

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SHENZHEN TUOZHU TECHNOLOGY CO., LTD.,

Petitioner

v.

STRATASYS, INC.

Patent Owner.

PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,421,713

Case No. IPR2025-00321

PATENT OWNER'S PRELIMINARY RESPONSE

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EXHIBIT LIST

Exhibit No.	Description
2001	Docket Navigator – Judge Rodney Gilstrap Motion Success for Stay Pending IPR and Time to Milestones
2002	United States District Courts — Judicial Caseload Profiles for Eastern District of Texas (Sept. 30, 2024 and Dec. 31, 2024), available at https://www.uscourts.gov/data-news/reports/statistical-reports/federal-court-management-statistics
2003	Minute Entry for proceedings held before District Judge Gilstrap on Nov. 7, 2024, <i>Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG (E.D. Tex. Nov. 14, 2024)
2004	Discovery Order, <i>Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, Dkt No. 35 (E.D. Tex. Dec. 2, 2024)
2005	Protective Order, <i>Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, Dkt No. 36 (E.D. Tex. Dec. 3, 2024)
2006	e-Discovery Order, <i>Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, Dkt No. 41 (E.D. Tex. Dec. 19, 2024)
2007	Invalidity and Ineligibility Contentions, <i>Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, (E.D. Tex. Jan. 30, 2025)
2008	Transcript of Hearing on the Nomination of Howard Lutnick, of New York, to be Secretary of Commerce (Jan. 29, 2025)
2009	U.S. Patent No. 6,645,412 (“ <i>Priedeman-412</i> ”)
2010	Declaration of Gary Larson
2011	Declaration of Paul Leavitt
2012	Complaint, <i>Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd.</i> , No. 2:24-cv-00644-JRG, Dkt No. 1 (E.D. Tex. Aug. 8, 2024)

I. INTRODUCTION

Pursuant to 35 U.S.C. § 313 and 37 C.F.R. § 42.107, Stratasys, Inc. (“Stratasys” or “Patent Owner”) hereby submits this Preliminary Response to the Petition for *inter partes* review (“Petition” or “Pet.”) filed by Shenzhen Tuozhu Technology Co., Ltd. (“Petitioner”), challenging claims 1, 2, 5-7, 9, 16, and 17 (“challenged claims”) of U.S. Patent No. 9,421,713 (“the ’713 Patent”) (EX1001).

Petitioner has failed to meet its burden of showing a reasonable likelihood that it would prevail with respect to any of the challenged claims. As an initial matter, the Board should exercise its discretion to deny institution under 35 U.S.C. § 314(a). Among other reasons articulated below, the parallel district court litigation will reach a final resolution in a jury trial before any final written decision in this forum.

On the merits, the Petition suffers from fatal defects in the asserted grounds, which provides an independent basis to deny institution.

The challenged claims and the ’713 Patent are directed to solutions that print layers of a 3-D part and support structure from multiple print heads or deposition lines using additive manufacturing and perform a purge operation that includes printing a purge tower in a layer-by-layer manner, in which the layers of the purge tower are printed from the print head or deposition line switched to the operating mode.

The Petition relies on several references (*RepRap Article*, *RepRap Video*, and *Boyer*) in Grounds 1, 2B, and 3 that are not prior art as the challenged claims were reduced to practice before the references' critical dates.

Additionally, the Petition relies on several secondary references (*RepRap Article*, *RepRap Video*, and *KISSlicer*) in Grounds 1, 2A, and 2B that Petitioner has failed to show are printed publications. In addition, the secondary references in their combinations each fail to teach the purge tower of the challenged claims. The primary references (*Leavitt* and *Priedeman*) in the combinations fail to remedy this deficiency. Further, the Petition relies on an alleged anticipatory reference *Boyer* in Ground 3, which fails to disclose such a purge tower or even switching between stand-by and operating modes in-between the printing of the layers of the 3-D part and the support structure.

In summary, there are multiple independent reasons for the Board to deny institution. The Board should exercise its discretionary power to deny institution under § 314, and the Board should not institute IPR in any event because each of Petitioner's grounds are deficient and thus Petitioner cannot satisfy its burden for obviousness.

II. THE *FINTIV* FACTORS FAVOR DENIAL OF THE PETITION

Institution of *inter partes* review is discretionary. 35 U.S.C. § 314 states that the "Director *may not* authorize an *inter partes* review to be instituted unless . . .

the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged.” 35 U.S.C. § 314(a) (emphasis added¹). As the Supreme Court has explained, § 314(a) “invests the Director with discretion on the question *whether* to institute review.” *SAS Inst., Inc. v. Iancu*, 584 U.S. 357, 358 (2018). Pursuant to the Director’s discretion, the Board is “permitted, but never compelled, to institute an IPR proceeding.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016); *see also Cuozzo Speed Techs. v. Lee*, 579 U.S. 261, 273 (2016) (“decision to deny a petition is a matter committed to the Patent Office’s discretion”) (citing 35 U.S.C. § 314(a)). Irrespective of whether the minimum standards for institution are met, other reasons, such as “events in other proceedings related to the same patent,” may favor denying a petition. Consolidated Trial Practice Guide (84 Fed. Reg. 64,280 (Nov. 21, 2019)) (“CTPG”) at 58 (citing *NetApp, Inc. v. Realtime Data LLC*, IPR2017-01195, Paper 9, at 12–13 (PTAB Oct. 12, 2017) and explaining that the Board in *NetApp* denied institution under § 314(a) where it “likely would not have been able to rule on patentability until after the district court trial date”).

In determining whether to exercise its discretionary power under § 314(a), the Board balances a set of six factors, as articulated in *Apple Inc. v. Fintiv, Inc.*,

¹ Emphasis added throughout unless otherwise stated.

IPR2020-00019, Paper 11, at 6 (PTAB “Precedential” Mar. 20, 2020) (“*Fintiv* Precedent”). Here, each of the six *Fintiv* factors favors discretionary denial or is neutral. A co-pending litigation in the Eastern District of Texas² (“Related Litigation”) involving both Petitioner and Patent Owner, substantially the same claims of the same patent, and invalidity challenges to the same patent (including the same prior art references as this Petition) will outpace a PTAB proceeding. The Petition fails to cite any credible reason why the “efficiency and integrity of the system” would not be “best served” by discretionary denial. *Fintiv* Precedent at 6.

A. The exercise of discretionary denial under the *Fintiv* Precedent is proper

As an initial matter, the exercise of discretionary denial under the *Fintiv* Precedent is proper and should be followed. Petitioner's bare, unsupported assertions that the *Fintiv* Precedent “exceeds the Director's authority, is arbitrary and capricious, and was adopted without notice-and-comment rulemaking” are without merit. Pet. at 78. The Federal Circuit has already considered and rejected similar statutory and arbitrary-and-capriciousness challenges against *Fintiv*. See *Apple Inc. v. Vidal*, 63 F.4th 1, 12–14 (Fed. Cir. 2023) (affirming dismissal of

² The Court in the Related Litigation consolidated two cases (2:24-cv-00644-JRG and 2:24-cv-00645-JRG) between the same parties for pretrial issues under the lead case (2:24-cv-00644-JRG). See *Stratasys, Inc. v. Shenzhen Tuozhu Technology Co., Ltd.*, No. 2:24-cv-00644-JRG, Dkt. No. 19 (E.D. Tex. Oct. 22, 2024).

plaintiff's challenges to *Fintiv* as being contrary to statute or arbitrary and capricious under 5 U.S.C. § 701(a)(1)).

Further, a U.S. District Court has already considered and rejected a similar challenge claiming that notice-and-comment rulemaking is required. *Apple Inc. v. Vidal*, Case No. 20-CV-06128-EJD, 2024 WL 1382465, at *13 (N.D. Cal. Mar. 31, 2024). As the District Court explained, “the APA expressly excludes three categories of rulemaking from the notice-and-comment requirement: (1) interpretative rules; (2) general statements of policy; and (3) rules of agency organization, procedure, or practice.” *Id.* at 5 (citing 5 U.S.C. § 553(b)(4)(A)). Consistent with the APA, “Courts have formulated this distinction to hold that ‘[t]he notice-and-comment requirements apply ... only to so-called “legislative” or “substantive” rules.’” *Id.* (quoting *Lincoln v. Vigil*, 508 U.S. 182, 195 (1993) (citations omitted)). Under this framework, the District Court determined that “the *NHK-Fintiv* standard is a general statement of policy, rather than a substantive or legislative rule.” *Id.* at 13 Accordingly, “the Director was not required to conduct notice-and-comment rule making prior to designating the *NHK* and *Fintiv* decisions as precedential.” *Id.* (concluding that “the lack of such rule making does not render the *NHK-Fintiv* standard unlawful”) (citing 5 U.S.C. § 706(2)(D)).

Thus, the *Fintiv* Precedent is proper—it does not exceed the Director's authority, is not arbitrary and capricious, and does not need to be adopted with notice-and-comment rule making.

B. Factor 1: Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted

Factor 1 weighs in favor of discretionary denial. In the Related Litigation involving both Petitioner and Patent Owner, there has been no request for a stay pending *inter partes* review, the judge in the case, Judge Rodney Gilstrap, has not granted a stay, and the evidence indicates Judge Gilstrap will not grant a stay even if one were requested.

Petitioner contends that this factor is neutral because there is purportedly “no evidence that, if the action is maintained and a stay is requested, the court will deny a stay.” Pet. at 78. However, Petitioner ignores the reality that it is highly unlikely that Judge Gilstrap will grant a stay. Judge Gilstrap denies the vast majority of motions to stay pending IPR. Since 2019, over 85% of such motions were denied. EX2001.

In past decisions denying a stay, Judge Gilstrap explained that such motions will be denied if filed before the “last of the patents-in-suit to be acted upon by the PTAB.” Order Denying Motion to Stay Pending Inter Partes Review, *Acorn Semi, LLC v. Samsung Elecs. Co.*, No. 2:19-CV-00347-JRG, 2020 WL 10284981 at *2

(E.D. Tex. Sept. 14, 2020). Similarly, Judge Gilstrap has denied such motions when the IPR proceedings do not challenge every asserted patent. *See, e.g., Uniloc USA, Inc. v. Motorola Mobility LLC*, 2:16-cv-00992-JRG, Dkt. No. 125 at 3 (E.D. Tex. Apr. 5, 2017) (denying a stay when “the pending IPR petitions do not challenge every patent asserted”).

Petitioner fails to provide any reason why the Court in the Related Litigation would depart from its practice of denying motions to stay filed before the last of the patents-in-suit are acted upon by the PTAB and before every one of the patents-in-suit are challenged in IPR. Indeed, Petitioner has overlooked the fact that the Related Litigation involves multiple patents besides the '713 Patent, which are either challenged in separate IPRs with different filing dates or have not been challenged in IPR. *See, e.g., EX2012* at 29 (listing four other patents); IPR2025-00257, IPR2025-000531, IPR2025-00532 (related IPRs for three of the other asserted patents). Thus, the reality is that Judge Gilstrap is highly unlikely to grant a stay in the particular Related Litigation due to facts specific to the case and parallel IPR proceedings.

A stay is also highly unlikely given that Petitioner has offered a very limited estoppel by stipulation that only covers “the same grounds of invalidity raised in th[e] petition.” EX1019. As Judge Gilstrap has explained, such a “limited estoppel,” as the one offered by Petitioner, increases its ability to “game the

system,” “increase rather than reduce the complexity” of issues, and “devise an unfair second bite at the apple.” Memorandum and Order Denying Motion to Stay, *Intellectual Ventures II LLC v. Kemper Corp.*, No. 6:16-CV-0081-JRG, 2016 WL 7634422 at *3 (E.D. Tex. Nov. 7, 2016). Petitioner has not agreed to be bound by the full “estoppel provisions of 35 U.S.C. § 315” (*id.* at 2) and thus any request for a stay in the Related Litigation will be denied. *See id.* at 2-3 (agreeing with “other courts” that have required those seeking a stay to “agree to be bound by the estoppel effect of 35 U.S.C. § 315(e).”). Thus, the evidence indicates a stay would not be granted and factor 1 favors discretionary denial.

C. Factor 2: Proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision

Given that trial in the Related Litigation is set to begin before any final written decision would be due, factor 2 favors discretionary denial. PTAB precedent makes clear that factor 2 favors discretionary denial “[i]f the court’s trial date is earlier than the projected statutory deadline.” *Fintiv* Precedent at 9.

Here, the Court’s trial date in the Related Litigation is earlier than the projected statutory deadline. The Court set a trial date for June 1, 2026. EX1020 at 1. The projected statutory deadline for any final written decision is June 24, 2026. *See* Notice of Filing Date Accorded, Paper 3 (setting preliminary response date for March 24, 2025); 35 U.S.C. § 314(b) (setting institution decision for 3 months after

a preliminary response); 35 U.S.C. § 316(a)(11) (requiring a final determination by 1 year after institution decision, extendable by 6 months).

In general, the Court's trial date is consistent with both the U.S. court case statistics for the United States District Court for the Eastern District of Texas and statistics for patent cases before Judge Gilstrap, specifically. Since 2021, the median time from filing to trial for civil cases has varied between 19.0 and 23.0 months depending on the year and measurement period (e.g., by fiscal year or calendar year). *See* EX2002 at 1-2 ("From Filing to Trial (Civil Only)"). Applying these median timings to the present case, which was filed in August 2024 (*see* EX2012), trial would be expected between March 2026 and July 2026.

