

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HESAI TECHNOLOGY CO., LTD.

Petitioner

v.

OUSTER, INC.

Patent Owner

U.S. Patent No. 11,422,236

Inter Partes Review No. IPR2023-01458

**PETITIONER'S REQUEST FOR DIRECTOR REVIEW
OF THE JANUARY 21, 2025 INSTITUTION DECISION**

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This second Request for Director Review is required because, subsequent to the Director granting the first Request and vacating the first institution decision, two of the three judges assigned to the panel effectively overruled the Director's finding about Hall. The dissent, however, astutely noted why the majority should not do so. The dissent honored the Director's authority and the mandate of *United States v. Arthrex, Inc.*, 594 U.S. 1, 37-40 (2021). An injustice occurred here. The Director now has an opportunity to correct it rather than sweep it under the proverbial rug.

And yet again, there is an important issue of policy here too. The Board discounted all sworn testimony about Hall's design and instead entrusted Patent Owner's mere attorney argument that feigned ignorance about its own prior patent. Shedding any semblance of candor after the Director's Decision, Patent Owner exacerbated the issue by now arguing a skilled artisan would not have known that the Hall patent—one of the most successful prior art designs in the industry—described the use of each uniquely aligned emitter/detector pair to provide a time-of-flight measurement/pixel. Patent Owner's newfound confusion of its own patent was the core premise for the majority's annulment of the Director's Decision. Such conduct deserved scrutiny in, not shielding from, a PTAB trial.

I. BACKGROUND

A. The Director's Decision (Paper 14)

The Director's Decision aptly summarized the '236 Patent and cited pertinent

portions of Hall’s teaching for the claimed offset arrangement. Paper 14, 3-5.

Indeed, the Director’s Decision went so far as to quote claim 1 and therein italicize/emphasize the structures of this “claimed” offset arrangement:

an optical imaging receive module comprising a bulk receiving optic and a plurality of pixels arranged behind the bulk receiving optic, wherein each pixel in the plurality of pixels comprises a plurality of single photon avalanche diodes (SPADs) and *wherein the plurality of pixels includes a first set of pixels arranged in a first column and a second set of pixels arranged in a second column horizontally and vertically offset from the first column.*



Director’s emphasis added to the claimed offset arrangement

Id., 4 (emphasis in original, color annotations added), 8. After citing Petitioner’s reasoning why “[e]ach detector is a pixel” and analyzing Hall’s teachings, the Director reached the apex conclusion: “on this record, Hall teaches detectors in the claimed offset arrangement.” *Id.*, 6, 8.

Critically, the Director did not merely find that Hall teaches detectors in *an* offset arrangement. The Director’s finding was explicit: “Hall teaches detectors in *the claimed* offset arrangement”—the claimed version originally emphasized above with the first and second sets of pixels. *Id.*, 8 (emphasis added).

B. The Parties’ Subsequent Briefing (Papers 16 and 17)

According to *Arthrex*, the Director’s straightforward holding regarding the claimed offset arrangement was the end of the dispute on this issue, at least for

purposes of institution. *Arthrex*, 594 U.S. at 37 (“The Director ... may issue decisions [herself] on behalf of the Board.”). Not so, contended the Patent Owner.

Patent Owner theorized that the Director merely found that Hall’s detectors were in *an* offset arrangement, but not necessarily *the claimed* offset arrangement (with the first and second sets of pixels). Paper 16, 1-2 (“First” and “[s]econd” arguments). To do so, Patent Owner needed to shroud Hall’s preferred design (1:1 correspondence/alignment between each emitter and its corresponding detector) and then amplify Hall’s “possible” alternative embodiment tersely mentioned in columns 3-4 where “a single detector may be used by multiple pixels.” Paper 16, 2 (citing to Hall’s col. 3:18-21 and 4:63-67). The panel majority followed this lead.¹

In response, Petitioner highlighted why the Patent Owner’s “first” and “second” arguments regarding Hall’s pixels were directly contrary to the Director’s finding and myopically focused on Hall’s “possible” alternative embodiment rather than Hall’s “preferred” design. Paper 17, 1-3 (“exactly what Hall defines as a ‘pixel’” and citing to Hall’s cols. 1 and 5). As everyone in the industry already knew

¹ Patent Owner also included a “third” argument in its supplemental brief that reincorporated its three “teaching away” theories from the POPR. *See* Paper 16, 3 (citing to the POPR at 33-36). The majority opinion did not adopt these “teaching away”/lack of motivation theories.

