

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

EXTRUSION GROUP, LLC, EXTRUSION GROUP SERVICES, LLC,
EG GLOBAL, LLC, EG VENTURES, LLC,
Petitioner,

v.

KIMBERLY-CLARK GLOBAL SALES, LLC,
Patent Owner.

IPR2021-00202
Patent 6,972,104 B2

Before CHRISTOPHER L. CRUMBLEY, CHRISTOPHER G. PAULRAJ,
and ELIZABETH M. ROESEL, *Administrative Patent Judges*.

ROESEL, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. *Background and Summary*

Extrusion Group, LLC, Extrusion Group Services LLC, EG Global, LLC and EG Ventures, LLC (collectively “Petitioner”) filed a Petition (Paper 5, “Pet.”) seeking an *inter partes* review of claims 1, 2, 5, 7, 9, and 18 (“the challenged claims”) of U.S. Patent No. 6,972,104 B2 (Ex. 1001, “the ’104 Patent”). Kimberly-Clark Global Sales, LLC (“Patent Owner”) filed a Preliminary Response. Paper 16 (“Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2019). An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). After considering the parties’ arguments and evidence, we determine that the reasonable likelihood standard is not met. Accordingly, we deny institution of *inter partes* review.

B. *Real Parties in Interest*

Petitioner identifies Extrusion Group, LLC, Extrusion Group Services LLC, EG Global, LLC and EG Ventures, LLC, as the real parties in interest. Pet. 6. Patent Owner identifies Kimberly-Clark Global Sales, LLC and Kimberly-Clark Corporation as the real parties in interest. Paper 13, 1 (Mandatory Notices).

C. *Related Matters*

The parties indicate that the ’104 Patent is being asserted by Patent Owner against Petitioner in the following district court action: *Kimberly-*

die tip 102 and air plates 106a and 106b are mounted to mounting plate 104, but they may also be mounted directly to die body 103, and the mounting plate may be omitted. *Id.* at 4:47–56. Die tip 102 has top side 160, bottom side 161, and two sides 162a and 162b, which extend from the top side toward the bottom side of the die tip. *Id.* at 4:60–62. Fiber-forming material passes through passageway 132, distribution plate 131, breaker plate/screen assembly 130, and narrowing passage 133 to narrow cylindrical outlet 129, which ejects the material, thereby forming fibers. *Id.* at 4:63–5:6.

The '104 Patent discloses that a “high velocity fluid, generally air, must be provided to die tip outlet 129 in order to attenuate the fibers.” Ex. 1001, 5:15–16. The attenuating fluid is supplied through an inlet (not shown in Figure 2) in die body 103 and passes through passages 140a and 140b, distribution chambers 141a and 141b, passages 120a and 120b, and channels 114a and 114b to outlet opening 149 of meltblowing die 100. *Id.* at 5:16–40. The '104 Patent states that “[t]he air plates 106a and 106b are secured to the mounting plate 104 (alternately the die body 103) in such a way that the air plates 106a and 106b and the die tip 102 form passages 120a and 120b.” *Id.* at 5:30–36. According to the '104 Patent, this configuration allows the meltblown die to have a reduced width in the machine direction, i.e., the direction of travel of the forming surface onto which fibers are deposited. *Id.* at 2:7–10, 4:14–16, 5:20–24, 5:44–53. The machine direction is left to right in Figure 2. *See id.* Fig. 4 (identifying machine direction with an arrow labeled “MD”).

One way of providing passages 120a and 120b between die tip 102 and air plates 106a and 106b is illustrated in Figure 3, which is reproduced below.

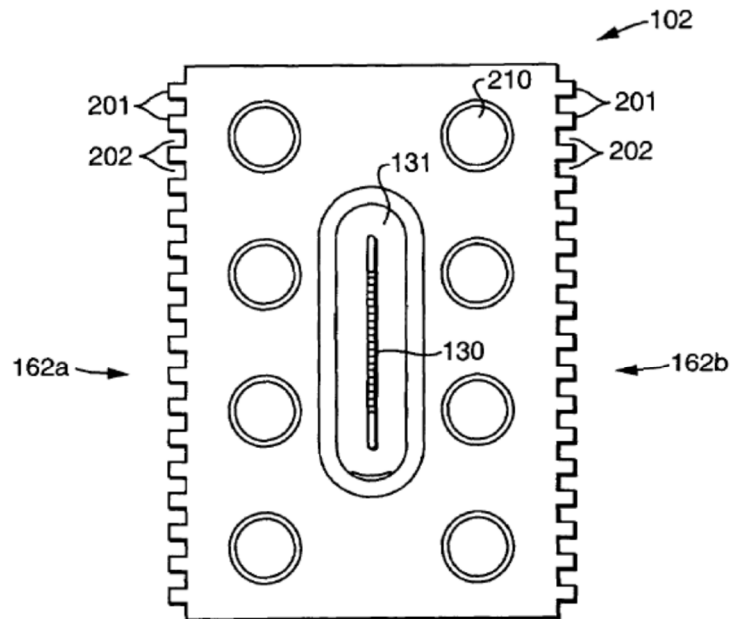


FIG. 3

Figure 3 is a top view of die tip 102, looking down onto surface 160 along section line A--A in Figure 2. Ex. 1001, 3:12–13, 6:5–9. As shown in Figure 3, a series of raised portions 201 on sides 162a and 162b of die tip 102 define a series of grooves or channels 202 in each side of the die tip. *Id.* at 5:62–6:11. These channels extend from top side 160 of the die tip to bottom side 161 of the die tip. *Id.* at 6:1–4. As shown in Figure 2, air plates 106a and 106b are fitted against raised portions 201, such that passage ways 120a and 120b are formed by channels 202 and the air plates. *Id.* at 6:11–14. This allows for the attenuating fluid to pass from die body 103 or mounting plate 104 to outlet 149 of meltblowing die 100. *Id.* at 6:14–16.

