

IHMA PATENT NEWSLETTER

Limited circulation patent news bulletin for the Holography Industry

OCTOBER 2023 – 126 PATENTS

Published and granted patents

**The IHMA PATENT NEWSLETTER
is exclusively dedicated to IHMA MEMBERS.**

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

**Reproducing the IHMA PATENT NEWSLETTER via any means
(Electronic, mechanical, photocopying or recording) is an illegal infringement of copyright.**

TABLE OF CONTENTS

Please click on the links (titles) to go to

ABOUT IHMA PATENT NEWSLETTER		page	3
APPLICANTS OF THE MONTH		p.	4
PATENT OF THE MONTH		p.	5 – 6
<u>SECURITY HOLOGRAMS</u>	(17 patents)	p.	7 – 15
<u>SECURITY & OPTICAL EFFECTS</u>	(26 patents)	p.	16 – 36
Various optical effects in Security			
<u>DECORATIVE HOLOGRAMS</u>	(1 patent)	p.	37
<u>HOLOGRAPHY TECHNIQUE</u>	(10 patents)	p.	38 – 44
<u>HOLOGRAPHY PROCESS</u>	(5 patents)	p.	45 – 48
Manufacturing equipment and process			
<u>RECORDING & MEMORY</u>	(12 patents)	p.	49 – 55
Recording material – Storage medium – Optical disk & process			
<u>DISPLAYS</u>	(39 patents)	p.	56 – 77
Displays devices – Digital holography – TV – Video			
<u>HOLOGRAPHY & MICROSCOPY</u>	(3 patents)	p.	78 – 80
<u>VARIOUS</u>	(13 patents)	p.	81 – 90
TABLES WITH REFERENCES		p.	91 – 96

Click on the title to return to table of contents

Please note that:

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

Even though the greatest care is taken in the preparation of this patent surveillance newsletter, some errors or oversights could have occurred. We are committed to making all reasonable efforts to ensure the reliability and a content of information as complete as possible without nevertheless being able to guarantee the exactitude or exhaustive character of the data used. We collect data from official or private sources of the best quality which themselves do not guarantee that the information provided is complete, up-to-date, pertinent, well-referenced ... Please also accept our apologies for the poor quality translations of Asian abstracts which are machine translation.

Click on the title to return to table of contents

1. 4U TECHNOLOGY
2. AM HOLO
3. ANHUI ZHONGXIANG INFORMATION TECHNOLOGY SERVICE
4. ANT BLOCKCHAIN TECHNOLOGY SHANGHAI
5. BEIJING DIKOU TECHNOLOGY
6. BHARAT ELECTRONICS
7. BLUEST METTLE SOLUTIONS PRIVATE | CHITKARA UNIVERSITY
8. BRYTN
9. BUNDESDRUCKEREI
10. CARL ZEISS JENA
11. CARNEGIE MELLON UNIVERSITY
12. CHENGDU FEIMI CULTURE COMMUNICATION GROUP
13. CHINA BANKNOTE PRINTING & MINT | CHINA BANKNOTE SECURITY PRINTING TECHNOLOGY RESEARCH INSTITUTE
14. CHINA CONSTRUCTION THIRD BUREAU GREEN INDUSTRY INVESTMENT | CHINA CONSTRUCTION THIRD BUREAU WATER CONSERVANCY & HYDROPOWER DEVELOPMENT | THIRD ENGINEERING BUREAU OF CHINA CITY CONSTRUCTION
15. DAI NIPPON PRINTING
16. DE LA RUE INTERNATIONAL
17. DIGITAL SHANXI DESIGN STOCK
18. DONGGUAN DONGANG PACKAGING TECHNOLOGY
19. DRAGONFLY EYE SHANGHAI VISUAL TECHNOLOGY
20. FACEBOOK TECHNOLOGIES | META PLATFORMS TECHNOLOGIES
21. FONDATION B COM
22. FUJIAN NORMAL UNIVERSITY
23. FUTURE TECHNOLOGY
24. GENERAL INTERFACE SOLUTION | GIS TECHNOLOGY | INTERFACE OPTOELECTRONIC | YECHENG PHOTOELECTRIC WUXI
25. GIESECKE & DEVRIENT CURRENCY TECHNOLOGY
26. GOOLTON TECHNOLOGY
27. GUANGDONG JINGQI LASER TECHNOLOGY
28. GUANGZHOU ACADEMY OF FINE ARTS
29. GUANGZHOU LI BAO PACKING
30. GUILIN UNIVERSITY OF ELECTRONIC TECHNOLOGY
31. HAIYAN XIMEI PRINTING INDUSTRY
32. HARBIN UNIVERSITY OF SCIENCE & TECHNOLOGY
33. HEFEI UNIVERSITY OF TECHNOLOGY
34. HENAN PROVINCE WELLKING TECHNOLOGY DEVELOPMENT
35. HOLOLAB
36. HTC
37. HUAWAI
38. HUBEI HUAGONG IMAGE TECHNOLOGY DEVELOPMENT
39. HUECK FOLIEN
40. INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES)
41. INSTITUTUL NATIONAL DE CERCETARE DEZVOLTARE PENTRU CHIMIE SI PETROCHIMIE ICECHIM | OPTOELECTRONICA 2001 | UNIVERSITATEA POLITEHNICA DIN BUCUREȘTI
42. ITW - ILLINOIS TOOL WORKS
43. JAPAN MINT | OSAKA RESEARCH INSTITUTE OF INDUSTRIAL SCIENCE & TECHNOLOGY
44. JIANGSU JINGRUI INFORMATION TECHNOLOGY
45. JIANGXI LIANHAO PHOTOELECTRIC
46. JILIN UNIVERSITY
47. JOSHI PRASHANT NISHIKANT
48. JOURNEY TECHNOLOGY
49. KANSAI UNIVERSITY | KDDI
50. KOENIG & BAUER
51. KOENIG & BAUER BANKNOTE SOLUTIONS
52. KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE
53. KOREA ELECTRONICS TECHNOLOGY INSTITUTE
54. KUNMING UNIVERSITY OF SCIENCE & TECHNOLOGY
55. LANZHUYUNHE BEIJING TECHNOLOGY & CULTURE
56. LINGYAO BIOTECHNOLOGY SHANGHAI | SHANGHAI YODAY BIOTECH
57. LONGYING TECHNOLOGY GUANGZHOU
58. META MEDIA
59. META PLATFORMS TECHNOLOGIES
60. NANCHANG UNIVERSITY
61. NANCHANG VIRTUAL REALITY RESEARCH INSTITUTE
62. NETEASE MEDIA TECHNOLOGY
63. NXO
64. OBSHCHESTVO S OGRANICHENNOI OTVETSTVENNOSTIU «KSPANSEO» OOO «KSPANSEO»
65. OVD KINEGRAM
66. PINGXIANG HAOFENG PACKAGING
67. PRECISION CONVERTING TECHNOLOGIES
68. PREH
69. SHANDONG LABOR VOCATIONAL & TECHNICAL COLLEGE
70. SHANGHAI GUANZHONG OPTICAL TECHNOLOGY
71. SHANGHAI TECHSUN PACKING MATERIALS | SHANGHAI TIANCHEN MICRO NANO TECHNOLOGY
72. SHANGHAI UNIVERSITY
73. SHENZHEN EUCLIDEON TECHNOLOGY
74. SHENZHEN JIANYANG TECHNOLOGY
75. SHENZHEN METALENX TECHNOLOGY
76. SHENZHEN SHENDA AURORA TECHNOLOGY
77. SHENZHEN SONOSCAPE BIOLOGICAL MEDICAL SCIENCE & TECHNOLOGY
78. SHENZHEN WUJIE VISION TECHNOLOGY
79. SHENZHEN YATUSHEN PRINTING PACKAGE
80. SICHUAN UNIVERSITY
81. SOOCHIRAL CHEMICAL SCIENCE & TECHNOLOGY
82. SUETSUGU KATSUNORI
83. SUH, MI SOOK
84. SUZHOU SUNWAY INTELLIGENT TECHNOLOGY
85. THALES DIS
86. TSINGHUA SHENZHEN INTERNATIONAL GRADUATE SCHOOL
87. VIVIDQ
88. WS HSH INTERNATIONAL TECHNOLOGY
89. WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT
90. WUHAN INSTITUTE OF QUANTUM TECHNOLOGY
91. WUHAN UNIVERSITY
92. WUHAN YINCAITIAN PAPER
93. WUYI UNIVERSITY
94. XI AN INSTITUTE OF OPTICS & PRECISION MECHANICS OF CHINESE ACADEMY OF SCIENCES
95. YIWU QINGYUE PHOTOELECTRIC TECHNOLOGY RESEARCH INSTITUTE
96. YUXI TIPPING PAPER MANUFACTURING
97. ZEON
98. ZHEJIANG CHUNYU PACKAGING MATERIAL
99. ZHEJIANG NORMAL UNIVERSITY

Click on the title to return to table of contents

P36913

**SECURITY & OPTICAL EFFECTS' COLUMN
BANKNOTE – CARD – THREAD – RELIEF**

WO2023199061

DE LA RUE INTERNATIONAL

Inventor(s):

HOLMES BRIAN | FOURNIER FREDERIC | KING MARIA

Application Nber / Date:

WOGB2023/050988 2023-04-12

Priority Nber / Date / Country:

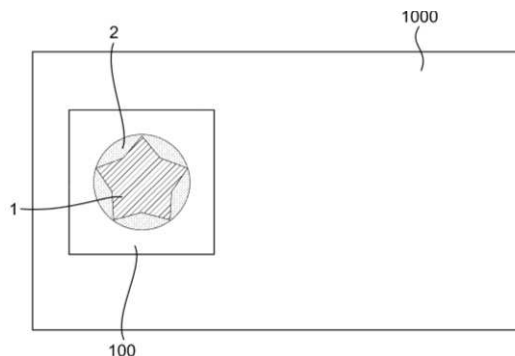
GB202205574 2022-04-14

OPTICAL DEVICES AND METHODS OF MANUFACTURE THEREOF

An optical device that exhibits a variable optical effect upon illumination is provided. The optical device comprises a set of first grating regions, wherein each first grating region comprises a plurality of first grating elements. The first grating elements have one or more first grating pitches such that upon illumination the first grating elements exhibit at least a first order diffractive effect at a first viewing angle and a second order diffractive effect at a second viewing angle. The optical device further comprises a set of second grating regions, wherein each second grating region comprises a plurality of second grating elements, the second grating elements having one or more second grating pitches smaller than the one or more first grating pitches such that upon illumination the second grating elements exhibit a first order diffractive effect substantially at the second viewing angle. The set of first grating regions is interlaced with the set of second grating regions. The first grating elements are arranged in accordance with a first image and the second grating elements are arranged in accordance with a second image, such that a user viewing the device perceives the first image at the first viewing angle and perceives the second image at least partially overlapping the first image at the second viewing angle.

DISPOSITIFS OPTIQUES ET LEURS PROCÉDÉS DE FABRICATION

L'invention concerne un dispositif optique qui présente un effet optique variable lors de l'éclairage. Le dispositif optique comprend un ensemble de premières régions de réseau, chaque première région de réseau comprenant une pluralité de premiers éléments de réseau. Les premiers éléments de réseau ont un ou plusieurs premiers pas de réseau de telle sorte que, lors de l'éclairage, les premiers éléments de réseau présentent au moins un effet de diffraction de premier ordre à un premier angle de visualisation et un effet de diffraction de second ordre à un second angle de visualisation. Le dispositif optique comprend, en outre, un ensemble de secondes régions de réseau, chaque seconde région de réseau comprenant une pluralité de seconds éléments de réseau, les seconds éléments de réseau ayant un ou plusieurs seconds pas de réseau plus petits que le ou les premiers pas de réseau de telle sorte que, lors de l'éclairage, les seconds éléments de réseau présentent un effet de diffraction de premier ordre sensiblement au second angle de visualisation. L'ensemble de premières régions de réseau est entrelacé avec l'ensemble de secondes régions de réseau. Les premiers éléments de réseau sont agencés conformément à une première image et les seconds éléments de réseau sont agencés conformément à une seconde image, de telle sorte qu'un utilisateur visualisant le dispositif perçoit la première image au premier angle de visualisation et perçoit la seconde image chevauchant au moins partiellement la première image au second angle de visualisation.



CLAIM 1. An optical device that exhibits a variable optical effect upon illumination, comprising: a set of first grating regions, wherein each first grating region comprises a plurality of first grating elements, the first grating elements having one or more first grating pitches such that upon illumination the first grating elements exhibit at least a first order diffractive effect at a first viewing angle and a second order diffractive effect at a second viewing angle; a set of second grating regions, wherein each second grating region comprises a plurality of second grating elements, the second grating elements having one or more second grating pitches smaller than the one or more first grating pitches such that upon illumination the second grating elements exhibit a first order diffractive effect substantially at the second viewing angle; and wherein the set of first grating regions is interlaced with the set of second grating regions, and wherein the first grating elements are arranged in accordance with a first image and the second grating elements are arranged in accordance with a second image, such that a user viewing the device perceives the first image at the first viewing angle and perceives the second image at least partially overlapping the first image at the second viewing angle.

Equivalents : GB2617610A | GB202205574D0

Status: Pending

Research Report:

INTERNATIONAL SEARCH REPORT		International application No PCT/GB2023/050988
A. CLASSIFICATION OF SUBJECT MATTER		
INV.	B42D25/324 B42D25/328 B42D25/373 B42D25/425 B42D25/29	
	G02B5/18	
ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
B42D G02B		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2019/180461 A1 (DE LA RUE INT LTD [GB]) 26 September 2019 (2019-09-26) page 2, line 4 - page 44, line 11; claims 1-42; figures 1-15	1-25
A	WO 2021/069918 A1 (DE LA RUE INT LTD [GB]) 15 April 2021 (2021-04-15) page 4, line 12 - page 61, line 10; claims 1-63; figures 1-23	1-25

Click on the title to return to table of contents

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

P36918

PRINTING – BANKNOTE

WO2023194578

BUNDESDRUCKEREI

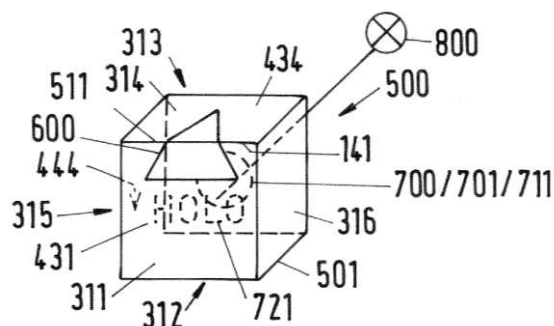
Priority Date: 06/04/2022

BANKNOTE THAT CAN BE FOLDED TO FORM A THREE-DIMENSIONAL BODY

The invention relates to a banknote comprising a flat substrate element (120) with a plurality of folds (200) such that when the substrate element is folded along the folds a three-dimensional body (500) can be created which completely encloses a volume, i.e. each face of the three-dimensional body is formed at least partially from face elements (311-316) of the substrate element, one of the face elements (311-316) having a transparent window region (701) which is formed by a transparent plastic element. The plastic element can have a light-refracting property such that information on an inner surface portion (340) within the three-dimensional body can be identified through the plastic element, which information cannot be identified on the surface portion when the flat substrate element is in the planar state. Information which can be projected onto the inner surface portion can be encoded in the plastic element. A light-deflecting optical security element (780) can be formed on the surface portion (340) opposite the window region (700).

BILLET DE BANQUE POUVANT ÊTRE PLIÉ POUR FORMER UN CORPS TRIDIMENSIONNEL

L'invention concerne un billet de banque comprenant un élément de substrat plat (120) comportant une pluralité de plis (200) de telle sorte que, lorsque l'élément de substrat est plié le long des plis, un corps tridimensionnel (500) peut être créé, lequel entoure complètement un volume, c'est-à-dire que chaque face du corps tridimensionnel est formée au moins partiellement d'éléments de face (311-316) de l'élément de substrat, l'un des éléments de face (311-316) comportant une région de fenêtre transparente (701) qui est formée par un élément en plastique transparent. L'élément en plastique peut présenter une propriété de réfraction de la lumière de telle sorte que des informations figurant sur une partie de surface interne (340) à l'intérieur du corps tridimensionnel peuvent être identifiées à travers l'élément en plastique, lesquelles informations ne peuvent pas être identifiées sur la partie de surface lorsque l'élément de substrat plat est à l'état plan. Des informations qui peuvent être projetées sur la partie de surface interne peuvent être codées dans l'élément en plastique. Un élément de sécurité optique de déflexion de la lumière (780) peut être formé sur la partie de surface (340) opposée à la région de fenêtre (700).



CLAIM 1. Banknote (100) comprising a flat substrate element (120), characterized in that the substrate element (120) has a plurality of folds (200; 201-212), so that a three-dimensional body (500) can be produced when the substrate element (120) is folded along the folds (200; 201-212).

P36942

PRINTING – BRAND PROTECTION

RO-137671

Priority Date: 29/05/2023

**INSTITUTUL NATIONAL DE CERCETARE DEZVOLTARE PENTRU
CHIMIE SI PETROCHIMIE ICECHIM | OPTOELECTRONICA 2001 |
UNIVERSITATEA POLITEHNICA DIN BUCUREȘTI**

PROCESS FOR MAKING HOLOGRAPHIC MARKS USING EMBOSsing SUBSTRATE OF BIOPOLYESTERS WHICH MAY BE RECYCLED AND REUSED FOR THE SAME PURPOSE

The invention relates to a process for making holographic marks using an embossing substrate of biopolyesters which may be recycled and reused for the same purpose, the holographic marks being used for marking pharmaceutical products, medical devices or products in the electronic field, motor vehicle and food field. According to the invention, the process for making the holographic marks consists in printing, from the surface of a master, a 2D/3D designed model of a hologram visible with the naked eye, on a substrate of biodegradable biopolyester such as polylactic acid, polyhydroxybutyrate or other polyhydroxyalkanoate or mixtures of polylactic acid and polyhydroxyalkanoate, having the shape of a plate with a thickness ranging between 1...5 mm which is made by pressing at a temperature ranging between 160...180°C, at a pressure of 10...50 MPa, applied for 1...2 min after pre-heating at the same temperature for 100...300 sec, the printing of the microrelief from the master being firstly performed on an embossing Ni mould using a conventional technique of electro-forming or electro-plating followed by the hologram model multiplication by hot-embossing from the Ni mould onto the biopolyester plate, by using an electric press, at a temperature ranging between 50...70°C, for 60...200 sec, at a pressure of 5...50 bar, to result in a model matrix which is further printed by conventional electro-forming and electro-plating techniques on a Ni mould with multiple models of the hologram and which is used for producing holographic marks to be applied on various supports or objects made of metal or polymeric material.

CLAIM 1. Process for obtaining holographic marks characterized by the fact that a 2D/3D projected model of a hologram having as security elements optical effects visible to the naked eye, optical effects visible under a microscope, alphanumeric series and microtexts visible under an electron microscope is printed on the surface of a master on a biodegradable biopolyester substrate of the type polylactic acid, polyhydroxybutyrate or other polyhydroxyalkanoate or mixtures of polylactic acid and polyhydroxyalkanoate having the form of a plate with a thickness of 1-5 mm which is obtained by pressing at a temperature of 160

- 180 °C with a pressure of 10 - 50 MPa applied for 1-2 min after a pre-heat at the same temperature for 100-300 s, printing the micro-relief on the master first on a nickel embossing die by a conventional electroforming technique or electroplating followed by the multiplication of the hologram pattern by hot embossing from the nickel mold on the biopolyester plate using an electric press at a temperature of 50 - 70 °C, for 60 - 200 s at a pressure of 5 - 50 bar obtaining a pattern matrix, which is then printed by conventional electroforming or electroplating techniques on a nickel mold with multiple patterns of the hologram and which is used for the production of holographic marks by application to various supports or objects of metal or polymeric material.



P36945

BRAND PROTECTION

KR20230147368

Priority Date: 14/04/2022

AM HOLO

QR CODE DECODER IMPLEMENTED IN HOLOGRAM

The present invention relates to a decoder for reading a QR code realized as a hologram.

According to an aspect of the present invention, there is provided a QR code display device including: a hologram structure including a plurality of hologram elements having diffraction grating patterns, some of the hologram elements representing a hologram color to implement a QR code; a light irradiation unit irradiating light incident toward the hologram structure; a light receiving unit receiving light emitted from the hologram structure; and a control unit reading data contained in the QR code from the light received by the light receiving unit.

CLAIM 1. A hologram structure including a plurality of hologram elements having diffraction grating patterns formed thereon, wherein a part of the hologram elements expresses a hologram color to implement a QR code; a light irradiation unit irradiating light incident on the hologram structure; a light receiving unit receiving light emitted from the hologram structure; and A decoder for reading a quick response (QR) code implemented as a hologram, the decoder comprising: a controller configured to read data included in the QR code from light received by the light receiver.

P36946

BRAND PROTECTION

KR20230147367

AM HOLO

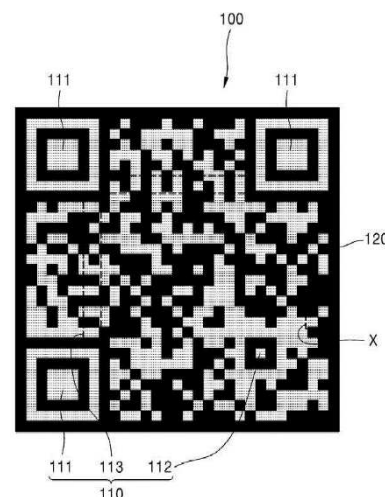
Priority Date: 14/04/2022

VARIABLE QR CODE WITH HOLOGRAM

The present invention relates to a variable QR code using a hologram.

According to an aspect of the present invention, there is provided a hologram structure including: an information instruction region formed on a surface of the hologram structure including a plurality of hologram elements having diffraction grating patterns and indicating information for reading a QR code; and a data region formed by mixing a color-expressing cell in which a hologram color is expressed and a color-non-expressing cell in which the hologram color is not expressed, wherein the data region is formed by changing arrangements of the color-expressing cell and the color-non-expressing cell according to light irradiated on the hologram structure.

CLAIM 1. Formed on a surface of a hologram structure including a plurality of hologram elements with diffraction grating patterns, an information indication area indicating information for reading a QR code; and a data region formed by mixing a color-expressing cell in which the hologram color is expressed and a color-non-expressing cell in which the hologram color is not expressed, The variable QR code using a hologram, wherein the arrangement of the color expressing cell and the color non-expressing cell is changed according to light irradiated to the hologram structure in the data region.



P36947

BRAND PROTECTION

KR20230147366

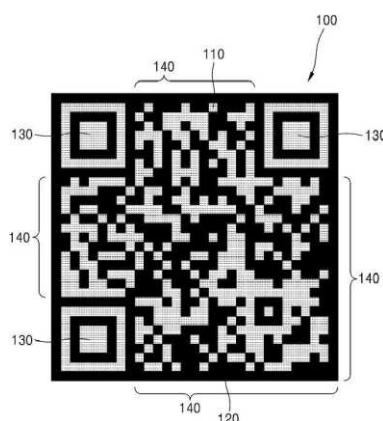
AM HOLO

Priority Date: 14/04/2022

MULTI-QR CODES USING HOLOGRAMS

The present invention relates to a multi-QR code using a hologram.

According to an aspect of the present invention, there is provided a hologram structure including: a first QR code part formed on a surface of a hologram structure including a plurality of hologram elements having diffraction grating patterns and including a first position region indicating a position of a QR code and a first data region formed by mixing a first color-expressing cell expressing a hologram color and a first color-non-expressing cell not expressing the hologram color; and a second QR code part disposed in the first QR code part.



CLAIM 1. Formed on a surface of a hologram structure including a plurality of hologram elements with diffraction grating patterns, a first QR code part including a first position area indicating the position of a QR code; and a first data area formed by mixing a first color-expressing cell in which a hologram color is expressed and a first color-non-expressing cell in which the hologram color is not expressed; and A multi-QR code using a hologram, the multi-QR code comprising a second QR code unit disposed in the first QR code unit.

P36948

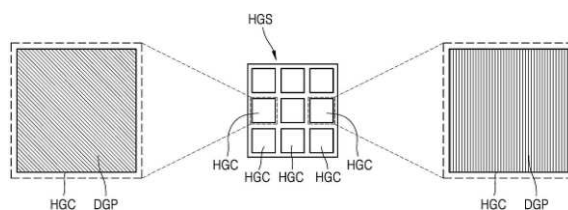
KR20230147365

AM HOLO

Priority Date: 14/04/2022

HOLOGRAM STRUCTURE INCLUDING DIFFRACTION GRATING PATTERN AND MANUFACTURING METHOD THEREOF

The present invention relates to a hologram structure including a diffraction grating pattern and a manufacturing method thereof. According to an aspect of the present invention, there is provided a hologram device including a plurality of hologram elements, wherein a diffraction grating pattern having a slit shape and including protrusions and depressions is formed on a surface of the hologram element, the diffraction grating pattern is one diffraction grating pattern selected from among various patterns, a hologram color is implemented when incident light is irradiated on the diffraction grating pattern, and the diffraction grating pattern and the implemented hologram color may correspond to each other on a one-to-one basis.



CLAIM 1. Including a plurality of hologram elements, The hologram element may have a diffraction grating pattern of a slit shape formed of unevenness on a surface thereof. the diffraction grating pattern is one diffraction grating pattern selected from various patterns, When the diffraction grating pattern is irradiated with incident light, a hologram color is realized. The hologram structure having the diffraction grating pattern and the realized hologram color corresponding one-to-one.

P36949

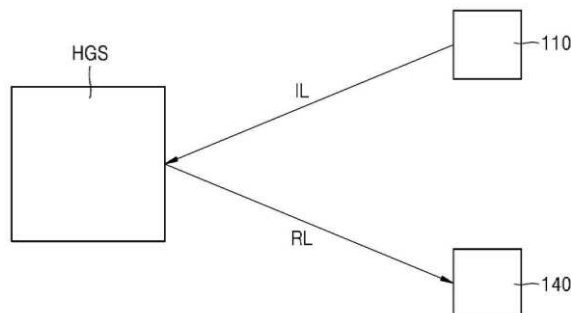
KR20230147364

AM HOLO

Priority Date: 14/04/2022

HOLOGRAM DECODER HAVING LIGHT IRRADIATION ANGLE CHANGE FUNCTION

The present invention relates to a hologram decoder having a light irradiation angle change function. According to an aspect of the present invention, the hologram structure may include a diffraction lattice pattern, a light emitting unit emitting light incident toward the hologram structure, a light receiving unit receiving the light emitted from the hologram structure, and a control unit analyzing the light received by the light receiving unit.



CLAIM 1. A hologram structure including a diffraction grating pattern; a light emitting unit that emits light incident toward the hologram structure; a light receiving unit receiving light emitted from the hologram structure; and A hologram decoder comprising: a control unit configured to analyze light received by the light receiving unit.

P36951

PRINTING – LABEL

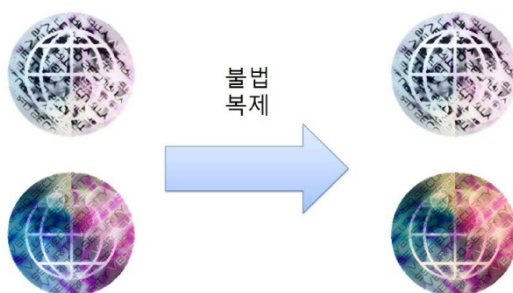
KR102580966

Priority Date: 06/12/2022

KOREA ELECTRONICS TECHNOLOGY INSTITUTE

MULTILAYER EMBOSSED HOLOGRAM STICKER FOR PREVENTING ILLEGAL REPLICATION AND METHOD FOR MANUFACTURING THE SAME

A multi-layer embossed hologram sticker for preventing illegal replication and a method of manufacturing the same are provided. A hologram sticker according to an embodiment of the present invention includes: a substrate layer; a hologram layer disposed below the substrate layer and printed with a hologram shape in multiple layers; a release layer disposed between the substrate layer and the hologram layer and adhered to the substrate layer more strongly than the hologram layer; and an adhesive layer disposed below the hologram layer and adhered to an object. As a result, illegal replication of the hologram sticker through simple scanning or photographing can be prevented, and an afterimage on the mirror generated in the hologram problem can be reduced, thereby improving precision and stereoscopic feel of the hologram problem.



CLAIM 1. A hologram apparatus, comprising: a substrate layer; a hologram layer disposed below the substrate layer, the hologram layer having a hologram shape printed in multiple layers; and an adhesive layer disposed below the hologram layer, the adhesive layer being attached to an object, wherein the hologram layer has a circumference divided into a plurality of sections, wherein the hologram sticker is printed with a printing roller having a relief pattern of each layer for each section, and meshes with the printing roller while being rolled up on a rotating roller, and the hologram pattern of each layer is printed while being rotated by the number of sections of the printing roller.

P36970

PRINTING – BRAND PROTECTION – TAMPER EVIDENCE

IN202321050993

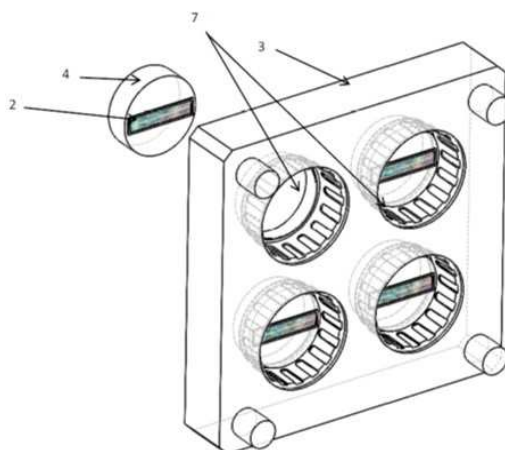
Priority Date: 28/07/2023

JOSHI PRASHANT NISHIKANT

SYSTEM FOR PRINTING HOLOGRAPHIC DESIGNS ON PLASTIC ARTICLES, METHODS, MOULDS AND ARTICLES THEREOF

A system for manufacturing of plastic article, wherein manufacturing of one or more plastic article(s) is done by injection moulding or blow moulding techniques, characterised in that there is provided a mould, wherein the mould consists of one or more positions on which holographic shim is placed, wherein the holographic shim consists of holographic design, and said holographic design is emboss printed on the plastic article at the time of manufacturing.

CLAIM 1. A system for manufacturing of plastic article, wherein manufacturing of one or more plastic article(s) is done by injection moulding or blow moulding techniques, characterised in that there is provided a mould, wherein the mould consists of one or more positions on which holographic shim is placed, wherein the holographic shim consists of holographic design, and said holographic design is emboss printed on the plastic article at the time of manufacturing.



P36980

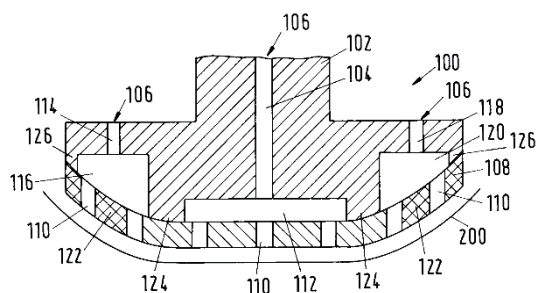
EP4253290

Priority Date: 28/03/2022

BUNDESDRUCKEREI

SUCTION GRIPPER FOR HANDLING FILMS

The invention relates to a suction gripper (100) for individually removing a film (200) from a film stack, having a rigid gripper part (102) in which at least one channel (104) is formed which ends at a connection (106) to which a vacuum device is connected or can be connected, and having an elastically flexible gripper part (108) which is attached to the rigid gripper part (102) and is intended for receiving the film (200), for which purpose the elastically flexible gripper part (108) comprises at least one passage (110) which is fluidically connected to the channel (104) of the rigid gripper part (102).



CLAIM 1. Suction gripper (100) for individually removing a film (200) from a film stack, having a rigid gripper part (102) in which at least one channel (104) is formed which ends at a connection (106) to which a vacuum device is connected or can be connected, and having an elastically flexible gripper part (108) which is attached to the rigid gripper part (102) and is intended for receiving the film (200), for which purpose the elastically flexible gripper part (108) comprises at least one passage (110) which is fluidically connected to the channel (104) of the rigid gripper part (102).

P36991

PRINTING

CN219883474U

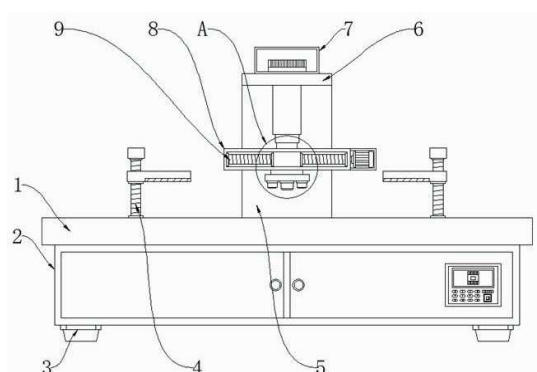
Priority Date: 12/05/2023

SHENZHEN YATUSHEN PRINTING PACKAGE

PRINTING ANTI-FAKE DEVICE FOR HALFTONE HOLOGRAPHIC WATERMARK

The utility model discloses a printing anti-counterfeiting device for halftone holographic watermarks, which comprises a workbench, a box body and a top plate, wherein supporting legs are arranged on two sides of the bottom end of the box body, the workbench is arranged on the top end of the box body, a mounting block is arranged on one side of a hydraulic cylinder, and a moving mechanism is arranged in the mounting block. According to the utility model, the limiting plate is arranged at the top end of the workbench, the limiting plate is connected with the workbench through the threaded rod and the guide rod, the threaded rod and the limiting plate form threaded connection, the threaded rod can be screwed, the threaded rod can rotate to drive the limiting plate to lift, the limiting plate can clamp a photo between the workbench and the limiting plate to prevent the situation of deflection during photo processing, the friction force of the limiting plate can be enhanced by the anti-skid patterns at the bottom end of the limiting plate, the guide rod penetrates through the limiting plate, the guide rod can guide the limiting plate to prevent the situation of deflection of the limiting plate, and therefore the purpose that the printing anti-counterfeiting device of the halftone holographic watermark is convenient for limiting the photo is achieved.

CLAIM 1. The utility model provides a printing anti-fake device of halftone holographic watermark, includes workstation (1), box (2) and roof (6), its characterized in that: the two sides of the bottom end of the box body (2) are provided with supporting legs (3), and the top end of the box body (2) is provided with a workbench (1); air-drying mechanism (12) are installed to one end on workstation (1) top, limit structure (4) are all installed on both sides on workstation (1) top, and limit structure (4) are including limiting plate (401), anti-skidding line (402), threaded rod (403) and guide bar (404), guide bar (404) are installed on both sides on workstation (1) top, the top swing joint of guide bar (404) has limiting plate (401), threaded rod (403) are run through to one side of limiting plate (401), support (5) are installed on the top of workstation (1), roof (6) are installed on the top of support (5); the top of roof (6) is installed cylinder (7), and connecting block (10) are installed to the bottom of cylinder (7), pneumatic cylinder (11) are installed to one side of connecting block (10), installation piece (8) are installed to one side of pneumatic cylinder (11), and watermark marking terminal (9) are installed to the bottom of installation piece (8), internally mounted of installation piece (8) has moving mechanism (9).



P37002

LABEL

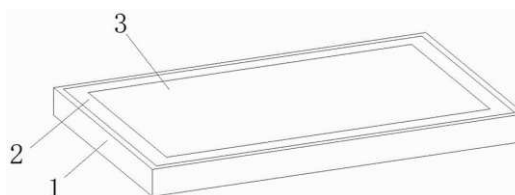
CN219789731U

Priority Date: 22/02/2023

LANZHUYUNHE BEIJING TECHNOLOGY & CULTURE

ANTI-FAKE STICKER ENDORSEMENT CERTIFICATE

The utility model belongs to the technical field of anti-counterfeiting certificates, and particularly relates to an anti-counterfeiting label certificate, which comprises a protective frame, wherein an anti-warping pressing frame is arranged on the inner side of the protective frame, a protective plastic film is connected on the inner side of the anti-warping pressing frame, and a certificate component is arranged between the two protective plastic films.



The utility model is convenient to protect the plastic film and the certificate component to be stably and tightly attached by the anti-tilting press frame and the plastic surrounding frame, can provide sealing protection for the certificate component, can ensure that the certificate is not damaged or discolored in the long-time use process, and can prevent counterfeiting through the super-linear anti-counterfeiting layer, the lines can generate rich curves, thickness, yin-yang lines and other variable special lines after processing, the holographic anti-counterfeiting film, the anti-copying paper layer and the shading anti-counterfeiting layer are matched, the high-efficiency anti-counterfeiting purpose can be achieved, and the situations of composite layer separation, corner tilting, damage and the like of the certificate component formed by multi-layer compounding can be avoided by the protection frame and the anti-tilting press frame.

CLAIM 1. The utility model provides an anti-fake sticker endorsement certificate, includes protection frame (1), its characterized in that: the anti-warping frame is characterized in that an anti-warping pressing frame (2) is arranged on the inner side of the protective frame (1), protective plastic films (3) are connected on the inner side of the anti-warping pressing frame (2), a certificate component (5) is arranged between the two protective plastic films (3), and a plastic surrounding frame (4) is connected between the anti-warping pressing frame (2) and the protective plastic films (3).

P37016

PRINTING – LABEL

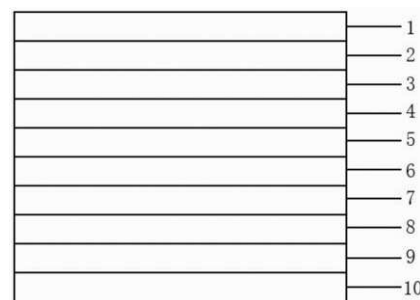
CN116913167

Priority Date: 31/07/2023

HENAN PROVINCE WELLKING TECHNOLOGY DEVELOPMENT

BIDIRECTIONAL DEVELOPING ANTI-COUNTERFEITING MARK AND MANUFACTURING METHOD THEREOF

The invention belongs to the technical field of anti-counterfeiting marks, and particularly relates to a bidirectional developing anti-counterfeiting mark and a manufacturing method thereof. The mark sequentially comprises a first printing layer, a base film layer, an information layer, a coating film layer, a stripping layer, a second printing layer, a pressure-sensitive adhesive and release paper from top to bottom, wherein the first printing layer, the base film layer, the information layer and the coating film layer form a clear code anti-counterfeiting layer, the first printing layer comprises a surface layer two-dimensional code, and holographic patterns are molded on the information layer; the stripping layer, the second printing layer and the pressure-sensitive adhesive form a password anti-counterfeiting layer, the second printing layer



comprises an inner layer two-dimensional code, and the holographic pattern corresponds to the positions of the surface layer two-dimensional code and the inner layer two-dimensional code. The invention combines the holographic molding technology, the two-dimensional code tracing technology, the positioning molding technology and the positioning printing technology together by arranging the two-way developing printing technology on the front surface, the identification reliability of the obtained identification is higher, the anti-counterfeiting effect is good, the requirements on equipment are high, the technical operation difficulty is high, the imitation and the theft are not easy, the structure is simple, and the use is convenient.

CLAIM 1. The two-way development anti-counterfeiting mark is characterized by sequentially comprising a first printing layer, a base film layer, an information layer, a coating film layer, a stripping layer, a second printing layer, a pressure-sensitive adhesive and release paper from top to bottom, wherein the first printing layer, the base film layer, the information layer and the coating film layer form a clear code anti-counterfeiting layer, the first printing layer comprises a surface layer two-dimensional code, and holographic patterns are molded on the information layer in a mould pressing manner; the peeling layer, the second printing layer and the pressure-sensitive adhesive form a password anti-counterfeiting layer, the second printing layer comprises an inner layer two-dimensional code, and the holographic pattern corresponds to the positions of the surface layer two-dimensional code and the inner layer two-dimensional code.

P37021

PRINTING – BRAND PROTECTION

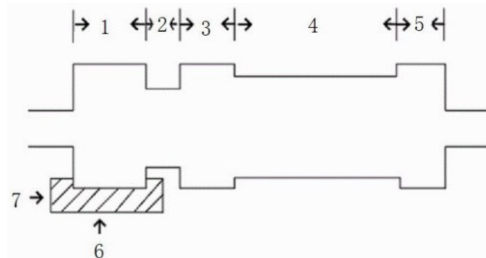
CN116901580

HUBEI HUAGONG IMAGE TECHNOLOGY DEVELOPMENT

Priority Date: 30/08/2023

MULTIFUNCTIONAL PLATE SHAFT WITH SLEEVE POSITION PRINTING AND HOLOGRAPHIC SPECIAL PATTERN EMBOSSING FUNCTIONS

The invention belongs to the field of anti-counterfeiting package printing related equipment, and discloses a multifunctional plate shaft with sleeve position printing and embossed holographic special pattern, which sequentially comprises a first plate shaft area, a first groove, a second plate shaft area, a second groove and a third plate shaft area along the axial direction, wherein an initial mark for sleeve position detection is arranged on the periphery of the first plate shaft area, and the initial mark is used for invading an ink tank and executing scraper printing when in operation; the first groove has a first depth of the inward groove; straight lines for aligning the initial marks are respectively arranged on the outer sides of the second plate shaft area and the third plate shaft area; the second groove has a second depth of the inward groove and is used for sticking the laser holographic plate. The invention can more accurately execute the registration recognition in a compact structure and convenient operation and control mode and realize the impression copy of the holographic special pattern, thereby effectively solving the problems of large secondary registration fluctuation, low yield and the like in the prior art.



CLAIM 1. The utility model provides a multi-functional version axle that has cover position printing and impression holographic special edition pattern concurrently, this version axle is used for laser holography to prevent fake package printing, its characterized in that: the plate shaft sequentially comprises a first plate shaft region (1), a first groove (2), a second plate shaft region (3), a second groove (4) and a third plate shaft region (5) along the axial direction, wherein: the circumference of the first plate shaft area (1) is provided with an initial mark for sleeve position detection, and the first plate shaft area (1) is used for independently invading an ink tank and executing doctor printing when in operation; the first groove (2) is provided with a first depth which is recessed inwards relative to the first plate shaft area (1) and is used for separating the second plate shaft area (3), the second groove (4) and the third plate shaft area (5) which are behind, so that the groove cannot be invaded; the plate circumferences of the second plate axis area (3) and the third plate axis area (5) are kept consistent with the plate circumference of the first plate axis area, and the surfaces of the second plate axis area and the third plate axis area are respectively provided with a straight line for aligning the initial mark; the second groove (4) has a second depth of the inward groove relative to the first plate axis region (1) for sticking the laser hologram plate and keeping the plate circumference of the post-sticking laser hologram plate consistent with the plate circumference of the first plate axis region, and the surface of the second groove (4) is also provided with a straight line for aligning the initial mark.

P37029

PRINTING – BRAND PROTECTION

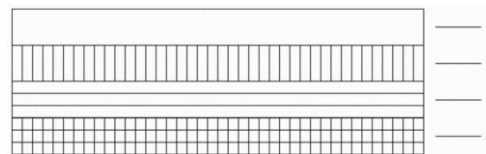
CN116852834

SHANGHAI TECHSUN PACKING MATERIALS | SHANGHAI TIANCHEN MICRO NANO TECHNOLOGY

Priority Date: 07/07/2023

PACKAGING FILM WITH POSITIONING HOLOGRAPHIC EFFECT AND PREPARATION METHOD AND APPLICATION THEREOF

The invention provides a packaging film with a positioning holographic effect, and a preparation method and application thereof. The packaging film comprises a base film, a laser holographic layer, an image-text layer and a reflecting layer which are arranged in a laminated manner; the preparation method comprises the following steps: coating a laser mould pressing information coating on one side of the base film, drying, adopting a mould pressing printing integrated machine, and after mould pressing laser holography on one side of the laser holography layer far away from the base film, printing a picture and text coating to form a laser holography layer and a picture and text layer on one side of the base film; and then preparing a reflecting layer on one side of the image-text layer far away from the base film to obtain the packaging film with the positioning holographic effect. According to the invention, the packaging film with accurate positioning information is prepared by designing the structure of the packaging film and using the die-pressing printing integrated machine, the positioning deviation of the graph and the holographic positioning mark is less than or equal to +/-0.20 mm, the preparation method is simplified, and the production efficiency is improved.



CLAIM 1. The packaging film with the positioning holographic effect is characterized by comprising a base film, a laser holographic layer, an image-text layer and a reflecting layer which are arranged in a laminated mode.