For patent cases before Judge Gilstrap, specifically, the median time from filing to trial is 21.7 months for cases filed since January 2008 (107 cases), 21.7 months for cases filed since January 1, 2019 (41 cases), and 23.2 months for cases filed since January 2022 (small sample size of 13 cases). EX2001 at 3, 5, 7. Applying these median timings to the present case, trial would be expected between May 2026 and July 2026. Thus, the median time to trial statistics are consistent with the actual trial date the Court set for the Related Litigation, which is set for several weeks in advance of an expected final written decision deadline.

Petitioner asserts that this factor is neutral because any final written decision will be "nearly contemporaneous" with the trial date. Pet. at 79. However,

Petitioner ignores numerous PTAB decisions that have weighed factor 2 somewhat in favor of discretionary denial when trial is expected to begin several weeks in advance of the expected final written decision deadline. For example, the PTAB exercised discretionary denial in the *Apple Inc. v. Fintiv, Inc.* case in part because trial was scheduled to begin “approximately two months” before a final written decision. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15, at 12–13 (PTAB “Informative” May 13, 2020).

Other PTAB decisions have exercised discretionary denial with even shorter periods between a trial and final written decision. For instance, in *EClinicalWorks, LLC v. Decapolis LLC*, the PTAB denied institution where trial would begin “roughly one to two months before any final decision.” Decision Denying Institution, *EClinicalWorks, LLC v. Decapolis LLC*, IPR2022-00229, Paper 10 at 9 (PTAB Apr. 13, 2022). In *EClinicalWorks*, the PTAB recognized that jury selection was set to begin approximately six weeks before a final written decision was expected and determined that factor 2 “weighs somewhat in favor of denial.” *Id.* (citing *Apple*, IPR2020-00019, Paper 15 at 13). Consistent with previous PTAB decisions, such as those in *Apple* and *EClinicalWorks*, finding that a trial date set shortly before any final written decision weighs somewhat in favor of denial, factor 2 weighs somewhat in favor of discretionary denial, because it is likely that the jury trial in the Related Litigation will occur several weeks before a final written

decision would be due. *See also* Decision Denying Institution, *10X Genomics, Inc. v. President and Fellows of Harvard College*, IPR2023-01299, Paper 15 at 17 (PTAB Mar. 7, 2024) (finding factor 2 weighing in favor of discretionary denial where trial would occur at least one month before a final written decision would be due).

D. Factor 3: Investment in the parallel proceeding by the court and the parties

The proceedings of the Related Litigation are well underway and remain in progress. Petitioner asserts that “there has been little investment by the court and the Markman hearing is scheduled for December 3, 2025, well after institution.” Pet. at 79. However, Petitioner fails to address the efforts undertaken by the Court and parties thus far and efforts that will be undertaken before any decision on institution. Thus far, the Court has held a scheduling conference with the parties (EX2003) and entered numerous orders in the case, including a docket control order, discovery order, e-discovery order, and protective order. EX1020, EX2003, EX2004, EX2005, EX2006. In addition, the parties in the Related Litigation have (a) negotiated and proposed numerous orders, including the aforementioned orders, (b) exchanged initial disclosures (EX1020 at 6); (c) exchanged additional disclosures (EX1001 at 6); and (d) exchanged infringement, invalidity, and subject-matter eligibility contentions totaling well over 2,000 pages (*see* EX1020

at 5–6). Fact discovery is well underway with the parties having exchanged over 100 document requests, exchanged requests and responses to over 30 interrogatories, and produced documents exceeding 52,000 pages, and third-party discovery. In addition, the parties have briefed issues related to party joinder.

Besides these existing substantial investments in the Related Litigation, the parties will make further substantial investments in the Related Litigation before a decision whether to institute review is expected. Source code review and amended infringement contentions are anticipated based on the Court's local patent rules. *See* EX1020 at 5-6. Moreover, as explained above for factor 2, the parties and Court in the Related Litigation will make additional substantial investments by starting a jury trial prior to the expected final written decision deadline. Thus, any final written decision would simply revisit the jury's earlier findings regarding validity. Such duplicative efforts contradict the main purpose of *inter partes* review—to provide “quick and cost effective *alternatives* to litigation.” CTPG at 56 (quoting H.R. Rep. No. 112–98, pt. 1, at 40 (2011), 2011 U.S.C.C.A.N. 67, 69). Given these substantial investments made by the Court and parties, factor 3 weighs in favor of exercising discretionary denial.

E. Factor 4: Overlap between issues raised in the petition and in the parallel proceeding

The overlap in patent validity issues between the Petition and the Related Litigation is significant. There is significant overlap in claims with the same claims (claims 1, 2, 5-7, 9, 16, and 17) involved in the Related Litigation. *See* EX2007, 5. There is also significant overlap in invalidity references and grounds. As explained above, the Petition asserts four grounds involving various combinations of *Leavitt*, *RepRap Article*, *RepRap Video*, *Priedeman*, *KISSlicer* and an anticipation ground based on *Boyer*. Each of these references in the Petition is included in the Invalidity Contentions along with many others. *See* EX2007 at 38, 127-40. Accordingly, there can be no dispute that all of the asserted grounds and references in this IPR are also at issue in the Related Litigation and that additional asserted grounds and references are at issue in the Related Litigation.

Petitioner asserts that this factor “favors institution as Petitioner has made a stipulation not to pursue the IPR grounds in District Court.” Pet. at 79. However, Petitioner ignores that it has offered a very limited stipulation that openly permits overlapping issues between the jury trial in the Related Litigation and a latter final written decision it seeks from the Board. *See* EX1019. In doing so, Petitioner has failed to provide a stipulation not to pursue in a parallel proceeding the same grounds as in the Petition or any grounds that could have reasonably been raised in the Petition. *See Sand Revolution II, LLC v. Continental Intermodal Group*,

IPR2019-01393, Paper 24 at 12 n.5 (PTAB “Informative” June 16, 2020); *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 19 (PTAB “Precedential” as to §II.A Dec. 1, 2020). As a result, Petitioner is not restrained from asserting very similar obviousness theories in the Related Litigation that include only minor differences from the Grounds raised in this Petition.

Given this advantage, it appears that Petitioner has presented an opportunity for it to have two bites at the apple. As such, nothing prevents Petitioner from simply asserting the same reference or references repackaged in different permutations or a nearly identical theory challenging the claims of the '713 Patent with simple variations in a primary or secondary reference.

While Petitioner's stipulation can reduce a very limited set of overlapping issues, it wholly fails to eliminate most of the overlap between the Related Litigation and this proceeding. While similar, narrow stipulations have resulted in this factor weighing marginally in favor of not exercising discretionary denial (*see Sand Revolution II*, Paper 24 at 12), when factor 4 is considered with the other factors of the *Fintiv* analysis, discretionary denial is still favored.

F. Factor 5: Whether the petitioner and the defendant in the parallel proceeding are the same party

Petitioner is also a defendant in the Related Litigation, and Patent Owner is plaintiff in the Related Litigation. As the PTAB explained in *Apple*, factor 5

weighs in favor of discretionary denial where “the petitioner and the defendant in the parallel proceeding are the same party.” *Apple*, IPR2020-00019, Paper 15 at 15. For this reason alone, factor 5 weighs in favor of exercising discretion to deny institution.

In addition, Petitioner's willful blindness to the jury trial in the Related Litigation being scheduled to start before the projected statutory deadline for a final written decision further weighs in favor of exercising discretionary denial. *Supra* Section II.C (addressing trial date relative to projected statutory deadline for a final written decision); *see* Pet. at 79 (stating “there is no indication that the parallel litigation will reach a jury trial before the conclusion of this IPR”).

G. Factor 6: Other circumstances that impact the Board's exercise of discretion, including the merits

The sixth factor of the *Fintiv* analysis also favors discretionary denial. Petitioner's sole argument for Factor 6 is premised upon pure speculation—the *prospect* of its Motion to Dismiss in the Related Litigation being granted. *See* Pet. at 79 (arguing that its “Motion to Dismiss further favors institution under Factor 6”). The Court in the Related Litigation has not ruled on the Motion to Dismiss, which is premised on the failure to join another party. *See* Defendant's Motion to Dismiss, *Stratasys, Inc. v. Shenzhen Tuozhu Technology Co., Ltd.*, Case No. 2:24-cv-00644-JRG, Dkt. No. 38 (E.D. Tex. Dec. 9, 2024). As Patent Owner explained

in response to the Motion, the Motion fails to recognize “established principles,” including “as th[e] Court [in the Related Litigation] has repeatedly acknowledged, a plaintiff ‘is not required to accuse all infringers in the same action.’” *See* Plaintiff’s Response to Defendant’s Motion to Dismiss, *Stratasys, Inc. v. Shenzhen Tuozhu Technology Co., Ltd.*, Case No. 2:24-cv-00644-JRG, Dkt. No. 43 (E.D. Tex. Dec. 19, 2024) (internal citations omitted). As such, it is pure speculation whether the Court will grant the flawed Motion to Dismiss, much less whether the Court will do so before any decision on whether to institute review is due. Such speculation should not receive any weight under factor 6 and cannot “tip the balance in favor of Petitioner.” *See Apple*, IPR2020-00019, Paper 15 at 17.

Although Petitioner fails to raise an argument regarding the merits of its Petition under factor 6, as explained in the section below, Petitioner’s asserted grounds lack merits as they each have identified weaknesses. *See Apple*, IPR2020-00019, Paper 15 at 15–17 (finding that merits “do not tip the balance in favor of Petitioner and instead also weigh in favor discretionary denial in a balanced assessment of all the circumstances”).

Additionally, to the extent current or future directives from the Commerce Secretary, or his subordinates at the USPTO, instruct the Board to consider whether to exercise discretionary denial when a foreign company seeks to use the PTAB (a USPTO tribunal) to revisit the validity of a duly issued U.S. patent

invented by an individual in the United States and owned by a U.S. company, Patent Owner seeks to preserve any argument under such directives. Testimony by the Secretary of Commerce indicates that his directive may be that foreign entities, such as the Petitioner, are not permitted to use the PTAB, a tribunal of the United States Patent and Trademark Office, to challenge the duly issued '713 Patent, that was invented by inventors in the United States and assigned to a company in the United States. *See* EX2008 at 57; *see also* Video of Hearing on the Nomination of Howard Lutnick, of New York, to be Secretary of Commerce (Jan. 29, 2025) at 1:56:15, available at https://www.commerce.senate.gov/2025/1/full-committee-nomination-hearing_2_3. Accordingly, Patent Owner preserves its argument under any such directive for the Board to consider whether to exercise discretionary denial when a foreign company seeks to use the PTAB (a USPTO tribunal) to revisit the validity of a duly issued U.S. patent invented by individuals in the United States and owned by a U.S. company when the foreign company will receive due process on the validity of the patent in the U.S. federal court system.

III. THE '713 PATENT AND THE CHALLENGED CLAIMS

A. Summary of the '713 Patent (EX1001)

The '713 Patent is related to “additive manufacturing systems” to print 3D parts and support structures using “purge operation techniques.” EX1001, at 1:6-13. The patent explains that “part material is extruded through an extrusion tip or

nozzle carried by a print head of the system, and is deposited as a sequence of roads.” *Id.* at 1:30-32. In making 3D parts, “supporting layers or structures are typically built underneath overhanging portions or in cavities of 3D parts under construction.” *Id.* at 1:40-44. A computer “generates additional geometry acting as a support structure” and “[s]upport material is then deposited from a second nozzle pursuant to the generated geometry during the printing process.” *Id.* at 1:46-50; *see also id.*, 1:50-53.

The specification of the '713 Patent explains that its disclosure such additive manufacturing systems “with the use of a purge tower (or multiple purge towers).” EX1001 at 3:41-44. In particular, “the additive manufacturing system may utilize multiple print heads or deposition lines, where a first print head or deposition line may be used to print the 3D part, and a second material print head or deposition line may be used to print the support structure.” *Id.* at 3:52-56. “When printing with multiple print heads (or multiple deposition lines), each print head or deposition line is preferably switchable between an ‘operating mode’ and a ‘stand-by mode’.” *Id.* at 4:1-4.