E. Illustrative Claim

Petitioner challenges claims 1, 2, 5, 7, 9, and 18 of the '104 Patent.

Pet. 1, 5–6. Claim 1 is the sole independent claim and is reproduced below.

1. A meltblowing die comprising
 - a. a die body;
 - b. a die tip comprising a top side, a bottom side, a first side and a second side, wherein the top side is mounted to the die body, the bottom side is opposite the topside, the first side and the second side each extend from the topside towards the bottom side, the first side and the second side are opposite each other,
 - c. a first air plate, wherein a portion of the first air plate is in contact with the first side of the die tip and a series of passages are formed by the first side of the die tip and the first air plate; and
 - d. a second air plate, wherein a portion of the second air plate is in contact with the second side of the die tip and a series of passages are formed by the second side of the die tip and the second air plate.

Ex. 1001, 12:9–24.

F. Asserted Grounds and Evidence

Petitioner asserts the following grounds of unpatentability under 35 U.S.C. § 103(a):¹

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the '104 Patent has an effective filing date before this date, the pre-AIA version of § 103 applies. Ex. 1001, code (22).

Claims Challenged	References
1, 2, 5, 7, 9, 18	Allen '615, ² Allen '219, ³ Koenig ⁴
1, 2, 5, 7, 9, 18	Allen '615, Allen '219, Koenig, Butin ⁵

Pet. 5–6. Petitioner relies on the Declaration of Tim A. Osswald, Ph.D. to support its challenges. Ex. 1002.

II. ANALYSIS

A. Legal Standards

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)); *see also* 37 C.F.R. § 42.104(b) (requiring a petition for *inter partes* review to identify how the challenged claim is to be construed and where each element of the claim is found in the prior art patents or printed publications relied upon).

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406

² Ex. 1003, Allen, US 6,502,615 B1, issued Jan. 7, 2003.

³ Ex. 1004, Allen et al., US 5,728,219, issued Mar. 17, 1998.

⁴ Ex. 1005, Koenig, US 5,196,207, issued Mar. 23, 1993.

⁵ Ex. 1006, Butin, US 3,849,241, issued Nov. 19, 1974.

(2007). The question of obviousness is resolved based on underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when presented, objective evidence of nonobviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)). Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

B. Level of Ordinary Skill in the Art

Relying on Dr. Osswald’s testimony, Petitioner contends that a person of ordinary skill in the art (“POSA”) would have had a Bachelor of Science degree in mechanical engineering, chemical engineering, fluid mechanics, and/or polymer processing or equivalent, and at least two years of practical experience working with dies and other equipment used in polymer processing, such as meltblowing dies, or in lieu of work experience, additional education and/or coursework exposing them to polymer processing and equipment, including meltblowing dies. Pet. 11; Ex. 1002

¶ 37. Patent Owner does not dispute Petitioner’s contention regarding the level of ordinary skill in the art.

We find that Petitioner’s definition of a POSA is consistent with the scope and content of the ’104 Patent and the asserted prior art, and we apply this definition for purposes of this Decision.

C. Claim Construction

In an *inter partes* review, we apply the same claim construction standard as would be used by a district court to construe a claim in a civil action involving the validity or infringement of a patent. 37 C.F.R. § 42.100(b). Under that standard, claim terms are given their ordinary and customary meaning, as would have been understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of record. *Id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–19 (Fed. Cir. 2005) (en banc); *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365–66 (Fed. Cir. 2012).

For purposes of this proceeding, the parties do not dispute the meaning of any claim term. *See* Pet. 11–15 (for purposes of this proceeding, Petitioner adopts Patent Owner’s claim construction positions from the related district court litigation); Prelim. Resp. 11–14 (discussing claim construction and not disputing constructions on which Petition is based). Accordingly, we do not need to resolve any claim construction disputes for purposes of this Decision. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean*

Motor Co., 868 F.3d 1013, 1017 (Fed. Cir. 2017) (applying *Vivid Techs.* in the context of *inter partes* review).

