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Paper 44
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SZ DJI TECHNOLOGY CO., LTD.,
Petitioner,

v.

SYNERGY DRONE LLC,
Patent Owner.

Case IPR2018-00204
Patent 8,200,375 B2

Before PATRICK R. SCANLON, FRANCES L. IPPOLITO, and TIMOTHY J. GOODSON, *Administrative Patent Judges*.

GOODSON, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Petitioner filed a Petition (Paper 1, "Pet.") requesting *inter partes* review of claims 1–10 of U.S. Patent No. 8,200,375 B2 (Ex. 1001, "the '375 patent") on the following grounds:

Ground	References	Basis	Claim(s) Challenged
1	Thornberg-983[1] and Thornberg-1995[2]	§ 103	1–6
2	Thornberg-983, Thornberg-1995, and Kotake[3]	§ 103	7
3	Thornberg-983, Thornberg-1995, and Karem[4]	§ 103	8
4	Thornberg-983, Thornberg-1995, and Rivers[5]	§ 103	9, 10
5	Muramatsu,[6] Karem and, optionally, Thornberg-983	§ 103	1–5, 8
6	Muramatsu, Karem, and Thornberg-983	§ 103	6
7	Muramatsu, Karem, Kotake, and, optionally, Thornberg-983	§ 103	7
8	Muramatsu, Karem, Rivers, and, optionally, Thornberg-983	§ 103	9, 10

[1] U.S. Patent No. 5,552,983, issued Sept. 3, 1996, Ex. 1006.
[2] Christopher A. Thornberg & James P. Cycon, *Sikorsky Aircraft's Unmanned Aerial Vehicle, Cypher: System Description and Program Accomplishments*, Ex. 1012.
[3] JP Patent Pub. No. H08-10451, published Jan. 16, 1996, Ex. 1009.
[4] U.S. Patent No. 6,584,382 B2, issued June 24, 2003, Ex. 1008.
[5] U.S. Patent App. Pub. No. US 2005/0127242 A1, published June 16, 2005, Ex. 1010.
[6] JP Patent Pub. No. P2001-209427 A, published Aug. 3, 2001, Ex. 1007.

See Pet. 4. Patent Owner did not file a Preliminary Response.

We instituted an *inter partes* review on all claims and all grounds asserted in the Petition. *See* Paper 8 ("Dec. on Inst."). After institution of trial, Patent Owner filed a Patent Owner Response (Paper 18, "PO Resp."), Petitioner filed a Reply (Paper 23, "Reply"), and Patent Owner filed a Sur-Reply (Paper 25, "Sur-Reply"). To support its arguments, Petitioner relies on the testimony of Dr. John Hansman (*see* Ex. 1003), while Patent Owner relies on testimony from Dr. Edmond J. Murphy (*see* Ex. 2005). A transcript of the hearing is included in the record. *See* Paper 43 ("Tr.").

We have authority under 35 U.S.C. § 6. Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–10 of the '375 patent — i.e., all of the challenged claims, which are also all of the claims in the patent — are unpatentable. *See* 35 U.S.C. § 316(e).

A. Related Matters

Patent Owner is asserting the '375 patent against Petitioner in *Synergy Drone, LLC v. SZ DJI Technology Co.*, Case No. 1:17-cv-00242 in the U.S. District Court for the Western District of Texas. Pet. 73; Paper 21, 2.

At the Board, four *inter partes* reviews are pending that challenge patents related to the '375 patent: Case IPR2018-00205, challenging U.S.

Patent 8,380,368; Case IPR2018-00206, challenging U.S. Patent No. 8,649,918; Case IPR2018-00207, challenging U.S. Patent No. 9,079,116; and Case IPR2018-00208, challenging U.S. Patent No. 9,568,913. Pet. 73; Paper 21, 2.