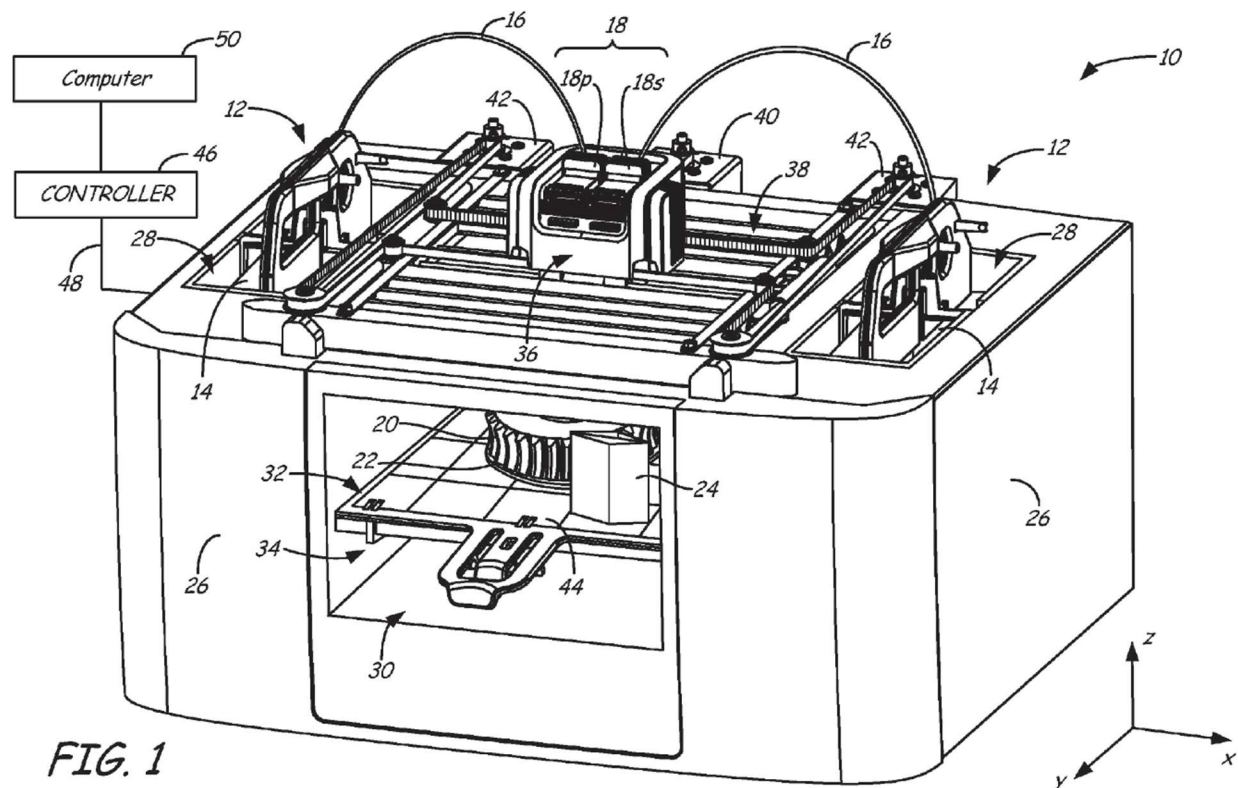
The '713 Patent explains that when a print head or deposition line switches to an operating mode, it can undergo a purge operation, such as extruding material into a purge station or bucket. EX1001 at 4:39-45; *see also id.* at 4:46-62.

However, there are numerous issues with the purge station or bucket, such as

requiring “a sufficient amount” of material to be extruded “to have enough weight to fall away” and “into a purge bucket,” reducing the useable build volume due to the sizeable footprint of the purge station, and need for the purge station or bucket to be emptied periodically. *See id.* at 4:63-5:6.

Unlike the purge station or bucket, the '713 Patent discloses a process that prints one or more purge towers “during the purge operations.” *Id.* at 5:7-10. As a result, there is no need to use a separate purge station and thus use of the purge tower can increase the useable build volume, reduce the materials consumed during purge operations, and allow automated operation of an additive manufacturing system. *See id.* at 5:10-17.

The '713 Patent illustrates and describes several figures that further detail the use of a purge tower. Figure 1 shows a system 10 in use with consumable assemblies 12 to print a 3D part 20 and support structure 22 and a purge tower 24.



EX1001 at Fig. 1, 5:18-30, 5:60-67. As shown, there are two consumable assemblies 12, one for part material and the other for support material. *See id.* at 5:25-30. Head carriage 36 includes “one or more [] print heads,” such as part print head 18p that draws consumable part material filament and support print head 18s that draws consumable support material filament. *Id.* at 5:31-35, 6:51-53. Within the chamber 30 of the system 10, 3D part 20, support structure 22, and purge tower 24 are printed in a layer-by-layer manner. *See id.* at 8:6-9. “After the print operation is complete, the resulting 3D part [] and support structure [] may be removed from chamber 30, and support structure 22 may be removed from 3D part

20. Purge tower 24 itself may be then recycled or otherwise discarded as desired.”

Id. at 8:24-28.

“[E]ach layer of purge tower 24 is printed by either the part material or by the support material depending on when print heads 18 switch between their operating modes and their stand-by modes and perform the purge operations.”

FIG. 3A

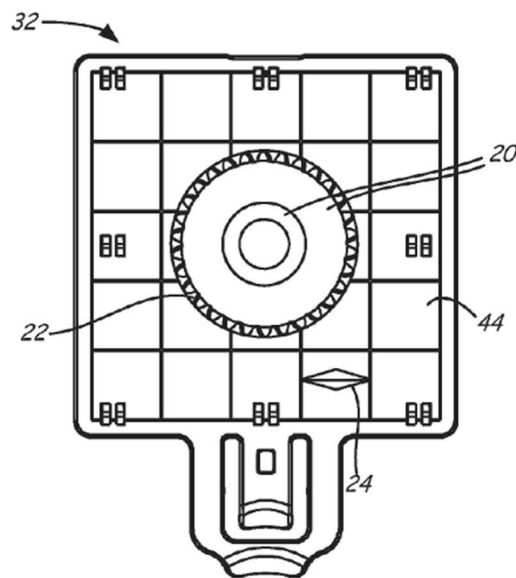
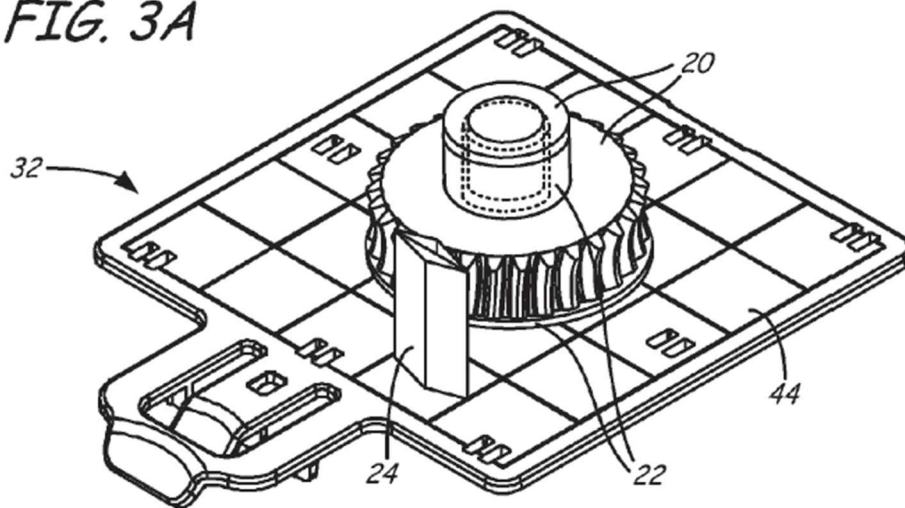


FIG. 3B

Id. at Figs. 3A and 3B, 8:34-38; *see also id.* at Figs. 7-8, 12:5-14:41. The purge tower may be printed with one or more tool paths. *See id.* at 8:39-53.

Numerous claims embody these solutions, including independent claims 1 and 16. Among other things, claim 1 recites “switching the print heads or deposition line between stand-by modes and operating modes in-between the printing of the layers of the three-dimensional part and the support structure;” and “performing a purge operation for each print head or deposition line switched to the operating mode, the purge operation comprising printing at least one purge tower in a layer-by-layer manner, wherein the layers of the at least one purge tower are printed from the print head or deposition line switched to the operating mode.” EX1001 at 15:49-58.

Similarly, claim 16 recites a “method for printing a three-dimensional part with an additive manufacturing system, the method comprising: (a) printing a first layer of a support structure from a support material for the three-dimensional part; (b) printing a first layer of a purge tower from a part material; (c) printing a first layer of the three-dimensional part on at least a portion of the first layer of the support structure from the part material after printing the first layer of the purge tower; (d) printing a second layer of the purge tower from the support material; and (e) printing a second layer of the support structure on at least a portion of the first

layer of the three-dimensional part from the support material after printing the second layer of the purge tower." *Id.* at 17:26-18:11.

As explained below, the asserted grounds fail to teach the elements of independent claims 1 and 16. Because claims 2, 5-7, and 9 depend from claim 1 and claim 17 depends from claim 16, the asserted grounds also fail to teach the elements of dependent claims 2, 5-7, 9, and 17 for at least the same reasons.

B. Summary of the Prosecution History of the '713 Patent (EX1002)

During prosecution, the applicant amended claim 1 to recite printing "at least one purge tower in a layer-by-layer manner, wherein the layers of the at least one purge tower are printed from the print head or deposition line switched to the operating mode." EX1002 at 149. According to the applicant, using a purge bucket for a purge operation, as disclosed in the cited art, does not relate to the printing of a purge tower in a layer-by-layer manner as claimed. *See id.* at 154.

In response, the examiner agreed and issued a notice of allowance, noting that "none of the prior art alone or in combination teach purging of one or more print heads by printing a purge tower." *Id.* at 165, 159. Rather, the "closest prior art discloses the use of wiping blades and purge buckets." *Id.* Notably, before the examiner were numerous references that are identical or very similar to the ones that Petitioner asserts, including *Leavitt* (*see id.* at 165, 175 (citation no. A45 to *Leavitt*)) and *Priedeman* (*see id.* at 165, 174 (citation no. 23 to similar reference,

EX2009 (Prideman-412); *compare Priedeman-412* (EX2009) at Fig. 1 *with Priedeman* (EX1007) at Fig. 1).

As explained below, the references asserted in the Petition suffer from many of the same deficiencies as the art cited during prosecution and in the asserted grounds do not teach all elements of independent claims 1 and 16.

IV. LEVEL OF ORDINARY SKILL

For the purpose of this Preliminary Response, a person of ordinary skill in the art (a “POSITA”) in relation to the subject matter of the ’713 Patent would have had a bachelor’s degree in Mechanical Engineering, Computer Engineering, Chemical Engineering, Materials Science, or a comparable field and at least two years of experience related to 3D printing, with additional experience potentially being a substitute for a formal degree or training (and vice versa).

As explained below, the Petition has failed to show that the claims of the ’713 Patent are unpatentable irrespective of the level of skill of a skilled artisan.

V. CLAIM CONSTRUCTION

A. Petitioner fails to identify how the claims are to be construed

Contrary to the PTAB’s rules and Trial Practice Guide, Petitioner has failed to identify how the claims should be construed. *See* 37 CFR § 42.104(b)(3) (“[T]he petition must set forth: ... a statement [that] must identify the following: ... (3)

How the challenged claim is to be construed.”); see also CTPG at 42 (A “petitioner must . . . provide a claim construction for the challenged claims . . .”).

Contrary to this requirement, Petitioner improperly proposes two positions as to the scope of the claims. *See* Pet. at 5-7. Specifically, Petitioner presents a “first” position that Grounds 1 through 2B purportedly address and an “alternative” position that all Grounds purportedly address. *See id.* However, Petitioner fails to provide any identification of how the challenged claims are to be construed, such as an argument why a particular position is correct or should be adopted by the Board. *See TCL Communication Technology Holdings Ltd. v. DataQuill Ltd.*, IPR2020-00746, Paper 21 at 12-14 (Sept. 18, 2020) (denying institution where petition “provides alternative constructions for two claim terms . . . but does not take any position as to which alternative the Board should adopt and why”).

In addition, Petitioner fails to articulate any construction of the claims, choosing instead to specify two positions as to what structures are or are not included within the scope of the claim. Under Petitioner’s “first” position, “the step of printing ‘from multiple print heads [plural] or deposition lines [plural]’ requires a system having multiple deposition output ports.” *Id.* at 6. Petitioner contends that this position includes two structures (“multiple print heads” or “a single head having multiple output nozzles/tips”) and excludes “any system with a single head having a single deposition output port.” *Id.* at 6-7. Under Petitioner’s “alternative”

position, the structures encompassed by the claim include “the types of systems having multiple deposition output ports” and “a single extruder head having a single deposition output port to print different materials at different times.” *Id.* at 7. By merely addressing what structures and use thereof would be covered under the claims, Petitioner has failed to satisfy its burden to “include a statement identifying *a proposed construction of the particular term*” where it believes a term requires an express construction. CTPG at 44. Whether a particular structure is covered by the claims is “not a question of law, but rather a question of fact challenging the sufficiency of the evidence” *TRUSTID, Inc. v. Next Caller, Inc.*, No. 2022-1433, 2023 WL 2298748, at *5 (Fed. Cir. Mar. 1, 2023) (citing to *ePlus v. Lawson Software*, 700 F.3d 509, 520 (Fed. Cir. 2012)). Thus, Petitioner’s flawed attempt at claim construction is insufficient because Petitioner must identify its proposed construction and because Petitioner cannot transform a question of fact (whether a structure is covered by the claims) into a question of law (the proper scope of the claims).

In any case, the Petition fails to show a reasonable likelihood of prevailing on any of the grounds and challenged claims.

VI. APPLICABLE LEGAL STANDARDS

As explained above, institution of *inter partes* review is discretionary under 35 U.S.C. § 314. At a minimum, Petitioner must show there is a reasonable

likelihood of prevailing with respect to at least one challenged claim. *See* 35

U.S.C. § 314(a); 37 C.F.R. § 42.108(c); CTPG at 3.

Grounds 1–2B of the Petition each relies on obviousness under 35 U.S.C. § 103. A claim cannot be considered obvious if even one element of the claim is absent from the prior art. *See CFMT, Inc. v. YieldUp Int'l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974)); *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993) (reversing obviousness rejection as not all claim elements were taught or suggested); *Garmin Int'l, Inc. v. Patent of Cuozzo Speed Techs. LLC*, IPR2012-00001, Paper 15 at 15 (PTAB Jan. 9, 2013) (denying institution as obviousness references did not disclose all claim limitations).

Obviousness is resolved based on several factual determinations including the scope and content of the prior art, any differences between the claimed subject matter and the prior art, and the level of ordinary skill in the art. *See Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). IPR Petitions “must address the *Graham* factors.” *Eizo Corp. v. Barco N.V.*, IPR2014-00358, Paper 11 at 29-30 (PTAB July 23, 2014) (citing *Graham*, 383 U.S. at 17-18) (Petitioner must identify differences between claimed subject matter and prior art.); *see also Moses Lake Indus., Inc. v. Enthone, Inc.*, IPR2014-00243, Paper 6 at 18 (PTAB June 18, 2014); *Moses Lake Indus., Inc. v. Enthone, Inc.*, IPR2014-00246, Paper 6 at 17 (PTAB

June 18, 2014); *eBay, Inc. v. Paid, Inc.*, CBM2014-00125, Paper 15 at 21 (PTAB Sept. 30, 2014).