D. Petitioner's First Obviousness Ground: Allen '615, Allen '219, and Koenig

1. Claim 1

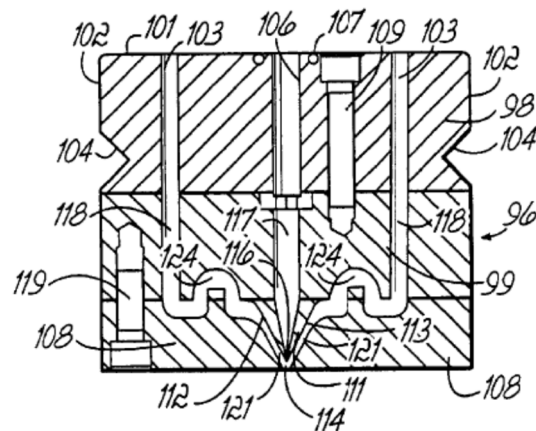
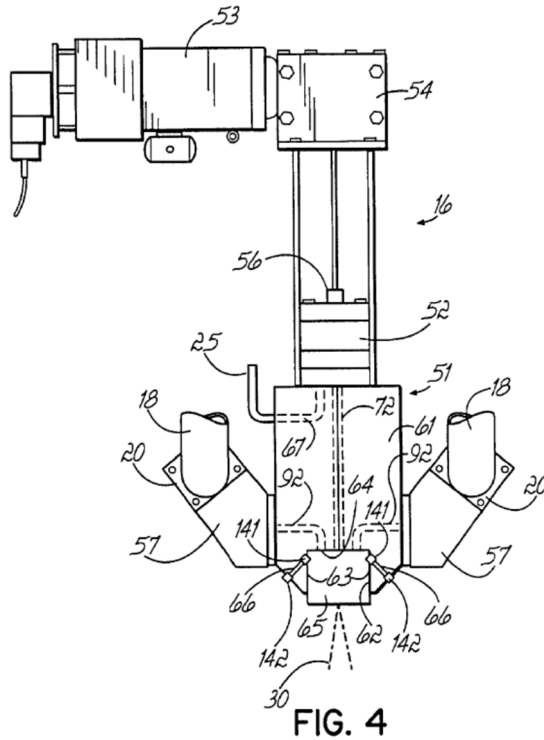
Petitioner contends that claim 1 would have been obvious in view of Allen '615, either alone or further in view of Allen '219. Pet. 18. Petitioner relies on Koenig for some of the challenged dependent claims, but not for independent claim 1. Pet. 18, 26.

a) Allen '615 (Ex. 1003)

Petitioner contends that Allen '615 discloses each limitation of claim 1. Pet. 22.

It is undisputed that Allen '615 discloses a meltblowing die comprising a die body, a die tip, and first and second air plates.

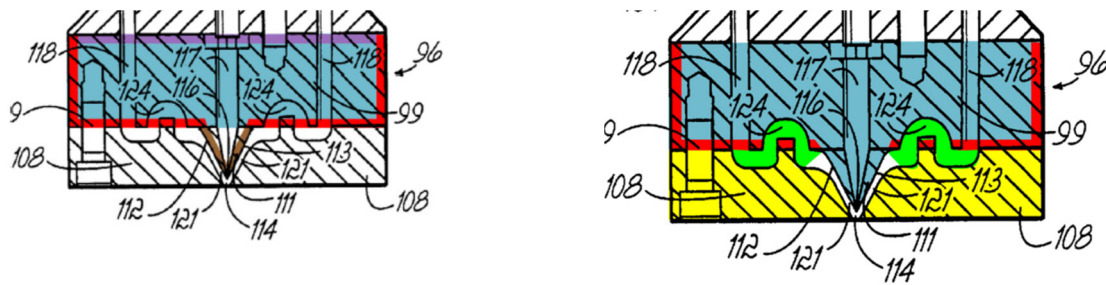
Figures 4 and 5 of Allen '615 are reproduced below.



Allen '615 Figure 4 shows a meltspinning assembly including die body 61 and die insert 65, which can be a meltblowing die insert. Ex. 1003, 3:21–22, 8:37–60, 9:8–13. Allen '615 Figure 5 shows meltblowing die insert 96 comprising support member 98, die tip 99, and air plates 108. *Id.* at 3:23–24, 9:8–16, 9:32–33, 9:44–51.

Petitioner asserts, and Patent Owner does not dispute, that die body 61 of Allen '615 corresponds to the die body recited in claim 1, that die tip 99 of Allen '615 corresponds to the die tip recited in claim 1, and that air plates 108 of Allen '615 correspond to the first and second air plates recited in claim 1. Pet. 18–21; *see* Prelim. Resp. 30–35 (discussing Allen '615).

Petitioner provides the following annotated excerpts of Allen '615 Figure 5 to identify the limitations of claim elements 1b, 1c, and 1d.



[The above figures show the lower part of meltblowing die insert.]

Pet. 20, 22. Referring to the first annotation of Allen '615 Figure 5, Petitioner contends that die tip 99 shown in blue has a top side shown in purple, a bottom side shown in brown, and first and second sides shown in red. Pet. 20. Referring to the second annotation of Allen '615 Figure 5, Petitioner contends that a series of passages shown in green are formed by first and second sides of die tip 99 and air plates 108 shown in yellow. Pet. 20–22. Petitioner relies on Allen '615's disclosure that "[e]ach air plate 108 defines with a confronting surface of the die tip a tortuous air passage 124." Pet. 21 (quoting Ex. 1003, 9:50–51).

Patent Owner disputes these contentions. Prelim. Resp. 29–36. Patent Owner argues that Petitioner misidentifies the bottom of Allen '615's die tip 99 as part of the first and second sides, as recited in claim 1. *Id.* at 29–33. In addition, Patent Owner argues that, even if Petitioner correctly identifies the first and second sides of the die tip in Allen '615 Figure 5, Petitioner does not show that Allen '615 discloses both (i) a series of passages formed by the first side of the die tip and the first air plate and (ii) a series of passages formed by the second side of the die tip and the second air plate, as recited in claim elements 1c and 1d. *Id.* at 33–36. We agree with Patent Owner.

Claim elements 1c and 1d recite:

c. a first air plate, wherein a portion of the first air plate is in contact with the first side of the die tip and *a series of passages* are formed by the first side of the die tip and the first air plate; and

d. a second air plate, wherein a portion of the second air plate is in contact with the second side of the die tip and *a series of passages* are formed by the second side of the die tip and the second air plate.

Ex. 1001, 12:17–24 (emphasis added).

