UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Caihong Display Devices Co., Ltd.,

Petitioner,

v.

Corning Incorporated,

Patent Owner.

Case No.: IPR2025-01137

U.S. Patent No. 8,627,684

PETITIONER'S OPPOSITION TO PATENT OWNER'S DISCRETIONARY DENIAL BRIEF

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I. INTRODUCTION

The Petition should be granted and a trial instituted because the PTAB serves as the most efficient forum for determining patentability for 8,627,684 ("the '684 Patent") and represents the <u>only</u> forum in which Petitioner can obtain complete relief. Indeed, while the International Trade Commission (ITC) can adjudicate patent validity, that determination does not result in claim invalidity because the ITC lacks authority to cancel claims.

The "settled expectations" doctrine emphasizes the protection of patent owners' reliance interests, particularly for patents that have been in force for an extended period, weighing the disruptive impact of late-stage challenges against the public interest in correcting erroneous grants of monopoly rights. However, while the doctrine counters established precedent, the doctrine is not absolute; there is no bright-line rule for when expectations become sufficiently "settled," and institution may proceed where compelling circumstances, such as material errors by the examiner during prosecution, justify review to ensure the integrity of the patent system. Here, the petitioner demonstrates such material errors overcoming any presumption of settled expectations and warranting institution.

Patent Owner's arguments for discretionary denial lack merit and fail to overcome the compelling case for institution presented by Petitioner's well-supported obviousness challenge. The Petition demonstrates clear material errors during prosecution that outweigh any claimed "settled expectations," and the parallel proceedings do not justify denial under a proper *Fintiv* analysis.

Most significantly, Patent Owner's characterization of missing limitations fundamentally misunderstands the prior art combination and obviousness analysis. The cited prior art teaches each limitation when properly analyzed under the correct legal framework. Patent Owner's arguments amount to claim-by-claim arguments better suited for trial on the merits rather than grounds for discretionary denial.

The material errors during prosecution are particularly compelling here. While Patent Owner claims JP '826 was considered, the petition presents substantially new obviousness theories combining JP '826 with other references that were never analyzed together. Indeed, the specific combinations of JP '826 with Butts, JP '027, KR '349, Ferngren, and Smids present genuinely new arguments. The Examiner found Butts silent regarding torque splitting between roller pairs, but the petition demonstrates how the combination of references teaches these limitations. *See, e.g.,* Petition at 6-7.

Permitting this patent to evade review due to its age would perpetuate an erroneous grant, contrary to the public interest and the America Invents Act's (AIA) goal of efficient post-grant challenges.

In totality, the material errors outweigh any settled expectations. Absent institution, the public would bear the cost of an erroneously granted patent, eroding confidence in the USPTO. Therefore, the IPR should be instituted to rectify these errors, consistent with Acting Director Stewart's emphasis on equitable application of discretion.

Discretionary denial is not appropriate.

II. REASONS WHY THE BOARD SHOULD NOT EXERCISE ITS DISCRETION TO DENY INSTITUTION

A. THE NEWLY CREATED SETTLED EXPECTATIONS DOCTRINE IS IMPROPER

Patent Owner posits that the age of the '684 patent precludes institution of the IPR based on the so-called settled expectations, citing *Dabico Airport Solutions Inc., v. AXA Power ApS*, IPR2025-00408, Paper 21 at 2 (PTAB June 18, 2025) (discretionarily denying review for a patent that had been in force for "almost eight years"); *Intel Corp. v. Proxense LLC*, IPR2025-00327, Paper 12 at 2 (PTAB Jun. 26, 2025) ("[T]he challenged patents have been in force over nine years, creating settled expectations, and Petitioner does not provide any persuasive reasoning why an *inter partes* review is an appropriate use of Board resources.").

The doctrine, which permits denials for patents held unchallenged for several or more years with significant reliance interests lacks statutory grounding, imposes arbitrary restrictions, and undermines the AIA's core purpose. More significantly, the doctrine is in direct contradiction to the Board's own precedential decisions. *NHK Spring Co. v. Intri-Plex Techs. Inc.,* IPR2018-00752, Paper 8 at 19 (PTAB March 2, 2020) (precedential).