P37022

LABEL

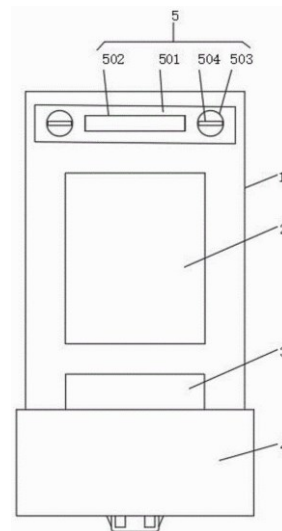
CN116895210

HAIYAN XIMEI PRINTING INDUSTRY

Priority Date: 05/07/2023

LASER HOLOGRAPHIC ANTI-COUNTERFEITING CLOTHING HANGTAG AND PREPARATION METHOD THEREOF

The invention discloses a laser holographic anti-counterfeiting clothing hangtag and a preparation method thereof, the laser holographic anti-counterfeiting clothing hangtag comprises a hangtag main body and an information area arranged on the front surface of the hangtag main body, an anti-counterfeiting scraping layer is arranged below the front surface of the hangtag main body relative to the information area, a hanging hole is formed in the top end of the hangtag main body in a penetrating manner, an anti-tearing structure is arranged at the top end of the hangtag main body, the anti-tearing structure comprises a protective rubber cover and a plug bush, the protective rubber cover and the plug bush are in an integrated structure, the plug bush is inserted into the hanging hole, a strip-shaped hole is formed in the plug bush in a penetrating manner, and a mounting structure is arranged between the protective rubber cover and the hangtag main body; according to the invention, the laser holographic anti-counterfeiting clothing hangtag in the prior art is improved and optimized, and the anti-tearing structure is designed above the laser holographic anti-counterfeiting clothing hangtag, so that the hanging hole can be effectively protected, the problem that the hanging hole is torn due to the fact that a hanging rope is torn by mistake in the transportation process of clothing is prevented, and the stability of the hangtag is improved.



CLAIM 1. The utility model provides a holographic anti-fake clothing drop of laser, includes drop main part (1) and sets up in information area (2) of drop main part (1) front surface, the front surface of drop main part (1) is provided with anti-fake layer (3) of scraping for the below of information area (2), hanging hole (11) have been seted up in the top of drop main part (1) run through, its characterized in that: the novel anti-fake label is characterized in that the top end of the label body (1) is provided with an anti-fake structure (5), the anti-fake label body (1) is provided with the anti-fake structure (5) which comprises a protective rubber cover (501) and a plug bush (505), the protective rubber cover (501) and the plug bush (505) are of an integrated structure, the plug bush (505) is inserted into the hanging hole (11), the plug bush (505) is provided with a strip-shaped hole (502) in a penetrating mode, an installation structure is arranged between the protective rubber cover (501) and the label body (1), the bottom end of the label body (1) is provided with a protective component (4), the protective component (4) comprises a transparent sheath (41) which is sleeved on the bottom end surface of the label body (1) in a sliding mode, and the bottom end of the anti-fake label layer (3) is located inside the transparent sheath (41).

P37039

LABEL

AT-526123

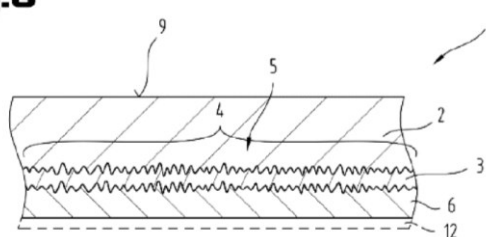
HUECK FOLIEN

Priority Date: 05/10/2022

LAMINATED COMPOSITE WITH A THERMALLY SHRUNK STRUCTURE AND METHOD FOR THE PRODUCTION THEREOF

The invention relates to a layered composite (1) for producing a decorative film, a security element, a label or an adhesive tape, comprising a carrier layer (2) and a layer (3). According to the invention, the layer (3) has a region (4) with a thermally shrunk structure (5). The invention also relates to a method for producing a layered composite (1).

Fig-3



Click on the title to return to table of contents

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

P36908

CARD – RELIEF – MICROLENS

WO2023208666

OVD KINEGRAM

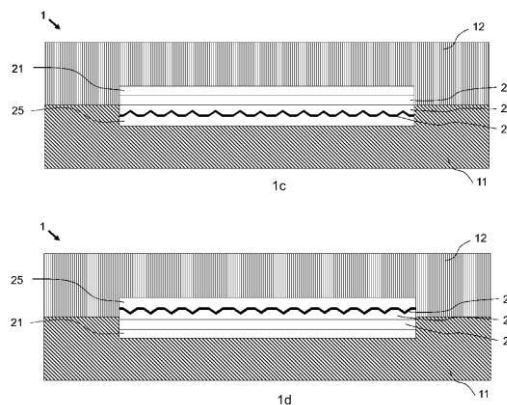
Priority Date: 25/04/2022

LAMINATE AND METHOD FOR PRODUCING A LAMINATE

The invention relates to a laminate (1) comprising a security element (20) which is laminated in between a recording layer (11) and a cover layer (12), wherein an adhesive layer (25) adheres to the recording layer (11) and a release layer (21) adheres to the cover layer (12) or the adhesive layer (25) adheres to the cover layer (12) and the release layer (21) adheres to the recording layer (11), characterized in that the adhesive layer (25) of the security element (20) can be split into itself by a tensile force exerted on the security element (20) by the recording layer (11) and the cover layer (12), and a method for producing a laminate (1).

STRATIFIÉ ET PROCÉDÉ DE PRODUCTION D'UN STRATIFIÉ

L'invention concerne un stratifié (1) comportant un élément (20) de sécurité qui est incorporé par stratification entre une couche (11) d'enregistrement et une couche (12) de couverture, une couche adhésive (25) adhérant à la couche (11) d'enregistrement et une couche antiadhésive (21) adhérant à la couche (12) de couverture, ou la couche adhésive (25) adhérant à la couche (12) de couverture et la couche antiadhésive (21) adhérant à la couche (11) d'enregistrement, et le stratifié (1) étant conçu de telle façon que la couche adhésive (25) de l'élément (20) de sécurité puisse être divisée par une force de traction exercée par la couche (11) d'enregistrement et la couche (12) de couverture sur l'élément (20) de sécurité. L'invention concerne également un procédé de production d'un stratifié (1).



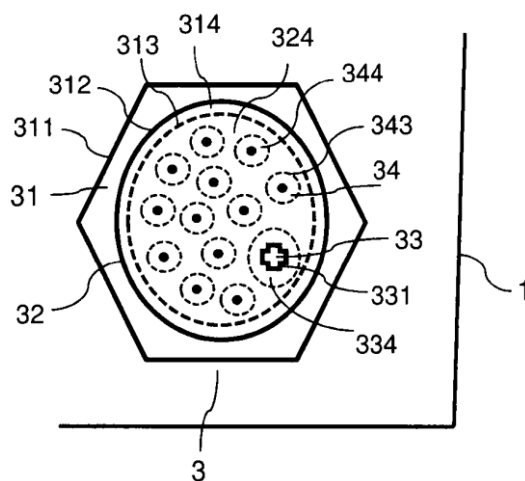
CLAIM 1. A laminate (1), in particular a security document, comprising a recording layer (11), a transparent cover layer (12) and a security element (20) laminated in between the recording layer (11) and the cover layer (12), wherein the security element (20) comprises a release layer (21), a replication layer (21) having a relief surface arranged on its side facing away from the release layer (21), a reflection layer (24) arranged on the relief surface, and an adhesive layer (25) which forms a side of the security element (20) facing away from the release layer (21), wherein a) the adhesive layer (25) adheres to the recording layer (11) and the release layer (21) adheres to the cover layer (12) or the adhesive layer (25) adheres to the cover layer (12) and the release layer (21) adheres to the recording layer (11), characterized in that the adhesive layer (25) of the security element (20) can be split into itself by a tensile force exerted on the security element (20) by the recording layer (11) and the cover layer (12).

METHOD FOR TRANSFERRING A SECURITY ELEMENT TO A TARGET SUBSTRATE

The invention relates to a method for transferring a security element (3) to a target substrate (1), comprising: - providing the security element (3); - applying the security element (3) to the target substrate (1); - irradiating a radiation-curable adhesive layer on the security element side for curing the radiation-curable adhesive layer, which permanently connects the security element (3) to the target substrate (1), wherein the security element is opaque for the irradiation in an effect region (32) and transparent for the irradiation in at least one transparency element (31, 33, 34). A plurality of transparency elements (31, 33; 31, 34; 33; 34) is distributed in the security element (3) for the irradiation on the security element side in such a way that, during irradiation by the transparency elements (31, 33; 31, 34; 33; 34), a plurality of cured partial surfaces (314, 334, 344) of the adhesive layer are formed, which are separated from one another by at least one uncured partial surface (324) of the adhesive layer.

PROCÉDÉ DE TRANSFERT D'UN ÉLÉMENT DE SÉCURITÉ SUR UN SUBSTRAT CIBLE

L'invention concerne un procédé de transfert d'un élément de sécurité (3) sur un substrat cible (1), comprenant les étapes consistant à : - fournir l'élément de sécurité (3) ; - appliquer l'élément de sécurité (3) sur le substrat cible (1) ; et - irradier une couche adhésive durcissable par rayonnement sur le côté élément de sécurité pour durcir la couche adhésive durcissable par rayonnement qui lie de manière permanente l'élément de sécurité (3) au substrat cible (1), l'élément de sécurité étant opaque à la suite de l'irradiation dans une région d'effet (32) et étant transparent à la suite de l'irradiation dans au moins un élément transparent (31, 33, 34). Pour l'irradiation sur le côté élément de sécurité, une pluralité d'éléments transparents (34 ; 31, 34 ; 33, 34 ; 31, 33, 34) sont répartis dans l'élément de sécurité (3) de telle sorte que, lors de l'irradiation à travers les éléments transparents (34 ; 31, 34 ; 33, 34 ; 31, 33, 34), une pluralité de surfaces partielles durcies (314, 334, 344) de la couche adhésive sont formées et séparées les unes des autres par au moins une surface partielle non durcie (324) de la couche adhésive. La pluralité d'éléments transparents (34 ; 31, 34 ; 33, 34 ; 31, 33, 34) comprennent une pluralité d'éléments de grille transparents (34).



CLAIM 1. A method for transferring a security element (3) to a target substrate (1), comprising: - providing the security element (3); - applying the security element (3) to the target substrate (1); - irradiating on the security element side a radiation-curable adhesive layer for curing the radiation-curable adhesive layer, which permanently connects the security element (3) to the target substrate (1), wherein the security element is opaque for the irradiation in an effect region (32) and transparent for the irradiation in at least one transparency element (31, 33, 34); characterized in that In that a plurality of transparency elements (31, 33; 31, 34; 33; 34) are distributed in the security element (3) for the irradiation on the security element side in such a way that, during the irradiation by the transparency elements (31, 33; 31, 34; 33; 34), a plurality of cured partial surfaces (314, 334, 344) of the adhesive layer are formed, which are separated from one another by at least one uncured partial surface (324) of the adhesive layer.

METASURFACE-BASED ANTI-COUNTERFEITING DEVICE

Displays includes a two-dimensional array of display pixels and methods for making such displays are disclosed.

DISPOSITIF ANTI-CONTREFAÇON À MÉTASURFACE

Des dispositifs d'affichage comprennent un réseau bidimensionnel de pixels d'affichage et des procédés de fabrication de tels dispositifs d'affichage.

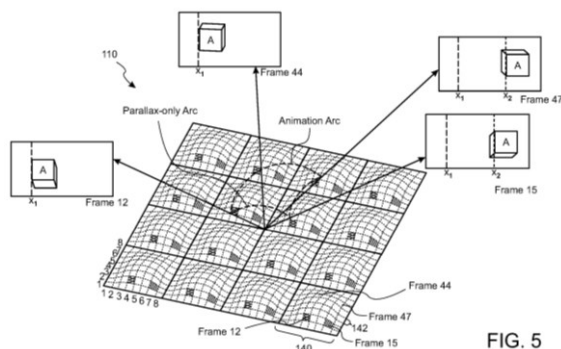


FIG. 5

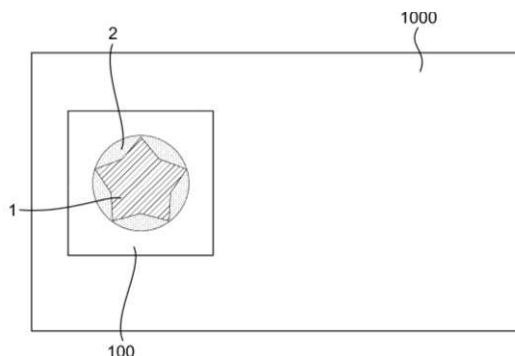
CLAIM 1. A display comprising a two-dimensional array of display pixels, the display comprising: a substrate extending in a plane; a polymer layer supported by the substrate, the polymer layer having a surface patterned to correspond to the two-dimensional array of display pixels, a shape of the surface within each display pixel varying with respect to the plane so that different areas of each display pixel reflect light incident on the display from a common direction into different viewing angles, each of the different areas corresponding to a respective frame pixel, the surface at each of the different areas comprising a respective metasurface pattern; and a layer of a first material on the surface of the polymer layer, the first material being different from a material composing the polymer layer, the metasurface patterns and the layer of the first material being configured so that the reflected light is spectrally filtered by each frame pixel, the metasurface patterns for different frame pixels of at least some of the display pixels varying so that each of the at least some of the display pixels reflect differently colored light into the different viewing angles.

OPTICAL DEVICES AND METHODS OF MANUFACTURE THEREOF

An optical device that exhibits a variable optical effect upon illumination is provided. The optical device comprises a set of first grating regions, wherein each first grating region comprises a plurality of first grating elements. The first grating elements have one or more first grating pitches such that upon illumination the first grating elements exhibit at least a first order diffractive effect at a first viewing angle and a second order diffractive effect at a second viewing angle. The optical device further comprises a set of second grating regions, wherein each second grating region comprises a plurality of second grating elements, the second grating elements having one or more second grating pitches smaller than the one or more first grating pitches such that upon illumination the second grating elements exhibit a first order diffractive effect substantially at the second viewing angle. The set of first grating regions is interlaced with the set of second grating regions. The first grating elements are arranged in accordance with a first image and the second grating elements are arranged in accordance with a second image, such that a user viewing the device perceives the first image at the first viewing angle and perceives the second image at least partially overlapping the first image at the second viewing angle.

DISPOSITIFS OPTIQUES ET LEURS PROCÉDÉS DE FABRICATION

L'invention concerne un dispositif optique qui présente un effet optique variable lors de l'éclairage. Le dispositif optique comprend un ensemble de premières régions de réseau, chaque première région de réseau comprenant une pluralité de premiers éléments de réseau. Les premiers éléments de réseau ont un ou plusieurs premiers pas de réseau de telle sorte que, lors de l'éclairage, les premiers éléments de réseau présentent au moins un effet de diffraction de premier ordre à un premier angle de visualisation et un effet de diffraction de second ordre à un second angle de visualisation. Le dispositif optique comprend, en outre, un ensemble de secondes régions de réseau, chaque seconde région de réseau comprenant une pluralité de seconds éléments de réseau, les seconds éléments de réseau ayant un ou plusieurs seconds pas de réseau plus petits que le ou les premiers pas de réseau de telle sorte que, lors de l'éclairage, les seconds éléments de réseau présentent un effet de diffraction de premier ordre sensiblement au second angle de visualisation. L'ensemble de premières régions de réseau est entrelacé avec l'ensemble de secondes régions de réseau. Les premiers éléments de réseau sont agencés conformément à une première image et les seconds éléments de réseau sont agencés conformément à une seconde image, de telle sorte qu'un utilisateur visualisant le dispositif perçoit la première image au premier angle de visualisation et perçoit la seconde image chevauchant au moins partiellement la première image au second angle de visualisation.



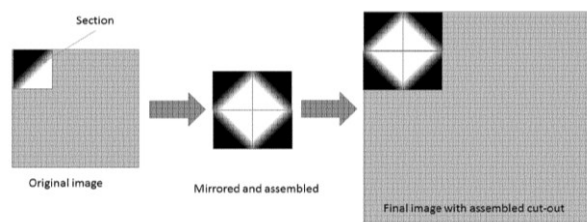
CLAIM 1. An optical device that exhibits a variable optical effect upon illumination, comprising: a set of first grating regions, wherein each first grating region comprises a plurality of first grating elements, the first grating elements having one or more first grating pitches such that upon illumination the first grating elements exhibit at least a first order diffractive effect at a first viewing angle and a second order diffractive effect at a second viewing angle; a set of second grating regions, wherein each second grating region comprises a plurality of second grating elements, the second grating elements having one or more second grating pitches smaller than the one or more first grating pitches such that upon illumination the second grating elements exhibit a first order diffractive effect substantially at the second viewing angle; and wherein the set of first grating regions is interlaced with the set of second grating regions, and wherein the first grating elements are arranged in accordance with a first image and the second grating elements are arranged in accordance with a second image, such that a user viewing the device perceives the first image at the first viewing angle and perceives the second image at least partially overlapping the first image at the second viewing angle.

METHODS FOR DESIGNING A PRINTED IMAGE FOR A SECURITY FEATURE

A method for designing a first layer of a printed image in a security feature is provided. The security feature comprising an array of optical elements overlaying the printed image, the method comprising: receiving an original image, the original image comprising rows of pixels extending in an x direction and columns of pixels extending in a y direction; selecting a first section of the original image; generating a first block by combining the pixels of the first section with pixels of the first section mirrored in both the x and y directions; and assigning to the first block a location within the first layer of the printed image, the location corresponding to the location of the first section within the original image. A method for producing a printed image, a printed image, a security feature, a security document, and non-transitory computer readable medium are also provided.

PROCÉDÉS DE CONCEPTION D'UNE IMAGE IMPRIMÉE POUR UN SIGNE DE SÉCURITÉ

L'invention concerne un procédé de conception d'une première couche d'une image imprimée dans un signe de sécurité. Le signe de sécurité comprend un réseau d'éléments optiques recouvrant l'image imprimée, le procédé consistant : à recevoir une image d'origine, l'image d'origine comprenant des rangées de pixels s'étendant dans une direction x et des colonnes de pixels s'étendant dans une direction y ; à sélectionner une première section de l'image d'origine ; à générer un premier bloc en combinant les pixels de la première section avec des pixels de la première section en miroir à la fois dans les directions x et y ; et à attribuer au premier bloc un emplacement à l'intérieur de la première couche de l'image imprimée, l'emplacement correspondant à l'emplacement de la première section à l'intérieur de l'image d'origine. L'invention concerne également un procédé de production d'une image imprimée, une image imprimée, un signe de sécurité, un document de sécurité et un support non transitoire lisible par ordinateur.



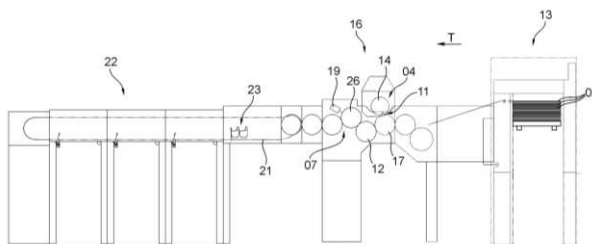
CLAIM 1. A method for designing a first layer of a printed image in a security feature, the security feature comprising an array of optical elements overlaying the printed image, the method comprising: receiving an original image, the original image comprising rows of pixels extending in an x direction and columns of pixels extending in a y direction; selecting a first section of the original image; generating a first block by combining the pixels of the first section with pixels of the first section mirrored in both the x and y directions; and assigning to the first block a location within the first layer of the printed image, the location corresponding to the location of the first section within the original image.

CYLINDER FOR ALIGNING MAGNETIC OR MAGNETIZABLE PARTICLES CONTAINED IN A COATING AGENT ON A SUBSTRATE, AND MACHINE FOR GENERATING OPTICALLY VARIABLE IMAGE ELEMENTS

The invention relates to a cylinder (26) for aligning magnetic or magnetizable particles (P) contained in a coating agent (06) on a substrate (02), the outer circumference of said cylinder comprising a matrix of $n \times m$ (in words n times m ; where $n, m \in \mathbb{N} > 1$) elements (24) that provide magnetic fields, also called magnetic elements (24) for short, which are arranged in n axially parallel rows and in m columns running in the circumferential direction, and suction elements (34) in the circumferential region, said suction elements comprising suction openings (42) facing outwards. In a plurality, or in all, of the columns of magnetic elements (24), a respective plurality or all of the magnetic elements (24) arranged one behind the other are combined together with at least one respective paired suction element (34) in respective components (36) so as to form functional units (36) and can be positioned as such collectively and independently of all other such functional units (36) in the circumferential direction and/or can be released from the cylinder (26). The invention additionally relates to a system for mounting and/or positioning magnetic elements (24) and to a machine (01) for generating optically variable image elements on a substrate (02).

CYLINDRE POUR L'ALIGNEMENT DE PARTICULES MAGNÉTIQUES OU MAGNÉTISABLES CONTENUES DANS UN AGENT DE REVÊTEMENT SUR UN SUBSTRAT, ET MACHINE POUR GÉNÉRER DES ÉLÉMENTS D'IMAGE OPTIQUEMENT VARIABLES

L'invention concerne un cylindre (26) pour aligner des particules magnétiques ou magnétisables (P) contenues dans un agent de revêtement (06) sur un substrat (02), la circonférence extérieure dudit cylindre comprenant une matrice de $n \times m$ (c'est-à-dire n fois m ; où $n, m \in \mathbb{N} > 1$) éléments (24) qui fournissent des champs magnétiques, également appelés éléments magnétiques (24) en abrégé, qui sont agencés en n rangées axialement parallèles et en m colonnes s'étendant dans la direction circonférentielle, et des éléments d'aspiration (34) dans la région circonférentielle, lesdits éléments d'aspiration comprenant des ouvertures d'aspiration (42) tournées vers l'extérieur. Dans plusieurs ou dans toutes les colonnes d'éléments magnétiques (24), une pluralité respective ou la totalité des éléments magnétiques (24) agencés les uns derrière les autres sont combinés conjointement avec au moins un élément d'aspiration apparié respectif (34) dans des composants respectifs (36) de façon à former des unités fonctionnelles (36) et peuvent être positionnés en tant que tels collectivement et indépendamment de toutes les autres unités fonctionnelles (36) dans la direction circonférentielle et/ou peuvent être libérés du cylindre (26). L'invention concerne en outre un système de montage et/ou de positionnement d'éléments magnétiques (24) et une machine (01) de génération d'éléments d'image optiquement variables sur un substrat (02).



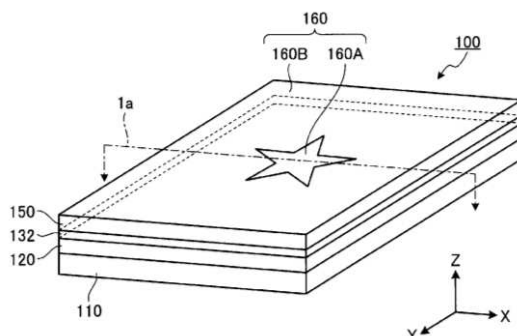
CLAIM 1. A cylinder (26) for aligning magnetic or magnetizable particles (P) contained in coating agent (06) on a substrate (02), which cylinder, in the region of its outer circumference, has a matrix-like number of $n \times m$ (in words n times m ; with $n, m \in \mathbb{N} > 1$) elements (24) providing magnetic fields, short magnet elements (24), which are arranged in n rows running axially parallel and in m columns running in the circumferential direction, and which in the circumferential region has suction elements (34) with outwardly pointing suction openings (42), characterized in that, characterized in that in a plurality or all of the columns of magnet elements (24) in each case a plurality or all of the magnet elements (24) arranged one behind the other are connected in each case to at least one associated suction element (34) are combined in respective structural units (36) as active units (36) and as such can be positioned as a whole and in each case independently of all other active units (36) of this type in the circumferential direction and/ or from the cylinder (26).

IDENTIFICATION MEDIUM AND ARTICLE

Provided is an identification medium equipped with a light reflection layer and a patterned phase difference layer, wherein the light reflection layer reflects incident light as circularly polarized light, the patterned phase difference layer includes a region having a phase difference, and is provided in the identification medium such that the region having the phase difference occupies a portion of a display surface region of the identification medium, the light reflection layer includes three or more types of flakes of a material having cholesteric regularity, at least one type among the three or more types of flakes satisfies a specific relational expression, two types among the three or more types of flakes have a specific selective reflection center wavelength λ_c , and the reflectance of the light reflection layer satisfies a specific relational expression. Also provided is an article equipped therewith.

SUPPORT D'IDENTIFICATION ET ARTICLE

L'invention concerne un support d'identification équipé d'une couche de réflexion de lumière et d'une couche de différence de phase à motifs, la couche de réflexion de lumière réfléchissant la lumière incidente sous la forme d'une lumière à polarisation circulaire, la couche de différence de phase à motifs comprenant une région ayant une différence de phase, et étant disposée dans le support d'identification de telle sorte que la région ayant la différence de phase occupe une partie d'une région de surface d'affichage du support d'identification, la couche de réflexion de lumière comprenant trois types ou plus de flocons d'un matériau ayant une régularité cholestérique, au moins un type parmi les trois types ou plus de flocons satisfaisant à une expression relationnelle spécifique, deux types parmi les trois types ou plus de flocons ayant une longueur d'onde centrale de réflexion sélective spécifique λ_c , et la réflectance de la couche de réflexion de lumière satisfaisant à une expression relationnelle spécifique. L'invention concerne également un article équipé de celui-ci.



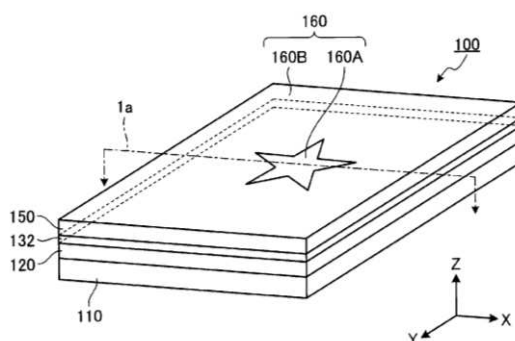
CLAIM 1. An identification medium comprising a light reflective layer and a patterned retardation layer, wherein the light reflective layer is a layer that reflects incident light as circularly polarized light, the patterned retardation layer is a layer that includes a region having retardance, the region having retardance comprising: A layer provided on an identification medium so as to occupy a portion of a region of a display surface of the identification medium, wherein the light reflection layer includes three or more types of flakes of a material having cholesteric regularity, and one or more types of the three or more types of flakes satisfy Equation (a), $\Delta\lambda / \lambda_c < 0.14$ Equation (a) Where $\Delta\lambda$ represents a half width of a reflection band of the flake, λ_c represents a selective reflection center wavelength of the flake, and among the three or more types of flakes, one type of the three or more types of flakes is under selective reflection. Flake (R) having a cardiac wavelength λ_c (R) and another type of flake (G) having a selective reflective central wavelength λ_c (G), the flake (R) and flake (G) being characterized in that $600 \text{ nm} < \lambda_c$ (R) $\leq 660 \text{ nm}$ and $500 \text{ nm} \leq \lambda_c$ (G) $\leq 600 \text{ nm}$, The light reflective layer satisfies Formula (b-1)~ (b-2) below, where $0.95 \leq B$ (430-490) Ave/G (500-600) Ave ≤ 1.02 Formula (b-1) $0.95 \leq R$ (600-660) Ave/ G (500-600) Ave ≤ 1.02 Equation (b-2) wherein B (430-490) Ave is an average value of an integrated reflectance of the light reflective layer at a wavelength from 430 nm to 490 nm; G (500-600) Ave is an average value of the integrated reflectance of the optically reflective layer at a wavelength of 500 nm to 600 nm, and R (600-660) Ave is an average value of the integrated reflectance of the optically reflective layer. The average value is an average value at wavelengths 600 nm to 660 nm, and the average value at 430~ 660 nm of the integrated reflectance of the light reflective layer is 20% or greater.

IDENTIFICATION MEDIUM AND PRODUCT

The present invention is an identification medium comprising a light reflection layer and a patterned phase difference layer, wherein the light reflection layer reflects incident light with circular polarization, and the patterned phase difference layer includes an area having a phase difference and the area having such a phase difference is provided in the identification medium so as to occupy a portion of a display surface area of the identification medium. The light reflection layer includes three or more kinds of flakes of materials having cholesteric regularity, each of the three or more kinds of flakes satisfies a specific relationship, and the light reflection layer satisfies a specific relationship pertaining to reflectance.

SUPPORT D'IDENTIFICATION ET PRODUIT

La présente invention est un support d'identification comprenant une couche de réflexion de lumière et une couche de différence de phase à motifs, la couche de réflexion de lumière réfléchissant la lumière incidente avec une polarisation circulaire, et la couche de différence de phase à motifs comprenant une zone ayant une différence de phase et la zone ayant une telle différence de phase étant disposée dans le support d'identification de façon à occuper une partie d'une zone de surface d'affichage du support d'identification. La couche de réflexion de lumière comprend au moins trois types de flocons de matériaux ayant une régularité cholestérique, chacun des trois types ou plus de flocons satisfait à une relation spécifique, et la couche de réflexion de lumière satisfait à une relation spécifique concernant la réflectance.



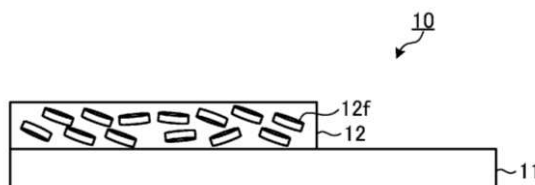
CLAIM 1. An identification medium comprising a light reflection layer and a patterned phase difference layer, wherein the light reflection layer is a layer that reflects incident light as circularly polarized light, the patterned phase difference layer is a layer that includes a region having a phase difference, and is provided on the identification medium such that the region having such a phase difference occupies a portion of a region of a display surface of the identification medium, and the light reflection layer includes: A laminate comprising three or more types of flakes of a material having cholesteric regularity, each of the three or more types of flakes satisfying Formula (a) below, where $0.14 \leq \Delta\lambda/\lambda_c \leq 0.25$ Formula (a) where $\Delta\lambda$ is a half width of a reflection band of the flake, λ_c is a selective reflection center wavelength of the flake, and the light reflection layer includes: The optical element according to claim 1, wherein $0.95 \leq B(430-490) \text{ Ave}/G(500-600) \text{ Ave} \leq 1.02$ Formula (b-1) $0.95 \leq R(600-660) \text{ Ave}/G(500-600) \text{ Ave} \leq 1.02$ Formula (b-2) where B (430-490) Ave is an integral reflectance of the light reflective layer, Is an average value at wavelengths 430 nm to 490 nm, G (500-600) Ave is an average value of an integrated reflectance of the light reflective layer at wavelengths 500 nm to 600 nm, and R (600-660) Ave is an average value of an integrated reflectance of the light reflective layer at wavelengths 600 nm to 660 nm.

IDENTIFICATION MEDIUM

Provided is an identification medium including a first layer and a second layer provided so as to overlap the first layer, wherein the first layer is capable of reflecting either right-handed circularly polarized light or left-handed circularly polarized light and transmitting circularly polarized light other than the above light, and is a resin layer having cholesteric regularity, the second layer is capable of reflecting at least a portion of circularly polarized light with the same rotation direction as that of the circularly polarized light reflected by the first layer and transmitting circularly polarized light with a rotation direction opposite to that of the circularly polarized light reflected by the first layer, and includes resin flakes having cholesteric regularity, and the volume average particle diameter (D50) of the flakes contained in the second layer is 70 μm or more.

SUPPORT D'IDENTIFICATION

L'invention concerne un support d'identification comprenant une première couche et une seconde couche disposée de manière à chevaucher la première couche, la première couche étant capable de réfléchir une lumière à polarisation circulaire droite ou une lumière à polarisation circulaire gauche et transmettant une lumière à polarisation circulaire autre que la lumière ci-dessus, et étant une couche de résine ayant une régularité cholestérique, la seconde couche étant capable de réfléchir au moins une partie de lumière à polarisation circulaire avec la même direction de rotation que celle de la lumière à polarisation circulaire réfléchie par la première couche et transmettant une lumière à polarisation circulaire avec une direction de rotation opposée à celle de la lumière à polarisation circulaire réfléchie par la première couche, et comprenant des flocons de résine ayant une régularité cholestérique, et le diamètre de particule moyen en volume (D50) des flocons contenus dans la seconde couche étant supérieur ou égal à 70 μm .



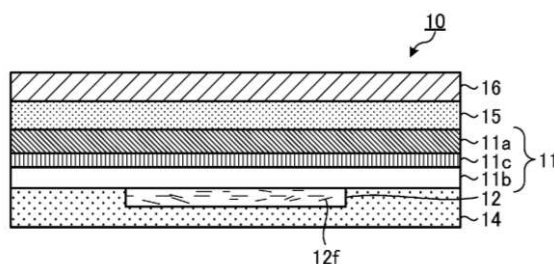
CLAIM 1. An identification medium comprising: a first layer; and a second layer provided overlapping the first layer, wherein the first layer is a layer capable of reflecting either right-hand circularly polarized light or left-hand circularly polarized light and transmitting other circularly polarized light, and is a layer of resin having cholesteric regularity, and the second layer includes: A layer that reflects at least a portion of circularly polarized light in the same rotational direction as the circularly polarized light reflected by the first layer, and is capable of transmitting circularly polarized light in a rotational direction opposite that of the circularly polarized light reflected by the first layer, The second layer is a layer including flakes of a resin having cholesteric regularity, wherein a volume average particle size (D50) of the flakes included in the second layer is not less than 70 μm .

IDENTIFICATION MEDIUM AND ARTICLE

Provided is an identification medium comprising a first layer, a second layer provided so as to overlap the first layer, and an adhesive layer provided on the second layer, wherein the first layer includes a resin layer having cholesteric regularity and capable of reflecting either right-handed circularly polarized light or left-handed circularly polarized light and transmitting circularly polarized light other than the above light, the second layer includes resin flakes having cholesteric regularity and capable of reflecting at least a portion of circularly polarized light with the same rotation direction as that of the circularly polarized light reflected by the first layer and transmitting circularly polarized light with a rotation direction opposite to that of the circularly polarized light reflected by the first layer, adhesion force F1 between the first layer and the second layer and adhesion force F2 between the second layer and the adhesive layer satisfy $F1 < F2$, and the adhesion force F1 and adhesion force F3 between the adhesive layer and the adherend satisfy $F1 < F3$.

SUPPORT D'IDENTIFICATION ET ARTICLE

L'invention concerne un support d'identification comprenant une première couche, une seconde couche disposée de manière à chevaucher la première couche, et une couche adhésive disposée sur la seconde couche, la première couche comprenant une couche de résine ayant une régularité cholestérique et capable de réfléchir soit une lumière à polarisation circulaire droite soit une lumière à polarisation circulaire gauche et transmettre une lumière à polarisation circulaire autre que la lumière ci-dessus, la seconde couche comprenant des flocons de résine ayant une régularité cholestérique et pouvant réfléchir au moins une partie de la lumière à polarisation circulaire ayant la même direction de rotation que celle de la lumière à polarisation circulaire réfléchie par la première couche et transmettre une lumière à polarisation circulaire avec une direction de rotation opposée à celle de la lumière à polarisation circulaire réfléchie par la première couche, une force d'adhérence F1 entre la première couche et la seconde couche et une force d'adhérence F2 entre la seconde couche et la couche adhésive satisfaisant à $F1 < F2$, et la force d'adhérence F1 et la force d'adhérence F3 entre la couche adhésive et la partie adhérente satisfaisant à $F1 < F3$.



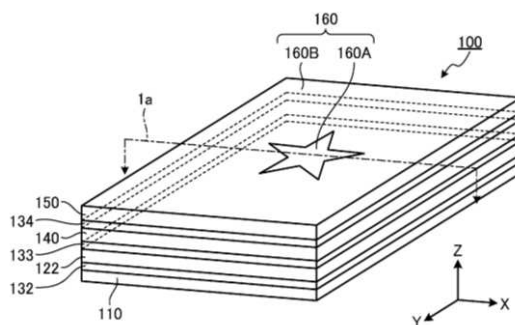
CLAIM 1. A first layer, a second layer provided so as to overlap the first layer, and an adhesive layer provided on the second layer, the first layer reflecting either right-hand circularly polarized light or left-hand circularly polarized light, according to any one of claims 1 to 4, wherein comprises a resin layer having cholesteric regularity, and the second layer reflects at least a portion of circularly polarized light in the same rotational direction as the circularly polarized light reflected by the first layer, and The first layer is a layer capable of transmitting circularly polarized light in a rotational direction opposite to the circularly polarized light reflected by the first layer, the first layer is a layer containing flakes of a resin having cholesteric regularity, and when the adhesive layer is attached to an adherend, An adhesive strength F1 between the first layer and the second layer, an adhesive strength F2 between the second layer and the adhesive layer, and an adhesive strength F3 between the adhesive layer and the adherend satisfy relationships of formulas (1) and (2): $F1 < F2$ (1) $F1 < F3$ (2)

IDENTIFICATION MEDIUM AND ARTICLE

This identification medium comprises: a light reflection layer (I); and a light reflection layer (II). The light reflection layers reflect incident light as circularly-polarized light. The light reflection layers (I, II) are arranged side by side on the same plane. The light reflection layers (I, II) exhibit similar colors. The light reflection layer (I) includes a flake (I-1) and a flake (I-2), and the light reflection layer (II) includes a flake (II-1) and a flake (II-2). There is a specific relationship between the selected center wavelength of the flakes and the rotation direction of the reflected light. This article comprises the identification medium.

SUPPORT D'IDENTIFICATION ET ARTICLE

L'invention concerne un support d'identification comprenant : une couche de réflexion de lumière (I) ; et une couche de réflexion de lumière (II). Les couches de réflexion de lumière réfléchissent la lumière incidente sous la forme d'une lumière à polarisation circulaire. Les couches de réflexion de lumière (I, II) sont disposées côte à côte sur le même plan. Les couches de réflexion de lumière (I, II) présentent des couleurs similaires. La couche de réflexion de lumière (I) comprend un flocon (I-1) et un flocon (I-2), et la couche de réflexion de lumière (II) comprend un flocon (II-1) et un flocon (II-2). Il existe une relation spécifique entre la longueur d'onde centrale sélectionnée des flocons et la direction de rotation de la lumière réfléchie. Cet article comprend le support d'identification.



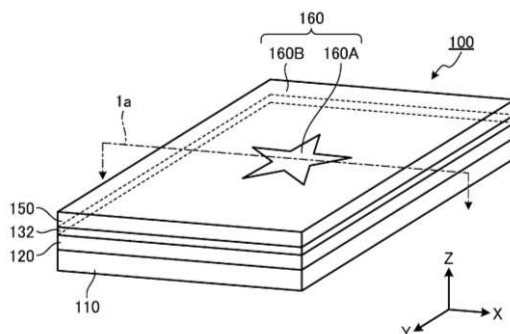
CLAIM 1. An identification medium comprising, as light reflection layers, a light reflection layer (I) and a light reflection layer (II), wherein the light reflection layer is a layer that reflects incident light as circularly polarized light, the light reflection layer (I) and the light reflection layer (II) are disposed side by side on the same plane, The light reflective layer (I) and the light reflective layer (II) are in contact with each other or adjacent to each other with a distance of 200 μm or less, the light reflective layer (I) and the light reflective layer (II) are layers exhibiting the same color, and the light reflective layer (I) comprises: Flakes (I-1) and (I-2) are a plurality of types of flakes of materials having cholesteric regularity, the flakes (I-1) and the flakes (I-2) having mutually different colors, The optical element according to claim 1, wherein the flakes (I-1) have a selective reflection center wavelength λ_c (I-1), the flakes (I-2) have a selective reflection center wavelength λ_c (I-2), and the light reflection layer (II) comprises: Flake (II-1) and flake (II-2), the flake (II-1) and flake (II-2) differing in color from each other, the flake (II-1) having a selective reflection center wavelength λ_c (II-1), The flake (II-2) has a selective reflection center wavelength λ_c (II-2), and λ_c (I-1), λ_c (I-2), λ_c (II-1), and λ_c (II-2) satisfy Requirement (a-1): Alternatively, Requirement (a-2) below is satisfied, λ_c (I-1) < λ_c (I-2) and λ_c (II-1) < λ_c (II-2) is satisfied, Requirement (a-1) λ_c (I-1) > λ_c (I-2) and λ_c (II-1) > λ_c (II-2) is satisfied, and Wherein a rotational direction of reflected light of the flake (I-2) is different from each other, and a rotational direction of reflected light of the flake (I-1) and a rotational direction of reflected light of the flake (II-1) are different from each other.

IDENTIFICATION MEDIUM AND ARTICLE

Provided is an identification medium comprising a light reflecting layer and a patterned phase difference layer, wherein the light reflecting layer reflects incident light as circularly polarized light, the patterned phase difference layer includes a region having a phase difference, the region having a phase difference being a layer provided to the identification medium so as to occupy a portion of the region of a display surface of the identification medium, the light reflecting layer including flakes (i) and flakes (ii) as flakes of a material having cholesteric regularity, the flakes (i) and the flakes (ii) being of mutually different colors, and the rotation direction of reflected light from the flakes (i) and the rotation direction of reflected light from the flakes (ii) being mutually different. Also provided is an article comprising the identification medium.

SUPPORT D'IDENTIFICATION ET ARTICLE

L'invention concerne un support d'identification comprenant une couche de réflexion de lumière et une couche de différence de phase à motifs, une couche de réflexion de lumière réfléchissant la lumière incidente sous la forme d'une lumière à polarisation circulaire, la couche de différence de phase à motifs comprenant une région ayant une différence de phase, la région ayant une différence de phase étant une couche disposée sur le support d'identification de façon à occuper une partie de la région d'une surface d'affichage du support d'identification, la couche de réflexion de lumière comprenant des flocons (i) et des flocons (ii) en tant que flocons d'un matériau ayant une régularité cholestérique, les flocons (i) et les flocons (ii) étant de couleurs mutuellement différentes, et la direction de rotation de la lumière réfléchiée par les flocons (i) et la direction de rotation de la lumière réfléchiée par les flocons (ii) étant mutuellement différentes. L'invention concerne également un article comprenant le support d'identification.



CLAIM 1. An identification medium comprising a light reflection layer and a patterned retardation layer, wherein the light reflection layer is a layer that reflects incident light as circularly polarized light, the patterned retardation layer is a layer that includes a region having a retardance, and is provided on the identification medium such that the region having the retardance occupies a portion of a region of a display surface of the identification medium, The light reflective layer includes Flake (i) and Flake (ii) as flakes of a material having cholesteric regularity, the Flake (i) and the Flake (ii) have different colors from each other, and a rotational direction of reflected light of the Flake (i) and a rotational direction of reflected light of the Flake (ii) are different from each other.

P36929

CARD

US20230339220

Priority Date: 22/04/2022

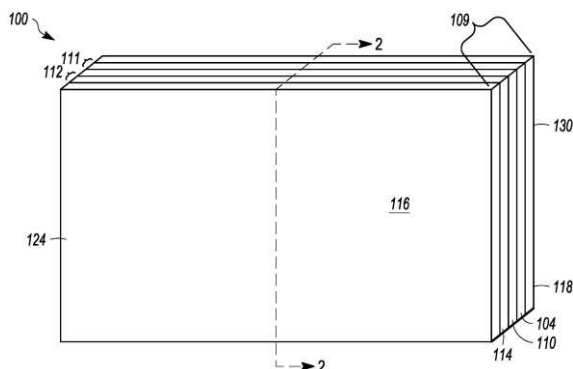
ITW - ILLINOIS TOOL WORKS

FULL FOIL FACE ASSEMBLIES AND METHODS FOR MANUFACTURING THE SAME

Full foil face assemblies and methods for manufacturing the same are provided. The assemblies can be formed by obtaining a first film layer having a maximum thickness that is no greater than 2.0 mils, and applying the first film layer with a reflective or refractive body-containing layer to form a core layer assembly. The reflective or refractive body-containing layer may provide a functional feature and/or decorative feature of a card to be manufactured using the first film layer and the core layer assembly.

ENSEMBLES À FACE PLEINE ALUMINIUM ET PROCÉDÉS DE FABRICATION DE TELS ENSEMBLES

L'invention concerne des ensembles à face pleine aluminium et des procédés de fabrication associés. Les ensembles peuvent être formés par obtention d'une première couche de film ayant une épaisseur maximale qui est inférieure ou égale à 2,0 mils, et par application sur la première couche de film d'une couche contenant un corps réfléchissant ou réfractif pour former un ensemble couche centrale. La couche contenant un corps réfléchissant ou réfractif peut fournir une caractéristique fonctionnelle et/ou une caractéristique décorative d'une carte à fabriquer en utilisant la première couche de film et l'ensemble couche centrale.



CLAIM 1. A method comprising: obtaining a first film layer having a maximum thickness that is no greater than 2.0 mils; and applying the first film layer with a reflective or refractive body-containing layer to form a core layer assembly, the reflective or refractive body-containing layer providing one or more of a functional feature or decorative feature of a card to be manufactured using the first film layer and the core layer assembly.