Patent Owner is correct that claim 1 requires both (i) a *series of passages* formed by the *first* side of the die tip and the *first* air plate, and (ii) a *series of passages* are formed by the *second* side of the die tip and the *second* air plate. For purposes of this proceeding, the parties agree that “series” means “two or more.” Pet. 14–15 (adopting Patent Owner’s claim construction positions from the related district court litigation, including Patent Owner’s contention that a “series” is “two or more” things); Prelim. Resp. 14.⁶

⁶ Patent Owner states: “For the purposes of this IPR proceeding, both parties have agreed that ‘series’ means ‘two or more.’” Prelim. Resp. 14. (citing Pet. 15). Patent Owner directs us to the district court’s claim construction order, which construes “series” as meaning “two or more.” Prelim. Resp. 14; Ex. 2009, 27, 37. The district court relied on dictionary definitions and “normal usage,” for example, in the context of baseball. Ex. 2009, 26–27. We note that the parties’ agreed construction is consistent with the claims of the ’104 Patent, which recite the word “series” in various contexts, including a “series of passages,” a “series of raised portions,” a “series of channels,” a “series of polymer ports,” and a “series of capillaries.” Ex. 1001, 12:19, 12:23, 12:31, 12:33, 12:42, 12:44, 12:64–65, 13:2–3, 13:20–14:1, 14:6, 14:11–13. In each case, the meaning “two or more” is consistent with the claim language. The parties’ agreed construction is also supported by the Specification, which shows and

We agree with Patent Owner that Petitioner identifies only a *single passage* on each side of the die tip in Allen '615, not a *series of passages* on each side of the die tip, as recited in claim 1. Prelim. Resp. 35. More specifically, referring to Allen '615 Figure 5, Petitioner identifies a single tortuous passage 124 on the left side of the die tip and a single tortuous passage 124 on the right side of the die tip. Pet. 21–22. As support for its contention that Allen '615 discloses claim element 1c and with reference to its annotated excerpt of Figure 5, Petitioner provides the following citation:

See Ex. 1003, Fig. 5 (excerpt), Item 99 (die tip) (blue), Items 108 (air plates) (yellow), the first and second sides of the die tip (red), and Items 124 (the series of air passages formed by the first side of the die tip and the air plates) (green) (Ex. 1002, Osswald, at ¶ 81).

Pet. 21. As support for its contention that Allen '615 discloses claim element 1d, Petitioner states:

As discussed in claim element 1(c), supra, the prior art discloses a second air plate, wherein a portion of the second air plate is in contact with the second side of the die tip and a series of passages are formed by the second side of the die tip and the second air plate.

Pet. 22 (citing Ex. 1002 ¶ 82).

For each of claim elements 1c and 1d, Petitioner identifies the same air passages 124 shown in green in the above annotated excerpt of Allen '615 Figure 5. Pet. 21–22. Petitioner does not show sufficiently how air passages 124 of Allen '615 satisfy the claim requirement for a “series of passages” on a first side of the die tip and another “series of passages” on a second side of the die tip.

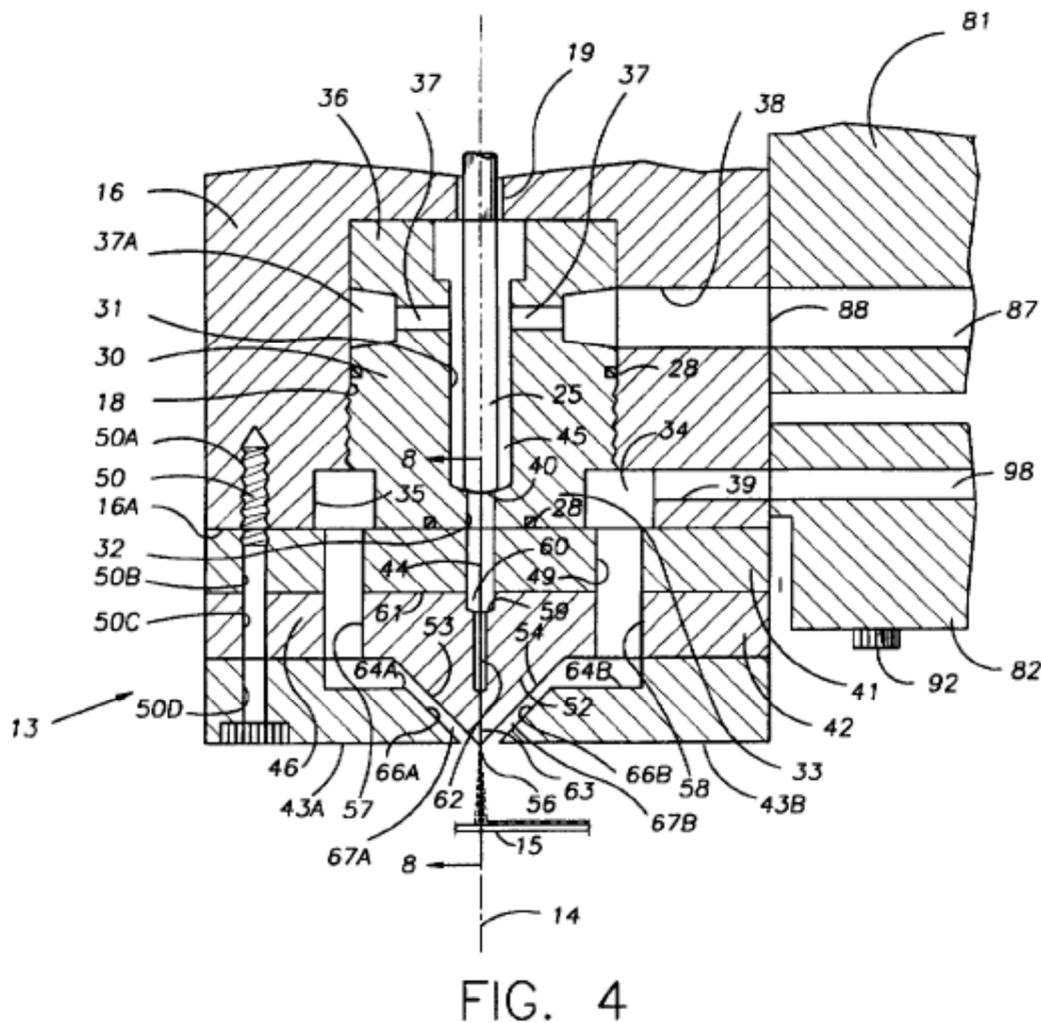
describes an embodiment in which more than two air passages are formed on each side of a die tip. *Id.* at 5:54–6:49, Figs. 2, 3.

