

UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington, D.C.

In the Matter of

**CERTAIN UNMANNED AERIAL VEHICLES
AND COMPONENTS THEREOF**

Inv. No. 337-TA-1133

**INITIAL DETERMINATION ON VIOLATION OF SECTION 337 AND
RECOMMENDED DETERMINATION ON REMEDY AND BOND**

Chief Administrative Law Judge Charles E. Bullock

(March 2, 2020)

Appearances:

For Complainant Autel Robotics USA LLC

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Therefore, for the reasons discussed above, the undersigned finds that DJI has not shown by clear and convincing evidence that the Microdrones manual qualifies as a prior art printed publication that was available to the public before May 15, 2013.²⁴

b) Conclusion

Because the Microdrones manual does not qualify as a printed publication, it cannot be relied upon as prior art under 35 U.S.C. §§ 102 or 103. The undersigned therefore need not determine whether the Microdrones manual anticipates or renders obvious the '184 patent.

2. Sasaki

Autel does not dispute that Sasaki discloses elements 1[a], 1[b], 1[c], 1[d], 1[e], and 1[f] or that Wang discloses the element added in claim 5. CIB at xiv. Autel does dispute that Sasaki discloses elements 1[g], 1[h], 1[i], or claim 2. *Id.* Autel also disputes that EP067 and Philistine disclose, teach, or suggest any of the claim elements, and that there is a motivation to combine Sasaki with EP067 or Philistine. *Id.*

a) Sasaki with EP067

DJI asserts that claims 1, 2, and 5 of the '184 patent are invalid under 35 U.S.C. § 103 due to EP067 combined with Sasaki. RIB at 125. DJI explains that Sasaki is a "flying toy [that] includes a rotor assembly with a motor and blades and a drive rotating the driveshaft." *Id.* at 127. However, DJI states that "it is the admitted prior art structure disclosed in Sasaki that is relevant for the

²⁴ The undersigned notes that the PTAB found the Microdrones manual to be a prior art printed publication in its institution decision for the '184 patent's IPR proceeding. *SZ DJI Tech. Co. v. Autel Robotics USA*, IPR2019-00343, Paper No. 7 (P.T.A.B. 2019). While informative, the PTAB's decision is not controlling. In addition, the evidence presented by DJI in the IPR proceeding differs from the evidence presented in this Investigation. *Id.* at 21, 23 (relying on a declaration for a witness who did not appear before the Commission). And, it appears the PTAB applied a lower evidentiary standard in determining that the Microdrones manual was available to the relevant public. *Id.* at 23. (holding that the Petitioner "has made a *threshold showing* that members of the relevant public could have obtained the Microdrones user manual.").

obviousness analysis of claim 1.”²⁵ *Id.* at 135. DJI argues that the prior art cited in Sasaki teaches the limitations of claim 1 because it discloses “a system where each type of blade can only engage with one of the available lock mechanisms.” *Id.* at 138. DJI also relies on “EP067 [which] discloses a lug and notch lock mechanism.” *Id.* Based on these disclosures, DJI argues that “it would have been obvious to use a mirror image of [EP067] as a counterclockwise lock mechanism in view of Sasaki’s [prior art’s] disclosure of left and right screws.” *Id.*

Autel argues that “DJI’s assertion that the screw on mechanism [in Sasaki’s prior art] prevents attachment of the wrong blade is simply not credible.” CIB at 139. Autel also argues that “Sasaki specifically teaches away from the claim limitations of the ’184 patent related to the directionally specific lock mechanisms.” *Id.* at 137. Autel states that “[a] POSA would not be motivated to combine [] EP067 . . . with Sasaki.” *Id.* at 140.

For the reasons discussed below, the undersigned finds that the combination of Sasaki, the prior art cited in Sasaki, and EP067 fails to disclose limitation 1[h] of claim 1 of the ’184 patent.²⁶ Limitation 1[h] states: “[T]he clockwise rotor blade is engageable only with the clockwise lock mechanism and cannot be engaged in the counterclockwise lock mechanism, and the counterclockwise rotor blade is engageable only with the counterclockwise lock mechanism and cannot be engaged in the clockwise lock mechanism.” JX-0002 at cl. 1[h]. This means that a clockwise rotor blade cannot be attached to a counterclockwise driveshaft, and vice versa.

DJI asserts that prior art cited in Sasaki discloses a directional threading system where “the clockwise rotor blade is engageable only with the clockwise lock mechanism” and the

²⁵ DJI does not rely on the invention disclosed by Sasaki itself because its locking mechanism allows propellers to “easily be attached to and detached from a rotating shaft without depending on the direction of rotation of the propeller.” RX-0037.0007 at 1:30-32, 2:24-28.