The settled expectations doctrine requires clear congressional authorization due to its vast economic and political significance. *West Virginia v. EPA*, 597 U.S. 697 (2022). By shielding older patents from IPR review based on their age and reliance interests, the doctrine protects billions in patent-driven revenue across countless industries likely impacting billions of dollars in licensing or market investments. Such a policy, which creates a *de facto* amnesty for long-held patents, even if they are invalid, and significantly alters the AIA's balance between patent owners and challengers, a matter of "deep economic and political significance" requiring explicit statutory authority (*West Virginia*, 597 U.S. at 716).

The AIA's text and legislative history provide no such authorization. 35 U.S.C. § 314(a) permits the Director to institute IPR if there is a "reasonable likelihood" of prevailing, with discretion limited to administrative considerations like efficiency or preventing harassment (H.R. Rep. No. 112-98, at 46, 2011; 157 Cong. Rec. S1364, 2011). The legislative history emphasizes IPRs as a mechanism to challenge weak patents and foster innovation, with no mention of patent age or reliance as barriers.

The settled expectations doctrine, if applied in the present instance imposes a substantive restriction absent from the AIA's framework.

The AIA's silence on time-based or reliance-based denials, coupled with its focus on patent quality demonstrates that the doctrine exceeds the Director's authority. Congress intended IPRs to be broadly accessible under 35 U.S.C. § 311(a), which grants "a person who is not the owner" the right to petition without age-based restrictions.

The settled expectations doctrine's widespread application threatens the patent system's integrity. By shielding older patents like the '684 patent, it perpetuates invalid monopolies, stifles innovation, and increases litigation costs, contrary to the AIA's goals.

B. SETTLED EXPECTATIONS ARE OUTWEIGHED BY MATERIAL ERROR DURING PROSECUTION

Without conceding the propriety of the newly minted settled expectations doctrine, the patent examiner's material errors during prosecution outweigh those settled expectations. This is particularly evident where, as is here, petitioner presented a compelling basis for challenging the '684 patent, which demonstrates obviousness that was entirely and improperly missed during prosecution. *See Skullcandy, Inc. v Earin AB* IPR2025-00690, Paper 9 at 2 (PTAB July 31, 2025) ("the challenged patent issued nine years ago, creating strong settled expectations.

While ordinarily that counsels for discretionary denial, Petitioner persuasively explains that the patent examiner materially erred during prosecution of the challenged patent.”).

In determining whether to deny institution under § 325(d), the following two-part framework applies: (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of [the] first part of the framework is satisfied, whether the petitioner has demonstrated that the ***Office erred in a manner material to the patentability of challenged claims***. *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6, 8 (PTAB Feb. 13, 2020) (precedential). The Becton, Dickinson factors provide useful insight into how to apply the *Advanced Bionics* framework under 35 U.S.C. § 325(d). Id. at 9 (referencing *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8, 17–18 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph)).

The Petition presents genuinely new arguments because the USPTO never considered prior art combinations that specifically address the torque control limitations that led to allowance during prosecution. *See, e.g.,* Petition at 6-7. While five of six references were previously considered, the petition presents two key new obviousness theories: First, Ground 1 combines JP '826 (which teaches speed ratios of 30-90% between cooling and pulling rollers), *See, e.g.,* Petition at 20, with Butts (which teaches torque control advantages over speed control), *See, e.g.,* Petition at 21, to directly address the Examiner's finding that prior art was "silent with regard to any splitting or apportioning of the torque in different roll pairs." Second, Ground 2 uses KR '349 as a primary reference combined with Bogdahn's torque coordination teachings from cylindrical glass manufacturing, arguing these benefits transfer to flat glass production for vertically stretching glass. *See, e.g.,* Petition at 47-49. The petition argues these specific multi-reference combinations were never evaluated during prosecution, even though individual references may have been cited, and that they cure the precise deficiencies (torque control ratios between roller pairs) that the Examiner identified as missing from the prior art during allowance. Critically, references like Bogdahn and Fredholm were never cited during prosecution, providing additional teachings not previously available to the Examiner.

1. The Petition demonstrates material error.

First, as to the material differences between the prior art relied on in the Petition and that involved during examination, as neither Bogdahn nor Fredholm were cited or considered by the Examiner during prosecution, the framework of part 1 of *Advanced Bionics* does not favor discretionary denial. *Oticon Medical AB v.*

Cochlear Ltd., IPR2019-00975, Paper 15 (Oct. 16, 2019) (declining to exercise discretion under 35 U.S.C. § 325(d), because the petitioner relied on a new prior art reference not considered during prosecution).

