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Stratasys Extrudes Past IPR Petitions; Set to Build 3D Printer Case Against Afinia

By Graham C. Phero and Benedict L. Hanrahan

Stratasys asserted four of its 3D printing patents against Afinia in the U.S. District Court of Minnesota. Afinia responded by petitioning for *inter partes* review (IPR) of the asserted patents. Yet, Stratasys escaped unscathed as the Patent Trial and Appeal Board (PTAB) did not institute trial on any of the 14 proposed grounds of unpatentability.

The Technology

Additive manufacturing, *i.e.*, 3D printing, builds physical objects from digital models. While many different types of technologies are available, a common type of 3D printer heats, extrudes, and deposits plastic material to build an object one layer at a time. The machine at work resembles an automated glue gun. Experts agree that the 3D printing industry is rapidly expanding, and there is a race for many 3D printer companies to claim the consumer market with a reliable, cost-effective 3D printer.

Stratasys, founded in 1989, sells 3D printers for consumers and companies alike. Stratasys also owns MakerBot, a well-known 3D printer targeted to the consumer and hobbyist market. Stratasys is actively involved in the development of 3D printing technologies, resulting in hundreds of issued patents. According to their CEO, "in 2012 alone, Stratasys Ltd invested \$33.3 million or 9.3 percent of its revenues in R&D."¹

Afinia sells the popular H-Series line of 3D printers. An example is pictured below.



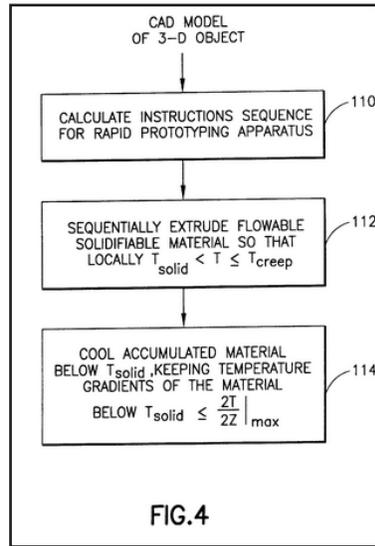
Afinia H-Series 3D Printer User's Manual, cover.

¹Stratasys Press Release (November 25, 2013), available at: <http://investors.stratasys.com/releasedetail.cfm?ReleaseID=809438>.

The 3D Printing Lawsuit and IPRs

Stratasys filed a complaint due to alleged infringement by Afinia on four of its patents: U.S. 5,653,925; U.S. 5,866,058; U.S. 6,004,124; and U.S. 8,349,239.² In response, Afinia filed IPRs to challenge the validity of the '058 patent (IPR2015-00284); the '124 patent (IPR2015-00287); and the '239 patent (IPR2015-00288). Afinia did not request IPR for the '925 patent as it was removed from the district court proceeding.³

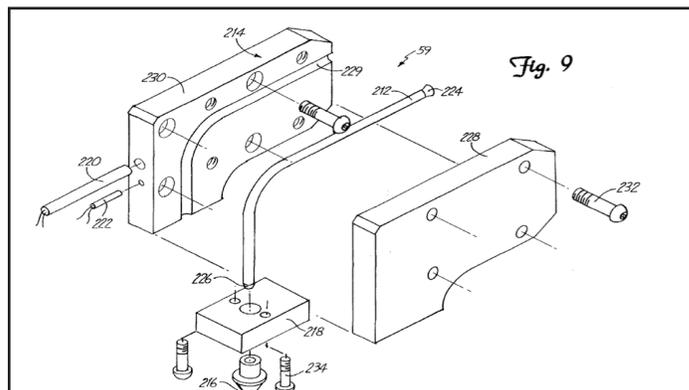
The '058 patent, titled "METHOD FOR RAPID PROTOTYPING OF SOLID MODELS," broadly covers extruding material into a build environment with a controlled temperature. Controlling the build environment temperature reduces "curl" and "plastic deformation" of the printed object. Figure 4 of the '058 patent is shown below.



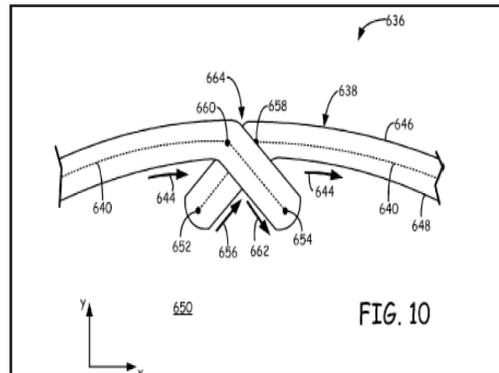
The '124 patent, titled "THIN WALL TUBE LIQUIFIER," relates to a liquefier formed by a single piece of thin-wall tubing. The claimed liquefier offers several advantages over previous liquefiers, including the ability to dispense two materials through a common nozzle. Figure 9, below, depicts an embodiment of the '124 patent.

² *Stratasys Inc. v. Microboards Technology, LLC*, No. 0:13cv3228 (MN).

