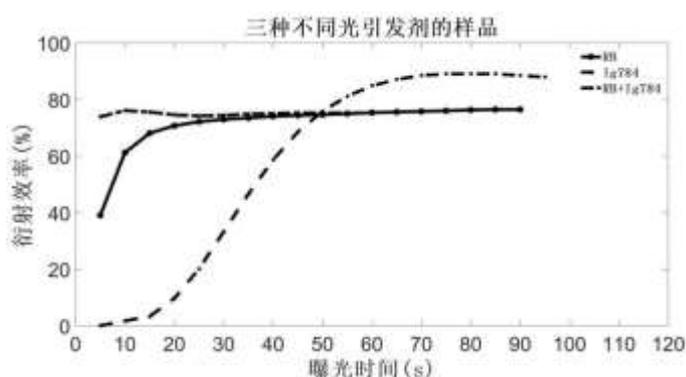
CN113527594

Priority Date: 14/07/2021

UNIVERSITY OF SHANGHAI FOR SCIENCE & TECHNOLOGY

### COMPOSITE INITIATOR HOLOGRAPHIC PHOTOPOLYMER AND METHOD FOR PREPARING HOLOGRAPHIC RECORDING FILM BY USING SAME

The invention relates to a composite initiator holographic photopolymer and a method for preparing a holographic recording film by using the same, wherein a polymerization substrate and a prepolymer monomer are mixed under a dark environment to obtain an initial solution, a cross-linking agent, a co-initiator, a green sensitive photoinitiator and a blue sensitive photoinitiator are added into the initial solution, and then the solution is stirred by a glass rod for 10min, after the solution is uniformly clarified and sealed by tinfoil, putting the solution into an ultrasonic cleaning machine for uniformly mixing and heating for 2 hours, placing the solution in a dark and low-temperature environment, standing the solution for 2 to 24 hours, injecting the material into a prepared packaging box by using an injector, and placing the packaging box in a holographic coherent light path of a 532nm wavelength solid laser for exposure, wherein the diffraction efficiency is up to 79.3 percent, and the refractive index modulation degree is up to  $2.57 \times 10^{-3}$ . The holographic grating has good holographic recording, high resolution performance, low shrinkage rate, good thermal stability and good storage potential.



**CLAIM 1.** The holographic photopolymer is characterized by comprising the following raw materials in percentage by mass: the polymer matrix, the prepolymer monomer, the cross-linking agent, the co-initiator, the green sensitive photoinitiator and the blue sensitive photoinitiator are respectively 40-50%, 9-11%, 1-2%, 0.5-0.9% and 2-3%.

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

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

**N8205**

**WO2021214154**

*Priority Date: 21/04/2020*

**REALFICTION**

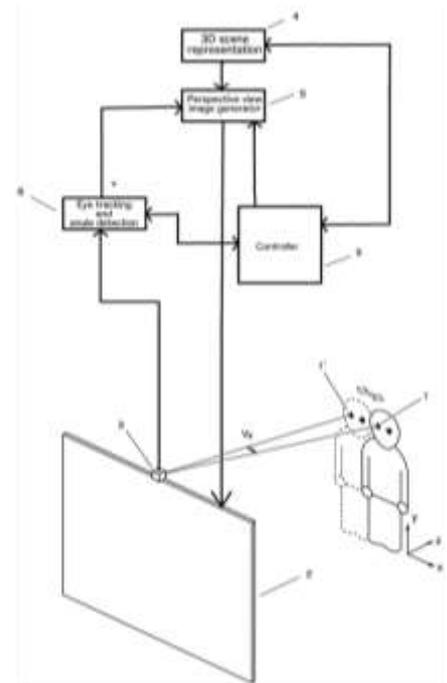
**A METHOD FOR PROVIDING A HOLOGRAPHIC EXPERIENCE FROM A 3D MOVIE**

The present invention relates to a method for micro movement perspective correction for a 3D display system. The method comprises providing the 3D display system including a display screen for displaying a 3D image to an observer observing said 3D image from an observation angle, where the observation angle is defined as an angle between the line of sight between an eye of said observer and a point at said display screen. The 3D image is generated from a data file having a 3D scene representation including an original camera angle for displaying a right eye image and left eye image. A controller and a tracking system is provided for tracking the position of said observer and determining a change in observation angle. A first offset 3D image and a second offset 3D image is synthesized from the data file and as a function of the change in the observation angle, such that the original camera angle is perceived by said observer as rotated to a first and second synthetic camera angle, and generating a 3D image and displaying it on the display screen.

**PROCÉDÉ POUR FOURNIR UNE EXPÉRIENCE HOLOGRAPHIQUE À PARTIR D'UN FILM 3D**

La présente invention concerne un procédé de correction de perspective de micro-mouvement pour un système d'affichage 3D. Le procédé comprend la fourniture du système d'affichage 3D comprenant un écran d'affichage pour afficher une image 3D à un observateur observant ladite image 3D à partir d'un angle d'observation, l'angle d'observation étant défini comme un angle entre la ligne de visée entre un œil dudit observateur et un point au niveau dudit écran d'affichage. L'image 3D est générée à partir d'un fichier de données ayant une représentation de scène 3D comprenant un angle de caméra d'origine pour afficher une image d'œil droit et une image d'œil gauche. Un contrôleur et un système de suivi sont prévus pour suivre la position dudit observateur et déterminer un changement d'angle d'observation. Une première image 3D décalée et une seconde image 3D décalée sont synthétisées à partir du fichier de données et en fonction du changement de l'angle d'observation, de sorte que l'angle de caméra d'origine soit perçu par ledit observateur comme étant tourné selon un premier et un second angle de caméra synthétique et pour générer une image 3D et l'afficher sur l'écran d'affichage.

**CLAIM 1.** A method for a display system for updating a perspective view of a first set of images, comprising: - providing said display system including a display screen for displaying said first set of images to said observer observing said display from an observation angle, - providing data including said first set of images or a light-field data set or a 3D model for rendering said first set of images, said first set of images depicting a scene from a first perspective, - providing a controller and a tracking system for tracking or detecting an eye position of said observer, - determining said observation angle by means of said controller and tracking system, - generating and displaying a second set of images including a first offset image as a function of said observation angle when said observer having moved eye position, each respective image of said second set of images depicting said scene from a respective perspective, each of said respective perspectives having an offset constituting an angle with respect to said first perspective, - reducing said offset as a function of time such that a respective perspective is moved closer to said first perspective with time, or - setting said offset to zero at the time of a scene change.



N8209

KR20210133397

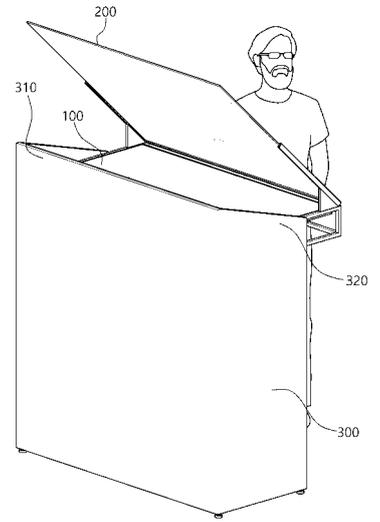
Priority Date: 29/04/2020

DILUSSION

**HOLOGRAM STIFFENING DEVICE**

The present invention relates to a hologram rigid apparatus, comprising: a display panel unit outputting an image of a rigid person, a hologram screen panel unit inclined to face a screen of the display panel unit to convert the image of the rigid person output to the display panel unit into a hologram image, Wherein the display panel unit and the hologram screen panel unit are mounted on the display panel unit and the hologram screen panel unit to position a position of the hologram screen panel unit to a height at which audience can be seen, so as to provide an image of the audience as a hologram image to the audience to cause interest in audience due to a stereoscopic sense due to the hologram image, and efficiently transmit education, tremor, playing, and the like by the audience to the audience.

**CLAIM 1.** An image processing apparatus comprising: a display panel unit configured to output an image of a speaker; a hologram screen panel unit configured to be inclined to face a screen of the display panel unit to convert the image of the speaker output to the display panel unit into a hologram image; And a strong portion on which the display panel unit and the hologram screen panel unit are mounted to position a position of the hologram screen panel unit to a height at which hearing can be seen.



N8210

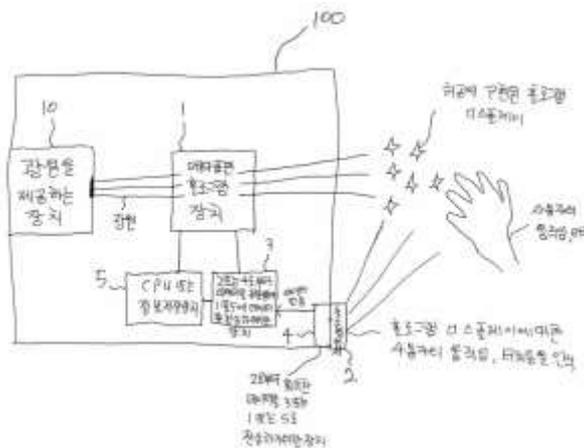
KR20210129539

Priority Date: 20/04/2020

JANG, MIN-SOO

**HOLOGRAM DISPLAY CONTROL METHOD USING MICROSENSOR**

Technical field: The present invention relates to a method for controlling a holographic display implemented in the air using a micro-sensor. The object of the present invention is to recognize a user's operation and touch and more effectively control a display screen by a user through the recognized transmission data when implementing a hologram display in the air. [Means for Solving the Problems] The device includes 1 and 2 in FIG. 1 according to the present disclosure, and may include separate devices in 1 and 2 as necessary and provided to 100. Effects, etc.: Also possible to change or control the image desired by the user out of conventional display schemes where only simple image implementation was possible.



**CLAIM 1.** Figure 1 100 is a base member of the invention.

N8211

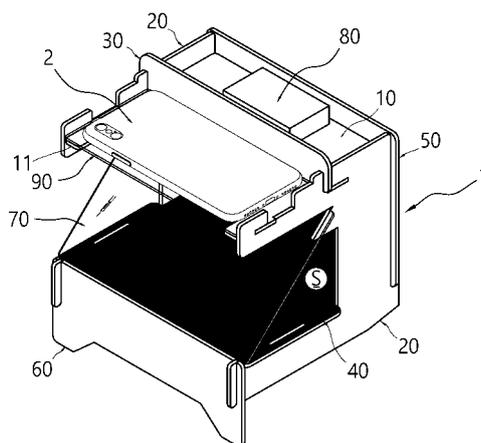
KR20210127866

Priority Date: 15/04/2020

KIM, INN-SIK - CHO GEUMSUN

### HOLOGRAPHIC IMAGE DISPLAY DEVICE

The present invention relates to a hologram image display device for projecting a hologram image output from an image output device of portable multimedia such as a smartphone so as to be visible as a more realistic stereoscopic image, A holographic image display device (1) according to the present invention includes: an upper plate (10) having a receiving portion (11) on which an image output device (2) is mounted such that an output screen of the portable image output device (2) is exposed downward, the upper plate (10) forming an upper surface of an internal space (s); A pair of left and right plates (20) detachably assembled downward to both left and right sides of the upper plate (10), formed in a concave shape with the front open, and forming left and right surfaces of the inner space (s); a pair of right and left plates (20) that crosses the upper plate (10) in the right and left directions, A connecting plate (30) detachably assembled to an upper portion of the left and right plates (20) and firmly assembled to the upper plate (10) and the right and right plates (20); a lower plate (40) detachably assembled to a lower lateral portion (21) of the left and right plates (20) and forming a bottom surface of the inner space (s); A rear plate (50) detachably assembled to the longitudinal portion (22) of the left and right plates (20), the rear plate (50) forming a rear surface of the inner space (s); a lower lateral portion (21) of the left and right plates (20), A leg plate 60 that rests at a high inclination forward to fit an observation angle of an observer; and a plurality of leg plates 60 that are detachably and inclined to left and right plates 20 so as to cross the inner space s, reflect a hologram image from an upper image output device 2 to a front where the observer is located, And a translucent reflective projection plate (70) visible through the inner space (s), wherein when the image output device (2) is placed on the base portion (11) of the upper plate (10) to output a hologram image, And the output hologram image is reflected by the reflection projection plate 70 and projected onto an observer, so that the hologram image is visible to the observer in a space between the reflection projection plate 70 and the rear plate 50.



**CLAIM 1.** An upper plate (10) which forms an upper surface of an internal space (s) and in which a receiving portion (11) for placing the image output device (2) in such a way that an output screen of the image output device (2) is exposed downward is formed; A pair of left and right plates (20) detachably assembled downward to both left and right sides of the upper plate (10), formed in a concave shape with the front open, and forming left and right surfaces of the inner space (s); a pair of right and left plates (20) configured to cross the upper plate (10) in right and left directions, A connecting plate (30) detachably assembled to an upper portion of the left and right plates (20), the connecting plate (30) rigidly assembled to the upper plate (10) and the left and right plates (20); a lower lateral portion (21) of the left and right plates (20), A lower plate (40) forming a bottom surface of the inner space (s); a rear plate (50) detachably assembled to a longitudinal portion (22) of the left and right plates (20) and forming a rear surface of the inner space (s); A leg plate 60 detachably assembled to a front end of the lower lateral portion 21 of the left and right plates 20, the leg plate 60 resting at an inclination with a high front in accordance with an observation angle of an observer; And an image output device detachably and tiltably assembled to the left and right plates 20 so as to cross the internal space s, reflects a hologram image from the image output device 2 on the upper side forward on which an observer is located, And a translucent reflective projection plate (70), wherein when the image output device (2) is placed on the receiving portion (11) of the upper plate (10) to output a hologram image, the output hologram image is reflected by the reflective projection plate (70) and projected to an observer, And that the hologram image appears to the observer to be visible in the space between the reflection projection plate and the rear plate.

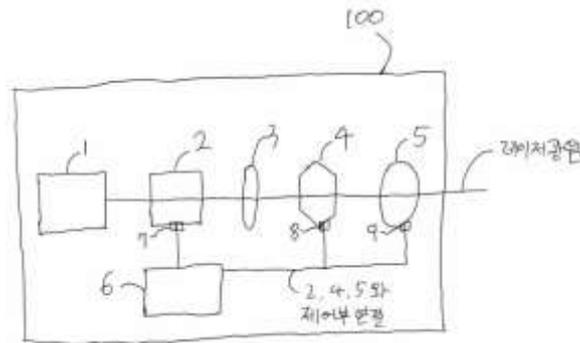
N8212

KR20210002377U  
Priority Date: 17/04/2020

JANG, MIN-SOO

**DESIGN OF PLASMA HOLOGRAM DISPLAY DEVICE**

Technical field: The present invention relates to the design of a plasma hologram display device. It is an object of the present invention to design a hologram display apparatus efficiently. The display device includes a laser device, an SLM, a lens, a mirror (galvanometer scanner), and a varifocal lens computer controller. The present invention devised through the devices shown in FIG. 1 and the computer controller can effectively implement plasma imaging voxels in the air through air ionization.



**CLAIM 1.** The representative figure 100 illustrates the placement and overall configuration of the plasma hologram device of the present invention.

N8215

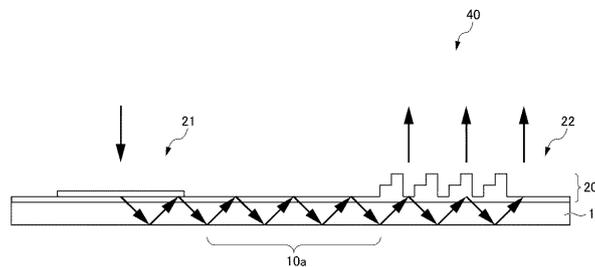
JP2021173878  
Priority Date: 27/04/2020

DAI NIPPON PRINTING

**VOLUME HOLOGRAM, EXIT PUPIL EXPANSION ELEMENT, HEAD-MOUNTED DISPLAY APPARATUS**

TOPIC: To provide a volume hologram, an exit pupil expansion element, and a head-mounted display apparatus capable of increasing utilization efficiency of light.

INVENTION: a volume hologram 21 includes: a waveguide portion 10 a configured to have a flat plate shape and to guide light; an incidence portion 21 configured to cause light to be incident on the waveguide portion 10 a; and a diffuser disposed on the waveguide portion 10 a or configured integrally with the waveguide portion 10 a. An emission unit 22 configured to divide and expand an exit pupil into a plurality of sections. the emission unit 22 is disposed at an incidence portion 21 of an exit pupil expansion element 40. the emission unit 22 has a half width of 5 nm or greater in a spectral distribution curve.



**CLAIM 1.** A volume hologram disposed at an incident section of an exit pupil expansion element, the exit pupil expansion element comprising: a waveguide section configured to guide light; the incident section configured to cause light to enter the waveguide section; and an expansion section disposed on the waveguide section or integrally formed with the waveguide section and configured to expand an exit pupil into a plurality of sections, wherein a half width in a spectral distribution curve is 5 nm or greater.

N8219

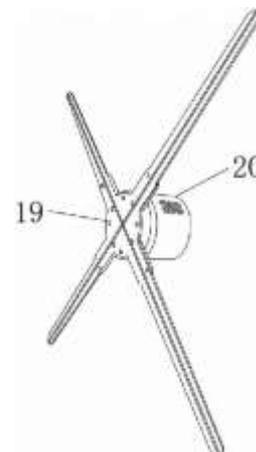
CN214752710U

Priority Date: 07/04/2021

SHENZHEN JIWOKOS TECHNOLOGY

### HOLOGRAPHIC ROTARY DISPLAY SCREEN PICTURE POSITIONING DEVICE

The utility model discloses a holographic rotary display screen picture positioning device, which comprises a device body, wherein the device body consists of a rotary part and a non-rotary part, the rotary part consists of a LED lamp panel and a rotary part fixing component, the non-rotary part consists of a non-rotary part fixing component and a bottom plate, the utility model has stable structure, low cost, stronger anti-electromagnetic wave interference capability and more accurate picture positioning, wherein, a Hall wheel speed sensing receiver mainly acts on an electric signal sent by a Hall wheel speed sensing transmitter, the rotary part fixing component containing the Hall wheel speed sensing receiver is driven to rotate by the work of a brushless driving motor, the Hall wheel speed sensing receiver senses the output electric signal of the Hall wheel speed sensing transmitter contained in the non-rotary part fixing component, the work of the inductive electric signal is not influenced by the rotating speed, the response rate is high, and the rotating speed of the holographic rotary display screen can be detected in real time, and accurately positioning the picture of the holographic rotating display screen according to the rotating speed.



**CLAIM 1.** The utility model provides a holographic rotatory display screen picture positioner, includes the device body, its characterized in that: the device body consists of a rotating part (19) and a non-rotating part (20), the rotating part (19) consists of an LED lamp panel (1) and a rotating part fixing component (2), the non-rotating part (20) is composed of a non-rotating part fixing assembly (3) and a bottom plate (4), the rotating part fixing component (2) consists of a lamp panel fixing part (5), a main control panel fixing part (6), a main control panel (7), a communication infrared transmitting tube (8), a Hall wheel speed sensing receiver (9) and a wireless power supply receiving circuit (10), the non-rotating part fixing assembly (3) is fixed on the bottom plate (4) through a motor and drive plate fixing part (11), a drive control plate (12), a communication infrared receiving tube (13), a Hall wheel speed sensing transmitter (14), a wireless power supply transmitting circuit (15), a brushless drive motor (16), a power supply DC base (17) and a non-rotating part shell (18).

