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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DEMIAN GORDON

Appeal 2011-010558
Application 11/849,916
Technology Center 2600

Before THU A. DANG, JAMES R. HUGHES,
and GREGORY J. GONSALVES, *Administrative Patent Judges*.

DANG, *Administrative Patent Judge*.

DECISION ON APPEAL

I. STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from a Final Rejection of claims 1-20 and 22-24 (App. Br. 2). Claim 21 has been canceled (App. Br. 25). We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

A. INVENTION

Appellant's invention is directed to capturing the position and rotational orientation information of a moving object; wherein, the system analyzes the position and rotational orientation information of uniquely known patterns on a plurality of marking materials applied to the surface of the moving object (Abstract; Spec. 18:7-20-15).

B. ILLUSTRATIVE CLAIM

Claim 1 is exemplary:

1. A method, comprising:

applying a plurality of marking materials to different locations on a surface, each of the marking materials including a uniquely known pattern;

acquiring a sequence of image frames, each image frame of the sequence including a plurality of images of uniquely known patterns covering the surface;

deriving position and rotational orientation information for a portion of the different locations on the surface by analyzing position and rotational orientation information of those uniquely known patterns which are identifiable in each image frame of the sequence,

wherein the rotation orientation information for a portion of the different locations is derived from the uniquely known pattern generated from each marking material; and

generating animation data incorporating the position and orientation information

C. REJECTIONS

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Hashimoto	US 7,565,004 B2	Jul. 21, 2009
Marks	US 2004/0155962 A1	Aug. 12, 2004
Gobush	US 2005/0114073 A1	May 26, 2005
Perlman	US 2006/0055706 A1	Mar. 16, 2006
Perlman	US 2007/0285559 A1	Dec. 13, 2007

Claims 1, 2, 5-15, 20, and 22-24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Perlman'559 (incorporating Perlman'706) in view of Hashimoto.

Claims 3 and 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Perlman'559 (incorporating Perlman'706) in view of Hashimoto and Gobush.

Claims 16-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Perlman'559 (incorporating Perlman'706) in view of Hashimoto and Marks.

II. ISSUES

The dispositive issues before us are whether the Examiner has erred in determining that the combination of Perlman'559 (incorporating Perlman'706) and Hashimoto teach or would have suggested "applying a plurality of *marking materials* to different locations on a surface, each of the

marking materials including *a uniquely known pattern*" and "deriving position and rotational orientation information … by analyzing position and rotational orientation information" (claim 1, emphasis added).

III. FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

Perlman'706

1. Perlman'706 discloses a system and method for color-coded motion capture using a plurality of retro-reflective markers 201-216 positioned at various points of the performer's body; wherein, the retro-reflective markers 201-216 reflect light in different colors (frequencies) for unique identification of each marker 201-216 (¶¶ [0024]-[0025]). The system comprise at least one camera controller 250, a motion capture controller 252 and color coding data 253 of the retro-reflective markers 201-216 (¶ [0026]).

Hashimoto

2. Hashimoto discloses a system and method that uses a fiducial having a pattern which placed in a scene to provide a landmark position, orientation, scale, or other control data; wherein, one specific example includes the use of a fiducial 1010 having a planar circle 1012 on a planar background 1014 (Fig. 10 a; col. 11, ll. 35-40).

3. The system capable of acquiring a pose of the object which is the position and rotational orientation of an object relative to the camera coordinate space; wherein, the pose has 6 degrees of freedom, which are

typically considered as 3 rotational degrees of freedom (e.g. roll, pitch, and yaw) and 3 translational degrees of freedom (e.g. x, y, and z) (col. 11, ll. 58-62).

IV. ANALYSIS

Claims 1, 2, 5-15, 20 and 22-24

Appellant contends that Perlman '706 "fails to teach or suggest … applying a plurality of marking materials to different locations on a surface, each of the marking materials including a uniquely known pattern" (App. Br. 10). Appellant asserts that since "Merriam-Webster dictionary defines the term 'uniquely known' as 'being recognized as the only one,'" Hashimoto also fails to disclose marking materials including a uniquely known pattern because "the patterns of the marking materials [disclosed in Hashimoto] are all … known beforehand so that the position and the orientation of a marking material's pattern are also known" (App. Br. 13).