and as Hall expressly taught, Hall's preferred design used a perfect 1:1 correspondence between each emitter and its aligned detector—meaning that each detector was “preferably” acting in isolation to detect a single pixel (time-of-flight measurement) in response to a pulse from its paired emitter. *Id.*, 2 (citing to EX1001, 1:15-24 (“considered a pixel”), 5:5-34 (“alignment of each pair,” “preferably just one,” “only the desired detector”), 8:5-13 (“paired with a separate one”), EX1003, ¶¶29-31 (describing the famous Hall design was commercialized with the same 1:1 correspondence (“sixty-four emitter-detector pairs”)), and ¶¶32-36 (confirming that “[o]ther devices” also used Hall's then-famous prior art design of the offset columns of pixels), p. 65 (“each detector is a pixel”), p. 67 (“the known benefits of using an offset arrangement were...”). Hall's preferred design was no secret—certainly not to Patent Owner. *Id.*; Pet., 20 (explaining why this 1:1 correspondence was “the same operation and configuration of the pixels in the '236 patent”).²

C. The Second Institution Decision (Paper 18)

The majority opinion of the Institution Decision (paper 18) effectively

² Regarding Patent Owner's “third” argument, Petitioner reminded the Board that only one person in this proceeding has ever testified under oath regarding Hall teachings and the obviousness combination. Paper 17, 3 (citing to pages of Dr. Hesselink's testimony at EX1003, ¶¶105-115, ¶¶33-36, and pp. 64-67).

overruled the Director’s finding that “Hall teaches detectors in *the claimed* offset arrangement.” Paper 14, 8 (emphasis added). The panel majority instead decided that Hall’s detectors are, at most, in “*an* offset arrangement.” Paper 18, 15 (emphasis added). In fairness to the panel majority, the opinion did include a footnote that sought to address this concern. *Id.*, 16-17 (footnote 2). The linchpin for the panel majority’s decision was the adoption of Patent Owner’s amplification of Hall’s “possible” alternative embodiment tersely mentioned in columns 3-4. *Id.*, 19. Never once did the panel majority answer why, in Hall’s preferred design where each detector is angularly aligned and paired with only one corresponding emitter (e.g., col. 5:8-38), such a detector would not provide a “pixel”/distance measurement as defined in Hall (col. 1:21). This critical question went unanswered.

Additionally, the panel majority advocated a new argument never posited by Patent Owner. Paper 18, 20. In particular, the panel majority quoted page 22 of the Petition and then theorized the Petition did not explain “how” the resulting combination “would affect the arrangement of detectors” in Hall. *Id.*; *infra*, Section III.B. The panel majority did not credit Patent Owner’s actual arguments, which were based on its three “teaching away” theories. Paper 16, 3; POPR at 33-36.

This dissenting opinion got it right. All of it. Paper 18, 33-34. Judge Cherry accurately noted that “we are not writing on a blank slate” because the PTAB panel was bound by the Director’s Decision. *Id.* Under Supreme Court precedent, the

Director's Decision was issued "on behalf of the Board," not for the Board's subsequent interpretation thereof. *Arthrex*, 594 U.S. at 37. Judge Cherry also astutely quoted the clear finding on page 8 of the Director's Decision. Paper 18, 33 ("Hall teaches detectors in *the claimed* offset arrangement" (emphasis added)). And Judge Cherry's logic makes sense. He noted that the Director's Decision cited to Petitioner's citations/reasoning why each detector in Hall "is a pixel," and that the Director never would have reached the apex finding on page 8 ("the *claimed* offset arrangement") without also accepting this foundational assertion too. Paper 18, 34.

And regarding the "Patent Owner's other arguments" (e.g., the motivation-to-combine arguments), Judge Cherry was likewise correct they were not persuasive "on the current record." *Id.* Again, Patent Owner relied upon attorney argument alone, which was not enough under the "reasonable likelihood to prevail" standard.

The measured approach in the dissenting opinion—one that unequivocally regards the authority of the Director—is worthy of credit and adoption in this second round of Director Review.

II. STANDARD OF REVIEW

"Requests for Director Review of the Board's decision whether to institute an AIA trial ... shall be limited to decisions presenting (a) an abuse of discretion or (b) important issues of law or policy." *See* Director Review Process, §2.B. "An abuse of discretion occurs where the decision is based on an erroneous interpretation of the

law, on factual findings that are not supported by substantial evidence, or represents an unreasonable judgment in weighing relevant factors.” *Star Fruits S.N.C. v. U.S.*, 393 F.3d 1277, 1281 (Fed. Cir. 2005).