N8221

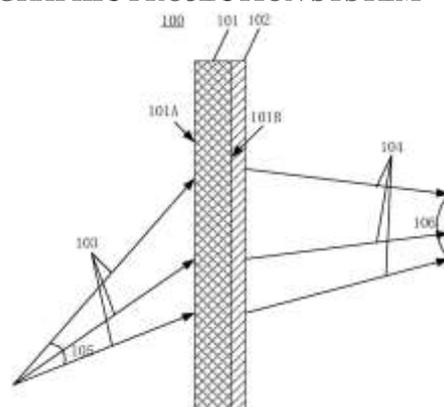
CN214751309U

Priority Date: 11/06/2021

BEIJING KANGTEMAN ELECTRONIC SYSTEMS - BEIJING SPECTRUM YINBAO TECHNOLOGY - TIANJIN YANGGUANG TECHNOLOGY

### VOLUME HOLOGRAPHIC PROJECTION SCREEN AND VOLUME HOLOGRAPHIC PROJECTION SYSTEM

The utility model discloses a volume holographic projection screen and volume holographic projection system, wherein, volume holographic projection screen includes: a substrate comprising a first surface and a second surface disposed opposite one another; a photosensitive layer on the second surface; the substrate and the photosensitive layer form the volume holographic projection screen, and the volume holographic projection screen is used for receiving projection information light rays in a first constraint angle and converting the projection information light rays into diffuse reflection light rays to be emitted in a second constraint angle. Therefore, by the structure, the projection information on the volume holographic projection screen can be seen only in a certain distance and a certain angle range from the projection screen, the information on the projection screen can not be seen in other angles and positions, the energy utilization rate is extremely high, a high-brightness projector is not required to be used for supporting, and the information is prevented from being peeped by surrounding people; meanwhile, the projection screen is a transparent projection screen, and information communication on two sides of the projection screen is not influenced.



**CLAIM 1.** A volume holographic projection screen, comprising: a substrate comprising a first surface and a second surface disposed opposite one another; a photosensitive layer on the second surface; the substrate and the photosensitive layer form the volume holographic projection screen, and the volume holographic projection screen is used for receiving projection information light rays in a first constraint angle and converting the projection information light rays into diffuse reflection light rays to be emitted in a second constraint angle.

N8223

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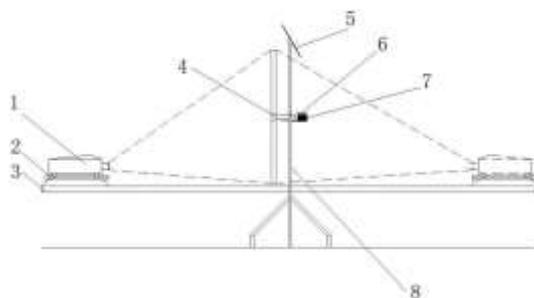
Priority Date: 07/04/2021

LI YUNYONG

### HOLOGRAPHIC PROJECTION FAN

The utility model relates to a holographic projection's technical field discloses a holographic projection fan, including projecting apparatus, fan and support, middle part one side fixedly connected with motor support plate of support, the top of motor support plate is provided with the motor, the one end of motor is provided with the speed reducer, the top bolt of support has solar cell panel, solar cell panel passes through charge controller and storage battery electric connection, the bolt between fan and the motor, the bottom both sides fixedly connected with lateral frame of support, the end of lateral frame is provided with folding platform. The utility model discloses a rotatory formation slice curtain of fan is used for holographic projection usefulness, is different from traditional flabellum lamp pearl form, makes the fan curtain diameter not restricted, can form the curtain of great diameter, has solved the narrow defect of present holographic projection fan, and the scope of use is wider, and rotary part is simple, and holistic stability is higher.

**CLAIM 1.** A holographic projection fan comprises a projector (1), a fan (4) and a bracket (8), and is characterized in that, the solar energy air conditioner is characterized in that a motor carrier plate (7) is fixedly connected to one side of the middle of the support (8), a motor (6) is arranged above the motor carrier plate (7), a speed reducer is arranged at one end of the motor (6), a solar cell panel (5) is bolted to the top end of the support (8), the solar cell panel (5) is electrically connected with a storage battery through a charging controller, a fan (4) is bolted to the motor (6), transverse supports (3) are fixedly connected to the two sides of the bottom of the support (8), and folding tables (2) are arranged at the tail ends of the transverse supports (3).



N8224

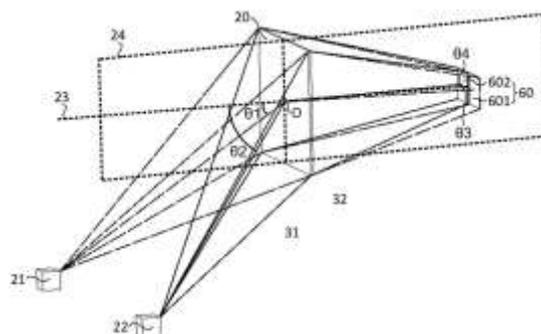
CN214675468U

Priority Date: 25/05/2021

BEIJING KANGTEMAN ELECTRONIC SYSTEMS - BEIJING SPECTRUM  
YINBAO TECHNOLOGY - TIANJIN YANGGUANG TECHNOLOGY

### NAKED EYE 3D DISPLAY BASED ON VOLUME HOLOGRAPHIC TECHNOLOGY

The utility model discloses a bore hole 3D display based on volume holographic technique, wherein, bore hole 3D display, including holographic projection screen, first projecting apparatus and second projecting apparatus are located the first side of holographic projection screen, and first projecting apparatus is used for throwing first image to holographic projection screen, and the second projecting apparatus is used for throwing the second image to holographic projection screen, and holographic projection screen is used for throwing first image and second image to people's eye. The embodiment of the utility model provides a bore hole 3D display is located the first projecting apparatus and the second projecting apparatus of holographic projection screen first side through the setting and throws first image and second image to holographic projection screen to throw first image and second image to people's eye through holographic projection screen, realize the bore hole 3D display that contains the whole information of object amplitude and phase place, improved the display quality of 3D image.



**CLAIM 1.** A naked eye 3D display based on volume holographic technology is characterized by comprising a holographic projection screen, a first projector and a second projector; the first projector and the second projector are located on a first side of the holographic projection screen, the first projector for projecting a first image to the holographic projection screen, the second projector for projecting a second image to the holographic projection screen, the holographic projection screen for projecting the first image and the second image to the human eye.

N8226

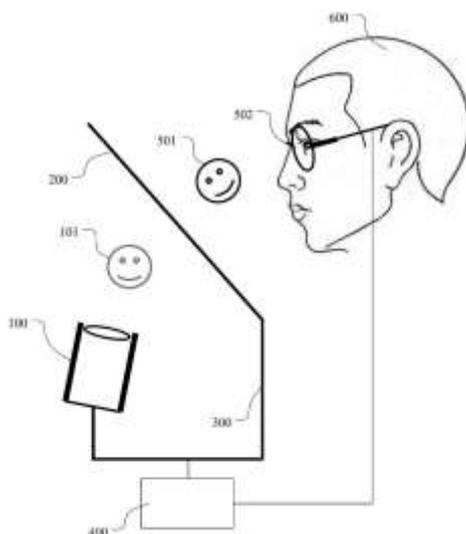
CN214670096U

Priority Date: 30/04/2021

JINGMEN CITY DREAM EXPLORATION TECHNOLOGY

### PICTURE FRAME TRACKING TYPE GEOMETRIC HOLOGRAPHIC DISPLAY SYSTEM

The utility model discloses a picture frame tracking type geometric holography display system, including projection equipment, conjugate formation of image screen, supporting structure, trearer and motion tracking picture frame. When the device is used, the projection equipment projects picture information on the first side of the conjugate imaging screen, the conjugate imaging screen converts the picture information on the first side into an optical conjugate image on the second side, the motion tracking picture frame worn on the head of a user tracks motion data of the head of the user, the processor controls the support structure to make corresponding action response according to the motion data, and the relative spatial position and/or the overall spatial position of the projection equipment and the conjugate imaging screen are/is adjusted, so that the window and the projection equipment are optically conjugated relative to the conjugate imaging screen, and the user watches the optical conjugate image through the window. In the process, the view window is optically conjugated with the projection equipment relative to the conjugated imaging screen while covering the eyes of the user all the time, so that all three-dimensional pictures can be observed through the view window, and the use experience of the user is improved.



**CLAIM 1.** A frame tracking geometry holographic display system comprising: a projection device for projecting picture information in a space; the conjugate imaging screen is used for converting the picture information projected to the first side of the conjugate imaging screen by the projection equipment into an optical conjugate image positioned at the second side of the conjugate imaging screen; the supporting structure is respectively matched with the projection equipment and the conjugate imaging screen and provides physical structural support for the projection equipment and the conjugate imaging screen; the processor is electrically connected with the projection equipment and the supporting structure, and is characterized in that the picture frame tracking type geometric holographic display system further comprises a motion tracking picture frame worn on the head of a user, the area corresponding to the motion tracking picture frame and the eyes of the user is a window for watching the optical conjugate image, the motion tracking picture frame is used for tracking motion data of the head of the user and transmitting the motion data to the processor, the processor controls the supporting structure to make corresponding action response according to the received motion data, and the relative spatial position and/or the overall spatial position of the projection equipment and the conjugate imaging screen are/is adjusted, so that the window is always located in the optical conjugate area of the output pupil of the projection equipment relative to the conjugate imaging screen.

N8227

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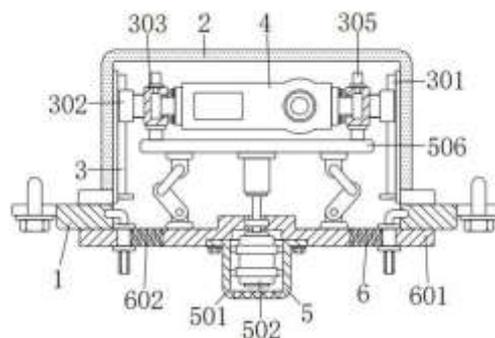
Priority Date: 22/12/2020

TODAY DIGITAL TECHNOLOGY SHANGHAI

### 3D HOLOGRAPHIC PROJECTION DEVICE

The utility model discloses a 3D holographically projected device, including diaphragm and shell, the top rigid coupling of diaphragm has the shell, the supporting member is all installed to the inner wall both sides of shell, install the projecting apparatus between the supporting member, adjusting device is installed to the bottom of projecting apparatus, fixed component is installed to adjusting device's bottom. This 3D holographically projected device, through the frid, the slide, decide the piece, the cooperation of commentaries on classics piece and thread piece is used, the inclination that can reach the projecting apparatus adjusts the work, through the motor frame, including a motor, an end cap, a controller, and a cover plate, the filter screen, the screw rod, the screwed pipe, the roof, the cooperation of first fagging and second fagging is used, reached and to have risen the area occupied that reduces the apron with the apron in to the projecting apparatus use, through the apron, a spring, the briquetting, the fixture block, the arm-tie, the cooperation of diaphragm and shell is used, reached can carry out protection work to the projecting apparatus, dustproof work simultaneously can carry out.

**CLAIM 1.** The utility model provides a 3D holographic projection arrangement, includes diaphragm (1) and shell (2), the top rigid coupling of diaphragm (1) has shell (2), its characterized in that: supporting members (3) are mounted on two sides of the inner wall of the shell (2), projectors (4) are mounted between the supporting members (3), adjusting devices (5) are mounted at the bottom ends of the projectors (4), and fixing members (6) are mounted at the bottom ends of the adjusting devices (5); adjusting device (5) are including motor frame (501), motor (502), filter screen (503), screw rod (504), screwed pipe (505), roof (506), first fagging (507) and second fagging (508), the inside rigid coupling of motor frame (501) has motor (502), the inside rigid coupling of bottom outer wall of motor frame (501) has filter screen (503), the top rigid coupling of motor (502) has screw rod (504), the outer wall threaded connection of screw rod (504) has screwed pipe (505), the top rigid coupling of screwed pipe (505) has roof (506), the bottom both sides of roof (506) all rotate and are connected with first fagging (507), the bottom of first fagging (507) is rotated and is connected with second fagging (508).



N8229

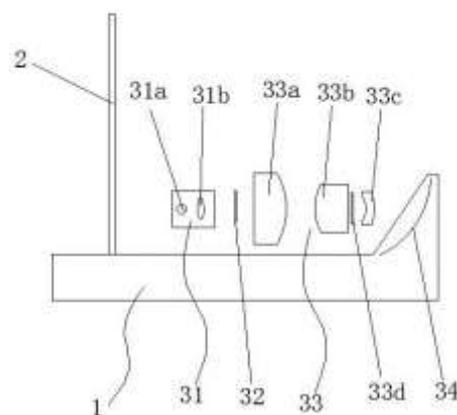
CN214623325U

Priority Date: 27/05/2021

NINGBO QIANJIE ELECTRONIC TECHNOLOGY

### HOLOGRAPHIC PROJECTION CLOCK

The utility model discloses a holographic projection clock, the on-line screen storage device comprises a base, the base on be fixed with the imaging screen, the base still be provided with short burnt projection module and holographic projection control circuit, short burnt projection module including light source subassembly, display device, refraction lens group and the aspheric mirror of arranging in proper order, refraction lens group and aspheric mirror constitute projection lens group, the light source subassembly including light-emitting component and condensing lens, holographic projection control circuit with display device signal connection. The utility model has the advantages that: the structure is reasonable, the short-focus projection module is matched with the aspheric reflector, the projection focal length and the reflection imaging range are greatly shortened, the miniaturization of the whole structure of the holographic projection clock is facilitated, and the manufacturing cost is reduced.



**CLAIM 1.** A holographic projection clock comprises a base (1), and is characterized in that: base (1) on be fixed with imaging screen (2), base (1) still be provided with short burnt projection module and holographic projection control circuit, short burnt projection module including light source subassembly (31), display device (32), refraction battery of lens (33) and aspherical mirror (34) that arrange in proper order, refraction battery of lens (33) and aspherical mirror (34) constitute projection lens group, light source subassembly (31) including luminous piece (31a) and condensing lens (31b), holographic projection control circuit with display device (32) signal connection.

N8230

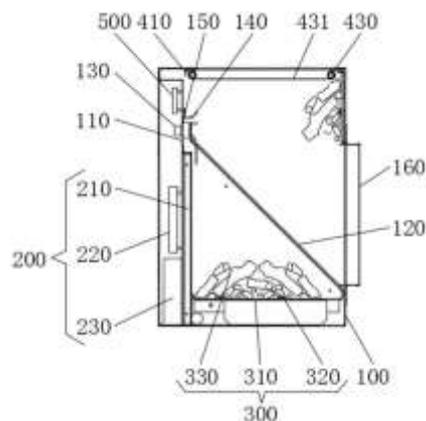
CN214619774U

Priority Date: 25/03/2021

MOLONEY HOUSEWARES JIANGSU

### HOLOGRAPHIC PROJECTION ELECTRIC FIREPLACE

The utility model discloses a holographic projection electric fireplace in the technical field of furniture decoration equipment, which comprises a fireplace box body, a projection mechanism, a simulation mechanism, a plate changing mechanism and a control panel, wherein the projection mechanism is positioned at the rear side of an inner cavity of the fireplace box body, the simulation mechanism is fixedly connected at the bottom of the inner cavity of the fireplace box body and the upper side of the front side wall of the inner cavity through bolts, the plate changing mechanism is fixedly connected at the top of the inner cavity of the fireplace box body through bolts, the control panel is positioned at the rear side of the inner cavity of the fireplace box body and at the upper side of the projection mechanism, the holographic projection electric fireplace has reasonable structural design, can view different charcoal fire effects from different angles, enables the holographic projection electric fireplace to be more three-dimensional and vivid, and the played flame animation, the played sound effect of wood combustion and the played charcoal fire form a 3D visual effect that the flame burns between the two charcoal fires, can change different fireplace backgrounds according to individual hobbies, increase application range.



**CLAIM 1.** Holographic projection electric fireplace, its characterized in that: the fireplace with the plate changing mechanism comprises a fireplace box body (100), a projection mechanism (200), a simulation mechanism (300), the plate changing mechanism (400) and a control panel (500), wherein the projection mechanism (200) is located on the rear side of an inner cavity of the fireplace box body (100), the simulation mechanism (300) is fixedly connected to the bottom of the inner cavity of the fireplace box body (100) and the upper side of the front side wall of the inner cavity, the plate changing mechanism (400) is fixedly connected to the top of the inner cavity of the fireplace box body (100) through bolts, the control panel (500) is located on the rear side of the inner cavity of the fireplace box body (100) and located on the upper side of the projection mechanism (200), and the control panel (500) is electrically connected with the projection mechanism (200), the simulation mechanism (300) and the plate changing mechanism (400) through electric wires.

N8231

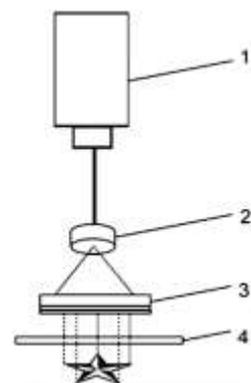
CN214619378U

Priority Date: 10/05/2021

XIAMEN UNIVERSITY

### HOLOGRAPHIC AUTOMOBILE TAIL LAMP DEVICE WITH THREE-DIMENSIONAL IMAGE DISPLAY FUNCTION

A holographic automobile tail lamp device with a three-dimensional image display function relates to an automobile tail lamp device. The automobile tail lamp is sequentially provided with a light ray generating unit, a light ray processing unit, a holographic display element and an automobile tail lamp shade; the light generating unit is a laser diode which generates laser with the wavelength of 650 nm; the light processing unit sequentially comprises a beam expander and a collimating lens; the holographic display element is of a three-layer structure and sequentially comprises a surface protection layer, a middle photosensitive polymer layer and a substrate layer; the automobile tail lamp shade is a transparent plastic shade made of high-light-transmittance PC materials. The light generating unit emits laser with high temporal coherence and spatial coherence, the light enters the beam expanding lens to form beam expanding light, and the beam expanding light forms a beam of parallel light after passing through the collimating lens. The parallel light beams are irradiated on the holographic display element recorded with the three-dimensional image information to generate light diffraction, and the holographic display of the original three-dimensional image is formed behind the automobile tail lamp shade. The holographic automobile tail lamp with the three-dimensional image display is more attractive and real.



**CLAIM 1.** A holographic automobile tail lamp device with a three-dimensional image display function is characterized in that a light ray generating unit, a light ray processing unit, a holographic display element and an automobile tail lamp lampshade are sequentially arranged; the light generating unit is a laser diode which generates laser with the wavelength of 650 nm; the light processing unit sequentially comprises a beam expander and a collimating lens; the holographic display element is of a three-layer structure and sequentially comprises a surface protection layer, a middle photosensitive polymer layer and a base material layer; the automobile tail lamp shade is a transparent plastic shade made of high-light-transmittance PC materials.

N8232

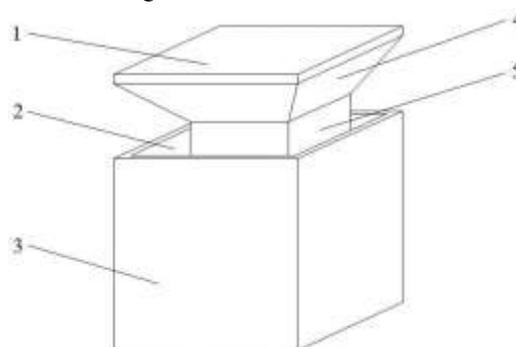
CN214618834U

Priority Date: 29/12/2020

HEBEI ZHONGXIAN INTELLIGENT TECHNOLOGY

### NAKED EYE 3D HOLOGRAPHIC PROJECTION MULTI-SURFACE DISPLAY EQUIPMENT

The utility model discloses a bore hole 3D holographically projected multiaspect display device, including box and stand, the vertical center department that welds the bottom in the box of stand, the box top all installs the screen all around with the stand middle part between all around, the display surface is all installed all around at the stand top, the inside sliding connection of box has the mounting panel, the top of mounting panel all is equipped with the projecting apparatus all around, the top of mounting panel all is equipped with the first angle adjustment mechanism who changes the projecting apparatus left and right directions all around, the top of mounting panel all is equipped with the second angle adjustment mechanism who changes the projecting apparatus fore-and-aft direction all around, the bottom is equipped with the elevating system who drives the mounting panel lift in the box. The utility model discloses from the arbitrary face homoenergetic of equipment can watch the 3D image, the demonstration of 3D image is more comprehensive, can adapt to the projection of the image of different projection distances, different projection angles, makes holographic projection's 3D image more lively lifelike.