Appellant also argues that "the color-coded markers in Perlman '706 only provide the location of the markers, not the rotational orientation information of the markers" (App. Br. 12). Appellant contends further that "Hashimoto does not teach or suggest using relative rotational orientation of multiple fiducials to determine the orientation of the portion of the different locations on a surface of an object or person" (App. Br. 18).

However, the Examiner finds that "Perlman '706 discloses that '[t]he different colors may then be used to uniquely identify each individual retro-reflective element'" (Ans. 15). The Examiner finds further that "Hashimoto teaches applying fiducials (having a uniquely known pattern) on different locations of a surface and then analyzing position and rotational orientation

information of those fiducials to derive the position and rotational orientation information for a portion of the different locations on the surface (wherein the rotational orientation information for a portion of the different locations is derived from the fiducial)" (Ans. 18). The Examiner notes that he "did not rely on Perlman '706 to teach deriving rotational orientation information;" rather, "[t]he [E]xaminer relied on Hashimoto to teach deriving rotational orientation information" (Ans. 16).

We give the claim its broadest reasonable interpretation consistent with the Specification. *See In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). However, we will not read limitations from the Specification *or any other reference* into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

Claim 1 does not place any limitation on what a "uniquely known" pattern means, includes, or represents other than the marking materials includes one. In fact, claim 1 does not define what "uniquely" means. Thus, we give "uniquely known" its broadest reasonable interpretation as being known singularly and thus give "applying a plurality of marking materials to different locations on a surface, each of the marking materials including a uniquely known pattern" its broadest reasonable interpretation as applying marking materials including a singular, known pattern to a surface, as consistent with the Specification and claim 1.

Perlman'706 discloses a system and method for color-coded motion capture using a plurality of retro-reflective markers positioned at various points of the performer's body; wherein, the system detects the unique identification of each marker (FF 1). We find that retro-reflective markers positioned at various points of the performer's body to be a plurality of

marking materials placed at different locations on the surface of the performer's body. We find further that the markers having a unique identification are marking materials that include a uniquely known reflective property associated with its identification. That is, we find that Perlman '706's method includes the step of "applying a plurality of marking materials to different locations on a surface, each of the marking materials including a uniquely known" reflective property (claim 1).

In addition, Hashimoto discloses a system and method that uses a fiducial having a pattern which placed in a scene to provide a landmark position, orientation, scale, or other control data (FF 2). The system is able to acquire the pose of the object representing the position and rotational orientation of an object relative to the camera coordinate space (FF 3). We find that each fiducial includes a pattern. We also find that the system detects the rotational orientation of the object with respect to the camera. That is, we find that Hashimoto's fiducials comprise "marking materials including a uniquely known pattern" and Hashimoto's method comprises the step of "deriving position and rotational orientation information for a portion of the different locations on the surface by analyzing position and rotational orientation information of those uniquely known patterns which are identifiable in each image frame of the sequence" (claim 1).

We conclude that the combination of Perlman'559 (incorporating Perlman'706) and Hashimoto *at least suggests* providing "applying a plurality of marking materials to different locations on a surface, each of the marking materials including a uniquely known pattern" and "deriving position and rotational orientation information" (claim 1).

Accordingly, we find that Appellant has not shown that the Examiner erred in rejecting claim 1 under 35 U.S.C. § 103(a) over Perlman'559 (incorporating Perlman'706) in view of Hashimoto. Further, claims 2, 5-15, 20 and 22-24 (depending from claim 1) which have not been argued separately, fall with claim 1.

Claims 3, 4, and 16-19

Appellant argues that claims 3 and 4 are patentable over the cited prior art for the same reasons asserted with respect to claim 1 (App. Br. 19).

As noted *supra*, however, we find that the combined teachings of Perlman'559 (incorporating Perlman'706) and Hashimoto *at least suggests* all the features of claim 1. We therefore affirm the Examiner's rejection of claims 3 and 4 under 35 U.S.C. § 103 Perlman'559 (incorporating Perlman'706) in view of Hashimoto and Gobush and of claims 16-19 under 35 U.S.C. § 103 Perlman'559 (incorporating Perlman'706) in view of Hashimoto and Marks for the same reasons expressed with respect to parent claim 1, *supra*.

V. CONCLUSION AND DECISION

The Examiner's rejection of claims 1-20 and 22-24 under 35 U.S.C. § 103(a) is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

<u>AFFIRMED</u>

pgc