b) Allen '219 (Ex. 1004)

Petitioner contends that Allen '219 discloses each limitation of claim 1. Pet. 23–26.

It is undisputed that Allen '219 discloses a meltblowing die comprising a die body, a die tip, and first and second air plates.

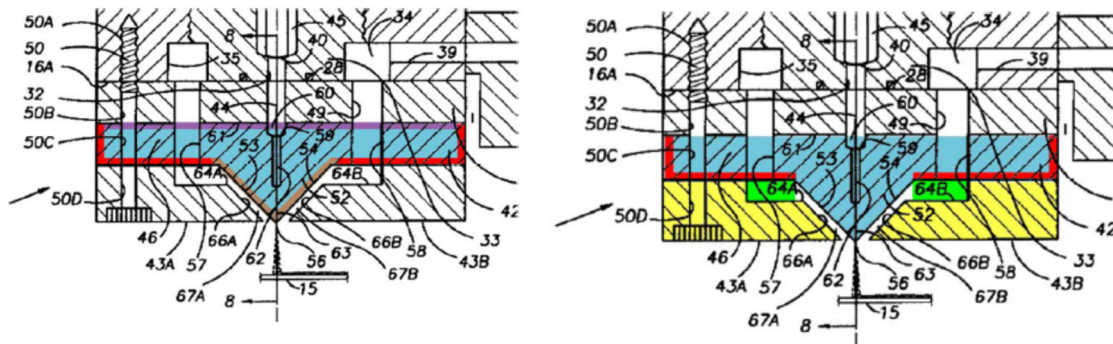
Figure 4 of Allen '219 is reproduced below.



Allen '219 Figure 4 shows die tip assembly 13, including die body 16, transfer plate 41, die tip 42, and air plates 43A and 43B. Ex. 1004, 3:48–49, 5:33–37.

Petitioner asserts, and Patent Owner does not dispute, that die body 16 of Allen '219 corresponds to the die body recited in claim 1, that die tip 42 of Allen '219 corresponds to the die tip recited in claim 1, and that air plates 43A and 43B of Allen '219 correspond to the first and second air plates recited in claim 1. Pet. 23–25; *see* Prelim. Resp. 36–39 (discussing Allen '219).

Petitioner provides the following annotated excerpts of Allen '219 Figure 4 to identify the limitations of claim elements 1b, 1c, and 1d.



[The above figures show the lower part of a die tip assembly.]

Pet. 25, 26. Referring to the first annotation of Allen '219 Figure 4, Petitioner contends that die tip 42 shown in blue has a top side shown in purple, a bottom side shown in brown, and first and second sides shown in red. Pet. 24. Referring to the second annotation of Allen '219 Figure 4, Petitioner contends that a series of passages shown in green are formed by first and second sides of die tip 42 and air plates 43A and 43B shown in yellow. Pet. 25–26.

Patent Owner disputes these contentions. Prelim. Resp. 36–39. Patent Owner argues that Petitioner misidentifies the bottom of Allen '219's die tip 42 as part of the first and second sides, as recited in claim 1. *Id.* at 36–38. In addition, Patent Owner argues that, even if Petitioner correctly identifies the first and second sides of the die tip in Allen '219 Figure 4,

Petitioner makes the same error for claim elements 1c and 1d as discussed above for Allen '615. *Id.* at 38. According to Patent Owner, Petitioner identifies only a single passage on each side of the die tip in Allen '219. *Id.* We agree with Patent Owner.

Referring to Allen '219 Figure 4, Petitioner identifies a single air passage 64A on the left side of the die tip and a single air passage 64B on the right side of the die tip. Pet. 25–26. Petitioner does not show sufficiently how air passages 64A and 64B of Allen '219 satisfy the claim requirement for a “series of passages” on a first side of the die tip and another “series of passages” on a second side of the die tip.

c) Combination of Allen '615 and Allen '219

Petitioner contends that, to the extent any claimed feature may be missing from Allen '615, a POSA would have been motivated to look to Allen '216 “to modify Allen '615 to provide those features.” Pet. 22.

Patent Owner argues that Petitioner presents “no argument as to how the asserted art would actually be combined or why a [person of ordinary skill in the art] would be motivated to combine them.” Prelim. Resp. 42–43. We agree with Patent Owner.

Although Petitioner relies upon Allen '219 to supply any claim feature that may be missing from Allen '615, Petitioner does not identify any difference between Allen '615 and the claimed invention, nor explain how that difference would have been remedied by the teachings of Allen '219. Petitioner does not identify what features of Allen '615's meltblowing die would have been combined with what features of Allen '219's meltblowing die to arrive at the claimed invention. As discussed above, Petitioner does not show sufficiently that either reference discloses claim elements 1c and

1d. Nor does Petitioner explain how the combined disclosures of the two references would have suggested modification to include claim elements 1c and 1d. For these reasons, Petitioner does not show sufficiently that the combination of Allen '615 and Allen '219 teaches or suggests the meltblowing die of claim 1.

