

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ASHWORTH BROS., INC.,
Petitioner,

v.

LAITRAM, L.L.C.,
Patent Owner.

IPR2020-00593
Patent 10,023,388 B2

Before SHERIDAN K. SNEDDEN, MITCHELL G. WEATHERLY, and
ERIC C. JESCHKE, *Administrative Patent Judges*.

JESCHKE, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision on Remand
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. BACKGROUND

Petitioner, Ashworth Brothers, Inc., challenges claims 9–13 of U.S. Patent No. 10,023,388 B2 (Ex. 1001, “the ’388 patent”), which is assigned to Patent Owner, Laitram, L.L.C. In the original Final Written Decision in this proceeding, we determined that Petitioner had proven by a preponderance of the evidence that claims 9 and 11–13 are unpatentable, but had not proven by a preponderance of the evidence that claim 10 is unpatentable. *See* Paper 62 (“FWD”).¹

Both parties appealed to the United States Court of Appeals for the Federal Circuit, which (1) affirmed in part, as to all issues raised by Patent Owner and (2) vacated and remanded in part, as to issues raised by Petitioner. *See Laitram, LLC v. Ashworth Bros., Inc.*, Nos. 2022-1044, 2022-1045, 2022-1084, 2023 WL 3449148 (Fed. Cir. May 15, 2023) (the “Appeal Decision” or “Appeal Dec.”); *see also* Paper 68 (copy of the Appeal Decision). The Federal Circuit’s mandate issued on June 21, 2023. *See* Paper 67.

We have jurisdiction under 35 U.S.C. § 6, and we issue this Final Written Decision on Remand under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons below, on the complete record, we conclude that Petitioner has proven, by a preponderance of the evidence, the unpatentability of claims 9–13 of the ’388 patent.

¹ Paper 63 is a public version of the confidential Final Written Decision, which is Paper 62.

A. Procedural History

1. Background of the Trial

Petitioner filed a Petition seeking *inter partes* review of challenged claims 9–13. Paper 2 (“Pet.”). Patent Owner did not file a Preliminary Response.² We instituted trial as to all challenged claims. Paper 8. During trial, Patent Owner filed a Response (Paper 21, “PO Resp.”), Petitioner filed a Reply (Paper 32, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 41, “PO Sur-reply”).³

Petitioner relied on the declaration testimony of Mr. Philip O’Keefe, P.E., filed with the Petition (Ex. 1006, “O’Keefe Pet. Decl.”⁴) and the Reply (Ex. 1031). Patent Owner relied on the declaration testimony of Mr. Michael R. Straight, filed with the Response. Ex. 2013 (“Straight Decl.”). A consolidated oral hearing in this proceeding and related IPR2020-00594 was held on June 1, 2021, and a copy of the transcript of that hearing was entered into the record. Paper 60.⁵

2. Related Proceedings

The parties identify a proceeding in the U.S. District Court for the District of Delaware involving the ’388 patent: *Laitram, L.L.C. v. Ashworth Bros., Inc.*, No. 19-cv-01130-LPS (D. Del.), filed June 19, 2019 (the

² Under our rules, filing a Preliminary Response is optional. *See* 37 C.F.R. § 42.107(a) (2019) (“The patent owner *may* file a preliminary response to the petition.” (emphasis added)).

³ Paper 36 is a public version of the Petitioner’s Reply.

⁴ Petitioner filed a corrected version of Exhibit 1006 on April 28, 2020. The original version was expunged. *See* Paper 7 (Order Granting Petitioner’s Motion to Expunge).

⁵ A public version of the hearing transcript is available as Paper 61.

“Delaware Litigation”). Pet. 1; Paper 3 (Patent Owner’s Mandatory Notices) § II. The Delaware Litigation also involves U.S. Patent No. 10,189,645 B2 (“the ’645 patent”). *See* IPR2020-00594, Paper 2 at 1; Paper 3 § II.

On the same day as the filing of the Petition in this proceeding, Petitioner filed a petition for *inter partes* review of claims 1–4 of the ’645 patent, in IPR2020-00594. *See* IPR2020-00594, Paper 2. We granted institution in that proceeding (*see* IPR2020-00594, Paper 6), and we issued a final written decision in that proceeding (*see* IPR2020-00594, Papers 60 (confidential Final Written Decision) and 61 (public Final Written Decision)).