N8234

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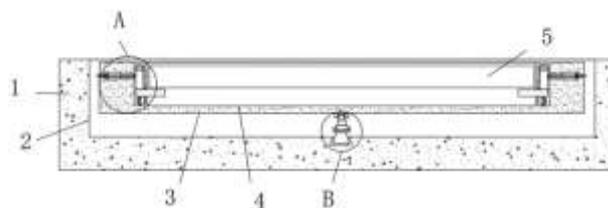
Priority Date: 01/12/2020

ZHEJIANG CATCHING LIGHTING TECHNOLOGY

### FUNCTIONAL IMAGING SCREEN CAPABLE OF BEING APPLIED TO HOLOGRAPHIC DISPLAY

The utility model discloses a can be applied to function formation of image screen of holographic display relates to the formation of image screen field, including the mounting plate, a side surface of mounting panel is seted up flutedly, the inside board of placing that is provided with of recess, a side surface of placing the board has seted up the standing groove, the inside formation of image screen that is provided with of standing groove, the cavity has all been seted up to the inside both sides of placing the board, the inside L shaped plate that is provided with of cavity. The utility model discloses a being provided with the L shaped plate placing the board both sides, the one end of L shaped plate extends to the standing groove outside, when installation formation of image screen, place the formation of image screen in the standing groove, back extrusion L shaped plate through the formation of image screen removes, the L shaped plate removes to leading to the groove and corresponds with the fly leaf, and then makes the limiting plate drive the fly leaf under second reset spring's reaction force and insert logical groove and extend to the standing groove in, fix the formation of image screen inside the standing groove through two fly leaves, make things convenient for the staff to install and change the formation of image screen.

**CLAIM 1.** A functional imaging screen applicable to holographic display, comprising a mounting plate (1), characterized in that: a groove (2) is formed in one side surface of the mounting plate (1), a placing plate (3) is arranged in the groove (2), a placing groove (4) is formed in one side surface of the placing plate (3), an imaging screen (5) is arranged in the placing groove (4), cavities (6) are formed in two sides of the placing plate (3), an L-shaped plate (7) is arranged in each cavity (6), sliding grooves (8) are formed in two side groove walls of the placing groove (4), one end of each L-shaped plate (7) is located in each cavity (6), the other end of each L-shaped plate (7) penetrates through each sliding groove (8) and extends into the corresponding placing groove (4), a movable plate groove (9) is formed in one side groove wall of each cavity (6), a movable plate (10) matched with the movable plate groove (9) is arranged in each movable plate groove (9), a limiting groove (11) is formed in one side groove wall of each movable plate groove (9), limiting groove (11) inside is provided with limiting plate (12), the one end of fly leaf (10) extend to limiting groove (11) inside and with limiting plate (12) fixed connection, one side middle part fixedly connected with pull rod (13) of fly leaf (10) are kept away from in limiting plate (12), pull rod groove (14) with pull rod (13) looks adaptation are seted up to one side cell wall of limiting groove (11), the one end of pull rod (13) is run through pull rod groove (14) and is extended to and place the board (3) outside.



N8235

CN214586362U

Priority Date: 07/06/2021

JINGMEN CITY DREAM EXPLORATION TECHNOLOGY

### PORTABLE HOLOGRAPHIC PROJECTOR AND HOLOGRAPHIC DISPLAY SYSTEM

The utility model discloses a lightweight holographic projector and holographic display system, including setting up the lightweight is inAn imaging chip for providing an equivalent image plane, a light source for providing light for the imaging chip, an imaging lens group corresponding to the equivalent image plane and used for optical imaging, and a mass density rho of the portable holographic projectorMSatisfies the following conditions:adopt the utility model discloses a portable holographic projector is showing through a large amount of experiments and has improved tracking effect and user comfort to the product property ability of portable holographic projector has been optimized.

**CLAIM 1.** A portable holographic projector, comprising an imaging chip for providing an equivalent image plane, a light source for providing light to the imaging chip, and an imaging lens group corresponding to the equivalent image plane and used for optical imaging, which are arranged inside the portable holographic projector, mass density of the lightweight holographic projectorMSatisfies the following conditions: wherein the mass density of the portable holographic projector Has a unit of M is the total mass of the portable holographic projector, and unit kg; power density of the light sourcePSatisfies the following conditions: wherein the power density of the light source Has a unit of P is the light source power in W; S0the aperture area of the light hole of the outermost lens in the imaging lens group is unit m<sup>2</sup>; S10The area of a light spot projected by the portable holographic projector on a plane perpendicular to a main optical axis of the outermost lens is 10cm away from the outermost lens in the imaging lens group, and the unit is m<sup>2</sup>; S100The area of a light spot projected by the portable holographic projector on a plane perpendicular to a main optical axis of the outermost lens is 100cm away from the outermost lens in the imaging lens group, and the unit is m<sup>2</sup>

N8236

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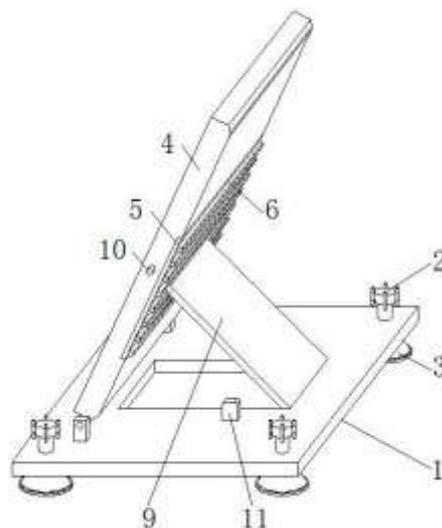
Priority Date: 31/03/2021

SOOCHOW UNIVERSITY

### HOLOGRAPHIC WAVEGUIDE LENS MOUNTING STRUCTURE CONVENIENT TO ADJUST

The utility model discloses a holographic waveguide lens mounting structure convenient to adjust, including base, vacuum chuck and holographic waveguide lens body, the inside swing joint of base has the regulation pole, and the downside integration of adjusting the pole is provided with vacuum chuck, the top left side swing joint of base has the lens shell, and the inside of lens shell inlays and have the magnetic sheet to the internally mounted of lens shell has holographic waveguide lens body, the right side welding of magnetic sheet has the gag lever post, and the downside of gag lever post closely laminates there is the iron set, and the downside integration of iron set is provided with the backup pad, the outside welding of lens shell has the lug. This holographic waveguide lens mounting structure convenient to adjust, the angle that can adjust the structure as required, the flexibility is strong, and can be effectively spacing, avoids rocking, and can effectively accomodate, reduces and takes up an area of the space, conveniently carries to can effectively install, stability is strong.

**CLAIM 1.** The utility model provides a holographic waveguide lens mounting structure convenient to adjust, includes base (1), vacuum chuck (3) and holographic waveguide lens body (7), its characterized in that: the adjustable holographic waveguide lens is characterized in that an adjusting rod (2) is movably connected inside the base (1), a vacuum sucker (3) is integrally arranged on the lower side of the adjusting rod (2), a lens shell (4) is movably connected to the left side of the upper portion of the base (1), a magnetic plate (5) is embedded inside the lens shell (4), a holographic waveguide lens body (7) is installed inside the lens shell (4), a limiting rod (6) is welded on the right side of the magnetic plate (5), an iron rod (8) is tightly attached to the lower side of the limiting rod (6), and a supporting plate (9) is integrally arranged on the lower side of the iron rod (8); the outside welding of lens shell (4) has lug (10), the top middle part of base (1) is fixed with fixed plate (11), and the downside integration of base (1) is provided with connecting block (12), the outside of connecting block (12) is closely laminated with installation section of thick bamboo (13), and the downside of installation section of thick bamboo (13) is pasted and is linked there is no trace subsides (14).



N8237

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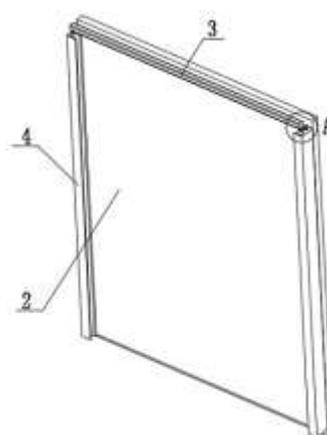
JIANGSU FALANMU NEW MATERIAL

Priority Date: 31/12/2020

### NOVEL HOLOGRAPHIC PROJECTION IMAGING USES MULTI-FUNCTIONAL WALLBOARD

The utility model discloses a novel holographic projection is multi-functional wallboard for formation of image, which comprises a body, the middle part at the body back is equipped with the mounting panel, and the mounting panel passes through the fix with screw on the body, is provided with the picture peg of L shape on the mounting panel, picture peg and mounting panel formula structure as an organic whole, and the both sides of body are all fixed and are provided with the gib block, and the cross-section of gib block is "F" shape, including first guide way and second guide way on its gib block, be close to the fixed dog that sets up in the first guide way bottom of body one side, slidable mounting has the decorative board between two relative first guide ways, there is electronic curtain top of gib block through the support mounting, and the play curtain mouth of electronic curtain sets up corresponding second guide way down, the width of electronic curtain suits with the distance between two second guide ways. The utility model discloses a wallboard and projected combination, for prior art, it is more convenient to install, when not using the projection function, and decoration through the decorative board is more pleasing to the eye in addition.

**CLAIM 1.** The utility model provides a novel holographic projection is multi-functional wallboard for formation of image which characterized in that: including body (1) and fixed slot (5), the middle part at the body (1) back is equipped with mounting panel (601), and mounting panel (601) passes through the fix with screw on body (1), is provided with picture peg (602) of L shape on mounting panel (601), picture peg (602) and mounting panel (601) formula structure as an organic whole, the back of picture peg (602) is fixed slot (5), and picture peg (602) insert in square hole (502) of fixed slot (5), four edges of fixed slot (5) are opened there are mounting hole (501), install the inflation screw in mounting hole (501), fixed slot (5) are fixed on the wall body through the inflation screw, the both sides of body (1) all are fixed and are provided with gib block (4), and the cross-section of gib block (4) is "F" shape, including first guide way (401) and second guide way (402) on its gib block (4), be close to dog (403) of the fixed setting in first guide way (401) bottom of body (1) one side, slidable mounting has decorative board (2) between two relative first guide ways (401), electronic curtain (3) are installed through support (301) in the top of gib block (4), and the play curtain mouth of electronic curtain (3) sets up corresponding second guide way (402) position department down, the width of electronic curtain (3) suits with the distance between two second guide ways (402).



N8240

CN214540396U

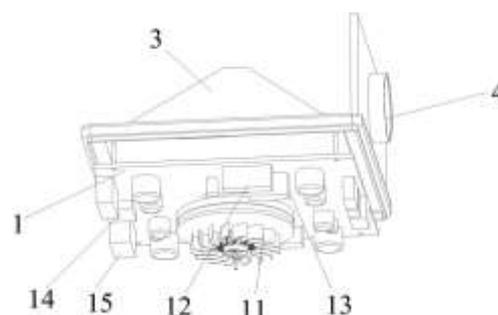
HE JIJIANG

Priority Date: 26/04/2021

### HOLOGRAPHIC PROJECTION DEVICE

The utility model relates to the technical field of projection equipment, in particular to a holographic projection device, which comprises a PCB (printed Circuit Board), a display screen and a projection screen, wherein the projection screen is integrally pyramid-shaped; the display screen is characterized in that the number of the display screens is four, the four display screens are all connected with the PCB, and the four display screens respectively correspond to four side surfaces of the projection screen; the device also comprises a projection lens, and the projection lens corresponds to the projection screen. The utility model discloses, through the four display screens that mutually independent set up for when the device need carry out holographic projection to pattern or picture, need not to handle pattern or picture, directly show pattern or picture by four display screens, and because the corresponding relation of four display screens and four sides of projection screen, make and realize carrying out real-time no delayed holographic projection to the pattern on the projection screen. And the arrangement of the projection lens can project the holographic projection realized on the projection screen.

**CLAIM 1.** A holographic projection device comprises a PCB (printed circuit board), a display screen and a projection screen, wherein the projection screen is integrally pyramid-shaped; the display screen is characterized in that the number of the display screens is four, the four display screens are all connected with the PCB, and the four display screens respectively correspond to four side surfaces of the projection screen; the device also comprises a projection lens, and the projection lens corresponds to the projection screen.



N8242

CN214535469U

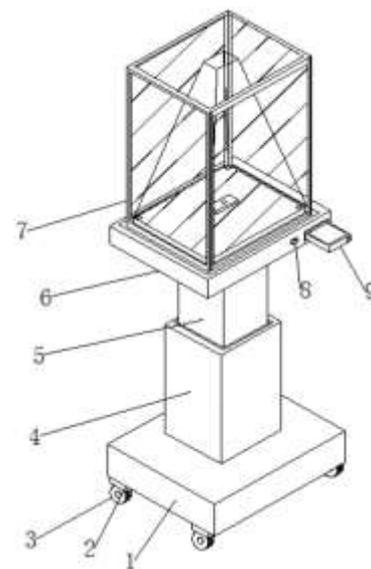
Priority Date: 28/12/2020

WUJIANG CULTURE TECHNOLOGY GROUP

### HOLOGRAPHIC DISPLAY DEVICE IS USED IN EXHIBITION HALL ENGINEERING

The utility model relates to a holographic display technology field, concretely relates to exhibition hall engineering is with holographic display device, including base, fixed knot structure and gyro wheel. The utility model overcomes prior art's is not enough, through being provided with the gyro wheel, fixed knot constructs, base case and pillar, in the in-service use, gyro wheel that can be through the base bottom carries out the shift position, do not need the manpower to carry out the transport of making a round trip, time saving and labor saving, fix the gyro wheel through fixed knot constructs after removing the completion, make whole remain stable, when needs carry out the altitude mixture control to the device, can make the base case function through the control of display screen, when the base case functions, make the inside expansion bend function, function through the expansion bend then make the telescopic link stretch out and draw back through connecting rod control connecting block, thereby make the flexible post in fixed block and the pillar stretch out and draw back, then make the pillar carry out the altitude mixture control, the display effect is improved, be favorable to the in-service use.

**CLAIM 1.** A holographic display device for exhibition engineering comprises a base (1), a fixed structure (2) and rollers (3), and is characterized in that the fixed structure (2) is fixedly arranged at the bottom of the base (1), and the rollers (3) are movably connected to the lower end of the fixed structure (2); the display device is characterized in that a base box (4) is fixedly mounted at the top of the base (1), a support column (5) is movably connected to the upper end of the base box (4), a display stand (6) is fixedly mounted at the upper end of the support column (5), a fixed frame (7) is movably connected to the upper end of the display stand (6), a starting switch (8) is fixedly mounted at the right end of the front of the display stand (6), a display screen (9) is movably mounted at the right end of the starting switch (8), a display screen switch (13) is fixedly mounted at the front of the display screen (9), and a slide rail (10) is fixedly mounted on the surface of the fixed frame (7).



N8243

CN214504134U

Priority Date: 15/03/2021

GUANGZHOU AUTOMOBILE

### HOLOGRAPHIC IMAGING DEVICE AND AUTOMOBILE

The utility model relates to the technical field of holographic imaging, and discloses a holographic imaging device and an automobile, wherein the holographic imaging device comprises a holographic image controller, holographic glass and N holographic display screens, and N is more than 1; the holographic image controller is connected with the N holographic display screens; and the N images on the holographic display screens are subjected to space imaging through the holographic glass. The embodiment of the utility model provides a pair of holographic imaging device and car has increased holographic image's visual angle.

**CLAIM 1.** A holographic imaging device is characterized by comprising a holographic image controller, holographic glass and N holographic display screens, wherein N is more than 1; wherein the content of the first and second substances, the holographic image controller is connected with the N holographic display screens; and the N images on the holographic display screens are subjected to space imaging through the holographic glass.

N8244

CN214504133U

Priority Date: 30/04/2021

BEIJING KANGTEMAN ELECTRONIC SYSTEMS - BEIJING SPECTRUM  
YINBAO TECHNOLOGY - TIANJIN YANGGUANG TECHNOLOGY

### NAKED EYE 3D DISPLAY MECHANISM FOR HOLOGRAPHIC IMAGE

The utility model belongs to the technical field of 3D imaging, and discloses a naked eye 3D display mechanism for holographic images, which comprises a bracket component, a photo frame component and a power supply component, wherein the bracket component comprises a base, a supporting rod and a supporting plate, the supporting rod can rotate around the base, the supporting plate can rotate around one end of the supporting rod, and the supporting rod can stretch along the length direction; the photo frame assembly comprises a photo frame, a lamp holder and an LED lamp, wherein one side of the photo frame is provided with a socket, a holographic image can be inserted into the photo frame from the socket, the back surface of the photo frame is provided with a slot, and a supporting plate can be inserted into the slot so as to enable the photo frame to be connected with the supporting plate; the lamp holder is provided with a light source, and the light source can reproduce the holographic image so as to show the naked eye 3D stereoscopic image effect of the holographic image; the naked eye 3D display mechanism for the holographic image is simple in structure, common in parts and low in cost.



**CLAIM 1.** The naked-eye 3D display mechanism for the holographic image is characterized by comprising a support assembly (1), a photo frame assembly (2) and a power supply assembly, wherein the support assembly (1) comprises a base (11), a supporting rod (12) and a supporting plate (13), the base (11) is of a hollow structure, and the power supply assembly is arranged in the hollow structure; one end of the supporting rod (12) is hinged to the base (11), the supporting plate (13) is hinged to the other end of the supporting rod (12), and the supporting rod (12) can stretch along the length direction; the photo frame assembly (2) comprises: the holographic image display device comprises a photo frame (21), wherein one side of the photo frame (21) is provided with a socket (211), a holographic image can be inserted into the photo frame (21) from the socket (211), the back of the photo frame (21) is provided with a slot (212), and the supporting plate (13) can be inserted into the slot (212); the lamp holder (22) is hinged to the photo frame (21), a light source is arranged on the lamp holder (22), and the light source can be obliquely irradiated on the holographic image in the photo frame (21) to reproduce the 3D holographic image; the LED lamp (23) is hinged to the lamp holder (22), and the holographic image in the photo frame (21) can be irradiated by the LED lamp (23).

N8245

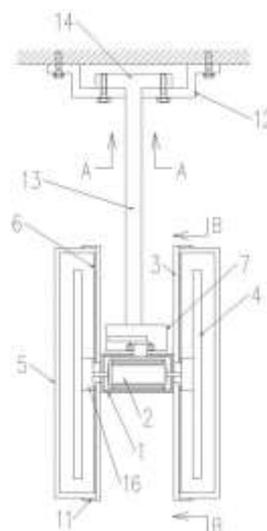
CN214476186U

Priority Date: 15/03/2021

HAINAN DASQI DIGITAL TECHNOLOGY

### 3D HOLOGRAPHIC ADVERTISEMENT FAN SCREEN

The utility model discloses a 3D holographic advertisement fan screen, which comprises a fan screen body, wherein the upper end surface of the fan screen body is rotationally connected to a driving device, the upper end of the driving device is provided with a hanger device, and the hanger device is hung on a top plate; the fan screen body comprises a frame, a double-end motor fixed in the frame, back plates fixed on two sides of the frame and a display device connected to two output ends of the double-end motor, a protective cover is arranged in cooperation with the back plates, and a background cloth is attached to one side, close to the display device, of the fan screen body; the driving device comprises a fixed frame, a turbine which is rotatably connected inside the fixed frame, a driving motor which drives the turbine to rotate, and a driving rod which is rotatably connected with the turbine through a connecting rod. Has the advantages that: the display device is favorable for displaying different pictures on two sides, the protective cover is favorable for protecting the display device inside, and the display mechanism on the front side has better display effect due to the fact that the background cloth attached to the back plate is favorable for the display mechanism.



