

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
12 May 2022 (12.05.2022)



(10) International Publication Number
WO 2022/098733 A3

(51) International Patent Classification:
G02B 30/56 (2020.01)

(21) International Application Number:
PCT/US2021/057865

(22) International Filing Date:
03 November 2021 (03.11.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/110,216 05 November 2020 (05.11.2020) US
17/512,367 27 October 2021 (27.10.2021) US

(71) Applicant: **UNIVERSAL CITY STUDIOS LLC**
[US/US]; 100 Universal City Plaza, Universal City, California 91608 (US).

(72) Inventors: **KRAUTHAMER, Akiva Meir**; 1000 Universal Studios Plaza, Orlando, Florida 32819 (US). **GAR-**

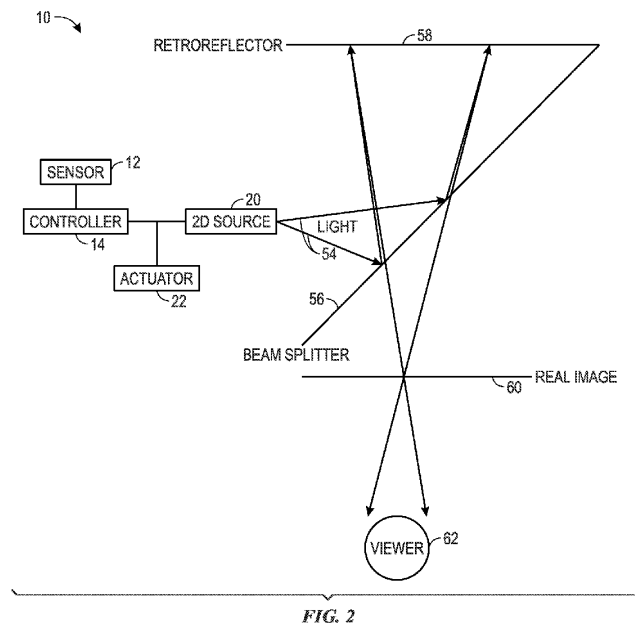
NIER, Timothy Fitzgerald; 1000 Universal Studios Plaza, Orlando, Florida 32819 (US).

(74) Agent: **POWELL, W. Allen** et al.; P.O. Box 692289, Houston, Texas 77269 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): 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, IT, 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.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,

(54) Title: AERIAL IMAGING USING RETROREFLECTION



(57) Abstract: Systems and method for generating real images via retroreflection are provided. An image source may project light beams, which are received at a beam splitter. The beam splitter, positioned between a retroreflector and a viewing area, may reflect the light beams toward the retroreflector. In turn, the light beams may be reflected back from the retroreflector and toward and through the beam splitter to generate a real image that appears to a viewer to be floating in the viewing area. A controller may control the image source to adjust the real image based on a control parameter detected by at least one sensor.

[Continued on next page]

TM), European (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), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:

21 July 2022 (21.07.2022)