The conclusion of obviousness based on the combination of references must be supported by an explicit analysis of a reason to combine such references. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). Mere conclusory statements are insufficient. Instead, “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006); *see also LG Elecs., Inc. v. Cellular Commc'ns Equip. LLC*, IPR2016-00197, Paper 7 at 7-11 (PTAB Apr. 29, 2016) (petition's obviousness assertions lacked sufficient articulated reasons with rational underpinnings for modifying references to achieve specific elements of the claims).

Ground 3 of the Petition each relies on anticipation under 35 U.S.C. § 102. “Because the hallmark of anticipation is prior invention, the prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements arranged as in the claim.” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (internal quotation marks omitted); *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009) (requiring “each and every element of the claimed invention” be “explicitly or inherently” disclosed in a single reference, and

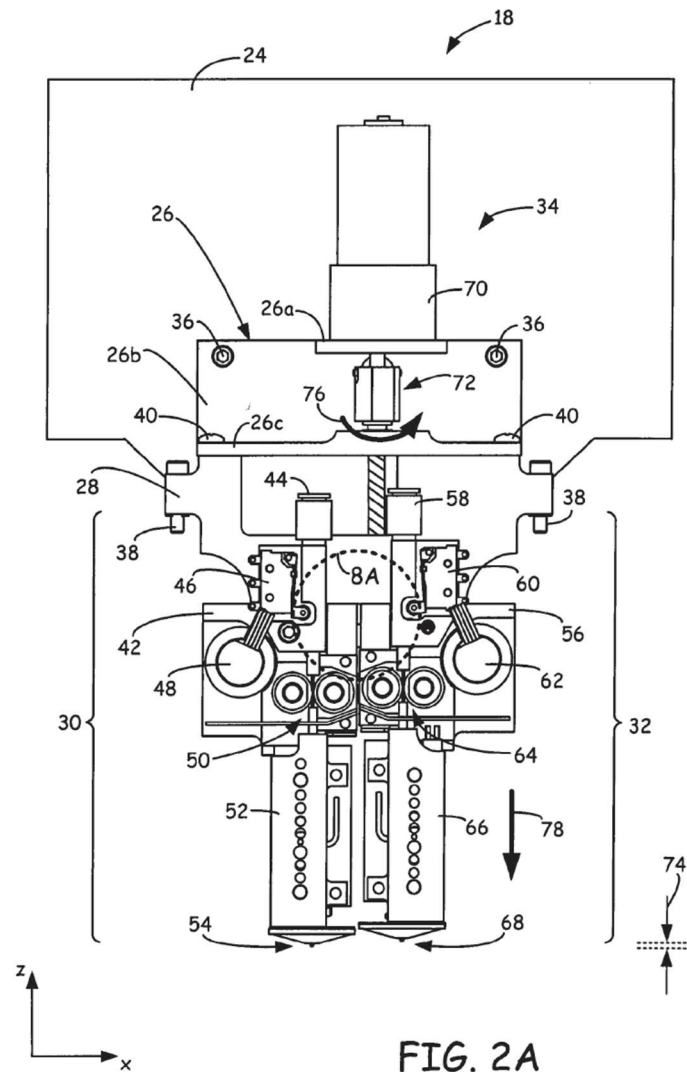
such elements “must be arranged or combined in the same way as in the claim”) (internal citations and quotation marks omitted).

VII. OVERVIEW OF ASSERTED REFERENCES

A. Overview of *Leavitt* (EX1004)

Leavitt is directed to an extrusion head that deposits multiple materials by toggling between a build and support state for depositing build and support materials, respectively. EX1004 at ¶[0022], Title, Abstract.

Leavitt addresses the risk of residual amounts of materials oozing from a tip by positioning one tip for a material (e.g., support tip 68) higher than another tip for a second material (e.g., build tip 54), by a raised offset distance (e.g., 74 in Figure 2A or 80 in Figure 2B). *Id.* at ¶¶[0032], [0035].



Id. at Fig. 2A. The offset distance allows the lower tip to extrude material without interference from the higher tip. *Id.* at ¶¶[0032], [0035].

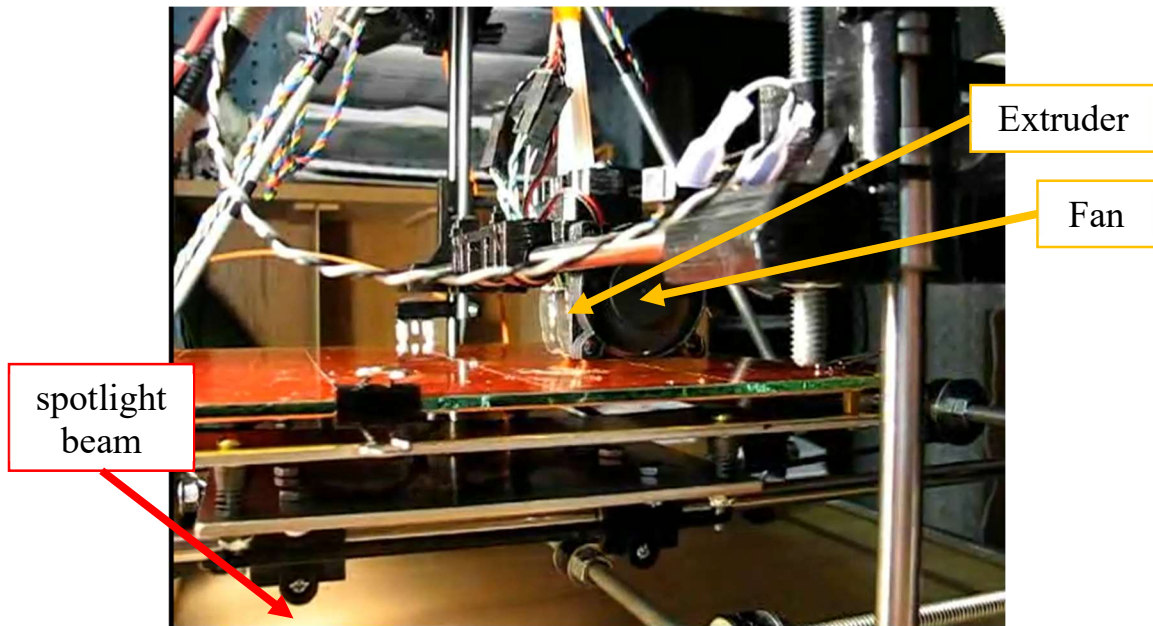
As explained, the examiner allowed the claims of the '713 Patent over numerous cited references, including *Leavitt. Supra* Section III.B; *see also* EX1002 at 175 (citation no. A45).

B. Overview of *RepRap Article* (EX1005)

The *RepRap Article* appears to be a printout from a blog post relates to temperature changes when lowering and restoring the temperature of an idle extruder. *See* EX1005 at 1 (“Lowering the temperature of the idle extruder while it is not needed and restore it when it is time to start printing with that extruder again helps to deal with leaking.”). It discusses printing a parking space that plugs both nozzles during a temperature change and primes the extruders before printing to “establish the consistent flow of plastic.” *Id.* It also purports to link to a video on YouTube and describes “a dual color whistle” with what appears to be links to a whistle body and text. *See id.* (“Whistle X2 body” and “Whistle X2 text”).

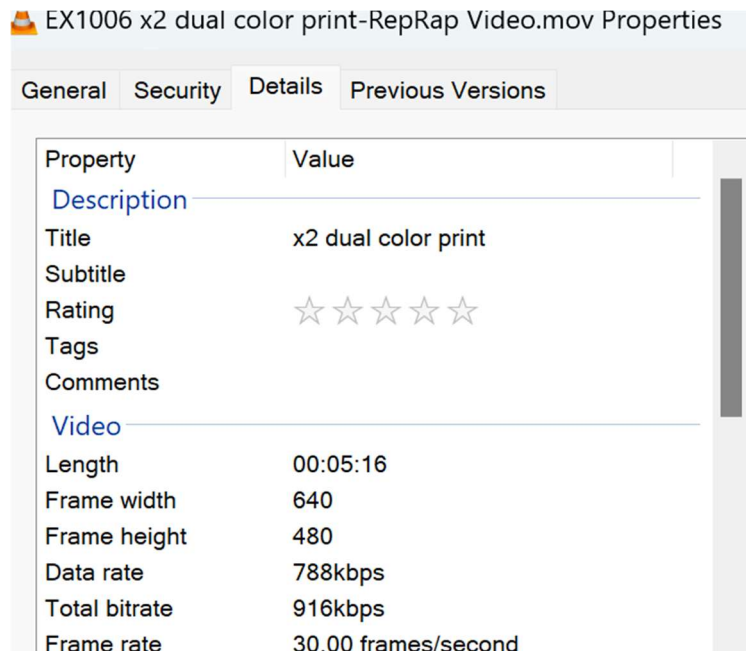
C. Overview of *RepRap Video* (EX1006)

The *RepRap Video* appears to be a video that is linked in the *RepRap Article*. *See* EX1005 at 1. The video records excerpts of someone using a printer in a dim environment with what appears to be a spotlight on the left side of the frame opposite the print operation.



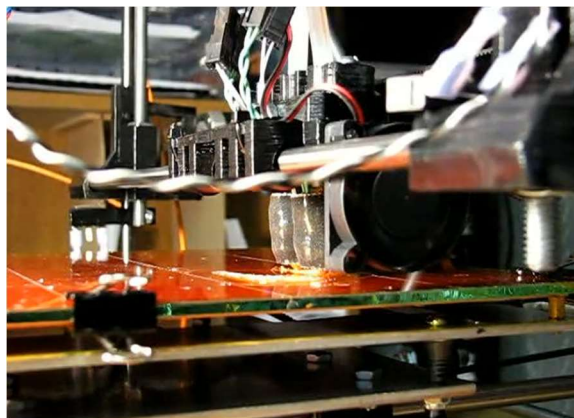
EX1006 at 0:04. As shown, the view of what is being printed is obstructed by an extruder, as well as what appears to be a large fan that is proximate to the camera and the camera angle. *Id.*

In addition, the properties of *RepRap Video* indicate that it has a very low resolution of 640 x 480.



See EX1006 (file properties, Details).

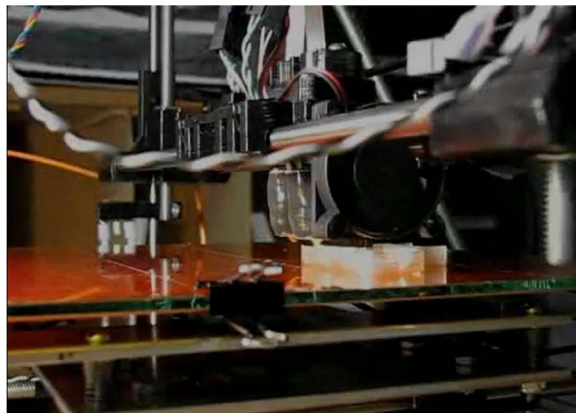
The *RepRap Video* is not a continuous recording. It fades out and back in around the 03:15 mark, at which point the printed object looks substantially different.



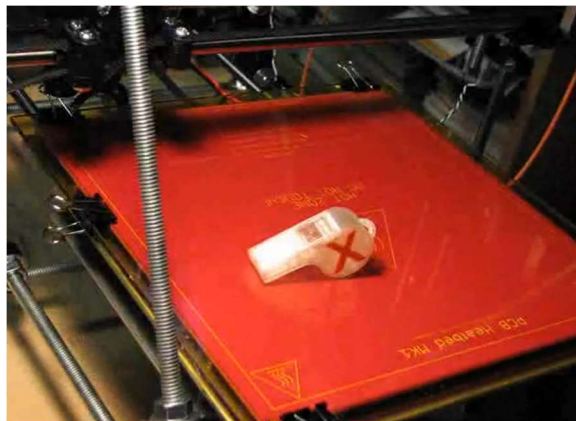
Id. at 03:14.



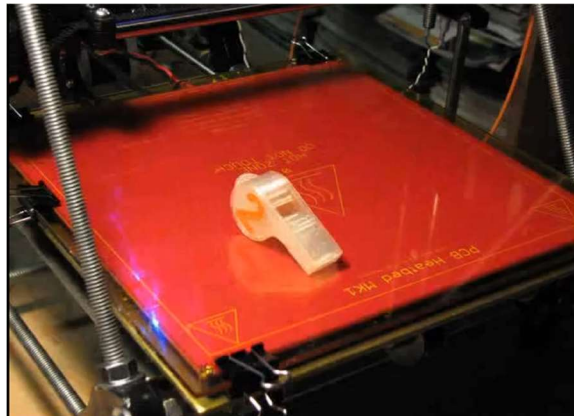
Id. at 03:15.