**CLAIM 1.** The utility model provides a 3D holographic advertisement fan screen which characterized in that: the fan screen comprises a fan screen body, wherein the upper end surface of the fan screen body is rotationally connected to a driving device, the upper end of the driving device is provided with a hanging bracket device, and the hanging bracket device is hung on a top plate; the fan screen body comprises a frame (1), a double-end motor (2) fixed in the frame (1), back plates (3) fixed on two sides of the frame (1) and a display device (4) connected to two output ends of the double-end motor (2), a protective cover (5) is arranged in cooperation with the back plates (3), and a background cloth (6) is attached to one side close to the display device (4); drive arrangement rotates turbine (8), drive turbine (8) pivoted driving motor (9) of being connected, rotates through the connecting rod with turbine (8) including fixed frame (7), in fixed frame (7) inside, actuating lever (10) of being connected, actuating lever (10) rotate with frame (1) coaxial synchronization, connecting rod one end rotates with eccentric settings at the eccentric lever of turbine (8) side and is connected, the other end and actuating lever (10) are kept away from rotation axle center one end and are rotated and be connected.

N8246

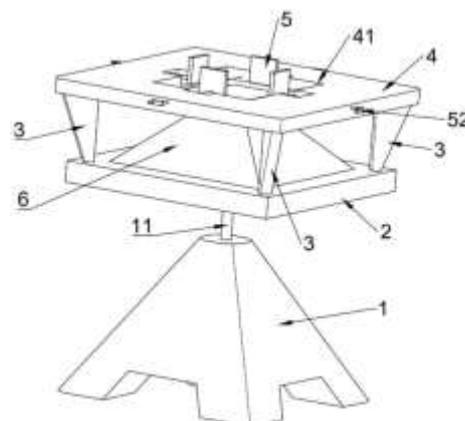
CN214467400U

Priority Date: 15/03/2021

NANJING VOCATIONAL UNIVERSITY OF INDUSTRY TECHNOLOGY

### HOLOGRAPHIC PROJECTION DEVICE

The utility model discloses a holographic projection arrangement relates to the projection arrangement field, the on-line screen storage device comprises a base, be equipped with lifting unit on the base, it has the platen to peg graft on the lifting unit, platen central authorities are equipped with throws the screen, the four corners of platen all is equipped with triangle-shaped's stabilizer blade, be equipped with the roof on the stabilizer blade, roof central authorities are equipped with the standing groove, the bottom of placing is equipped with a plurality of pin, the well upper portion of standing groove four walls all is equipped with extrusion fixing device. The utility model discloses utilize slot and inserted block can fast assembly and utilize small-size projection equipment to carry out holographic projection, utilize elevating gear can conveniently adjust the projection height in a flexible way simultaneously, be convenient for observe the projection. The extrusion fixing device can meet the fixation of equipment with different sizes, and is convenient and fast.



**CLAIM 1.** The holographic projection device is characterized by comprising a base (1), wherein a lifting assembly is arranged on the base (1), a table plate (2) is connected onto the lifting assembly in an inserted mode, a screen (6) is arranged in the center of the table plate (2), triangular support legs (3) are arranged at four corners of the table plate (2), a top plate (4) is arranged on the support legs (3), a placing groove (41) is arranged in the center of the top plate (4), a plurality of stop rods (7) are arranged at the placed bottom, and extrusion fixing devices are arranged on the middle upper portions of four walls of the placing groove (41).

N8254

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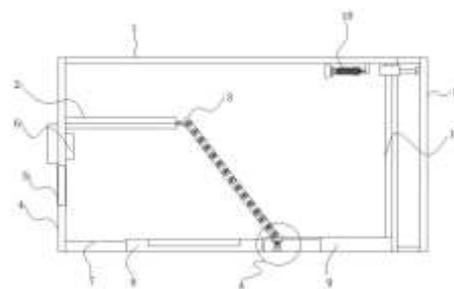
Priority Date: 21/07/2021

QIANGSHI MEDIA

### HOLOGRAPHIC IMAGE STAGE CONTROL SYSTEM

The invention discloses a holographic image stage control system, which relates to the technical field of holographic image stages and comprises a top plate and a third connecting table, wherein a vertical plate is arranged at the left end inside the top plate, a film viewing table is arranged at the lower end inside the vertical plate, a first projector is arranged at the upper end outside the film viewing table, a stabilizing device is arranged at the upper end outside the first projector, a transparent holographic film is arranged at one end outside the stabilizing device, and adjusting devices are arranged at two ends outside the bottom of the transparent holographic film. According to the stage imaging system, the inner cavity is located in the middle of the inner part of the second connecting table, the floor screen is located in the inner cavity and is recessed in the inner cavity, the floor screen can be protected to a certain degree in the use process of the stage imaging system, meanwhile, the whole floor screen is movably placed in the inner cavity, a user can conveniently detach the floor screen, or the floor screen is heightened, the structure is simple, and the use is convenient for the user.

**CLAIM 1.** The utility model provides a holographic image stage control system, includes roof (1) and third links up platform (9), its characterized in that: the novel film projector is characterized in that a vertical plate (4) is arranged at the left end inside the top plate (1), a film viewing platform (5) is arranged at the lower end inside the vertical plate (4), a first projector (6) is arranged at the upper end outside the film viewing platform (5), a stabilizing device (2) is arranged at the upper end outside the first projector (6), a transparent holographic film (3) is arranged at one end outside the stabilizing device (2), adjusting devices (15) are arranged at two ends outside the bottom of the transparent holographic film (3), a second connecting platform (8) is arranged at one end outside the adjusting devices (15), a first connecting platform (7) is arranged at the left end outside the second connecting platform (8), an inner cavity (13) is arranged inside the second connecting platform (8), a ground curtain (14) is arranged in the middle of the inner cavity (13), and the third connecting platform (9) is located at the right end outside the second connecting platform (8), the LED screen body (11) is installed to the outside end of third linking platform (9), and the outside one end of the LED screen body (11) is provided with cleaning device (12), second projector (10) are installed to the inside right-hand member of roof (1).



N8256

CN113608356

Priority Date: 08/10/2021

CHINA COAL RESEARCH INSTITUTE

### AR-BASED HOLOGRAPHIC HEAD-MOUNTED DISPLAY SYSTEM AND METHOD AND HOLOGRAPHIC HEAD-MOUNTED DISPLAY SYSTEM

The application provides a holographic head-mounted display system, a method and a holographic head-mounted based on AR, wherein, the display system comprises: the device comprises a processor module, a data acquisition module, a holographic calculation module and an augmented reality holographic display module, wherein the processor module is respectively connected with the data acquisition module and the holographic calculation module, and the holographic calculation module is connected with the augmented reality holographic display module; the data acquisition module is used for acquiring monitoring data of the environment where the holographic head is worn; the processor module is used for carrying out graphical processing on the monitoring data to generate an environment monitoring graph; the holographic calculation module is used for generating a plurality of holograms according to the environment monitoring image; and the augmented reality holographic display module is used for superposing the multiple holograms and the real environment information to generate an augmented reality hologram and displaying the augmented reality hologram. Therefore, the safety state of mine workers can be monitored in real time, and the monitoring data is subjected to augmented reality display, so that the safety of the workers is guaranteed.

**CLAIM 1.** An AR-based holographic head mounted display system, comprising: a processor module, a data acquisition module, a holographic calculation module and an augmented reality holographic display module, wherein, the processor module is respectively connected with the data acquisition module and the holographic calculation module, and the holographic calculation module is connected with the augmented reality holographic display module; the data acquisition module is used for acquiring monitoring data of the environment where the holographic head is worn; the processor module is used for carrying out graphical processing on the monitoring data to generate an environment monitoring graph; the holographic calculation module is used for generating a plurality of holograms according to the environment monitoring image; and the augmented reality holographic display module is used for superposing the multiple holograms and the real environment information to generate an augmented reality hologram, and displaying the augmented reality hologram.

N8257

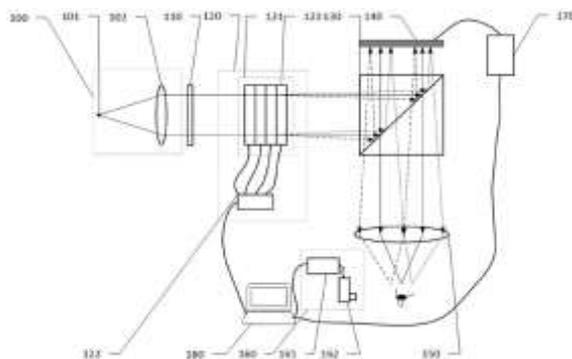
CN113608354

Priority Date: 21/07/2021

SHANGHAI UNIVERSITY

## HOLOGRAPHIC NEAR-EYE DISPLAY SYSTEM BASED ON ELECTRIC CONTROL POLARIZATION MODULATOR AND EYE PUPIL BOX EXPANSION METHOD

The invention discloses a holographic near-eye display system based on an electric control polarization modulator and an eye pupil box expanding method. The system comprises a point light source beam expanding and collimating system, a light deflection system, a spatial light modulator, an ocular, an eye movement tracking system and a controller. Parallel light emitted by the point light source beam expanding and collimating system irradiates the spatial light modulator after being controlled by the light deflection system to deflect, the spatial light modulator loads a calculation hologram to perform diffraction modulation on incident light beams, and modulated image light is converged to human eyes through an ocular lens. The eye movement tracking device is adopted to track the positions of pupils of human eyes, the controller is used for calculating the coordinates of the positions of viewing focuses, calculating the amplitude and the phase, generating a calculation hologram after encoding and loading the calculation hologram on the spatial light modulator, and meanwhile, the deflection device is controlled to drive the deflection device to load corresponding voltage to the deflection device so as to change the direction of parallel light incident on the spatial light modulator, so that diffraction light of the hologram is accurately focused at the positions of the pupils of the human eyes, and the two-dimensional pupil box expansion effect is further realized.



**CLAIM 1.** A holographic near-to-eye display system based on an electric control polarization modulator comprises a point light source beam expanding and collimating system (100), a polarizer (110), a light beam deflection system (120), a beam splitter (130), a spatial light modulator (140), a spatial light modulator driver (170), an eyepiece (150), an eye movement tracking system (160) and a controller (180), and is characterized in that: the point light source expanded beam collimation system (100) is used for generating parallel light of a wide light beam; a polarizer (110) for changing the generated parallel light into linearly polarized parallel light; the light deflection system (120) consists of a deflection device (121) and a deflection device driver (122), the deflection device (121) deflects the parallel light, is connected with the deflection device driver (122) and controls a deflection angle by voltage loaded by the deflection device driver, and the light deflection system is connected with the controller; a beam splitter (130) for irradiating the parallel light refracted by the light deflecting system (120) onto the spatial light modulator (140); the spatial light modulator (140) loads a calculation hologram corresponding to the pupil position, performs diffraction modulation on parallel light refracted by the light deflection system (120) and provides a three-dimensional image for human eyes, and the spatial light modulator (140) is connected with the controller (180) through a spatial light modulator driver (170); a spatial light modulator driver (170) connected to the controller (180) and the spatial light modulator (140), respectively, for controlling the computation hologram loaded on the spatial light modulator; an eyepiece (150) that converges the diffracted light with image information to a human eye; the eye movement tracking system (160) is connected with the controller (180) and used for acquiring the pupil position information of human eyes and transmitting the pupil position information into the controller; and the controller (180) is used for processing the pupil position information of the human eye, calculating the position coordinates of the focus, calculating the amplitude and the phase, generating a calculation hologram after wrapping and encoding, and synchronously controlling the voltage time sequence of the deflection device and the loading and refreshing of the hologram.

N8258

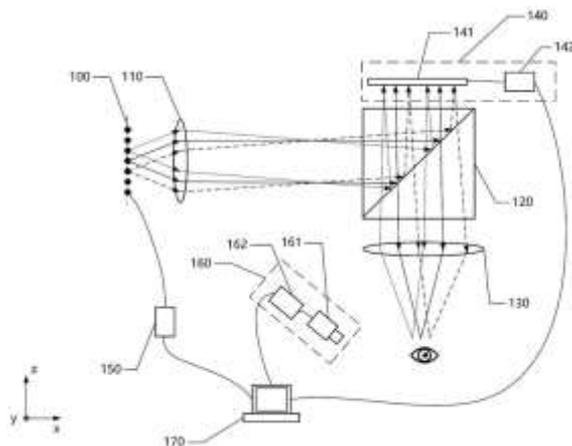
CN113608353

Priority Date: 14/07/2021

SHANGHAI UNIVERSITY

### HOLOGRAPHIC NEAR-EYE DISPLAY SYSTEM BASED ON ARRAY LIGHT SOURCE AND EYE PUPIL BOX EXPANSION METHOD

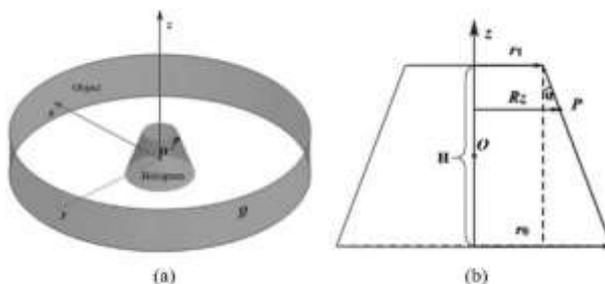
The invention discloses a holographic near-eye display system based on an array light source and an eye pupil box expanding method. The holographic display device includes an array of point light sources, lenses, beam splitters, spatial light modulators, eyepieces, eye tracking systems, computers, and the like. The light emitted by the point light source is collimated by the lens and then irradiates the beam splitter, the parallel light is reflected by the beam splitter and irradiates the spatial light modulator, the parallel light is modulated and diffracted by the calculation hologram loaded on the spatial light modulator, and the diffracted image light is converged to human eyes through the ocular lens. The eye tracking device is adopted to track the position of human eyes, the computer is used for calculating the corresponding position in the point light source array, the light emitting state of the point light source with the corresponding color and the corresponding hologram loaded to the spatial light modulator, and the direction of parallel light incident on the spatial light modulator is changed by controlling the point light source, so that the hologram is accurately converged to the position of the human eyes, further, the color holographic near-eye display is realized, and the eye pupil box is effectively expanded.



**CLAIM 1.** A holographic near-to-eye display system based on an array light source, comprising a point light source array (100), a first lens (110), a beam splitter (120), a spatial light modulator (141) and a driving system (140), an eyepiece, an eye tracking system (160), a point light source array driver (150), and a computer (170), characterized in that: the point light source array (100) is connected with a point light source array driver (150), the point light source array driver (150) controls the point light sources to be turned on and off, and the point light source array driver (150) is connected with a computer (170); a point light source array (100) is arranged on the front focal plane of the first lens (110) and is used for generating wide-beam parallel light with different angles; a beam splitter (120) reflects the parallel light to the spatial light modulator; the spatial light modulator (141) loads a calculation hologram corresponding to the pupil position, diffraction modulation is carried out on parallel light irradiated on the calculation hologram, the diffraction modulated parallel light provides a three-dimensional image for human eyes through an optical system, and the spatial light modulator (141) is connected with a computer (170) through a spatial light modulator driver (142); the ocular lens converges the diffraction light with the image information into human eyes or converges the diffraction light with the image information into the human eyes and simultaneously leads the external light to directly enter the human eyes; the eye movement tracking system (160) is used for acquiring the position information of the pupils of the human eyes and is connected with the computer (170); and the computer (170) is used for processing the pupil position information of the human eye, calculating the on-off state of the point light source in the point light source array (100), calculating the hologram of the corresponding position of the code, and synchronously controlling the on-off of the point light source and the loading and refreshing of the hologram.

**CONICAL SURFACE HOLOGRAPHIC DISPLAY METHOD FOR ENLARGING VERTICAL FIELD ANGLE**

The invention provides a conical surface holographic display method for expanding a vertical field angle. The method firstly provides a conical surface diffraction model and a rapid calculation method thereof, then provides a generation and reconstruction method of a conical surface hologram on the basis of the conical surface diffraction model, and the provided conical surface holographic display method can enlarge the vertical field angle of cylindrical surface holographic display. Since the field angle expansion study and the technical method of the holographic display are limited to the horizontal direction, the field angle expansion method in the vertical direction has never been studied and proposed. Therefore, the method solves the problem that the field angle in the vertical direction of holographic display is limited for the first time, and has better creativity and novelty; in addition, the method can be applied to desktop holographic three-dimensional display and has great application potential.



**CLAIM 1.** The conical surface holographic display method for expanding the vertical field angle is characterized in that: based on twoThe cylindrical diffraction theory of the concentric cylindrical surfaces inclines the inner cylindrical surface serving as a holographic recording surface to become a partial conical surface, so that the vertical field angle of holographic display is enlarged; the generation process of the cone hologram based on the cone diffraction model is specifically described as follows: step one, the object plane of the cone diffraction model is a cylindrical surface, the radius and height of the cylindrical surface are (R, H), the complex amplitude distribution of the cylindrical surface is represented as  $U(\theta_0, z_0)$ , the holographic recording surface is a part of a conical surface, the upper radius and height of the holographic recording surface are  $(R_1, R_0, H)$ , the complex amplitude distribution of the cylindrical surface is represented as  $H(\theta_1, z_1)$ , and since the radius  $R_z$  of the conical surface changes along with the change of the height  $z_1$ , the radius of the conical surface can be represented as:  $r = z_1 (r_1 - r_0) / H + (r_1 + r_0) / 2$ , and when the inclination angle of the tapered surface is  $\alpha$ ,  $\tan \alpha = (r_1 - r_0) / H$  is satisfied; step two, based on the cone diffraction model, the calculation method for generating the cone hologram is expressed as follows:  $h(\theta_1, z_1) = \int U(\theta_0, z_0) \exp[ik \cdot d(\theta_0, z_0, z_1)] D(\theta_0, z_0, z_1) K(\theta_0) d\theta_0 dz_0$ , wherein the distance  $d(\theta_0, z_0, z_1)$  between the object plane and any two points on the holographic surface is  $\sqrt{R_0^2 + z_0^2 + R_z^2 - 2R_0 R_z \cos(\theta_0 - \theta_1) + (z_0 - z_1)^2}$  wherein  $i$  is an imaginary unit,  $\lambda$  is a wavelength,  $k$  is a wave number,  $K(\theta_0)$  is a tilt factor of the diffraction model, and  $\sqrt{\quad}$  is an open square operation; step three, since the tilt factor of the diffraction model can be approximated to 1, the point spread function of the cone diffraction model can be simplified to  $h(\theta_1, z_1) = \int U(\theta_0, z_0) \exp[ik \cdot d(\theta_0, z_0, z_1)] / d(\theta_0, z_0, z_1) d\theta_0 dz_0$ , where  $d(\theta_0, z_0, z_1) = \sqrt{R_0^2 + z_0^2 + R_z^2 - 2R_0 R_z \cos(\theta_0 - \theta_1) + (z_0 - z_1)^2}$  Since  $R_z$  is a constant for a specific height  $z_1$  in the generation of the cone hologram, the cone hologram generation is denoted as  $H(\theta_1, z_1) = \int U(\theta_0, z_0) H(\theta_0 - \theta_1, z_0, z_1) d\theta_0 dz_0$ ; the process of reconstructing the conical hologram is the inverse process of the process of generating the conical hologram, and is specifically described as follows:  $u(\theta_0, z_0) = H(\theta_1, z_1) H(\theta_0 - \theta_1, z_0, z_1) d\theta_1 dz_1$ .