²⁶ The undersigned notes that DJI is only relying on Sasaki’s prior art to disclose limitation 1[h]. RIB at 138. DJI does not assert that EP067 discloses a locking system that prevents the improper engagement of rotor blades on directional locking mechanisms. *Id.*

counterclockwise rotor blade is engageable only with the counterclockwise lock mechanism. RIB at 137. The undersigned disagrees. The evidence demonstrates that Sasaki's prior art does not teach a system that prevents the improper attachment of rotor blades.²⁷ CX-0016C at Q/A 87. As Dr. Reinholtz explained: "Multicopter UAV's typically use plastic or composite propellers for both the clockwise and counterclockwise blades. Because this material is soft, it is relatively easy to thread a clockwise rotor blade on a motor shaft intended for a counterclockwise blade, and vice versa." *Id.* DJI's expert, Dr. Alonso, conceded on cross-examination that it would be possible to screw a blade onto the wrong rotor. Alonso, Tr. at 317:15-319:14. This was confirmed during trial when counsel for Autel demonstrated that a screw-on type blade could indeed be attached to the wrong rotor. *Id.* at 333:2-337:20 (demonstrating that a clockwise rotor blade could be installed on a counterclockwise rotor using a DJI UAV that practiced the directionally threaded locking system from Sasaki's prior art); Reinholtz, Tr. at 441:4-442:3 (confirming the wrong blade was installed during the demonstration). Dr. Alonso acknowledged that the blade was successfully engaged on the wrong rotor because it did not fall off when the rotor shaft was twisted or when the UAV was turned upside down.²⁸ Alonso, Tr. at 337:1-20.

The evidence also does not show that it would have been obvious to a person of ordinary skill in the art to modify Sasaki to use directionally specific lock mechanisms to prevent the installation of a blade on the wrong drive. Sasaki does not mention a need, motivation, or desire

²⁷ The undersigned also finds that it would not have been obvious to a person of ordinary skill in the art to modify Sasaki to use directionally specific lock mechanisms to prevent the installation of a blade on the wrong drive. Sasaki does not mention a need, motivation, or desire to utilize lock mechanisms for the blade and driveshaft that depend on the rotational direction of the blade. CX-0016C at Q/A 86. Sasaki also does not mention a need to prevent installation of the wrong blade. *Id.*

²⁸ DJI argues that the term "engagement" used in limitation 1[h] requires that the blades be properly affixed to their corresponding rotor. RIB at 142. This argument is not persuasive. Engagement does not require a blade to be affixed per factory instructions. Rather, a rotor blade is engaged when a user can twist the threads on the improper shaft such that the blade will not fall off. Reinholtz, Tr. 333:15-337:20. By DJI's own admission, the blade and rotor shaft could engage together to such an extent that their threads began to permanently deform. RIB at 142.

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to utilize lock mechanisms for the blade and driveshaft that depend on the rotational direction of the blade. CX-00016C at Q/A 86. Sasaki also does not mention a need to prevent installation of the wrong blade. *Id.* Nor does the evidence show that a person of ordinary skill in the art would be motivated to combine Sasaki with EP067 to achieve a lock mechanism that prevents installation of a blade on the wrong rotor.²⁹ EP067 is a single direction interlock mechanism that attaches individual propeller blades to a hub on boat motors. RX-0039.0002. It does not relate to UAVs, UAV design, a locking mechanism for UAV propeller blades, nor does it disclose different configurations for its locking mechanism based on the direction of the blade's rotation. CX-0016C at Q/A 19; *see also* Alonso, Tr. at 328:3-7 (conceding that EP067 does not disclose different configurations for its lock mechanism). And, as Dr. Reinholtz noted, "[t]here is no discussion in EP067 regarding clockwise or counterclockwise rotating rotor blades and the critical need to prevent interchangeably mounting such blades." CX-0016C at Q/A 19.

Moreover, Dr. Alonso only provided a conclusory opinion as to why a person of ordinary skill in the art would combine Sasaki with EP067. RX-0001C at Q/A 166, 176-178 (stating that one would be motivated by "the paramount importance . . . to maximize convenience, speed of preparation, and the actual time spent [flying drones]"). This conclusory statement is insufficient. Dr. Alonso failed to provide an explanation "for how the mechanisms in EP067 are simpler, more reliable, and faster than the mechanisms in Sasaki." CX-0016C at Q/A 93. Without such testimony, there is not clear and convincing evidence that there is a motivation to combine. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *see also InTouch Techs. v. VGO Commcn's*, 751 F.3d

²⁹ DJI argues that if the locking mechanism in EP067 only rotates in one direction, a person of ordinary skill in the art would use a mirror image configuration for rotation in the opposition direction. This argument is flawed. EP067 does not disclose a "mirror image" configuration. CX-0016C at Q/A 96; Alonso, Tr. at 328:8-330:11, 332:11-22. Thus, a person of ordinary skill in the art "is not going to look to use EP067 to achieve directionally specific lock mechanisms." CX-0016C at Q/A 96.

1327, 1351 (Fed. Cir. 2014) (“A reason for combining disparate prior art references is a critical component of an obviousness analysis.”).