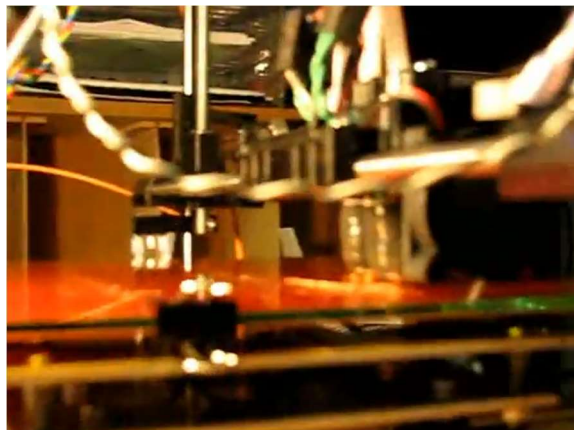
Id. at 03:16. Other discontinuous sequences occur around the 04:03, 04:20, 05:00, and 05:06 marks. A different object appears to be shown from various perspectives but without any printing at the 05:08 and 05:16 marks.



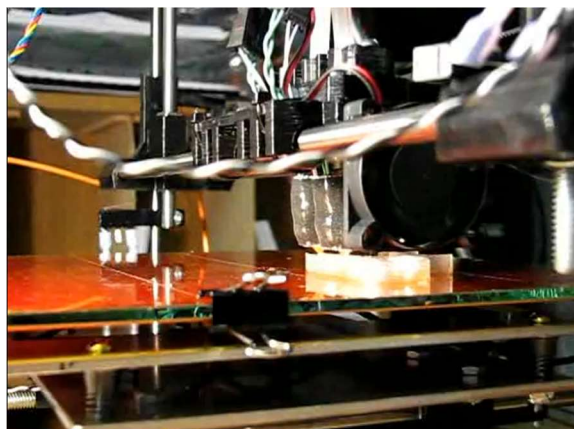
Id. at 05:08.



Id. at 05:16. Additionally, several portions of the *RepRap Video* appear to be blurry or out of focus, as shown below.



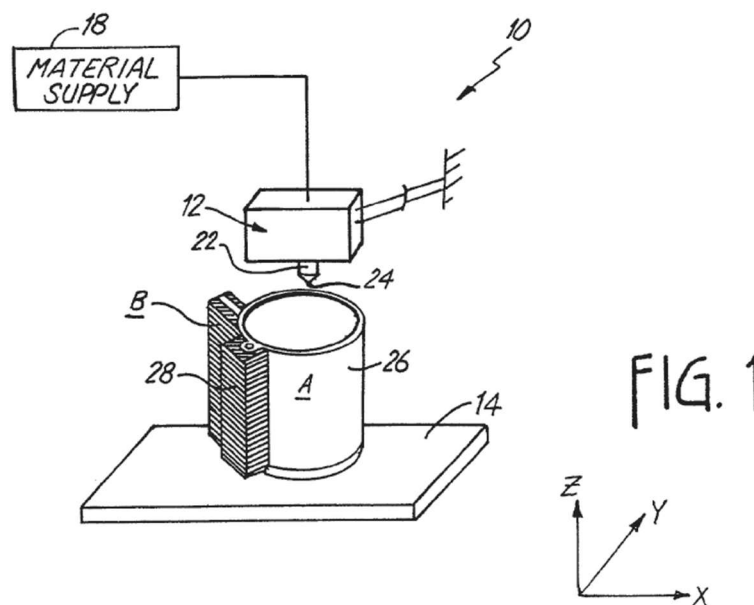
Id. at 02:26.



Id. at 03:17.

D. Overview of *Priedeman* (EX1007)

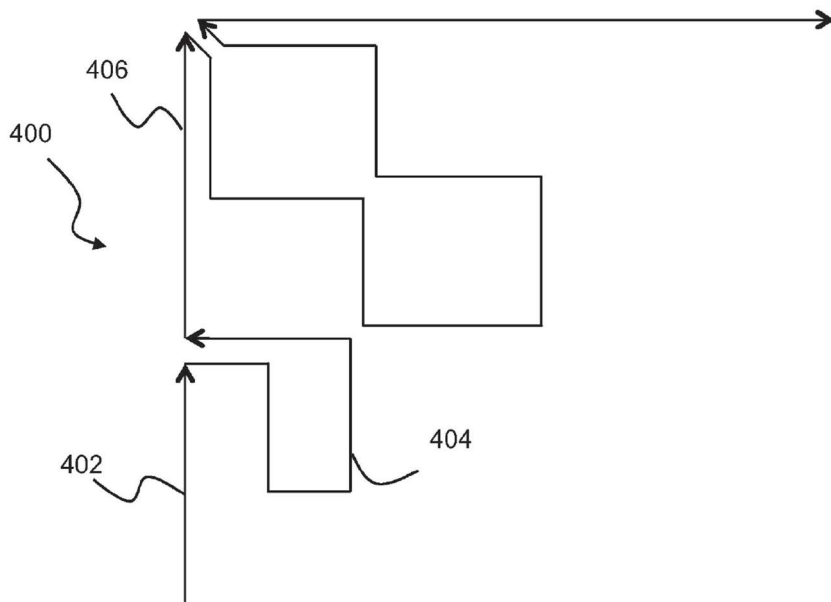
Priedeman relates a method for three-dimensional modeling that forms a support structure and/or model. EX1007 at Abstract, Title. Figure 1 shows an extrusion apparatus 10 for building a model 26 supported by a support structure 28.



Id. at Fig. 1, ¶[0016]. A material supply 18 supplies material to the extrusion head 12, and a liquefier 22 heats and melts the material for extrusion through an orifice 24. *Id.*

E. Overview of *Boyer* (EX1008)

Boyer relates to multi-color 3-D printing. EX1008 at Abstract, Title. Figure 4 of *Boyer* shows a cross section of a multi-color object.



Id. at Fig. 4, ¶[0032]. The tool path 400 of the object has first (402), transition (404), and third segments (406). *Id.* The first segment traverses a portion of the object's exterior surface with a first color (e.g., red) and the third segment traverses a different portion of the exterior with a second color (e.g., blue). *Id.* Between the first and third segments is a transition segment 404 that “turn[s] in toward an interior of the object and infill[s] with” a transition between the first and second colors. *Id.*

F. Overview of *KISSlicer* (EX1010)

KISSlicer is a short “Quick-Start Guide” for creating a “first print file.”

EX1010 at 1. The guide describes an overview of settings (*id.* at 2-6), loading a file and viewing and positioning a part (*id.* at 6-8), setting printer parameters (*id.* at 8-9), and a parameter quick reference guide (*id.* at 9-11).

VIII. *REPRAP* ARTICLE, *REPRAP* VIDEO, AND *BOYER* ARE NOT PRIOR ART

Contrary to Petitioner's assertions, the *RepRap Article*, *RepRap Video*, and *Boyer* references are not prior art. *See* Pet. at 2 (asserting critical dates on or after Sept. 21, 2012). As explained below, the invention of the '713 Patent was reduced to practice before the critical dates of these references.

A patent owner may antedate a reference under 35 U.S.C. § 102(a) or 102(e)

“by showing conception of the claimed invention prior to the critical date *and either* actual reduction to practice prior to the reference's critical date *or* reasonably continuous diligence in reducing the invention to practice until its effective filing date.” *Medtronic, Inc. v. Teleflex Life Scis. Ltd.*, 86 F.4th 902, 905–06 (Fed. Cir. 2023) (internal quotations omitted); *see also Mylan Pharms. Inc. v. Merck Sharp & Dohme Corp.*, 50 F.4th 147, 154 (Fed. Cir. 2022); *Shenzhen Buxiang Network Tech. Co. v. Sun Pleasure Co. Ltd.*, No. 2022-1912, 2024 WL 3451830, at *3–5 (Fed. Cir. July 18, 2024) (affirming Board's finding of actual reduction to practice that predated reference).

As explained in the accompanying declarations from an inventor of the '713 Patent (*see* EX2010) and a corroborating non-inventor witness who worked with the inventor (*see* EX2011), the inventors conceived of the invention during the research into a new dual-extruder 3-D desktop printer by September 2010. EX2010, ¶8; EX2011, ¶8. During the subsequent development of the printer in the

following year, the inventors with their colleagues reduced the invention to practice by, among other things, studying the implementation details of the invention, creating binary (CBM) files representing the generation of tool path instructions to build purge towers, and creating purge tower parts during a purge operation to enable the development of the printer. *See* EX2010, ¶¶15, 16, 18, 24 (discussing purge towers printed while developing printer); EX2011, ¶¶9, 15, 16, 18, 24 (discussing purge towers printed while developing printer); *see also* EX2010, ¶¶9-24, 26, 29 (discussing Exhibits B, C, E-G to EX2010); EX2011, ¶¶9-24, 26, 29. The accompanying declarations explain that purge tower parts were printed in a manner that practiced each of the challenged claims. *See id.*; *see also* EX2010, ¶¶27-28 (discussing claim chart in Exhibit A to EX2010); EX2011, ¶¶27-28. Further, these parts worked for their intended purpose to support purge operations that enabled continued product development of the printer. *See* EX2010, ¶24; EX2011, ¶¶9, 16, 24; *see also* EX2010, ¶¶11-22; EX2011, ¶¶11-22. As a result, there was an actual reduction to practice of the challenged claims by November 2011, before September 21, 2012. *Id.*; *see also* EX2010, ¶28 (citing to Exhibit A, ¶¶5-24); EX2011, ¶28.

Because the challenged claims were reduced to practice by September 21, 2012, each of the *RepRap Article*, *RepRap Video*, and *Boyer* cannot be prior art and thus Grounds 1, 2B, and 3 fail to show that any challenged claim is unpatentable.

IX. *REPRAP ARTICLE, REPRAP VIDEO, AND KISSLICER ARE NOT PRINTED PUBLICATIONS***A. The Petition fails to present any arguments on whether the *RepRap Article*, *RepRap Video*, and *KISSlicer* are purported printed publications**

As a threshold matter, the Petition fails to present any arguments as to why the *RepRap Article*, *RepRap Video*, and *KISSlicer* were published and publicly accessible so as to qualify as a printed publication. The Petition does not provide the relevant legal standards nor does it make any argument why each reference is a printed publication. Instead, Petitioner only provides conclusory statements and citations to three declarations. *See* Pet. at 2 (citing Exhibits 1016–18). For each reference, the Petition merely includes a bare assertion—that it “is accompanied by testimony evidence confirming that” the reference was published by a certain date and “publicly accessible to interested persons in this field”—with a wholesale citation to all pages of one or more declarations. *Id.*

However, Petitioner's attempt to incorporate arguments by reference expressly violates the PTAB's rules. *See* Decision Denying Petitioner's Request on Rehearing of Final Written Decision, *Medivis, Inc. v. Novarad Corp.*, IPR2023-00042, Paper 37 at 10 (PTAB Apr. 23, 2024) (PTAB “rules prohibit parties’ incorporation of arguments by reference”); *see also* 37 C.F.R. § 42.6(a)(3) (“Arguments must not be incorporated by reference from one document into another document.”). In *Medivis*, the petitioner included wholesale citations to two

declarations without any discussion that the Board found to constitute “improper incorporations by reference.” *See* IPR2023-00042, Paper 37 at 10. The Board in *Medivis* recognized that “incorporation ‘by reference amounts to a self-help increase in the [brief’s] length.’” *Id.* (quoting *DeSilva v. DiLeonardi*, 181 F.3d 865, 866–67 (7th Cir. 1999)). As the Federal Circuit has repeatedly recognized, “incorporating argument by reference ‘cannot be used to exceed word count’” because “[i]t is ‘fundamentally unfair to allow a party to use incorporation to exceed word count.’” *Medivis*, IPR2023-00042, Paper 37 at 11 (quoting *Promptu Sys. Corp. v. Comcast Cable Comm’s, LLC*, 92 F.4th 1384, 1385 (Fed. Cir. 2024) (quoting *Microsoft Corp. v. DataTern, Inc.*, 755 F.3d 899, 910 (Fed. Cir. 2014))). On this basis, the Board in *Medivis* concluded that the petitioner improperly attempted to incorporate by reference testimonial evidence from a declaration. *See id.*

Similar to the petitioner in *Medivis*, Petitioner has improperly attempted to incorporate by reference three declarations regarding whether three references are printed publications, without discussing Petitioner’s arguments. Such wholesale incorporation by reference violates the PTAB’s rules and amounts to an improper increase in the length of the Petition, which is just under the word-count limit under 37 C.F.R. § 42.24. *See* Pet. at 82 (certification). Petitioner should not be permitted to incorporate its arguments regarding publication and public

accessibility by reference to these three declarations. Absent such incorporation, the Petition has failed to show a reasonable likelihood that the *RepRap Article*, *RepRap Video*, and *KISSlicer* are printed publications. Thus, Grounds 1–2B fail to show that the challenged claims of the '713 Patent are unpatentable.

B. Petitioner cannot require the Board to piece together its potential arguments on whether the references are printed publications

Even if the Board were to consider Petitioner's tacit request to incorporate three declarations by reference, Petitioner's wholesale citations to the declarations fail to show how exactly the *RepRap Article*, *RepRap Video*, and *KISSlicer* support its conclusory argument. Additionally, much like the Petition, the declarations regarding the *RepRap Article*, the *RepRap Video* and *KISSlicer* do not set forth the legal standard for printed publications to found to be publicly accessible, much less present Petitioner's legal theories, such as whether the reference was actually disseminated or otherwise made available to certain individuals exercising reasonable diligence. *See* EX1017 at 1-2. Thus, Petitioner implicitly asks the Board to "piece together" potential arguments that might be made based on the facts alleged in those declarations.

However, it is not the Board's responsibility to piece together evidence or speculate as to Petitioner's position beyond the bare conclusions presented in the Petition. *See TCL Communication Technology Holdings Ltd. v. DataQuill Ltd.*,

IPR2020-00746, Paper 21 at 22 (Sept. 18, 2020) (denying institution and explaining that it is “Petitioner’s responsibility to cite specific evidence to support its arguments, not the Board’s responsibility to piece together evidence or speculate as to Petitioner’s position”). Thus, the Petition has failed to show a reasonable likelihood that the *RepRap Article*, *RepRap Video*, and *KISSlicer* are printed publications. For this additional reason, Grounds 1, 2A, and 2B fail to show that the challenged claims of the ’713 Patent are unpatentable.