Second, the grounds of unpatentability relied upon by Petitioner are not cumulative to the way the prior art considered by the Examiner during prosecution. The Examiner's Allowance was based on missing torque control elements in that the Examiner found Butts "silent with regard to any second pair of rollers that are above or below a first pair of rolls and is silent with regard to any splitting or apportioning of the torque in different roll pairs." *See, e.g.,* Petition at 6-7. The specific torque ratio limitations between different roller pairs formed the basis for allowance. While individual references may have been cited, the specific multi-reference combinations presented cure the deficiencies identified during prosecution. *See, e.g.,* Petition at 6-7.

Third, with respect to *Becton Dickinson* factor (c), the Office never analyzed how the JP '826 speed ratios combined with Butts' torque control teachings and how the specific combination cures Examiner's finding that prior art lacked torque splitting between roller pairs as set forth in Ground 1. The additional secondary references provide further support: KR '349 provides downtilt teachings not previously combined with torque control approach and Ferngren and Smids provide teachings for process integration and particularly, support splay angle and multiple roller configurations in combinations never before evaluated. For Ground 2, KR '349, Bogdahn and the other cited references create a new art landscape, particularly with references never considered during prosecution.

Fourth, there is overlap between the arguments presented during prosecution and the way Petitioner relies upon the art but most critically, there was a failure by the Examiner in understanding that very point when allowing the claims.

This leads to the fifth, and most compelling with respect to Becton Dickinson factor (e), the Ground 1 combination addresses these precise deficiencies through the synergistic teachings of JP '826 and Butts. JP '826 teaches speed ratios between cooling rollers and pulling rollers (specifically 30-90% of the peripheral speed), providing the foundation for controlled relationships between different roller pairs that the Examiner found missing. When combined with Butts' teachings on torque control advantages over speed control to prevent slippage, a person of ordinary skill in the art would be motivated to apply JP '826's speed ratio relationships as torque ratio relationships between the different roller pairs. *See, e.g.,* Petition at 19-20. This combination provides the very "splitting or apportioning of the torque in different roll pairs" that the Examiner determined was absent from the prior art, thereby directly curing the allowance-based limitation through a technically sound obviousness theory that was never considered during prosecution.

The combination in Ground 2 cures the allowance-based limitation through an alternative technical approach that provides the missing torque control and roller pair coordination elements identified during prosecution. *See, e.g.,* Petition at 6-7. While KR '349 discloses a downdraw method with multiple rollers for manufacturing glass sheets, Bogdahn provides the crucial missing element—teachings on coordinating torques to reduce or prevent gearing differences between the individual rolling bodies. *See, e.g.,* Petition at 48. Significantly, Bogdahn was never considered during prosecution and teaches specific torque coordination techniques, which can be understood as torque ratios between different roller pairs being preset to specific values. This directly addresses the Examiner's finding that prior art was silent regarding "splitting or apportioning of the torque in different roll pairs," as Bogdahn explicitly teaches coordinated torque control between vertically arranged rollers. The combination thus provides a person of ordinary skill in the art with clear motivation and technical guidance for implementing the precise torque splitting and roller pair coordination that formed the basis for allowance, using genuinely new prior art that presents substantially different arguments from those considered during prosecution.

Petitioner has shown clear material error under the two-part Advanced Bionics Framework test: (1) while some of the art was previously considered, particularly in Ground 1, the combinations were not, whereas in Ground 2 there are two references that supplement the core reason for allowance; and (2) the Office materially erred by misunderstanding or misapprehending the core teachings of the cited art and not having access to Bogdahn's and Fredholm's teachings that cure the specific deficiencies identified during prosecution.

Patent Owner's characterization of Ground 1 as presenting "31 possible combinations" and Ground 2 as presenting "7 combinations" fundamentally misrepresents the petition's obviousness analysis. The petition does not advance 38 separate and distinct obviousness theories but rather presents two coherent obviousness grounds where each secondary reference serves a specific, identified purpose in addressing particular claim limitations.

Ground 1 uses JP '826 as the primary reference and incorporates secondary references to address specific deficiencies identified during prosecution. The "one or more of" language reflects the technical reality that different claim limitations may require different combinations of secondary references, but all combinations serve the same underlying obviousness theory: curing the Examiner's finding that prior art was "silent with regard to any splitting or apportioning of the torque in different roll pairs."