P36930

CARD – LABEL – RELIEF – MICROLENS

US20230333293

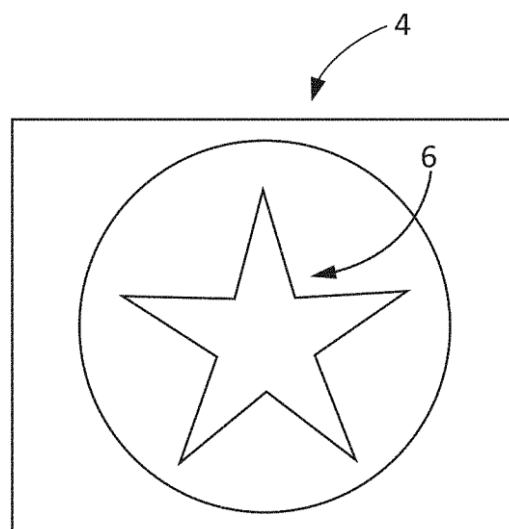
Priority Date: 15/04/2022

PRECISION CONVERTING TECHNOLOGIES

OPTICAL SECURITY FEATURE WITH EMBOSSED APPEARANCE

An optical security feature comprising a visually deformable layer disposed between two polymer layers, which are fused together by heating, thereby yielding an embossed appearance to the visually deformable layer.

CLAIM 1. An authentication device comprising: An upper layer comprising a first non-opaque polymer film layer, the upper layer having a first thickness and an upper layer area, the first non-opaque polymer film layer having at least one shaped cutout area disposed therein; a middle layer comprising a visually deformable layer, the middle layer having a second thickness, the middle layer having a middle layer area sized to at least partially cover the at least one shaped cutout area of the first non-opaque polymer film layer; and a lower layer comprising a second polymer film layer, the lower layer having a lower layer area, the lower layer having a third thickness greater than the first thickness of the upper layer, and each of the upper layer area and the lower layer area being sized to cover the middle layer area; wherein the authentication device is formed by: positioning a second side of the middle layer adjacent a first side of the first non-opaque polymer film layer of the upper layer to at least partially cover the shaped cutout area, positioning a first side of the middle layer adjacent a second side of the second polymer film layer of the lower layer; and exposing at least the upper layer and the lower layer to a fusion temperature that is higher than a glass transition temperature of at least one of the upper layer and the lower layer to thereby fuse the upper layer and the lower layer together.



P36956

PRINTING – CARD – LUMINESCENCE

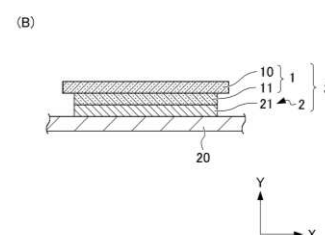
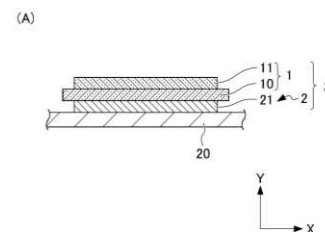
JP2023135699

DAI NIPPON PRINTING

Priority Date: 16/03/2022

MEDIUM GROUP, CARD MEDIUM, READING APPARATUS, CARD READING SYSTEM, PROGRAM, AND AUTHENTICITY DETERMINATION METHOD

TOPIC: To provide a medium group, a card medium, and the like with improved design by making it difficult to visually recognize codes. INVENTION: a seal layer 2 including a brightening layer 21, and a card 1 including a transparent layer 11. at least a partial region of the card 1 is formed of a transparent base 10, and the transparent layer 11 is a second image including a code having variable information and formed of a transparent material in the partial region; The brightening layer 21 is a first image formed from a photoluminescent material, and when the transparent layer 11 of the card 1 is overlaid on the brightening layer 21 of the seal layer 2 to form the laminate 3, the brightening layer 21 and the transparent layer 11 are configured to have different amounts of reflected light depending on the observation angle.



CLAIM 1. A medium group comprising: a medium having a first ink layer; and a card medium having a second ink layer, wherein the card medium is formed of a base material of which at least a partial region is transparent, the second ink layer is a second image including a code having variable information and formed of a transparent material in the partial region, and the first ink layer includes: A first image formed of a photoluminescent material, wherein when the second ink layer of the card medium is overlaid on the first ink layer of the medium, the first ink layer and the second ink layer are each configured to have different reflected light amounts depending on an observation angle.

P36978

PASSPORT – RELIEF – LUMINESCENCE

EP4257366

THALES DIS

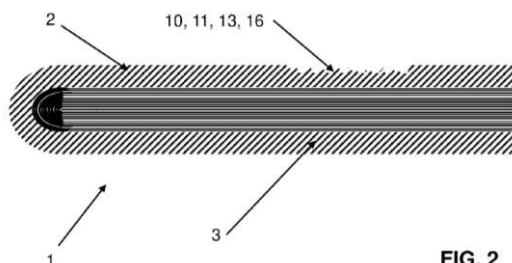
Priority Date: 08/04/2022

SECURITY ELEMENTS IN COVERS OF SECURE ARTICLE BY ULTRASONIC WELDING

A secure article, preferably a multi-page article, comprising a front cover, a reverse cover, and at least one security element. The security element is provided on and/or in the front cover and/or the reverse cover. The security element is produced by ultrasonic welding. The security element comprises or consists of an optically variable element.

ÉLÉMENTS DE SÉCURITÉ DANS DES COUVERTURES D'ARTICLE SÉCURISÉ PAR SOUDAGE PAR ULTRASONS

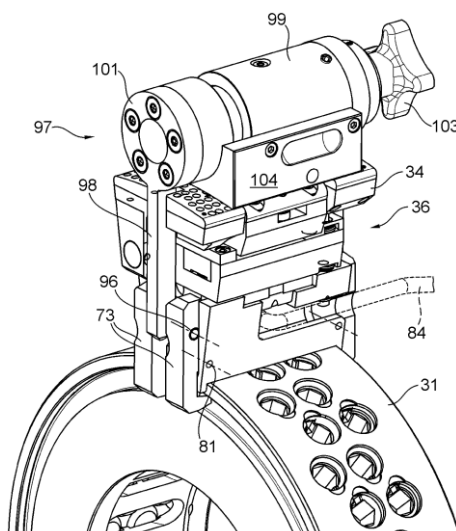
L'invention concerne un article sécurisé, de préférence un article multipage, comprenant une couverture avant, une couverture arrière et au moins un élément de sécurité. L'élément de sécurité est disposé sur et/ou dans la couverture avant et/ou la couverture arrière. L'élément de sécurité est produit par soudage par ultrasons. L'élément de sécurité comprend ou est constitué d'un élément optiquement variable.



CLAIM 1. A secure article (1), preferably a multi-page article, comprising: - a front cover (2); - a reverse cover (3); and - at least one security element (10); characterized in that the security element (10) is provided on and/or in the front cover (2) and/or the reverse cover (3), in that the security element (10) is produced by ultrasonic welding, and in that the security element (10) comprises or consists of an optically variable element (11).

CYLINDER WITH A NUMBER OF GROUPS OF MAGNETIC ELEMENTS ARRANGED NEXT TO ONE ANOTHER IN THE AXIAL DIRECTION, ARRANGED ONE BEHIND THE OTHER IN THE CIRCUMFERENTIAL DIRECTION, AND DEVICE FOR MOUNTING AND/OR POSITIONING MAGNETIC ELEMENTS ON SUCH A CYLINDER

The invention relates to a cylinder which, in the region of its outer circumference, viewed in the axial direction, has next to one another a number m of groups each having a number n of elements which provide magnetic fields arranged one behind the other in the circumferential direction, short magnetic elements, wherein several or all of the magnetic elements of a group are mounted on or on a common ring-like support element arranged on a cylinder inner body and can be positioned on the support element in the circumferential direction. The magnetic elements or the holders receiving the respective magnetic elements or the magnetic element carriers carrying the respective magnetic elements comprise, viewed in the axial direction of the cylinder, in each case at least one clamping element on both sides, the effective ends of which each engage under a stop face extending in the circumferential direction on the respective end face of the ring-like supporting element in the assembled state and directed into the interior of the cylinder and/or counteracting radial removal of the magnet element or of the holder or of the magnet element carrier by interacting with the clamping element located in the clamping position. The invention also relates to a device for mounting and/or positioning magnetic elements on a cylinder.



CLAIM 1. Cylinder (26) which, in the region of its outer circumference, as viewed in the axial direction, has a number m of groups with in each case a number n of elements (24) which provide magnetic fields arranged one behind the other in the circumferential direction, wherein a plurality or all of the magnet elements (24) of a group are mounted on or on a common ring-like supporting element (31) arranged on a cylinder inner body (32) and can be positioned on the supporting element (31) in the circumferential direction, characterized in that In that the magnetic elements (24) or the holders (28) receiving the respective magnetic elements (24) or the magnetic element carriers (37) carrying the respective magnetic elements (24) each comprise at least one clamping element (72; 73) on both sides as viewed in the axial direction of the cylinder (26), the effective ends of which in the assembled state each have a magnetic element (24) and/or a magnetic element (24) extending in the circumferential direction on the respective end face of the ring-like support element (31) and directed into the interior of the cylinder (26) and/or a radial removal of the magnetic element (24). of the holder (27) or of the magnet element carrier (37) by interaction with the clamping element (72; 73) located in the clamping position.

P36990

PRINTING – RELIEF

CN219885971U

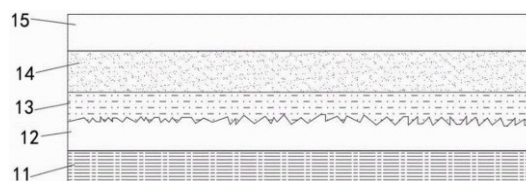
SHENZHEN SHENDA AURORA TECHNOLOGY

Priority Date: 26/04/2023

LASER ENCRYPTION ANTI-COUNTERFEITING FILM REPRODUCED BY POINT LIGHT SOURCE

The utility model provides a laser encryption anti-counterfeiting film reproduced by a point light source, which comprises a substrate layer, wherein the substrate layer is a transparent plastic film and is used for bearing and protecting an information layer from being damaged; the information layer is coated on the surface of the substrate layer, and comprises an epoxy acrylate layer coated on the surface of the substrate layer, and a relief structure is printed on the surface of the epoxy acrylate layer; the metal film layer is evaporated on the surface of the information layer and is used for reverse diffraction imaging; an adhesive layer coated on the surface of the metal film layer; and the release layer is adhered to the surface of the adhesive layer and is used for protecting the adhesive layer. The laser encryption anti-counterfeiting film reproduced by the point light source has the advantages of simple structure, reasonable design and convenient use, and when the point light source is used for illumination and viewing, decrypted image information can be seen to be submerged below the bottom of the film layer and synchronously move along with the movement of the light source, so that the laser encryption anti-counterfeiting film has a stronger visual impact effect, and the authenticity of the public can be rapidly, accurately and conveniently identified.

CLAIM 1. A laser encryption anti-counterfeiting film reproduced by a point light source, which is characterized by comprising: the base material layer is a transparent plastic film and is used for bearing and protecting the information layer from being damaged; the information layer is coated on the surface of the substrate layer, and comprises an epoxy acrylate layer coated on the surface of the substrate layer, and a relief structure is printed on the surface of the epoxy acrylate layer; the metal film layer is evaporated on the surface of the information layer and is used for reverse diffraction imaging; an adhesive layer coated on the surface of the metal film layer; and and the release layer is adhered to the surface of the adhesive layer, is used for protecting the adhesive layer and is convenient for stripping the film layer to adhere the film layer to a commodity.



P36999

PRINTING – LABEL

CN219811278U

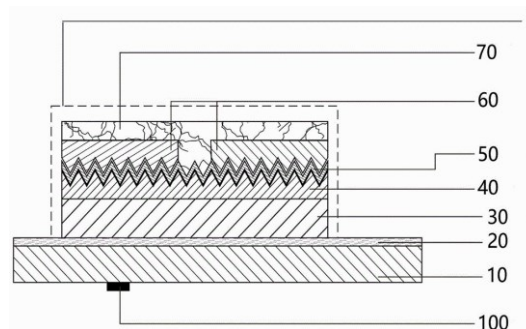
SHANGHAI GUANZHONG OPTICAL TECHNOLOGY

Priority Date: 30/05/2023

ANTI-COUNTERFEITING LABEL AND ANTI-COUNTERFEITING PRODUCT

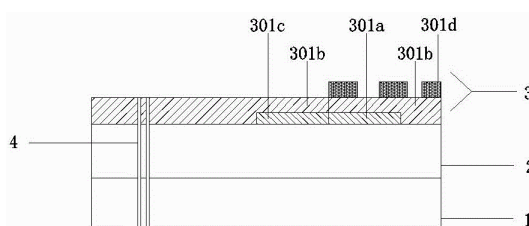
The utility model discloses an anti-counterfeiting label and an anti-counterfeiting product, wherein the anti-counterfeiting label comprises a label main body and a substrate layer, the uppermost layer of the label main body is a hot melt adhesive layer and is fixed with an attached object through the hot melt adhesive layer, the substrate layer is adhered to one side, far away from the hot melt adhesive layer, of the label main body through a pressure-sensitive adhesive coating, the label main body also comprises a metal coating layer, and the metal coating layer is arranged between the hot melt adhesive layer and the substrate layer; the anti-counterfeiting label can also be arranged to comprise a label main body and a substrate layer, wherein the uppermost layer of the label main body is a transparent ink layer, the lowermost layer of the label main body is a PC film layer, and the adhesive material of the label main body is connected with the adhesive material through ultrasonic waves, the substrate layer is adhered to the transparent ink layer through a pressure-sensitive adhesive coating, and the label main body can be fixed with the adhesive material through hot melting or ultrasonic waves, so that the label main body is prevented from being easily torn off or easily falling off to cause the failure of the anti-counterfeiting effect.

CLAIM 1. An anti-counterfeit label, comprising: the label comprises a label main body, wherein the uppermost layer of the label main body is a hot melt adhesive layer, and the label main body is fixed with an attached object through the hot melt adhesive layer; the base material layer is adhered to one side, far away from the hot melt adhesive layer, of the label main body through the pressure-sensitive adhesive coating, so that a preset adhesive force is formed between the label main body and the base material layer, two states of adhesion or stripping are formed between the label main body and the base material layer, and the base material layer can be stripped from the label main body when the tearing force is larger than the preset adhesive force; the label body further comprises a metal coating layer, and the metal coating layer is arranged between the hot melt adhesive layer and the substrate layer.



TIPPING PAPER WITH DUAL FUNCTIONS OF TAR REDUCTION AND ANTI-COUNTERFEITING

The utility model provides tipping paper with dual functions of tar reduction and anti-counterfeiting, and relates to the technical field of printing. The tipping paper comprises a raw paper layer and a pigment layer (2), and is characterized in that: the anti-counterfeiting functional layer (3) is also included; the structure of the tipping paper is sequentially provided with a tipping white raw paper layer (1), a pigment layer (2) and an anti-counterfeiting function layer (3) from bottom to top; the anti-counterfeiting function layer (3) comprises an anti-counterfeiting ink layer and an anti-counterfeiting thermoprint layer; the anti-counterfeiting ink layer is a composite structure layer and is divided into an outer functional area and an inner functional area; the utility model uses tipping white base paper as a printing substrate, integrates a special optically variable developing structural layer, an anti-counterfeiting laser thermoprinting technology and a laser punching and tar-reducing technology, has the advantages of more accurate anti-counterfeiting technology, high imitation difficulty, elegant appearance, rich colors and special laser luster effect, and realizes the technical effects of tar reduction and anti-counterfeiting dual functions.



CLAIM 1. The tipping paper with the dual functions of tar reduction and anti-counterfeiting comprises a raw paper layer and a pigment layer (2), and is characterized in that: the anti-counterfeiting functional layer (3) is also included; the structure of the tipping paper is sequentially provided with a tipping white raw paper layer (1), a pigment layer (2) and an anti-counterfeiting function layer (3) from bottom to top; the tipping white raw paper layer (1) is provided with a full-screen printing pigment layer (2), and the coating weight range is 1.0-1.5g/m²; The anti-counterfeiting function layer (3) comprises an anti-counterfeiting ink layer and an anti-counterfeiting thermoprinting layer, the anti-counterfeiting ink layer is arranged below the anti-counterfeiting thermoprinting layer, and the anti-counterfeiting ink layer and the anti-counterfeiting thermoprinting layer are both composite structure layers; the anti-counterfeiting ink layer is a composite structure layer and is divided into an outer functional area and an inner functional area; firstly, a plurality of lower-section anti-counterfeiting pattern structures (301 a) are arranged at intervals on the lower layer of the inner functional area close to the cigarette end and clung to the color material layer (2), and then a transparent ink layer (301 b) is covered on the lower-section anti-counterfeiting pattern structures; the lower layer of the outer functional area far away from the cigarette end is clung to the color material layer (2) and is provided with upper-section anti-counterfeiting pattern structures (301 c) with the same number as the inner functional area, and the upper layer also covers the transparent ink layer (301 b); the lower section anti-counterfeiting pattern structure (301 a) and the upper section anti-counterfeiting pattern structure (301 c) are combined into a complete anti-counterfeiting pattern by taking the connecting line of the inner side functional area and the outer side functional area as a boundary; transparent ink layers (301 b) are respectively arranged in the two areas, the upper section and the lower section of optically variable visible anti-counterfeiting patterns are respectively and completely covered, and the coating amount of the transparent ink layers (301 b) is set in the range of 1.0-2.0g/m².

P37003

PRINTING – LABEL -BRAND PROTECTION – TAMPER EVIDENCE

CN219778417U

Priority Date: 31/05/2023

LINGYAO BIOTECHNOLOGY SHANGHAI | SHANGHAI YODAY BIOTECH

TEARING OPEN AND LEAVING BOTTOM TYPE MEDICINE PACKAGE ANTI-COUNTERFEIT LABEL

The utility model provides a tearing open and leaving a bottom type medicine packaging anti-counterfeit label, which comprises an upper label layer and a lower label layer which are arranged in a stacking way, wherein: the upper label layer comprises a first adhesive layer, a printing layer and a protective film layer which are sequentially arranged from bottom to top, a tear strip is arranged between the printing layer and the first adhesive layer, and one end of the tear strip is connected with an adhesive-free film extending from the end part of the protective film layer through a connecting part; the lower label layer comprises a white ink layer, a variable color digital layer and an isolating film layer which are sequentially arranged from bottom to top, and the lower surface of the white ink layer is provided with an ultraviolet light curing glue base layer. The whole anti-counterfeiting label for the medicine package with the opened bottom comprises a printing layer, a color-variable digital layer and an anti-counterfeiting card three-layer anti-counterfeiting technology, wherein the printing layer and the color-variable digital layer can be visually displayed in front of the eyes of a user to facilitate anti-counterfeiting inspection, and the anti-counterfeiting card is well hidden in a substrate layer, so that abrasion during use is avoided, and the practicability and the effectiveness of the label are improved.

CLAIM 1. The utility model provides a take off and open and leave a base formula medicine package anti-fake label which characterized in that, this anti-fake label includes upper label layer and lower label layer that the range upon range of was arranged, wherein: the upper label layer comprises a first adhesive layer, a printing layer and a protective film layer which are sequentially arranged from bottom to top, a tear strip is arranged between the printing layer and the first adhesive layer, and one end of the tear strip is connected with an adhesive-free film extending from the end part of the protective film layer through a connecting part; the lower label layer comprises a white ink layer, a variable color digital layer and an isolating film layer which are sequentially arranged from bottom to top, and an ultraviolet light curing glue base layer is arranged on the lower surface of the white ink layer.



P37007

PRINTING – LABEL

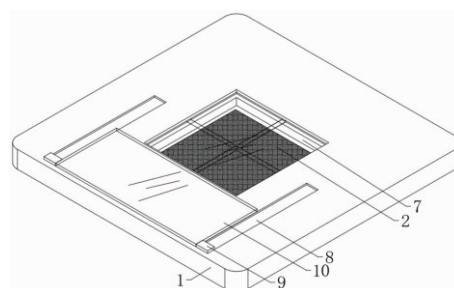
CN219759058U

Priority Date: 20/04/2023

DONGGUAN DONGANG PACKAGING TECHNOLOGY

OPTICALLY VARIABLE INK ANTI-COUNTERFEIT LABEL

The utility model discloses an optically variable ink anti-counterfeiting label, and relates to the technical field of asphalt sampling; the anti-abrasion ink mark comprises a shell and an optically variable ink mark, wherein the shell comprises an anti-abrasion layer, an anti-compression layer and an anti-folding layer, the anti-abrasion layer is adhered to the anti-compression layer, the anti-folding layer is adhered to one side of the anti-compression layer, which is far away from the anti-abrasion layer, the inner wall of a through groove is provided with an annular groove, the inside of the annular groove is provided with a transparent partition plate, the inside of the transparent partition plate is provided with a cross cavity, and the inside of the cross cavity is filled with corrosive liquid; the transparent partition plate is damaged, so that the corrosive liquid flows out of the cross cavity and drops onto the optically variable ink mark, and the corrosive liquid corrodes the optically variable ink mark, so that the optically variable ink mark can be prevented from being stolen, and the anti-theft purpose is achieved; through the slider that removes in the spout, the slider drives the magnifying glass and removes for the magnifying glass removes different positions, just so can conveniently look over to optically variable printing ink mark different positions and angles, thereby reaches the purpose that conveniently looks over.



CLAIM 1. Optically variable ink anti-counterfeiting label comprises a shell (1) and an optically variable ink label (2), and is characterized in that: the bottom of casing (1) is provided with bottom plate (3), optically variable ink mark (2) is fixed to be set up in one side that bottom plate (3) is close to casing (1), logical groove (7) have been seted up in the outside of casing (1), optically variable ink mark (2) are located the inboard of logical groove (7), casing (1) includes wearing layer (4), compressive layer (5) and anti layer (6), and wearing layer (4) bond on compressive layer (5), anti layer (6) bond in one side that wearing layer (4) were kept away from to compressive layer (5), ring channel (11) have been seted up to the inner wall of logical groove (7), transparent baffle (12) have been seted up to the inside of ring channel (11), cross chamber (13) have been seted up to the inside in cross chamber (13), the inside packing of cross chamber (13) has the corrosive liquid.

P37018

PRINTING – LABEL

CN116911872

Priority Date: 16/06/2023

ANT BLOCKCHAIN TECHNOLOGY SHANGHAI

ARTICLE VERIFICATION METHOD, DETECTION METHOD FOR SCREEN ACQUISITION AND LABEL PRINTED WITH GRAPHIC CODE

One or more embodiments of the present disclosure provide an item verification method, a detection method for screen acquisition, a label printed with a graphic code. The article authentication method includes: responding to a verification request for an article initiated by a terminal, randomly generating a first code sequence, and transmitting the first code sequence to the terminal, so that the terminal controls a light-emitting component carried by the terminal to flash according to a flashing rule indicated by codes contained in the first code sequence, and collecting video of the article in the flashing process;



the article is provided with a light-changing area, and the light-changing area generates light-changing reaction under the irradiation of the flashing light of the light-emitting component; receiving a video containing articles collected by a terminal; and verifying whether the video is acquired by a screen or not, and verifying whether the object contained in the video is true or false. Whether the video acquisition object of the detection terminal can generate a light-induced reaction in real time under the irradiation of the flickering light can prevent the screen from acquiring in the process of article verification.

CLAIM 1. A method of item authentication, the method comprising: a first coding sequence is randomly generated in response to a verification request for an article initiated by a terminal, and the first coding sequence is sent to the terminal, so that the terminal controls a light-emitting component carried by the terminal to flash according to a flashing rule indicated by codes contained in the first coding sequence, and video acquisition is carried out on the article in the flashing process; the article is provided with a light variation area, and the light variation area generates light variation reaction under the irradiation of the flashing light of the light emitting component; receiving a video containing the object collected by a terminal; verifying whether the video is acquired by a screen or not, and verifying authenticity of an article contained in the video; the verification of whether the video is acquired by a screen or not comprises the following steps: Identifying a light variation result of the video, and coding the identified light variation result to obtain a second coding sequence; and verifying whether the video is acquired by a non-screen according to the similarity between the first coding sequence and the second coding sequence.

P37023

PRINTING – LABEL – LIQUID CRYSTALS

CN116890554

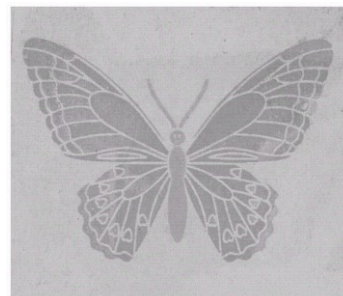
Priority Date: 26/05/2023

SOOCHIRAL CHEMICAL SCIENCE & TECHNOLOGY

PATTERNING METHOD OF CROSSLINKED CHOLESTERIC LIQUID CRYSTAL FILM

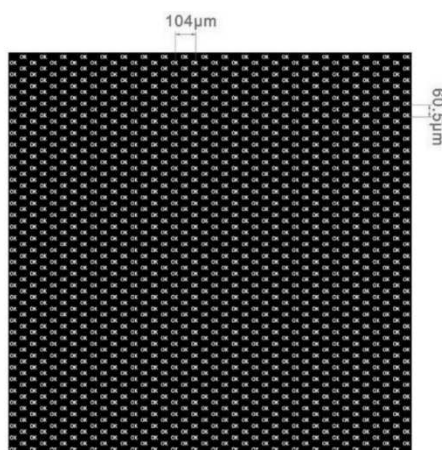
The application belongs to the technical field of films, and particularly relates to a patterning method of a crosslinked cholesteric liquid crystal film. Aiming at the defects in the prior art, the application aims to provide a simple, efficient and template-free PSLC film processing method. According to the application, a certain mass ratio of liquid crystal monomer, monofunctional monomer, chiral dopant, photoinitiator and leveling agent are dissolved in different types of mixed solvents to prepare a mixed solution. The print image is directly printed on the PET after being input to the printer. And then placing the printed pattern on a hot table, evaporating and crystallizing at a certain temperature, and assembling the liquid crystal into a regular structure. And then the liquid crystal film is directly solidified by an ultraviolet lamp, so that the color liquid crystal patterns with various colors and different optical rotations are obtained. The whole manufacturing process is not more than 5 minutes, and the printer, the heating equipment and the high-pressure mercury lamp can be connected through the conveyor belt, so that the manufacturing efficiency of the color liquid crystal film is remarkably improved.

CLAIM 1. A method for patterning a crosslinked cholesteric liquid crystal film, comprising the steps of: s1: preparing liquid crystal printing liquid; the liquid crystal printing liquid comprises the following components in parts by weight: 10-99.9 parts of liquid crystal, 0-99.9 parts of monofunctional monomer, 0.1-20 parts of chiral dopant, 0-20 parts of photoinitiator, 0-10 parts of flattening agent and organic mixed solution; the general formula of the liquid crystal is shown as formula I: wherein A is the center of the liquid crystal, A is selected from +, > B is a group providing cross-linking to the liquid crystal, B is selected from +, > n and m are selected from any integer from 4 to 12; the general formula of the monofunctional monomer is shown as formula I: wherein X is selected from -> B is selected from -> z is selected from any integer from 4 to 12; the organic mixed solution consists of any two of dimethylformamide, dimethylacetamide, cyclopentanone, cyclohexanone and ethyl acetate; s2: printing the liquid crystal printing liquid on the polyethylene terephthalate film by adopting a printer, and heating and volatilizing to obtain a liquid crystal film to be formed; s3: and curing the liquid crystal film to be formed to obtain the patterned crosslinked cholesteric liquid crystal film.



OPTICAL ANTI-COUNTERFEITING ELEMENT AND PREPARATION METHOD THEREOF

The invention provides an optical anti-counterfeiting element and a preparation method thereof, wherein the preparation method specifically comprises the following steps: s1, designing an arrangement mode of a micro lens array or a small hole array of a display layer; s2, designing an arrangement mode of image-text units so that the arrangement mode corresponds to that of the microlenses of the display layer; s3, etching the converted image-text information of the floating hemisphere and the image-text information of the sinking hemisphere on the same carrier by a micro-nano processing method, and manufacturing an information layer master mask by matching the image-text information of the floating hemisphere and the image-text information of the sinking hemisphere through principal points; s4, transferring the micro image-text of the information layer master plate to the bottom surface of the display layer film in an electroforming, coating and imprinting mode; and S5, filling ink into the grooves for color changing to obtain the colored three-dimensional ball. The invention changes the integral Moire imaging effect by carrying out coordinate weak transformation on the micro pictures and texts which are arranged in a fixed period according to a specific mathematical model, so that the invention presents the visual effect of the space three-dimensional sphere.



CLAIM 1. The preparation method of the optical anti-counterfeiting element is characterized by comprising the following steps of: s1, designing an arrangement mode of a micro lens array or a small hole array of a display layer; s2, designing an arrangement mode of image-text units, enabling the arrangement mode to correspond to the arrangement mode of the micro lenses of the display layer, respectively setting main points of the floating and sinking initial image-text arrays, firstly designing micro image-text arrays of the floating hemispheres, and enabling the transverse period T_{11} of the micro image-text arrays of the floating hemispheres to be larger than the transverse period T_1 of the micro lenses of the display layer, namely $T_{11} > T_1$; the longitudinal period T_{12} of the micro image-text array of the floating hemisphere is made to be larger than the longitudinal period T_2 of the micro lens array of the display layer, namely T_{12} is larger than T_2 ; then designing a micro image-text array of the sinking hemisphere, so that the transverse period T_{21} of the micro image-text array of the sinking hemisphere is smaller than the transverse period T_1 of the micro lens array of the display layer, namely T_{21} is smaller than T_1 ; making the longitudinal period T_{22} of the micro image-text array of the sinking hemisphere smaller than the longitudinal period T_2 of the micro lens array of the display layer, namely $T_{22} < T_2$; then respectively carrying out coordinate weak transformation on the micro image-text arrays of the floating hemispheres and the sinking hemispheres, so that the micro image-text pixels of the floating hemispheres are expanded in a radial nonlinear manner by taking the main points as the centers, and the micro image-text pixels of the sinking hemispheres are contracted in a radial nonlinear manner by taking the main points as the centers; s3, etching the converted image-text information of the floating hemisphere and the image-text information of the sinking hemisphere on the same carrier by a micro-nano processing method, and manufacturing an information layer master mask by matching the image-text information of the floating hemisphere and the image-text information of the sinking hemisphere through principal points; s4, transferring the micro image-text of the information layer master plate to the bottom surface of the display layer film in an electroforming, coating and imprinting mode; and S5, filling ink into the grooves for color changing to obtain the colored three-dimensional ball.

SECURITY ELEMENT AND SECURITY PRODUCT

The present invention provides a security element and a security product, wherein the security element comprises: at least one infrared reflecting layer having a transmission effect on electromagnetic waves in a first wavelength region and having a reflection effect on electromagnetic waves in a second wavelength region; the magnetic layer is arranged on one side of the infrared reflecting layer, has an absorption characteristic on electromagnetic waves in a third wavelength interval, and at least part of the first wavelength interval is positioned in the third wavelength interval, and has first anti-fake information which is a magnetic signal capable of being detected; the optical variable layer is arranged on the magnetic layer, has dynamic light variable characteristics, and can obtain second anti-counterfeiting information according to the optical variable layer when electromagnetic waves are injected into the anti-counterfeiting element.



CLAIM 1. A security element comprising: at least one infrared reflecting layer (110), the infrared reflecting layer (110) having a transmission effect on electromagnetic waves in a first wavelength interval, the infrared reflecting layer (110) having a reflection effect on electromagnetic waves in a second wavelength interval; a magnetic layer (120) disposed on one side of the infrared reflection layer (110), wherein the magnetic layer (120) has an absorption characteristic for electromagnetic waves in a third wavelength interval, at least a part of the first wavelength interval is within the third wavelength interval, and the magnetic layer (120) has first anti-counterfeiting information, and the first anti-counterfeiting information is a detectable magnetic signal; and an optically variable layer (130) provided on the magnetic layer (120), wherein the optically variable layer (130) has a dynamic optically variable characteristic, and electromagnetic waves are incident on the security element to obtain second security information from the optically variable layer (130).

Click on the title to return to table of contents



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

N9745

CN116922989

Priority Date: 15/06/2023

WUHAN YINCAITIAN PAPER

NAKED EYE 3D PACKAGING MATERIAL PAPER PRODUCTION PROCESS WITH SUSPENSION EFFECT

The invention discloses a naked eye 3D packaging material paper production process with a suspension effect, which comprises the following steps: 1. manufacturing design patterns: 2. manufacturing a photoetching design file 3, photoetching 4, developing 5, silver spraying 6, assembling 7, nickel plating 8, transferring 9, coating 10, mould pressing 11, aluminizing 12 and compounding 13: stripping 14: imaging. The invention realizes the 3D suspension puppy of naked eyes, namely 360-degree omnibearing smooth displacement, has no jumping property, has no limit on the number of layers of suspension elements, has proper maximum size of single element and maximum size of single photoetching plate, and is a mature and efficient photoetching paper process.

CLAIM 1. The naked eye 3D packaging material paper production process with the suspension effect is characterized by comprising the following steps of: 1. manufacturing design patterns: making a planar design pattern meeting the requirements on drawing software; 2. manufacturing a photoetching design file: performing photoetching design on the planar pattern; 3. photoetching; the photoetching machine is adopted to achieve the optimal photoetching effect through the selection of photoetching time and photoetching size; 4. developing: developing after photoetching; 5. spraying silver; silver spraying is carried out after development; 6. and (3) plate assembly: assembling the developed film on a plate assembling machine; 7. nickel plating: nickel plating the assembled version 8. Transferring: the nickel-plated plate is assembled into a working plate for subsequent coating 9. Coating: uniformly coating the coating on the PET transfer film 10. And (3) mould pressing: mounting the nickel-plated holographic working plate on a molding press for molding, 11. aluminizing: aluminizing the transfer film after molding by an aluminizing machine 12. Compounding: compounding the PET holographic laser film after aluminizing with paper on a compounding machine 13: stripping: stripping paper and PET film on stripping equipment 14: imaging: and displaying the holographic laser pattern effect.

Click on the title to return to table of contents

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

N9709

US20230324593
 Priority Date: 08/04/2022

HTC

METHOD OF MANUFACTURING OPTICAL ELEMENT AND OPTICAL EXPOSURE SYSTEM

A method of manufacturing an optical element includes steps of: exposing a photopolymer to a plurality of kinds of light for a plurality of cycles, in which each of the cycles includes a plurality of exposure time sequences respectively corresponding to the kinds of light, and any adjacent two of the exposure time sequences of the cycles correspond to two of the kinds of light; and fixing the exposed photopolymer to form a holographic optical element having a plurality of holographic gratings respectively formed by the kinds of light.

N9718

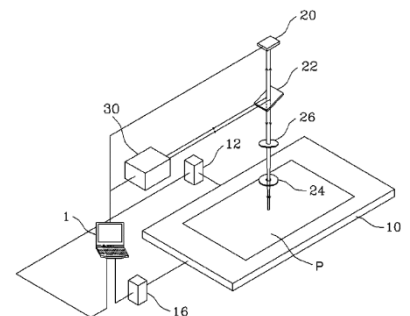
KR20230133114
 Priority Date: 10/03/2022

FUTURE TECHNOLOGY

CGH MANUFACTURING METHOD OF HOLOGRAM REPRODUCING APPARATUS THROUGH COMPUTER GENERATED HOLOGRAPHY WITH DEPTH INFORMATION AND LIGHTING ANGLE

The present invention relates to a method for producing a holographic image of arbitrary shape; converting the designed holographic image into a first digital image; Converting the first digital image into a second digital image as an interference fringe pattern using CGHs so that object light consisting of parallel light gives depth information in a Fourier plane and reference light consisting of diffused light gives angle information in the Fourier plane at an arbitrary angle θ ; Preparing an optical system including a light generating device, a spatial light modulator, and a control device; partitioning a second digital image into a plurality of (X_n, Y_n) having a predetermined area and then storing each individual digital image (X_n, Y_n) partitioned by the predetermined area in the control device; Transmitting a control signal for each interference fringe pattern possessed by the individual digital images X_n, Y_n among the second digital images to the spatial light modulator, and sequentially recording each interference fringe pattern possessed by the individual digital images X_n, Y_n on a hologram recording medium; A method of manufacturing a transmission plate in which a hologram is formed at a lower surface portion by using a hologram film master; preparing a case in which an upper surface portion is open and an illumination light source is provided in an inner space, And coupling the transmission plate to an upper portion of the case so that light generated by the illumination light source is irradiated while being diffused at θ -angle to the hologram.

CLAIM 1. A method of manufacturing a hologram image, comprising the steps of: designing a hologram image of arbitrary shape; converting the designed hologram image into a first digital image; converting the first digital image into a second digital image as an interference fringe pattern using CGHs so that object light consisting of parallel light gives depth information in a Fourier plane and reference light consisting of diffused light gives angle information in the Fourier plane at arbitrary angle θ ; Preparing an optical system including a light generating device, a spatial light modulator, and a control device; partitioning a second digital image into a plurality of (X_n, Y_n) having a predetermined area and then storing each individual digital image (X_n, Y_n) partitioned by the predetermined area in the control device; Transmitting a control signal for each interference fringe pattern possessed by the individual digital images X_n, Y_n among the second digital images to the spatial light modulator, and sequentially recording each interference fringe pattern possessed by the individual digital images X_n, Y_n on a hologram recording medium; A method of manufacturing a transmission plate in which a hologram is formed at a lower surface portion by using a hologram film master; preparing a case in which an upper surface portion is open and an illumination light source is provided in an inner space, Coupling the transmission plate to an upper portion of the case so that light generated by the illumination light source is irradiated while being diffused at θ -angle with respect to the hologram.



N9722

JP2023149767

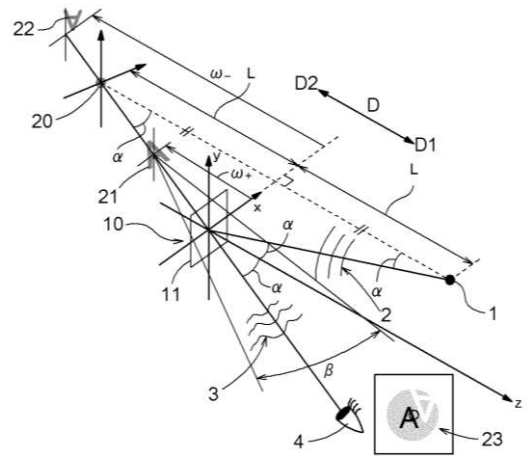
Priority Date: 31/03/2022

JAPAN MINT | OSAKA RESEARCH INSTITUTE OF INDUSTRIAL SCIENCE & TECHNOLOGY

HOLOGRAM ELEMENT

TOPIC: In a hologram element that displays a latent image by diffracting incident light from a point light source to an incident surface, color bleeding can be reduced by bringing the generation position and generation size of the latent image of each wavelength contained in the incident light close to each other.

INVENTION: The hologram element 10 is on the depth side D2 of the incident surface 11 and the depth direction from the incident surface 11. The direction orthogonal to the incident surface 11 is on the depth direction D1, the side opposite to the depth direction D1 in the depth direction D is on the depth side D2, and the distance L between the incident surface 11 and the point light source 1 in the depth direction D in the depth direction D2 Set distance ω with distance along d less than the target distance L.+A latent image 21 is formed at the position.



CLAIM 1. The hologram element displays a latent image by diffracting incident light from a point light source to an incident surface. The direction orthogonal to the incident plane is the depth direction, the side on which the viewer's view point is arranged with respect to the incident plane in the depth direction is the front side, the side opposite to the front side in the depth direction is the depth side, and the distance between the incident plane and the point light source in the depth direction is set as the target distance. The hologram element generates the latent image at a position which is on the depth side with respect to the incident surface and in which the distance along the depth direction from the incident surface is a set distance that is less than the target distance.

N9723

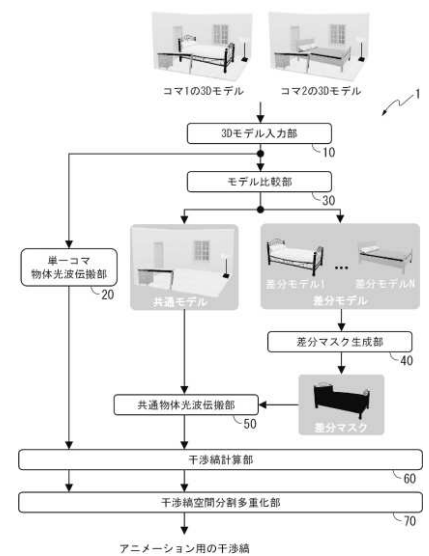
JP2023137107

Priority Date: 17/03/2022

KANSAI UNIVERSITY | KDDI

INTERFERENCE FRINGES OF COMPUTER-COMPOSITE HOLOGRAM ANIMATION, APPARATUS FOR GENERATING SAME, METHOD FOR GENERATING SAME, AND PROGRAM FOR GENERATING SAME, AND APPARATUS FOR REPRODUCING COMPUTER-COMPOSITE HOLOGRAM ANIMATION

TOPIC: To reproduce an animation of a 3 D model by spatially dividing interference fringes of the 3 D model displayed in each frame and a 3 D model common to a plurality of frames. INVENTION: a single-frame object light wave propagation unit 20 calculates object light wave propagation of a 3 D model displayed in each frame. The model comparison section 30 compares the 3 D models displayed in each frame to extract a common model and a differential model. The differential mask generation unit 40 generates a differential mask based on the differential model of each frame. The common object light wave propagation unit 50 uses the common model and the differential mask to calculate the object light wave propagation from the common model to the hologram surface in consideration of blocking by the differential model. The interference fringe calculating unit 60 calculates interference fringes of the 3 D model to be displayed in each frame and interference fringes common to a plurality of frames. The interference fringe space division multiplexing unit 70 integrates interference fringes of the 3 D model displayed in each frame and interference fringes of the 3 D model common to a plurality of frames by spatial division multiplexing.



CLAIM 1. Interference fringes of a computer composite hologram animation configured to switch a plurality of frames to reproduce an animation of a 3 D model, wherein the interference fringes of the 3 D model displayed in each frame and the interference fringes of a common model common to the plurality of frames are integrated by spatial division multiplexing.

N9748

CN116912343

Priority Date: 29/06/2023

WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT

HOLOGRAPHIC RELIEF PATTERN GENERATION METHOD AND DEVICE

The application provides a method and equipment for generating a holographic relief pattern, wherein the method comprises the following steps: obtaining an engraving gray scale image of an image to be processed and a black-and-white line block diagram corresponding to the engraving gray scale image; performing first image analysis processing on the black-and-white line block diagram to obtain a first gray scale image and a gray scale value corresponding to each pixel point in the first gray scale image; performing second image analysis processing on the first gray level image based on the gray level value to obtain a mask image; preprocessing the refined gray level graph to obtain a first relief graph; and superposing the mask pattern on the first relief pattern to perform third image analysis processing to obtain a second relief pattern, and engraving based on the second relief pattern to obtain the holographic relief pattern. According to the application, after the mask patterns are overlapped, special treatment is carried out on the detail part, and the original relief pattern structure of the detail part is replaced by other photoetching microstructures for photoetching, so that the characteristic of strong stereoscopic impression of the original relief block-shaped protrusions is maintained, and the obvious difference of the detail parts is emphasized.

CLAIM 1. A method of creating a holographic relief pattern, the method comprising: obtaining an engraving gray level image of an image to be processed and a black-and-white line block diagram corresponding to the engraving gray level image; performing first image analysis processing on the black-and-white line block diagram to obtain a first gray scale image and a gray scale value corresponding to each pixel point in the first gray scale image; performing second image analysis processing on the first gray level image based on the gray level value to obtain a mask image; preprocessing the refined gray pattern to obtain a first relief pattern; and superposing the mask pattern on the first relief pattern to perform third image analysis processing to obtain a second relief pattern, and engraving based on the second relief pattern to obtain a holographic relief pattern.



N9753

CN116908949

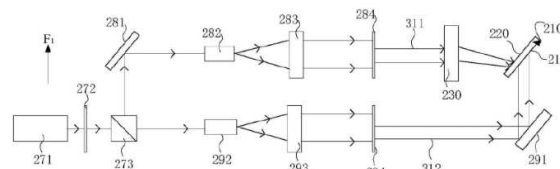
Priority Date: 19/07/2023

GENERAL INTERFACE SOLUTION | GIS TECHNOLOGY | INTERFACE OPTOELECTRONIC | YECHENG PHOTOELECTRIC WUXI

PREPARATION METHOD OF VOLUME HOLOGRAPHIC GRATING, VOLUME HOLOGRAPHIC GRATING AND HEAD-MOUNTED EQUIPMENT

The application relates to a preparation method of a volume holographic grating, a grating structure and head-mounted equipment. A method of preparing a volume holographic grating, comprising: providing a substrate, wherein the substrate is provided with a first surface and a second surface which are oppositely arranged; forming a holographic material layer on a first surface of a substrate; making incident light incident on the holographic material layer through the exposure adjusting element, and making reference light incident on the second surface of the substrate, so that the incident light and the reference light perform interference exposure on the holographic material layer to form a grating structure on the holographic material layer; wherein the exposure adjusting element is configured to be able to make the outgoing angle of the incident light outgoing from different positions of the exposure adjusting element in the first direction different from each other while making the grating period of the grating structure gradual. The uniformity of imaging brightness can be effectively improved, and further, the viewing experience is improved.