We have considered the paragraphs of the Osswald Declaration relied upon by Petitioner for its challenge to claim 1 based on the first obviousness ground (Ex. 1002 ¶¶ 74–88), and we find that they are essentially the same as the Petition (Pet. 18–26) and are deficient for the same reasons.

2. Claims 2, 5, 7, 9, and 18

Petitioner contends that claims 2, 5, 7, 9, and 18 would have been obvious in view of Allen '615, either alone or in further view Allen '219 and/or Koenig. Pet. 26–41.

After reviewing Petitioner's contentions, we find that the deficiencies in Petitioner's first obviousness ground for independent claim 1, as discussed above, are not remedied by Petitioner's contentions for dependent claims 2, 5, 7, 9, and 18, including Petitioner's contentions about Koenig.

E. Petitioner's Second Obviousness Ground: Allen '615, Allen '219, Butin, and Koenig

1. Claim 1

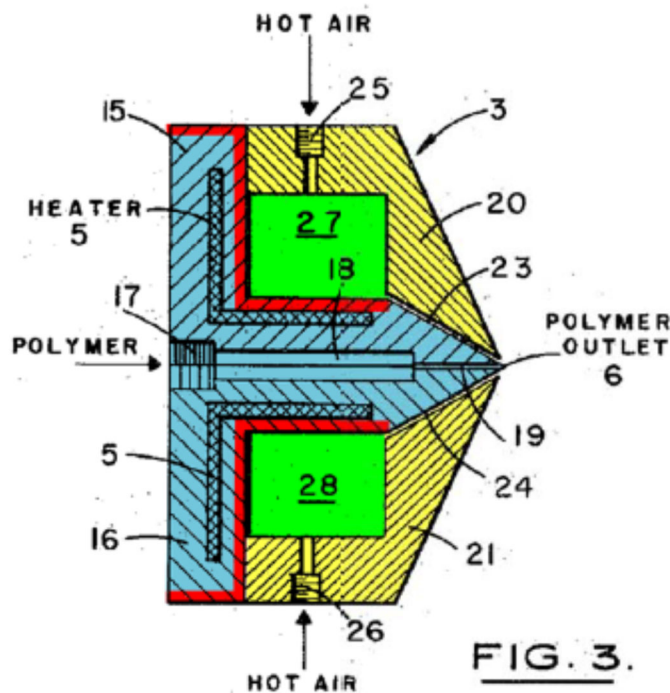
Petitioner contends that claim 1 would have been obvious in view of Allen '615, Allen '219, and Butin. Pet. 41–45. Petitioner relies on Koenig for some of the challenged dependent claims, but not for independent claim 1. Pet. 41–51.

Petitioner contends that Butin (Ex. 1006) discloses a meltblowing die that meets claim element 1c. Pet. 41–42. Relying on Butin's teaching of die

plates with milled grooves for forming nozzle openings or orifices for extruding fiber-forming polymer resin, Petitioner contends that it would have been obvious to a POSA that “air passages could also be produced by milling grooves on one surface of two adjoining surfaces.” Pet. 43–45.

Patent Owner argues that Butin does not teach claim element 1c or 1d and does not fill the gaps left by Allen ’615 and Allen ’219. Prelim. Resp. 39–42. Patent Owner argues that Petitioner presents “no argument as to how the asserted art would actually be combined or why a [person of ordinary skill in the art] would be motivated to combine them.” *Id.* at 42–43. We agree with Patent Owner.

As support for its contention that Butin discloses claim element 1c, Petitioner provides the following annotation of Butin Figure 3.



Pet. 42.⁷ Butin Figure 3 shows a nozzle die for use in a melt-blowing process. Ex. 1006, 7:5–7. As shown in Figure 3, nozzle die head 3 includes upper die plate 15, lower die plate 16, upper gas cover plate 20, lower gas cover plate 21, upper gas chamber 27, and lower gas chamber 28. *Id.* at 7:65–8:21, Fig. 3. Referring to its annotation of Butin Figure 3, Petitioner contends that die plates 15 and 16 shown in blue collectively correspond to the claimed die tip, that gas cover plates 20 and 21 shown in yellow correspond to the claimed air plates, that the first and second sides of the die tip are shown in red, and that a series of air passages is formed by the first side of the die tip and the air plates and is shown in green. Pet. 42.

We agree with Patent Owner that, even accepting Petitioner’s identification of the first and second sides of the die tip in Butin, Petitioner does not identify a “series of passages” on a first side of the die tip, nor a “series of passages” on a second side of the die tip, as recited in claim 1. Prelim. Resp. 41. To the extent that Petitioner identifies Butin’s gas chambers 27 and 28 as a “series of passages,” they are not “formed by the first side of the die tip and the first air plate,” as recited in claim element 1c. Instead, Butin’s gas chamber 27 is formed by the first side 15 of the die tip and first air plate 20, and gas chamber 28 is formed by the second side 16 of the die tip and second air plate 21. Ex. 1006, Fig. 3.