Accordingly, DJI has failed to show by clear and convincing evidence that EP067 combined with Sasaki renders claim 1 of the '184 patent obvious.

b) Sasaki with Philistine

DJI asserts that Sasaki in combination with Philistine renders claim 1 obvious. More specifically, DJI argues that “Sasaki combined with [] Philistine renders obvious the limitation ‘wherein the clockwise rotor blade is engageable only with the clockwise lock mechanism and cannot be engaged in the counterclockwise lock mechanism,’” and vice-versa. RIB at 137. DJI contends that Philistine “relates generally to a mounting system and more specifically to a twist lock mounting system for rapid and secure attachment and detachment of a variety of devices to various surfaces.” *Id.* at 139. Thus, DJI submits that “[i]n view of Sasaki’s disclosure of a prior art system using left and right screws, it would have been obvious to a person having ordinary skill in the art to use the configuration of Philistine for one locking mechanism and use a mirror image of Philistine’s configuration for the locking mechanism in the opposite direction.” *Id.* at 141.

Autel argues that a “POSA would not be motivated to combine [] Philistine with Sasaki to achieve the '184 lock mechanism.” CIB at 140. Autel asserts that “there is no discussion in Philistine regarding clockwise or counterclockwise rotating rotor blades and the critical need to prevent interchangeably mounting such blades.” *Id.* at 141. Autel further asserts that “Philistine does not relate to UAVs or UAV design, and it is not related to a locking mechanism for rotor blades, in general, or UAV propeller blades in particular.” *Id.*

The undersigned previously determined that Sasaki failed to disclose limitation 1[h]. *See* Section VI.D.2.a, *supra*. The undersigned also found that it would not have been obvious to a

person of skill in the art to modify Sasaki's lock mechanisms to prevent the installation of a blade on the wrong drive. *Id.*

The evidence shows that Philistine similarly fails to disclose a system that prevents the improper installation of rotor blades. Like EP067, Philistine does not relate to UAVs, UAV design, or locking mechanisms for rotor blades. CX-0016C at Q/A 92. Rather, Philistine relates to a twist-lock mount for a blower mower in a system that provides filtered air. *Id.* According to Dr. Reinholtz, "the Philistine mount achieves a rigid and secure locking arrangement with two basic components, a mounting member, and a receiving member, that are designed to interlock when one is twisted relative to one another." *Id.* Dr. Reinholtz further explains: "Philistine does not depict different configurations for its lock mechanism to accommodate the proper fitting of components based on the direction of rotation." *Id.* Dr. Alonso does not dispute that Philistine only discloses a locking mechanism for a single direction of rotation. Alonso, Tr. at 328:8-330:11, 332:11-22. And, as Dr. Reinholtz notes: "There is no discussion in Philistine regarding clockwise or counterclockwise rotating rotor blades and the critical need to prevent interchangeably mounting such blades." *Id.*

The evidence also does not show that a person of ordinary skill in the art would be motivated to combine Sasaki and Philistine – disparate pieces of prior art – to achieve a "mistake proof" way to install the correct blades on the correct rotors. As the Federal Circuit has stated, "teachings of references can be combined only if there is some suggestion or incentive to do so." *ACS Hosp Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577 (Fed. Cir. 1984). There is no such suggestion or incentive here. First, Philistine relates to a mechanism for attaching a blower motor to a fixed location in a filtered air system. RX-0040.0004. Philistine's locking system is not related to UAVs or propellers in general. CX-0016C at Q/A 92. Thus, contrary to Autel's assertions, a

person of ordinary skill in the art would not be motivated to use Philistine's fixed surface locking mechanism on a rotating UAV rotor. *Id.* at Q/A 92, 110 ("Philistine . . . do[es] not provide a motivation to improve UAV rotor blade attachment design."). Second, like the Sasaki and EP067 combination, Dr. Alonso's opinions are of a conclusory nature. For example, in discussing the motivation to combine, Dr. Alonso opines that "a person having ordinary skill in the art would have understood the need to overcome the limitations of Sasaki to ensure simpler, more reliable, less error prone, and faster ways of attaching and detaching the propellers of a UAV." RX-0001C at Q/A 177. Yet, he provides no explanation of how the mechanisms in Philistine are simpler, more reliable, or faster than those in Sasaki. *Id.* Without such testimony, there is not clear and convincing evidence that there is a motivation to combine.

Thus, for the reasons discussed above, DJI has failed to show by clear and convincing evidence that Philistine combined with Sasaki renders claim 1 of the '184 patent obvious.

c) Claims 2 and 5

Claims 2 and 5 depend from claim 1. Because claim 1 is nonobvious, claims 2 and 5 are also not obvious due to Sasaki with EP067 or Philistine, and claim 5 is not obvious due to Sasaki with Philistine or EP067, and in further combination with Wang.

3. Zhou

Autel does not dispute that Zhou discloses elements 1[a], 1[b], 1[c], 1[d], and 1[f] or that Wang discloses the element added in claim 5. CIB at xiv. Autel does dispute that Zhou discloses elements 1[e], 1[g], 1[h], 1[i], or claim 2. *Id.* Autel also disputes that EP067 and Philistine disclose, teach, or suggest any of the claim elements, and that there is a motivation to combine Zhou with EP067 or Philistine. *Id.*