CLAIM 1. A method of producing a volume holographic grating, comprising: providing a substrate, wherein the substrate is provided with a first surface and a second surface which are oppositely arranged; forming a holographic material layer on a first surface of the substrate; causing incident light to be incident on the holographic material layer through an exposure adjustment element, and causing reference light to be incident on a second surface of the substrate, so that the incident light and the reference light perform interference exposure on the holographic material layer to form a grating structure on the holographic material layer; wherein the exposure adjusting element is configured to be able to make the outgoing angle of the incident light outgoing from different positions of the exposure adjusting element in the first direction different from each other while making the grating period of the grating structure gradual.



N9761

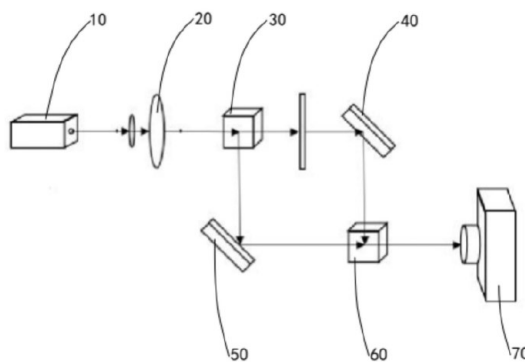
CN116879231

Priority Date: 05/06/2023

WUYI UNIVERSITY

FIBER ORIENTATION DEGREE DETECTION METHOD, DEVICE, EQUIPMENT AND MEDIUM BASED ON DIGITAL HOLOGRAM

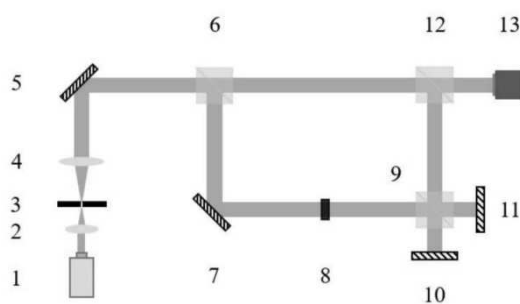
The embodiment of the application provides a fiber orientation degree detection method, device, equipment and medium based on digital holography, wherein the method comprises the steps of obtaining a hologram of a fiber to be detected; performing Fourier transform on the hologram to obtain spectrum distribution; extracting a +1 level image of spectrum distribution, and moving the spectrum center of the +1 level image to a spectrum origin; shifting the spectrum center to the +1 level image of the spectrum origin to perform inverse Fourier transform to obtain spatial distribution; extracting a wrapped phase distribution from the spatial distribution; unwrapping the wrapped phase distribution to obtain actual phase distribution; obtaining the refractive index of the fiber to be measured according to the actual phase distribution, the laser wavelength, the refractive index of the glass slide where the fiber to be measured is positioned and the thickness of the fiber to be measured; obtaining orientation degree according to the refractive index of the fiber to be measured; can react the crystallization condition without damage, and has the functions of on-line rapid detection and high accuracy.



CLAIM 1. The method for detecting the fiber orientation degree based on digital holography is characterized by comprising the following steps of: acquiring a hologram of the fiber to be detected by a laser interference imaging method; performing Fourier transform on the hologram to obtain spectrum distribution; extracting a +1 level image of the spectrum distribution, and moving the spectrum center of the +1 level image to a spectrum origin; shifting the spectrum center to the +1 level image of the spectrum origin to perform inverse Fourier transform to obtain spatial distribution; extracting phase distribution from the spatial distribution to obtain wrapped phase distribution; unwrapping the wrapped phase distribution to obtain an actual phase distribution; obtaining the refractive index of the fiber to be measured according to the actual phase distribution, the laser wavelength, the refractive index of the glass slide where the fiber to be measured is positioned and the thickness of the fiber to be measured; and obtaining the orientation degree according to the refractive index of the fiber to be measured.

MATCHED SELF-ADAPTIVE FILTERING METHOD FOR MULTIPLEXING OFF-AXIS DIGITAL HOLOGRAPHY

The invention discloses a matched self-adaptive filtering method for multiplexing off-axis digital holography. Firstly, carrying out Fourier transform on a multiplexing hologram to obtain a multiplexing hologram spectrum, and setting an initial value of a filtering algorithm according to the number of spectrum items in the multiplexing hologram; then normalizing the multiplexed holographic spectrum and carrying out K-means threshold clustering to obtain a clustering center set; then, the multiplexed holographic spectrum is standardized and subjected to phase taking to obtain a standardized phase spectrum, and the standardized phase spectrum is subjected to regional lighting; then, a plurality of filter centers are obtained by matching and positioning a standardized phase spectrum and a clustering center set, and then, a Butterworth filter window is generated by taking one third of the zero distance from each filter center to a frequency domain as a cut-off frequency, and multiplexing holographic spectrum is subjected to multiple times of filtering to obtain a plurality of original item frequency spectrums; and finally, carrying out inverse Fourier transform on each original item spectrum and obtaining a reconstruction result by using a back propagation algorithm. Under the condition that the off-axis angle is unknown, the method realizes accurate self-adaptive filtering and target wavefront reconstruction of multiplexing off-axis digital holography.



CLAIM 1. A matched adaptive filtering method for multiplexing off-axis digital holograms, comprising the steps of: s1: multiplexing the hologram frequency domain transform with the initial parameter settings: the interference fringe pattern recorded by the multiplexing off-axis interference device is a multiplexing hologram, the multiplexing hologram is subjected to Fourier transform to obtain a multiplexing hologram spectrum, the number of frequency spectrum items in the multiplexing hologram spectrum is observed and recorded as q , and the number of frequency spectrum items is set as initial parameters matched with the adaptive filtering algorithm; s2: normalized holographic spectrum K-means threshold clustering: normalizing the multiplexed holographic spectrum to normalize the value of each pixel point to be between 0 and 1; then sorting the values of all the pixel points from large to small, performing K-means clustering on the pixel points meeting the threshold according to the threshold setting, and obtaining q clustering centers after clustering; s3: normalized phase spectrum and area illumination: the multiplexing holographic spectrum is standardized, so that the value of each pixel point is standardized to be between $[-1,1]$, the phase of the standardized holographic spectrum is extracted to obtain a standardized phase spectrum, and then the positions of bright spots and dark spots in the standardized phase spectrum are lighted in regions for facilitating observation; s4: matching the filter center and generating a filter window: matching the positions of the bright spots in the standardized phase spectrum with the clustering centers, and determining the positions of the spectrums of the original items under the condition of no off-axis angle priori information; then taking the matched cluster center point as a filtering center, taking $1/3$ of the distance from the point to the frequency domain center zero point as the cut-off frequency of a filtering window, generating a filtering window, and generating a plurality of different filtering windows if the number of the filtering windows is the same as the number of the original items; s5: multiplexing holographic spectrum filtering reconstruction: multiplying the multiplexing holographic spectrum with the different filtering windows respectively to realize a filtering process; then the filtered holographic spectrum is moved to the center position of the frequency domain and is subjected to primary inverse Fourier transform; and finally, reconstructing by using a back propagation algorithm to obtain the reconstruction result of each original item.

N9769

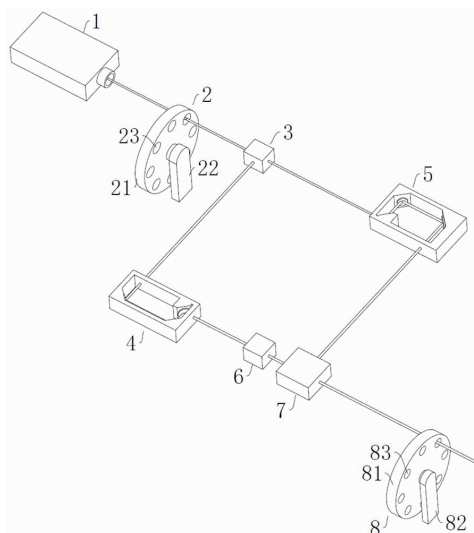
CN116841173

Priority Date: 17/07/2023

GUANGDONG JINGQI LASER TECHNOLOGY

COLOR HOLOGRAPHIC SYSTEM AND METHOD BASED ON WHITE LIGHT LASER LIGHT SOURCE AND TIME DIVISION MULTIPLEXING

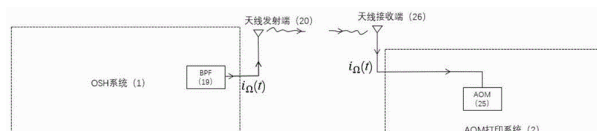
The invention relates to the technical field of laser color holography, in particular to a color holographic system and a method based on a white light laser source and time division multiplexing, wherein the color holographic system comprises a white light laser component, a filter disc rotating disc component, a first beam splitting prism, a first reflecting component, a second reflecting component, a translation table, a second beam splitting prism and a holographic dry plate rotating disc component; the white light laser component is used for emitting light sources, the light sources are divided into a first light source and a second light source by the first light splitting prism after passing through the filter plate turntable component, the first light source faces the first reflecting component, the second light source faces the second reflecting component, the first reflecting component reflects the first light source to the second light splitting prism, the second reflecting component reflects the second light source to the second light splitting prism after passing through the translation table, and the second light splitting prism is used for combining the first light source and the second light source to form a comprehensive light source and irradiating the comprehensive light source to the holographic dry plate turntable component.



CLAIM 1. The color holographic system based on the white light laser light source and time division multiplexing is characterized in that: the device comprises a white light laser component, a filter slice turntable component, a first beam splitter prism, a first reflection component, a second reflection component, a translation stage, a second beam splitter prism and a holographic dry plate turntable component; the white light laser assembly is used for emitting light sources, the light sources are divided into a first light source and a second light source by the first light splitting prism after passing through the filter plate turntable assembly, the first light source faces the first reflecting assembly, the second light source faces the second reflecting assembly, the first reflecting assembly reflects the first light source to the second light splitting prism, the second reflecting assembly reflects the second light source to the second light splitting prism after passing through the translation stage, and the second light splitting prism is used for combining the first light source and the second light source to form a comprehensive light source and irradiating the comprehensive light source to the holographic dry plate turntable assembly.

HOLOGRAPHIC PRINTING SYSTEM AND METHOD BASED ON OPTICAL SCANNING HOLOGRAPHY

The invention discloses a holographic printing system and method based on optical scanning holography, comprising an OSH system and an AOM printing system. The invention combines the optical scanning holographic method and the direct stripe printing method, has low environmental requirement and high holographic grating resolution when recording three-dimensional object information; in addition, the AOM-based direct stripe printing system has low system complexity, can control the energy of laser, and prints and generates a holographic image with proper brightness and definition.



CLAIM 1. A holographic printing system based on optically scanned holograms, comprising: an OSH system (1), an AOM printing system (2); the OSH system (1) comprises: the device comprises a laser (3), a first beam splitter (4), a first acousto-optic frequency shifter (5), a first reflecting mirror (6), a first beam expander (7), a second acousto-optic frequency shifter (8), a second reflecting mirror (9), a second beam expander (10), a first lens (11), a second beam splitter (12), a first diaphragm (13), a first photoelectric detector (14), a scanning galvanometer (15), an object (16), a second lens (17), a second photoelectric detector (18), a band-pass filter (19), an antenna transmitting end (20), a lock-in amplifier (21), a data acquisition card (22) and a computer (23); the emergent light of the laser (3) and the center of the first beam splitter (4) are kept coaxial, and the first beam splitter (4) is arranged in the emergent direction of the laser (3); the first acousto-optic frequency shifter (5) is arranged in the direction of light reflected by the first beam splitter (4) and is arranged between the first reflector (6) and the first beam splitter (4); the first reflecting mirror (6) is arranged in the first-order diffraction light direction of the first acousto-optic frequency shifter (5); the first beam expander (7) is arranged in the direction of the reflected light of the first reflector (6), and the direction of the optical axis of the reflected light of the first reflector (6) is consistent with the center of the first beam expander (7); the second sound frequency shifter (8) is arranged in the transmission light direction of the first beam splitter (4); the second reflector (9) is arranged in the first-order diffraction light direction of the second sound frequency shifter (8); the second beam expander (10) is arranged in the direction of the reflected light of the second reflector (9), and the direction of the optical axis of the reflected light of the second reflector (9) is consistent with the center of the second beam expander (10); the first lens (11) is arranged behind the second beam expander (10); the second beam splitter (12) is arranged at the coaxial intersection of the light transmitted by the first lens (11) and the light transmitted by the second beam expander (10); the first diaphragm (13) is arranged between the second beam splitter (12) and the first photoelectric detector (14); the output end of the first photoelectric detector (14) is connected with the reference signal end of the lock-in amplifier (20); the scanning galvanometer (15) is arranged behind the second beam splitting mirror (12); the object (16) to be scanned is positioned after the scanning galvanometer (15) reflects light; the second photoelectric detector (18) is arranged at the back focal plane of the second lens (17), and the output end of the second photoelectric detector (18) is connected with the band-pass filter (19); the band-pass filter (19) is divided into two paths, one path is connected with an antenna transmitting end (20), and the other end is directly connected with the input end of the lock-in amplifier (21); the output end of the lock-in amplifier (21) is closely connected with the data acquisition card (22); the data acquisition card (22) is connected with the computer (23); the AOM printing system (2) comprises a laser (24), an AOM (25) and a high-molecular photopolymer holographic film (28) which are sequentially arranged; the AOM (25) is provided with an antenna receiving end (26), and a high-molecular photopolymer holographic film (28) is arranged on the translation stage (27).

Click on the title to return to table of contents

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

N9719

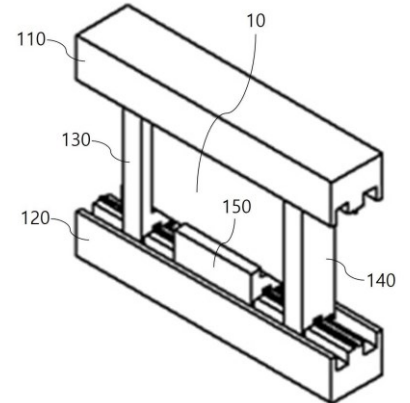
KR102590621

Priority Date: 15/11/2022

KOREA ELECTRONICS TECHNOLOGY INSTITUTE

HOLOGRAM FILM HOLDER FOR HOLOGRAM PRINTER

Provided is a hologram film holder for a hologram printer. According to an embodiment of the present invention, the hologram film holder comprises: a rail fixed on a stage of a holographic printer; a fixing unit coupled to the rail while being movable, and fixing a hologram film on which a hologram is recorded by the holographic printer; and a lower fixing unit coupled to the rail, and fixing a lower end of the hologram film. Accordingly, various sizes of hologram films can be mounted and fixed on the XY stage of a hologram printer using one hologram film holder, and thus it is not necessary to design and manufacture a hologram film holder for each hologram film size, thereby reducing costs, manpower, and time.



CLAIM 1. A rail secured to a stage of a holographic printer; a fixing part movably coupled to the rail and fixing a hologram film on which a hologram is recorded by the holographic printer; and a lower fixing part coupled to the rail to fix a lower end of the hologram film, The fixing part may include: a left fixing part fixing a left end of the hologram film; and a right fixing part fixing a right end of the hologram film, The rail, an upper rail coupled in a state in which an upper end of the left fixing part and an upper end of the right fixing part are movable; and a lower rail to which a lower end of the left fixing part and a lower end of the right fixing part are coupled in a movable state, The lower fixing part may include: A hologram film holder, which is movably coupled to a lower rail.

N9731

CN219856505U

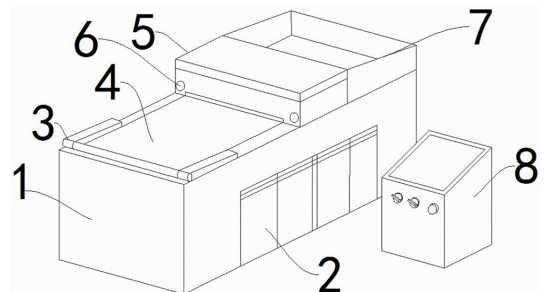
Priority Date: 07/01/2023

SHENZHEN JIANYANG TECHNOLOGY

FULL-AUTOMATIC HOLOGRAPHIC LASER PRINTER

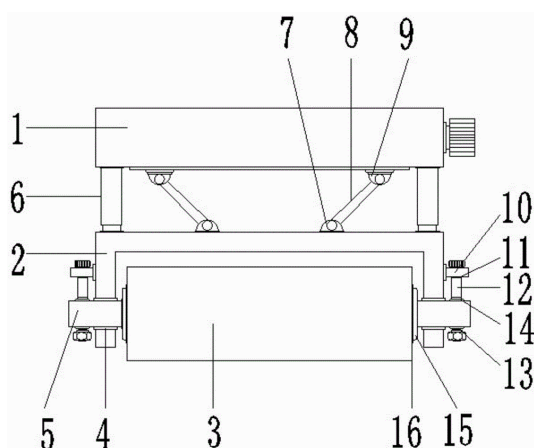
The utility model provides a full-automatic holographic laser printer, which relates to the technical field of printing equipment and comprises a base, a conveyor belt, a laser transmitter body, an infrared sensor, a control console, a conveying wheel, a micro switch, an induction lamp, a servo motor and an electric cabinet.

CLAIM 1. A full-automatic holographic laser printer comprises a base (1), a cabinet door (2), a compression bar (3), a conveyor belt (4), a laser emitter body (5), an infrared sensor (6), a storage tank (7), a control console (8), a conveying wheel (9), a micro-switch (10), an induction lamp (11), a servo motor (12) and an electric cabinet (13); the method is characterized in that: cabinet door (2) fixed connection is in base (1) left end, depression bar (3) fixed connection is in base (1) top, conveyer belt (4) fixed connection is in base (1) top, and is located between depression bar (3), laser transmitter body (5) fixed connection is in base (1) top, and is located conveyer belt (4) top, storage tank (7) fixed connection is in base (1) top, and is located laser transmitter body (5) rear end, control cabinet (8) fixed connection is in base (1) left end, conveyer wheel (9) fixed connection is inside base (1), and is located inside conveyer belt (4) both ends, micro-gap switch (10) fixed connection is in base (1) front and back end inner wall, induction lamp (11) fixed connection is in rear end conveyer wheel (9) right-hand member, servo motor (12) fixed connection is in front end conveyer wheel (9) right-hand member, electric cabinet (13) fixed connection is inside base (1), and is located conveyer belt (4) bottom.



PRINTING ROLLER OF LASER HOLOGRAPHIC PRINTER

The utility model discloses a printing roller of a laser holographic printer, which comprises a mounting seat arranged on the laser holographic printer, wherein the lower end of the mounting seat is provided with a U-shaped roller frame, and the inside of the U-shaped roller frame is provided with a printing roller main body; clamping cavities are formed at two ends of the front side wall of the U-shaped roller frame, fixing rods are arranged in the clamping cavities, and rotating blocks are sleeved at the ends of the fixing rods; clamping grooves are formed in the two side walls of the printing roller main body, and the rotating blocks are clamped in the clamping grooves (16); limiting blocks are arranged at the upper ends of the outer walls of the two sides of the U-shaped roller frame, limiting holes are formed in the side walls of the limiting blocks, and limiting rods are inserted into the limiting holes; the outer wall of the fixed rod is provided with a mounting hole, a limit screw is arranged in the mounting hole, and the upper end part of the limit screw is connected with the limit rod; the printing roller of the laser holographic printer is used for installing the printing roller main body, fixing the printing roller main body through the limiting structure convenient to disassemble and assemble, and disassembling the roller main body conveniently.



CLAIM 1. The utility model provides a printing roller of laser holographic printer, includes mount pad (1) of installing on laser holographic printer, its characterized in that: the lower end of the mounting seat (1) is provided with a U-shaped roller frame (2), and a printing roller main body (3) is arranged in the U-shaped roller frame (2); clamping cavities (4) are formed in two ends of the front side wall of the U-shaped roller frame (2), fixing rods (5) are arranged in the clamping cavities (4), and rotating blocks (15) are sleeved at the end parts of the fixing rods (5); clamping grooves (16) are formed in two side walls of the printing roller main body (3), and the rotating blocks (15) are clamped in the clamping grooves (16); limiting blocks (10) are arranged at the upper ends of the outer walls of the two sides of the U-shaped roller frame (2), limiting holes (11) are formed in the side walls of the limiting blocks (10), and limiting rods (12) are inserted into the limiting holes (11); the outer wall of the fixed rod (5) is provided with a mounting hole (14), a limit screw (13) is mounted in the mounting hole (14), and the upper end part of the limit screw (13) is connected with a limit rod (12); a slideway (22) is arranged on the side wall of the mounting seat (1), two sliding blocks (20) are arranged in the slideway (22), and a hinging seat a (9) is arranged on the side wall of each sliding block (20); the two sides of the top end of the U-shaped roller frame (2) are provided with hinge seats b (8), and connecting rods are hinged between the hinge seats a and the hinge seats b (8).

N9739

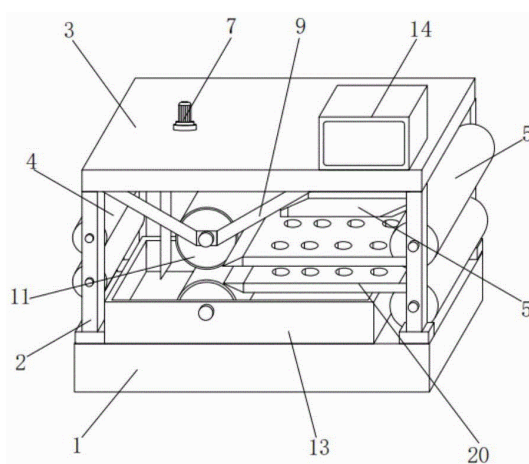
CN219723522U

Priority Date: 21/04/2023

ZHEJIANG CHUNYU PACKAGING MATERIAL

HOLOGRAPHIC THERMOPRINT MEMBRANE IS WITH HIGH-EFFICIENT COATING MACHINE

The utility model relates to the technical field of holographic thermoprinting film manufacturing, in particular to a high-efficiency coating machine for holographic thermoprinting films, wherein two cloth conveying rollers are movably arranged inside one end of a supporting rod, a cloth conveying linkage roller is movably connected to the other end of the supporting rod, the two cloth conveying rollers and the cloth conveying linkage roller are oppositely arranged, and the cloth conveying rollers, the cloth conveying linkage roller and an external power supply are electrically connected. This holographic thermoprinting membrane is with high-efficiency coating machine, through can pass between backup pad and the baffle by the holographic thermoprinting membrane that is painted the coating, excessive coating can receive gravity effect in the backup pad row material hole drip on holographic thermoprinting membrane, the stoving opportunity blows hot-blast ventilation hole through the baffle top and carries out the air-drying for holographic thermoprinting membrane coating, carry out the air-drying mode to the holographic thermoprinting membrane of painting, prevent the coating everywhere pollution drying to the influence that the coating caused, finally improved the work efficiency of holographic thermoprinting membrane with high-efficiency coating machine.



CLAIM 1. The utility model provides a holographic thermoprint membrane is with high-efficiency coating machine, includes base (1), bracing piece (2) and roof (3), its characterized in that: the support rods (2) are fixedly connected above the base (1), the top plate (3) is fixedly arranged at the top end of the support rods (2), two cloth conveying rollers (4) are movably arranged inside one end of each support rod (2), a cloth conveying linkage roller (5) is movably connected to the other end of each support rod (2), the two cloth conveying rollers (4) and the cloth conveying linkage roller (5) are oppositely arranged, and the cloth conveying rollers (4) and the cloth conveying linkage rollers (5) are electrically connected with an external power supply; a plurality of support plates (20) are fixedly connected to the inner sides of the support rods (2), a plurality of discharge holes (21) are fixedly formed in the inner sides of the support plates (20), a baffle plate (18) is fixedly connected to the inner sides of the support rods (2), a plurality of ventilation holes (19) are fixedly formed in the inner sides of the baffle plate (18), the baffle plate (18) and the support plates (20) are parallel to each other, and the lower parts of the support plates (20) are opposite to the coating grooves (13); the top fixed mounting of roof (3) has controller (14), the lower extreme fixedly connected with wire (15) of controller (14), the inboard fixedly connected with installation piece (16) of roof (3), two the lower extreme fixedly connected with drying-machine (17) of installation piece (16), drying-machine (17) pass through wire (15) and are connected with controller (14) electricity, the air supply end and the baffle (18) of drying-machine (17) set up relatively.

N9778

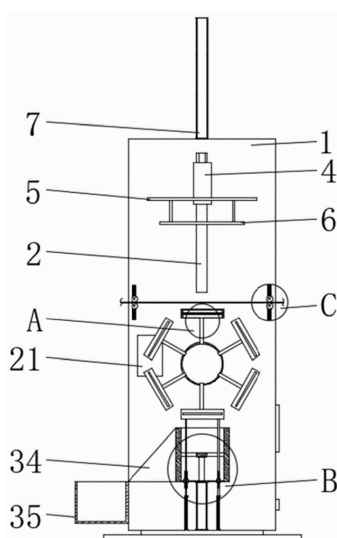
CN116811426

Priority Date: 25/07/2023

PINGXIANG HAOFENG PACKAGING

HOLOGRAPHIC POSITIONING GILDING PRESS AND GILDING PROCESS THEREOF

The invention discloses a holographic positioning gilding press which comprises a mounting plate, wherein a limiting through groove and a storage box are formed in the end face of the mounting plate, an I-shaped sliding block penetrates through the limiting through groove in a sliding mode, a first electric telescopic rod penetrates through the inner top face of the limiting through groove in a fixed mode, one end of the first electric telescopic rod is fixedly connected with the upper portion of the I-shaped sliding block, a connecting plate is fixedly arranged on the end face of the I-shaped sliding block, an embossing plate is arranged on the lower portion of the connecting plate, a holographic thermoprinting film, four groups of supporting rollers and a gas storage box are arranged in front of the mounting plate, a push plate is arranged in the storage box in a sliding mode, a control panel and a power socket are arranged on the other side of the mounting plate, and a first sealing bearing and an L-shaped plate are arranged on the rear end face of the mounting plate. The beneficial effects are that: according to the invention, through the gas storage box, the printed matter can be conveniently fed and discharged while the plane stable thermoprint is ensured.



CLAIM 1. The utility model provides a holographic location gilding press, its characterized in that, including mounting panel (1), the terminal surface of mounting panel (1) is provided with spacing logical groove (2) and storage box (3), the inside slip of spacing logical groove (2) runs through has worker's shape slider (4), the inside top surface of spacing logical groove (2) is fixed to be run through has first electric telescopic handle (7), and the upper portion fixed connection of one end and worker's shape slider (4) of first electric telescopic handle (7), the terminal surface fixed mounting of worker's shape slider (4) has connecting plate (5), and the lower part of connecting plate (5) installs impression board (6), holographic thermoprint membrane (8), four sets of backing rolls (9) and storage box (11) are installed to the place ahead of mounting panel (1), the inside slidably mounting of storage box (3) has push pedal (10), control panel and power socket are installed to the opposite side of mounting panel (1), the rear end face of mounting panel (1) has first sealed bearing (12) and L shaped plate (13), the rear end face of L (13) motor is installed and is had gear (16) and is cup jointed in the fixed side wall (16) of a axletree (16), the utility model discloses a motor, including motor (14), mounting box (23), air pump (15), air reservoir (11), air reservoir (22), multiunit mounting box (23) have all been fixed to cup joint to the output lateral wall of motor (14), multiunit air vent (24) have been seted up to one side of air reservoir (23), multiunit air vent (24) inside all fixed mounting has interception filter screen (25), multiunit the terminal surface of mounting box (23) all slides and runs through I-shaped picture peg (26), multiunit flexible spring (27) are all installed between the terminal surface of mounting box (23) I-shaped picture peg (26) and multiunit mounting box (23), electro-magnet (21) are installed to the terminal surface of mounting plate (1).

Click on the title to return to table of contents

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

N9703

WO2023186695

CARL ZEISS JENA

Priority Date: 28/03/2022

METHOD FOR PRODUCING A LAMINATING COMPONENT OR A HOLOGRAM COMPONENT, FOR PRODUCING A LAMINATED GLASS, AND CORRESPONDING LAMINATING COMPONENTS, HOLOGRAM COMPONENTS AND LAMINATED GLASSES

The invention relates to a method for producing a laminating component or a hologram component. In this case, a holographic material such as a hologram film is either connected to a laminating means in order to form a laminating component or is connected to a transparent stiffening material in order to form a hologram component. In order to produce a laminated glass, the laminating component or hologram component can then be laminated between two glass panes, which can in particular be curved. Damage to the hologram exposed in the holographic material can be prevented or reduced by the laminating means of the laminating component or the stiffening material of the hologram component.

PROCÉDÉ DE FABRICATION D'UN ÉLÉMENT DE STRATIFICATION OU D'UN ÉLÉMENT HOLOGRAPHIQUE SERVANT À LA FABRICATION D'UN VERRE FEUILLETÉ, ET ÉLÉMENTS DE STRATIFICATION, ÉLÉMENTS HOLOGRAPHIQUES ET VERRES FEUILLETÉS CORRESPONDANTS

L'invention concerne un procédé de fabrication d'un élément de stratification ou d'un élément holographique. Un matériau holographique, tel qu'un film holographique, est relié soit à un agent de stratification afin de former un élément de stratification, soit à un matériau de renfort transparent afin de former un élément holographique. Le but de l'invention est de permettre la fabrication d'un verre feuilleté. À cet effet, l'élément de stratification ou l'élément holographique peut ensuite être stratifié entre deux plaques de verre, qui peuvent être en particulier courbées. Grâce à l'agent de stratification de l'élément de stratification ou au matériau de renfort de l'élément holographique, il est possible d'éviter ou de réduire un endommagement de l'hologramme enregistré dans le matériau holographique.

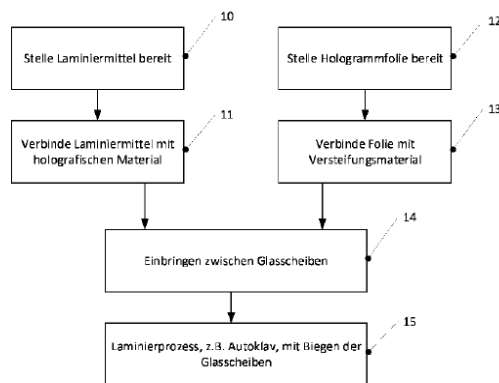


Fig. 1

- 10 Provide laminating agent
- 11 Connect laminating agent to holographic material
- 12 Provide holographic film
- 13 Connect film to reinforcing material
- 14 Introduce between glass panes
- 15 Carry out laminating process, e.g. autoclaving, while bending the glass panes

CLAIM 1. A method of making a laminating component (20, 28, 40) for joining two glass sheets (24, 26), comprising: providing a laminating means (22, 25); and joining the laminating means (22, 25) to a holographic material.

N9711

RU2804253

Priority Date: 31/05/2023

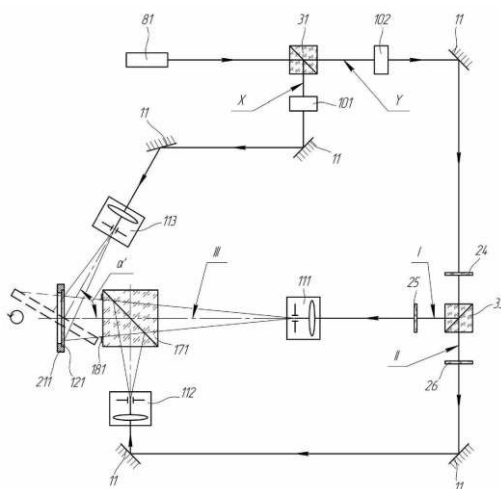
OBSHCHESTVO S OGRANICHENNOI OTVETSTVENNOSTIU
«KSPANSEO» OOO «KSPANSEO»

UNIT OF RECORDING MULTIPLEX HOLOGRAMS AND METHOD OF RECORDING MULTIPLEX HOLOGRAMS

FIELD: holography.

SUBSTANCE: invention relates to methods and devices for holography capable of performing multiplex recording with high density. The device for recording multiplex holograms comprises a coherent radiation source, a reference channel, an object channel, spatial filters and a hologram blank holder. The object channel is equipped with at least two spatial filters and is configured to form and subsequently combine at least two diverging radiation beams with a spherical wavefront and different focal lengths corresponding to different lengths of optical arms from the specified spatial filters of the object channel to the hologram blank holder.

EFFECT: expanding functionality of the recorded holograms, in particular, the fields of view while maintaining a virtual image, as well as simplifying and lightening the projection system in which they can be used.



CLAIM 1. Installation of multiplexed holograms containing a source of coherent radiation, a support channel, an object channel, spatial filters and a hologram holder, because the objective channel is equipped with at least two spatial filters and is completed with the possibility of forming and following up at least two divergent beams with the spherical wave front and various focal distances, different optical shoulder lengths from the specified spatial filters of the object channel to the holder of the hologram.

N9744

CN116925639

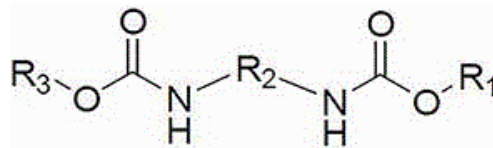
Priority Date: 14/09/2023

NANCHANG VIRTUAL REALITY RESEARCH INSTITUTE

COMPOSITION FOR HOLOGRAPHIC RECORDING MEDIUM AND HOLOGRAPHIC RECORDING MEDIUM

The present application relates to a composition for a hologram recording medium and a hologram recording medium using the composition for a hologram recording medium. The application improves the overall refractive index difference by structurally designing the substrate film forming substance contained in the composition for the holographic recording medium and reducing the refractive index of the substrate, thereby preparing high-performance VHG.

CLAIM 1. A composition for a holographic recording medium comprising a base film-forming material, wherein the base film-forming material has a general structure as shown below: wherein R is 2 Is C 1 -C 10 A carbon chain of (2), said carbon chain being linear, cyclic, branched or heterocyclic; r is R 1 And R is 3 Independently of one another C 1 -C 25 And R is a carbon chain of 1 And R is 3 At least one of them is an organic carbon chain containing fluorine atoms.



N9754

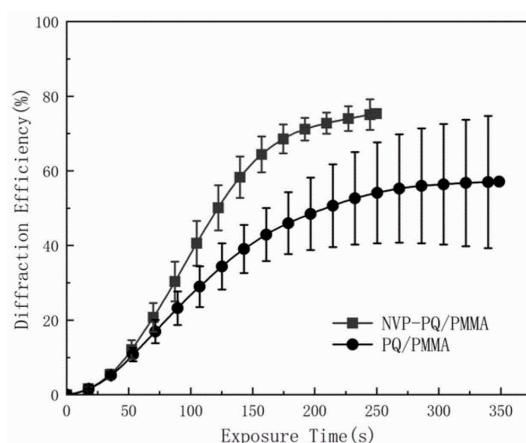
CN116903777

Priority Date: 14/07/2023

FUJIAN NORMAL UNIVERSITY

NVP DOPED PQ\PMMA PHOTOPOLYMER HOLOGRAPHIC STORAGE MATERIAL AND PREPARATION METHOD THEREOF

The invention relates to the technical field of holographic storage materials, in particular to an NVP doped PQ\PMMA photopolymer holographic storage material and a preparation method thereof. The NVP doped PQ\PMMA photopolymer holographic storage material comprises NVP, MMA, PQ and AIBN. NVP is doped in PQ\PMMA to realize that the photopolymer material is used as an excellent medium for holographic storage. The material has simple preparation process and low cost, has higher diffraction efficiency and photosensitivity, and can be better used in the fields of holographic imaging and data storage compared with PQ\PMMA.



CLAIM 1. An NVP doped PQ\PMMA photopolymer holographic storage material comprising NVP, MMA, PQ and AIBN.

N9755

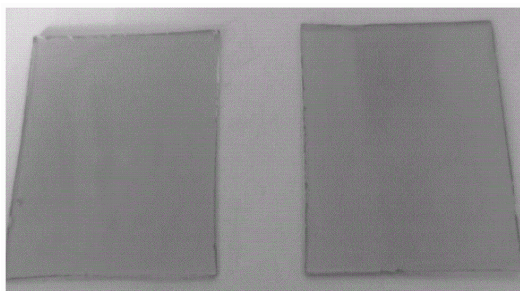
CN116903776

Priority Date: 14/07/2023

FUJIAN NORMAL UNIVERSITY

NOVEL HOLOGRAPHIC STORAGE MATERIAL AND PREPARATION METHOD THEREOF

The application relates to the technical field of holographic storage materials, in particular to a novel holographic storage material and a preparation method thereof. The raw materials of the material comprise PETA, MMA, PQ and AIBN. Compared with the traditional PQ/PMMA material, the modified material has the characteristics of no bubbles, improves the photosensitivity of the material system, can obviously shorten the response time of the material, and improves the grating diffraction efficiency uniformity and holographic performance of the material system to a certain extent by introducing the dendrimer material PETA.



CLAIM 1. A novel holographic storage material, comprising PETA, MMA, PQ and AIBN.

N9756

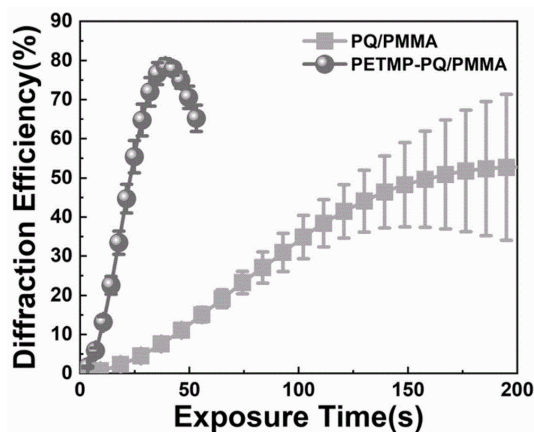
CN116903769

Priority Date: 14/07/2023

FUJIAN NORMAL UNIVERSITY

PETMP DOPED PQ/PMMA PHOTOPOLYMER HOLOGRAPHIC STORAGE MATERIAL AND PREPARATION METHOD THEREOF

The invention belongs to the technical field of holographic polymer materials, and particularly relates to a PETMP doped PQ/PMMA photopolymer holographic storage material and a preparation method thereof. According to the preparation method, PETMP, MMA, PQ and AIBN are added, and mixing, prepolymerization and thermal polymerization are sequentially carried out, so that the PETMP doped PQ/PMMA photopolymer holographic storage material is obtained. Compared with the traditional PQ/PMMA material, the PETMP doped PQ/PMMA holographic polymer storage material has the advantages that the diffraction efficiency of the recording grating is improved to more than 80%, the refractive index modulation degree is higher, and the storage capacity of the material can be effectively improved; meanwhile, the diffraction efficiency is greatly improved by doping PETMP, the light response speed is accelerated, better optical characteristics are shown, and the PETMP doped PQ/PMMA photopolymer holographic storage material has wide application prospect in the field of holographic storage.



CLAIM 1. A PETMP doped PQ/PMMA photopolymer holographic storage material characterized in that the raw materials comprise PETMP, MMA, PQ and AIBN.

N9764

CN116859700

Priority Date: 11/07/2023

GUANGZHOU LI BAO PACKING

LUMINOUS HOLOGRAPHIC FILM PRODUCT AND PREPARATION METHOD THEREOF

The invention provides a luminous holographic film product and a preparation method thereof, belonging to the technical field of holographic display, wherein the luminous unit comprises a transparent film, and an antenna circuit diagram and luminous ink for driving luminous ink to emit light are printed on the surface of the transparent film; the holographic film comprises a holographic layer, wherein the holographic layer is subjected to ultraviolet light curing nano-imprinting to form a relief hologram, and the surface of the holographic layer is also plated with a transparent medium so as to protect the holographic layer from being damaged; the light-emitting unit is attached to the holographic film to prepare a light-emitting holographic film, and when a signal is input into the light-emitting holographic film, the set position of the light-emitting unit emits light, so that a holographic image is excited; the invention adopts ultraviolet light curing nanoimprint to fully restore holographic information, and generates current through designing an antenna circuit and excitation, so that a light-emitting unit generates light change, irradiates a holographic film and generates a dynamic effect; the product of the invention has lighter thickness, better flexibility, small site limitation and wider application range.



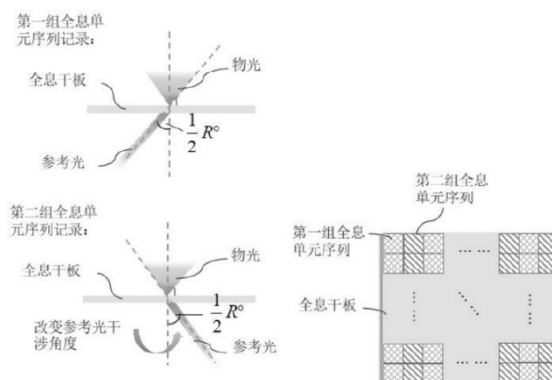
CLAIM 1. A luminescent holographic film article, comprising: the light-emitting unit comprises a transparent film, and an antenna circuit diagram and light-emitting ink for driving the light-emitting ink to emit light are printed on the surface of the transparent film; the holographic film comprises a holographic layer, wherein the holographic layer is subjected to ultraviolet light curing nano-imprinting to form a relief hologram, and the surface of the holographic layer is also plated with a transparent medium so as to protect the holographic layer from being damaged; the light-emitting unit is attached to the holographic film to prepare a light-emitting holographic film, and when a signal is input into the light-emitting holographic film, the set position of the light-emitting unit emits light, so that a holographic image is excited.

METHOD, MATERIAL AND DEVICE FOR RAPIDLY RECORDING LARGE-FIELD-ANGLE HOLOGRAPHIC STEREOGRAM

The invention discloses a method, a material and a device for rapidly recording a large-field-angle holographic stereogram. The method comprises the following steps: performing disparity map sampling on the three-dimensional scene or the real scene to obtain a plurality of disparity map sequences; dividing the parallax image sequences into two groups, and respectively carrying out image batch pretreatment on the two groups of parallax image sequences; and performing pixel cyclic extraction and recombination on the two groups of preprocessed parallax images to obtain two groups of holographic unit sequences. The first group of holographic units is recorded by interfering with the reference light scanning on the ultra-high sensitivity holographic material by the device. And (3) finishing the recording of the first group of holographic units, and enabling the reference light to enter from the other side by controlling the beam angle deflector in the recording device to rotate a certain angle so as to scan and record the second group of holographic units. Compared with the prior art, the holographic recording method for splicing the reproduction angles of view can obtain the reproduction angles of view twice as high as that of the traditional method, and has high diffraction efficiency and recording efficiency.

CLAIM 1. A fast recording method of a large-field angle holographic stereogram is characterized in that: the method comprises the following steps: (1) Sampling a parallax image of a real scene or a scene needing to be virtualized, wherein the sampling angle range is twice the lens convergence angle; setting the convergence angle as R DEG, and setting the sampling range as 2R DEG; The three-dimensional scene is sampled to obtain a plurality of parallax image sequences, and the parallax image sequences are divided into two groups according to sampling angles; the first group of parallax images with the sampling range of 0-R degrees is a first group of parallax images, and the second group of parallax images with the sampling range of R-2R degrees is a second group of parallax images; (2) The image preprocessing is carried out on the two groups of disparity map sequences, and specifically comprises the following steps:

extracting a column of pixels from each column of pixels of the image to form a pair of new parallax images, wherein the column number of the pixels of the new parallax images is half of that of the pixels before preprocessing, and circularly executing preprocessing on the two groups of parallax image sequences; (3) Sampling and encoding pixels or pixel blocks of the two groups of preprocessed parallax images to obtain holographic units for exposure; the method specifically comprises the following steps: extracting and recombining pixels at the same position of the parallax map to obtain a holographic unit sequence, wherein the operation is circulated until all pixels in the parallax map participate in coding; the holographic unit sequence extracted from the first group of parallax images is a first group of holographic units, and the holographic unit sequence extracted from the second group of parallax images is a second group of holographic units; (4) The beam angle deflector in the light path is adjusted to drive the reflecting mirror to rotate by an angle of R/2 DEG, so that the reference light is incident in a half angle of the converging lens between the horizontal direction and the vertical direction; (5) Recording the first group of holographic units, which specifically comprises: preparation of an ultra-high sensitivity holographic material for rapidly recording large-field angle holographic stereograms; sequentially loading the first group of holographic units to a display screen, scanning and exposing by controlling a printing mechanism, wherein the holographic units are closely arranged in the vertical direction of exposure, and the positions of a row of holographic units are spaced in the horizontal direction to interfere with reference light on the surface of the ultra-high-sensitivity holographic recording material for recording; (6) The first group of holographic units complete recording, and the high-precision rotating mechanism of the reflecting mirror in the device is controlled to rotate the reflecting mirror to a certain angle so that reference light enters at an angle of -R/2 degrees; (7) Scanning exposure is sequentially carried out on the second group of holographic units, and gaps of the exposure array of the first group of holographic units are filled; recording of the holographic stereogram is completed; (8) And (3) obtaining a holographic volume view with a reconstruction field angle of 2R DEG which is twice the convergence angle through post-processing the holographic material.