N8259

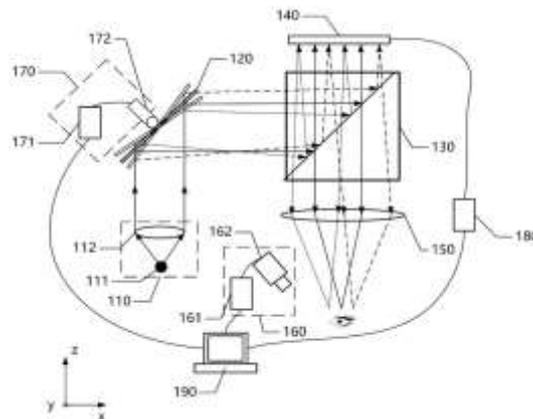
CN113608352

Priority Date: 06/07/2021

SHANGHAI UNIVERSITY

### HOLOGRAPHIC NEAR-EYE DISPLAY SYSTEM BASED ON EXIT PUPIL SCANNING AND EYE PUPIL BOX EXPANSION METHOD

The invention discloses a holographic near-eye display system based on exit pupil scanning and an eye pupil box expanding method. The holographic display device comprises a collimation light source system, a reflector rotating system, a beam splitter, a spatial light modulator, a light combiner, a controller and the like. The light emitted by the point light source is collimated by the lens and then irradiates onto the reflecting mirror, the reflecting mirror reflects the light onto the beam splitter, the parallel light is reflected by the beam splitter and irradiates onto the spatial light modulator, the parallel light is modulated and diffracted by the calculation hologram loaded on the spatial light modulator, and the diffracted image light is converged to human eyes through the lens. The eye movement tracking device is adopted to track the position of human eyes, the controller is used for calculating the rotating angle and direction of the reflector and corresponding holograms loaded to the spatial light modulator, the reflector is rotated to change the direction of parallel light incident on the spatial light modulator, so that the holograms are accurately converged to the position of the human eyes, and the effect of expanding the eye pupil box is further realized.



**CLAIM 1.** A holographic near-to-eye display system based on exit pupil scanning, comprising: comprises a collimated light source system (110), a mirror (120), a beam splitter (130), a spatial light modulator (140), an eye tracking system (160), a mirror rotation system (170), a spatial light modulator driver (180), and a controller (190); the method is characterized in that: the holographic near-eye display system further comprises a lens (150) or a light combiner (210) which respectively form a virtual reality type holographic near-eye display system comprising the lens (150) or an augmented reality type holographic near-eye display system comprising the light combiner (210).

N8272

CN113542716

Priority Date: 01/06/2021

SHENZHEN REALIS MULTIMEDIA TECHNOLOGY

### IMAGE PROCESSING METHOD AND DEVICE APPLIED TO HOLOGRAPHIC DISPLAY

The application discloses an image processing method and device applied to holographic display, the method is based on an image processing system, the image processing system comprises a processing module, a shooting module and a holographic sand table, the method is executed by the processing module, and the method comprises the following steps: acquiring a designated image, wherein the designated image is acquired by a capturing camera assembly of the UE4 system, and the pose of the capturing camera assembly is the same as that of the shooting module; determining a region enclosed by each boundary line and the holographic sand table as a reference region by taking the position of the capture camera assembly as a viewpoint and a connecting line between the viewpoint and each corner point of the holographic sand table as the boundary line; determining pixels which are positioned in the reference area and outside the display area of the holographic sand table from all pixels of the designated image as pixels to be processed; and adjusting the color of the pixel to be processed in the appointed image into a color matched with the background color of the holographic sand table to obtain the target image.

**CLAIM 1.** An image processing method applied to holographic display, wherein the method is based on an image processing system, the image processing system comprises a processing module, a shooting module and a holographic sand table, the method is executed by the processing module, and the method comprises the following steps: acquiring a designated image acquired by a capturing camera assembly of the UE4 system, the capturing camera assembly having a pose identical to the pose of the filming module; determining a region enclosed by each boundary line and the holographic sand table as a reference region by taking the position of the capture camera assembly as a viewpoint and a connecting line between the viewpoint and each corner point of the holographic sand table as the boundary line; determining pixels which are positioned in the reference area and outside the display area of the holographic sand table from all pixels of the designated image as pixels to be processed; and adjusting the color of the pixel to be processed in the appointed image into a color matched with the background color of the holographic sand table to obtain a target image.

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

**N8228**

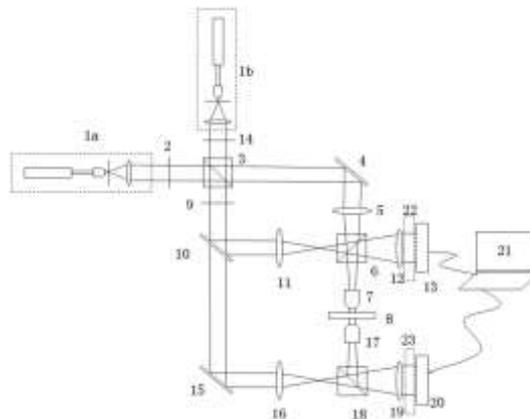
**CN214666619U**

Priority Date: 21/05/2021

**SHENZHEN TECHNOLOGY UNIVERSITY**

### TRANSMISSION-REFLECTION TYPE DIGITAL HOLOGRAPHIC MICROSCOPE SYSTEM

The utility model is suitable for a microscope technical field provides a holographic microscopic system of transmission reflection formula digit, including reflection formula digital holographic microscope light path and the holographic microscope light path of transmission formula digit, reflection formula digital holographic microscope light path does: the first light beam changes the polarization direction through the first polaroid and is divided into two light waves with vertical polarization states, wherein the horizontal polarized light is transmitted through the polarization beam splitting cube to form an object light path reflected by the sample, and the vertical polarized light is reflected through the polarization beam splitting cube to form a reference light path reflected by the sample; the light path of the transmission type digital holographic microscope is as follows: the second light beam changes the polarization direction through the second polaroid and is divided into two light waves with vertical polarization states, wherein the vertical polarized light is reflected through the polarization beam splitting cube to form an object light path transmitted by the sample, and the horizontal polarized light is transmitted through the polarization beam splitting cube to form a reference light path transmitted by the sample. The utility model discloses thickness and surface profile that can the simultaneous test sample.



**CLAIM 1.** A transmission-reflection type digital holographic microscope system is characterized by comprising a reflection type digital holographic microscope light path and a transmission type digital holographic microscope light path, wherein the reflection type digital holographic microscope light path is as follows: the first light beam changes the polarization direction through the first polaroid, and is divided into two light waves with vertical polarization states after passing through the polarization beam splitting cube, wherein the light transmitted through the polarization beam splitting cube is a first object light beam to form a first object light path, and the light reflected by the polarization beam splitting cube is a first reference light beam to form a first reference light path; the light path of the transmission type digital holographic microscope is as follows: the second light beam changes the polarization direction through the second polarizer, and is divided into two light waves with vertical polarization states after passing through the polarization beam splitting cube, wherein the light reflected by the polarization beam splitting cube is the second light beam to form a second light path, and the light transmitted by the polarization beam splitting cube is a second reference light beam to form a second reference light path.

N8269

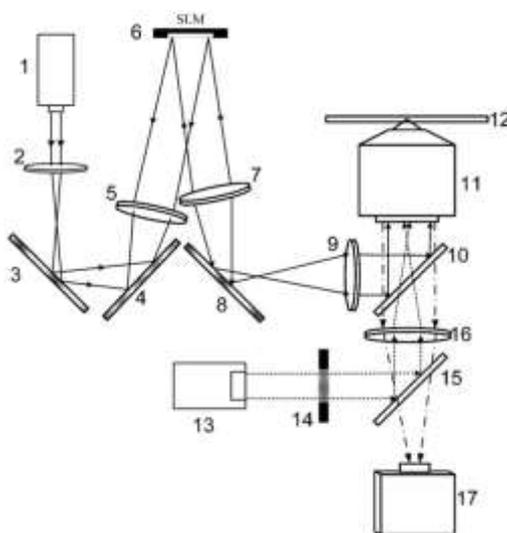
CN113568294

Priority Date: 16/07/2021

XI'AN JIAOTONG UNIVERSITY

### HOLOGRAPHIC OPTICAL TWEEZERS FUSION STRUCTURE LIGHT ILLUMINATION MICROSCOPIC SYSTEM AND METHOD

The invention provides a holographic optical tweezers fusion structure light illumination microscopic system and a method, belonging to the technical field of optical microscopic systems, it includes little control system of holographic optical tweezers and the microsystem of structured light illumination, little control system of holographic optical tweezers includes laser generating device, light beam expanding unit and light modulating unit, light beam expanding unit includes first lens and the second lens that sets gradually along laser generating device's light outgoing direction, light modulating unit includes the light spatial light modulator that sets gradually along the light outgoing direction of second lens and the third lens that sets gradually along light spatial light modulator's light outgoing direction, the fourth lens, first dichroic mirror and objective, the microsystem of structured light illumination includes light source and the structured light generator that sets gradually along light source's light outgoing direction, the second dichroic mirror, the fifth lens, first dichroic mirror and objective.



**CLAIM 1.** The utility model provides a little control system of holographic optical tweezers fused structure light, its characterized in that includes little control system of holographic optical tweezers, little control system of holographic optical tweezers includes laser generating device, light beam expanding unit and light modulating unit, light beam expanding unit includes first lens (2) and second lens (5) that set gradually along laser generating device's light outgoing direction, light modulating unit includes light spatial light modulator (6) that set gradually along the light outgoing direction of second lens (5) and third lens (7), fourth lens (9), first dichroic mirror (10) and objective (11) that set gradually along the light outgoing direction of light spatial light modulator (6).

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

## N8202

**WO2021226102**

Priority Date: 04/05/2020

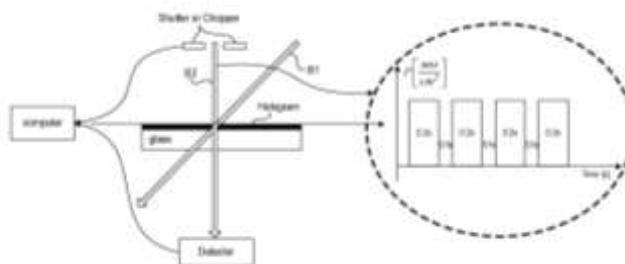
**UNIVERSITY OF ARIZONA**

### **REAL-TIME MONITORING OF DIFFRACTION EFFICIENCY OF VOLUME HOLOGRAPHIC ELEMENTS**

Methods, devices and systems for improved fabrication and measurement of holographic elements are described. One example method includes directing a reference and an object beam toward a holographic material for formation of a diffraction grating in the holographic material, and blocking one of the reference or the object beams to prevent the beam from reaching the holographic material for at least a portion of time during which the diffraction grating is being formed. During the blockage of the beam, a power level of a diffracted beam associated with the reference or the object beam that is not being blocked is measured. Based on the measured power level, it is then determined whether a particular diffraction grating efficiency is reached. The described techniques enable real-time measurement of diffraction grating efficiency as the grating is being formed and enable improved fabrication of holographic elements that must meet precise diffraction grating efficiency requirements.

### **SUIVI EN TEMPS RÉEL DE L'EFFICACITÉ DE DIFFRACTION D'ÉLÉMENTS HOLOGRAPHIQUES DE VOLUME**

Procédés, dispositifs et systèmes pour une fabrication et une mesure améliorées d'éléments holographiques. Procédé donné à titre d'exemple consistant à diriger un faisceau de référence et un faisceau objet vers un matériau holographique pour former un réseau de diffraction dans le matériau holographique, et à bloquer le faisceau de référence ou d'objet afin d'empêcher le faisceau d'atteindre le matériau holographique pendant au moins une partie du temps pendant lequel le réseau de diffraction est formé. Pendant le blocage du faisceau, un niveau de puissance d'un faisceau diffracté associé au faisceau de référence ou d'objet qui n'est pas bloqué est mesuré. Sur la base du niveau de puissance mesuré, il est ensuite déterminé si une efficacité de réseau de diffraction particulier est atteinte. Les techniques décrites permettent une mesure en temps réel de l'efficacité du réseau de diffraction lorsque le réseau est formé et permettent une fabrication améliorée d'éléments holographiques qui doivent satisfaire des exigences d'efficacité de réseau de diffraction précises.



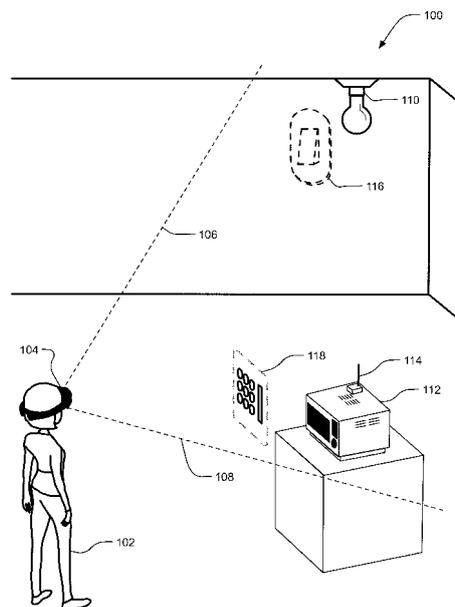
**CLAIM 1.** A method for real-time measurement of diffraction efficiency of a hologram, comprising: directing a reference beam and an object beam toward a holographic material for formation of a diffraction grating in the holographic material; blocking the reference or the object beams to prevent the corresponding beam to reach the holographic material for at least a portion of time during which the diffraction grating is being formed; upon blockage of one of the reference or object beams, measuring a power level of a diffracted beam associated with the reference or the object beam that is not being blocked; and determining whether or not a particular diffraction grating efficiency is reached based on the measured power level.

**HOLOGRAPHIC DEVICE CONTROL**

A remote control device controls a physical controlled device in a physical user space using a virtual control in a mixed reality environment, including positioning, by a remote control device, the virtual control associated with the physical controlled device within a visual user space displayed by the remote control device and viewable within a field of view of a user. The remote control device detects a first user activation of the virtual control within the visual user space and generates a remote control instruction representing the first user activation of the virtual control by the user, the remote control instruction being supported by the physical controlled device to perform the first user activation on the physical controlled device. The remote control device transmits the remote control instruction from the remote control device to the physical controlled device, responsive to detecting the first user activation.

**COMMANDE DE DISPOSITIF HOLOGRAPHIQUE**

Un dispositif de commande à distance commande un dispositif commandé physique dans un espace utilisateur physique à l'aide d'une commande virtuelle dans un environnement de réalité mixte, comprenant le positionnement, par un dispositif de commande à distance, de la commande virtuelle associée au dispositif commandé physique à l'intérieur d'un espace visuel d'utilisateur affiché par le dispositif de commande à distance et pouvant être visualisé dans un champ de vision d'un utilisateur. Le dispositif de commande à distance détecte une première activation d'utilisateur de la commande virtuelle à l'intérieur de l'espace visuel d'utilisateur et génère une instruction de commande à distance représentant la première activation d'utilisateur de la commande virtuelle par l'utilisateur, l'instruction de commande à distance étant prise en charge par le dispositif à commande physique pour effectuer la première activation d'utilisateur sur le dispositif à commande physique. Le dispositif de commande à distance transmet l'instruction de commande à distance du dispositif de commande à distance au dispositif à commande physique, en réponse à la détection de la première activation d'utilisateur.



**CLAIM 1** . A method of remotely controlling a physical controlled device in a physical user space using a virtual control in a mixed reality environment, the method comprising: positioning, by a remote control device, the virtual control associated with the physical controlled device within a visual user space presented by the remote control device within a field of view of a user; detecting, by the remote control device, a first user activation of the virtual control within the visual user space; generating a remote control instruction representing the first user activation of the virtual control, the remote control instruction being supported by the physical controlled device to perform the first user activation on the physical controlled device; and transmitting the remote control instruction from the remote control device to the physical controlled device, responsive to detecting the first user activation.

N8213

KR102319451

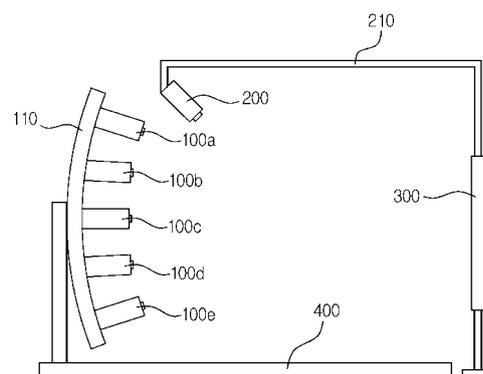
Priority Date: 30/12/2020

KOREA INSTITUTE OF LIGHTING & ICT

### HOLOGRAM IMAGE ACQUISITION METHOD AND HOLOGRAM IMAGE ACQUISITION SYSTEM

The present invention relates to a method for obtaining a hologram image and a system for obtaining a hologram image, and more particularly, to a method for obtaining a hologram image and a system for obtaining a hologram image, the method comprising the steps of: providing a light source for irradiating light to hologram printing, and arranging a plurality of cameras at a predetermined interval from upper to lower sides so as to face the hologram printing; generating a hologram image by irradiating light to the hologram printing by the light source; Wherein the plurality of cameras capture an image generated in the hologram printing while moving an arc around the hologram printing, and the plurality of cameras capture an image generated in the hologram printing, wherein quality of the hologram image is confirmed by acquiring the hologram image according to the configuration.

**CLAIM 1.** First connecting part, 90 A second connection connected to the second connection 45 The positions of hologram printing and the light source are maintained at a certain distance by a connecting portion including a third connecting portion connected to the third connecting portion, the hologram printing and the light source are arranged parallel to each other on a y axis, and a camera is arranged to face the hologram printing; 45 Generating a hologram image by irradiating light at an angle to generate a hologram image; photographing a portion of the hologram image while the camera moves in an arc shape with respect to the hologram printing on an X-axis orthogonal to the Y-axis; photographing left and right ranges of the hologram image by rotating the light source and the hologram printing in a clockwise or counterclockwise direction, Generating the hologram image in a rotated state; and capturing, by the camera, at least a part of an upper and lower extent of the hologram image by photographing a part of the rotated hologram image while moving about the hologram printing on the X-axis.



N8214

KR102319443

Priority Date: 06/08/2021

KIM, SUK-JIN

### JOULE PENDANT FOR GENERATING HOLOGRAM PATTERNS AND METHOD OF MANUFACTURING THE SAME

Provided are a Joule pendant capable of stimulating a purchase desire of a demand by cutting the Joule pendant with a predetermined rule and forming a hologram pattern that moves according to a time point, and a method of manufacturing the same. The method of manufacturing a journal pendant includes: manufacturing a pendant body having a shape; performing a first cutting process of forming a plurality of circles arranged along a contour of the shape so as to be in contact with the contour of the shape; and performing a second cutting process of forming a plurality of curves on the pendant body.

**CLAIM 1.** A method of manufacturing a door unit, comprising the steps of: preparing a pendant body in which a text is formed; subjecting the pendant body to a first cutting process that forms a plurality of circles arranged along a contour of the text so as to abut the contour of the text; and subjecting the pendant body to a second cutting process that forms a plurality of curves, Wherein the plurality of curves form at least a part of a plurality of circles arranged along the virtual contour line so that the center is located on the virtual contour line which is the same as the contour line of the question and is reduced at a specific rate, and wherein values of diameters of the plurality of circles arranged along the virtual contour line are larger than values of diameters of the plurality of circles arranged along the contour line of the question.