III. ARGUMENT

A. The Director’s Decision regarding “*the claimed offset arrangement*” was clear; the dissenting opinion honored it while the majority opinion effectively overruled it

As previously described, the majority opinion (paper 18) effectively overruled the Director’s finding that “Hall teaches detectors in *the claimed* offset arrangement” when the panel majority instead elevated its conclusion that Hall’s detectors are merely in “*an* offset arrangement.” Paper 18, 15 (emphasis added). This was the result of both (1) an erroneous interpretation of the law under *Arthrex* and (2) incomplete factual findings that never acknowledged Hall’s preferred design.

First, the *Arthrex* precedent forbids any such attempt by a panel to revisit and then annul a plainly stated finding from the Director. *Arthrex*, 594 U.S. at 37-40. This is not an instance where the panel majority denied IPR based upon a shortcoming in a different reference (e.g., Borowski) or an entirely different structure in Hall (e.g., Hall’s emitters, lens, or actuator). Rather, the panel majority revisited the exact same claim element (the claimed offset arrangement, *supra* p. 1) and the exact same prior art structure (Hall’s detectors) as the earlier Director’s Decision. Paper 18, 15-19. The Director already reached a finding “on behalf of the

Board.” *Arthrex*, 594 U.S. at 37. This was enough, especially for purposes of the lower “reasonable likelihood” threshold at the institution stage. *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (“a qualitatively different standard”).

The dissent was right. The Board was “not writing on a blank slate” at this stage. Paper 18, 33. The majority opinion went too far, flipping the *Arthrex* chain of authority on its head. The Director provides the “direction and supervision” over the panel, not the other way around. *Arthrex*, 594 U.S. at 39. To the extent the panel majority had any doubt about the Director’s finding regarding Hall’s detectors, the prudent course was to institute review for further factfinding during a PTAB trial. *E.I. du Pont de Nemours & Co. v. Synvina C.V.*, 904 F.3d 996, 1007-08 (Fed. Cir. 2018) (explaining that the petitioner’s burden “is necessarily satisfied when there is no evidentiary reason to question the prior art’s disclosure”).

Arguably, the panel majority attempted to address this *Arthrex* concern in the four-paragraph footnote. *Id.*, 16-17 (footnote 2). Here, the panel majority elevated form over substance. The footnote theorized that the Director’s apex finding must be artificially cabined into narrow confines because the Director failed to use the word “*pixels*” in that apex finding. *Id.* (citing to page 8 of the Director’s Decision). Yet nothing in this footnote explains why the Director’s use of the key phrase—“*the claimed* offset arrangement”—must somehow exclude the *claim* element itself, which undeniably includes first and second set of “pixels.” *Supra*, p. 2. At a

minimum, the panel majority needed to answer this question. It went unanswered.

Second, the majority opinion premised its annulment of the Director's finding based upon factual findings that are not supported by substantial evidence. Paper 18, 19. Namely, the panel majority embraced Patent Owner's obfuscation of its own prior patent. Again, Patent Owner pretended Hall's preferred design (1:1 correspondence and unique physical alignment for each emitter/detector pair so that each detector provides a distance measurement/pixel in the point cloud array) did not exist and instead amplified only Hall's "possible" alternative embodiment tersely mentioned in Hall's col. 3:18-21 and 4:63-67. Paper 16, 2 ("a single detector may be used by multiple pixels"). The panel majority followed this lead and never acknowledged Hall's preferred design. Paper 18, 19 (citing col. 3:18-21, 4:63-67).

This obfuscation was a stark difference from the patent owner's explanation of Hall's emitter/detector "pairs" in the earlier IPR involving Hall. There, the patent owner (who is now Patent Owner here) had no confusion about Hall's time-of-flight measurement from each emitter-detector "pair" achieving the "pixels" in the point cloud array. *See* IPR2018-00255, Pap. 30, 7, 12 ("pixels"), 50 ("each pair"). Back then, the PTAB also agreed that Hall provided such "pixels." *See* IPR2018-00255, Pap. 59, 3-4 ("each distance measurement creates a 'pixel'" and noting distinctly aligned "emitter/detector pairs"). And the Federal Circuit did too. *Quanergy Sys. v. Velodyne Lidar USA, Inc.*, 24 F.4th 1406, 1410-18 (Fed. Cir. 2022) ("each distance

measurement is a “pixel” and affirming “commercial success” of Hall’s design). Not long after, Patent Owner conveniently forgot about all of it. Paper 16, 1-2 (“First” and “[s]econd” arguments). Unfortunately, here, Patent Owner’s newfound confusion was rewarded when the panel majority denied review in a PTAB trial.