³ Afinia asserted in a counterclaim that the claims in Stratasys' '925 patent were invalid due to double patenting on an earlier granted Stratasys patent. Afinia also asserted patent misuse and inequitable conduct by Stratasys. In response, Stratasys made an offer to Afinia to dismiss claims of infringement on the '925 patent if Afinia's counterclaims were dropped. Afinia rejected Stratasys' offer, but the court ordered Stratasys to drop their '925 compliant and will look into Afinia's counterclaims at a later date.



The '239 patent, titled "SEAM CONCEALMENT FOR THREE-DIMENSION MODELS," broadly covers methods for concealing seams when building 3D models. The deposition patterns conceal the seams by varying the location of the extrusion start and stop points. Figure 10, shown below, depicts a concealment method in the '239 patent.



The PTAB denied institution in each of IPR2015-00284, IPR2015-00287, and IPR2015-00288. IPR2015-00284 contained four grounds of unpatentability—one based on anticipation and three based on obviousness. IPR2015-00287 and IPR2015-00288 each contained five distinct grounds of unpatentability—one based on anticipation and four based on obviousness. Each of the three petitions also cited five prior art references. Between the three IPRs, the PTAB reviewed and denied 14 grounds of rejection based on 14 different pieces of art. The PTAB reasoned that Afinia did not meet their burden on anticipation or provide sufficient support or motivation for their obviousness combinations.

A. The '058 Patent—IPR2015-00284

The PTAB found the assertions in Afinia's Petition to be conclusory and unpersuasive.⁴ The reference for anticipation and primary reference for an obviousness ground was the Fused Deposition Modeling (FDM) reference, a manual for an earlier device sold by Stratasys. The PTAB found Afinia's anticipation arguments to be conclusory in alleging that the FDM reference discloses a local region temperature that exceeds the solidification temperature of the thermally solidifiable material. Afinia's obviousness arguments with respect to the FDM reference and others were insufficient and did not articulate a reason for modifying the prior art. Similarly, the PTAB concluded that Afinia's expert testimony jumped to the same conclusions in the Petition without providing the requisite articulated reasoning. The PTAB found there was no demonstration of reasonable likelihood of prevailing, giving no reason to prompt one of ordinary skill to make a prior art combination. Ultimately, the PTAB relied on the Supreme Court case of *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007), that a patent comprising several elements cannot be proven obvious just because each of the elements was known independently in the prior art.

B. The '124 Patent—IPR2015-00287

The PTAB found similar inadequacies in Afinia's arguments in IPR2015-00287.⁵ Here, Afinia relied on US 5,340,433 to Crump as the anticipation reference and a primary reference for obviousness. The Petition failed due to its attempt to pick and choose from the embodiments in Crump. The PTAB found Afinia did not provide an adequate explanation of how the different embodiments would be put together to disclose the claim limitations recited in the '124 patent. Also, Crump was before the Examiner during examination, and the Examiner's Notice of Allowability addressed the deficiencies in Crump. As another reason to deny institution, the PTAB used its discretion under 35 U.S.C. § 325(d) and declined to take into account prior art previously presented to the Office during prosecution of the original application.

C. The '239 Patent—IPR2015-00288

Afinia's arguments in IPR2015-00288 failed for similar reasons to those present in IPR2015-00284 and IPR2015-00287.⁶ Afinia's arguments were based on a claim construction not adopted by the PTAB, and the Board felt that Afinia did a poor job linking the prior art disclosures to the claim limitations. Afinia relied on the Kao reference⁷ for anticipation and as a primary reference for obviousness.

However, the PTAB found that the Kao reference did not disclose several claim limitations. And, the PTAB determined that the presented expert testimony failed to explain why a person of skill would have understood the disclosed process in Kao to disclose the claimed process. With respect to one of the proposed grounds of unpatentability, the PTAB went so far as to state, “we decline to sift through the record to identify support for such a finding [in the prior art] unguided by Petitioner.”

⁴ IPR 2015-00284, Paper 14, May 27, 2015.

⁵ IPR 2015-00287, Paper 13, May 28, 2015.

⁶ IPR 2015-00288, Paper 13, May 28, 2015.

⁷ Ju-Hsien Kao, *Process Planning for Additive/Subtractive Solid Freeform Fabrication Using Medial Axis Transform*, 1–159 (1999) (Ph.D. diss., Stanford Univ.)

After IPR - What's Next?

After Afinia's loss at the PTAB, they are left with few options. Under 35 U.S.C. 315(b), an IPR may

not be instituted if the petition requesting the proceeding is filed more than one year after the date on which the petitioner is served with a complaint alleging infringement of the patent. Afinia is outside their one year window and is thus time-barred from re-filing for IPR. The patent dispute between Afinia and Stratasys, however, continues in the district court.

Even if Afinia was still permitted to refile for IPR to fix their deficiencies, the petitions could be denied under 35 U.S.C. 325(d). 35 U.S.C. 325(d) allows the PTAB to decline to hear a request based on substantially the same prior art or arguments previously presented. After Afinia asserted fourteen rejections using fourteen different pieces of prior art, it is unclear whether the PTAB would accept new IPR petitions were Afinia to simply add minor tweaks to remedy the petition deficiencies. The PTAB's ability to reject a second request for IPR under 35 U.S.C. 325(d) urges petitioners to get the IPR petition right the first time.

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