N8220

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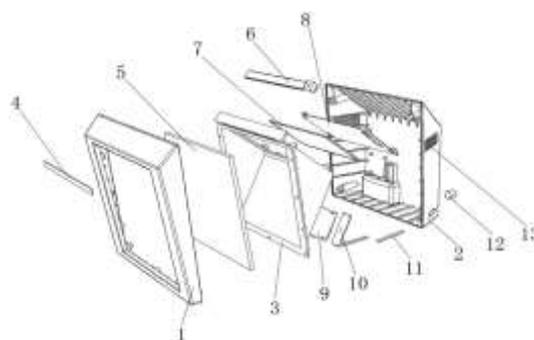
Priority Date: 14/04/2021

SUZHOU YANSHITONG ELECTRONIC TECHNOLOGY

### TOUCH-FREE HOLOGRAPHIC AIR IMAGING TOUCH SCREEN EQUIPMENT FOR COUNTER SERVICE

The utility model discloses a screen device of contact-free holographic air imaging touch control for counter service, which comprises a shell, a first cover plate, an optical inner container, a second cover plate, an optical lens, a gesture sensor, a screen body, a fixed bracket, a first control plate, a second control plate, an anti-slip rubber strip, a power button, a heat dissipation hole and an external interface, wherein the internal wall of one side of the first cover plate is provided with the external interface, the external interface is connected with the gesture sensor through a signal line, the external interface is connected with the first control plate through a signal line, the external interface is connected with the second control plate through a signal line, compared with the prior touch control screen, the utility model is designed into the contact-free holographic air imaging touch control screen, realizes the display imaging in the air, realizes the contact-free touch control function, is not only practical and convenient, but also has strong scientific and technological sense, and cross propagation in public environment can be effectively reduced, and virus propagation ways are reduced.

**CLAIM 1.** A screen equipment that is used for holographic air formation of image touch-control of contact-free of sales counter service, including shell (1), first apron (2), optics inner bag (3), second apron (4), optical lens (5), gesture sensor (6), screen body (7), fixed bolster (8), first control panel (9), second control panel (10), anti-skidding rubber strip (11), power button (12), louvre (13) and external interface (14), its characterized in that: the optical cable screen is characterized in that a first cover plate (2) is fixed on the outer wall of one side of the shell (1) through bolts, an optical inner container (3) is fixedly connected onto the inner wall of one side of the first cover plate (2), an optical lens (5) is fixedly connected onto the outer wall of one side of the optical inner container (3), the optical lens (5) is sleeved on the inner wall of one side of the shell (1), a screen body (7) is arranged on the outer wall of one side of the optical inner container (3), a fixing support (8) is fixedly connected onto the outer wall of one side of the screen body (7), and the fixing support (8) is fixed onto the outer wall of one side of the optical inner container (3) through bolts.



N8238

CN214564011U

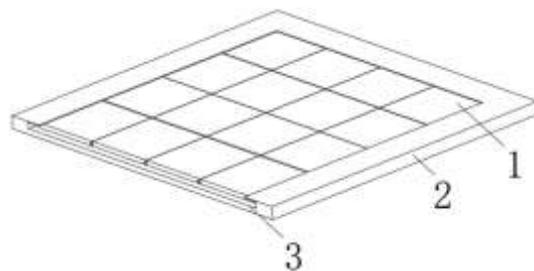
Priority Date: 12/03/2021

HUBEI GEDIAN DEVELOPMENT REGION CHENGUANG INDUSTRIAL

### HOLOGRAPHIC MASTER PLATE FOR SPLICING SEAMLESS MICRO PLATE MAKING PROCESS

The utility model provides a concatenation seamless micro plate-making process's holographic mother board relates to holographic technical field, including the unit mother board, the side of unit mother board is fixed with the locating piece, the side of locating piece evenly is fixed with the fixture block, the constant head tank has been set up to the side of unit mother board, the draw-in groove has evenly been set up in the constant head tank, the front of unit mother board is equipped with the dead lever, and dead lever and unit mother board swing joint. The structure of mortise and tenon joint is adopted, the clamping blocks and the clamping grooves are respectively fixed on the corresponding side edges of the unit mother plates, when the clamping blocks and the clamping grooves are mutually clamped, the two unit mother plates are fixed by the fixing rods, the design enables the gap at the joint of the holographic mother plates during splicing to be minimum, the holographic mother plates are suitable for splicing large-size unit holograms, and the production quality of the holographic mother plates is improved.

**CLAIM 1.** The utility model provides a splice holographic mother board of seamless micro plate-making technology, includes unit mother board (1), its characterized in that: the unit mother set is characterized in that a positioning block (10) is fixed on the side face of the unit mother set (1), a clamping block (5) is uniformly fixed on the side face of the positioning block (10), a positioning groove (8) is formed in the side face of the unit mother set (1), a clamping groove (7) is uniformly formed in the positioning groove (8), a fixing rod (6) is arranged on the front face of the unit mother set (1), and the fixing rod (6) is movably connected with the unit mother set (1).



N8241

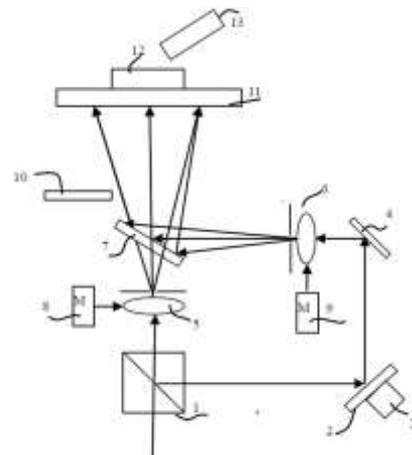
CN214540190U

Priority Date: 25/04/2021

SOOCHOW UNIVERSITY

### SPLICING PROCESSING DEVICE FOR HOLOGRAPHIC LENS

The application provides a splicing processing device of holographic lenses. It includes: holographic lens exposure concatenation controlling means and holographic lens base plate adjusting device, this holographic lens exposure concatenation controlling means includes: the first attitude control platform is connected with the first spatial filter, the second attitude control platform is connected with the second spatial filter, the piezoelectric ceramic is connected with the first reflector and used for controlling the micro displacement of the first reflector so as to change the optical path of reflected light in real time, and the parallel flat plate is arranged between the semi-transmitting semi-reflecting mirror and the holographic lens substrate and positioned above the semi-transmitting semi-reflecting mirror and used for deflecting the optical path so that the positions of the first spherical wave and the second spherical wave generate micro displacement to form light field interference fringes which are superposed with the prepared holographic lens to form moire fringes. The device enlarges the aperture of the light beam through deflection of the light beam, splices the curved grating lines through exposure splicing to manufacture a large-aperture holographic lens, and meets the requirements of a large-aperture telescope system.



**CLAIM 1.** A splicing processing device for a holographic lens is characterized by comprising: a holographic lens exposure splicing control device and a holographic lens substrate adjusting device, the holographic lens exposure splicing control device comprises: a first attitude console connected to the first spatial filter, a second attitude console connected to the second spatial filter, a piezoelectric ceramic connected to the first reflecting mirror for controlling the micro-displacement of the first reflecting mirror to change the optical path of the reflected light in real time, an And the parallel flat plate is arranged between the semi-transparent semi-reflective mirror and the holographic lens substrate and positioned above the semi-transparent semi-reflective mirror and used for deflecting the light path to enable the positions of the first spherical wave and the second spherical wave to generate micro displacement so as to form light field interference fringes which are superposed with the prepared holographic lens and further form moire fringes.

N8248

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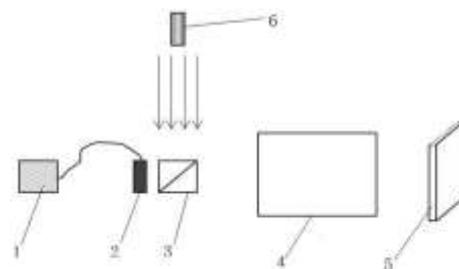
Priority Date: 17/08/2021

SOUTHEAST UNIVERSITY NANJING

### HOLOGRAPHIC ENCODING METHOD BASED ON NEURAL NETWORK

The invention discloses a holographic encoding method based on a neural network, which comprises the following steps: decomposing the target complex amplitude into real data of two channels, and taking the real data as the input of a neural network model; processing the real data through the neural network model to obtain a single-channel holographic coding result; loading the obtained single-channel holographic coding result on a spatial light modulator to obtain output light; and constructing an optical system, and transmitting the obtained output light through the optical system to finally obtain a target complex amplitude result recovered by the single-channel holographic code pattern. The holographic encoding result generated by the method is subjected to holographic reconstruction, the reconstructed holographic result has less noise, and meanwhile, the method can be widely applied to holographic encoding and holographic reconstruction in complex amplitude scenes, and provides a new thought for further development of holographic display.

**CLAIM 1.** A holographic coding method based on a neural network is characterized by comprising the following steps: step S1, decomposing the target complex amplitude into real data of two channels, and taking the real data as the input of a neural network model; step S2, processing the real data through the neural network model to obtain a single-channel holographic encoding result; s3, loading the single-channel holographic encoding result obtained in the S2 on a spatial light modulator to obtain output light; and S4, constructing an optical system, and transmitting the output light obtained in the step S3 through the optical system to finally obtain a target complex amplitude result recovered by the single-channel holographic code pattern.



N8249

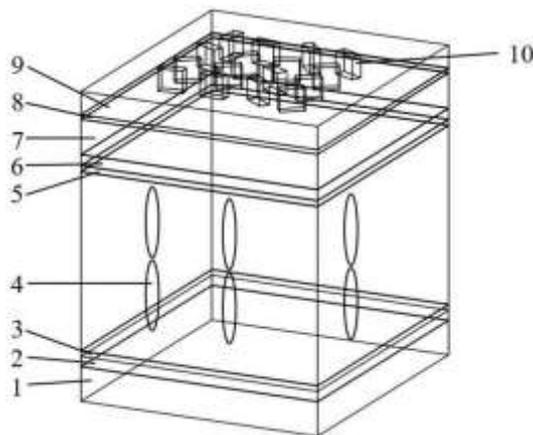
CN11365557

Priority Date: 08/07/2021

HUNAN UNIVERSITY

### DYNAMIC COLOR HOLOGRAPHIC DEVICE BASED ON SUPER-STRUCTURE SURFACE AND MANUFACTURING METHOD THEREOF

The invention discloses a dynamic color holographic device based on a super-structure surface and a manufacturing method thereof. The method for manufacturing the dynamic color holographic device mainly comprises a design and manufacturing method of a super-structure surface and a packaging method of liquid crystal. The invention combines the super-structure surface with the polarization regulation function of the liquid crystal, and realizes the dynamic switching of the color holographic patterns of the device under the condition of the same linearly polarized light incidence. The independent control of different color wavelengths can be realized naturally by carefully designing the nano-columns on the surface of the super-structure, so that holographic images corresponding to different wavelengths can be imaged at the same position, and color holography is realized. An electric control tuning mode is adopted, so that the tuning process is simple; the invention utilizes the particle swarm algorithm to carry out phase matching on the nanostructure units at each position on the surface of the super structure, and compared with other matching algorithms, the phase matching method is simpler and easier to realize and has no adjustment of a plurality of parameters.



**CLAIM 1.** A dynamic color holographic device based on a super-structured surface, characterized in that: consists of a liquid crystal layer and a super-structure surface layer; the liquid crystal layer comprises a first layer of transparent medium substrate for light incidence; the first layer of indium tin oxide transparent electrode ITO is plated on the first layer of transparent dielectric substrate, is used for conducting electricity and is connected with an external power supply; the first photoinduced orientation layer is coated on the ITO film; nematic liquid crystal, pour into a large number of intervals between two layers of alignment layers, used for changing the polarization state of the light; a second photo-alignment layer supported by spacers filled with a large number of gaps between the two alignment layers; a second layer of indium tin oxide transparent electrode which is stacked on the second layer of photoinduced orientation layer and is connected with the external power supply; the second layer of transparent dielectric substrate is stacked on the second layer of indium tin oxide transparent electrode and used for emitting light of the liquid crystal layer; the super-structure surface layer comprises a transparent medium substrate, a second layer of transparent medium substrate which is stacked on the liquid crystal layer and is used for entering light emitted from the liquid crystal layer; the dielectric rectangular nano structure array is distributed on the transparent medium substrate according to a certain rule and used for regulating and controlling emergent light so as to obtain a final holographic pattern.

N8260

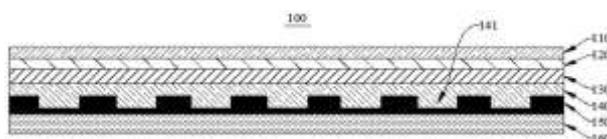
CN113602032

Priority Date: 10/08/2021

WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT

### HIGH-TEMPERATURE-RESISTANT HOLOGRAPHIC GOLD STAMPING FILM, GOLD STAMPING PLASTIC PART AND PREPARATION METHOD

The embodiment of the application provides a high-temperature-resistant holographic gold stamping film, a gold stamping plastic part and a preparation method, and relates to the field of gold stamping films. The high-temperature-resistant holographic gold-stamping film comprises a base film, a release layer, a protective layer, a mould pressing layer, a metal coating and a glue layer which are sequentially overlapped from bottom to top, wherein the surface of the mould pressing layer, which is close to the metal coating, is provided with a holographic pattern microstructure, the coatings corresponding to the protective layer and the mould pressing layer respectively contain polyhydroxy acrylic resin, amino resin and isocyanate, and the dosage ratio of the amino resin to the isocyanate in the coating corresponding to the protective layer is 2-4: 1, the dosage ratio of the amino resin to the isocyanate in the coating corresponding to the mould pressing layer is 0.5-1: 1. the high-temperature-resistant holographic gold stamping film has excellent physical and chemical resistance, can resist high-temperature hot stamping and die pressing, and meets higher decoration requirements in the field of plastic gold stamping.



**CLAIM 1.** The high-temperature-resistant holographic gold stamping film is characterized by comprising a base film, a release layer, a protective layer, a mould pressing layer, a metal coating and an adhesive layer which are sequentially overlapped from bottom to top, wherein the surface of the mould pressing layer close to the metal coating is provided with a holographic pattern microstructure, coatings corresponding to the protective layer and the mould pressing layer respectively contain polyhydroxy acrylic resin, amino resin and isocyanate, and the dosage ratio of the amino resin to the isocyanate in the coating corresponding to the protective layer is 2-4: 1, the dosage ratio of the amino resin to the isocyanate in the coating corresponding to the mould pressing layer is 0.5-1: 1.

N8261

CN113595607

Priority Date: 16/07/2021

UNIVERSITY BEIJING

### HYBRID PRECODING METHOD AND SYSTEM BASED ON RECONFIGURABLE HOLOGRAPHIC SUPER SURFACE

The invention discloses a hybrid pre-coding method and a hybrid pre-coding system based on a reconfigurable holographic super surface. The method comprises the following steps: carrying out digital beam forming coding on the target sending signal according to the digital beam forming matrix; inputting a digital beam coding signal into a feed source of the reconfigurable holographic super-surface antenna, enabling a reference wave which is sent by the feed source and carries a target sending signal to enter a metamaterial radiation unit of the reconfigurable holographic super-surface antenna, carrying out holographic beam forming coding on the reference wave by the metamaterial radiation unit according to the holographic beam forming matrix, and sending the holographic beam coding signal to a user. The invention can solve the problems of high antenna manufacturing cost and large power loss in the mobile communication process and simultaneously improve the communication quality.

**CLAIM 1.** A hybrid precoding method based on a reconfigurable holographic super surface is characterized by comprising the following steps: acquiring a target sending signal; carrying out digital beam forming coding on the target sending signal according to the digital beam forming matrix to obtain a digital beam coding signal; inputting the digital beam coding signals into a feed source of the reconfigurable holographic super-surface antenna, enabling reference waves which are sent by the feed source and carry the target sending signals to enter a metamaterial radiation unit of the reconfigurable holographic super-surface antenna, and enabling the metamaterial radiation unit to perform holographic beam forming coding on the reference waves according to a holographic beam forming matrix to obtain holographic beam coding signals and sending the holographic beam coding signals to a user.

N8262

CN113591854

Priority Date: 12/08/2021

CHINA OCEAN UNIVERSITY

### LOW-REDUNDANCY QUICK RECONSTRUCTION METHOD OF PLANKTON HOLOGRAM

The invention relates to the technical field of computer vision, and particularly discloses a low-redundancy quick reconstruction method of a plankton hologram, which comprises the following steps of: s1: collecting a digital hologram of plankton to generate a source image data set; s2: calibrating plankton in each holographic source image in the source image data set to obtain a calibration data set; s3: training the built hologram reconstruction network by using the calibration data set, and testing the trained hologram reconstruction network by using the source image data set; s4: and using the tested hologram reconstruction network for reconstructing other plankton holographic source images. The hologram reconstruction network can realize autonomous detection of an effective target area and reconstruction of an interested area. Compared with the traditional numerical reconstruction method, the trained hologram reconstruction network has high reconstruction speed on the plankton hologram and high efficiency of eliminating redundant information, and is expected to play an important role in marine environment detection.

N8267

CN113589524

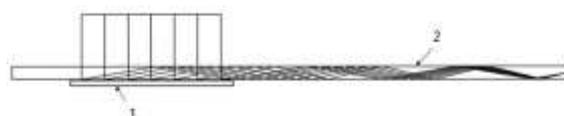
Priority Date: 08/10/2021

NANCHANG UNIVERSITY

### DESIGN METHOD OF HOLOGRAPHIC GRATING OPTICAL WAVEGUIDE PLANAR LIGHT-GATHERING SYSTEM FOR LIFI COMMUNICATION

The invention discloses a design method of a holographic grating optical waveguide plane condensing system facing LiFi communication, which condenses and deflects incident light through a holographic grating and folds the light path of diffracted light of the holographic grating through an optical waveguide; the method comprises the following steps: s1, selecting different integration modes between the holographic grating and the visible light detector according to the requirements of the plane light-gathering system; s2 designing a holographic grating visible light convergence deflection initial system; s3 designing a holographic grating optical waveguide condensing system; s4, solving the propagation vector and grating period constant of the emergent light of the holographic grating through light tracing; s5 calculating the diffraction efficiency of the holographic grating; s6 records holographic grating and test. The invention replaces the traditional refraction/reflection type light gathering function by the low-cost holographic grating, deflects the incident light and realizes the coupling with the optical waveguide; the ultrathin design of the visible light communication condensing system is realized by repeatedly folding the optical waveguide to the optical path; and the use efficiency of the detector is improved.

**CLAIM 1.** The design method of the holographic grating optical waveguide plane light gathering system facing LiFi communication is characterized in that: the planar light condensing system comprises a holographic grating, an optical waveguide and a visible light detector,



wherein the holographic grating and the visible light detector are integrated on the optical waveguide; the holographic grating is formed by exposing two beams of structural beams on a photosensitive material film and then developing, wherein one beam of structural beam is called a reference beam, the incident direction of the reference beam is vertical to the photosensitive material, the other beam of structural beam is called an object beam, the included angle between the incident direction of the object beam and the photosensitive material is larger than the total reflection angle of the optical waveguide, and the incident beam has focal power; the holographic grating condenses and deflects the incident light; the optical waveguide folds the light path of the diffraction light of the holographic grating; when the diffraction light of the holographic grating is coupled into the optical waveguide, the coupling angle is larger than the total reflection angle of the optical waveguide; the design method comprises the following steps: s1, selecting different integration schemes between the holographic grating and the visible light detector according to the requirements of the plane light-gathering system; s2, designing a holographic grating visible light convergence deflection initial system: calculating an initial system without optical waveguide folding light according to the spatial position and the light-gathering area of the holographic grating in the integration scheme of the step S1 and combining the spatial position of the visible light detector; s3, designing a holographic grating optical waveguide condensing system: establishing a holographic grating optical waveguide simulation model in ZEMAX according to the initial system designed in the step S2; s4, solving the propagation vector and grating period constant of the emergent light of the holographic grating through light tracing; s5, calculating the diffraction efficiency of the holographic grating; and S6, recording the holographic grating and testing.