Unlike Patent Owner's mathematical approach treating all combinations as equally viable, the petition provides clear technical guidance on how each reference contributes:

Ground 1 - JP '826 + Secondary References:

- **Butts**: Provides torque control teachings to address speed vs. torque control limitations
- **JP '027**: Contributes specific speed ratio ranges (1:3.5 to 1:20) for dependent claims
- **KR '349**: Teaches downtilt positioning and comprehensive angle control
- **Ferngren**: Provides splay angle control using successive roller pairs
- **Smids**: Contributes multiple roller configurations for enhanced control

Ground 2 - KR '349 + Secondary References:

- **Bogdahn**: Provides missing torque coordination element never considered during prosecution
- **Ferngren**: Contributes splay angle teachings
- **Fredholm**: Provides cantilevered auxiliary roller configurations

The decision in *Adaptics Ltd. v. Perfect Co.*, IPR2018-01596, Paper 20 at 15 (P.T.A.B. Mar. 6, 2019) involved a petition that the Board characterized as "not reasonably bounded in scope." Here, the petition presents technically bounded combinations within the same field of glass manufacturing with downdraw processes, where all references address analogous technical problems where Ground 1 cures the specific allowance-based deficiency and Ground 2 provides an alternative path to obviousness relying on references not previously considered.

Ground 2 Provides Alternative Path with Uncited References

Ground 2 relies on Bogdahn and Fredholm, which were never considered during prosecution, providing genuinely new teachings that address the torque control limitations. [2] This creates substantially new arguments that warrant IPR review under the Advanced Bionics framework, regardless of mathematical permutations.

Thus, the Patent Owner can efficiently respond to both grounds by addressing:

- The primary reference (JP '826 for Ground 1, KR '349 for Ground 2)
- The specific teachings of each secondary reference
- The technical motivation to combine

This approach is no more burdensome than responding to multiple separate grounds with overlapping technical issues, and potentially more efficient given the shared technical foundation.

The Board need not analyze all mathematical combinations separately. Instead, the analysis focuses on whether the primary reference teaches the basic method, the secondary references cure specific identified deficiencies, and a POSITA would be motivated to make the combinations.

The particularity requirements of § 312(a)(3) are satisfied through the petition's detailed, element-by-element analysis showing exactly how each reference contributes to the obviousness determination. Institution should proceed based on the merits of these technically sound obviousness theories.

2. § 314 does not provide a basis to deny the Petition.

The filing of this Petition is not abusive, neither the Office nor the Board has previously addressed the grounds raised in this Petition, and instituting this proceeding would be an efficient use of the Board's resources. Accordingly, denial under § 314(a) is not warranted. *See General Plastic Industrial Co. v. Canon Kabushiki Kaisha*, IPR2016-01357 (PTAB Sept. 6, 2017) (precedential).

C. ANALYSIS OF THE *FINTIV* FACTORS DEMONSTRATES THAT DISCRETIONARY DENIAL IS NOT APPROPRIATE

The *Fintiv* factors do not weigh in favor of discretionary denial in this case.

In its brief, Patent Owner contends that the Petition should be denied based on the *Fintiv* factors, along with certain additional considerations set forth in the Director's Memorandum dated March 26, 2025. *See* Patent Owner's Discretionary Denial Brief, at 5. Contrary to Patent Owner's assertions, however, discretionary denial is not warranted here, as a holistic analysis of the *Fintiv* factors demonstrates.

Additionally, Petitioner acted diligently and expeditiously in filing its Petition, which sets forth compelling, well-supported grounds demonstrating that the claims of the ´684 Patent should never have been granted in the first place. Patent Owner's arguments to the contrary are both unsubstantiated and unpersuasive.

Although the '684 patent is related to other patents that have been challenged in IPRs and are asserted in the ITC, s*ee Certain Glass Substrates for Liquid Crystal Displays, Products Containing the Same, and Methods for Manufacturing the Same (I) and (II)*, Inv. Nos. 337-TA-1433; 337-TA-1441, this Petition should not be denied under the discretionary factors set forth in *Apple v. Finitiv, Inc.*, IPR2020-00019, Paper 11, at 6 (PTAB Mar. 20, 2020), for at least the following reasons.