To be clear, the substantial evidence regarding Hall’s detectors was present in the current record, not merely in the earlier IPR2018-00255. Paper 17, 1-2; Pet., 12 (unique path for “each detector”), 20 (citing to EX1003, pp. 65-66 (“an image composed of pixels” where “[e]ach detector represents a pixel in the array”)), 21 (each emitter-detector pair having “angular separation” from other pairs); EX1003, ¶¶ 12-13, 29-36. Hall’s preferred design is plainly described in column 5. First, Hall explains that “each” emitter/detector pair is distinctly “aligned” and used to “record[] the time-of-flight” measurement based on the angular alignment of “each” pair. EX1004, 5:8-35. And “preferably *just one*” laser and “*only the desired detector* is powered up at any one time.” *Id.*, 5:19-19, 33-35 (emphasis added). In other words, each detector receives the pulse from its distinctly aligned emitter to thereby provide the time-of-flight measure for that pulse, which is exactly what Hall defines as a “pixel.” *Id.*, 1:15-24 (“can be considered a pixel”); 8:5-13 (“a separate one”).

Given Hall’s preferred design, that is why all of Hall’s depicted embodiments always provide a perfect 1:1 correspondence and alignment for each detector and its paired emitter. *Id.*, FIGS. 13-22; 5:5-15 (“angular alignment”), 5:19-20, 5:32-34,

8:5-13 (“angularly separated”). Patent Owner never acknowledged any of it here even though it was touted in IPR2018-00255. The panel majority followed suit. Paper 18, 19 (“as Patent Owner points out”). The dissent, adroitly, did not.

B. The Panel Majority advocated on behalf of Patent Owner by raising an entirely new theory never proffered by Patent Owner

Separately, the panel majority also advocated a new theory never posited by Patent Owner. Paper 18, 20. The panel majority theorized that page 22 of the Petition did not explain “how” the resulting combination “would affect the arrangement of detectors” in Hall. *Id.* This was the result of both (1) factual findings not supported by substantial evidence and (2) an erroneous interpretation of the law.

First, the Board reached this conclusion simply because it referred to the wrong portion of the Petition (p. 22). Before that, the Petition amply explained how the resulting combination would merely “replace” the *type* of each detector, not rearrange the *position* of each detector. Pet., 14 (“SPAD detectors *in place of* Hall’s traditional APDs”), 15 (“*to replace* each APD with a multi-SPAD pixel”). In other words, Petitioner identified how the resulting combination would affect the arrangement of the detectors—not at all—because the suggested multi-SPAD pixel would be used “in place of” each APD of Hall. *Id.* Critically, Patent Owner never disputed this “in place of” result set forth in the Petition. This makes sense. The location of each of Hall’s detection regions is isolated in critical alignment with the paired emitter, so the placement of the detection region would not change merely by

the replacement of each original APD with an improved multi-SPAD pixel. EX1004, 5:7-15 (“physically aligned”), 5:19-20, 5:32-34, 8:5-13 (“angularly separated”); EX1003, ¶¶22, 37, p. 67. Dr. Hesselink provided lengthy testimony on the ordinary use of multi-SPAD cells instead of APDs. EX1003, ¶¶45-51 (“each detector including an array of SPADs”), ¶¶106-113 (“motivated to replace”). Yet again, all of this substantial evidence was met with silence in the majority opinion.³

Second, this new theory raised by the panel majority was based on an erroneous interpretation of the law. *Brand v. Miller*, 487 F.3d 862, 869 (Fed. Cir. 2007) (“in the context of a contested case, it is impermissible for the Board to base its factual findings on its expertise, rather than on evidence in the record”). The institution stage is not the time for the Board to step into the role of an advocate to raise new theories that were (intentionally) not disputed by the parties. The Board should have been a neutral arbiter of the parties disputed issues, not an advocate for new ones. This role is especially true at the institution stage, which need not address “every legal or factual issue that might arise.” *Genzyme Therapeutic Prods. L.P. v. Biomarin Pharm. Inc.*, 825 F.3d 1360, 1366 (Fed. Cir. 2016). Even if the panel majority had questions about the location of the resulting pixels (which it need not