N9772

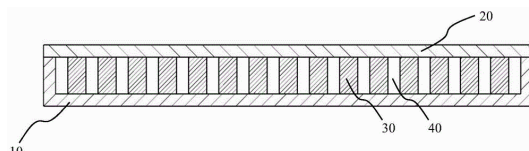
CN116840958

Priority Date: 30/06/2023

JIANGXI LIANHAO PHOTOELECTRIC

SOLVENT POLYMER HOLOGRAPHIC GRATING AND PREPARATION METHOD THEREOF

The invention provides a holographic grating of a solvent polymer, which comprises a transparent box body structure, a grating structure and a transparent cover plate structure, wherein the grating structure is positioned in a containing cavity formed by the transparent box body structure and the transparent cover plate structure, the grating structure is respectively connected with the transparent box body structure and the transparent cover plate structure, and a plurality of grating structures are arranged at intervals, and the holographic grating is characterized in that: and a solvent is arranged between any two adjacent grating structures, and the grating structures are polymers.



CLAIM 1. The utility model provides a holographic grating of solvent polymer body, includes transparent box body structure, grating structure and transparent cover plate structure, the grating structure is located transparent box body structure with in the accepting chamber that transparent cover plate structure formed, the grating structure respectively with transparent box body structure with transparent cover plate structure is connected, a plurality of grating structure interval sets up, its characterized in that: and a solvent is arranged between any two adjacent grating structures, and the grating structures are polymers.

N9773

CN116825146

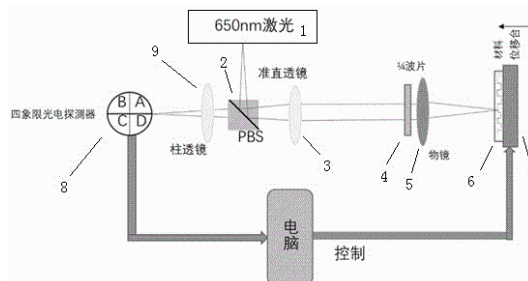
Priority Date: 18/07/2023

FUJIAN NORMAL UNIVERSITY

SERVO FOCUSING METHOD FOR HOLOGRAPHIC DATA STORAGE SYSTEM

The invention provides a servo focusing method for a holographic data storage system, which comprises a laser light source, a PBS (polarization beam splitter), a collimating lens, a 1/4 wave plate, an objective lens, a cylindrical lens and a four-quadrant photoelectric detector, wherein the PBS is arranged on the optical axis of the optical axis; when the servo focusing mechanism works, S light reflected by red light of the laser light source after entering the PBS is converted into parallel light through the collimating lens, the parallel light is focused by the 1/4 wave plate and the objective lens and enters a material carried by the displacement table, the S light is converted into P light through the 1/4 wave plate by the light reflected by the reflecting layer of the material, and the P light irradiates four quadrants of the four-quadrant photoelectric detector through light spots formed by the cylindrical lens; the servo focusing method focuses by adjusting the distance between the material and the objective lens in the direction of parallel light, so that the reflecting layer in the material is positioned at the focusing incidence focus of the parallel light, and the focusing process comprises coarse focusing according to the total intensity of the light spot and fine focusing according to the shape of the light spot; the invention can compensate in real time by the movement of the displacement table, and ensure the accuracy of data recording and reading.

CLAIM 1. A servo focusing method for a holographic data storage system, characterized by: the servo focusing mechanism adopted by the servo focusing method comprises a laser light source, PBS, a collimating lens, a 1/4 wave plate, an objective lens, a cylindrical lens and a four-quadrant photoelectric detector; when the servo focusing mechanism works, S light reflected by red light of the laser light source after entering the PBS is converted into parallel light through the collimating lens, the parallel light is focused through the 1/4 wave plate and the objective lens and enters a reflective material carried by the displacement table, the S light is converted into P light through the 1/4 wave plate by the light reflected by the reflective layer of the material, and the P light irradiates four quadrants of the four-quadrant photoelectric detector through light spots formed by the cylindrical lens; the light spot intensities at the four quadrants of the four-quadrant photodetector are respectively denoted as A, B, C, D; the servo focusing method focuses by adjusting the distance between the material and the objective lens in the direction of parallel light, so that the reflecting layer in the material is positioned at the focusing incidence focus of the parallel light, and the focusing process comprises coarse focusing according to the total intensity of the light spot and fine focusing according to the shape of the light spot.



N9779

CN116811119

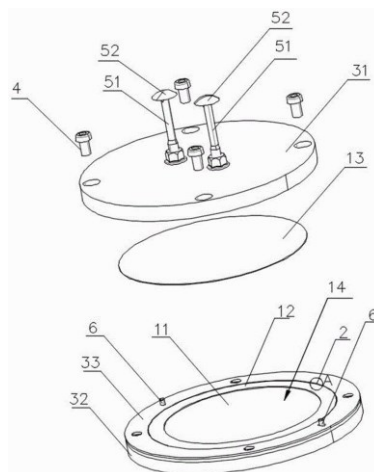
Priority Date: 05/07/2023

FUJIAN NORMAL UNIVERSITY

PREPARATION METHOD OF HOLOGRAPHIC STORAGE MATERIAL AND MOLD FOR PREPARATION

The application relates to a mould for preparing holographic storage material, comprising: the container comprises a substrate, a gasket and a cover plate, wherein the gasket is arranged between the substrate and the cover plate, the substrate and the cover plate are of plate-shaped structures, the gasket is of an annular structure, and the upper surface of the substrate, the inner wall of the gasket and the lower surface of the cover plate are enclosed to form a container space; the device comprises a compressing mechanism, wherein a compressing groove for placing a container is arranged in the compressing mechanism, a gap is arranged between the side wall of the compressing groove and the side wall of the container, and the gap is used for receiving holographic storage materials overflowed from the container space or compensating the holographic storage materials into the container space. The edge of the formed holographic storage material is prevented from generating bubbles, the consistency of the holographic storage material is improved, mass production can be realized through the die, and the die has a simple structure and is convenient to use, and has a broad market prospect.

CLAIM 1. A mold for preparing a holographic memory material, comprising: the container comprises a substrate, a gasket and a cover plate, wherein the gasket is arranged between the substrate and the cover plate, the substrate and the cover plate are of plate-shaped structures, the gasket is of an annular structure, and the upper surface of the substrate, the inner wall of the gasket and the lower surface of the cover plate are enclosed to form a container space; the device comprises a compressing mechanism, wherein a compressing groove for placing a container is arranged in the compressing mechanism, a gap is arranged between the side wall of the compressing groove and the side wall of the container, and the gap is used for receiving holographic storage materials overflowed from the container space or compensating the holographic storage materials into the container space.



N9780

CN116811118

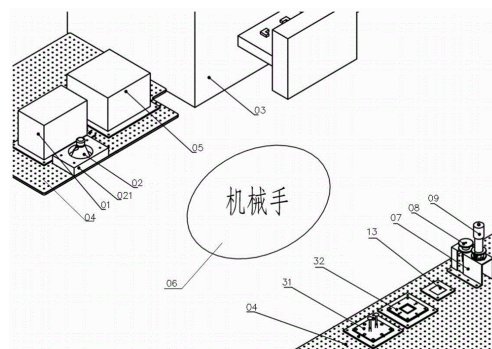
Priority Date: 05/07/2023

FUJIAN NORMAL UNIVERSITY

SYSTEM AND METHOD FOR AUTOMATICALLY PREPARING HOLOGRAPHIC STORAGE MATERIAL

The application relates to a system and a method for automatically preparing holographic storage materials, wherein a mixer, a heating mixer, a mould and a baking box are arranged on an objective table, the mould comprises a container and a pressing mechanism, the container comprises a base plate, a gasket and a cover plate, the gasket is arranged between the base plate and the cover plate, the base plate and the cover plate are of plate-shaped structures, the gasket is of annular structures, the upper surface of the base plate, the inner wall of the gasket and the lower surface of the cover plate are enclosed to form a container space, a pressing groove for placing the container is arranged in the pressing mechanism, a gap is arranged between the side wall of the pressing groove and the side wall of the container, and the gap is used for receiving holographic storage materials overflowed in the container space or compensating the holographic storage materials into the container space. The manipulator may be used to transport mixers, transport molds, and assembly molds. The system can realize batch production, has simple structure and convenient use, and has broad market prospect.

CLAIM 1. A system for automatically preparing holographic storage material, comprising: the device comprises an objective table, a heating mixer, a mold and a baking box, wherein the objective table is provided with the mixer, the heating mixer, the mold and the baking box, the mold comprises a container and a pressing mechanism, the container comprises a base plate, a gasket and a cover plate, the gasket is arranged between the base plate and the cover plate, the base plate and the cover plate are of a platy structure, the gasket is of an annular structure, the upper surface of the base plate, the inner wall of the gasket and the lower surface of the cover plate enclose to form a container space, a pressing groove for placing the container is arranged in the pressing mechanism, a gap is arranged between the side wall of the pressing groove and the side wall of the container, and the gap is used for receiving holographic storage materials overflowed in the container space or compensating the holographic storage materials into the container space; the manipulator can be used to transport the mixer, transport the mould and assemble the mould.



Click on the title to return to table of contents

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

N9700

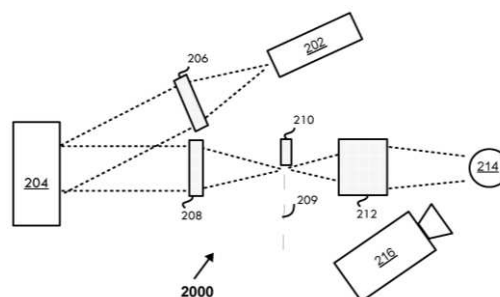
WO2023196686

Priority Date: 28/03/2022

CARNEGIE MELLON UNIVERSITY

HOLOGRAPHIC LIGHT CURTAINS

Provided is a system and method for holographic light curtains. A system includes a holographic projector configured to project a holographic image, a rolling-shutter camera arranged to receive light from the holographic image, and at least one processor in communication with the rolling-shutter camera, the at least one processor programmed or configured to: determine an intensity of the light received from the holographic image; and detect a disturbance in a space of the holographic image based on a change in the intensity.



RIDEAUX DE LUMIÈRE HOLOGRAPHIQUES

L'invention concerne un système et un procédé pour des rideaux de lumière holographiques. Un système comprend un projecteur holographique conçu pour projeter une image holographique, une caméra à obturateur roulant agencée pour recevoir de la lumière provenant de l'image holographique, et au moins un processeur en communication avec la caméra à obturateur roulant, le ou les processeurs étant programmés ou configurés pour : déterminer une intensité de la lumière reçue en provenance de l'image holographique ; et détecter une perturbation dans un espace de l'image holographique sur la base d'un changement de l'intensité.

N9704

WO2023186627

Priority Date: 31/03/2022

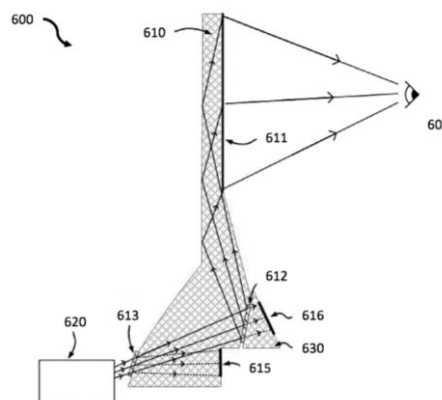
CARL ZEISS JENA

TRANSPARENT DISPLAY

The invention relates to a transparent display (600), comprising a holographic diffuser (611) extending substantially in a two-dimensional diffuser plane, and comprising an enlarging reflective element (612), wherein the holographic diffuser (611) and the reflective element (612) are part of a one-piece optical unit (610), and wherein image rays, reflected by the reflective element (612), are guided inside the optical unit (610) to the holographic diffuser (611).

DISPOSITIF D'AFFICHAGE TRANSPARENT

L'invention concerne un dispositif d'affichage transparent (600), comprenant un diffuseur holographique (611) s'étendant sensiblement dans un plan de diffuseur bidimensionnel, et comprenant un élément réfléchissant d'agrandissement (612), le diffuseur holographique (611) et l'élément réfléchissant (612) faisant partie d'une unité optique monobloc (610), et des rayons d'image, réfléchis par l'élément réfléchissant (612), étant guidés à l'intérieur de l'unité optique (610) vers le diffuseur holographique (611).



CLAIM 1. Large-format transparent display (100; 200; 300; 400; 500; 600), having a holographic diffuser (111; 211; 311; 411; 511; 611) extending substantially in a two-dimensional diffuser plane, and having an enlarging reflection element (112; 212; 312; 412; 512; 612), wherein the holographic diffuser (111; 211; 311; 411; 511; 211; 311; 411; 511; 611) and the reflection element (112; 212; 312; 412; 512; 612) are part of a one-piece optical unit (110; 210; 310; 410; 510; 610), and wherein image beams reflected by the reflection element (112; 212; 312; 412; 512; 612) are guided within the optical unit (110; 210; 310; 410; 510; 610) to the holographic diffuser (111; 211; 311; 411; 511; 611).

N9705

WO2023183450

Priority Date: 23/03/2022

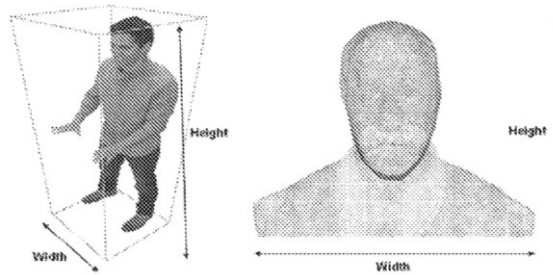
META PLATFORMS TECHNOLOGIES

SYSTEMS AND METHODS OF SIGNALING INFORMATION FOR HOLOGRAPHIC COMMUNICATIONS

Systems and methods for signaling information for holographic communications include one or more servers which maintain a first session with a first device of a first user and one or more second sessions with one or more second devices of one or more second users. The server(s) may receive, via the first session from the first device, audio/video (A/V) data of a first user and scaling data for the first user. The server(s) may modify a scale of the first user represented in video data of the A/V data according to the scaling data. The server(s) may transmit, via the one or more second sessions, modified A/V data of the first user to the one or more second devices, for rendering to the one or more second users.

SYSTÈMES ET PROCÉDÉS DE SIGNALISATION D'INFORMATIONS POUR DES COMMUNICATIONS HOLOGRAPHIQUES

Des systèmes et des procédés de signalisation d'informations pour des communications holographiques comprennent un ou plusieurs serveurs qui maintiennent une première session avec un premier dispositif d'un premier utilisateur et une ou plusieurs secondes sessions avec un ou plusieurs seconds dispositifs d'un ou de plusieurs seconds utilisateurs. Le ou les serveurs peuvent recevoir, par l'intermédiaire de la première session et en provenance du premier dispositif, des données audio/vidéo (A/V) d'un premier utilisateur et des données de mise à l'échelle pour le premier utilisateur. Le ou les serveurs peuvent modifier une échelle du premier utilisateur représentée dans des données vidéo des données A/V selon les données de mise à l'échelle. Le ou les serveurs peuvent transmettre, par l'intermédiaire de la ou des secondes sessions, des données A/V modifiées du premier utilisateur au ou aux seconds dispositifs, en vue d'un rendu au ou aux seconds utilisateurs.



CLAIM 1. A method comprising: maintaining, by one or more servers, a first session with a first device of a first user and one or more second sessions with one or more second devices of one or more second users; receiving, by the one or more servers via the first session from the first device, audio/video (AA) data of a first user and scaling data for the first user; modifying, by the one or more servers, a scale of the first user represented in video data of the A/V data according to the scaling data; and transmitting, by the one or more servers via the one or more second sessions, modified AN data of the first user to the one or more second devices, for rendering to the one or more second users.

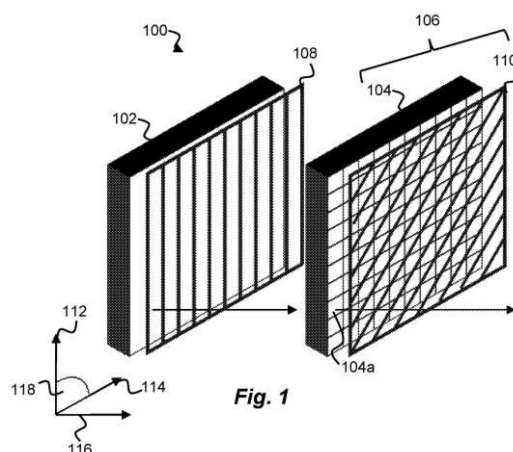
HOLOGRAPHIC DISPLAYS AND METHODS

A holographic display is provided. The display comprises (i) an illumination source configured to emit at least partially coherent light, (ii) a liquid crystal layer comprising an array of elements arranged to be illuminated by the light. The layer is configured such that: (a) when a first electric field is applied across an element of the liquid crystal layer, the light from the element has a first polarisation state, (b) when a second electric field is applied across the element, the light has a second polarisation state, and (c) when a third electric field is applied across the element, the light has a third polarisation state. The display further comprises (iii) a controller configured to control electric fields applied across the elements, and (iv) an output polarising element, configured to: (a) remove a portion of light having the first polarisation state and also transmit a portion of the light having the first polarisation state, (b) remove substantially all of the light having the second polarisation state, and (c) remove a portion of the light having the third polarisation state and also transmit a portion of the light having the third polarisation state. In this display, one of: (1) the second electric field is greater than the first electric field, and the third electric field is greater than the second electric field; and (2) the second electric field is lower than the first electric field, and the third electric field is lower than the second electric field.

AFFICHAGES HOLOGRAPHIQUES ET PROCÉDÉS

L'invention concerne un affichage holographique. L'affichage comprend (i) une source d'éclairage configurée pour émettre une lumière au moins partiellement cohérente, (ii) une couche de cristaux liquides comprenant un réseau d'éléments agencés pour être éclairés par la lumière. La couche est configurée de telle sorte que : (a) lorsqu'un premier champ électrique est appliqué à travers un élément de la couche de cristaux liquides, la lumière provenant de l'élément a un premier état de polarisation, (b) lorsqu'un deuxième champ électrique est appliqué à travers l'élément, la lumière a un deuxième état de polarisation, et (c) lorsqu'un troisième champ électrique est appliqué à travers l'élément, la lumière a un troisième état de polarisation. Le dispositif d'affichage comprend en outre (iii) un dispositif de commande configuré pour commander des champs électriques appliqués à travers les éléments, et (iv) un élément de polarisation de sortie, configuré pour : (a) éliminer une partie de la lumière ayant le premier état de polarisation et transmettre également une partie de la lumière ayant le premier état de polarisation, (b) éliminer sensiblement toute la lumière ayant le deuxième état de polarisation, et (c) éliminer une partie de la lumière ayant le troisième état de polarisation. Dans cet affichage, l'un parmi : (1) le deuxième champ électrique est supérieur au premier champ électrique, et le troisième champ électrique est supérieur au deuxième champ électrique ; et (2) le deuxième champ électrique est inférieur au premier champ électrique, et le troisième champ électrique est inférieur au deuxième champ électrique.

CLAIM 1. A holographic display, comprising: an illumination source configured to emit at least partially coherent light; a liquid crystal layer comprising an array of elements arranged to be illuminated by the light and configured such that: when a first electric field is applied across an element of the liquid crystal layer, the light from the element has a first polarisation state; when a second electric field is applied across the element of the liquid crystal layer, the light from the element has a second polarisation state; and when a third electric field is applied across the element of the liquid crystal layer, the light from the element has a third polarisation state; a controller configured to control electric fields applied across the elements of the liquid crystal layer; and an output polarising element configured to: remove a portion of light having the first polarisation state and also transmit a portion of the light having the first polarisation state; remove substantially all of the light having the second polarisation state; and remove a portion of the light having the third polarisation state and also transmit a portion of the light having the third polarisation state; wherein one of: the second electric field is greater than the first electric field, and the third electric field is greater than the second electric field; and the second electric field is lower than the first electric field, and the third electric field is lower than the second electric field.



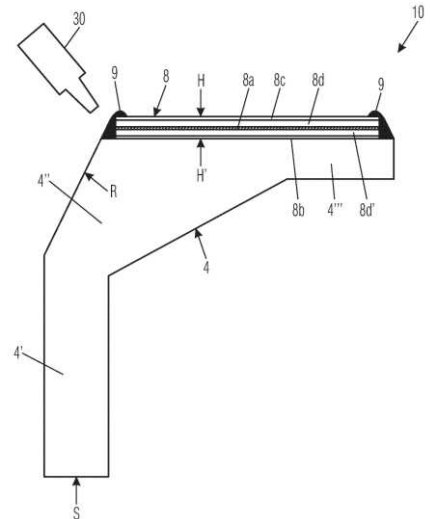
OPERATING ELEMENT HAVING A HOLOGRAPHIC FUNCTIONAL DISPLAY FOR VISUALISING THE SWITCHING FUNCTION ASSOCIATED WITH THE OPERATING ELEMENT AND/OR THE SWITCHING STATE THEREOF, ASSOCIATED ASSEMBLY, AND ASSOCIATED JOINING METHOD

The invention relates to an assembly (10) composed of a light guide (4) and a two-dimensional holographic image carrier (8) which contains a hologram and is positioned with a first main surface (H') of its two main surfaces (H, H') adjacent to the light guide (4), wherein the holographic image carrier (8) has a layer structure which has at least one photopolymer layer (8a) and an outer protective layer (8c) that forms the second main surface (H) of the holographic image carrier (8) and faces away from the light guide (4); wherein the operating element (1) also has an edge seal (9) which extends along the end faces of the holographic image carrier (8), encloses at least the photopolymer layer (8a), and is bonded integrally and/or in one piece to the outer protective layer (8c) and the light guide (4). The invention also relates to: an operating element (1) that contains the assembly (10); and an associated joining method.

ÉLÉMENT DE COMMANDE MUNI D'UN INDICATEUR DE FONCTIONNEMENT HOLOGRAPHIQUE SERVANT À VISUALISER LA FONCTION DE COMMUTATION ASSOCIÉE À L'ÉLÉMENT DE COMMANDE ET/OU SON ÉTAT DE COMMUTATION, ENSEMBLE ASSOCIÉ ET PROCÉDÉ D'ASSEMBLAGE ASSOCIÉ

L'invention concerne un ensemble (10) composé d'un guide de lumière (4) et d'un support d'image holographique bidimensionnel (8) qui contient un hologramme et est positionné de manière adjacente au guide de lumière (4) par une première surface principale (H') parmi ses deux surfaces principales (H, H'), le support d'image holographique (8) présentant une structure stratifiée qui comprend au moins une couche de photopolymère (8a) et une couche de protection externe (8c) qui forme la seconde surface principale (H) du support d'image holographique (8) et est tournée à l'opposé du guide de lumière (4) ; l'élément de commande (1) comprenant également un scellement périphérique (9) qui s'étend le long des faces d'extrémité du support d'image holographique (8), entoure au moins la couche de photopolymère (8a), et est lié par liaison de matière et/ou d'un seul tenant à la couche de protection externe (8c) et au guide de lumière (4). L'invention concerne également : un élément de commande (1) qui contient l'ensemble (10) ; et un procédé d'assemblage associé.

CLAIM 1. Operating element (1), having: an input part (2) which forms an at least regionally translucent or at least regionally transparent input surface (3); a carrier (12) for fixing the operating element to an external structure, in particular a motor vehicle component; a detection device (13, 18, 19) which is designed to detect an actuation and/or a contact of the input surface (3) by an operator (B); a transparent light guide (4) which is arranged below the input surface (3) from the view of the operator (B), is fixed to the carrier (12) and has a light guide (5) which faces the input surface (3), upper boundary surface (G) and a lower boundary surface (G') facing away from the input surface (3); at least one light source (5) which is arranged to couple an optical reproduction wave field (L) into the optical waveguide (4) via a light entry surface (S); a two-dimensional holographic image carrier (8) containing a hologram, which is arranged with a first main surface (H') of its two main surfaces (H, H') adjacent to one of the two boundary surfaces of the uppermost boundary surface (G) or lowermost boundary surface (G') of the light guide (4), wherein the reproduction wave field (L) coupled into the light guide (4) is reflected by the light entry surface (S) as a result of an internal reflection in the light guide (4) to the holographic image carrier (8), wherein the reproduction wave field (L) is transformed into an image wave field (L') by the holographic image carrier (8) and the image wave field (L') emerges from the holographic image carrier (8), optionally via the light guide (4), to the operator (B) in order to display to the operator (B) the hologram stored in the holographic image carrier (8) as an image, which visually symbolizes a switching functionality assigned to the operating element (1) and/or an acute switching state, wherein the holographic image carrier (8) has a layer structure which comprises one or more photopolymer layers (8 a) containing the hologram and an outer, which forms the second main surface (H) of the holographic image carrier (8) facing away from the light guide (4); wherein the operating element (1) further comprises a protective layer (8 c) which extends along the end faces of the holographic image carrier (8) and which encloses at least the photopolymer layer (8 a) and which is connected to the outer protective layer (8 c) and the light guide (4) in a materially integral and/or integral manner.



N9712

KR20230146949

HOLOLAB

Priority Date: 13/04/2022

METHOD AND SYSTEM FOR REPRODUCING HIGH-DIMENSIONAL HOLOGRAPHIC IMAGE USING COMBINATION OF HOLOGRAPHIC SCREEN AND HOLOGRAPHIC STEREOGRAM

The present invention relates to a system for reproducing a high stereoscopic hologram image, which obtains a stereoscopic effect of a reproduced image by combining a front projection type high transparent holographic screen and a holographic stereogram.

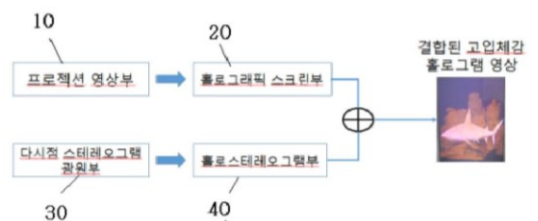
In addition, the system for reproducing a high stereoscopic hologram image includes a projection image unit 10, a holographic screen unit 20, a multi-viewpoint stereogram light source unit 30, and a holographic stereogram unit 40.

In addition, the present invention relates to a method for reproducing a high stereoscopic hologram image, comprising the steps of: photographing an object multiple times by view in order to obtain an image to be applied to a holostereogram; dividing the photographed image into view images; and taking divided images located at the same location of each view and rearranging the images, wherein the rearranged images are inserted into a spatial light modulator (SLM) to be used as information on pixels to be recorded;

splitting a beam output from a laser of an optical structure system for manufacturing a holostereogram into two beams using a half mirror;

spreading the first beam of the two split beams using a first lens and allowing the spread beam to pass through a spatial light modulator;

The second beam passing through the half mirror is transmitted to the rear side of the HOE using mirrors 1 to 3, and the present invention combines a front projection type highly transparent holographic screen and a holographic stereogram, thereby obtaining an excellent three-dimensional effect of a reproduced image, enabling actual and augmented reality expression, and has a remarkable effect of clearly observing in a bright environment.



CLAIM 1. A system for reproducing a high stereoscopic hologram image, the system comprising: a holographic screen; and a holographic image generation unit configured to generate a stereoscopic effect of a reproduced image by combining the holographic screen with a front projection type high transparent holographic screen

N9713

KR20230146948

HOLOLAB

Priority Date: 13/04/2022

HIGHLY TRANSPARENT AR SHOWCASE BASED ON MULTI-LAYER IMAGES

The present invention relates to a high-transparency AR showcase based on a multilayer image.

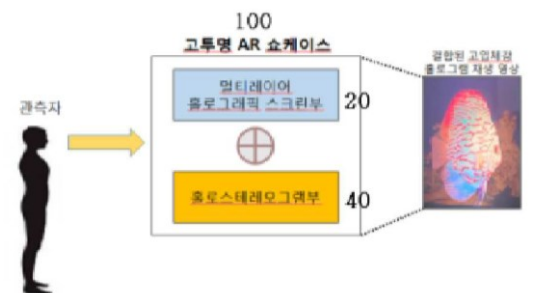
It is characterized in that it is a combined structure of a multilayer holographic screen unit and a holographic screen unit 40.

In addition, the multilayer holographic screen unit uses a projection device and a mirror reflective medium to play the holographic screen, so that the image information is displayed in the projection and the projected image is played.

In the multilayer holographic screen unit, an image output device projection device and a holder for holding the image output device projection device are located below the showcase, an image projection angle of the projector is adjusted by adjusting an angle of the holder, and a mirror reflection medium is attached to a wall surface so as to reflect an image of the projector toward the holographic screen.

Therefore, the present invention obtains an excellent stereoscopic effect of a reproduced image by combining a front projection type high transparent holographic screen and a holographic stereoscopic gram using a high transparent AR showcase based on a multilayer image, enables real and augmented reality expression, and has a remarkable effect of enabling clear observation even in a bright environment.

CLAIM 1. A highly transparent AR showcase based on a multilayer image, characterized in that it has a combined structure of a holographic multilayer holographic screen unit (20) and a holographic stereogram unit (40)



N9714

KR20230142873

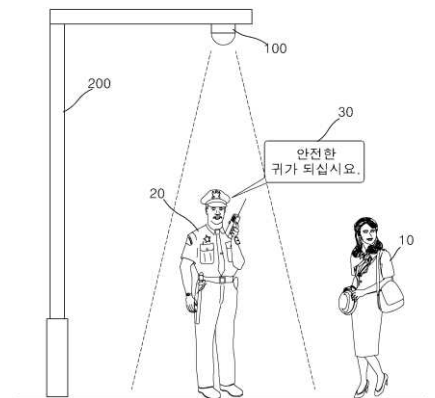
Priority Date: 04/04/2022

SUH, MI SOOK

APPARATUS AND METHOD FOR PROVIDING SAFETY INFORMATION USING HOLOGRAM

The present invention relates to an apparatus and method for providing utility safety guide information by using hologram images having various character shapes, and includes a hologram projecting unit projecting a character hologram having a specific character shape onto a road, an information processing apparatus comprising: a speaker unit configured to output safety information mention of a character hologram in voice; a sensing unit configured to sense a person passing through a road; a storage unit configured to store character hologram data and safety information mention data; and a controller configured to control the hologram projection unit and the speaker unit, Selects a specific character shape and safety information mention corresponding to the detected person when the person is sensed through the sensing unit, extracts character hologram data and safety information mention data of the selected specific character shape from the storage unit, Controls the hologram projecting unit to project a character hologram having a specific character shape onto a road on the basis of the extracted character hologram data, and controls the speaker unit to output safety information mention of the character hologram in voice on the basis of the extracted safety information mention data.

CLAIM 1. An information processing apparatus comprising: a hologram projection unit that projects a character hologram having a specific character shape onto a road; a speaker unit that outputs safety information mention of the character hologram in speech; a sensing unit that senses a person passing through the road; a storage unit that stores character hologram data and safety information mention data; And a controller configured to control the hologram projection unit and the speaker unit, wherein the controller selects a specific character shape and safety information mention corresponding to the sensed person when the person is sensed through the sensing unit, Extracts character hologram data and safety information mention data of the selected specific character shape from the storage unit, controls the hologram projecting unit to project a character hologram having a specific character shape onto a road based on the extracted character hologram data, And controls the speaker unit to output the safety information mention of the character hologram in voice on the basis of the extracted safety information mention data.



N9715

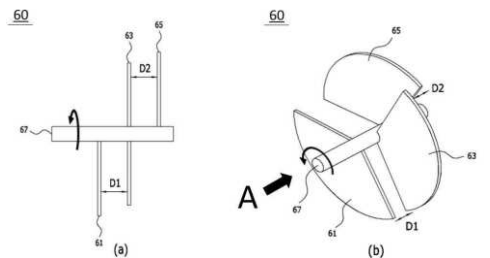
KR20230142183

Priority Date: 01/04/2022

BRYTN

HOLOGRAPHIC IMAGE GENERATION UNIT AND HEAD-UP DISPLAY DEVICE FOR VEHICLE HAVING THE SAME

The present invention relates to a holographic image generation unit and a head-up display device for a vehicle having the same. The present invention provides a projection lens system for magnifying and projecting primary multikov images, wherein the multikov comprises n depths, and nis a natural number greater than or equal to 2, and a rotating projection screen on which an image of secondary multikov images magnified and projected by the projection lens system is formed, And a plurality of screens each having a center angle of 360 °/n at positions spaced apart from a first point in an axial longitudinal direction of a rotation shaft by n - 1, and formed into nth sectors that do not overlap each other when viewed from the axial direction, and a head-up display apparatus for a vehicle having the same. The holographic image generation unit and the head-up display device for a vehicle having the holographic image generation unit according to the present invention enable implementation of HUD virtual images at different distances from each other and implement a large HUD screen in a small volume.



CLAIM 1. A holographic image generation unit for providing a multikov image in front of a vehicle window shield, comprising: a projection lens system for magnifying and projecting primary multikov images, the multikov consisting of n depths, where nis a natural number of 2 or more, and a rotating projection screen on which secondary multikov images magnified and projected by the projection lens system are formed, Wherein the projection screen comprises: a rotation shaft; and a plurality of screens formed as nth sectors, each having a center angle of 360 °/n, at positions spaced apart from a first point in an axial longitudinal direction of the rotation shaft by n - 1, and not overlapping each other when viewed from the axial direction.

N9717

KR20230134193

Priority Date: 14/03/2022

HOLOLAB

METHOD AND SYSTEM FOR MANUFACTURING EXTERIOR HOLOGRAPHIC HEAD-UP DISPLAY

The present invention relates to a system and method for manufacturing an external holographic head-up display, comprising: an image control unit (10) for receiving information from a vehicle and transmitting the information to a beam project module (21) of an image display unit; an image control unit (10) for receiving information from the image control unit and representing an image, an image display unit (20) including a beam projector module (21), a screen (22), and a housing (23); a holographic optical element (hoe, hoe) for converting the image represented by the image display unit into a holographic image, And an hoe optical element unit 30 including an hoe optical element unit 31, wherein the hoe optical element unit 30 is configured to provide a wide observation area (Eyebox), provide a large area of a waist image, It is possible to miniaturize a product, to satisfy a high reflectance and a high transmittance simultaneously, to design a product structure that is friendly at the time of front viewing, and to have a product structure that is simple and convenient for use in a detachable form.

CLAIM 1. An image display apparatus comprising: an image control unit (10) for receiving information from a vehicle and transmitting the information to a beam project module (21) of the image display unit; an image display unit (20) including a beam projector module (21), a screen (22), and a housing (23) for receiving information from the image control unit and representing an image; And an hoe optical element unit (30) for converting an image represented by the image display unit into a holographic image and including an hoe (holographic optical element) (31).

N9720

KR102588925

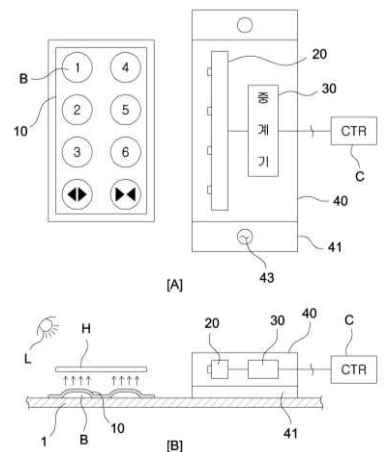
Priority Date: 07/06/2023

NXO

NON-CONTACT BUTTON INPUT DEVICE USING HOLOGRAM

The present invention relates to a button input device for receiving a button signal and transmitting the button signal to a controller of the button, and more particularly, to a contactless button input device using a hologram for receiving the button signal by touching the button in a contactless manner using the hologram. There is provided a non-contact button input apparatus using a hologram. the non-contact button input apparatus includes: a hologram transfer sheet attached to a button and implementing a shape of the button as a hologram in air when light is incident; a sensor provided next to the button and sensing an object passing through the hologram implemented by the hologram transfer sheet; and a relay device transmitting a sensing signal of the sensor to a controller of the button.

CLAIM 1. A hologram transfer apparatus comprising: a hologram transfer sheet attached to a button and configured to implement a shape of the button as a hologram in the air when light is incident; a sensor provided next to the button and configured to sense an object passing through the hologram implemented by the hologram transfer sheet; a repeater configured to transmit a sensing signal of the sensor to a controller of the button; A case that houses the detector and the relay; and a fastening member that fastens the case to a structure provided with the button, wherein the fastening member includes a penetrating portion that penetrates through fastening holes of the case and the structure, A head provided at one end of the through portion and caught in the case, a hollow portion formed inside the head and the through portion, and a lead-out hole communicated with the hollow portion and formed in the through portion, a fastening block pulled out from the lead-out hole and caught in the structure, A first rotation bar and a second rotation bar rotatably provided in the hollow portion of the body, intersecting in an X-shape, and hinged to an outer end of the coupling block, a spring connecting the first rotation bar and the second rotation bar to pull the first rotation bar, A rotating body rotatably provided in the hollow portion of the body, and a connecting bar connecting the rotating body and the first rotating bar, wherein when the rotating body is rotated, the connecting bar pushes the first rotating bar to rotate, When the first rotation bar is rotated by a predetermined angle or more, the first rotation bar and the second rotation bar are automatically rotated by a pulling force of the spring, and when the first rotation bar and the second rotation bar are rotated, the coupling block is withdrawn from the withdrawal hole and caught inside the structure, Wherein a bottom of the hollow portion is formed with a locking bump having one side inclined so as to allow clockwise rotation of the second rotation bar and the other side vertically protruded so as to prevent counterclockwise rotation, wherein the first rotation bar is provided with a push protrusion having a triangular cross section, And the push protrusion lifts the second rotation bar while the first rotation bar is rotated and passes through the second rotation bar, so that the second rotation bar deviates from the catch bump, thereby enabling rotation of the second rotation bar.



N9721

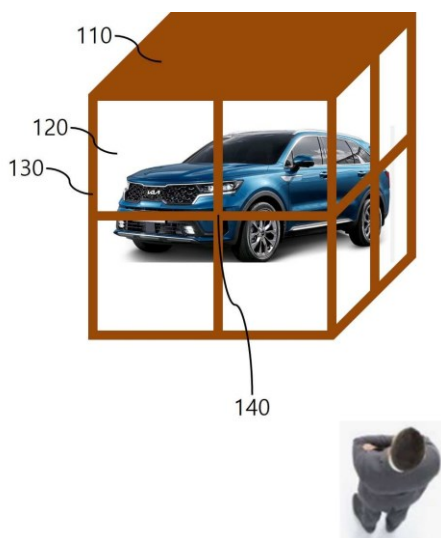
KR102583717

Priority Date: 02/12/2022

KOREA ELECTRONICS TECHNOLOGY INSTITUTE

360DEG WINDOW HOLOGRAM VIEWING DEVICE

A 360 degree window hologram viewing apparatus is provided. The hologram viewing apparatus according to an embodiment of the present invention attaches hologram prints that can be viewed only within a limited viewing angle to side surfaces of a polygonal column, so that viewing can be performed at a 360 degree viewing angle, thereby maximizing the stereoscopic sense of the hologram. It is also possible to resolve visual unnatural due to mismatches occurring in joining portions of hologram prints through a window type frame.



CLAIM 1. A three-dimensional model comprising: a polygonal columnar body; holographic prints attached to each side of the body, with shapes at each viewing angle opposite to one 3 D model respectively printed with holograms; And first frames installed on front surfaces of the hologram printed products at portions to which the hologram printed products are joined, respectively, to obscure mismatches of holograms occurring at portions to which the hologram printed products are joined.

N9724

JP7361853

Priority Date: 10/08/2022

SUETSUGU KATSUNORI

ELECTRONIC BOOK DISPLAY SYSTEM AND ELECTRONIC BOOK DISPLAY PROGRAM

TOPIC: To provide an electronic book display system and an electronic book display program capable of improving comfort when using an electronic book. INVENTION: An electronic book display system 10 includes: a hologram generating unit 17 a configured to generate a hologram for reproducing an electronic book as a stereoscopic image of the book; And a display control unit 17 b configured to cause the SLM (Spatial Light Modulator) 11 to display the hologram generated by the hologram generation unit 17 a.

CLAIM 1. The electronic book display system is provided with a hologram generation unit for generating a hologram for reproducing an electronic book as a stereoscopic image of the book, and a display control unit for displaying the hologram generated by the hologram generation unit on an SLM. The hologram is for reproducing a real image of the book, the electronic book has a sex mass set as a quantity of the property of the book component, and the hologram generation unit generates the hologram so that the page of the book can be turned at a speed corresponding to the sex mass. The electronic book display system is characterized by being provided with a sex-mass changing unit for changing the sex mass set in the electronic book in accordance with an instruction.

N9726

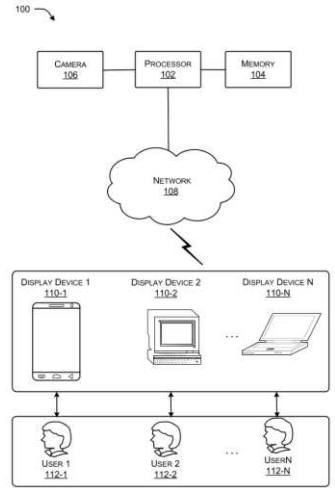
IN202311055513

Priority Date: 18/08/2023

BLUEST METTLE SOLUTIONS PRIVATE | CHITKARA UNIVERSITY

SYSTEM OF FACE-TIME HOLOGRAMS BASED ON AI AND METHOD THEREOF

The present invention describes a system (100) and method (200) for generating and displaying one or more holographic images of a user in real-time during a video call. The proposed system (100) includes a camera (106), a processor (102), a display device (110), and an ARVR headset. During the video call, the camera (106) records the user's image and transmits the user image to the processor (102). Based on the image data, the processor (102) applies AI techniques to build a 3D model of the user's body and face. To create a realistic and dynamic holographic image, the AI technique examines the user's face characteristics, emotions, and movements. The ARVR headgear allows for virtual interaction between the users (112) and the holographic image. The holographic image may be moved about, the size and location changed, and even motions or voice instructions can be used to interact with the user (112).



CLAIM 1. A system (100) for generating and displaying one or more holographic images of a user in real-time during a video call, wherein the system (100) comprising: a camera (106) is configured to capture or records the one or more images of the user during the video call; a processor (102) operatively coupled to a memory (104) that comprises a set of instructions, which upon being executed, causes the processor (102) to: generate a three dimension (3D) model of the user's (112) face and body based on the one or more images data using artificial intelligence (AI) techniques; a display device (110) is configured to display the one or more holographic images of the user (112); and an ARVR headset for enabling the user (112) to interact with the one or more holographic image in a virtual environment.

N9727

IN202241012973

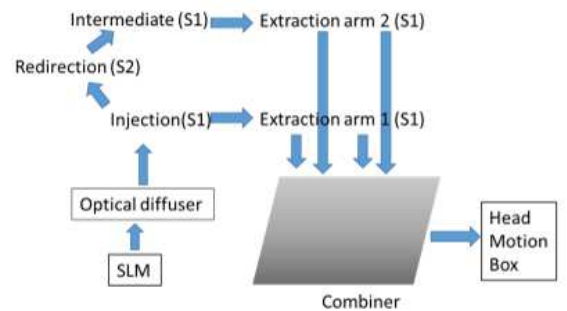
Priority Date: 10/03/2022

BHARAT ELECTRONICS

DESIGN METHODOLOGY OF A COMPACT TRANSPARENT PROJECTION SYSTEM EMPLOYING HOLOGRAPHIC ELEMENTS IN U-SHAPED GEOMETRY

Moving platform, flying or land based requires projection systems to be as small as possible. Current projection systems are very bulky due to bulk optics utilization for larger FOV coverage and Head Motion Box requirements. Literature reported systems for low profile projection system in user's line of vision are not yet in commercialization except for a few where mostly still require use of bulk optics before waveguide optics for collimation or expansion of FOV purposes, which yet again is not feasible for size reduction. Current design is all waveguide mounted optical elements such as lens and beam splitter with maximum thickness of 3mm. Optical elements includes injection, redirection, intermediate and extraction elements. No free space/ bulk optics has been utilized in this design. SLM source with diffuser is used as an image source for projection of the imagery to the waveguide and which in return magnifies and expands pupil in both x and y axis. The expanded and magnified imagery is then projected to combiner which is partially reflective optics at target spectral band for viewing the outside world and the projected information simultaneously. The image is then virtually formed and observer will see the imagery in a Head motion box.