**N8271**

**CN113554636**

*Priority Date: 30/07/2021*

**XIDIAN UNIVERSITY**

**CHIP DEFECT DETECTION METHOD BASED ON GENERATION OF COUNTERMEASURE NETWORK AND COMPUTER GENERATED HOLOGRAM**

The invention is suitable for the technical field of chip defect detection, and provides a chip defect detection method based on generation of a countermeasure network and computer generated holography, which comprises the following steps: collecting object light wave amplitude and phase information of a non-defective chip, processing the obtained data to obtain a stripe sequence diagram, and then forming a gray level calculation hologram through gray level value coding; loading the gray-scale calculation hologram in a spatial light modulator and placing the spatial light modulator in a light path meeting set requirements, and generating a dynamic reconstruction holographic projection image through a light diffraction effect; training a GAN network by using a gray-scale computation hologram; inputting the gray level calculation hologram of the chip to be detected into the trained GAN network, and outputting a detection result, the invention has the beneficial effects that: the problems of 3D modeling and imaging of the miniaturized chip are solved, the influence of environmental factors and the actual cost in the optical process are reduced, and the chip detection has high detection speed.

**CLAIM 1.** A chip defect detection method based on generation of a countermeasure network and computer generated holography is characterized by comprising the following steps: collecting object light wave amplitude and phase information of a non-defective chip, processing the obtained data to obtain a fringe ordering image set, and then forming a gray level calculation hologram set through gray level value coding; loading the gray scale calculation hologram set in a spatial light modulator and placing the set in a light path meeting set requirements, generating a dynamic reconstruction hologram projection image set through light diffraction, and verifying whether the positions of chip pins and a surface area correspond to each other in a reconstruction hologram projection image and a gray scale calculation hologram; when the positions of the chip pins and the surface area correspond to each other in the reconstructed holographic projection image and the gray-scale calculation hologram, training a GAN network by using a gray-scale calculation hologram set; and inputting the gray level calculation hologram of the chip to be detected into the trained GAN network, and outputting a detection result.

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**N8273**

**CN113541873**

*Priority Date: 15/07/2021*

**HANGZHOU FEIFEI TECHNOLOGY**

**CHANNEL FEEDBACK COMPRESSION METHOD AND SYSTEM BASED ON RECONFIGURABLE HOLOGRAPHIC SUPER SURFACE**

The invention relates to a channel feedback compression method and a system based on a reconfigurable holographic super surface, wherein the method comprises the following steps: acquiring a data packet received by a user terminal at the current moment; the receiving signal of the base station comprises a signal sent by the reconfigurable holographic super surface, and the user side is provided with the reconfigurable holographic super surface; determining a channel state information data packet at the current moment according to the data packet; recording channel data quantized by the channel state information data packet at the current moment as current channel data; recording the channel data quantized when the user terminal sends the channel state information data packet to the base station as the last channel data; calculating a first communication rate when the user terminal sends a data packet not including the current channel data to the base station at the current moment and a second communication rate when the data packet including the current channel data; and determining whether the data packet sent to the base station by the user terminal at the current moment comprises the current channel data or not by comparing the first communication rate with the second communication rate. The invention improves the communication speed of the system.

**CLAIM 1.** A channel feedback compression method based on a reconfigurable holographic super surface is characterized by comprising the following steps: acquiring a data packet received by a user terminal at the current moment; the data packet is sent from a base station, a receiving signal of the base station comprises a signal sent by the reconfigurable holographic super surface, and the user side is provided with the reconfigurable holographic super surface; determining a channel state information data packet at the current moment according to the data packet; recording channel data quantized by the channel state information data packet at the current moment as current channel data; recording the channel data quantized when the user terminal sends the channel state information data packet to the base station as the last channel data; calculating the communication rate when the user side sends a data packet which does not comprise the current channel data to the base station at the current moment, and recording the communication rate as a first communication rate; calculating the communication rate of the client side to the base station at the current moment when the client side sends the data packet containing the current channel data, and recording the communication rate as a second communication rate; and determining whether the data packet sent to the base station by the user terminal at the current moment comprises the current channel data or not by comparing the first communication rate with the second communication rate.

N8274

CN113541759

Priority Date: 15/07/2021

HANGZHOU FEIFEI TECHNOLOGY

## RECONFIGURABLE HOLOGRAPHIC SUPER-SURFACE BEAM FORMING METHOD AND SYSTEM BASED ON DEEP LEARNING

The invention discloses a reconfigurable holographic super-surface beam forming method and system based on deep learning, and relates to the technical field of communication. The method includes determining a target channel; the target channel is a channel from a metamaterial radiation unit in the target reconfigurable holographic super-surface antenna to a receiving end; determining an analog beam forming matrix and a digital beam forming matrix of the target reconfigurable holographic super-surface antenna based on a target channel and a deep learning algorithm; training based on a training target and the deep learning algorithm to obtain a neural network model; the loss function of the neural network model is a calculation function of the total communication rate of the receiving end; the training objective is to maximize the overall communication rate at the receiving end. The invention can achieve the purposes of reducing the requirement of computing hardware and improving the communication rate.

**CLAIM 1.** A reconfigurable holographic super-surface beam forming method based on deep learning is characterized by comprising the following steps: determining a target channel; the target channel is a channel from a metamaterial radiation unit in the target reconfigurable holographic super-surface antenna to a receiving end; determining an analog beam forming matrix and a digital beam forming matrix of the target reconfigurable holographic super-surface antenna based on a target channel and a deep learning algorithm; training based on a training target and the deep learning algorithm to obtain a neural network model; the loss function of the neural network model is a calculation function of the total communication rate of the receiving end; the training objective is to maximize the overall communication rate at the receiving end.

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**HOLOGRAMS - 15 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="#">P34148</a>	KR	20210131591	03/11/2021	MOOKOONGHWA LNB	KR	24/04/2020	KR202000049869	KR20210131591	AUTHENTIC AUTHENTICATION LABEL	
<a href="#">P34171</a>	CN	214752608	16/11/2021	SHANDONG TAIBAO PACKAGING PRODUCT	CN	31/05/2021	CN2021001184225	CN214752608U	UNCOVERING HOLOGRAPHIC ANTI-COUNTERFEITING FANCY LANTERN	
<a href="#">P34176</a>	CN	214731338	16/11/2021	ANHUI ZIJIANG ALUMINIUM SPRAY ENVIRONMENTAL PROT MATERIAL - SHANGHAI ZIJIANG METALLIZATION ENV PROT MAT	CN	04/01/2021	CN2021000008486	CN214731338U	NANOMETER REFRACTION THREE-DIMENSIONAL RELIEF LASER ANTI-COUNTERFEITING ALUMINUM-SPRAYED PACKAGING BOX	
<a href="#">P34179</a>	CN	214705200	12/11/2021	SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP	CN	25/05/2021	CN2021001137406	CN214705200U	MAGNETIC LIGHT-VARIABLE ANTI-COUNTERFEITING HOLOGRAPHIC ANTI-COUNTERFEITING LABEL	
<a href="#">P34180</a>	CN	214705199	12/11/2021	SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP	CN	25/05/2021	CN2021001137392	CN214705199U	PRINTED HOLOGRAPHIC UNCOVERING INFORMATIZATION ANTI-COUNTERFEIT LABEL	
<a href="#">P34181</a>	CN	214693987	12/11/2021	SHANDONG TAIBAO PACKAGING PRODUCT	CN	31/05/2021	CN2021001184222	CN214693987U	UNCOVERING HOLOGRAPHIC ANTI-COUNTERFEITING ADHESIVE TAPE	
<a href="#">P34185</a>	CN	214671459	09/11/2021	SHANGHAI HAUGE FALSE PROOF TECHNOLOGY	CN	26/04/2021	CN2021000879561	CN214671459U	CONCAVE-CONVEX VARIABLE ANTI-COUNTERFEITING DIGITAL LABEL	
<a href="#">P34186</a>	CN	214671452	09/11/2021	SHANGHAI NUOBIO INFORMATION TECHNOLOGY	CN	09/01/2021	CN2021000050348	CN214671452U	DOUBLE-LAYER PURCHASE-REMOVAL TYPE COLOR CODE ANTI-COUNTERFEITING MARK FOR COLD STAMPING OF LOOSE FLOWERS	
<a href="#">P34197</a>	CN	214567531	02/11/2021	LU QINGYU	CN	11/03/2021	CN2021000509337	CN214567531U	LASER ANTI-COUNTERFEITING LABEL FOR ARTICLE PACKAGING	
<a href="#">P34200</a>	CN	214525463	29/10/2021	ZHEJIANG MEGA TECHNOLOGY	CN	12/03/2021	CN2021000532235	CN214525463U	NOVEL HOLOGRAPHIC ANTI-FAKE VACUUM PACKAGING BAG OF ALUMINIZING	
<a href="#">P34203</a>	CN	214476015	22/10/2021	SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP	CN	30/04/2021	CN2021000921676	CN214476015U	TRANSPARENT HOLOGRAPHIC INFORMATION ANTI-COUNTERFEITING MARK	
<a href="#">P34204</a>	CN	214476014	22/10/2021	SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP	CN	30/04/2021	CN2021000921661	CN214476014U	FILMLESS LASER INFORMATION ANTI-COUNTERFEIT LABEL	
<a href="#">P34205</a>	CN	214476007	22/10/2021	HENAN PROVINCE WELLKING TECHNOLOGY DEVELOPMENT	CN	29/03/2021	CN2021000628970	CN214476007U	DOUBLE-SIDED WATER-PASTING FLOWER ANTI-COUNTERFEITING LABEL	
<a href="#">P34210</a>	CN	214474408	22/10/2021	SEMJON PAPER SHANGHAI	CN	28/12/2020	CN2020003226290	CN214474408U	IMPRESSION EQUIPMENT OF HOLOGRAPHIC ANTIFALSIFICATION LABEL HOLLOW PAPER	
<a href="#">P34214</a>	CN	214449308	22/10/2021	JIANGSU YINHE LASER TECHNOLOGY	CN	23/12/2020	CN2020003149003	CN214449308U	LASER HOLOGRAPHIC ANTI-COUNTERFEITING MOLDED PLATE WITH FULL IMAGE	

**VARIOUS OPTICAL EFFECTS - 15 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="#">P34125</a>	WO	2021230619	18/11/2021	NBST	KR	13/05/2020	KR2020000057132	WO2021230619	FORGERY PREVENTION MEANS INCLUDING CHOLESTERIC LIQUID CRYSTAL DISPLAY LAYER	
<a href="#">P34126</a>	WO	2021230613	18/11/2021	NBST	KR	13/05/2020	KR2020000057146	WO2021230613	COUNTERFEITING/FALSIFICATION PREVENTION MEANS COMPRISING POLARIZING MATERIAL AND METHOD FOR UTILIZING SAME	
<a href="#">P34128</a>	WO	2021228573	18/11/2021	LEONHARD KURZ STIFTUNG - OVD KINEGRAM	DE	14/05/2020	DE202010113144	WO2021228573 DE102020113144	METHOD FOR PRODUCING A MULTILAYER BODY, AND A MULTILAYER BODY	MicroLens
<a href="#">P34130</a>	WO	2021225526	11/11/2021	NANYANG TECHNOLOGICAL UNIVERSITY	SG	06/05/2020	SG2020001004162	WO2021225526	THIN FILM, METHOD OF PRODUCING THE THIN FILM, AND PRODUCT COMPRISING THE THIN FILM	
<a href="#">P34131</a>	WO	2021222963	11/11/2021	HUECK FOLIEN	AT	08/05/2020	AT2020000050402	WO2021222963	SECURITY ELEMENT	

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**VARIOUS OPTICAL EFFECTS - 15 PATENTS (continuation)**

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
<a href="#">P34133</a>	WO	2021219735	04/11/2021	KOENIG BAUER BANKNOTE SOLUTIONS	GB	28/04/2020	GB202000006219	WO2021219735 GB202006219 GB2594474	METHODS FOR DESIGNING AND PRODUCING A SECURITY FEATURE	Microlens
<a href="#">P34135</a>	WO	2021214244	28/10/2021	SICPA	EP	23/04/2020	EP2020000171031	WO2021214244	PROCESS FOR PRODUCING DICHROIC SECURITY FEATURES FOR SECURING VALUE DOCUMENTS	
<a href="#">P34137</a>	WO	2021213942	28/10/2021	BASF	EP	23/04/2020	EP2020000171077	WO2021213942	COMPOSITIONS, COMPRISING PLATELET-SHAPED TRANSITION METAL PARTICLES	
<a href="#">P34138</a>	WO	2021212803	28/10/2021	SVG TECHNOLOGY	CN	24/04/2020	CN2020000332484	WO2021212803 CN113554933	COLORFUL COLOR-CHANGING FILM	
<a href="#">P34141</a>	US	20210347193	11/11/2021	CCL SECURE	US	12/05/2017	US2017000505315	US20210347193	OPTICAL SECURITY DEVICE AND METHOD OF MANUFACTURE	Microlens
<a href="#">P34160</a>	EP	3910548	17/11/2021	DEMAX HOLOGRAMS	EP	14/05/2020	EP2020000472005	EP3910548 EP3910548	METHOD FOR CHECKING VARIABLE DIFFRACTIVE OPTICAL ELEMENT	
<a href="#">P34190</a>	CN	214633896	09/11/2021	XIAMEN WEIERSHENG TECHNOLOGY	CN	16/06/2020	CN2020001117827	CN214633896U	CARD PLATE WITH MICRO-NANO STRUCTURE	
<a href="#">P34206</a>	CN	214476004	22/10/2021	SHENZHEN YUTONG PACKAGING SCIENCE & TECHNOLOGY	CN	18/03/2021	CN2021000558773	CN214476004U	MULTIPLE ANTIFALSIFICATION LABEL OF GREEN	Microlens
<a href="#">P34212</a>	CN	214459218	22/10/2021	SHANTOU JIAMING ENVIRONMENTAL PROTECTION MATERIAL	CN	22/03/2021	CN2021000583280	CN214459218U	RADIUM-SHINE TRANSFER PAPER OF ALUMINIZING	
<a href="#">P34224</a>	CN	113593399	02/11/2021	CHINA BANKNOTE PRINTING & MINT - CHINA BANKNOTE PRINTING TECHNOLOGY RESEARCH INSTITUTE	CN	23/08/2021	CN2021000970401	CN113593399	ANTI-COUNTERFEITING MATERIAL, MANUFACTURING METHOD OF ANTI-COUNTERFEITING MATERIAL, ANTI-COUNTERFEITING ELEMENT AND ANTI-COUNTERFEITING PIGMENT	

**NON SECURITY HOLOGRAMS - 76 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="#">N8201</a>	WO	2021228120	18/11/2021	JINGMEN CITY DREAM EXPLORATION TECHNOLOGY	CN	13/05/2020	CN2020000401956	WO2021228120	SCANNING-TYPE HOLOGRAPHIC IMAGING DEVICE AND RELATED SYSTEM	
<a href="#">N8202</a>	WO	2021226102	11/11/2021	UNIVERSITY OF ARIZONA	US	04/05/2020	US2020000019880	WO2021226102	REAL-TIME MONITORING OF DIFFRACTION EFFICIENCY OF VOLUME HOLOGRAPHIC ELEMENTS	
<a href="#">N8203</a>	WO	2021221742	04/11/2021	APPLIED MATERIALS	US	01/05/2020	US2020000019003	WO2021221742	MULTIPLEX HOLOGRAM GENERATING SYSTEM	
<a href="#">N8204</a>	WO	2021216747	28/10/2021	MIT - MASSACHUSETTS INSTITUTE OF TECHNOLOGY	US	21/04/2020	US2020000013308	WO2021216747	REAL-TIME PHOTOREALISTIC 3D HOLOGRAPHY WITH DEEP NEURAL NETWORKS	
<a href="#">N8205</a>	WO	2021214154	28/10/2021	REALFICTION	EP	21/04/2020	EP2020000170622	WO2021214154	A METHOD FOR PROVIDING A HOLOGRAPHIC EXPERIENCE FROM A 3D MOVIE	
<a href="#">N8206</a>	US	20210358294	18/11/2021	MICROSOFT TECHNOLOGY LICENSING	US	15/05/2020	US2020000875075	US20210358294 WO2021230975	HOLOGRAPHIC DEVICE CONTROL	
<a href="#">N8207</a>	RU	2758151	26/10/2021	FEDERALNOE GOSUDARSTVENNOE BYUDZHETNOE UCHREZHDENIE NAUKI NAUCHNO TEKHNOLOGICHESKIJ TSENTR UNIKALNOGO PRIBOROSTROENIYA ROSSIJSKOJ AKADEMII NAUK	RU	02/03/2021	RU2021000105453	RU2758151	METHOD FOR SINGLE-FRAME REGISTRATION OF SEVERAL SPECTRAL DIGITAL HOLOGRAPHIC IMAGES	

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**NON SECURITY HOLOGRAMS - 76 PATENTS (continuation)**