³ Notably, the Board did not adopt the three “teaching away”/motivation arguments actually proffered by Patent Owner. Paper 16, 3; POPR at 33-36.

based on the undisputed “in place of” result), the prudent course was to institute review with a note for further fact development during a PTAB trial. *Id.*

C. The second Institution Decision cemented an important issue of policy in need of resolution

As previously described in the first Request for Director Review, there is no dispute about “four facts” that give rise to an important issue of policy. Paper 13, 14-15. Since that time, Patent Owner elevated its feigned ignorance about Hall’s design, thereby further exacerbating this issue. So far, there is no answer the critical policy question: Should the Board review rather than adopt a patent owner’s later arguments contradicting its earlier assertions about its own “commercially successful” prior art design? This question is particularly noteworthy here because the Board previously adopted the patent owner’s earlier assertions.

Again, there is no dispute that Hall was previously reviewed in an IPR in which the patent owner zealously submitted *hundreds* of exhibits (including CAD drawings) detailing Hall’s design—so much so that the Board and the Federal Circuit affirmed Hall’s design was a “commercial success.” IPR2018-00255, Paper 59, at 4-5 and 29-37 (“Then came David Hall...”), Paper 30, 12, EX2099-EX2102 (“CAD drawings”). Back then, everyone agreed Hall’s design achieved a time-of-flight measurement for each emitter/detector “pair” to thereby create “a ‘pixel’” in the point cloud. IPR2018-00255, Pap. 59, 3-4 (“creates a ‘pixel’” and “emitter/detector pairs”); *Quanergy*, 24 F.4th at 1410-11 (“pairs of laser emitters and detectors” and

“each distance measurement is a ‘pixel’”). The patent owner back then is the Patent Owner here. Paper 13, 14 (citing to EX1020, 19).

But now Patent Owner is conveniently confused or obfuscating about Hall’s preferred (and actually implemented) operation of each emitter/detector pair. *Compare* Paper 16, 2, *with* Paper 17, 1-2. To be clear, the Petition cited to Hall’s design and uncontroverted testimony stating what everyone in the LiDAR industry already knew by 2016. Pet., 12 (“each detector”), 19-20; EX1003, p. 65 (“represents a pixel in the array” and “the same operation ... in the ’236 patent”). Namely, Hall’s design employed a 1:1 correspondence between emitters and detectors—with each detector acting as a “pixel” when detecting a pulse from its distinctly aligned emitter for a time-of-flight measurement. EX1004, 1:15-24, 5:7-54, 8:5-13; Paper 17, 2. Due to Hall’s success, this arrangement was used by others too. EX1003, ¶¶30-36.

Patent Owner was equipped to exercise candor here. Indeed, no other party in the world was better equipped to submit in this case testimony/exhibits to rebut Dr. Hesselink’s stated fact (EX1003, p. 65 (“each detector is a pixel because...”). Tellingly, Patent Owner submitted none. Unlike the litany of exhibits submitted in the earlier IPR, Patent Owner now feigns ignorance about Hall’s design—running from the undeniable fact that Hall’s preferred design employed a 1:1 emitter-detector pairing/alignment so that each detector in provided a time-of-flight measurement and thus a pixel. *Compare* Paper 16, 2, *with* Paper 17, 1-2.

As a matter of policy, such convenient amnesia from a patent owner is worthy of scrutiny in, not shielding from, a PTAB trial. A review enables the Board to learn whether Dr. Hesselink’s *uncontroverted* testimony accurately aligns with what everyone in that industry already knew about Hall’s design. Moreover, the Board would only benefit from cross-examination of any witness who is willing to testify under oath (if one exists) that Hall did not contemplate each detector acting as pixel. A PTAB trial is the perfect cure to any modicum of doubt. Why deny such a review?

The Supreme Court described both the “basic” Congressional purpose of IPR and “the public’s paramount interest” here. *Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261, 280 (2016). They were both prematurely sacrificed here—effectively rewarding a patent owner for feigning ignorance of or otherwise concealing what it certainly knew to be true about its own “commercially successful” prior art patent.

IV. CONCLUSION

Petitioner requests Director Review and institution of review.

Respectfully submitted,

Date: February 12, 2025

/Michael T. Hawkins/

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(1) and 42.6(e)(4)(iii), the undersigned certifies that on February 12, 2025, a complete and entire copy of this Petitioner's Request for Director Review Of The January 21, 2025 Institution Decision was provided by email to the Patent Owner by serving the email correspondence addresses of record as follows:

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