C. Petitioner fails to show that the *RepRap Article* and *RepRap Video* are publicly accessible

Even if the Board were to consider Petitioner’s tacit requests to incorporate three declarations by reference and piece together evidence and speculate as to Petitioner’s position, Petitioner has failed to show, at a minimum, that the *RepRap Article* and *RepRap Video* are publicly accessible and thus the references are not printed publications. To satisfy the requirement of public accessibility, Petitioner must show that a “document has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art[,] exercising reasonable diligence, can locate it.” *SRI Int’l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1194 (Fed. Cir. 2008). Petitioner does not provide any evidence of actual dissemination and as discussed below the device provided fails

to show that interested persons and ordinary skilled artisans can locate the references when exercising reasonable diligence.

For the *RepRap Article* and *RepRap Video*, the Petition provides a wholesale reference to the declarations of Kathryn Talbot (EX1018) and Denis Bakin (EX1016). *See* Pet. at 2.

The Talbot declaration asserts that the declarant is a social media expert. *See* EX1018 at ¶7; *see also id.* at ¶¶6, 8–9. The declarant asserts that “[i]n my opinion, persons interested in and ordinarily skilled in the relevant subject matter *would have been familiar with YouTube and would have used it to research features of 3D printers, including the 3D printer demonstrated in Exhibit EX1006.*” *Id.* at ¶12. According to the declarant, YouTube videos were searchable by title and description and “[a]nyone interested in and ordinarily skilled in 3D printing would have been able to *use keyword searching to search for various terms used in the title and description of the video corresponding to Exhibit EX1006 to find them on YouTube.*” *Id.* at ¶20.

However, the declarant never explains why she is qualified to speak about such interested persons or skilled artisans given her limited qualification as a social media expert. *See* EX1018 at ¶¶6–9. There is no testimony or suggestion that the declarant has any qualification or experience related to 3D printers. *See id.* Instead, it appears that the declarant is speaking about public accessibility of social media

or YouTube generally. *See, e.g., id.* at ¶15 (“each video accessible via YouTube”), ¶21 (“my knowledge of and experience with YouTube”).

Moreover, there is no evidence submitted or argument that interested members of the public would have actually been able to locate the video with reasonable diligence. *See Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1350–51 (Fed. Cir. 2016) (agreeing with Board that petitioner “failed to carry its burden of proving public accessibility” of an asserted reference as it must provide “a sufficiently definite roadmap” leading to the reference); *see also MHL Custom, Inc. v. Waydoo USA, Inc.*, No. CV 21-0091-RGA, 2023 WL 5748755, at *4 (D. Del. Sept. 6, 2023) (explaining that indexing / technical accessibility, by itself, is “not sufficient to prove public accessibility”) (citing *Acceleration Bay, LLC v. Activision Blizzard Inc.*, 908 F.3d 765, 774 (Fed. Cir. 2018)). In both *Blue Calypso* and *MHL Custom*, the testimony only confirmed technical accessibility and failed to show that any actual search was performed or what a sufficient search would require to locate the reference. *See Blue Calypso*, 815 F.3d at 1350 (rejecting argument that “an internet search engine would have been able to locate” the reference in part because there was no “evidence that a query of a search engine before the critical date, using any combination of search words, would have led to [the reference] appearing in the search results”); *see also MHL Custom*, 2023 WL 5748755, at *4. Similarly, the declaration here fails to show that any actual search

was performed or what a sufficient search would have been required to locate the *RepRap Video*. In fact, there no explanation why interested members of the public would know how to search for the particular title or description of the *RepRap Video* to locate the video with reasonable diligence. *See* EX1018 at ¶¶12-21.

The Bakin declaration suffers from similar deficiencies. It asserts that “YouTube included search functionality that would have allowed members of the public to search for this video based on the title and the description.” EX1016 at ¶5. Like the Talbot declaration, the declarant of the Talbot declaration provides no explanation why interested members of the public would know to search for the title or description of the *RepRap Video* to locate the video with reasonable diligence. *See id.*; *see also Blue Calypso*, 815 F.3d at 1350; *MHL Custom*, 2023 WL 5748755 at *4. Nor is there any evidence submitted that interested members of the public would have actually been able to locate the video. *See id.*

With respect to the *RepRap Article*, the declarant asserts that “any member of the public can access my blog posts on the website” for three reasons:

- the website “allows visitors to browse blog posts by category (including a 3D printing category) or to search for specific blog posts using keyword searching,”

- “interested members of the public would have been able to locate this blog post via keyword searching using popular search engines available at the time such as Google or Yahoo,” and
- “archived forum discussions on okob.net, including discussion threads regarding 3D printing, demonstrate that members of the public were able to access and identify subject matter of interest on the website.”

Id. at ¶7. As an initial matter, the second rationale provided in the declaration—generally locating the article by using a search engine—is insufficient to show public accessibility. As the Federal Circuit has cautioned, technical accessibility does not show that an interested person would have located the reference with reasonable diligence. *Decision Denying Institution of Inter Partes Review, Guardian Alliance Technologies, Inc. v. Tyler Miller*, IPR2020-00031, Paper 23 at *8 (PTAB Mar. 26, 2020) (“Public accessibility requires more than technical accessibility.”) (citing *Samsung Elecs. Co. v. Infobridge Pte. Ltd.*, 929 F.3d 1363, 1369 (Fed. Cir. 2019) and *Acceleration Bay*, 908 F.3d at 773 (Fed. Cir. 2018)). Like the deficiencies with the Talbot and Bakin declarations for the *RepRap Video*, the Bakin declaration fails to show that any actual search was performed or what a sufficient search would have been to locate the *RepRap Article*. See *Blue Calypso*, 815 F.3d at 1350; *MHL Custom*, 2023 WL 5748755 at *4.

Moreover, the first and third rationales provided in the declaration—browsing by category, searching within the website, and referencing forum discussions—are also insufficient to show public accessibility of the *RepRap Article*. Indeed, there is no explanation whatsoever of how interested members of the public would have accessed the website (okob.net) at all, much less when exercising reasonable diligence. *See Blue Calypso*, 815 F.3d at 1349-50 (“[T]he present case lacks any testimonial evidence that a person interested in [the field] would be independently aware of the web address for [the] personal page. In other words, there was no evidence that the ordinarily skilled artisan would know of [the] personal webpage or its web address.”); *cf. Voter Verified, Inc. v. Premier Election Solutions, Inc.*, 698 F.3d 1374, 1380–81 (Fed. Cir. 2012) (finding that a skilled artisan “would have been independently aware of . . . a prominent forum for discussing such technologies”). As the Bakin declaration admits, the website at issue (okob.net) is the declarant’s “personal website where [he] post[s] thoughts, discussions, and information about my various interests.” EX1016 at ¶7. Those interests appear to be very diverse, from harvesting peaches (“Peaches Getting Destroyed before Harvesting, Brown Rot?”) to keyboard issues (“Keyboard Input Problem with nedit under Ubuntu 18.04 in Virtual Box”). See EX1016 at 6; EX1005 at 1. Thus, there is no evidence that an interested person and skilled

artisan would know of the declarant's "personal website" on "various interests" or its web address.

Even if an interested member of the public could somehow have located the website (okob.net) with reasonable diligence, there is no explanation or evidence of how interested members of the public would have been specifically directed to the particular *RepRap Article* or *RepRap Video*, such as using keyword searching or forums. *See Blue Calypso*, 815 F.3d at 1350 (rejecting argument that "an internet search engine would have been able to locate" the reference in part because there was no "evidence that a query of a search engine before the critical date, using any combination of search words, would have led to [the reference] appearing in the search results"); *see also* EX1016 at ¶7.

Thus, even if Petitioner were allowed to improperly incorporate the Talbot and Bakin declarations by reference and the Board were to piece together what Petitioner's argument could be, the alleged facts fail to show, at a minimum, that the *RepRap Article* and *RepRap Video* were publicly accessible. Thus, these references are not printed publications for this additional reason.

X. THE PETITION DOES NOT SHOW THAT THE CLAIMS 1, 2, 5-7, 9, 16, AND 17 ARE UNPATENTABLE UNDER GROUND 1A

A. Ground 1 does not teach or suggest all elements of claim 1

Ground 1 of the Petition asserts that claim 1 is obvious over *Leavitt* in view of the *RepRap Article* and *RepRap Video*. Pet. at 1. As explained, Petitioner has

failed to show that the *RepRap Article* and *RepRap Video* are printed publications. *Supra* Section IX. Even if those references are printed publications, Petitioner's challenge in Ground 1 fails to teach or suggest all elements of claim 1.

Claim 1 of the '713 Patent requires "performing a purge operation for each print head or deposition line switched to the operating mode, the purge operation comprising printing at least one purge tower in a layer-by-layer manner, wherein the layers of the at least one purge tower are printed from the print head or deposition line switched to the operating mode." EX1001 at 15:53-58.

Petitioner asserts that *RepRap* (referring collectively to the *RepRap Article* and *RepRap Video*) discloses a purge operation performed for each deposition line switching to the operating mode. Pet. at 24 (citing to §V.A.3 of Petition); *see also* Pet. at 25–27. According to Petitioner, the extruders are "configured to print a 3D part by depositing" two materials "using a layer-by-layer technique where the printer alternates between depositing one material using 'extruder 0' and depositing the other material using 'extruder 1.'" Pet. at 25 (citing EX1005 (*RepRap Article*) at 1). By moving the extruder head away from the 3D part and lowering the temperature within an idle extruder, Petitioner asserts that the *RepRap Article* addresses a problem regarding the oozing of residual material from the nozzle of an idle liquefier pump. Pet. at 24–26 (citing EX1004 (*Leavitt*) at ¶[0032], EX1005 at 1; EX1003 at ¶79). On this basis, Petitioner asserts that RepRap's

purported “purge tower is printed in a layer-by-layer manner through purge operations occurring when one of the extruders is switched to the operating mode.” Pet. at 27–28 (citing EX1006 (*RepRap Video*) at 05:04); *see also* Pet. at 28 (asserting that the combination “print[s] at least one layer of the purge tower in response to switching from a stand-by mode to an operating mode”).

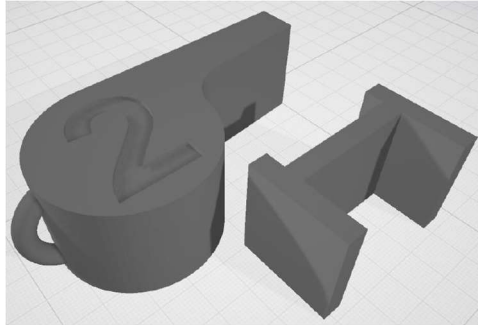
Contrary to Petitioner's assertions, *RepRap* discloses a parking space used to address temperature changes rather than a layer-by-layer purge tower. There is no disclosure in the *RepRap Article* that the parking space is printed in a layer-by-layer manner, in which the layers are printed from the print head or deposition line switched to the operating mode. The *RepRap Article* discloses that, at any given point in a print process, the same parking space serves two purposes. EX1005 at 1. One purpose is to plug the nozzles while the temperature changes to address “plastic leaking from the idle extruder” and the other purpose is to “prime” both extruders to “establish the consistent flow of plastic” “before printing the actual object after the temperature change.” *Id.* As a result, the parking space, at any given point, includes both leakage from one plugged nozzle / extruder and material extruded from both nozzles / extruders. There is no indication that this dual-material, dual-purpose parking space is actually printed in a layer-by-layer manner in which the layers are printed from the print head or deposition line switched to the operating mode.

The *RepRap Video* fails to remedy the deficiencies with the *RepRap Article* and provides little clarity regarding what occurs during a print process. As explained, the video has a poor quality in a dim environment with a spotlight, which creates severe reflections off of a glass surface (*see* EX1006 at 0:04), a view obstructed by an extruder and large fan (*id.* at 0:04), a low resolution recording (*see* EX1006), a discontinuous recording showing different objects from different views (*see id.* at 03:15, 04:03, 04:20, 05:00, and 05:06, 05:08, and 05:16), and several portions that are blurry or out of focus (*see id.* at 02:26, 03:17). *Supra* §VII.C. The poor quality of the video fails to provide much clarity on how exactly the parking space is printed. For instance, the view of the object after printing is completed, which Petitioner provides as a screenshot of on page 28 of the Petition, shows many characteristics inconsistent with Petitioner's assertions.

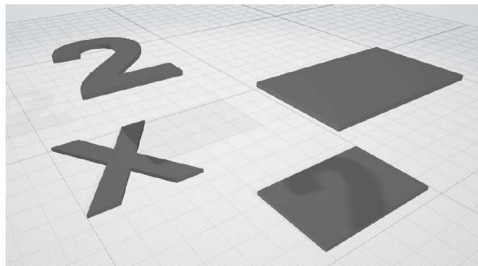


EX1006 at 05:04. As shown, the parking space that Petitioner alleges is a purge tower barely resembles the purported model of the parking space shown in Exhibits 1014 and 1015. *See* Pet. at 36 (asserting that EX1014 and EX1015

purportedly corroborate that build data is generated for each layer of a model);
EX1005 at 1 (describing base and text).