CLAIM 1. A compact projection system for a moving platform line of sight display with increased field of view and head motion box having an arrangement of holographic optical elements into a waveguide in such a way that the output beam will be magnified with five or more holographic optical element for one or more colors where magnification is achieved with injection that performs as both as a lens and a beam splitter comprising: a. A Spatial Light Modulator (SLM); b. A high contrast diffuser to maintain uniformity of pixels; c. One or more Holographic Optical Elements (HOE) that provide a system of thin film optics; d. Waveguide optics of sufficient size to accommodate at least five holographic optical elements for input, output as well as redirection; e. A powered injection element; f. A redirection element; g. An intermediate element; and h. One or more extraction elements, Arm1 and Arm2; wherein the elements (b) to (e) are arranged in a U-Shape to maximize space utilization.



N9728

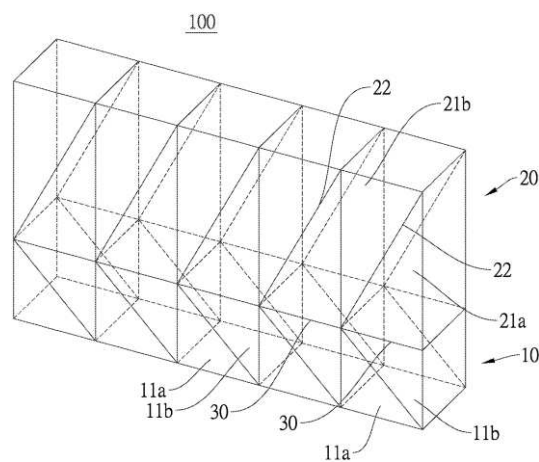
EP4254074

Priority Date: 28/03/2022

WS HSH INTERNATIONAL TECHNOLOGY

HOLOGRAPHIC PROJECTION OPERATING DEVICE, HOLOGRAPHIC PROJECTION DEVICE AND HOLOGRAPHIC OPTICAL MODULE THEREOF

A holographic projection operating device, holographic projection device and holographic optical module thereof are illustrated. The holographic optical module has a first and a second prism array. The first prism array has a plurality of first prisms with first faces in contact with each other to form a first optical interface. The second prism array has a plurality of second prisms with second faces in contact with each other to form a second optical interface. Light is incident on the first optical interface at a first incident angle to undergo total internal reflection and generate a first reflected ray or at a second incident angle to undergo total internal reflection and generate a second reflected ray. The first or second reflected ray enters the second prism array and hits the second optical interface at a third incident angle to undergo total internal reflection and generate a third reflected ray.



CLAIM 1. A holographic optical module, adapted for use in a holographic projection device, the holographic optical module comprising: a first prism array comprising a plurality of first prisms, each of the first prisms having a first face, wherein the first faces of every two of the first prisms are in contact with each other to form a first optical interface; and a second prism array comprising a plurality of second prisms, each of the second prisms having a second face, wherein the second faces of every two of the second prisms are in contact with each other to form a second optical interface, wherein a light ray enters the first prism array and is incident on the first optical interface at a first incident angle to undergo total internal reflection at the first face of one of the first prisms, thereby turning into a first reflected ray, wherein another light ray enters the first prism array and is incident on the first optical interface at a second incident angle to undergo total internal reflection at the first face of the other first prism, thereby turning into a second reflected ray, wherein the second reflected ray enters the second prism array and is incident on the second optical interface at a third incident angle to undergo total internal reflection at the second face of one of the second prisms, thereby turning into a third reflected ray.

N9730

CN219872103U

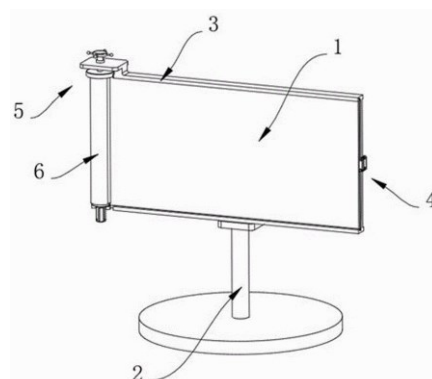
Priority Date: 14/04/2023

DIGITAL SHANXI DESIGN STOCK

HOLOGRAPHIC PROJECTION EXHIBITION DISPLAY DEVICE FOR SCIENCE AND TECHNOLOGY MUSEUM

The utility model relates to the technical field of projection exhibition and display, in particular to a holographic projection exhibition and display device for a science and technology center. The utility model comprises a support frame, wherein a winding frame is arranged on one side of the support frame, a base is fixedly connected to the bottom end of the support frame, a curtain is connected to the surface of the support frame in a sliding manner, a fixed end of the curtain is fixedly connected with the winding frame, an adjusting device is arranged at the moving end of the curtain, the adjusting device comprises a connecting frame, one side of the connecting frame is fixedly connected with the moving end of the curtain, a fixing plate is fixedly connected to the surface of the connecting frame, fixing holes are formed in two sides of the surface of the fixing plate, and a positioning plate is fixedly connected to the side wall of the support frame corresponding to the position of the fixing plate. The curtain is used in the using process, the curtain needs to be unfolded, and then limiting and fixing are carried out on the curtain, so that the problem that the curtain is fixed fussy and inconvenient to detach and assemble is solved.

CLAIM 1. Holographic projection exhibition display device is used in science and technology center, including support frame (3), its characterized in that: one side of support frame (3) is provided with rolling frame (6), the bottom fixedly connected with base (2) of support frame (3), the surface sliding connection of support frame (3) has curtain (1), the stiff end and the rolling frame (6) fixed connection of curtain (1), the removal end of curtain (1) is equipped with adjusting device (4), adjusting device (4) are including connecting frame (41), the removal end fixed connection of one side and curtain (1) of connecting frame (41), the fixed surface of connecting frame (41) is fixedly connected with fixed plate (42), fixed orifices (49) have all been seted up on the surface both sides of fixed plate (42), the position fixedly connected with locating plate (46) of support frame (3) lateral wall correspondence fixed plate (42), the surface sliding of locating plate (46) runs through has locating frame (43), the both ends of locating frame (43) all insert with the inner wall slip of fixed orifices (49).



N9732

CN219831646U

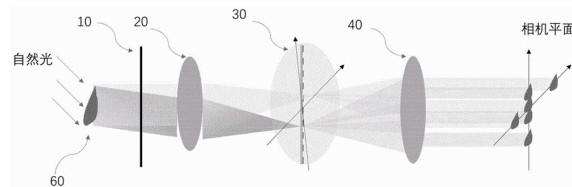
Priority Date: 18/01/2023

SHENZHEN METALENX TECHNOLOGY

HOLOGRAPHIC DISPLAY SYSTEM

The utility model provides a holographic display system, and belongs to the technical field of holographic display. The system includes a polarizer, a first lens, a polarization analyzer, and a second lens; the first lens, the polarization analyzer and the second lens are sequentially arranged along an incident light path; the first lens and the second lens are converging lenses with confocal surfaces, and the polarization analyzer is arranged on the confocal surfaces of the first lens and the second lens; the polarizer is disposed upstream of the polarization analyzer in an optical path, and the polarizer is configured to convert incident light carrying holographic image information into linearly polarized light; the polarization analyzer is a superlens, the phase distribution of the polarization analyzer is configured to at least partially decompose the linear polarized light reaching the polarization analyzer into left-handed circularly polarized light and right-handed circularly polarized light, and light rays with different polarization states are emitted at different deflection angles respectively, so that the visible range of holographic display is expanded.

CLAIM 1. A holographic display system, characterized in that the holographic display system comprises a polarizer (10), a first lens (20), a polarization resolver (30) and a second lens (40); wherein the first lens (20), the polarization analyzer (30) and the second lens (40) are sequentially arranged along an incident light path; the first lens (20) and the second lens (40) are converging lenses provided with confocal surfaces, and the polarization analyzer (30) is provided on the confocal surfaces of the first lens (20) and the second lens (40); the polarizer (10) is arranged upstream of the polarization analyzer (30) on the light path, and the polarizer (10) is configured to convert incident light carrying holographic image information into linearly polarized light; the polarization analyzer (30) is a superlens, and the phase distribution of the polarization analyzer (30) is configured to at least partially decompose the linearly polarized light reaching the polarization analyzer (30) into left circularly polarized light and right circularly polarized light, and make the light rays with different polarization states emergent at different deflection angles respectively.



N9733

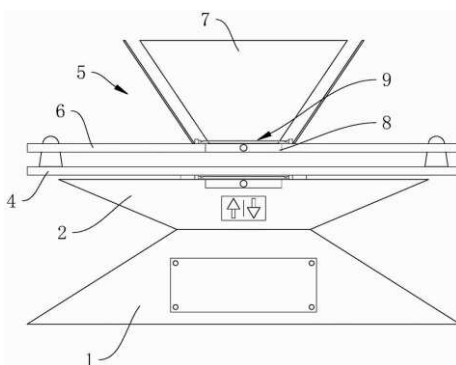
CN219811324U

Priority Date: 24/04/2023

CHINA CONSTRUCTION THIRD BUREAU GREEN INDUSTRY INVESTMENT | CHINA CONSTRUCTION THIRD BUREAU WATER CONSERVANCY & HYDROPOWER DEVELOPMENT | THIRD ENGINEERING BUREAU OF CHINA CITY CONSTRUCTION

HUMAN-COMPUTER INTERACTION TYPE INTELLIGENT WATER AFFAIR MODEL THREE-DIMENSIONAL HOLOGRAPHIC PROJECTION DEVICE

The utility model discloses a man-machine interaction type intelligent water affair model three-dimensional holographic projection device, which comprises two interaction units which are arranged on an electromagnetic induction table and a holographic projection assembly in an up-down separated mode; the interaction unit comprises a gesture recognition module and a protection component, wherein the gesture recognition module positioned above is connected to the display screen, and the gesture recognition module positioned below is connected to the electromagnetic induction table. According to the method, gesture recognition modules are respectively assembled on the original holographic projection equipment and the original electromagnetic induction equipment, correct gesture information is extracted from dynamic gestures of a user by the gesture recognition modules, and an action instruction is generated according to the gesture information.



CLAIM 1. A man-machine interaction type intelligent water affair model three-dimensional holographic projection device is characterized in that: the device comprises a table body base (1), an electromagnetic induction table (2), a suspension plate (3), a bearing plate (4) and a holographic projection assembly (5) which are sequentially arranged from bottom to top, and further comprises two interaction units which are respectively arranged on the electromagnetic induction table (2) and the holographic projection assembly (5) from top to bottom; the utility model provides a portable electronic device, including electromagnetic induction platform (2), including holographic projection subassembly (5), including portable electronic device, electromagnetic induction platform (2), pilot lamp (201) are installed in the front of the platform (2), holographic projection subassembly (5) include a plurality of display screens (10), interactive unit includes gesture recognition module (8) and protection component (9), is located the top gesture recognition module (8) are connected to display screen (10), are used for switching, zooming and rotating the page content of display screen (10), be located the below gesture recognition module (8) are connected to electromagnetic induction platform (2), are used for adjusting the size of electric current, and then change the intensity of magnetic field and the instruction state of pilot lamp (201), protection component (9) are installed the top of gesture recognition module (8) has the slip and covers or expose the motion stroke of gesture recognition module (8).

N9734

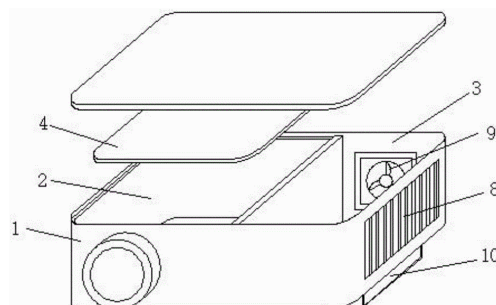
CN219778084U

Priority Date: 14/03/2023

LONGYING TECHNOLOGY GUANGZHOU

ADVERTISEMENT PROJECTOR BASED ON HOLOGRAPHIC TECHNOLOGY

The utility model discloses an advertising projector based on holographic technology, which comprises a shell, wherein an optical device mounting cavity and an electronic device mounting cavity are arranged in the inner cavity of the shell, a sealing cover is arranged at the top of the optical device mounting cavity, insulating cooling liquid is filled in the inner cavity of the optical device mounting cavity, heat conducting pieces are arranged at the top and the bottom of the inner cavity of the electronic device mounting cavity, heat conducting silica gel is arranged on the inner side of the heat conducting pieces, an air inlet is arranged on the side surface of the electronic device mounting cavity, a first heat radiating fan is arranged on the rear side of the electronic device mounting cavity, a heat radiating cavity is arranged at the bottom of the shell, a circulating pump is arranged on one side of the heat radiating cavity, a heat radiating component is arranged in the inner cavity of the heat radiating cavity, and a second heat radiating fan is arranged on the upper side of the heat radiating component.



CLAIM 1. The utility model provides an advertisement projector based on holographic technique, includes casing (1), its characterized in that, casing (1) inner chamber is provided with optics installation cavity (2) and electron device installation cavity (3), optics installation cavity (2) top is provided with sealed lid (4), optics installation cavity (2) inner chamber is filled with insulating coolant liquid (5), electron device installation cavity (3) inner chamber top and bottom all are provided with heat conduction spare (6), heat conduction spare (6) inboard is provided with heat conduction silica gel (7), electron device installation cavity (3) side is provided with air intake (8), electron device installation cavity (3) rear side is provided with first radiator fan (9), casing (1) bottom is provided with heat dissipation cavity (10), heat dissipation cavity (10) one side is provided with circulating pump (11), heat dissipation cavity (10) inner chamber is provided with radiator unit (12), heat dissipation unit (12) upside is provided with second radiator fan (13).

N9736

CN219738379U

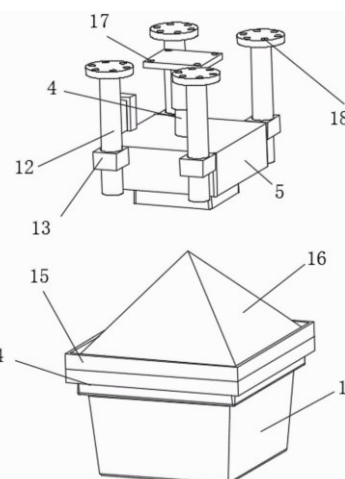
Priority Date: 31/10/2022

ANHUI ZHONGXIANG INFORMATION TECHNOLOGY SERVICE

HOLOGRAPHIC SAND TABLE MODEL AND VR EXPERIENCE PROJECTION DEVICE

The utility model provides a holographic sand table model and a VR experience projection device, and relates to the technical field of sand tables. According to the utility model, the hydraulic telescopic rod can drive the three-dimensional holographic imaging device to repeatedly move up and down, and the sliding column and the sliding block can fix the moving track of the three-dimensional holographic imaging device, so that the device can be used for imaging in other places, the use flexibility of the device is improved, the virtual model can be projected by using the VR projection equipment, and people can wear VR glasses to feel the visual impact of the virtual model more intuitively.

CLAIM 1. Projection arrangement is experienced to holographic sand table model and VR, including base (1), fixed plate (2) and four circular mounting panel (3), its characterized in that: the bottom of fixed plate (2) is fixed with hydraulic telescoping rod (4), the bottom of hydraulic telescoping rod (4) is provided with three-dimensional holographic imaging device (5), the top of three-dimensional holographic imaging device (5) is provided with L template (6), the bottom of L template (6) is provided with electric telescopic handle (7), one side of three-dimensional holographic imaging device (5) is provided with spout (8), one side sliding connection of spout (8) has slider (9), one side of slider (9) is provided with movable rod (10), one side of movable rod (10) is provided with VR projection equipment (11), the opposite side of movable rod (10) is connected with the bottom of electric telescopic handle (7), four the bottom of circular mounting panel (3) all is provided with slide column (12), four the exterior wall of slide column (12) all is provided with slider (13), four one side of slider (13) is connected with the other both sides of three-dimensional holographic imaging device (5) respectively.



N9737

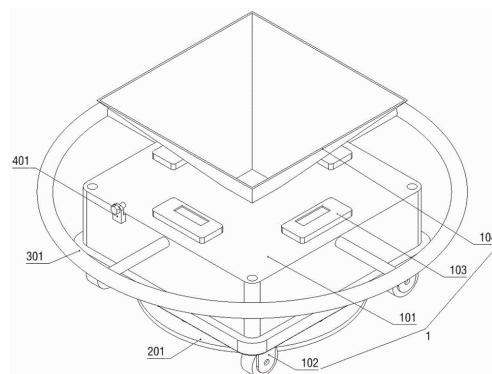
CN219738014U

Priority Date: 26/05/2023

CHENGDU FEIMI CULTURE COMMUNICATION GROUP

HOLOGRAPHIC PROJECTION DEVICE

The utility model provides a holographic projection device, and relates to the technical field of holographic projection; the holographic projection device solves the problems that the conventional holographic projection device cannot realize auxiliary rapid adjustment of the observation height and has poor protection effect; comprises a mounting support; the lifting control part is fixedly connected to the mounting support piece; the mounting support piece is fixedly connected with a maintenance prompt piece; the mounting support piece is fixedly connected with a positioning bolt piece; the mounting support piece is connected with a protection device in a sliding manner; through the protector that adopts the setting, can realize assisting to carry out efficient protection work, can effectually improve whole transportation protection effect, avoid colliding with the kinescope, through the maintenance handle that adopts the setting, can realize assisting the enclosure, guarantee best observation distance.



CLAIM 1. A holographic projection device, characterized by: comprising a mounting support (1); the lifting control part (2) is fixedly connected to the mounting support piece (1); a maintenance prompt piece (3) is fixedly connected to the mounting support piece (1); the mounting support piece (1) is fixedly connected with a positioning bolt piece (4); the mounting support (1) is connected with a protection device (5) in a sliding manner; the mounting support (1) comprises a mounting support block (101), a moving auxiliary roller (102) and a holographic projector (103), wherein the moving auxiliary roller (102) is mounted at the bottom of the mounting support block (101); and a circle of holographic projector (103) is fixedly connected to the mounting support block (101).

N9738

CN219738013U

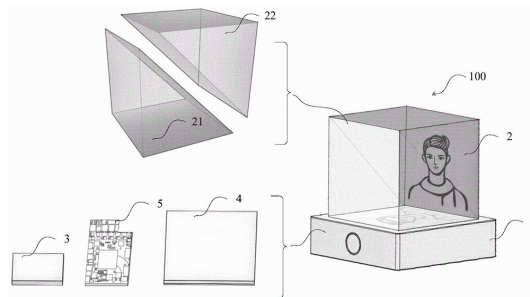
Priority Date: 27/04/2023

NETEASE MEDIA TECHNOLOGY

HOLOGRAPHIC PROJECTION ORNAMENT

The embodiment of the utility model provides a holographic projection ornament, which comprises a base and a beam-splitting prism; a battery, a holographic projection screen and a holographic projection circuit board are arranged in the base, and the holographic projection circuit board is electrically connected with the battery and the holographic projection screen respectively; the beam splitting prism is arranged on the base and consists of two right-angle triangular prisms, the inclined plane of the first right-angle triangular prism is attached to the inclined plane of the second right-angle triangular prism, and the bottom of the beam splitting prism is opposite to the holographic projection screen; the beam-splitting prism is used for projecting the image in the holographic projection screen into the beam-splitting prism through refraction of light rays to form holographic projection. The holographic projection and the ornament are combined creatively, so that the display forms of the ornament are enriched, the stereoscopic impression and the dynamic impression are enhanced, the interestingness is improved, and the personalized requirements of users are met due to the fact that the projection images can be changed, and long-term freshness can be maintained.

CLAIM 1. A holographic projection ornament is characterized by comprising a base and a beam-splitting prism; a battery, a holographic projection screen and a holographic projection circuit board are arranged in the base, and the holographic projection circuit board is electrically connected with the battery and the holographic projection screen respectively; the beam splitting prism is arranged on the base and consists of two right-angle triangular prisms, the inclined plane of the first right-angle triangular prism is attached to the inclined plane of the second right-angle triangular prism, and the bottom of the beam splitting prism is opposite to the holographic projection screen; the beam-splitting prism is used for projecting the image in the holographic projection screen into the beam-splitting prism through refraction of light rays to form holographic projection.



N9740

CN116934960

Priority Date: 21/06/2023

JIANGSU JINGRUI INFORMATION TECHNOLOGY

THREE-DIMENSIONAL HOLOGRAPHIC VISUALIZATION MODEL BASED ON DIGITAL TWIN AND IMPLEMENTATION METHOD

The invention relates to the technical field of visual models, and discloses a three-dimensional holographic visual model based on digital twinning and an implementation method thereof. According to the invention, through the collection of entity data and the integration processing of the collected data, and through constructing a three-dimensional digital twin model based on digital twin, the model data and the entity object data are compared after the three-dimensional digital twin model is constructed, the comparison content comprises the display proportion of the twin model and the display position of the twin model, after the model verification is finished, the three-dimensional model is simulated and rendered by adopting 3D rendering software in combination with the collected entity object data of the data collection module, and errors in the data are avoided when the three-dimensional holographic visual model is built on the entity object-based data, so that the display effect of the model is better.

CLAIM 1. The three-dimensional holographic visualization model based on digital twinning and the realization method thereof are characterized by comprising a data acquisition module, a data communication module, an integration module, a model construction module, a model verification module, a model rendering module and a visualization module; the implementation method comprises the following steps: s1: entity data acquisition Acquiring entity object data through a data acquisition module; s2: data collection integration Collecting, storing and analyzing the acquired data obtained by the data acquisition module; s3: construction of three-dimensional digital twin model According to the data analysis, identification and prediction results of the integration module, constructing a three-dimensional digital twin model of the entity object; s4: model verification and rendering The method comprises the steps that virtual data of a three-dimensional digital twin model of an entity object are compared with data of the entity object, the entity object data are collected through a data collection module, the comparison content comprises a twin model display proportion and a twin model display position, after model verification is finished, the entity object data are collected through the data collection module, and 3D rendering software is adopted to conduct simulation rendering on the three-dimensional model; s5: holographic visualization And constructing a three-dimensional holographic visual model in a virtual and reality combined form by combining an AR/VR virtual technology, a 3D projection technology and a three-dimensional visual model for display.

N9742

CN116931407

Priority Date: 25/07/2023

YIWU QINGYUE PHOTOELECTRIC TECHNOLOGY RESEARCH INSTITUTE

IMAGING METHOD OF HOLOGRAPHIC IMAGING DISPLAY DEVICE AND HOLOGRAPHIC IMAGING DISPLAY DEVICE

The embodiment of the application discloses an imaging method of a holographic imaging display device and the holographic imaging display device, wherein the imaging method comprises the following steps: acquiring a target two-dimensional image of a target object; the target two-dimensional image is imported into a reflection holographic recording image generator to obtain a simulated reflection holographic recording image of the target object; and utilizing the electrochromic film device to project a simulated reflection holographic record image under a set illumination condition to form a holographic image of the target object, wherein the set illumination condition at least comprises a white light illumination condition. According to the application, the electrochromic film device is used for projecting the simulated reflection holographic recorded image to obtain the holographic image of the target object, so that the technical problem that the imaging application range of the holographic image is limited only under the specific illumination condition in the prior art is solved, and the technical effect of displaying the holographic image under white light rapidly, simply, conveniently and clearly is realized.

CLAIM 1. An imaging method of a holographic imaging display, the imaging method comprising: acquiring a target two-dimensional image of a target object; the target two-dimensional image is led into a reflection hologram recording image generator to obtain a simulated reflection hologram recording image of the target object, wherein the reflection hologram recording image generator is an image generator obtained based on generation of countermeasure network training; and projecting the simulated reflection holographic record image by using an electrochromic film device under a set illumination condition to form a holographic image of the target object, wherein the set illumination condition at least comprises a white light illumination condition.

N9743

CN116931274

Priority Date: 24/07/2023

DRAGONFLY EYE SHANGHAI VISUAL TECHNOLOGY

HOLOGRAPHIC PROCESSING UNIT SYSTEM OF MIXED REALITY GLASSES

The invention discloses a holographic processing unit system of mixed reality glasses, which belongs to the technical field of holographic processing and comprises an image data acquisition module, an image preprocessing module, an image feature extraction module, a feature extraction and classification module, a holographic image forming module and a non-contact control module.

CLAIM 1. A mixed reality glasses holographic processing unit system, characterized in that: the device comprises an image data acquisition module, an image preprocessing module, an image feature extraction module, a feature extraction and classification module, a holographic image forming module and a non-contact control module; the image data acquisition module is in wireless connection with the image preprocessing module, and collects image data of an observed target object through acquisition equipment; the image preprocessing module is in wireless connection with the image feature extraction module and is used for processing and optimizing the acquired images; the image feature extraction module is in wireless connection with the feature extraction classification module, and extracts valuable information and features from image data through an image processing algorithm; the feature extraction and classification module is in wireless connection with the information result output module, and classifies and identifies the extracted features through a feature classification algorithm; the information result output module is in wireless connection with the non-contact control module, and the holographic image forming module is used for analyzing and integrating image data to form a holographic image; the non-contact control module is used for controlling the formed holographic image.

N9746

CN116919448

Priority Date: 29/03/2022

SHENZHEN SONOSCAPE BIOLOGICAL MEDICAL SCIENCE & TECHNOLOGY

HOLOGRAPHIC VIDEO GENERATION METHOD AND DEVICE, ELECTRONIC EQUIPMENT AND STORAGE MEDIUM

The application discloses a holographic video generation method and device, an electronic device and a computer readable storage medium, wherein the method comprises the following steps: acquiring an ultrasonic image; determining the corresponding relation between each projection surface of the holographic projection device and each projection area in the holographic projection plane area; determining a projection image corresponding to each projection surface based on the ultrasonic image; placing the projection image corresponding to each projection surface in the projection area corresponding to the holographic projection plane area according to the corresponding relation so as to splice and obtain the holographic projection image; holographic video is generated based on the holographic projection image. The application realizes the generation of the holographic video corresponding to the ultrasonic image in the ultrasonic equipment.

CLAIM 1. A holographic video generation method, comprising: acquiring an ultrasonic image; determining the corresponding relation between each projection surface of the holographic projection device and each projection area in the holographic projection plane area; determining a projection image corresponding to each projection surface based on the ultrasonic image; placing the projection images corresponding to each projection surface in the projection area corresponding to the holographic projection plane area according to the corresponding relation so as to splice and obtain holographic projection images; a holographic video is generated based on the holographic projection image.

N9747

CN116915963

Priority Date: 31/08/2023

GOOLTON TECHNOLOGY

HOLOGRAPHIC PROJECTION METHOD AND DEVICE BASED ON OBSERVATION SIGHT LINE AND ELECTRONIC EQUIPMENT

The application provides a holographic projection method and device based on observation sight and electronic equipment, wherein the method is applied to the holographic projection equipment and comprises the following steps: acquiring a visual position of a user; acquiring first picture content positioned on a first projection carrier, wherein the first picture content is positioned in the field of view of a user, and the first picture content is the projection content of holographic projection equipment on the first projection carrier; constructing a projection area, wherein the projection area is an area obtained by projecting the first picture content on a second projection carrier by using a point light source at a visual position, and the first projection carrier is positioned between the second projection carrier and a user; judging whether the projection area covers second picture content, wherein the second picture content is the projection content of the holographic projection device on a second projection carrier; if the projection area covers the second picture content, continuing to project the first picture content and stopping projecting the second picture content. The application has the effect of reducing the calculation load caused by holographic projection.

CLAIM 1. A holographic projection method based on an observed line of sight, the method being applied to a holographic projection device, comprising: acquiring a visual position of a user, wherein the visual position is a position of a midpoint of a binocular connecting line of the user; acquiring first picture content positioned on a first projection carrier, wherein the first picture content is positioned in the visual field range of the user, and the first picture content is the projection content of the holographic projection device on the first projection carrier; Constructing a projection area, wherein the projection area is an area obtained by projecting the first picture content on a second projection carrier by using a point light source at the visual position, and the first projection carrier is positioned between the second projection carrier and the user; judging whether the projection area covers second picture content or not, wherein the second picture content is the projection content of the holographic projection equipment on the second projection carrier; and if the projection area covers the second picture content, continuing to project the first picture content and stopping projecting the second picture content.

N9751

CN116909029

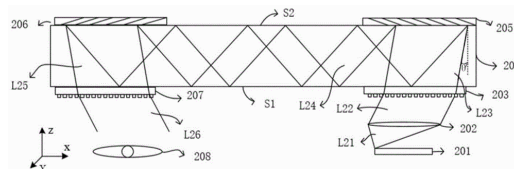
Priority Date: 07/08/2023

HEFEI UNIVERSITY OF TECHNOLOGY

HOLOGRAPHIC WAVEGUIDE DISPLAY DEVICE

The invention provides a holographic waveguide display device, and belongs to the technical field of waveguide display devices. The invention comprises the following steps: the micro-display, collimating lens, waveguide, in-coupling body holographic grating, out-coupling body holographic grating, secondary collimating element and secondary divergent element, the secondary collimating element is closely connected with one end of the in-coupling body holographic grating for reducing the angle of light rays injected into the waveguide; the secondary divergent element is closely connected with one end of the out-coupling body holographic grating and is in mirror symmetry with the secondary collimating element, and is used for restoring the light angle of the emitted waveguide. According to the invention, the angle of the collimated light beam injected into the waveguide is narrowed by the secondary collimating element, and the angle of the light beam injected out of the waveguide is reduced by the secondary diverging element, so that on one hand, the angle selectivity of the volume holographic grating can be inhibited, the diffraction efficiency of an edge view field is effectively improved, the defect of edge image information is avoided, and the coupled image is complete and imaged uniformly; on the other hand, the propagation period of marginal rays in the waveguide can be reduced, and the expansion of the exit pupil is convenient to realize.

CLAIM 1. A holographic waveguide display device, comprising: a waveguide having a first surface at a bottom end and a second surface at a top end; an in-coupling volume holographic grating attached to one end of the second surface; an outcoupling volume holographic grating closely connected to the other end of the second surface and in mirror symmetry with the incoupling volume holographic grating; a secondary collimation element closely connected with one end of the in-coupling volume holographic grating on the first surface and used for reducing the angle of light rays entering the waveguide; the secondary divergent element is closely connected with one end of the out-coupling volume holographic grating on the first surface and is in mirror symmetry with the secondary collimation element, and is used for restoring the angle of light rays emitted out of the waveguide; a micro display providing a display image, emitting divergent light loaded with image information to the outside; and the collimating lens is used for converting the divergent light into collimated light, making the collimated light enter the secondary collimating element at a certain angle with the Z axis and transmitting the collimated light into the waveguide.



N9752

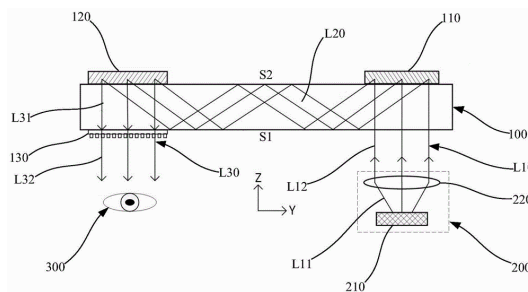
CN116909028

Priority Date: 03/08/2023

HEFEI UNIVERSITY OF TECHNOLOGY

HOLOGRAPHIC WAVEGUIDE DISPLAY DEVICE

The invention provides a holographic waveguide display device, which belongs to the technical field of waveguide display, and comprises: a display module and a waveguide. The display module generates an incident light beam, the light-in end of the waveguide is provided with a coupling-in holographic grating, the light-out end of the waveguide is provided with a coupling-out holographic grating, the waveguide is provided with a phase calibrator at the light-out end, and the phase calibrator is positioned on a diffraction light path of the coupling-out holographic grating; coupling into a holographic grating to diffract an incident light beam into a total reflection light beam, and enabling the total reflection light beam to be transmitted to a light emitting end in a total reflection way; the coupling-out holographic grating diffracts the total reflection light beam into an emergent light beam; the emergent light beam is modulated by a phase calibrator and then emergent from the waveguide; the phase corrector compensates for the apparent aberrations of the outgoing beam relative to the incoming beam. According to the holographic waveguide display device, the phase calibrator is arranged to compensate the energy attenuation of the emergent beam edge field, so that the uniformity of an emergent beam display image and the effective field angle are improved.



N9758

CN116880701

Priority Date: 07/09/2023

SHENZHEN EUCLIDEON TECHNOLOGY

MULTIMODE INTERACTION METHOD AND SYSTEM BASED ON HOLOGRAPHIC EQUIPMENT

The invention relates to the technical field of holographic images, and discloses a multi-mode interaction method and system based on holographic equipment, which are used for improving display timeliness and display accuracy when multi-mode interaction is performed based on the holographic equipment. Comprising the following steps: collecting infrared reflection signals to obtain infrared reflection signals; collecting a target visual line and a brain wave data set; performing time sequence alignment processing to obtain target fusion data; extracting multi-type feature data to obtain position feature data, concerned position feature data and emotion feature data; space division is carried out on the three-dimensional display space to obtain a target space region; generating an interaction instruction for the voice control instruction to generate a target interaction instruction; constructing holographic display space coordinates, generating a holographic display space coordinate set, and carrying out holographic equipment matching to determine a target holographic equipment set; and constructing a three-dimensional virtual reality space, and transmitting the three-dimensional virtual reality space to the virtual reality glasses for holographic image display.

CLAIM 1. The multi-mode interaction method based on the holographic equipment is characterized by comprising the following steps of: collecting infrared reflection signals of a handheld handle device of a target user to obtain infrared reflection signals; acquiring a visual line of the target user through preset virtual reality glasses to obtain a target visual line, and acquiring brain wave data of the target user through the virtual reality glasses to obtain a brain wave data set; performing time sequence alignment processing on the infrared reflection signals, the target visual line and the brain wave data set to obtain target fusion data; Extracting multi-type feature data from the target fusion data to obtain position feature data, concerned position feature data and emotion feature data; space division is carried out on a preset three-dimensional display space through the position characteristic data and the concerned position characteristic data, so that a corresponding target space region is obtained; collecting a voice control instruction of the target user, and generating an interaction instruction for the voice control instruction through the emotion characteristic data to generate a target interaction instruction; constructing holographic display space coordinates through the target interaction instruction, generating a holographic display space coordinate set, carrying out holographic equipment matching through the target interaction instruction, and determining a target holographic equipment set; and constructing a three-dimensional virtual reality space through the target holographic equipment set based on the holographic display space coordinate set, and transmitting the three-dimensional virtual reality space to virtual reality glasses of the target user for holographic image display.

N9759

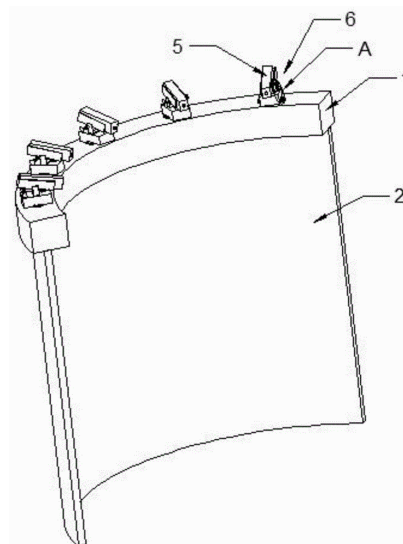
CN116880117

Priority Date: 10/07/2023

SHENZHEN WUJIE VISION TECHNOLOGY

3D HOLOGRAPHIC PROJECTION SYSTEM WITH IMMERSIVE EFFECT

The invention relates to the technical field of holographic projection and discloses a 3D holographic projection system with an immersive effect, which comprises a mounting frame, wherein a curtain is arranged at the bottom of the mounting frame, a fixed seat is arranged at the top of the mounting frame, a placing frame is arranged above the fixed seat, a projection module is arranged in the placing frame, a fixing mechanism is arranged on the placing frame and comprises a screwing block, a screw rod, a thread bush, a pressing block and a threaded hole, the threaded hole is formed in the placing frame, the screw rod passes through the threaded hole to be in threaded connection with the threaded hole, and the pressing block is rotatably connected to one end of the screw rod through a bearing and is abutted to the outer wall of the projection module; according to the invention, the screw rod is driven to rotate by screwing the screwing block, and the screw rod drives the pressing block to rotate, so that the pressing block is far away from the projection module, and the disassembly, the overhaul and the replacement of the projection module are convenient, and convenience is provided for staff.



CLAIM 1. 3D holographic projection system with immersive effect, including mounting bracket (1), its characterized in that: the utility model discloses a projection module, including installing frame (1), including installation frame (1), installation frame (1) and projection module, the bottom of installing frame (1) is provided with curtain (2), the top of installation frame (1) is provided with fixing base (3), the top of fixing base (3) is provided with rack (4), the inside of rack (4) is provided with projection module (5), be provided with fixed establishment (6) on rack (4), fixed establishment (6) are including twisting piece (601), lead screw (602), thread bush (603), briquetting (604), screw hole (605) are seted up on rack (4), lead screw (602) pass screw hole (605) and screw hole (605) threaded connection, briquetting (604) are through one end of bearing rotation connection at lead screw (602), and with projection module (5) outer wall butt.

N9760

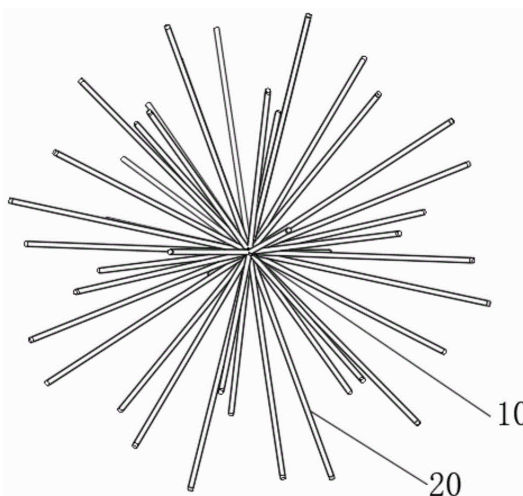
CN116880083

Priority Date: 17/07/2023

4U TECHNOLOGY

SPHERICAL HOLOGRAPHIC DISPLAY DEVICE AND DISPLAY METHOD THEREOF

The application provides a spherical holographic display device and a display method thereof, wherein the device comprises: one end of each luminous strip is fixed at a common center point, and the luminous strips are radially arranged by taking the center point as a sphere center to form a sphere; wherein, every be provided with the lamp pearl on the luminous strip to in from the sphere center to the direction on spherical surface, every the lamp pearl that sets up on the luminous strip is increasingly dense. The method and the device solve the technical problem of low user experience caused by unreal viewing of the holographic image from a part of angles in the related art.



CLAIM 1. A spherical holographic display device, comprising: one end of each luminous strip is fixed at a common center point, and the luminous strips are radially arranged by taking the center point as a sphere center to form a sphere; wherein, every be provided with the lamp pearl on the luminous strip to in from the sphere center to the direction on spherical surface, every the lamp pearl that sets up on the luminous strip is increasingly dense.

N9763

CN116862730

Priority Date: 05/09/2023

SHANDONG LABOR VOCATIONAL & TECHNICAL COLLEGE

VR HOLOGRAPHIC TEACHING MANAGEMENT SYSTEM

The invention discloses a VR holographic teaching management system, which relates to the technical field of holographic teaching, and the invention collects identity information data of a holographic student user of a current pre-access holographic teaching platform by arranging a holographic student module, and an information security module transmits a simulated area image of the holographic student user generated based on the identity information data of the holographic student user of the current pre-access holographic teaching platform, corresponding historical login coordinate data and activation coordinate data, on one hand, the simulated area image is transmitted, and meanwhile, the hidden trace of the login password of the holographic student user is eliminated as much as possible, and the direction of three-party cracking is led to the other places, so that the security in the password transmission process is improved, and on the other hand, the simulated area image is based on the login place of the holographic student user each time, has dynamic non-repeatability, so that three parties cannot search the generation rule based on a plurality of the simulated area images, and the security of holographic image data is further ensured.

CLAIM 1. A VR holographic teaching management system, comprising: the holographic storage module is used for acquiring identity information data of a holographic student user currently pre-accessing the holographic teaching platform, wherein the holographic student user refers to a student user wearing VR equipment; the identity information data comprise an account name and an account password which are used for logging in the holographic teaching platform by a holographic student user, current login coordinate data of the holographic student user and corresponding recording time, wherein the current login coordinate data of the holographic student user comprise longitude and latitude of the position of the holographic student user when the current holographic student user is used for logging in the account name and the account password of the holographic teaching platform; the holographic storage module is used for storing the activation coordinate data of the holographic student user, all the historical login coordinate data and the corresponding recording time thereof, wherein the activation coordinate data of the holographic student user comprises the longitude and the latitude of the position where the VR equipment is activated; the information security module is used for ensuring the security of account password transmission of a holographic student user of the current pre-access holographic teaching platform, and generating to-be-verified data of the current holographic student user based on identity information data, activation coordinate data, all historical login coordinates and corresponding recording time of the current holographic student user, wherein the to-be-verified data comprises a to-be-verified area image of the current holographic student user, a typed account name used for logging in the holographic teaching platform and login coordinate data of the current holographic student user; the holographic teaching platform is used for providing holographic teaching service for the holographic student users which pass through identity authentication, and comprises a quasi-verification unit which acquires the login password of the current holographic student user based on the quasi-region image of the current holographic student user and performs consistency verification on the login password.

N9766

CN116859617

Priority Date: 17/07/2023

4U TECHNOLOGY

CONTROL METHOD AND DEVICE FOR HOLOGRAPHIC DISPLAY BASED ON SPHERICAL HOLOGRAPHIC DISPLAY EQUIPMENT

The application provides a control method and a device for holographic display based on spherical holographic display equipment, wherein the method comprises the following steps: based on the number and the positions of the lamp beads of the spherical holographic display device, a display corresponding relation is established between each pixel point of the outermost layer of the three-dimensional image to be displayed and each lamp bead of the plurality of luminous strips; according to the display corresponding relation, determining gray information of each lamp bead; and controlling each lamp bead to emit light according to the gray information, so that a plurality of light emitting strips can display the three-dimensional holographic image corresponding to the three-dimensional image to be displayed. The method and the device solve the technical problem of low user experience caused by unreal viewing of the holographic image from a part of angles in the related art.

CLAIM 1. A control method for holographic display based on spherical holographic display device, comprising: based on the number and the positions of the lamp beads on a plurality of luminous strips of the spherical holographic display device, a display corresponding relation is established between each pixel point on the outermost layer of the three-dimensional image to be displayed and each lamp bead of the luminous strips; according to the display corresponding relation, determining gray information of each lamp bead; and controlling each lamp bead to emit light according to the gray information, so that a plurality of light emitting strips can display three-dimensional holographic images corresponding to the three-dimensional images to be displayed.

N9774

CN116824029

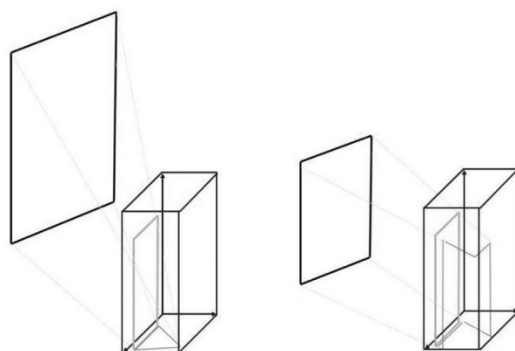
Priority Date: 13/07/2023

BEIJING DIKOU TECHNOLOGY

METHOD, DEVICE, ELECTRONIC EQUIPMENT AND STORAGE MEDIUM FOR GENERATING HOLOGRAPHIC SHADOW

The invention discloses a method, a device, electronic equipment and a storage medium for generating holographic image shadows, relates to the technical field of video image processing, and particularly relates to a technology for generating holographic image shadows in a holographic display terminal. The specific implementation scheme is as follows: and acquiring three-dimensional coordinate information of the foreground character edge pixels in the current video frame, the irradiation surface width of the light source and the position information of the light source. And judging the plane where the shadow is positioned according to the acquired information, generating a shadow contour, and filling the shadow contour to generate the shadow. And finally fusing the shadow with the foreground character. The method for generating the holographic shadow can simulate the scene of generating the shadow in different planes in the real world, and the technical scheme has low calculation complexity, realizes the improvement of the sense of reality of the three-dimensional vision of the virtual character on the premise of not obviously increasing the calculation amount, and is simultaneously suitable for the virtual interaction scene with a certain requirement on real-time property.