1. Whether the court granted a stay

Although the co-pending ITC investigation has not been stayed, because the ITC does not permit the filing of a counterclaim for invalidity, the co-pending ITC investigation cannot and will not address all of the claims of the ‘684 Patent, including independent claim 1. It is only through this IPR proceeding that Petitioner can possibly obtain complete relief.

This factor is, at best, neutral as to discretionary denial. *See POSCO CO., Ltd. v. Arcelormittal*, IPR2024-01376, Paper 11 at 13 (PTAB March 18, 2025): “We determine that, given *Fintiv*’s explanation of this situation, the weight of the district court’s stay pending the ITC Investigation and the weight of the lack of a stay of in the ITC Investigation itself depends, in part, on factor four. Thus, we determine that factor one, by itself, is neutral or bears little weight in our overall analysis, but consideration of the district court stay pending ITC investigation elevates the importance of factor four.”

2. Proximity of the court’s trial date

Although a Final Determination (“FD”) is scheduled to be issued in the co-pending ITC investigation before the FWD in this IPR, that FD will necessarily not involve all of the claims of the ‘684 Patent, including independent claim 1.

This factor is, at best, neutral to discretionary denial when the relationship between ITC proceedings and PTAB adjudications are properly weighted, as is discussed further in factor 4 below.

3. Investment in parallel proceedings

The parties and the ITC will have expended significant resources by the DI deadline. This factor is, at best, neutral to discretionary denial when the relationship between ITC proceedings and PTAB adjudications are properly weighted, as is discussed further in factor 4 below.

4. Overlap of issues

Reliance on a parallel ITC Investigation to deny institution of the IPR would be a clear legal error. *Wirtgen Am., Inc. v. Caterpillar Paving Prods. Inc.*, IPR2018-01201, Paper 13 at 12 (PTAB Jan. 8, 2019); *see also Emerson Elec. Co. v. SIPCO, LLC*, IPR2019-00545, Paper 16 at 13 (PTAB Aug. 30, 2019). Petitioner will not be free of threats of litigation from Patent Owner even if it prevails in the ITC investigation. *See INVT SPE LLC v. Int'l Trade Comm'n*, 46 F.4th 1361, 1370 (Fed. Cir. 2022) ("ITC determinations of patent infringement and validity do not have preclusive effect on district courts, even when affirmed by the Federal Circuit."); *see also Bio–Tech. Gen. Corp. v. Genentech, Inc.*, 80 F.3d 1553, 1563–64 (Fed. Cir. 1996) (ITC decisions do not bind a subsequent federal court under the doctrine of claim preclusion); *Texas Instruments, Inc. v. U.S. Int'l Trade Comm'n*, 851 F.2d 342, 344 (Fed. Cir. 1988) ("[T]his court has stated that the ITC's determinations regarding patent issues should be given no *res judicata* or collateral estoppel effect."). Consequently, the Board has frequently declined to deny IPR petitions in view of parallel ITC proceedings, that is up until Acting Director Stewart created a basis out of thin air.

Significantly, the issue of validity of all pending claims is not an issue in the ITC investigation, including independent claim 1 (from which all of the claims being asserted depend, *See, e.g.,* Petition at 16-22). *See Samsung Electronics Co. v. Dynamics, Inc.*, IPR2020-00499, Paper 41 at 13 (PTAB Aug. 12, 2020) (declining to exercise discretion after determining claim limitations at issue before the Board were not at issue in the ITC proceeding); *3Shape A/S v. Align Technology, Inc.*, IPR2020-00223, Paper 12 at 33-34 (PTAB May 26, 2020) (declining to exercise discretion after finding that the ITC investigation would not resolve all claims at issue in the IPR proceeding). Indeed, while the ITC's decision in the co-pending investigation may be informative, in this case, because the ITC will not be considering all of the claims of the ′684 Patent, that investigation "does not render our proceeding duplicative or amount to a waste of the Board's resources." *Wirtgen*, Paper 13 at 11. Accordingly, instituting trial here would be a more efficient alternative to the stayed district court litigation and the co-pending ITC investigation. *See Samsung*, Paper 41 at 13.

The 2022 Vidal Memo codified barring ITC-based denials because "the ITC lacks authority to invalidate a patent and the ITC's invalidity rulings are not binding on the Office or on district courts." The 2025 memorandum's reversal, prioritizing ITC timing, lacks reasoned explanation (*Motor Vehicle Mfrs. Ass'n v. State Farm*, 463 U.S. 29, 43, 1983) contrary to settled precedent on this issue.