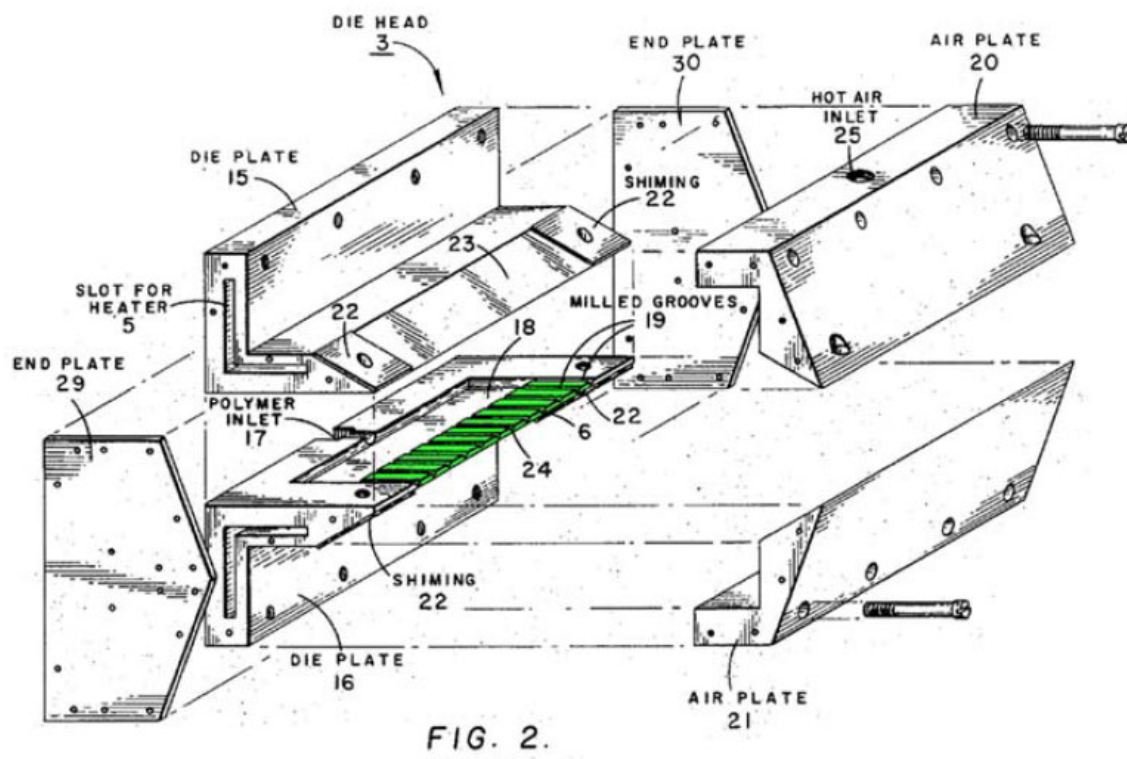
Next, Petitioner asserts that it would have been obvious to a POSA “to configure the air plates and the die tip in such a way as to create a series of air passages, by using the arrangement of these components as disclosed by Allen ‘615 individually or Allen ‘615 and Allen ‘219, in combination with

⁷ Although Petitioner’s annotation shows Butin Figure 3 rotated 90 degrees, we have restored the figure to its original orientation so as to conform to Butin’s description of the “upper” and “lower” parts of the nozzle die.

Butin.” Pet. 42. We are not persuaded that Petitioner has made a sufficient showing of obviousness.

Petitioner contends that Allen '615 and Allen '219 show that “any type of fluid passage” can be formed depending on the shape of the surfaces of the air plate or the die tip. Pet. 42–43. We agree that Allen '615 and Allen '219 show differently shaped air passages, but we do not agree that these references teach or suggest a series of passages on each side of a die tip, as recited in claim 1. As discussed above, both of these references show a single air passage on each side of the die tip.

As support for its contention that claim elements 1c and 1d would have been obvious to a POSA, Petitioner provides the following annotation of Butin Figure 2.



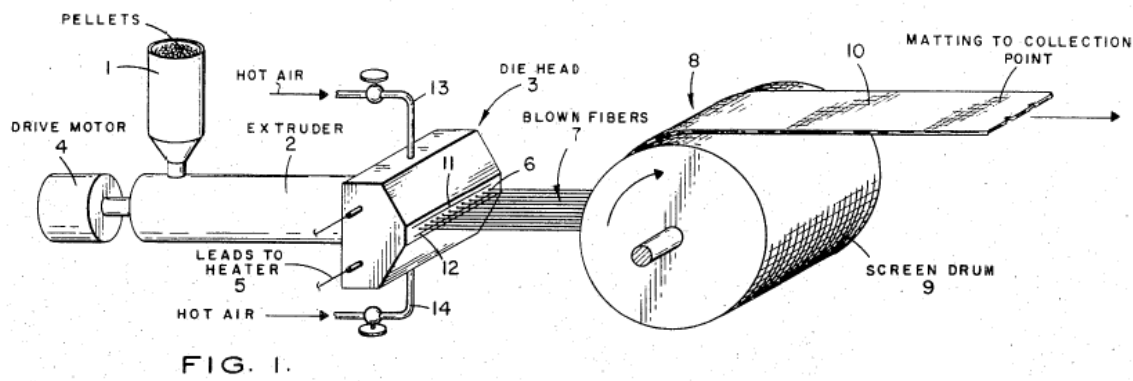
Pet. 45. Butin Figure 2 is an exploded view of a nozzle die. Ex. 1006, 7:65–8:2. Petitioner directs us to milled grooves 19 highlighted in green.

Pet. 45. Concerning these milled grooves, Butin explains:

The fiber-forming resin, preferably polypropylene, is introduced into the back of the die plates 15 and 16 through an inlet 17. The resin then goes into a chamber 18 between the upper and lower die plates 15 and 16, respectively. The facing of the die plate 16 has milled grooves 19 which terminate in the nozzle die openings or orifices 6. It is understood, of course, that the milled grooves may be in the lower die plate 16, in the upper die plate 15, or grooves may be milled in both plates 15 and 16. Alternatively orifices may be drilled in a single plate.