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
<a href="#">N8208</a>	RU	2758003	25/10/2021	FEDERALNOE GOSUDARSTVENNOE BYUDZHETNOE UCHREZHDENIE NAUKI NAUCHNO TEKHNOLOGICHESKIJ TSENTR UNIKALNOGO PRIBOROSTROENIYA ROSSIJSKOJ AKADEMII NAUK	RU	13/01/2021	RU2021000100515	RU2758003	METHOD FOR REGISTRATION OF HOLOGRAPHIC IMAGES OF OBJECTS	
<a href="#">N8209</a>	KR	20210133397	08/11/2021	DILUSSION	KR	29/04/2020	KR2020000051930	KR20210133397	HOLOGRAM STIFFENING DEVICE	
<a href="#">N8210</a>	KR	20210129539	28/10/2021	JANG, MIN-SOO	KR	20/04/2020	KR2020000047721	KR20210129539	HOLOGRAM DISPLAY CONTROL METHOD USING MICROSENSOR	
<a href="#">N8211</a>	KR	20210127866	25/10/2021	KIM, INN-SIK - CHO GEUMSUN	KR	15/04/2020	KR2020000045634	KR20210127866	HOLOGRAPHIC IMAGE DISPLAY DEVICE	
<a href="#">N8212</a>	KR	20210002377	27/10/2021	JANG, MIN-SOO	KR	17/04/2020	KR2020000001312	KR20210002377U	DESIGN OF PLASMA HOLOGRAM DISPLAY DEVICE	
<a href="#">N8213</a>	KR	102319451	29/10/2021	KOREA INSTITUTE OF LIGHTING & ICT	KR	30/12/2020	KR2020000187822	KR102319451	HOLOGRAM IMAGE ACQUISITION METHOD AND HOLOGRAM IMAGE ACQUISITION SYSTEM	
<a href="#">N8214</a>	KR	102319443	29/10/2021	KIM, SUK-JIN	KR	06/08/2021	KR2021000103652	KR102319443	JOULE PENDANT FOR GENERATING HOLOGRAM PATTERNS AND METHOD OF MANUFACTURING THE SAME	
<a href="#">N8215</a>	JP	2021173878	01/11/2021	DAI NIPPON PRINTING	JP	27/04/2020	JP2020000078028	JP2021173878	VOLUME HOLOGRAM, EXIT PUPIL EXPANSION ELEMENT, HEAD-MOUNTED DISPLAY APPARATUS	
<a href="#">N8216</a>	JP	2021173822	01/11/2021	JAPAN BROADCASTING	JP	22/04/2020	JP2020000076258	JP2021173822	INCOHERENT DIGITAL HOLOGRAM IMAGING APPARATUS AND IMAGING METHOD THEREOF	
<a href="#">N8217</a>	DE	102020205912	18/11/2021	ROBERT BOSCH	DE	12/05/2020	DE202010205912	DE102020205912	EXPOSURE DEVICE FOR RECORDING A HOLOGRAM AND METHOD AND DEVICE FOR OPERATING AN EXPOSURE DEVICE	
<a href="#">N8218</a>	DE	102020112447	11/11/2021	BMW - BAYERISCHE MOTOREN WERKE - SAINT GOBAIN	DE	07/05/2020	DE202010112447	DE102020112447	METHOD FOR INTEGRATING A HOLOGRAM IN A RIGID COMPONENT OF A PREDETERMINED CURVED DESIRED SURFACE GEOMETRY, IN PARTICULAR A VEHICLE WINDOW, A RESULTING COMPONENT AND A VEHICLE CONTAINING THE SAME	
<a href="#">N8219</a>	CN	214752710	16/11/2021	SHENZHEN JIWOKOS TECHNOLOGY	CN	07/04/2021	CN2021000702212	CN214752710U	HOLOGRAPHIC ROTARY DISPLAY SCREEN PICTURE POSITIONING DEVICE	
<a href="#">N8220</a>	CN	214751614	16/11/2021	SUZHOU YANSHITONG ELECTRONIC TECHNOLOGY	CN	14/04/2021	CN2021000751575	CN214751614U	TOUCH-FREE HOLOGRAPHIC AIR IMAGING TOUCH SCREEN EQUIPMENT FOR COUNTER SERVICE	
<a href="#">N8221</a>	CN	214751309	16/11/2021	BELJING KANGTEMAN ELECTRONIC SYSTEMS - BEIJING SPECTRUM YINBAO TECHNOLOGY - TIANJIN YANGGUANG TECHNOLOGY	CN	11/06/2021	CN2021001316197	CN214751309U	VOLUME HOLOGRAPHIC PROJECTION SCREEN AND VOLUME HOLOGRAPHIC PROJECTION SYSTEM	
<a href="#">N8222</a>	CN	214747811	16/11/2021	NORTHWESTERN POLYTECHNICAL UNIVERSITY	CN	18/03/2021	CN2021000582997	CN214747811U	LIGHT PATH OF COMPOSITE HOLOGRAM WITH TWO GROUPS OF ORTHOGONAL INTERFERENCE FRINGES	
<a href="#">N8223</a>	CN	214742214	16/11/2021	LI YUNYONG	CN	07/04/2021	CN2021000701484	CN214742214U	HOLOGRAPHIC PROJECTION FAN	
<a href="#">N8224</a>	CN	214675468	09/11/2021	BELJING KANGTEMAN ELECTRONIC SYSTEMS - BEIJING SPECTRUM YINBAO TECHNOLOGY - TIANJIN YANGGUANG TECHNOLOGY	CN	25/05/2021	CN2021001138847	CN214675468U	NAKED EYE 3D DISPLAY BASED ON VOLUME HOLOGRAPHIC TECHNOLOGY	
<a href="#">N8225</a>	CN	214671804	09/11/2021	GUANGDONG ZIJING INFORMATION STORAGE TECHNOLOGY	CN	17/06/2021	CN2021001356391	CN214671804U	TRANSMISSION TYPE HOLOGRAPHIC STORAGE MEDIUM AND DEVICE	
<a href="#">N8226</a>	CN	214670096	09/11/2021	JINGMEN CITY DREAM EXPLORATION TECHNOLOGY	CN	30/04/2021	CN2021000938369	CN214670096U	PICTURE FRAME TRACKING TYPE GEOMETRIC HOLOGRAPHIC DISPLAY SYSTEM	
<a href="#">N8227</a>	CN	214670029	09/11/2021	TODAY DIGITAL TECHNOLOGY SHANGHAI	CN	22/12/2020	CN2020003109233	CN214670029U	3D HOLOGRAPHIC PROJECTION DEVICE	
<a href="#">N8228</a>	CN	214666619	09/11/2021	SHENZHEN TECHNOLOGY UNIVERSITY	CN	21/05/2021	CN2021001104157	CN214666619U	TRANSMISSION-REFLECTION TYPE DIGITAL HOLOGRAPHIC MICROSCOPE SYSTEM	

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<a href="#">N8229</a>	CN	214623325	05/11/2021	NINGBO QIANJIE ELECTRONIC TECHNOLOGY	CN	27/05/2021	CN2021001152554	CN214623325U	HOLOGRAPHIC PROJECTION CLOCK	
<a href="#">N8230</a>	CN	214619774	05/11/2021	MOLONEY HOUSEWARES JIANGSU	CN	25/03/2021	CN2021000603887	CN214619774U	HOLOGRAPHIC PROJECTION ELECTRIC FIREPLACE	
<a href="#">N8231</a>	CN	214619378	05/11/2021	XIAMEN UNIVERSITY	CN	10/05/2021	CN2021000984326	CN214619378U	HOLOGRAPHIC AUTOMOBILE TAIL LAMP DEVICE WITH THREE-DIMENSIONAL IMAGE DISPLAY FUNCTION	
<a href="#">N8232</a>	CN	214618834	05/11/2021	HEBEI ZHONGXIAN INTELLIGENT TECHNOLOGY	CN	29/12/2020	CN2020003248787	CN214618834U	NAKED EYE 3D HOLOGRAPHIC PROJECTION MULTI-SURFACE DISPLAY EQUIPMENT	
<a href="#">N8233</a>	CN	214610541	05/11/2021	HUAI AN FUYUAN PACKAGING MATERIALS	CN	15/12/2020	CN2020003011496	CN214610541U	DOUBLE-SIDED VACUUM ALUMINIZED LASER FOOD COMPOSITE PAPER	
<a href="#">N8234</a>	CN	214586409	02/11/2021	ZHEJIANG CATCHING LIGHTING TECHNOLOGY	CN	01/12/2020	CN2020002848291	CN214586409U	FUNCTIONAL IMAGING SCREEN CAPABLE OF BEING APPLIED TO HOLOGRAPHIC DISPLAY	
<a href="#">N8235</a>	CN	214586362	02/11/2021	JINGMEN CITY DREAM EXPLORATION TECHNOLOGY	CN	07/06/2021	CN2021001265591	CN214586362U	PORTABLE HOLOGRAPHIC PROJECTOR AND HOLOGRAPHIC DISPLAY SYSTEM	
<a href="#">N8236</a>	CN	214586233	02/11/2021	SOOCHOW UNIVERSITY	CN	31/03/2021	CN2021000648984	CN214586233U	HOLOGRAPHIC WAVEGUIDE LENS MOUNTING STRUCTURE CONVENIENT TO ADJUST	
<a href="#">N8237</a>	CN	214575254	02/11/2021	JIANGSU FALANMU NEW MATERIAL	CN	31/12/2020	CN2020003288621	CN214575254U	NOVEL HOLOGRAPHIC PROJECTION IMAGING USES MULTI-FUNCTIONAL WALLBOARD	
<a href="#">N8238</a>	CN	214564011	02/11/2021	HUBEI GEDIAN DEVELOPMENT REGION CHENGUANG INDUSTRIAL	CN	12/03/2021	CN2021000519852	CN214564011U	HOLOGRAPHIC MASTER PLATE FOR SPLICING SEAMLESS MICRO PLATE MAKING PROCESS	
<a href="#">N8239</a>	CN	214545233	29/10/2021	ANHUI CHAOCUN TECHNOLOGY	CN	27/01/2021	CN2021000224276	CN214545233U	LASER EMITTING DEVICE FOR HOLOGRAM IN DISC TYPE HOLOGRAPHIC STORAGE MEDIUM	
<a href="#">N8240</a>	CN	214540396	29/10/2021	HE JIJIANG	CN	26/04/2021	CN2021000875455	CN214540396U	HOLOGRAPHIC PROJECTION DEVICE	
<a href="#">N8241</a>	CN	214540190	29/10/2021	SOOCHOW UNIVERSITY	CN	25/04/2021	CN2021000864279	CN214540190U	SPLICING PROCESSING DEVICE FOR HOLOGRAPHIC LENS	
<a href="#">N8242</a>	CN	214535469	29/10/2021	WUJIANG CULTURE TECHNOLOGY GROUP	CN	28/12/2020	CN2020003220559	CN214535469U	HOLOGRAPHIC DISPLAY DEVICE IS USED IN EXHIBITION HALL ENGINEERING	
<a href="#">N8243</a>	CN	214504134	26/10/2021	GUANGZHOU AUTOMOBILE	CN	15/03/2021	CN2021000538325	CN214504134U	HOLOGRAPHIC IMAGING DEVICE AND AUTOMOBILE	
<a href="#">N8244</a>	CN	214504133	26/10/2021	BELING KANGTEMAN ELECTRONIC SYSTEMS - BEIJING SPECTRUM YINBAO TECHNOLOGY - TIANJIN YANGGUANG TECHNOLOGY	CN	30/04/2021	CN2021000929503	CN214504133U	NAKED EYE 3D DISPLAY MECHANISM FOR HOLOGRAPHIC IMAGE	
<a href="#">N8245</a>	CN	214476186	22/10/2021	HAINAN DASQI DIGITAL TECHNOLOGY	CN	15/03/2021	CN2021000535257	CN214476186U	3D HOLOGRAPHIC ADVERTISEMENT FAN SCREEN	
<a href="#">N8246</a>	CN	214467400	22/10/2021	NANJING VOCATIONAL UNIVERSITY OF INDUSTRY TECHNOLOGY	CN	15/03/2021	CN2021000532996	CN214467400U	HOLOGRAPHIC PROJECTION DEVICE	
<a href="#">N8247</a>	CN	214452619	22/10/2021	ANHUI ZIJIANG ALUMINIUM SPRAY ENVIRONMENTAL PROT MATERIAL - SHANGHAI ZIJIANG METALLIZATION ENV PROT MAT	CN	04/01/2021	CN2021000008364	CN214452619U	LASER HOLOGRAPHIC THERMAL INSULATION PAPER CUP	
<a href="#">N8248</a>	CN	113658330	16/11/2021	SOUTHEAST UNIVERSITY NANJING	CN	17/08/2021	CN2021000942616	CN113658330	HOLOGRAPHIC ENCODING METHOD BASED ON NEURAL NETWORK	
<a href="#">N8249</a>	CN	113655557	16/11/2021	HUNAN UNIVERSITY	CN	08/07/2021	CN2021000773269	CN113655557	DYNAMIC COLOR HOLOGRAPHIC DEVICE BASED ON SUPER-STRUCTURE SURFACE AND MANUFACTURING METHOD THEREOF	
<a href="#">N8250</a>	CN	113652107	16/11/2021	HEBEI ZHISHENG GREEN TECHNOLOGY	CN	06/07/2021	CN2021000765856	CN113652107	ALUMINUM-CONVERSION HOLOGRAPHIC PHOTOCUREABLE COATING AND PREPARATION METHOD AND APPLICATION THEREOF	

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<a href="#">N8251</a>	CN	113650446	16/11/2021	JIANGSU DAYA PRINTING	CN	30/07/2021	CN2021000872898	CN113650446	HOLOGRAPHIC EFFECT IMITATING 3D MICRO-CARVING GOLD STAMPING PROCESS	
<a href="#">N8252</a>	CN	113635701	12/11/2021	MA YUJUAN - SONG ZHIXU	CN	09/08/2021	CN2021000907664	CN113635701	DRAWING TECHNIQUE ON ANCIENT MURAL HOLOGRAPHIC COPYING SUBSTRATE MATERIAL	
<a href="#">N8253</a>	CN	113634831	12/11/2021	GUANGQUN LASER SCIENCE & TEC	CN	11/05/2020	CN2020000392509	CN113634831	SEAMLESS HOLOGRAM PATTERN TRANSFER METHOD	
<a href="#">N8254</a>	CN	113633999	12/11/2021	QIANGSHI MEDIA	CN	21/07/2021	CN2021000826004	CN113633999	HOLOGRAPHIC IMAGE STAGE CONTROL SYSTEM	
<a href="#">N8255</a>	CN	113625526	09/11/2021	GUANGQUN LASER SCIENCE & TEC	CN	08/05/2020	CN2020000381971	CN113625526	SEAMLESS HOLOGRAM PATTERN TRANSFER METHOD	
<a href="#">N8256</a>	CN	113608356	05/11/2021	CHINA COAL RESEARCH INSTITUTE	CN	08/10/2021	CN2021001168613	CN113608356	AR-BASED HOLOGRAPHIC HEAD-MOUNTED DISPLAY SYSTEM AND METHOD AND HOLOGRAPHIC HEAD-MOUNTED DISPLAY SYSTEM	
<a href="#">N8257</a>	CN	113608354	05/11/2021	SHANGHAI UNIVERSITY	CN	21/07/2021	CN2021000826527	CN113608354	HOLOGRAPHIC NEAR-EYE DISPLAY SYSTEM BASED ON ELECTRIC CONTROL POLARIZATION MODULATOR AND EYE PUPIL BOX EXPANSION METHOD	
<a href="#">N8258</a>	CN	113608353	05/11/2021	SHANGHAI UNIVERSITY	CN	14/07/2021	CN2021000793391	CN113608353	HOLOGRAPHIC NEAR-EYE DISPLAY SYSTEM BASED ON ARRAY LIGHT SOURCE AND EYE PUPIL BOX EXPANSION METHOD	
<a href="#">N8259</a>	CN	113608352	05/11/2021	SHANGHAI UNIVERSITY	CN	06/07/2021	CN2021000759726	CN113608352	HOLOGRAPHIC NEAR-EYE DISPLAY SYSTEM BASED ON EXIT PUPIL SCANNING AND EYE PUPIL BOX EXPANSION METHOD	
<a href="#">N8260</a>	CN	113602032	05/11/2021	WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT	CN	10/08/2021	CN2021000911623	CN113602032	HIGH-TEMPERATURE-RESISTANT HOLOGRAPHIC GOLD STAMPING FILM, GOLD STAMPING PLASTIC PART AND PREPARATION METHOD	
<a href="#">N8261</a>	CN	113595607	02/11/2021	UNIVERSITY BEIJING	CN	16/07/2021	CN2021000807244	CN113595607	HYBRID PRECODING METHOD AND SYSTEM BASED ON RECONFIGURABLE HOLOGRAPHIC SUPER SURFACE	
<a href="#">N8262</a>	CN	113591854	02/11/2021	CHINA OCEAN UNIVERSITY	CN	12/08/2021	CN2021000922020	CN113591854	LOW-REDUNDANCY QUICK RECONSTRUCTION METHOD OF PLANKTON HOLOGRAM	
<a href="#">N8263</a>	CN	113591357	02/11/2021	BELJING UNIVERSITY OF TECHNOLOGY	CN	01/04/2021	CN2021000357073	CN113591357	METHOD FOR SIMULTANEOUSLY STORING GRAY SCALE AND VECTOR HOLOGRAPHIC IMAGE BASED ON MEDIUM METASURFACE	
<a href="#">N8264</a>	CN	113589671	02/11/2021	SICHUAN UNIVERSITY	CN	01/07/2021	CN2021000751080	CN113589671	CONICAL SURFACE HOLOGRAPHIC DISPLAY METHOD FOR ENLARGING VERTICAL FIELD ANGLE	
<a href="#">N8265</a>	CN	113589670	02/11/2021	KUNMING UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	29/07/2021	CN2021000862007	CN113589670	METHOD FOR RECORDING AND DISPLAYING PHOTOPOLYMER BASED ON COMPUTATIONAL HOLOGRAPHIC SURFACE ELEMENT ALGORITHM	
<a href="#">N8266</a>	CN	113589648	02/11/2021	UNIVERSITY OF SHANGHAI FOR SCIENCE & TECHNOLOGY	CN	14/07/2021	CN2021000794327	CN113589648	DOUBLE-MONOMER HOLOGRAPHIC PHOTOPOLYMER AND METHOD FOR PREPARING HOLOGRAPHIC RECORDING FILM MATERIAL FROM SAME	
<a href="#">N8267</a>	CN	113589524	02/11/2021	NANCHANG UNIVERSITY	CN	08/10/2021	CN2021001168677	CN113589524	DESIGN METHOD OF HOLOGRAPHIC GRATING OPTICAL WAVEGUIDE PLANAR LIGHT-GATHERING SYSTEM FOR LIFI COMMUNICATION	
<a href="#">N8268</a>	CN	113568295	29/10/2021	SANSUI OPTICAL TECHNOLOGY SUZHOU	CN	27/07/2021	CN2021000851526	CN113568295	VOLUME HOLOGRAM, PREPARATION METHOD AND APPLICATION IN AIMING DEVICE	
<a href="#">N8269</a>	CN	113568294	29/10/2021	XI'AN JIAOTONG UNIVERSITY	CN	16/07/2021	CN2021000806743	CN113568294	HOLOGRAPHIC OPTICAL TWEEZERS FUSION STRUCTURE LIGHT ILLUMINATION MICROSCOPIC SYSTEM AND METHOD	
<a href="#">N8270</a>	CN	113568085	29/10/2021	SANSUI OPTICAL TECHNOLOGY SUZHOU	CN	27/07/2021	CN2021000860432	CN113568085	HOLOGRAPHIC PLATE AND PROCESSING DEVICE AND PROCESSING METHOD THEREOF AND APPLICATION OF HOLOGRAPHIC PLATE IN AIMING DEVICE	
<a href="#">N8271</a>	CN	113554636	26/10/2021	XIDIAN UNIVERSITY	CN	30/07/2021	CN2021000872520	CN113554636	CHIP DEFECT DETECTION METHOD BASED ON GENERATION OF COUNTERMEASURE NETWORK AND COMPUTER GENERATED HOLOGRAM	
<a href="#">N8272</a>	CN	113542716	22/10/2021	SHENZHEN REALIS MULTIMEDIA TECHNOLOGY	CN	01/06/2021	CN2021000611709	CN113542716	IMAGE PROCESSING METHOD AND DEVICE APPLIED TO HOLOGRAPHIC DISPLAY	
<a href="#">N8273</a>	CN	113541873	22/10/2021	HANGZHOU FEIFEI TECHNOLOGY	CN	15/07/2021	CN2021000800741	CN113541873	CHANNEL FEEDBACK COMPRESSION METHOD AND SYSTEM BASED ON RECONFIGURABLE HOLOGRAPHIC SUPER SURFACE	

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<a href="#">N8274</a>	CN	113541759	22/10/2021	HANGZHOU FEIFEI TECHNOLOGY	CN	15/07/2021	CN2021000800715	CN113541759	RECONFIGURABLE HOLOGRAPHIC SUPER-SURFACE BEAM FORMING METHOD AND SYSTEM BASED ON DEEP LEARNING	
<a href="#">N8275</a>	CN	113527929	22/10/2021	HANGZHOU GUANGLI TECHNOLOGY	CN	20/04/2020	CN2020000312834	CN113527929	PHOTOPOLYMER COMPOSITION AND OPTICAL GRATING	
<a href="#">N8276</a>	CN	113527594	22/10/2021	UNIVERSITY OF SHANGHAI FOR SCIENCE & TECHNOLOGY	CN	14/07/2021	CN2021000795300	CN113527594	COMPOSITE INITIATOR HOLOGRAPHIC PHOTOPOLYMER AND METHOD FOR PREPARING HOLOGRAPHIC RECORDING FILM BY USING SAME	