The AIA's legislative history emphasizes the PTAB's role as the primary forum for patentability disputes, not deference to the ITC's non-binding infringement findings (H.R. Rep. No. 112-98, at 39–40, 2011; S. Rep. No. 112-31, at 33, 2011).

The ITC's limited jurisdiction under 19 U.S.C. § 1337(c) excludes invalidity adjudication, making it an improper basis for denying PTAB review. By prioritizing the ITC's projected determination over Petitioner's meritorious challenge, the PTAB allows potentially invalid claims to persist, harming industry competition, consumer prices and the like.

Finally, to reduce the potential for even a partial overlap of issues, if the Board institutes trial on this Petition, Petitioner will not assert the same prior art combinations or any grounds that could have reasonably been raised on which trial is instituted. The most efficient course is for the Board to address the issues before it and the ITC to address only the issues that would remain. *See Sotera Wireless, Inc. v. Masimo Corp.,* IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential as to § II.A).

This factor weighs against discretionary denial.

5. Identity of the parties

Patent Owner is the plaintiff. Petitioner is one of several respondents in the ITC investigation. That fact, however, is also true of a great many patent owners and petitioners in IPR proceedings and is fully consistent with the purpose of IPRs providing a process for accused infringers to challenge patents being asserted against them in litigation. This factor should therefore not weigh to denying institution.

6. Other circumstances, including the merits

a. Patent Owner's compelling economic and public-health interests are unsupported conjecture

Patent Owner purports that significant commercial development, centering on EAGLE XG GLASS, which has won industry awards while benefiting from the attenuation of heavy metal use in the manufacture of glass articles, has value in weighing the question of discretionary denial. *See* Patent Owner's Discretionary Denial Brief, Paper 6 at V.A.3.

None of those statements are supported by evidence and thus can be ignored as conjecture. More significantly, Patent Owner offered no evidence to tie to its commercial product development or, more importantly, the alleged commercial success of that product to any invention(s) related to the ′684 patent. It is well-settled that "[e]vidence of commercial success, or other secondary considerations, is only significant if there is a nexus between the claimed invention and the commercial success." *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311–12 (Fed. Cir. 2006).

Indeed, "if the commercial success is due to an unclaimed feature of the device, the commercial success is irrelevant." *Ormco*, 463 F.3d at 1312. The same is true if the feature that gives rise to the commercial success was known in the prior art. *See J.T. Eaton & Co. v. Atl. Paste & Glue Co.*, 106 F.3d 1563, 1571 (Fed. Cir. 1997) ("[T]he asserted commercial success of the product must be due to the merits of the claimed invention beyond what was readily available in the prior art."); *Richdel, Inc. v. Sunspool Corp.*, 714 F.2d 1573, 1580 (Fed.Cir.1983) (holding claims obvious despite purported showing of commercial success when patentee failed to show that "such commercial success as its marketed system enjoyed was due to anything disclosed in the patent in suit which was not readily available in the prior art").

b. The merits of the petition are clear and strong

The prior art relied upon in the Petition demonstrate that all of the claims of the ‘684 Patent are unpatentable. Both grounds present compelling obviousness theories that cure the specific allowance-based limitations through combinations not previously considered. While Patent Owner raises procedural and technical objections, these amount to claim-by-claim disputes better suited for trial on the merits rather than grounds for discretionary denial. The material errors during prosecution—particularly the failure to consider key references like Bogdahn, and Fredholm in the presented combinations—provide substantial justification for IPR review despite the patent's age.

1. Ground 1

Regarding Ground 1, the primary reference JP '826 teaches a glass sheet manufacturing method using cantilevered vertically downtilted stub roll pairs with peripheral speed control between cooling rollers and pulling rollers (30-90% ratios). JP '826's speed ratio controls combined with Butts' torque control teachings would lead a POSITA to implement torque ratios between different roller pairs, addressing the precise limitations that led to allowance during prosecution. *See*, e.g., Petition at 21, 33 and 62.

The combination addresses the specific allowance-based limitation that the Examiner found missing. While individual references were cited during prosecution, the specific combination was never evaluated, creating substantially new obviousness arguments.