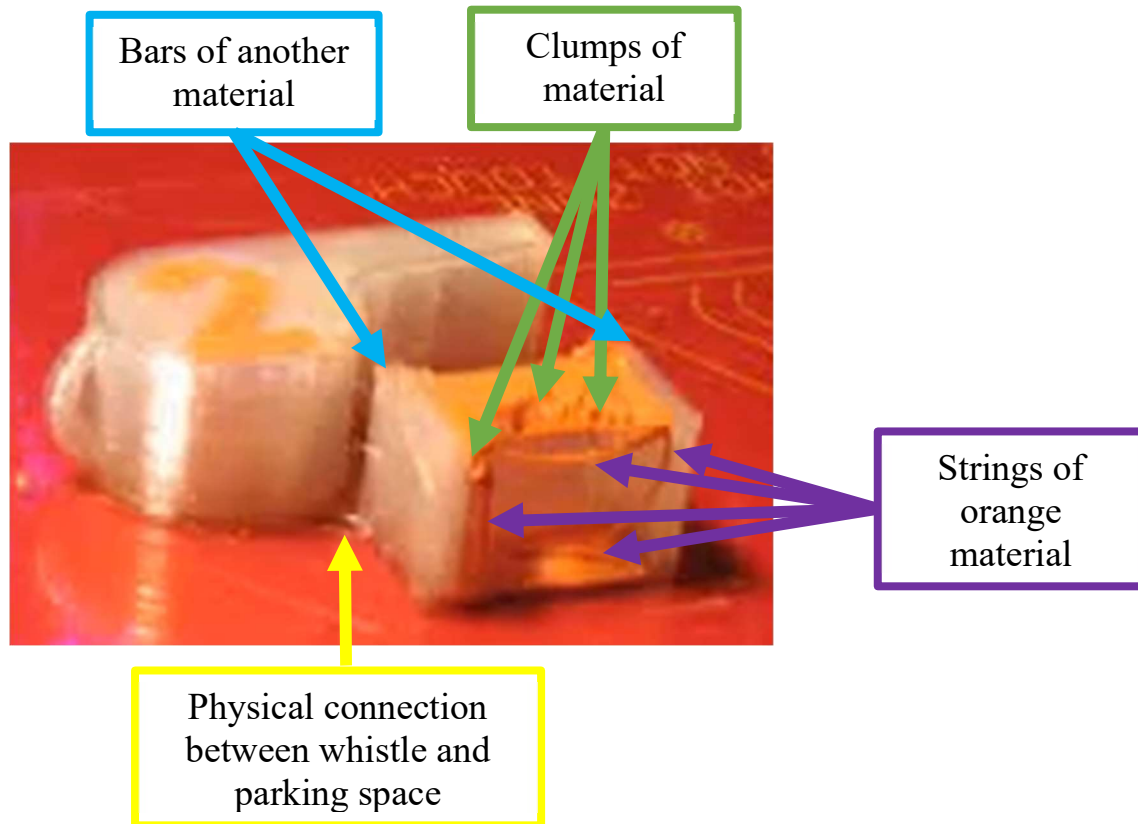


EX1014 (base).



EX1015 (text). As shown in Exhibit 1014, the parking space is supposed to be separate from the whistle and has two vertical surfaces connected together with a third vertical surface. Exhibit 1015 also shows at the two ends of the parking space are supposed to be two large plates that are larger in surface area (along the x-y plane) than the vertical surfaces illustrated in Exhibit 1014.

Contrary to Exhibits 1014 and 1015, the *RepRap Video* illustrates that there are many strings of orange-colored material all across the object (annotated in purple), with clumps of orange-colored material on top (annotated in green) with two bars of another material (annotated in blue).



EX1006 at 05:04 (annotated). As shown, there is no large plate on top of the parking space as illustrated in Exhibit 1015. In addition, the parking space is *physically connected* to the whistle to form a single object, as shown by the annotations in yellow in the screenshots above and below.



Physical connection
between whistle and
parking space

EX1005 at 4:22. The *RepRap Video* does not provide any audio or other explanation as to how the parking space is made to explain why the result of the print is different than the *RepRap Article* and Exhibits 1014 and 1015. There is also no explanation about various features that differ from the purported models in Exhibits 1014 and 1015, including the strings of orange-colored material, the clumps of orange-colored material on the top of the parking space with also two bars of another material (and without a large plate on top), or the single object printed with a physical connection between the whistle and parking space. See EX1014, EX1015, EX1006 at 04:22, 05:04. Thus, the whistle (alleged 3D part) and parking space (alleged purge tower) are printed as a single interconnected structure and there is no teaching in the combination of “printing layers of the three-

dimensional part” and also “performing a purge operation” that comprises “printing at least one purge tower.”

In addition, the *RepRap Video* does not teach that a layer of the parking space is printed when an extruder or a deposition line is switched into operation. Between the video's low-resolution capture, obstructions, reflections, blurry images, and discontinuous sequences, there is no clear indication whether the whistle or parking space is printed first when an extruder or a deposition line is switched into operation or whether a layer of the parking space is printed from the print head or deposition line switched to the operating mode. The end result of the *RepRap Video* indicates that the print operation is different than what claim 1 of the '713 Patent requires. As discussed above, the video shows *multiple types of material at any given point* or purported layer of the parking space (like the article), such as the clumps and strings of orange-colored material and two bars of another material on the top of the parking space and the strings of orange-colored material at nearly every vertical position. *See* EX1006 at 05:04 (reproduced and annotated above); *see also* EX1005 at 1 (as discussed above, parking space includes “leakage from one plugged nozzle” and “material extruded from both nozzles”). In addition, the resulting parking space differs from the purported model in several ways, including the strings and clumps of orange-colored material, another material on top of the parking space, and the lack of a large plate on top of

the parking space. *See id.*; *see also* EX1014 and 1015 (reproduced and discussed above). Thus, there is no teaching in the combination of “performing a purge operation for each print head or deposition line switched to the operating mode, the purge operation comprising printing at least one purge tower in a layer-by-layer manner, wherein the layers of the at least one purge tower are printed from the print head or deposition line switched to the operating mode.”

Accordingly, the combination in Ground 1 fails to provide all the elements of claim 1 and its dependent claims.

B. Ground 1 does not teach or suggest all elements of claim 16

Ground 1 of the Petition also asserts that claim 16 is obvious over the *Leavitt-RepRap Article-RepRap Video* combination. Independent claim 16 of the '713 Patent requires “printing a first layer of a support structure from a support material for the three-dimensional part,” “printing a first layer of a purge tower from a part material,” and “printing a first layer of the three-dimensional part on at least a portion of the first layer of the support structure from the part material after printing the first layer of the purge tower.” EX1001, 18:1-6. Petitioner argues the combination teaches that the extruder “prints a layer of the purge tower each time that build liquefier pump 30 transitions from an idle state to an active state as taught by RepRap.” Pet. at 37. On this basis, Petitioner contends that the extruder in the combination “prints a first layer of the purge tower from the part material

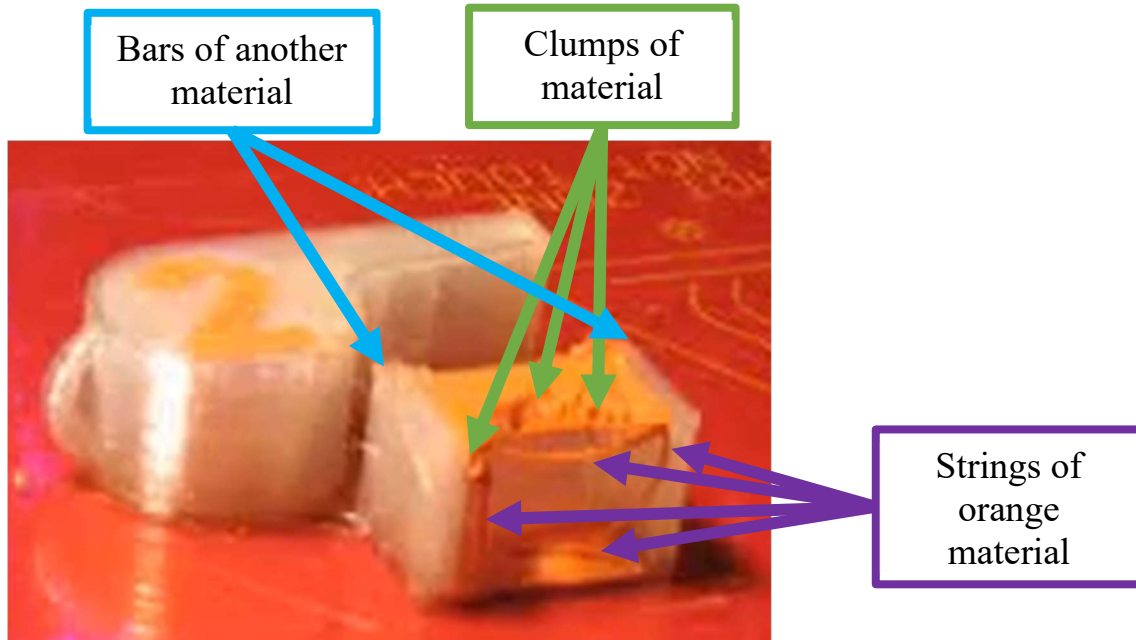
when the build liquefier pump 30 transitions from the idle state to the active state.”

Id.

However, Petitioner's conclusion that the transition from idle to active is the first transition when a first layer of the tower is printed is unsupported and conclusory. As discussed above for claim 1, the combination does not teach printing a purge tower in a layer-by-layer manner in which the layer of the tower is printed when a print head or deposition line is switched into an operating mode.

Supra Section X.A. For at least the same reasons, the combination also does not teach printing a first layer of a purge tower from part material after a first layer of a support structure is printed from a support material. Neither the *RepRap Article* or *RepRap Video*, whether alone or in the combination, show such a layered approach to printing the parking space.

The *RepRap Article* describes a parking space that has a dual purpose to handle leakage from one nozzle while handling priming for multiple nozzles. *See* EX1005 at 1; *supra* §X.A. Thus, at any given point, the parking space contains *a mixture of materials* from both nozzles. *Id.* For example, the top of the parking space shown in the *RepRap Video* includes strings and clumps of orange-colored material and two bars of another material.



EX1006 at 05:04 (annotated); *supra* §X.A. Additionally, nearly every given point of the parking space or purported layer includes strings of orange-colored material with the other material. *See id.* As a result, there is no indication whether the whistle or parking space is printed first with part material when a print head or a deposition line is switched to an operating mode. *See id.*; *see also* EX1005 at 1 (dual-purpose of parking space). For these reasons, *RepRap*, whether alone or in the combination, does not teach printing a first layer of a support structure from a support material, printing a first layer of a purge tower from a part material, and printing a first layer of a 3-D part from the part material on at least a portion of the first layer of the support structure after printing the first layer of the purge tower.

Leavitt does not address these deficiencies with *RepRap* in the combination. Indeed, *Leavitt* does not teach printing a purge tower. In addition, Figure 1 of

Leavitt shows that the bottom of an object has both support material 22 and part material 20.

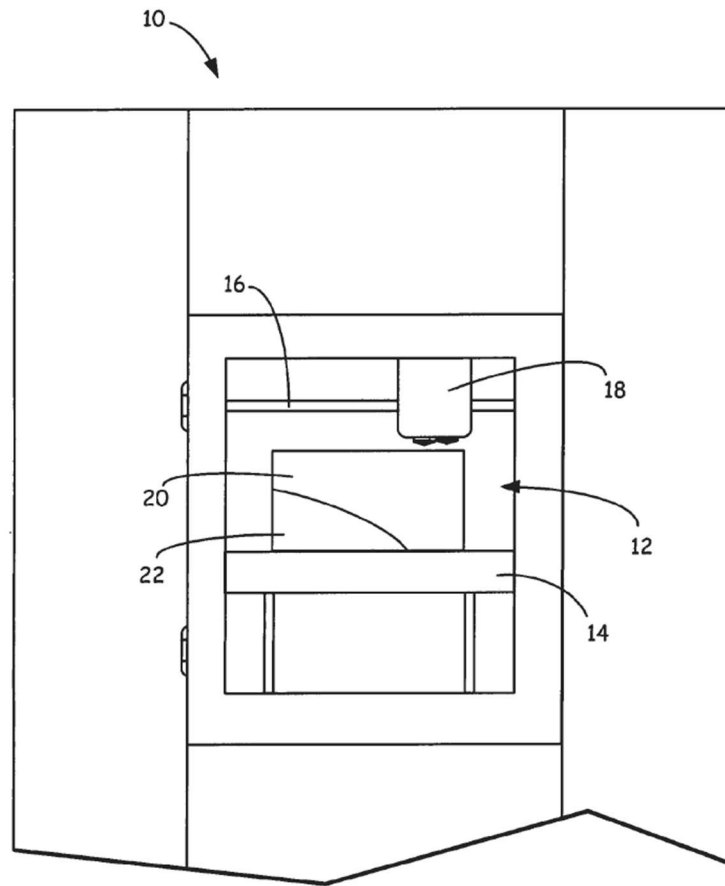


FIG. 1

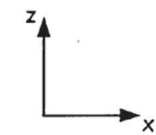


Fig. 1

EX1004 at Fig. 1, ¶[0023] (“During a build operation, extrusion head 18 is initially positioned in the build state, which allows extrusion head 18 to deposit the build material in a sequence of roads to form a layer of 3D object 20. *After the layer of*

3D object 20 is complete, extrusion head 18 then toggles to the support state, which allows extrusion head 18 to deposit the support material in a sequence of roads to form a layer of support structure 22.”). Thus, the combination does not teach printing a first layer of a support structure, printing a first layer of a purge tower from part material, and then printing a first layer of a 3-D part from part material.