Ex. 1006, 8:3–13. As Petitioner acknowledges, Butin’s milled grooves 19 form channels or passages for melted polymer, not for an attenuating fluid such as air. *Id.*; Pet. 43–45. We do not agree with Petitioner’s contention that this distinction is “irrelevant.” Pet. 44, 45. Petitioner does not show sufficiently that a POSA would have considered passages for melted polymer interchangeable with passages for attenuating fluid.

Petitioner’s obviousness argument must be considered in the context of a melt-blowing process as depicted, for example, in Butin Figure 1, which is reproduced below.



Butin Figure 1 is a schematic view of a melt-blowing process. Ex. 1006, 7:3–4. With reference to Figure 1, Butin teaches that fiber-forming polymer

resin is “forced out of a row of nozzle orifices or die openings 6 in the nozzle die head 3 as molten strands into a gas stream which attenuates the molten strands into fibers 7.” *Id.* at 7:37–49. According to Butin, “[t]he gas stream which attenuates the extruded molten resin is supplied through gas outlet slots 11 and 12.” *Id.* at 7:49–51. As illustrated in Butin Figure 2, milled grooves 19 terminate in nozzle die openings or orifices 6, through which molten resin is extruded to make fibers. *Id.* at 8:7–9. In contrast, attenuating fluid, e.g., hot air, passes through gas slots 23 and 24 and outlet slots 11 and 12, which extend across the entire length of the die head. *Id.* at Figs. 1, 3.

Although Petitioner contends that passages for attenuating fluid could be produced by milling grooves on one surface of two adjoining surfaces (Pet. 43), Petitioner does not explain sufficiently why a POSA would have been motivated to make such a change. *Adidas AG v. Nike, Inc.*, 963 F.3d 1355, 1359 (Fed. Cir. 2020) (“The obviousness inquiry does not merely ask whether a skilled artisan could combine the references, but instead asks whether ‘they would have been motivated to do so.’” (quoting *InTouch Techs., Inc. v. VGO Commc’ns, Inc.*, 751 F.3d 1327, 1352 (Fed. Cir. 2014))).

Petitioner contends that “cutting small precision grooves is easier than drilling small holes.” Pet. 44 (citing Ex. 1002 ¶¶ 121–122). That contention might be sufficient to support obviousness of substituting milled grooves for drilled holes, but it does not support substituting a series of passages for a single air passage, as taught by Allen ’615, Allen ’219, or Butin. Petitioner does not address whether and how the air flow around the extruded fibers would be changed by Petitioner’s proposed modification of the prior art, nor the desirability or undesirability of such a change.

In addition, Petitioner contends that “[i]t would have been obvious . . . to reduce the width of the die in the machine direction by creating a series of passages formed by the first side of the die tip and the first and second air plates.” Pet. 44 (citing Ex. 1001, 5:44–45; Ex. 1002 ¶ 123). We find that Petitioner’s alleged motivation relies on impermissible hindsight based on the teachings of the ’104 Patent. Petitioner does not explain, with reference to the teachings of the prior art or the general knowledge of a skilled artisan, how its proposed modification would have reduced the width of the die in the machine direction. The location of air passages 124 beneath die tip 99 in Allen ’615 and the location of air passages 64A and 64B beneath die tip 42 in Allen ’219 make it difficult to imagine how Petitioner’s proposed modification of the air passages would have resulted in any width reduction in the machine direction. In Butin, the machine direction is perpendicular to the width of the die, and Petitioner does not explain how the proposed modification would have resulted in any width reduction of the die. If Butin’s die were re-oriented as shown in Petitioner’s annotation of Butin Figure 2 (Pet. 42), then the location of air passages 27 and 28 beneath die plates 15 and 16 make it difficult to imagine how Petitioner’s proposed modification of the air passages would have resulted in any width reduction in the machine direction.

We have considered the paragraphs of the Osswald Declaration relied upon by Petitioner for its challenge to claim 1 based on the second obviousness ground (Ex. 1002 ¶¶ 119–125), and we find that they are essentially the same as the Petition (Pet. 41–45) and are deficient for the same reasons.

2. *Claims 2, 5, 7, 9, and 18*

Petitioner contends that claims 2, 5, 7, 9, and 18 would have been obvious in view of Allen '615, Allen '219, Butin, and Koenig. Pet. 46–51.

After reviewing Petitioner's contentions, we find that the deficiencies in Petitioner's second obviousness ground for independent claim 1, as discussed above, are not remedied by Petitioner's contentions for dependent claims 2, 5, 7, 9, and 18, including Petitioner's contentions about Koenig.

F. Discretion under 35 U.S.C. §§ 314(a), 325(d)

Patent Owner argues that the Board should exercise its discretion to deny the Petition under 35 U.S.C. §§ 314(a) and 325(d). Prelim. Resp. 14–27, 47–55. In view of our determination that Petitioner has not met the threshold for instituting review on the merits, we need not consider Patent Owner's arguments for a discretionary denial of institution.

III. CONCLUSION

For the above reasons, we determine that Petitioner has not established a reasonable likelihood that it would prevail in showing that claims 1, 2, 5, 7, 9, and 18 of the '104 Patent are unpatentable on the grounds asserted in the Petition.

IV. ORDER

It is

ORDERED that, the Petition is *denied*, and no trial is instituted.

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