US009716842B1

(12) **United States Patent**
Worley et al.

(10) **Patent No.: US 9,716,842 B1**
(45) **Date of Patent: Jul. 25, 2017**

(54) **AUGMENTED REALITY PRESENTATION**

(71) Applicant: **AMAZON TECHNOLOGIES, INC.**, Reno, NV (US)

(72) Inventors: **Connor Spencer Blue Worley**, San Diego, CA (US); **Devin Bertrum Pauley**, Mountain View, CA (US)

(73) Assignee: **Amazon Technologies, Inc.**, Reno, NV (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 323 days.

(21) Appl. No.: **13/922,145**

(22) Filed: **Jun. 19, 2013**

(51) **Int. Cl.**

G09G 5/00	(2006.01)
G06T 15/50	(2011.01)
H04N 5/262	(2006.01)
G09G 5/377	(2006.01)
G06T 19/00	(2011.01)
G06T 15/60	(2006.01)

(52) **U.S. Cl.**
CPC ***H04N 5/2621*** (2013.01); ***G06T 15/50*** (2013.01); ***G06T 15/60*** (2013.01); ***G06T 19/006*** (2013.01); ***G09G 5/377*** (2013.01)

(58) **Field of Classification Search**
CPC G06T 15/50; G06T 15/80; G06T 19/006; G06T 15/506; G06T 2210/56; G02C 13/005; G01B 11/2504
USPC 345/419, 632–634
IPC G06T 19/006,15/50, 15/80, 15/506, 2210/56
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2003/0038822	A1*	2/2003	Raskar	345/632
2008/0309667	A1*	12/2008	Zhou et al.	345/426
2009/0128579	A1*	5/2009	Xie	345/634
2009/0167763	A1*	7/2009	Waechter et al.	345/426
2009/0251460	A1*	10/2009	Dunnigan	345/419
2013/0083066	A1*	4/2013	Aoki et al.	345/633
2014/0002472	A1*	1/2014	Sobeski	G09G 5/026 345/582
2014/0267404	A1*	9/2014	Mitchell	G06T 19/006 345/633
2014/0333664	A1*	11/2014	Williams	G06Q 30/0643 345/633
2015/0070390	A1*	3/2015	Kasahara	G06F 3/01 345/633

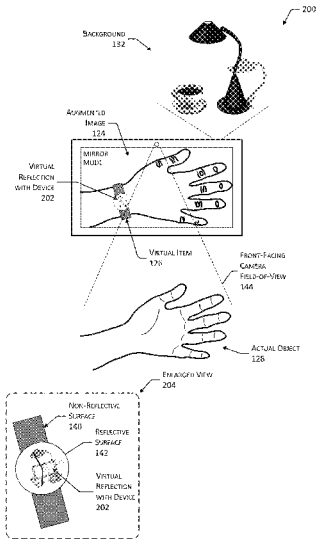
OTHER PUBLICATIONS

Peter Eisert, et al., "Virtual Jewel Rendering for Augmented Reality Environments", 2010 17th IEEE International Conference on Image Processing (ICIP 2010), Hong Kong, Sep. 26-29, 2010, pp. 1813-1816.*

(Continued)

Primary Examiner — Jin-Cheng Wang
(74) *Attorney, Agent, or Firm* — Lindauer Law, PLLC

(57) **ABSTRACT**

An augmented experience improves user experience by including virtual reflections of an actual background on virtual items presented in a user interface. An augmented image comprising a representation of a virtual item with one or more reflective surfaces is generated and presented in a user interface. Virtual reflections based on images of an actual background acquired by a camera are generated. The virtual reflections are superimposed on the one or more reflective surfaces of the virtual item for presentation of the augmented image. During presentation of the virtual item, the inclusion of the virtual reflection may improve overall realism of the virtual item.

20 Claims, 9 Drawing Sheets