B. The '375 Patent

The '375 patent is directed to methods for using a radio controlled aircraft and remote controller. *See* Ex. 1001, [54]. The '375 patent seeks to simplify the control of RC aircraft, to address the difficulty arising from the need for a user to consider the perspective of the aircraft when operating the remote control. *Id.* at 1:15–26. For example, in known remote control devices, "[t]he same commands that would make the aircraft turn right when the aircraft is moving toward the user, make the aircraft turn left when traveling away from the user." *Id.* at 1:23–24.

Figure 2 of the '375 patent is reproduced below:

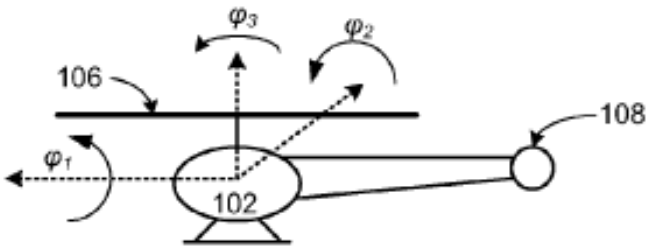

FIG. 2

Figure 2 illustrates a coordinate system aligned from the perspective of remote controlled aircraft 102, which describes the orientation of aircraft 102 in terms of angular displacements roll, pitch, and yaw. *Id.* at 2:31–40. Specifically, in Figure 2, φ_1 denotes rotation about the roll axis, φ_2 denotes

rotation about the pitch axis, and φ_3 denotes rotation about the yaw axis through the shaft of main rotor 106. *Id.* at 2:41–51.

In operation, a user generates command data from a remote control device in a different coordinate system, such as a user coordinate system that corresponds to the orientation of the user. *Id.* at 2:64–67. This command data can be transformed into control data in the aircraft's coordinate system, thus allowing control of RC aircraft 102 based on its orientation to the user, rather than the orientation of an imaginary pilot. *Id.* at 3:1–4.

Figures 3 and 4 are reproduced below:

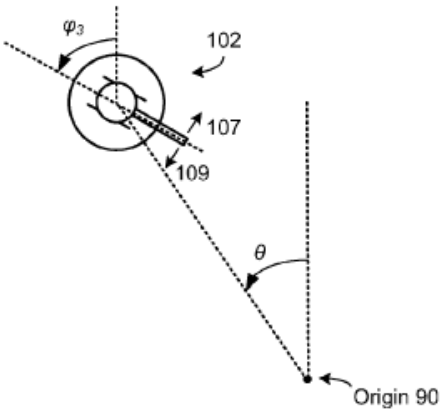

FIG. 3

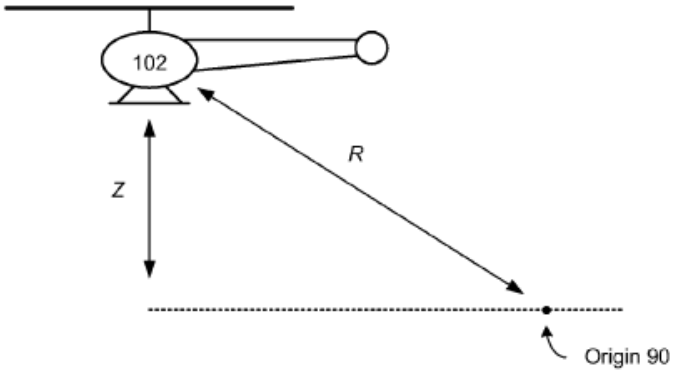

FIG. 4

Figure 3 shows a yaw-axis from the perspective of radio controlled aircraft 102 and an angular orientation with respect to a user coordinate system. *Id.* at 1:52–56, 3:8–11. Figure 4 illustrates distance and altitude coordinates of radio controlled aircraft 102 with respect to the user coordinate system. *Id.* at 1:57–60, 3:12–15. Referring to Figures 3 and 4, the '375 patent teaches that origin 90 indicates the placement of the origin of a polar coordinate system that corresponds to the perspective of the user. *Id.* at 3:25–27. The

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