Accordingly, the combination in Ground 1 fails to provide all the elements of claim 16 and its dependent claims.

XI. THE PETITION DOES NOT SHOW THAT THE CLAIMS 1, 2, 6, 7, 9, 16, AND 17 ARE UNPATENTABLE UNDER GROUND 2A

A. Ground 2A does not teach or suggest all elements of claims 1 and 16

Ground 2A of the Petition asserts that claims 1 and 16 are obvious over *Priedeman* in view of *KISSlicer*. Pet. at 1. As explained above, Petitioner has failed to show that *KISSlicer* is a printed publication. *Supra* Section IX. Even if the reference is a printed publication, Petitioner's challenge in Ground 2A fails to teach or suggest all elements of claims 1 and 16.

Claim 1 of the '713 Patent requires “performing a purge operation for each print head or deposition line switched to the operating mode, the purge operation comprising printing at least one purge tower in a layer-by-layer manner, wherein the layers of the at least one purge tower are printed from the print head or

deposition line switched to the operating mode.” EX1001 at 15:53-58. Similarly, claim 16 of the '713 Patent requires “printing a first layer of a support structure from a support material for the three-dimensional part,” “printing a first layer of a purge tower from a part material and “printing a first layer of the three-dimensional part on at least a portion of the first layer of the support structure from the part material after printing the first layer of the purge tower.” *Id.* at 18:1-6.

Petitioner tacitly admits that *Priedeman* does not disclose a purge tower. *See* Pet. at 42-43. Instead, Petitioner asserts that the *Priedeman-KISSlicer* combination teaches a purge operation after warm up. *See* Pet. at 50-51 (citing EX1010 at 9-10); *see also* Pet. at 43-46. However, *KISSlicer* does not teach a purge operation that prints a purge tower as recited in claims 1 and 16. Rather, the reference discloses a “wipe pillar” that is used to clean the extruder tip before each layer. In particular, *KISSlicer* teaches that the wipe pillar is a “cylinder printed before every layer to clean the extruder tip.” EX1010 at 9.

But cleaning the extruder tip before each layer by printing a cylinder is not the same operation as a purge operation comprising printing a purge tower in a layer-by-layer manner in which the layers of the tower are printed from the print head or deposition line switched to the operating mode, or printing a layer of a support structure from support material, printing a first layer of the purge tower from part material, and then printing a first layer of the 3D part from part material.

See EX1001 at 15:53-58, 18:1-6; *see also id.*, 4:41-45 (describing a purge operation optionally followed by a tip-wipe operation), 9:47-59 (“optionally” performing a separate tip-wipe operation, “as illustrated by tool path segment 58f” between vertices 64 and 66 in Figure 5), Fig. 5. In addition, *KISSlicer* fails to teach the requirement that the layers of the purge tower, which is printed in a layer-by-layer manner, are printed from the print head or deposition line switched to the operating mode (such as a first layer of the purge tower printed from part material before printing a first layer of the 3D part from the same material). Rather, *KISSlicer* teaches that an entire structure (a cylinder) is printed before every layer, which suggests that many cylinders are printed as layers are printed. EX1010 at 9. *KISSlicer* does not teach or even suggest what material is printed. *See id.*

Moreover, Petitioner's reliance on a wipe setting in *KISSlicer* is misplaced. *KISSlicer* does not describe its wipe setting as being related to its wipe pillar. *See* EX1010 at 10 (“Wipe [mm]: after a warm up the printer will push (prime) this amount of filament to ensure the printer is ready.”). In particular, *KISSlicer's* wipe setting is only performed “after warm up” and is “to ensure the printer is ready” (EX1010 at 10) whereas *KISSlicer's* wipe pillar is printed “before every layer” and is used “to clean the extruder tip” (*id.* at 9). *See also id.* at 3 (Material settings menu showing separate settings for “Prime” and “Wipe”), 9-10 (describing separate “destring” suck/prime setting to address “oozing”). There is no teaching in

KISSlicer that the warm-up of the printer is related to switching a particular print head or deposition line to an operating mode, nor is there any teaching that a wipe pillar is printed in relation to warming-up the printer. *See* Pet. at 50.

Thus, the combination fails to teach performing a purge operation comprising printing a purge tower in a layer-by-layer manner, in which the layers of the purge tower are printed from the print head or deposition line switched to the operating mode, such as printing a first layer of a support structure from a support material, printing a first layer of a purge tower from part material, and then printing a first layer of the three-dimensional part on at least a portion of the first layer of the support structure from the part material.

Accordingly, the combination in Ground 2A fails to provide all the elements of independent claims 1 and 16, and their dependent claims.

XII. THE PETITION DOES NOT SHOW THAT THE CLAIM 5 IS UNPATENTABLE UNDER GROUND 2B

Ground 2B of the Petition asserts that claim 5 is obvious over the combination of *Priedeman*, *KISSlicer*, *RepRap Article*, and *RepRap Video*. Pet. at 1. Because claim 5 depends from claim 1 and Petitioner relies on its assertions under Ground 2A for the elements of claim 1, for at least the reasons discussed above for Ground 2A with respect to independent claim 1, Ground 2B fails to teach

all elements of claim 5. Thus, Petitioner has also failed to show unpatentability for the claim challenged in Ground 2B.

XIII. THE PETITION DOES NOT SHOW THAT THE CLAIMS 1, 2, 6, 7, 9 ARE UNPATENTABLE UNDER GROUND 3

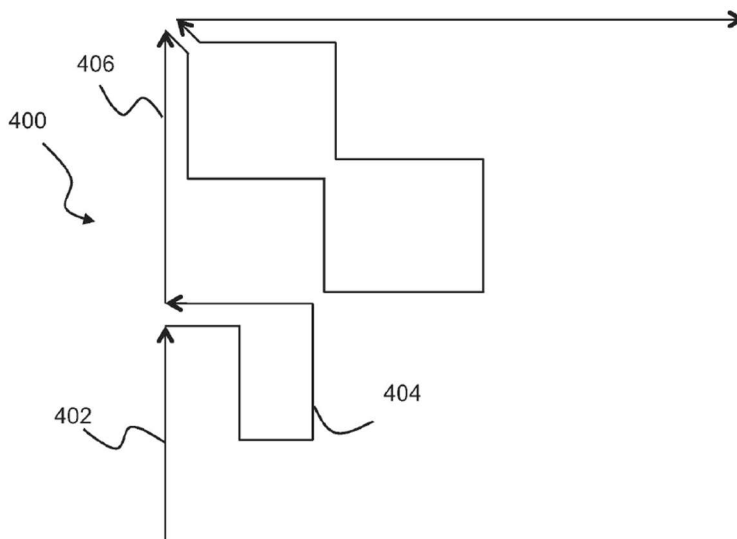
A. Ground 3 does not anticipate all elements of claim 1

Ground 3 fails to satisfy the exacting standards for anticipation, which require that the reference “disclose all elements of the claim within the four corners of the document” and “disclose those elements arranged as in the claim.” *Net MoneyIN*, 545 F.3d at 1369. Petitioner overlooks the actual disclosure within the four corners of *Boyer* to reach a flawed conclusion that “two-dimensional layers such as the one depicted in FIG. 4 [of *Boyer*] are stacked on top of one another so that the transition segments of FIG. 4 correspond to purge towers printed in a layer-by-layer.” Pet. at 73. As explained below, *Boyer* does not support Petitioner’s assertions and even Petitioner’s conclusion fails to anticipate claim 1 of the ’713 Patent.

Claim 1 requires “switching the print heads or deposition line between stand-by modes and operating modes in-between the printing of the layers of the three-dimensional part and the support structure” and “performing a purge operation for each print head or deposition line switched to the operating mode, the purge operation comprising printing at least one purge tower in a layer-by-layer manner, wherein the layers of the at least one purge tower are printed from the

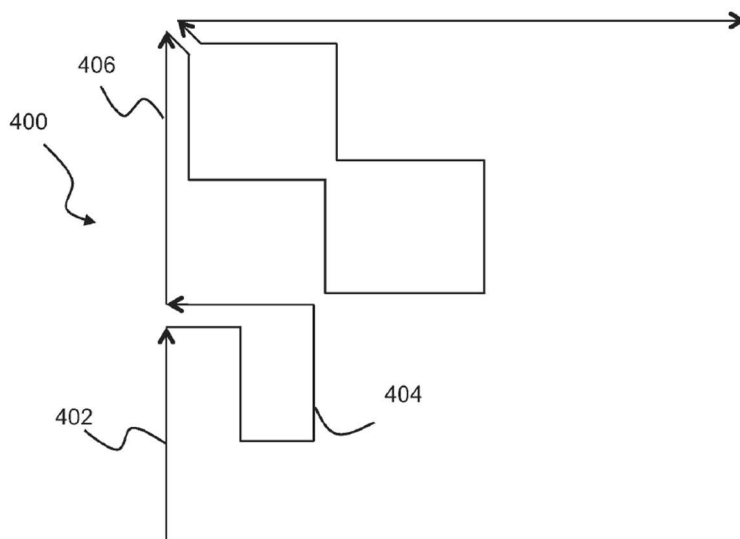
print head or deposition line switched to the operating mode.” The Petition asserts that *Boyer* discloses printing layers of a “sacrificial support structure for the three-dimensional part using a second build material.” Pet. at 65; *see also* Pet. at 68-69.

In addition, the Petition points to Figure 4 of *Boyer*.



EX1008 at Fig. 4. Petitioner asserts that *Boyer's* extruder performs “a purge operation by printing transition segment 404 using the second deposition line” because apparently the extruder will “in some cases, perform a purge operation each time there is a material change where one of the deposition lines transitions from the stand-by mode to the operating mode.” Pet. at 70-72. In Petitioner's view, layers can be printed above and below the cross-section shown in Figure 4 and thus the transition segment in Figure 4 corresponds to purge towers printed in a layer-by-layer manner. Pet. at 72-73.

However, *Boyer's* disclosure does not support Petitioner's assertions. First, *Boyer* does not describe both a 3-D part and purge tower. Like the single object shown in the *RepRap Video*, *Boyer* describes only a single object. Figure 4 of *Boyer* shows "a portion of a tool path [400] using multiple build materials to obtain different colors on an exterior of an object."



EX1008, Fig. 4, ¶¶[0008], [0032]. The first segment 402 and third segment 406 of tool path 400 traverse portions of the exterior surface of the object and transition segment 404 of the tool path 400 "turn[s] in toward an interior of the object and infill." *Id.*, ¶[0032]. *Boyer* describes that the first segment is a first color, the transition segment is a mixture of a first and second color, and the third segment is the second color. *Id.* While *Boyer* generally acknowledges that transitional lengths can be positioned on the outside of the object (*see id.*, ¶[0003]), there is no

disclosure in *Boyer* that transition segment 404 of the tool path 400 forms a *different object* than the 3D object itself, much less a *purge tower*.

Second, *Boyer* does not describe switching the print heads or deposition line between stand-by modes and operating modes in-between the printing of the layers of the 3-D part and support structure. The sole reference in *Boyer* to “support” structures discloses that “sacrificial support structures may be fabricated from materials that are lower in cost, or that dissolve or break away easily from the main structure of an object.” EX1008, ¶[0044] (cited by Pet., 65, 70, 73). There is no disclosure in *Boyer* that support material is used to print the transition segment (404) or other exterior segment (e.g., first segment 402 or third segment 406) in Figure 4, as Petitioner asserts. *See* Pet. at 72. In fact, the exterior segments in Figure 4 of *Boyer* form the outside or “main structure of the object” and thus cannot be made from sacrificial support structures that “dissolve or break away easily.” *See* EX1008, ¶[0032], [0044]. As *Boyer* explains, Figure 4 simply shows the use of “multiple build materials to obtain *different colors* on an exterior of an object.” *Id.*, ¶[0032].

Third, *Boyer* does not describe printing transition segment 404 for every layer of a purge power, as Petitioner asserts. *See* Pet. at 73. *Boyer* simply says that it can “position different segments” including transition segments “at suitable locations along a tool path in order to achieve specific colors (or more generally

build materials) at specific locations.” EX1008 at ¶[0033]. There is no disclosure in *Boyer* that the transition segments specifically are stacked on top of each other to create a purge tower.

Thus, *Boyer* fails to disclose multiple elements of claim 1 and thus cannot anticipate the claim. Accordingly, the Ground 3 fails to disclose all the elements of claim 1 and its dependent claims.

XIV. ADDITIONAL COMMENTS

With respect to any arguments in the Petition that are not specifically addressed herein, Patent Owner does not concede the legitimacy of such arguments and any underlying contentions in the Petition. If *inter partes* review is instituted, Patent Owner expressly reserves the right to rebut any such arguments and contentions at a later point, including in a Patent Owner Response. Patent Owner is not limited to the arguments presented in this Preliminary Response and expressly reserves the right to raise further arguments, including claim construction arguments, not presented here.

XV. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that the Board decline to institute *inter partes* review of the '713 Patent.

Respectfully submitted,

Dated: March 24, 2025

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), I certify that this Preliminary Response complies with the type-volume limits of 37 C.F.R. § 42.24(b)(1) because it contains 13,897 words, excluding the parts that are exempted by 37 C.F.R. § 42.24(a), according to the word processing system used in preparation of this Preliminary Response.

Dated: March 24, 2025

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e)(4), the undersigned certifies that on March 24, 2025, a complete copy of the foregoing Patent Owner's Preliminary Response was served on Lead and Back-up Counsel for Petitioner at the service address provided in Petitioner's Mandatory Notices:

Email: IPR56224-0005IP1@fr.com

Dated: March 24, 2025

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