Indeed, JP '826 provides the speed relationships between cooling and pulling rollers, Butts teaches the technical advantages of torque control over speed control to prevent slippage, and the combination is well-motivated as both references address the same technical field of glass manufacturing with downdraw processes. *See, e.g.,* Petition at 19-21. A POSITA would be motivated to apply Butts' torque control advantages to JP '826's speed ratio system. Any citation discrepancies are likely nothing more than translation issues rather than fabrication. The substantive teachings of Butts regarding torque control benefits are clearly disclosed and properly relied upon.

Patent Owner correctly identifies in the Patent Owner's Discretionary Denial Brief, at 9 that the exact quotation does not appear in Butts paragraph [0021]. This simply represents an inadvertent transcription error that should have been presented as such rather than as a direct quotation.

However, the underlying technical concept that Petitioner (with supporting expert testimony) seeks to establish is clearly present in Butts. Butts discloses that torque control provides advantages over speed control in glass manufacturing processes:

Paragraph [0021] contrasts delivering constant rpm speed with delivering equal and constant torque, establishing that the system operates through torque control rather than delivering constant rpm speed to the rolls. EX1004. The actual text explains that torque control "allow[s] the rotational speeds of each of the rolls 206 and 212 to change with respect to one another based on the small but unavoidable difference between the radii of roll 206 and roll 212." Butts teaches in the same paragraph [0021] that the differential drive allows "the surface speed of the glass sheet 105 on the rolls 206 and 212 matches the speed of the rolls 206 and 212 regardless of the differences in the diameters of the rolls 206 and 212." Butts explains that this torque control approach "ensures that there is little or no slipping or scuffing of the rolls 206 and 212 on the surface of the glass sheet 105."

Thus, the fundamental technical teaching that Petitioner seeks to establish—that Butts discloses torque control advantages over speed control, including the ability to accommodate speed differences and prevent slippage—is clearly and unambiguously disclosed in the reference. The substantive obviousness analysis remains technically sound despite this citation error.

2. Ground 2

KR '349 describes flat glass manufacturing using downdraw method with multiple rollers and diffusion roller positioning control. Bogdahn teaches coordinating torques to reduce damage in cylindrical glass manufacturing, providing torque control ratios where "torques of rolls 4, 7, and 8 are set equal to the torque of the reference roll 3." Fredholm provides cantilevered auxiliary roller configurations for controlling tension and stress. Ferngren teaches splay angle control using successive roller pairs. Thus, KR '349's flat glass manufacturing combined with Bogdahn's torque coordination principles would lead a POSITA to implement coordinated torque control between vertically arranged roller pairs.

Patent Owner argues Bogdahn teaches torque coordination among "entirely differently situated rollers in forming cylindrical glass—not flat glass sheets" with different apparatus configurations and purposes. Patent Owner also contends "no disclosure in Bogdahn teaches how or why one would coordinate the torque ratios of the kind of rollers claimed in the '684 patent. " *See* Patent Owner's Discretionary Denial Brief, at 10.

Patent Owner's distinction misses the fundamental technical similarity between Bogdahn's cylindrical glass process and the flat glass process of the '684 patent. Both processes involve vertically stretching glass using multiple coordinated rollers. As the Petition correctly notes, "vertically stretching glass is a key aspect of manufacturing flat glass as well as cylindrical glass." *See, e.g.,* Petition at 48-49. A person of ordinary skill in the art (POSITA) would recognize that the underlying mechanical principles of coordinating roller forces during vertical glass stretching are the same regardless of whether the final product is cylindrical or flat. *See*, e.g., EX1003, ¶ 174. The torque coordination principles are applicable across glass manufacturing processes regardless of final product shape. Bogdahn and Fredholm were never considered during prosecution, providing genuinely new teachings that address the torque control limitations identified by the Examiner. *See*, e.g., Petition at 12, 54 and 63.

Both Bogdahn and the '684 patent address the same fundamental technical problem: preventing damage to glass surfaces during manufacturing through coordinated roller control. Bogdahn specifically teaches coordinating torques to reduce or prevent gearing differences between the individual rolling bodies. *See,* e.g., Petition at 48, 49 and 59. This is precisely the type of technical benefit that would motivate a POSITA to apply Bogdahn's torque coordination principles to flat glass manufacturing, where preventing surface damage is equally critical.

Patent Owner's argument essentially requires that prior art disclose identical apparatus configurations and glass geometries to be considered relevant. This contradicts established obviousness principles, which permit combining teachings from analogous art to address the same technical problems.