CLAIM 1. A method of holographic shadow generation, comprising: acquiring coordinate information of edge pixels of a foreground person in a current video frame in a three-dimensional coordinate system; acquiring the irradiation surface width of the light source and the position information of the light source; judging the plane where the shadow is positioned according to the irradiation face width of the light source, the position information of the light source and the coordinate information of the edge pixels of the foreground person in the current video frame in a three-dimensional coordinate system; generating shadows of the foreground characters on the corresponding planes of the shadows according to the light source directions and the size information of the holographic display terminal, and drawing the shadows on a new layer to obtain a shadow layer of the foreground characters;



fusing the foreground character shadow layer with the layer where the foreground character is located to obtain a processed video frame; the foreground character shadow layer is arranged on the bottom layer, and the layer where the foreground character is arranged on the top layer.

N9775

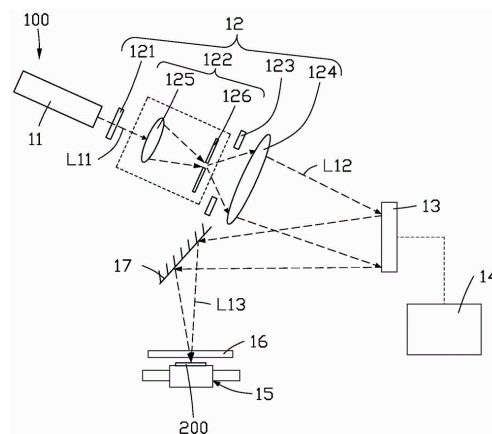
CN116819905

Priority Date: 20/07/2023

TSINGHUA SHENZHEN INTERNATIONAL GRADUATE SCHOOL

HOLOGRAPHIC PROJECTION EXPOSURE SYSTEM

The application provides a holographic projection exposure system, comprising: an illumination light source for emitting light source light; the filtering modulation component is positioned on the light path of the light source light and is used for modulating the light source light into reference light to be emitted, and the reference light is converged spherical waves; the spatial light modulator is positioned on the optical path of the reference light and is used for receiving hologram information and modulating the amplitude of the received reference light according to the hologram information so as to emit illumination light, wherein the illumination light is a converged spherical wave; the controller is electrically connected with the spatial light modulator and is used for loading the hologram information to the spatial light modulator so as to control the modulation mode of the spatial light modulator on the reference light; when the illumination irradiates the material to be processed, a light spot pattern corresponding to the hologram information is formed on the exposure surface of the material to be processed, so that the material to be processed is exposed.



N9776

CN116819794

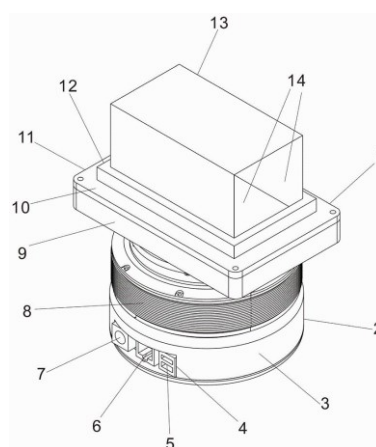
Priority Date: 03/07/2023

GUANGZHOU ACADEMY OF FINE ARTS

MULTIDIMENSIONAL HOLOGRAPHIC NAKED EYE 3D DISPLAY DEVICE

The invention discloses a multidimensional holographic naked eye 3D display device which comprises a rotating mechanism, a fixing mechanism and a slip ring mechanism, wherein the rotating mechanism comprises a triangular prism group, a protective shell, a magnetic ring and a motor output end, a groove is formed in the center of the protective shell, a screen is arranged in the groove, the lower end of the protective shell is connected with the slip ring mechanism through a screw, a hollow encoder is arranged below the protective shell and comprises a magnetic ring and a first circuit board, the fixing mechanism comprises a first circuit board, a hollow motor and a fixing base, a second circuit board is arranged inside the fixing base, and the fixing base is connected with the slip ring mechanism; the invention can rotate from a two-dimensional plane to form real three-dimensional imaging display, has no angle limit in viewing, has smooth imaging pictures and no stripes or marks, ensures that viewers can watch perfect three-dimensional holographic pictures at any angle without wearing 3D glasses, and has good market prospect.

CLAIM 1. The utility model provides a multidimensional holographic bore hole 3D display device which characterized in that: including rotary mechanism (1), fixed establishment (2) and slip ring mechanism (23), rotary mechanism (1) includes triangular prism group (13), protective housing (11), magnetic ring (15) and motor output (29), triangular prism group (13) set up in rotary mechanism (1) upper end, triangular prism group (13) lower extreme embedding is to in connecting frame (12), connecting frame (12) lower extreme fixedly connected with protective housing (11), protective housing (11) center is provided with recess (20), be provided with screen (27) in recess (20), protective housing (11) lower extreme is connected with slip ring mechanism (23) through the screw, protective housing (11) below is provided with cavity encoder (18), cavity encoder (18) are including magnetic ring (15) and first circuit board (16), fixed establishment (2) are including first circuit board (16), cavity motor (8) and unable adjustment base (3), first circuit board (16) below is connected with cavity motor (8), cavity motor (8) center is provided with recess (20), cavity motor (8) output (29) are provided with fixed base (25) inside fixed base (3), the fixed base (3) is connected with the slip ring mechanism (23).



N9777

CN116819771

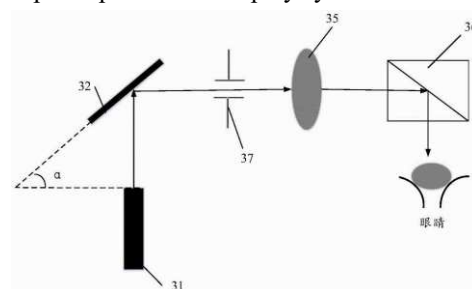
Priority Date: 21/03/2022

HUAWEI

HOLOGRAPHIC THREE-DIMENSIONAL OPTICAL DISPLAY SYSTEM

The application provides a holographic three-dimensional optical display system, which comprises: a laser, an SLM, a diaphragm, a first lens and a first BS. In the display system, a first included angle exists between a light beam incident on the SLM by the laser and reflected light of the light beam reflected by the SLM, and the included angle is smaller than 180 degrees; the SLM is loaded with a three-dimensional hologram, phase information of the second lens. When the light beam emitted by the laser is incident on the SLM, the light beam carries information loaded by the SLM and is emitted through the first BS after passing through the first lens. The application can reduce the second BS in the display system by obliquely placing the SLM, and can reduce the second lens in the display system by loading the phase information of the second lens on the SLM, thereby reducing the volume and the weight of the display system and the complexity of the optical path of the display system.

CLAIM 1. A holographic three-dimensional optical display system, the holographic three-dimensional optical display system comprising: the device comprises a laser, a Spatial Light Modulator (SLM), a diaphragm, a first lens and a first BS, wherein a first included angle exists between a light beam incident on the SLM by the laser and reflected light of the light beam reflected by the SLM, and the first included angle is smaller than 180 degrees; the light beam emitted by the laser is incident to the SLM, the SLM modulates the phase of the light beam according to the phase information of the three-dimensional hologram and the second lens to obtain a modulated light beam, and the modulated light beam comprises the phase information of the three-dimensional hologram and the phase information of the second lens; the modulated light beam passes through the diaphragm and the first lens, and then passes through the first BS to be emitted.



Click on the title to return to table of contents

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

N9725

IN202331034539

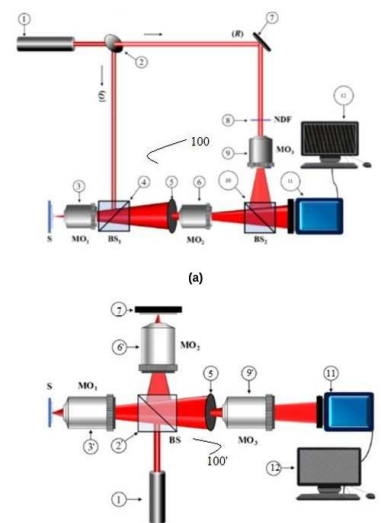
Priority Date: 17/05/2023

INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES)

DIGITAL HOLOGRAPHIC NANOSCOPIC SYSTEM FOR 3-D SUPER-RESOLUTION IMAGING OF REFLECTIVE SURFACE, DEFECTS AND CRACKS

The present invention relates to a digital holographic nanoscopic system for threedimensional super resolution imaging of the reflective surface topography, defects, and cracks, based on Mach-Zehnder and Linnik configuration. The digital image processing tools based on deep learning have been used for imaging beyond the diffraction limit. The system comprises a light source (1), a beam splitter (2, 2'), an interferometer (100, 100') comprising a plurality of microscope objectives (3, 3', 6, 6', 9, 9') where object (O) and reference (R) diverging wavefront superpose to create an interference pattern. This interference pattern consists of all the phase and amplitude information about the object, which is further magnified to a higher value. A CCD sensor (11) captures this information and store in a PC for further processing. The proposed systems exhibit axial resolution of (2-2.5) nm and lateral resolution of (90-100) nm with magnification of ~1,20,000 times.

CLAIM 1. A digital holographic nanoscopic system for three-dimensional imaging of reflective surface, said system comprising: a light source (1) for illuminating a specimen (S), an interferometer (100), wherein said interferometer (100) comprises: a first beam splitter (2) to form an object beam (O) and a reference beam (R), from the light beam from the source (1); a mirror (7) to reflect the reference beam (R), a second beam splitter (4) to split the object beam (O) and a third beam splitter (10) to combine a first and a second diverging wavefront generated from the object beam (O) and the reference beam (R), a plurality of microscopic objectives MO1 (3), MO2 (6), MO3 (9), wherein MO1 (3) being placed in the optical path of the beam reflected from the second beam splitter (4) and in between the beam splitter (4) and the specimen (S), wherein the beam reflected from the specimen (S) and from the MO1 (3) and the beam splitter (4) thereafter falls on MO2 (6) to form the first divergent wavefront, wherein MO3 (9) being placed in the optical path of the reflected beam between the mirror (7) and the third beam splitter (10) to form the second divergent wavefront, wherein the first and the second diverging wavefronts generates an interference pattern upon falling on the beam splitter (10), an iris (5) placed between the second beam splitter (4) and the objective MO2 (6) for projecting the reflected beam, a charge coupled device CCD (11) coupled with a processor (12), wherein said CCD (11) captures an information, from the interference pattern at the beam splitter (10), on the amplitude and the phase of the specimen in the form of digital hologram, wherein the processor (12) processes said information, wherein said system being configured to provide the characterisation of the reflective specimen (S) and the measurement of its surface topographical defect by providing high resolution three dimensional phase contrast magnified image of the specimen (S), wherein the magnification being the factor of the magnifying power of the microscopic objectives (3, 6, 9), and the inter distance between said objectives (3, 6, 9) and the beam splitters (4, 10) and the CCD (11).



N9749

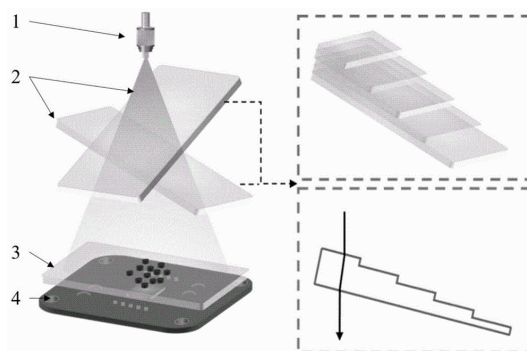
CN116909116

Priority Date: 01/08/2023

ZHEJIANG NORMAL UNIVERSITY

CENTIMETER-LEVEL TRANSLATIONAL PIXEL SUPER-RESOLUTION LENS-FREE ON-LENS MICROSCOPIC IMAGING SYSTEM AND METHOD

The invention discloses a microscopic imaging system and a microscopic imaging method on a centimeter-level translational pixel super-resolution lens-free sheet, which relate to the technical field of microscopic imaging and comprise the following steps: the device comprises a light source, two transparent flat plates with a plurality of step structures, a horizontal moving mechanism, a carrying platform, an image detector and a computer; the light beams emitted by the light source pass through the two transparent flat plates and then irradiate to the object carrying platform and the tested sample of the object carrying platform; the image detector is used for detecting the holographic image after the transparent flat plate moves each time; the computer is used for receiving the holographic image sequence and acquiring a high-resolution reconstruction image by applying a pixel super-resolution fusion algorithm. The whole imaging system greatly simplifies the traditional holographic super-resolution imaging system on the non-lens sheet, reduces the cost of the whole imaging system, processes the sub-pixel displacement hologram through a fusion algorithm combining a convex set projection algorithm and an alternate projection algorithm, and improves the precision of holographic phase imaging on the pixel super-resolution non-lens sheet.



CLAIM 1. A centimeter-level translational pixel super-resolution lenticular-free microscopic imaging system, the system comprising: the device comprises a light source, two transparent flat plates which are orthogonally and obliquely arranged, a horizontal moving mechanism, an object carrying platform, an image detector and a computer; each transparent flat plate is provided with a plurality of step structures; the step structure is a structure formed by transparent materials; the horizontal moving mechanism is used for controlling the two transparent flat plates to horizontally move; the light beams emitted by the light source pass through the two transparent flat plates and then irradiate to the carrying platform and the tested sample of the carrying platform; the image detector is used for detecting a holographic image sequence formed by the light beam passing through the sample and outputting the holographic image sequence to the computer; the holographic image sequence comprises holographic images shot after any transparent flat plate is moved by centimeter-level translation amount each time; when any transparent flat plate moves by a translation amount of one step length, the displacement amount of the corresponding obtained holographic image is sub-pixel displacement amount; the length of one step is centimeter-level; the computer is used for receiving the holographic image sequence and acquiring a high-resolution reconstructed image by applying a pixel super-resolution fusion algorithm; the pixel super-resolution fusion algorithm is a fusion algorithm combining a convex set projection algorithm and an alternate projection algorithm; and the initial value of the alternate projection algorithm is the high-resolution fusion hologram obtained by fusion reconstruction of the convex set projection algorithm, and the high-resolution fusion hologram is obtained by single-frame phase recovery calculation.

N9771

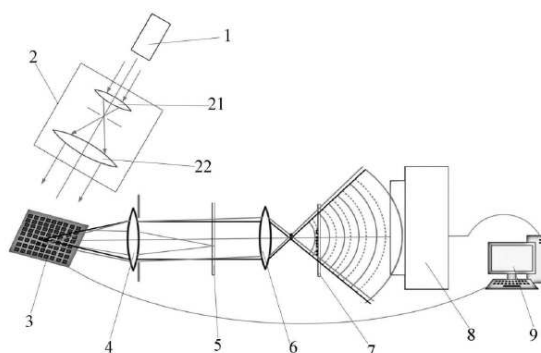
CN116841171

Priority Date: 01/06/2023

XI AN INSTITUTE OF OPTICS & PRECISION MECHANICS OF CHINESE ACADEMY OF SCIENCES

DIGITAL MICROMIRROR SCANNING HOLOGRAPHIC IMAGING METHOD AND IMAGING SYSTEM FOR FIELD OF VIEW INCREASE

The invention provides a digital micromirror scanning holographic imaging method and an imaging system for increasing a field of view, which mainly solve the technical problem that the conventional holographic imaging system is not suitable for holographic imaging under complex working conditions due to the fact that stability is reduced. The imaging method comprises the following steps: 1, fixing an object to be measured in a light path; scanning different areas of the object to be detected in a point light source scanning mode through the digital micromirror; recording hologram information of an object to be measured in real time by adopting an image sensor; preprocessing and reproducing the hologram information; splicing the repeated holograms to finish holographic imaging of the object to be detected. The method is applied to holographic imaging under various complex working conditions, and has a wider application range.



CLAIM 1. The digital micromirror scanning holographic imaging method for increasing the field of view is characterized by comprising the following steps: step 1, fixing an object to be measured in a light path; step 2, scanning different areas of the object to be detected in a point light source scanning mode through the digital micromirror; recording hologram information of an object to be measured in real time by adopting an image sensor; the hologram information comprises image information corresponding to the scanned position of the object to be detected and background diffraction light falling into a view field; step 4, preprocessing and reproducing the hologram information; and step 5, splicing the reproduced holograms to finish holographic imaging of the object to be detected.

Click on the title to return to table of contents

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

N9701

WO2023187126

Priority Date: 31/03/2022

FONDATION B COM

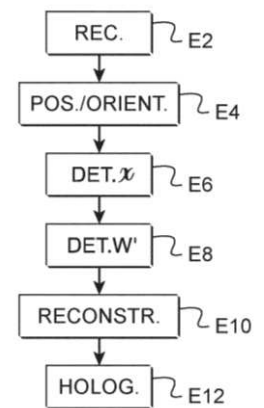
METHOD AND DEVICE FOR DECODING A DIGITAL HOLOGRAM, METHOD AND DEVICE FOR ENCODING A DIGITAL HOLOGRAM, AND ASSOCIATED COMPUTER PROGRAM

A method for decoding a digital hologram (H_{k+1}) involves the following steps: - obtaining (E30) a reference digital hologram (H_k) represented by a representation in a space-frequency domain D; - decoding (E40) a residue (e_{k+1}) from received data (D3, D4); - predicting (E42) a predicted digital hologram by transforming the reference digital hologram (H_k); - obtaining (E44) the decoded digital hologram (H_{k+1}) by combining the residue (e_{k+1}) and the predicted hologram. The prediction step (E42) involves applying a function χ of D to D such that the subset of the elements of the product space D x D having the form (e, $\chi(e)$) is the subset defined by the elements having the form (1) for (x, y, η_x , η_y) varying in \mathbb{R}^4 , where φ is the dot product of a first vector and a vector resulting from the application of the transformation to a second vector.

PROCÉDÉ ET DISPOSITIF DE DÉCODAGE D'UN HOLOGRAMME NUMÉRIQUE, PROCÉDÉ ET DISPOSITIF DE CODAGE D'UN HOLOGRAMME NUMÉRIQUE ET PROGRAMME D'ORDINATEUR ASSOCIÉ

Un procédé de décodage d'un hologramme numérique (H_{k+1}) comprend les étapes suivantes : - obtention (E30) d'un hologramme numérique de référence (H_k) représenté par une représentation dans un domaine spatio-fréquentiel D; - décodage (E40) d'un résidu (e_{k+1}) à partir de données reçues (D3, D4); - prédiction (E42) d'un hologramme numérique prédit par transformation de l'hologramme numérique de référence (H_k); - obtention (E44) de l'hologramme numérique décodé (H_{k+1}) par combinaison du résidu (e_{k+1}) et de l'hologramme prédit. L'étape de prédiction (E42) comprend l'application d'une fonction χ de D vers D telle que le sous-ensemble des éléments de l'espace produit D x D de forme (e, $\chi(e)$) est le sous-ensemble défini par les éléments de la forme (1) pour (x, y, η_x , η_y) variant dans \mathbb{R}^4 , où φ est le produit scalaire d'un premier vecteur et d'un vecteur résultant de l'application de la transformation à un second vecteur.

CLAIM 1. Method for decoding a digital hologram (H_{k+1}) propagating in a three-dimensional propagation space from received data (D3, D4), comprising the following steps: - obtaining (E30; E80) a reference digital hologram (H_k) defined in a reference plane (Pref) and represented by a representation in a spatio-frequency domain D with two spatial dimensions and two frequency dimensions; - decoding (E40; E88) a residual (e_{k+1}; e_{k+1,m}) from the received data; - predicting (E42; E90) a predicted digital hologram (h'_k) by transforming the reference digital hologram; - obtaining (E44; E92) the decoded digital hologram (h'_k)_{k+1} by combining the residual and the predicted hologram, characterized in that the step of predicting (E42; E90) the predicted digital hologram comprises, for determining the predicted digital hologram at a plane parallel to the reference plane, the application of a function χ having as starting set the spatio-frequency domain D and as ending set the spatio-frequency domain D, and such that the subset of the elements of the product space D x D of shape (E, $\chi(E)$) is the subset defined by the elements of the shape for (x, y, η_x , η_y) varying in \mathbb{R}^4 , where φ is a non-generating function quadratic with four variables defined as scalar product: - of a first vector, the first two coordinates of which correspond respectively to the first two variables of the four variables and the third coordinate of which corresponds to the coordinate of said parallel plane in a direction perpendicular to the reference plane, and - of a vector resulting from the application of the transformation to a second vector, the first two coordinates of which correspond respectively to the last two variables of the four variables.



(1)
 $(x, y, \frac{\partial \varphi}{\partial x}, \frac{\partial \varphi}{\partial y}, \frac{\partial \varphi}{\partial \eta_x}, \frac{\partial \varphi}{\partial \eta_y}, \eta_x, \eta_y)$

METHOD FOR APPLYING A TRANSFORMATION TO A DIGITAL HOLOGRAM, ASSOCIATED DIGITAL HOLOGRAPHY DEVICE AND COMPUTER PROGRAM

A digital hologram defined in a reference plane (Pref) propagates in a three-dimensional propagation space and is represented by a representation in a space-frequency domain D with two spatial dimensions and two frequency dimensions. A method for applying a transformation T to this digital hologram involves, for determining the digital hologram after applying the transformation and in a plane parallel to the reference plane of coordinate z, applying a function χ of D to D, such that the subset of the elements of the product space $D \times D$ having the form $(e, \chi(e))$ is the subset defined by the elements having the form (1) for (x, y, η_x, η_y) varying in \mathbb{R}^4 , where φ is a non-quadratic generating function that has four variables (x, y, ξ_x, ξ_y) and is defined as the dot product (2), with C being a predefined constant.

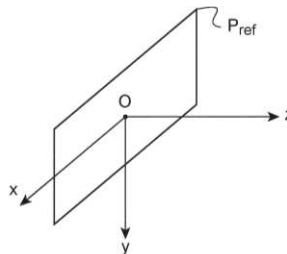
PROCÉDÉ D'APPLICATION D'UNE TRANSFORMATION À UN HOLOGRAMME NUMÉRIQUE, DISPOSITIF D'HOLOGRAPHIE NUMÉRIQUE ET PROGRAMME D'ORDINATEUR ASSOCIÉS

Un hologramme numérique défini dans un plan de référence (Pref) se propage dans un espace de propagation tridimensionnel et est représenté par une représentation dans un domaine spatio-fréquentiel D à deux dimensions spatiales et deux dimensions fréquentielles. Un procédé d'application d'une transformation T à cet hologramme numérique comprend, pour la détermination de l'hologramme numérique après application de la transformation et au niveau d'un plan parallèle au plan de référence de coordonnée z, l'application d'une fonction χ de D vers D, telle que le sous-ensemble des éléments de l'espace produit $D \times D$ de forme $(e, \chi(e))$ est le sous-ensemble défini par les éléments de la forme (1) pour (x, y, η_x, η_y) variant dans \mathbb{R}^4 , où φ est une fonction génératrice non quadratique à quatre variables (x, y, ξ_x, ξ_y) définie comme le produit scalaire (2), avec C une constante prédéfinie.

$$(x, y, \frac{\partial \varphi}{\partial x}, \frac{\partial \varphi}{\partial y}, \frac{\partial \varphi}{\partial \xi_x}, \frac{\partial \varphi}{\partial \xi_y}, \eta_x, \eta_y) \quad \langle \begin{pmatrix} x \\ y \\ z \end{pmatrix}, T \left(\begin{pmatrix} \xi_x \\ \xi_y \\ \sqrt{C^2 - \xi_x^2 - \xi_y^2} \end{pmatrix} \right) \rangle$$

(1) (2)

Fig.1



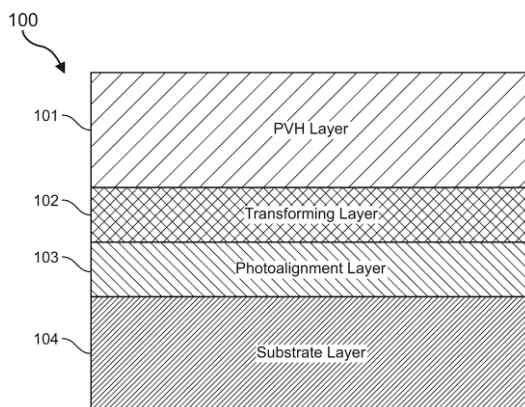
CLAIM 1. Method for applying a transformation to a digital hologram defined in a reference plane (Pref), propagating in a three-dimensional propagation space and represented by a representation in a spatio-frequency domain D with two spatial dimensions and two frequency dimensions, characterized in that it comprises, for the determination of the digital hologram after application of the transformation and at the level of a plane parallel to the reference plane, the application of a function χ having as its starting set the spatio-frequency domain D and as its ending set the spatio-frequency domain D, and such that the subset of the elements of the product space $D \times D$ of shape $(e, \chi(e))$ is the subset defined by the elements of the shape (x, y, η_x, η_y) for (x, y, η_x, η_y) varying in \mathbb{R}^4 , where φ is a four-variable non-quadratic generating function defined as scalar product: - of a first vector, the first two coordinates of which correspond respectively to the first two variables of the four variables and the third coordinate of which corresponds to the coordinate of said parallel plane in a direction perpendicular to the reference plane, and - of a vector resulting from the application of the transformation to a second vector, the first two coordinates of which correspond respectively to the last two variables of the four variables.

MULTI-LAYERED POLARIZATION VOLUME HOLOGRAM

The disclosed optical assembly may include a photoalignment layer that includes photoalignment material (PAM) anchored to a substrate according to a specified surface anchoring. The optical assembly may also include a functional or transforming layer that is applied to the photoalignment layer. The transforming layer may modify the surface anchoring of the photoalignment layer to align with a polarization volume hologram layer. The polarization volume hologram layer of the optical assembly may be disposed on the transforming layer. Various other methods of manufacturing, systems, and apparatuses are also disclosed.

HOLOGRAMME DE VOLUME DE POLARISATION MULTICOUCHE

L'ensemble optique divulgué peut comprendre une couche de photoalignement qui comprend un matériau de photoalignement (PAM) ancré à un substrat selon un ancrage de surface spécifié. L'ensemble optique peut également comprendre une couche fonctionnelle ou de transformation qui est appliquée à la couche de photo-alignement. La couche de transformation peut modifier l'ancrage de surface de la couche de photoalignement pour s'aligner avec une couche d'hologramme de volume de polarisation. La couche d'hologramme de volume de polarisation de l'ensemble optique peut être disposée sur la couche de transformation. Divers autres procédés de fabrication, systèmes et appareils sont également divulgués.



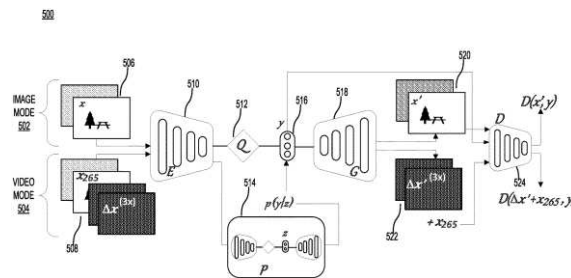
CLAIM 1. An optical assembly comprising: a photoalignment layer that includes photoalignment material (PAM) anchored to a substrate according to a specified surface anchoring; a transforming layer applied to the photoalignment layer, wherein the transforming layer modifies the surface anchoring of the photoalignment layer to align with a polarization volume hologram layer; and the polarization volume hologram layer disposed on the transforming layer.

SYSTEMS AND METHODS FOR COMPUTER-GENERATED HOLOGRAM IMAGE AND VIDEO COMPRESSION

According to examples, a learning based, end-to-end compression system may include an encoder, which may receive a complex hologram image and encode a latent code for a real component and an imaginary component of the hologram image. The system may also include a quantizer to quantize the latent code and a transform block, which may entropy-code the quantized latent code to obtain a compressed image. The system may further include a generator to decode the compressed image and a discriminator, which may classify the decoded image to obtain an uncompressed image. In case of holographic video input, the encoder may encode a frame to obtain a standard compressed frame and a residual to a latent code. The generator may decode the standard compressed frame and the latent code to obtain a reconstructed residual, and the discriminator may combine the uncompressed standard frame and the reconstructed residual.

SYSTÈMES ET PROCÉDÉS POUR UNE COMPRESSION DE VIDÉO ET D'IMAGE HOLOGRAPHIQUE GÉNÉRÉE PAR ORDINATEUR

La présente invention concerne un système de compression de bout en bout basé sur l'apprentissage qui peut comprendre un codeur, qui peut recevoir une image holographique complexe et coder un code latent pour une composante réelle et une composante imaginaire de l'image holographique. Le système peut également comprendre un quantificateur pour quantifier le code latent et un bloc de transformée, qui peut coder par entropie le code latent quantifié pour obtenir une image compressée. Le système peut en outre comprendre un générateur pour décoder l'image compressée et un discriminateur, qui peut classifier l'image décodée pour obtenir une image non compressée. Dans le cas d'une entrée vidéo holographique, le codeur peut coder une trame pour obtenir une trame compressée standard et un code résiduel à latent. Le générateur peut décoder la trame compressée standard et le code latent pour obtenir un code résiduel reconstruit et le discriminateur peut combiner la trame standard non compressée et le code résiduel reconstruit.



CLAIM 1. A system for image or video compression comprising: a processor; and a memory storing instructions, which when executed by the processor, cause the processor to: receive a complex hologram image; encode a latent code for a real component and an imaginary component of the complex hologram image; quantize the latent code; and compress the quantized latent code using an entropy coding technique to obtain a compressed image.

N9716

KR20230140187

Priority Date: 29/03/2022

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH
INSTITUTE

METHOD AND APPARATUS FOR DIGITAL HOLOGRAM TRANSFORM AND RENDERING

A digital hologram conversion and rendering method and apparatus are provided. A processing apparatus receives digital hologram data corresponding to a three-dimensional image, and then reduces the resolution of the received digital hologram data. The digital hologram prediction is performed by applying the reduced-converted digital hologram data to a pre-learned neural network model. Then, the processing device performs numerical restoration processing based on the predicted digital hologram to reproduce the corresponding hologram through the holographic display terminal device.

CLAIM 1. A digital hologram conversion and rendering method, comprising: receiving, by a processing device, digital hologram data corresponding to a three-dimensional image; converting, by the processing device, resolution of the input digital hologram data; converting, by the processing device, Predicting a digital hologram by applying to a neural network model; and performing, by the processor, numerical restoration processing based on the predicted digital hologram, to reproduce a corresponding hologram through a holographic display terminal.

N9729

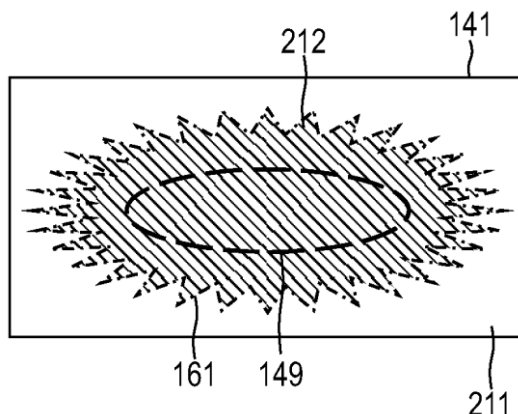
DE102022106627

Priority Date: 22/03/2022

CARL ZEISS JENA

SUPPORT MATERIAL LAYER FOR HOLOGRAPHIC OPTICAL ELEMENT ON CURVED SURFACE

A production method for an optical system comprises forming a holographic optical element (149) in a carrier material layer (141) when the carrier material layer (141) has a first curvature. The method also comprises fixing (3010, 3110, 3225) the carrier material layer (141) on a curved surface (155) having a second curvature different from the first curvature, and performing (3015, 3125, 3220) a blank of the carrier material layer (141). The cutting is carried out in such a way that at least one of a fold line (145), an extension and a compression of the carrier material layer (141) on the curved surface is reduced due to the second curvature, which is different from the first curvature.

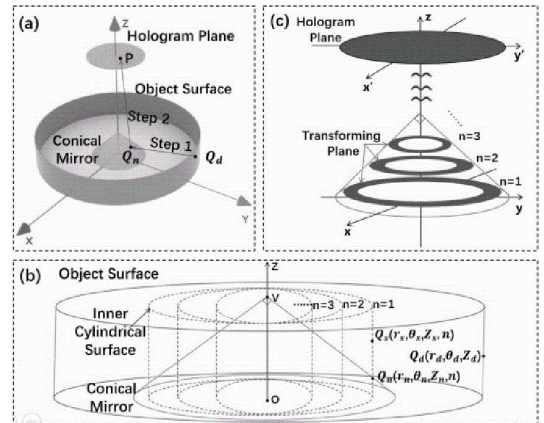


CLAIM 1. A manufacturing method for an optical system, comprising: -forming (3005, 3105, 3215) a holographic optical element (149) in a carrier material layer (141) when the carrier material layer (141) has a first curvature, - fixing (3010, 3110, 3225) the carrier material layer (141) on a curved surface (155) having a second curvature, which is different from the first curvature, and - performing (3015, 3125, 3220) a blank of the carrier material layer (141), wherein the blank is performed such that at least one of a fold line (145), stretching and compression of the substrate layer (141) on the curved surface due to the second curvature different from the first curvature.

OPTICAL CYLINDRICAL SURFACE HOLOGRAPHIC DISPLAY METHOD BASED ON 2-STEP DIFFRACTION METHOD

The invention discloses an optical cylindrical surface holographic display method based on a 2-step diffraction method. The invention solves the problem that the traditional cylindrical surface calculation holographic display is limited by lacking a commercial cylindrical surface spatial light modulator and can not verify various proposed cylindrical surface holographic display schemes experimentally. Therefore, the invention provides an optical cylindrical surface holographic display method based on a 2-step diffraction method. The method adopts a right angle conical surface mirror to change the propagation direction by 90 degrees, and converts the diffraction field of the plane hologram to a cylindrical surface, thereby realizing 360-degree cylindrical surface display; meanwhile, the method adopts a 2-step diffraction method to directly calculate the diffraction field on the conical surface mirror, has the characteristics of simplicity and accuracy, and can correctly reconstruct larger objects with different cylindrical radii. The method breaks through the limitation that the cylindrical hologram needs a cylindrical spatial light modulator, realizes cylindrical holographic display based on the planar spatial light modulator, and has great application prospect.

CLAIM 1. The optical cylindrical surface holographic display method based on the 2-step diffraction method is characterized by comprising the following steps of: (a) The hologram reproduction method of the optical cylindrical hologram display method based on the 2-step diffraction method comprises the following steps: step (a)1, loading a calculated hologram Holo onto a planar spatial light modulator, wherein the propagation distance of a light field on a holographic plane HP is z p To a conical mirror CM with a right angle at the vertex; step 2, changing the propagation direction of the light field on the conical surface mirror CM by the conical surface mirror to 90 degrees, changing the direction of the propagation optical axis from the original direction perpendicular to the holographic plane to the cylindrical direction parallel to the holographic plane and diverging outwards by taking the connecting line of the vertex of the conical surface mirror and the center of the bottom edge circle as the center axis, wherein the propagation distance is z r To a radius r d Obtaining an optical reproduction image U0 of 360-degree cylindrical hologram, namely a reconstructed object light wave; the mathematical procedure of the reproduction method is expressed as: $u_0 = cm2oc_prop [HP2cm_prop (Holo, z) p], z r]$ Wherein, $HP2CM_Prop (.z) p)$ Indicating a propagation distance z p Diffraction propagation process from holographic plane to conical mirror, $z p = D - a + r n$ D is the distance from the holographic surface to the bottom surface of the conical surface mirror, a is the bottom edge radius of the conical surface mirror, and r n Is the radius of the n-th conical surface, and the size range is $[0, a]$ I.e. $0 \leq r n \leq a$; wherein, $CM2OC_Prop [(), z r]$ Indicating a propagation distance z r Diffraction process from conical mirror to outer cylindrical surface, wherein $z r = r d - r n$ The method comprises the steps of carrying out a first treatment on the surface of the (b) In order to realize the hologram reproduction of the optical cylindrical hologram display method, a computer simulation hologram generation process is adopted, and the process is the opposite process to the hologram reproduction process, and the method comprises the following specific steps: step I, located at radius r d The object light wave U0 of the outer cylindrical surface of the (2) is subjected to a diffraction process of a conical surface mirror CM with the radius of the bottom edge being a from the outer cylindrical surface OC to obtain diffraction field distribution on the conical surface mirror, and the propagation distance is $z r = r d - r n$ The method comprises the steps of carrying out a first treatment on the surface of the Step II, changing the propagation direction of the light field on the conical surface mirror CM by the conical surface mirror to 90 DEG, changing the direction of the propagation optical axis from the original cylindrical direction parallel to the holographic plane and inwardly converged by taking the connecting line of the vertex and the bottom edge circle center of the conical surface mirror as the circular mandrel to the direction perpendicular to the holographic plane, and rounding Diffraction field on cone mirror with propagation distance z p The diffraction process from the conical surface mirror CM to the holographic plane HP reaches the holographic plane; finally, the diffraction field complex amplitude distribution on the holographic plane is encoded into a hologram which can be loaded and modulated by a spatial light modulator through a hologram encoding algorithm; the mathematical procedure of the calculation generation method is expressed as $holo = encode \{ cm2hp_prop [oc2cm_prop (U_0, z) r], z p []$ wherein, $oc2cm_prop \{ [], z r$ The propagation distance is z r Diffraction process of outer cylindrical to conical mirror, $cm2hp_prop \{ [], z p$ The propagation distance is z p Diffraction propagation process from conical mirror to holographic plane; the encodings $\{ \}$ represent the hologram encoding process.



N9750

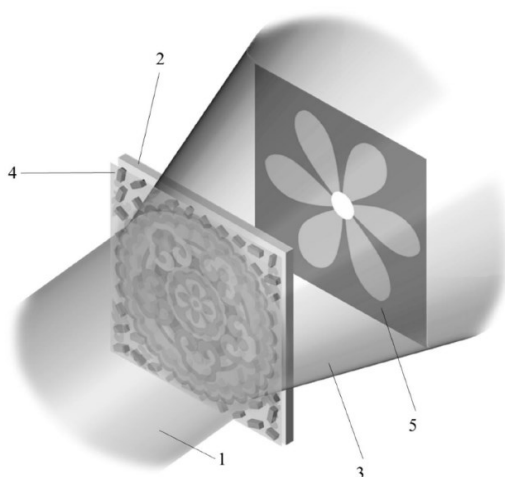
CN116909115

Priority Date: 07/07/2023

WUHAN INSTITUTE OF QUANTUM TECHNOLOGY

METHOD FOR SIMULTANEOUSLY REALIZING COLOR NANO PRINTING AND COLOR HOLOGRAM ON SUPER SURFACE AND SUPER SURFACE

The application discloses a method for simultaneously realizing color nano printing and color holography on a super surface and the super surface, wherein the method comprises the following steps: constructing a nano brick array; acquiring a color nano printing image, and determining the long axis and the short axis of the nano brick in the nano brick structural unit at each position according to the colors represented by the nano brick structural units with different size parameters; acquiring a color holographic image, and determining steering angles of the nano bricks in the nano brick structural units at all positions; arranging the nano brick structural units with corresponding sizes at all positions according to the determined corresponding nano brick steering angles to obtain the required super surface; the unpolarized white light is incident on the super surface, and reflected light forms a color nano printing image on the super surface; with wavelength λ_R 、 λ_G 、 λ_B incident upon the super-polarized light of (a) And displaying the color holographic image on the designed distance plane. The application can realize the display multiplexing of the color nano printing image and the color holographic image through one super surface at the same time, and has high information storage density.



CLAIM 1. The method for simultaneously realizing color nano printing and color holography on the super surface is characterized by comprising the following steps of: constructing a nano brick array, wherein the nano brick array comprises a plurality of nano brick structural units distributed in an array manner; the nano brick structural units with different size parameters show different colors under the incidence of white light; wherein, the different size parameters are that the long axis and the short axis of the nano brick in the nano brick structure unit are different; acquiring a color nano printing image, and determining the long axis and the short axis of the nano brick in the nano brick structural unit at each position according to the colors represented by the nano brick structural units with different size parameters; acquiring a color holographic image and extracting R, G, B components of the color holographic image; the nano brick structure units according to different size parameters are designed at red, green and blue wavelength λ_R 、 λ_G 、 λ_B The transmission coefficient of the long and short axes and the complex amplitude modulation effect of the anisotropic nano brick on circularly polarized light determine the nano at each position The turning angle θ of the nano bricks in the brick structure unit enables a color holographic image to be displayed on a designed distance plane when three coherent light sources with designed wavelengths are incident; arranging the nano brick structural units with corresponding sizes at all positions according to the determined corresponding nano brick steering angles, so as to obtain the required super surface; the unpolarized white light is incident on the super surface, and after passing through the super surface, the reflected light forms the color nano printing image on the super surface; with wavelength λ_R 、 λ_G 、 λ_B incident on the super surface, and displays the color holographic image on a designed distance plane.

N9757

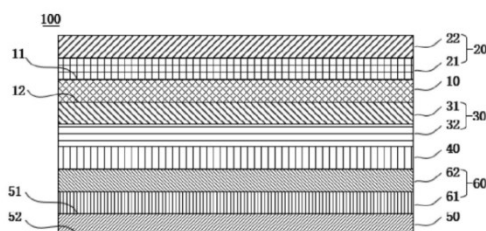
CN116893462

Priority Date: 08/09/2023

JOURNEY TECHNOLOGY

PREPARATION METHOD OF POLARIZER HOLOGRAPHIC GRATING AND POLARIZER HOLOGRAPHIC GRATING

The invention discloses a preparation method of a polarizer holographic grating and the polarizer holographic grating, and the method comprises the following steps: providing a first substrate and a second substrate, wherein the first substrate comprises a first surface and a second surface which are oppositely arranged, and the second substrate comprises a third surface and a fourth surface which are oppositely arranged; forming a first polarization grating layer having a first periodic molecular structure on a first surface; forming a second polarization grating layer having a second periodic molecular structure on the second surface; forming a third polarization grating layer having a third periodic molecular structure on a third surface; and bonding the first substrate and the second substrate to form the polarizer holographic grating. The full-color polarizer holographic grating prepared by the preparation method of the polarizer holographic grating can be realized, the thickness and the weight of the full-color polarizer holographic grating are reduced, the full-color polarizer holographic grating can be obtained by only one lamination, the process difficulty is reduced, and the product yield is improved.



CLAIM 1. A method of producing a polarizer holographic grating, the method comprising: Providing a first substrate and a second substrate, wherein the first substrate comprises a first surface and a second surface which are oppositely arranged, and the second substrate comprises a third surface and a fourth surface which are oppositely arranged; forming a first polarization grating layer having a first periodic molecular structure on the first surface; forming a second polarization grating layer having a second periodic molecular structure on the second surface; forming a third polarization grating layer having a third periodic molecular structure on the third surface; and bonding the first substrate and the second substrate to form the polarizer holographic grating.

N9762

CN116862744

Priority Date: 27/06/2023

GUILIN UNIVERSITY OF ELECTRONIC TECHNOLOGY

GRID GEOGRAPHIC DATA WATERMARK GENERATION METHOD COMBINING QR (QUICK RESPONSE) CODING AND CALCULATION HOLOGRAM

The invention relates to the technical field of image processing, in particular to a grid geographic data watermark generation method combining QR (quick response) coding and calculation holography, which is used for coding grid geographic data geographic space coordinate frame information and user information into a QR code, so that the problem of insufficient capacity of the traditional watermark is solved, and meanwhile, the strong error correction capability of the QR code can obviously improve the robustness of a watermark algorithm; converting the QR code into a phase hologram with white noise distribution characteristics by utilizing a GS iterative optical process and taking the phase hologram as a final watermark image, further improving the watermark information security, and simultaneously, being beneficial to the robust extraction of the watermark after the host image is partially attacked due to the self anti-clipping characteristic of the hologram; if the geographic coordinate frame information of the grid geographic data is ignored, the method is also applicable to digital image or video watermark generation, and the conventional geographic data watermark generation method is insufficient to resist common attack.

CLAIM 1. The grid geographic data watermark generation method combining QR coding and calculation holography is characterized by comprising the following steps of: preprocessing the grid geographic data to obtain a quick response code; performing optical transformation on the quick response code to obtain a hologram; embedding the hologram to obtain a host image with a watermark; and extracting the host image with the watermark to obtain a geographic coordinate frame and user information.

