

(12) International Application Status Report

Received at International Bureau: 23 February 2020 (23.02.2020)

Information valid as of: 02 June 2020 (02.06.2020)

Report generated on: 22 June 2021 (22.06.2021)

(10) Publication number:

WO2020/160188

(43) Publication date:

06 August 2020 (06.08.2020)

(26) Publication language:

English (EN)

(21) Application Number:

PCT/US2020/015735

(22) Filing Date:

29 January 2020 (29.01.2020)

(25) Filing language:

English (EN)

(31) Priority number(s):

62/800,316 (US)

(31) Priority date(s):

01 February 2019 (01.02.2019)

(31) Priority status:

Priority document received (in compliance with PCT Rule 17.1)

(51) International Patent Classification:

G02B 6/00 (2006.01); **G02B 6/24** (2006.01); **G02B 6/26** (2006.01); **G02B 6/10** (2006.01); **G02B 27/01** (2006.01); **G02B 27/0101** (2006.01); **G02B 27/00** (2006.01); **G02F 1/00** (2006.01); **G02F 1/1343** (2006.01); **G02F 1/1333** (2006.01); **G02F 1/133** (2006.01)

(71) Applicant(s):

MAGIC LEAP, INC. [US/US]; 7500 W Sunrise Blvd. Plantation, Florida 33322 (US) (*for all designated states*)

(72) Inventor(s):

KHORASANINEJAD, Mohammadreza; 7500 W Sunrise Blvd. Plantation, Florida 33322 (US)

LIU, Victor Kai; 7500 W Sunrise Blvd. Plantation, Florida 33322 (US)

LIN, Dianmin; 7500 W Sunrise Blvd. Plantation, Florida 33322 (US)

PEROZ, Christophe; 7500 W Sunrise Blvd. Plantation, Florida 33322 (US)

ST. HILAIRE, Pierre; 7500 W Sunrise Blvd. Plantation, Florida 33322 (US)

(74) Agent(s):

CHRISTENSEN, Michael, R.; KNOBBE, MARTENS, OLSON & BEAR, LLP 2040 Main Street 14th Floor Irvine, California 92614 (US)

(54) Title (EN): INLINE IN-COUPLING OPTICAL ELEMENTS

(54) Title (FR): ÉLÉMENTS OPTIQUES DE COUPLAGE D'ENTRÉE EN LIGNE

(57) Abstract:

(EN): A display system includes a waveguide assembly having a plurality of waveguides, each waveguide associated with an in-coupling optical element configured to in-couple light into the associated waveguide. A projector outputs light from one or more spatially-separated pupils, and at least one of the pupils outputs light of two different ranges of wavelengths. The in-coupling optical elements for two or more waveguides are inline, e.g. vertically aligned, with each other so that the in-coupling optical elements are in the path of light of the two different ranges of wavelengths. The in-coupling optical element of a first waveguide selectively in-couples light of one range of wavelengths into the waveguide, while the in-coupling optical element of a second waveguide selectively in-couples light of another range of wavelengths. Absorptive color filters are provided forward of an in-coupling optical element to limit the propagation of undesired wavelengths of light to that in-coupling optical element.

(FR): L'invention concerne un système d'affichage comprenant un ensemble guide d'ondes ayant une pluralité de guides d'ondes, chaque guide d'ondes étant associé à un élément optique de couplage d'entrée conçu pour coupler en entrée de la lumière dans le guide d'ondes associé. Un projecteur émet de la lumière à partir d'une ou de plusieurs pupilles spatialement séparées, et au moins l'une des pupilles émet de la lumière de deux plages de longueurs d'onde différentes. Les éléments optiques de couplage d'entrée pour deux guides d'ondes ou plus sont en ligne, par exemple alignés verticalement, les uns avec les autres de telle sorte que les éléments optiques de couplage d'entrée se trouvent dans le trajet de lumière des deux plages de longueurs d'onde différentes. L'élément optique de couplage d'entrée d'un premier guide d'onde couple en entrée sélectivement la lumière d'une plage de longueurs d'onde dans le guide d'onde, tandis que l'élément optique de couplage d'entrée d'un second guide d'onde couple en entrée sélectivement la lumière d'une autre plage de longueurs d'onde. Des filtres colorés absorbants sont disposés vers l'avant

d'un élément optique de couplage d'entrée afin de limiter la propagation de longueurs d'onde de lumière indésirables à cet élément optique de couplage d'entrée.

International search report:

Received at International Bureau: 29 May 2020 (29.05.2020) [US]

International Report on Patentability (IPRP) Chapter II of the PCT:

Not available

(81) Designated States:

AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW

European Patent Office (EPO) : AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR

African Intellectual Property Organization (OAPI) : BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG

African Regional Intellectual Property Organization (ARIPO) : BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW

Eurasian Patent Organization (EAPO) : AM, AZ, BY, KG, KZ, RU, TJ, TM

Declarations:

Declaration made as applicant's entitlement, as at the international filing date, to apply for and be granted a patent (Rules 4.17(ii) and 51bis.1(a)(ii)), in a case where the declaration under Rule 4.17(iv) is not appropriate

Declaration made as applicant's entitlement, as at the international filing date, to claim the priority of the earlier application, where the applicant is not the applicant who filed the earlier application or where the applicant's name has changed since the filing of the earlier application (Rules 4.17(iii) and 51bis.1(a)(iii))