The motivation to combine Bogdahn's torque coordination teachings with flat glass manufacturing is clear: both processes involve multiple rollers acting on glass during vertical drawing operations, and both seek to prevent damage through controlled force application. *See*, e.g., Petition at 48 and 49.

Critically, Patent Owner offers no technical explanation for why torque coordination principles would not work in flat glass manufacturing, nor any evidence that such application was considered unfeasible by those skilled in the art. The absence of any teaching away or technical incompatibility undermines Patent Owner's position that the processes are sufficiently distinct to preclude obviousness.

Thus, a POSITA would understand that Bogdahn's benefits of coordinating torques to "reduce or prevent gearing differences between individual rolling bodies [and resulting damage to glass surface]" would apply to flat glass production for the same technical reasons. *See*, e.g., Petition at 48, 59.

c. **The Expert Declaration Provides Proper Support**

Patent Owner criticizes the Petition's reliance on the expert declaration, but expert testimony is expressly contemplated and encouraged in IPR proceedings. As the Board recently confirmed in *Irhythm Technologies, Inc. v. Welch Allyn, Inc.*, IPR2025-00363, Paper 10, at 2-3 (PTAB June 6, 2025), reliance on expert testimony is proper where the expert provides technical context and supports the Petition's element-by-element mapping of the prior art to the claim limitations. This is exactly what Petitioners have done in the instant Petition. Mr. Tsugunobu's declaration provides detailed technical analysis explaining how the prior art combination would lead to the claimed invention, which is precisely the type of evidence needed to support obviousness challenges. *See, e.g.,* EX1003, ¶ 0036-0041.

As the Board has found before, this type of expert testimony follows regulations requiring disclosure of underlying facts in expert testimony. *GD Energy Prods., LLC v. Kerr Mach. Co.*, PGR2025-00031, Paper 11, at 2 (PTAB June 25, 2025) (denying patent owner's request for discretionary denial finding petitioners' reliance on expert testimony was in compliance with regulations requiring disclosure of "underlying facts or data"); *see also* 37 C.F.R. § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.").

The fact that the Petition mirrors Mr. Tsugunobu's analysis—not the other way around, simply shows that the Petition is well-supported by Mr. Tsugunobu's analysis and should do nothing to diminish the weight that ought to be accorded to his testimony. Patent Owner's flawed argument provides no support for discretionary denial.

The declaration does not improperly "fill gaps" but rather explains how a POSITA would understand and apply the prior art teachings. This is a fundamental aspect of obviousness analysis.

III. THE DIRECTOR'S MEMORANDUM VIOLATES THE ADMINISTRATIVE PROCEDURES ACT

Petitioner respectfully submit that the Director's Memorandum establishing the current process for discretionary denial review violates the Administrative Procedures Act ("APA"). *First*, the Director's Memorandum represents binding agency policy and so should properly by promulgated through notice-and-comment rulemaking. *See Mendoza v. Perez*, 754 F.3d 1002, 1020 (D.C. Cir. 2014). *Second*, the Director's Memorandum exceeds the Director's statutory authority and/or violates the AIA (American Invents Act). Nothing in the AIA authorizes the Director to deny IPR petitions based on the factors referenced in the Director's Memorandum. *Third*, the factors and considerations identified in the Director's Memorandum are arbitrary and capricious. Attempts to apply the *Fintiv* factors has led to unpredictable disparities among similarly situated IPR petitioners because of the uncertainty and malleability of those factors. The Director's Memorandum worsens this problem by introducing several additional unpredictable and malleable factors. *Fourth*, discretionary denial for any basis other than as authorized in 35 U.S.C. §314(a) is unauthorized. The Director does not have absolute discretion regarding whether to institute IPR; that discretion is limited to the bases authorized in 35 U.S.C. §314.

IV. CONCLUSION

For at least the reasons above, the Board should decline to exercise its discretion in this case.

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Dated: September 29, 2025

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. §42.24(d), the undersigned certifies that this Opposition includes 5873 words, as measured by Microsoft Word®.

/Daniel J. Pereira/
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CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e)(1))

The undersigned hereby certifies that the above document was served on, September 29, 2025, by filing this document through the Patent Trial and Appeal Board P-TACTS System, as well as delivering a copy via electronic mail upon the following attorneys of record for the Patent Owner:

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