N9767

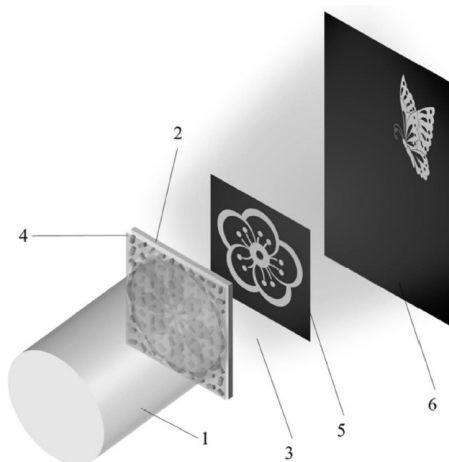
CN116859494

Priority Date: 14/06/2023

WUHAN UNIVERSITY

SUPER SURFACE FOR REALIZING COLOR NANO PRINTING AND TWO KINDS OF HOLOGRAPHIC MULTIPLEXING AND DESIGN METHOD THEREOF

The invention belongs to the technical field of micro-nano optics, and discloses a super surface for realizing color nano printing and two kinds of holographic multiplexing and a design method thereof. According to the invention, a plurality of groups of nano brick structure units capable of presenting different structural colors under the incidence of white light are optimally designed, each nano brick structure unit is taken as a pixel, and the group class of the nano brick structure units corresponding to each pixel point is selected according to the color distribution of a color nano printing target image; and according to the complex amplitude distribution corresponding to the Fresnel holographic target image and the Fourier holographic target image, arranging the steering angles of the nano bricks in the nano brick structure units corresponding to each pixel point, and finally obtaining the super surface. The super surface obtained by the invention can simultaneously realize color nano printing image display, fresnel hologram and Fourier hologram multiplexing, and has the advantages of low complexity of design algorithm, high image display quality, low crosstalk between channels and high information storage density.



CLAIM 1. The design method for realizing the color nano printing and the two holographic multiplexing super surfaces is characterized by comprising the following steps: constructing a nano brick structure unit for forming a super surface, wherein the nano brick structure unit comprises a substrate and nano bricks arranged on a working surface of the substrate; respectively setting the directions of two sides parallel to the working surface of the substrate as an x-axis and a y-axis to establish an xoy coordinate system, wherein the nano brick is of a cuboid structure, the long axis and the short axis of the nano brick are parallel to the working surface of the substrate, and the steering angle of the nano brick is an included angle between the long axis and the x-axis of the nano brick; optimally designing a plurality of groups of nano brick structural units, wherein the size parameters of the long shafts or the short shafts of the nano bricks corresponding to the nano brick structural units of different groups are different, the height sizes of the nano brick structural units of different groups corresponding to the nano bricks are the same, and the nano brick structural units of different groups show different structural colors under the incidence of white light; taking each nano brick structure unit as a pixel, and selecting the group of the nano brick structure units corresponding to each pixel point according to the color distribution of the color nano printing target image; according to complex amplitude distribution corresponding to the Fresnel holographic target image and complex amplitude distribution corresponding to the Fourier holographic target image, arranging steering angles of the nano bricks in the nano brick structure units corresponding to each pixel point to obtain a super surface; the unpolarized white light is incident to the super surface, and reflected light displays the color nano-printing target image on the super surface; and the coherent light with the designed wavelength is incident to the super surface, the transmitted light displays the Fresnel holographic target image in the designed distance of the Fresnel diffraction zone, and the Fourier holographic target image is displayed in the Fraunhofer diffraction zone.

N9781

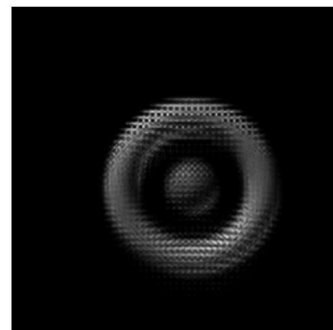
CN116797641

Priority Date: 10/07/2023

JILIN UNIVERSITY

FOURIER HOLOGRAM GENERATION AND RECONSTRUCTION METHOD BASED ON SPARSE ACQUISITION

The invention relates to a Fourier hologram generation and reconstruction method based on sparse acquisition, belonging to a Fourier hologram generation and reconstruction method. Generating a three-dimensional element image of the object by adopting an integrated imaging method based on sparse acquisition; and carrying out multi-view projection incoherent Fourier calculation hologram generation and simulation reconstruction according to the stereoscopic element image of the object. Compared with the traditional image recognition gray scale integral projection method, the block matching integral projection method based on the SAD searching method has the advantages that the calculated parallax error rate is reduced to 0.2% from 3.125%, the structural similarity SSIM of the generated stereoscopic element image and the original object view is increased to 0.75 from 0.71, the accuracy of the generated stereoscopic element image is improved, therefore, the stored information and the reproduced image of the object Fourier hologram are more accurate, the block matching integral projection method carries out image correction when the running codes are subjected to block matching, and only the matching block is searched in the horizontal direction, so that the steps are more concise compared with other algorithms.



N9782

CN116794923

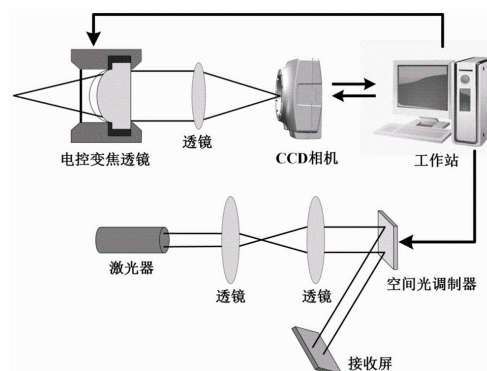
Priority Date: 27/06/2023

NANCHANG UNIVERSITY

REAL-TIME THREE-DIMENSIONAL SCENE ACQUISITION AND THREE-DIMENSIONAL HOLOGRAPHIC RECONSTRUCTION METHOD BASED ON ULTRA-FAST OPTICAL AXIAL SCANNING

The invention discloses a real-time three-dimensional scene acquisition and three-dimensional holographic reconstruction method based on ultra-fast optical axial scanning, which comprises the following steps of S1: the object to be measured is placed in the focal length variation range of the electric control zoom lens, and the CCD camera and the electric control zoom lens are kept coaxial and closely placed. And S2, controlling the driving current of the electric control zoom lens to linearly change by a computer in the workstation, and synchronously triggering the CCD camera to acquire image sequences with different focusing depths by the computer program in the workstation every time the driving current is increased by one step. S3: and extracting in-focus information of the image sequence by a three-dimensional information extraction method based on a Tenengrad focusing evaluation operator to obtain an in-focus image sequence. S4: and calculating the in-focus image sequence by using a layering-based three-dimensional holographic algorithm to obtain a hologram, and loading the hologram onto a spatial light modulator to carry out three-dimensional holographic reconstruction. According to the method, the three-dimensional image can be obtained only by synchronously controlling the electric control zoom lens and the CCD camera, and the three-dimensional holographic reconstruction is realized by combining a layered-based holographic algorithm.

CLAIM 1. A real-time three-dimensional scene acquisition and three-dimensional holographic reconstruction method based on ultra-fast optical axial scanning is characterized in that: the method is realized by a three-dimensional image acquisition module consisting of a CCD camera, an electric control zoom lens and a workstation, and a three-dimensional holographic reconstruction module consisting of a laser, a spatial light modulator and the workstation, and comprises the following steps: s1: the object to be measured is placed in the focal length variation range of the electric control zoom lens, and the CCD camera and the electric control zoom lens are kept coaxial and closely placed; s2, controlling the driving current of the electric control zoom lens to change by a computer in the workstation, so as to realize the rapid movement of an imaging focus in the axial direction, and triggering a CCD camera to acquire a multi-focus image sequence by the computer in the workstation through program synchronization every time the driving current is increased by one step; s3: extracting in-focus information of the multi-focus image sequence by a three-dimensional information extraction method based on a Tenengrad focusing evaluation operator to obtain an in-focus image sequence, namely a three-dimensional image; s4: calculating the in-focus image sequence by using a layering-based three-dimensional holographic algorithm to obtain a hologram, and loading the hologram onto a spatial light modulator; the laser emits a collimated beam which is obliquely incident to the spatial light modulator at a certain angle to reconstruct a three-dimensional holographic image.



IHMA - OCTOBER 2023 - 126 ISSUED PATENTS - PAGE 1

HOLOGRAMS - 17 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P36918	WO	2023194578	12/10/2023	BUNDESDRUCKEREI	DE	06/04/2022	DE202210203462	WO2023194578 DE102022203462	BANKNOTE THAT CAN BE FOLDED TO FORM A THREE-DIMENSIONAL BODY	
P36942	RO	137671	29/09/2023	INSTITUTUL NATIONAL DE CERCETARE DEZVOLTARE PENTRU CHIMIE SI PETROCHIMIE ICECHIM OPTOELECTRONICA 2001 UNIVERSITATEA POLITEHNICA DIN BUCURESTI	RO	29/05/2023	RO2023000000271	RO-137671	PROCESS FOR MAKING HOLOGRAPHIC MARKS USING EMBOSsing SUBSTRATE OF BIOPOLYESTERS WHICH MAY BE RECYCLED AND REUSED FOR THE SAME PURPOSE	
P36945	KR	20230147368	23/10/2023	AM HOLO	KR	14/04/2022	KR2022000046294	KR20230147368	QR CODE DECODER IMPLEMENTED IN HOLOGRAM	
P36946	KR	20230147367	23/10/2023	AM HOLO	KR	14/04/2022	KR2022000046293	KR20230147367	VARIABLE QR CODE WITH HOLOGRAM	
P36947	KR	20230147366	23/10/2023	AM HOLO	KR	14/04/2022	KR2022000046292	KR20230147366	MULTI-QR CODES USING HOLOGRAMS	
P36948	KR	20230147365	23/10/2023	AM HOLO	KR	14/04/2022	KR2022000046291	KR20230147365	HOLOGRAM STRUCTURE INCLUDING DIFFRACTION GRATING PATTERN AND MANUFACTURING METHOD THEREOF	
P36949	KR	20230147364	23/10/2023	AM HOLO	KR	14/04/2022	KR2022000046290	KR20230147364	HOLOGRAM DECODER HAVING LIGHT IRRADIATION ANGLE CHANGE FUNCTION	
P36951	KR	102580966	21/09/2023	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	06/12/2022	KR2022000168319	KR102580966	MULTILAYER EMBOSSED HOLOGRAM STICKER FOR PREVENTING ILLEGAL REPLICATION AND METHOD FOR MANUFACTURING THE SAME	
P36970	IN	202321050993	29/09/2023	JOSHI PRASHANT NISHIKANT	IN	28/07/2023	IN2023021050993	IN202321050993	SYSTEM FOR PRINTING HOLOGRAPHIC DESIGNS ON PLASTIC ARTICLES, METHODS, MOULDS AND ARTICLES THEREOF	
P36980	EP	4253290	04/10/2023	BUNDESDRUCKEREI	DE	28/03/2022	DE202210107301	EP4253290 DE102022107301	SUCTION GRIPPER FOR HANDLING FILMS	
P36991	CN	219883474	24/10/2023	SHENZHEN YATUSHEN PRINTING PACKAGE	CN	12/05/2023	CN2023001130752	CN219883474U	PRINTING ANTI-FAKE DEVICE FOR HALFTONE HOLOGRAPHIC WATERMARK	
P37002	CN	219789731	03/10/2023	LANZHUYUNHE BEIJING TECHNOLOGY & CULTURE	CN	22/02/2023	CN2023000278116	CN219789731U	ANTI-FAKE STICKER ENDORSEMENT CERTIFICATE	
P37016	CN	116913167	20/10/2023	HENAN PROVINCE WELLKING TECHNOLOGY DEVELOPMENT	CN	31/07/2023	CN2023000945774	CN116913167	BIDIRECTIONAL DEVELOPING ANTI-COUNTERFEITING MARK AND MANUFACTURING METHOD THEREOF	
P37021	CN	116901580	20/10/2023	HUBEI HUAGONG IMAGE TECHNOLOGY DEVELOPMENT	CN	30/08/2023	CN2023001123057	CN116901580	MULTIFUNCTIONAL PLATE SHAFT WITH SLEEVE POSITION PRINTING AND HOLOGRAPHIC SPECIAL PATTERN EMBOSsing FUNCTIONS	
P37022	CN	116895210	17/10/2023	HAIYAN XIMEI PRINTING INDUSTRY	CN	05/07/2023	CN2023000818876	CN116895210	LASER HOLOGRAPHIC ANTI-COUNTERFEITING CLOTHING HANGTAG AND PREPARATION METHOD THEREOF	
P37029	CN	116852834	10/10/2023	SHANGHAI TECHSUN PACKING MATERIALS SHANGHAI TIANCHEN MICRO NANO TECHNOLOGY	CN	07/07/2023	CN2023000827958	CN116852834	PACKAGING FILM WITH POSITIONING HOLOGRAPHIC EFFECT AND PREPARATION METHOD AND APPLICATION THEREOF	
P37039	AT	526123	15/10/2023	HUECK FOLIEN	AT	05/10/2022	AT2022000050775	AT-526123	LAMINATED COMPOSITE WITH A THERMALLY SHRUNK STRUCTURE AND METHOD FOR THE PRODUCTION THEREOF	

VARIOUS OPTICAL EFFECTS - 26 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P36908	WO	2023208666	02/11/2023	OVD KINEGRAM	DE	25/04/2022	DE202210109850	WO2023208666 DE102022109850	LAMINATE AND METHOD FOR PRODUCING A LAMINATE	MicroLens
P36909	WO	2023208416	02/11/2023	GIESECKE & DEVRIENT CURRENCY TECHNOLOGY	DE	25/04/2022	DE202210001402	WO2023208416 DE102022001402	METHOD FOR TRANSFERRING A SECURITY ELEMENT TO A TARGET SUBSTRATE	
P36911	WO	2023202864	26/10/2023	META MEDIA	US	19/04/2022	US202206332665	WO2023202864	METASURFACE-BASED ANTI-COUNTERFEITING DEVICE	

IHMA - OCTOBER 2023 - 126 ISSUED PATENTS - PAGE 2

VARIOUS OPTICAL EFFECTS - 26 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P36913	WO	2023199061	19/10/2023	DE LA RUE INTERNATIONAL	GB	14/04/2022	GB2022200005574	WO2023199061 GB202205574 GB2617610	OPTICAL DEVICES AND METHODS OF MANUFACTURE THEREOF	
P36914	WO	2023198771	19/10/2023	KOENIG & BAUER BANKNOTE SOLUTIONS	GB	12/04/2022	GB2022200005377	WO2023198771 GB202205377 GB2617578	METHODS FOR DESIGNING A PRINTED IMAGE FOR A SECURITY FEATURE	Passport - Microlens
P36915	WO	2023198301	19/10/2023	KOENIG & BAUER	DE	13/04/2022	DE202210109036	WO2023198301 DE102022109036	CYLINDER FOR ALIGNING MAGNETIC OR MAGNETIZABLE PARTICLES CONTAINED IN A COATING AGENT ON A SUBSTRATE, AND MACHINE FOR GENERATING OPTICALLY VARIABLE IMAGE ELEMENTS	
P36921	WO	2023190483	05/10/2023	ZEON	JP	30/03/2022	JP2022000057410	WO2023190483	IDENTIFICATION MEDIUM AND ARTICLE	
P36922	WO	2023190481	05/10/2023	ZEON	JP	30/03/2022	JP2022000057123	WO2023190481	IDENTIFICATION MEDIUM AND PRODUCT	
P36923	WO	2023189967	05/10/2023	ZEON	JP	30/03/2022	JP2022000057409	WO2023189967	IDENTIFICATION MEDIUM	
P36924	WO	2023189966	05/10/2023	ZEON	JP	30/03/2022	JP2022000057254	WO2023189966	IDENTIFICATION MEDIUM AND ARTICLE	
P36925	WO	2023189788	05/10/2023	ZEON	JP	30/03/2022	JP2022000057487	WO2023189788	IDENTIFICATION MEDIUM AND ARTICLE	
P36926	WO	2023189787	05/10/2023	ZEON	JP	30/03/2022	JP2022000057124	WO2023189787	IDENTIFICATION MEDIUM AND ARTICLE	
P36929	US	20230339220	26/10/2023	ITW - ILLINOIS TOOL WORKS	US	22/04/2022	US2022063363392	US20230339220 WO2023204999	FULL FOIL FACE ASSEMBLIES AND METHODS FOR MANUFACTURING THE SAME	
P36930	US	20230333293	19/10/2023	PRECISION CONVERTING TECHNOLOGIES	US	15/04/2022	US2022063331353	US20230331024 US20230333293	OPTICAL SECURITY FEATURE WITH EMBOSSED APPEARANCE	Microlens
P36956	JP	2023135699	29/09/2023	DAI NIPPON PRINTING	JP	16/03/2022	JP2022000040914	JP2023135699	MEDIUM GROUP, CARD MEDIUM, READING APPARATUS, CARD READING SYSTEM, PROGRAM, AND AUTHENTICITY DETERMINATION METHOD	
P36978	EP	4257366	11/10/2023	THALES DIS	EP	08/04/2022	EP2022000305502	EP4257366 WO2023194605	SECURITY ELEMENTS IN COVERS OF SECURE ARTICLE BY ULTRASONIC WELDING	Passport
P36982	DE	102022109035	19/10/2023	KOENIG & BAUER	DE	13/04/2022	DE202210109035	DE102022109035	CYLINDER WITH A NUMBER OF GROUPS OF MAGNETIC ELEMENTS ARRANGED NEXT TO ONE ANOTHER IN THE AXIAL DIRECTION, ARRANGED ONE BEHIND THE OTHER IN THE CIRCUMFERENTIAL DIRECTION, AND DEVICE FOR MOUNTING AND/OR POSITIONING MAGNETIC ELEMENTS ON SUCH A CYLINDER	
P36990	CN	219885971	24/10/2023	SHENZHEN SHENDA AURORA TECHNOLOGY	CN	26/04/2023	CN2023000979800	CN219885971U	LASER ENCRYPTION ANTI-COUNTERFEITING FILM REPRODUCED BY POINT LIGHT SOURCE	
P36999	CN	219811278	10/10/2023	SHANGHAI GUANZHONG OPTICAL TECHNOLOGY	CN	30/05/2023	CN2023001342048	CN219811278U	ANTI-COUNTERFEITING LABEL AND ANTI-COUNTERFEITING PRODUCT	
P37001	CN	219793465	03/10/2023	YUXI TIPPING PAPER MANUFACTURING	CN	23/05/2023	CN2023001249787	CN219793465U	TIPPING PAPER WITH DUAL FUNCTIONS OF TAR REDUCTION AND ANTI-COUNTERFEITING	
P37003	CN	219778417	29/09/2023	LINGYAO BIOTECHNOLOGY SHANGHAI SHANGHAI YODAY BIOTECH	CN	31/05/2023	CN2023001358602	CN219778417U	TEARING OPEN AND LEAVING BOTTOM TYPE MEDICINE PACKAGE ANTI-COUNTERFEIT LABEL	
P37007	CN	219759058	26/09/2023	DONGGUAN DONGANG PACKAGING TECHNOLOGY	CN	20/04/2023	CN2023000908981	CN219759058U	OPTICALLY VARIABLE INK ANTI-COUNTERFEIT LABEL	
P37018	CN	116911872	20/10/2023	ANT BLOCKCHAIN TECHNOLOGY SHANGHAI	CN	16/06/2023	CN2023000725250	CN116911872	ARTICLE VERIFICATION METHOD, DETECTION METHOD FOR SCREEN ACQUISITION AND LABEL PRINTED WITH GRAPHIC CODE	
P37023	CN	116890554	17/10/2023	SOOCHIRAL CHEMICAL SCIENCE & TECHNOLOGY	CN	26/05/2023	CN2023000603876	CN116890554	PATTERNING METHOD OF CROSSLINKED CHOLESTERIC LIQUID CRYSTAL FILM	
P37028	CN	116852892	10/10/2023	SHENZHEN SHENDA AURORA TECHNOLOGY	CN	10/07/2023	CN2023000837257	CN116852892	OPTICAL ANTI-COUNTERFEITING ELEMENT AND PREPARATION METHOD THEREOF	Microlens
P37036	CN	116811461	29/09/2023	CHINA BANKNOTE PRINTING & MINT CHINA BANKNOTE SECURITY PRINTING TECHNOLOGY RESEARCH INSTITUTE	CN	06/06/2023	CN2023000665391	CN116811461	SECURITY ELEMENT AND SECURITY PRODUCT	

IHMA - OCTOBER 2023 - 126 ISSUED PATENTS - PAGE 3

NON SECURITY HOLOGRAMS - 83 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N9700	WO	2023196686	12/10/2023	CARNEGIE MELLON UNIVERSITY	US	28/03/2022	US2022063324163	WO2023196686	HOLOGRAPHIC LIGHT CURTAINS	
N9701	WO	2023187126	05/10/2023	FONDATION B COM	FR	31/03/2022	FR2022000002919	WO2023187126	METHOD AND DEVICE FOR DECODING A DIGITAL HOLOGRAM, METHOD AND DEVICE FOR ENCODING A DIGITAL HOLOGRAM, AND ASSOCIATED COMPUTER PROGRAM	
N9702	WO	2023186924	05/10/2023	FONDATION B COM	FR	31/03/2022	FR2022000002919	WO2023186924 FR3134198 FR3134199	METHOD FOR APPLYING A TRANSFORMATION TO A DIGITAL HOLOGRAM, ASSOCIATED DIGITAL HOLOGRAPHY DEVICE AND COMPUTER PROGRAM	
N9703	WO	2023186695	05/10/2023	CARL ZEISS JENA	DE	28/03/2022	DE202210107225	WO2023186695 DE102022107225	METHOD FOR PRODUCING A LAMINATING COMPONENT OR A HOLOGRAM COMPONENT, FOR PRODUCING A LAMINATED GLASS, AND CORRESPONDING LAMINATING COMPONENTS, HOLOGRAM COMPONENTS AND LAMINATED GLASSES	
N9704	WO	2023186627	05/10/2023	CARL ZEISS JENA	DE	31/03/2022	DE202210107677	WO2023186627 DE102022107677	TRANSPARENT DISPLAY	
N9705	WO	2023183450	28/09/2023	META PLATFORMS TECHNOLOGIES	US	23/03/2022	US2022063322851	WO2023183450	SYSTEMS AND METHODS OF SIGNALING INFORMATION FOR HOLOGRAPHIC COMMUNICATIONS	
N9706	WO	2023180693	28/09/2023	VIVIDQ	GB	25/03/2022	GB2022000004235	WO2023180693 GB202204235	HOLOGRAPHIC DISPLAYS AND METHODS	
N9707	WO	2023179985	28/09/2023	PREH	DE	23/03/2022	DE202210106819	WO2023179985 DE102022106819	OPERATING ELEMENT HAVING A HOLOGRAPHIC FUNCTIONAL DISPLAY FOR VISUALISING THE SWITCHING FUNCTION ASSOCIATED WITH THE OPERATING ELEMENT AND/OR THE SWITCHING STATE THEREOF, ASSOCIATED ASSEMBLY, AND ASSOCIATED JOINING METHOD	
N9708	US	20230341812	26/10/2023	FACEBOOK TECHNOLOGIES META PLATFORMS TECHNOLOGIES	US	22/04/2022	US2022017727518	US20230341812 WO2023205487	MULTI-LAYERED POLARIZATION VOLUME HOLOGRAM	
N9709	US	20230324593	12/10/2023	HTC	US	08/04/2022	US2022063362664	US20230324593 TW202340883 CN116893461	METHOD OF MANUFACTURING OPTICAL ELEMENT AND OPTICAL EXPOSURE SYSTEM	
N9710	US	20230305489	28/09/2023	META PLATFORMS TECHNOLOGIES	US	23/03/2022	US2022017702379	US20230305489 WO2023183378	SYSTEMS AND METHODS FOR COMPUTER-GENERATED HOLOGRAM IMAGE AND VIDEO COMPRESSION	
N9711	RU	2804253	26/09/2023	ОБЩЕСТВО С ОГРАНИЧЕННОЙ ОТВЕТСТВЕННОСТЬЮ «KSPANSEO»	RU	31/05/2023	RU2023000114191	RU2804253	UNIT OF RECORDING MULTIPLEX HOLOGRAMS AND METHOD OF RECORDING MULTIPLEX HOLOGRAMS	
N9712	KR	20230146949	20/10/2023	HOLOLAB	KR	13/04/2022	KR2022000046000	KR20230146949	METHOD AND SYSTEM FOR REPRODUCING HIGH-DIMENSIONAL HOLOGRAPHIC IMAGE USING COMBINATION OF HOLOGRAPHIC SCREEN AND HOLOGRAPHIC STEREOGRAM	
N9713	KR	20230146948	20/10/2023	HOLOLAB	KR	13/04/2022	KR2022000045998	KR20230146948	HIGHLY TRANSPARENT AR SHOWCASE BASED ON MULTI-LAYER IMAGES	
N9714	KR	20230142873	11/10/2023	SUH, MI SOOK	KR	04/04/2022	KR2022000041473	KR20230142873	APPARATUS AND METHOD FOR PROVIDING SAFETY INFORMATION USING HOLOGRAM	
N9715	KR	20230142183	11/10/2023	BRYTN	KR	01/04/2022	KR2022000041099	KR20230142183	HOLOGRAPHIC IMAGE GENERATION UNIT AND HEAD-UP DISPLAY DEVICE FOR VEHICLE HAVING THE SAME	
N9716	KR	20230140187	06/10/2023	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	29/03/2022	KR2022000039027	KR20230140187	METHOD AND APPARATUS FOR DIGITAL HOLOGRAM TRANSFORM AND RENDERING	
N9717	KR	20230134193	21/09/2023	HOLOLAB	KR	14/03/2022	KR2022000031183	KR20230134193	METHOD AND SYSTEM FOR MANUFACTURING EXTERIOR HOLOGRAPHIC HEAD-UP DISPLAY	
N9718	KR	20230133114	19/09/2023	FUTURE TECHNOLOGY	KR	10/03/2022	KR2022000030228	KR20230133114	CGH MANUFACTURING METHOD OF HOLOGRAM REPRODUCING APPARATUS THROUGH COMPUTER GENERATED HOLOGRAPHY WITH DEPTH INFORMATION AND LIGHTING ANGLE	
N9719	KR	102590621	19/10/2023	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	15/11/2022	KR2022000152137	KR102590621	HOLOGRAM FILM HOLDER FOR HOLOGRAM PRINTER	
N9720	KR	102588925	16/10/2023	NXO	KR	07/06/2023	KR2023000072728	KR102588925	NON-CONTACT BUTTON INPUT DEVICE USING HOLOGRAM	
N9721	KR	102583717	27/09/2023	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	KR	02/12/2022	KR2022000166179	KR102583717	360DEG WINDOW HOLOGRAM VIEWING DEVICE	

IHMA - OCTOBER 2023 - 126 ISSUED PATENTS - PAGE 4

NON SECURITY HOLOGRAMS - 83 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N9722	JP	2023149767	13/10/2023	JAPAN MINT OSAKA RESEARCH INSTITUTE OF INDUSTRIAL SCIENCE & TECHNOLOGY	JP	31/03/2022	JP2022000058522	JP2023149767	HOLOGRAM ELEMENT	
N9723	JP	2023137107	29/09/2023	KANSAI UNIVERSITY KDDI	JP	17/03/2022	JP2022000043137	JP2023137107	INTERFERENCE FRINGES OF COMPUTER-COMPOSITE HOLOGRAM ANIMATION, APPARATUS FOR GENERATING SAME, METHOD FOR GENERATING SAME, AND PROGRAM FOR GENERATING SAME, AND APPARATUS FOR REPRODUCING COMPUTER-COMPOSITE HOLOGRAM ANIMATION	
N9724	JP	7361853	16/10/2023	SUETSUGU KATSUNORI	JP	10/08/2022	JP2022000127657	JP7361853	ELECTRONIC BOOK DISPLAY SYSTEM AND ELECTRONIC BOOK DISPLAY PROGRAM	
N9725	IN	202331034539	06/10/2023	INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES)	IN	17/05/2023	IN2023031034539	IN202331034539	DIGITAL HOLOGRAPHIC NANOSCOPIC SYSTEM FOR 3-D SUPER-RESOLUTION IMAGING OF REFLECTIVE SURFACE, DEFECTS AND CRACKS	
N9726	IN	202311055513	15/09/2023	BLUEST METTLE SOLUTIONS PRIVATE CHITKARA UNIVERSITY	IN	18/08/2023	IN2023011055513	IN202311055513	SYSTEM OF FACE-TIME HOLOGRAMS BASED ON AI AND METHOD THEREOF	
N9727	IN	202241012973	15/09/2023	BHARAT ELECTRONICS	IN	10/03/2022	IN2022041012973	IN202241012973	DESIGN METHODOLOGY OF A COMPACT TRANSPARENT PROJECTION SYSTEM EMPLOYING HOLOGRAPHIC ELEMENTS IN U-SHAPED GEOMETRY	
N9728	EP	4254074	04/10/2023	WS HSH INTERNATIONAL TECHNOLOGY	TW	28/03/2022	TW2022000111764	EP4254074 US20230305313 JP2023145384 CN116819795 TW202338445	HOLOGRAPHIC PROJECTION OPERATING DEVICE, HOLOGRAPHIC PROJECTION DEVICE AND HOLOGRAPHIC OPTICAL MODULE THEREOF	
N9729	DE	102022106627	28/09/2023	CARL ZEISS JENA	DE	22/03/2022	DE202210106627	DE102022106627	SUPPORT MATERIAL LAYER FOR HOLOGRAPHIC OPTICAL ELEMENT ON CURVED SURFACE	
N9730	CN	219872103	20/10/2023	DIGITAL SHANXI DESIGN STOCK	CN	14/04/2023	CN2023000835297	CN219872103U	HOLOGRAPHIC PROJECTION EXHIBITION DISPLAY DEVICE FOR SCIENCE AND TECHNOLOGY MUSEUM	
N9731	CN	219856505	20/10/2023	SHENZHEN JIANYANG TECHNOLOGY	CN	07/01/2023	CN2023000038690	CN219856505U	FULL-AUTOMATIC HOLOGRAPHIC LASER PRINTER	
N9732	CN	219831646	13/10/2023	SHENZHEN METALENX TECHNOLOGY	CN	18/01/2023	CN2023000161747	CN219831646U	HOLOGRAPHIC DISPLAY SYSTEM	
N9733	CN	219811324	10/10/2023	CHINA CONSTRUCTION THIRD BUREAU GREEN INDUSTRY INVESTMENT CHINA CONSTRUCTION THIRD BUREAU WATER CONSERVANCY & HYDROPOWER DEVELOPMENT THIRD ENGINEERING BUREAU OF CHINA CITY CONSTRUCTION	CN	24/04/2023	CN2023000994904	CN219811324U	HUMAN-COMPUTER INTERACTION TYPE INTELLIGENT WATER AFFAIR MODEL THREE-DIMENSIONAL HOLOGRAPHIC PROJECTION DEVICE	
N9734	CN	219778084	29/09/2023	LONGYING TECHNOLOGY GUANGZHOU	CN	14/03/2023	CN2023000496287	CN219778084U	ADVERTISEMENT PROJECTOR BASED ON HOLOGRAPHIC TECHNOLOGY	
N9735	CN	219749186	26/09/2023	SUZHOU SUNWAY INTELLIGENT TECHNOLOGY	CN	31/05/2023	CN2023001363876	CN219749186U	PRINTING ROLLER OF LASER HOLOGRAPHIC PRINTER	
N9736	CN	219738379	22/09/2023	ANHUI ZHONGXIANG INFORMATION TECHNOLOGY SERVICE	CN	31/10/2022	CN2022002876854	CN219738379U	HOLOGRAPHIC SAND TABLE MODEL AND VR EXPERIENCE PROJECTION DEVICE	
N9737	CN	219738014	22/09/2023	CHENGDU FEIMI CULTURE COMMUNICATION GROUP	CN	26/05/2023	CN2023001306041	CN219738014U	HOLOGRAPHIC PROJECTION DEVICE	
N9738	CN	219738013	22/09/2023	NETEASE MEDIA TECHNOLOGY	CN	27/04/2023	CN2023001006811	CN219738013U	HOLOGRAPHIC PROJECTION ORNAMENT	
N9739	CN	219723522	22/09/2023	ZHEJIANG CHUNYU PACKAGING MATERIAL	CN	21/04/2023	CN2023000907951	CN219723522U	HOLOGRAPHIC THERMOPRINT MEMBRANE IS WITH HIGH-EFFICIENT COATING MACHINE	
N9740	CN	116934960	24/10/2023	JIANGSU JINGRUI INFORMATION TECHNOLOGY	CN	21/06/2023	CN2023000748326	CN116934960	THREE-DIMENSIONAL HOLOGRAPHIC VISUALIZATION MODEL BASED ON DIGITAL TWIN AND IMPLEMENTATION METHOD	
N9741	CN	116931408	24/10/2023	SICHUAN UNIVERSITY	CN	07/08/2023	CN2023000985867	CN116931408	OPTICAL CYLINDRICAL SURFACE HOLOGRAPHIC DISPLAY METHOD BASED ON 2-STEP DIFFRACTION METHOD	
N9742	CN	116931407	24/10/2023	YIWU QINGYUE PHOTOELECTRIC TECHNOLOGY RESEARCH INSTITUTE	CN	25/07/2023	CN2023000919890	CN116931407	IMAGING METHOD OF HOLOGRAPHIC IMAGING DISPLAY DEVICE AND HOLOGRAPHIC IMAGING DISPLAY DEVICE	
N9743	CN	116931274	24/10/2023	DRAGONFLY EYE SHANGHAI VISUAL TECHNOLOGY	CN	24/07/2023	CN2023000908155	CN116931274	HOLOGRAPHIC PROCESSING UNIT SYSTEM OF MIXED REALITY GLASSES	

IHMA - OCTOBER 2023 - 126 ISSUED PATENTS - PAGE 5

NON SECURITY HOLOGRAMS - 83 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N9744	CN	116925639	24/10/2023	NANCHANG VIRTUAL REALITY RESEARCH INSTITUTE	CN	14/09/2023	CN2023001187537	CN116925639	COMPOSITION FOR HOLOGRAPHIC RECORDING MEDIUM AND HOLOGRAPHIC RECORDING MEDIUM	
N9745	CN	116922989	24/10/2023	WUHAN YINCAITIAN PAPER	CN	15/06/2023	CN2023000716731	CN116922989	NAKED EYE 3D PACKAGING MATERIAL PAPER PRODUCTION PROCESS WITH SUSPENSION EFFECT	
N9746	CN	116919448	24/10/2023	SHENZHEN SONOSCAPE BIOLOGICAL MEDICAL SCIENCE & TECHNOLOGY	CN	29/03/2022	CN2022000320035	CN116919448	HOLOGRAPHIC VIDEO GENERATION METHOD AND DEVICE, ELECTRONIC EQUIPMENT AND STORAGE MEDIUM	
N9747	CN	116915963	20/10/2023	GOOLTON TECHNOLOGY	CN	31/08/2023	CN2023001119767	CN116915963	HOLOGRAPHIC PROJECTION METHOD AND DEVICE BASED ON OBSERVATION SIGHT LINE AND ELECTRONIC EQUIPMENT	
N9748	CN	116912343	20/10/2023	WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT	CN	29/06/2023	CN2023000783133	CN116912343	HOLOGRAPHIC RELIEF PATTERN GENERATION METHOD AND DEVICE	
N9749	CN	116909116	20/10/2023	ZHEJIANG NORMAL UNIVERSITY	CN	01/08/2023	CN2023000961367	CN116909116	CENTIMETER-LEVEL TRANSLATIONAL PIXEL SUPER-RESOLUTION LENS-FREE ON-LENS MICROSCOPIC IMAGING SYSTEM AND METHOD	
N9750	CN	116909115	20/10/2023	WUHAN INSTITUTE OF QUANTUM TECHNOLOGY	CN	07/07/2023	CN2023000837561	CN116909115	METHOD FOR SIMULTANEOUSLY REALIZING COLOR NANO PRINTING AND COLOR HOLOGRAM ON SUPER SURFACE AND SUPER SURFACE	
N9751	CN	116909029	20/10/2023	HEFEI UNIVERSITY OF TECHNOLOGY	CN	07/08/2023	CN2023000983479	CN116909029	HOLOGRAPHIC WAVEGUIDE DISPLAY DEVICE	
N9752	CN	116909028	20/10/2023	HEFEI UNIVERSITY OF TECHNOLOGY	CN	03/08/2023	CN2023000976369	CN116909028	HOLOGRAPHIC WAVEGUIDE DISPLAY DEVICE	
N9753	CN	116908949	20/10/2023	GENERAL INTERFACE SOLUTION GIS TECHNOLOGY INTERFACE OPTOELECTRONIC YECHENG PHOTOELECTRIC WUXI	CN	19/07/2023	CN2023000891237	CN116908949	PREPARATION METHOD OF VOLUME HOLOGRAPHIC GRATING, VOLUME HOLOGRAPHIC GRATING AND HEAD-MOUNTED EQUIPMENT	
N9754	CN	116903777	20/10/2023	FUJIAN NORMAL UNIVERSITY	CN	14/07/2023	CN2023000865530	CN116903777	NVP DOPED PQ/PMMA PHOTOPOLYMER HOLOGRAPHIC STORAGE MATERIAL AND PREPARATION METHOD THEREOF	
N9755	CN	116903776	20/10/2023	FUJIAN NORMAL UNIVERSITY	CN	14/07/2023	CN2023000864628	CN116903776	NOVEL HOLOGRAPHIC STORAGE MATERIAL AND PREPARATION METHOD THEREOF	
N9756	CN	116903769	20/10/2023	FUJIAN NORMAL UNIVERSITY	CN	14/07/2023	CN2023000864586	CN116903769	PETMP DOPED PQ/PMMA PHOTOPOLYMER HOLOGRAPHIC STORAGE MATERIAL AND PREPARATION METHOD THEREOF	
N9757	CN	116893462	17/10/2023	JOURNEY TECHNOLOGY	CN	08/09/2023	CN2023001153425	CN116893462	PREPARATION METHOD OF POLARIZER HOLOGRAPHIC GRATING AND POLARIZER HOLOGRAPHIC GRATING	
N9758	CN	116880701	13/10/2023	SHENZHEN EUCLIDEON TECHNOLOGY	CN	07/09/2023	CN2023001148693	CN116880701	MULTIMODE INTERACTION METHOD AND SYSTEM BASED ON HOLOGRAPHIC EQUIPMENT	
N9759	CN	116880117	13/10/2023	SHENZHEN WUJIE VISION TECHNOLOGY	CN	10/07/2023	CN2023000838793	CN116880117	3D HOLOGRAPHIC PROJECTION SYSTEM WITH IMMERSIVE EFFECT	
N9760	CN	116880083	13/10/2023	4U TECHNOLOGY	CN	17/07/2023	CN2023000877052	CN116880083	SPHERICAL HOLOGRAPHIC DISPLAY DEVICE AND DISPLAY METHOD THEREOF	
N9761	CN	116879231	13/10/2023	WUYI UNIVERSITY	CN	05/06/2023	CN2023000657712	CN116879231	FIBER ORIENTATION DEGREE DETECTION METHOD, DEVICE, EQUIPMENT AND MEDIUM BASED ON DIGITAL HOLOGRAM	
N9762	CN	116862744	10/10/2023	GUILIN UNIVERSITY OF ELECTRONIC TECHNOLOGY	CN	27/06/2023	CN2023000763757	CN116862744	GRID GEOGRAPHIC DATA WATERMARK GENERATION METHOD COMBINING QR (QUICK RESPONSE) CODING AND CALCULATION HOLOGRAM	
N9763	CN	116862730	10/10/2023	SHANDONG LABOR VOCATIONAL & TECHNICAL COLLEGE	CN	05/09/2023	CN2023001134125	CN116862730	VR HOLOGRAPHIC TEACHING MANAGEMENT SYSTEM	
N9764	CN	116859700	10/10/2023	GUANGZHOU LI BAO PACKING	CN	11/07/2023	CN2023000848988	CN116859700	LUMINOUS HOLOGRAPHIC FILM PRODUCT AND PREPARATION METHOD THEREOF	
N9765	CN	116859699	10/10/2023	SHANGHAI UNIVERSITY	CN	26/05/2023	CN2023000604785	CN116859699	METHOD, MATERIAL AND DEVICE FOR RAPIDLY RECORDING LARGE-FIELD-ANGLE HOLOGRAPHIC STEREOGRAM	
N9766	CN	116859617	10/10/2023	4U TECHNOLOGY	CN	17/07/2023	CN2023000875778	CN116859617	CONTROL METHOD AND DEVICE FOR HOLOGRAPHIC DISPLAY BASED ON SPHERICAL HOLOGRAPHIC DISPLAY EQUIPMENT	
N9767	CN	116859494	10/10/2023	WUHAN UNIVERSITY	CN	14/06/2023	CN2023000708303	CN116859494	SUPER SURFACE FOR REALIZING COLOR NANO PRINTING AND TWO KINDS OF HOLOGRAPHIC MULTIPLEXING AND DESIGN METHOD THEREOF	

IHMA - OCTOBER 2023 - 126 ISSUED PATENTS - PAGE 6

NON SECURITY HOLOGRAMS - 83 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N9768	CN	116846364	03/10/2023	HARBIN UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	08/06/2023	CN2023000674176	CN116846364	MATCHED SELF-ADAPTIVE FILTERING METHOD FOR MULTIPLEXING OFF-AXIS DIGITAL HOLOGRAPHY	
N9769	CN	116841173	03/10/2023	GUANGDONG JINGQI LASER TECHNOLOGY	CN	17/07/2023	CN2023000875239	CN116841173	COLOR HOLOGRAPHIC SYSTEM AND METHOD BASED ON WHITE LIGHT LASER LIGHT SOURCE AND TIME DIVISION MULTIPLEXING	
N9770	CN	116841172	03/10/2023	KUNMING UNIVERSITY OF SCIENCE & TECHNOLOGY	CN	05/07/2023	CN2023000816370	CN116841172	HOLOGRAPHIC PRINTING SYSTEM AND METHOD BASED ON OPTICAL SCANNING HOLOGRAPHY	
N9771	CN	116841171	03/10/2023	XI AN INSTITUTE OF OPTICS & PRECISION MECHANICS OF CHINESE ACADEMY OF SCIENCES	CN	01/06/2023	CN2023000641779	CN116841171	DIGITAL MICROMIRROR SCANNING HOLOGRAPHIC IMAGING METHOD AND IMAGING SYSTEM FOR FIELD OF VIEW INCREASE	
N9772	CN	116840958	03/10/2023	JIANGXI LIANHAO PHOTOELECTRIC	CN	30/06/2023	CN2023000793577	CN116840958	SOLVENT POLYMER HOLOGRAPHIC GRATING AND PREPARATION METHOD THEREOF	
N9773	CN	116825146	29/09/2023	FUJIAN NORMAL UNIVERSITY	CN	18/07/2023	CN2023000878048	CN116825146	SERVO FOCUSING METHOD FOR HOLOGRAPHIC DATA STORAGE SYSTEM	
N9774	CN	116824029	29/09/2023	BEIJING DIKOU TECHNOLOGY	CN	13/07/2023	CN2023000856337	CN116824029	METHOD, DEVICE, ELECTRONIC EQUIPMENT AND STORAGE MEDIUM FOR GENERATING HOLOGRAPHIC SHADOW	
N9775	CN	116819905	29/09/2023	TSINGHUA SHENZHEN INTERNATIONAL GRADUATE SCHOOL	CN	20/07/2023	CN2023000899449	CN116819905	HOLOGRAPHIC PROJECTION EXPOSURE SYSTEM	
N9776	CN	116819794	29/09/2023	GUANGZHOU ACADEMY OF FINE ARTS	CN	03/07/2023	CN2023000810611	CN116819794	MULTIDIMENSIONAL HOLOGRAPHIC NAKED EYE 3D DISPLAY DEVICE	
N9777	CN	116819771	29/09/2023	HUAWEI	CN	21/03/2022	CN2022000281082	CN116819771	HOLOGRAPHIC THREE-DIMENSIONAL OPTICAL DISPLAY SYSTEM	
N9778	CN	116811426	29/09/2023	PINGXIANG HAOFENG PACKAGING	CN	25/07/2023	CN2023000920279	CN116811426	HOLOGRAPHIC POSITIONING GILDING PRESS AND GILDING PROCESS THEREOF	
N9779	CN	116811119	29/09/2023	FUJIAN NORMAL UNIVERSITY	CN	05/07/2023	CN2023000818388	CN116811119	PREPARATION METHOD OF HOLOGRAPHIC STORAGE MATERIAL AND MOLD FOR PREPARATION	
N9780	CN	116811118	29/09/2023	FUJIAN NORMAL UNIVERSITY	CN	05/07/2023	CN2023000818354	CN116811118	SYSTEM AND METHOD FOR AUTOMATICALLY PREPARING HOLOGRAPHIC STORAGE MATERIAL	
N9781	CN	116797641	22/09/2023	JILIN UNIVERSITY	CN	10/07/2023	CN2023000841018	CN116797641	FOURIER HOLOGRAM GENERATION AND RECONSTRUCTION METHOD BASED ON SPARSE ACQUISITION	
N9782	CN	116794923	22/09/2023	NANCHANG UNIVERSITY	CN	27/06/2023	CN2023000762460	CN116794923	REAL-TIME THREE-DIMENSIONAL SCENE ACQUISITION AND THREE-DIMENSIONAL HOLOGRAPHIC RECONSTRUCTION METHOD BASED ON ULTRA-FAST OPTICAL AXIAL SCANNING	