3. The Appeals to the Federal Circuit

After issuance of the original Final Written Decision, Patent Owner filed a notice of appeal (Paper 64) and Petitioner filed a notice of appeal (Paper 65). Specifically, Patent Owner appealed the determinations (1) that Petitioner had shown by a preponderance of the evidence claims 9 and 11–13 as obvious based on Pupp⁶ and Roinestad⁷ and (2) that Petitioner had shown by a preponderance of the evidence claims 11–13 as obvious based on Roinestad2⁸ and Roinestad. *See* Paper 64 at 1–2; Appeal Dec. at *2. Petitioner cross-appealed the determinations in the original Final Written Decision that Petitioner had not shown by a preponderance of the

⁶ US 6,062,375, issued May 16, 2000 (Ex. 1003, “Pupp”).

⁷ US 3,348,659, issued October 24, 1967 (Ex. 1005, “Roinestad”).

⁸ US 4,741,430, issued May 3, 1988 (Ex. 1007). Like Petitioner, we refer to this reference as “Roinestad2.” *See* FWD 9 n.9. The Federal Circuit refers to this reference as “Roinestad ’430” in the Appeal Decision. *See* Appeal Dec. 2 n.1.

evidence (1) claim 10 as obvious based on Pupp and Roinestad and (2) claims 9 and 10 as obvious based on Roinestad2 and Roinestad. *See* Paper 65 at 1; Appeal Dec. at *2.

In a combined Decision for this proceeding and related IPR2020-00594, the Federal Circuit affirmed in part as to all issues raised in Patent Owner’s appeal in this proceeding, and vacated and remanded in part as to the issues raised in Petitioner’s cross-appeal.⁹ *See* Appeal Dec.

4. After Remand from the Federal Circuit

Following an order seeking input from the parties on the procedures for remand (Paper 66), the parties filed the requested joint response (Paper 73). After considering the joint response, we authorized each party to file a single seven-page brief on or before September 1, 2023, at 5:00 pm eastern, that (1) discusses the scope of the issues on remand (including each party’s understanding of the grounds and claims at issue on remand) and (2) identifies previously submitted argument and evidence supporting each party’s position as to the issues on remand. Paper 74 at 2–3.

The parties timely filed their briefs on remand. *See* Paper 76 (Petitioner’s Remand Brief); Paper 75 (Patent Owner’s Remand Brief). Having considered those briefs, we issue this Final Written Decision on Remand.

⁹ Patent Owner filed a notice of appeal in IPR2020-00594 (IPR2020-00594, Paper 62), but Petitioner did not. In its combined Decision, the Federal Circuit affirmed as to all issues raised by Patent Owner in its appeal in IPR2020-00594. *See* Appeal Dec. at *2–*7.

B. The '388 Patent

The '388 patent “relates . . . to spiral conveyors in which a conveyor belt is positively driven in a helical path around a rotating drive tower.” Ex. 1001, 1:5–8. According to the '388 patent, in prior systems known as “overdrive systems,” “the conveyor belt is driven by frictional contact between the inside edge of the belt and the faster-rotating outer surface of the rotating drum about which the belt is helically wrapped.” *Id.* at 1:22–26. The '388 patent describes certain alleged shortcomings of these systems, including (1) high belt tension, (2) wear at the belt edge and the outer drum surfaces due to the frictional engagement, and (3) high motor and power requirements. *Id.* at 1:26–37.

The '388 patent states that “[p]ositively driven spiral systems, in which drive structure on the outside of a rotating cage engages structure on the inside of a conveyor belt, have been used to overcome some of the shortcomings of overdrive systems.” Ex. 1001, 1:38–41. In such systems, “[b]ecause there is positive engagement between regularly spaced drive structure on the cage and regularly spaced edge structure on the inside edge of the belt, there is no slip as in overdrive systems.” *Id.* at 1:41–45.

Figure 1 is reproduced below:

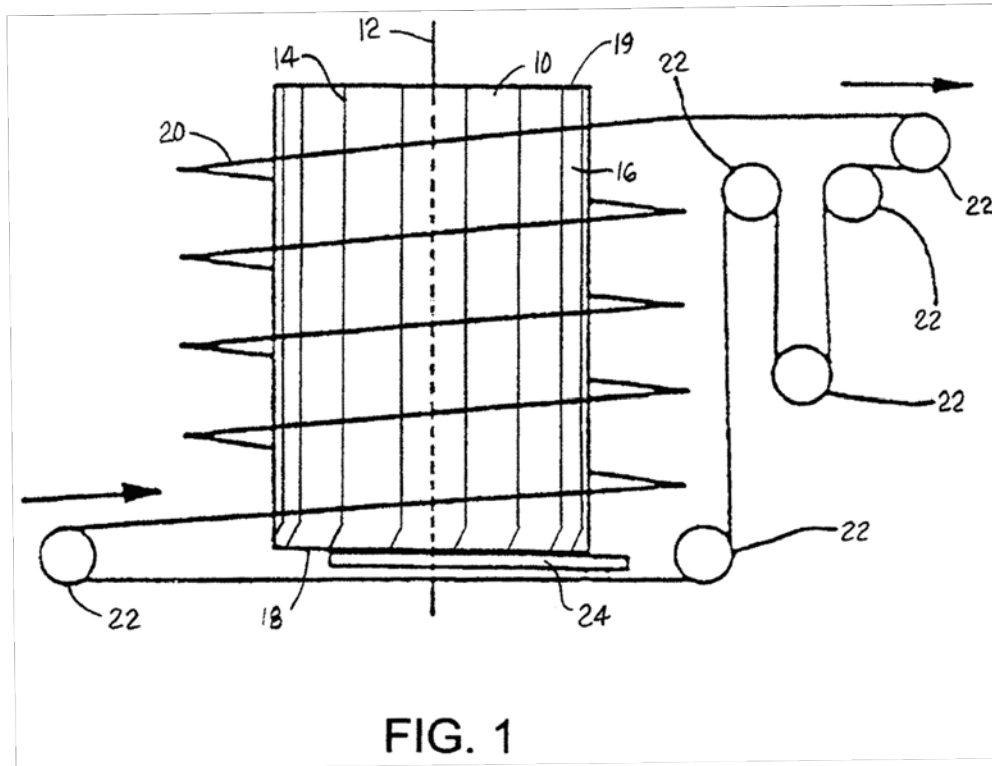
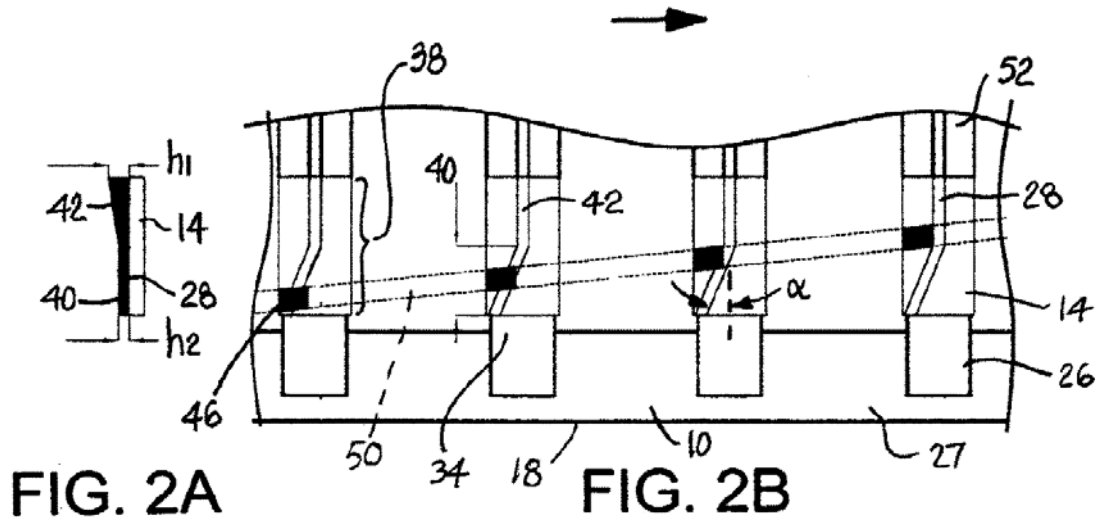


Figure 1 is “a side elevation schematic of a spiral conveyor system.” Ex. 1001, 2:11–12. The depicted system includes “drive tower 10 in the form of a cylindrical drum or cage” and conveyor belt 20, which “follows a multi-tiered helical path around the tower” via “various take-up, idle, and feed sprockets 22.” *Id.* at 2:65–3:13.¹⁰ “The rotating tower has a plurality of parallel, generally vertical drive members 14 spaced apart regularly around its periphery 16.” *Id.* at 3:1–3. The ’388 patent states that “[t]he inside edge of the belt positively engages the drive members, which drive the belt up the tower as it rotates.” *Id.* at 3:8–10.

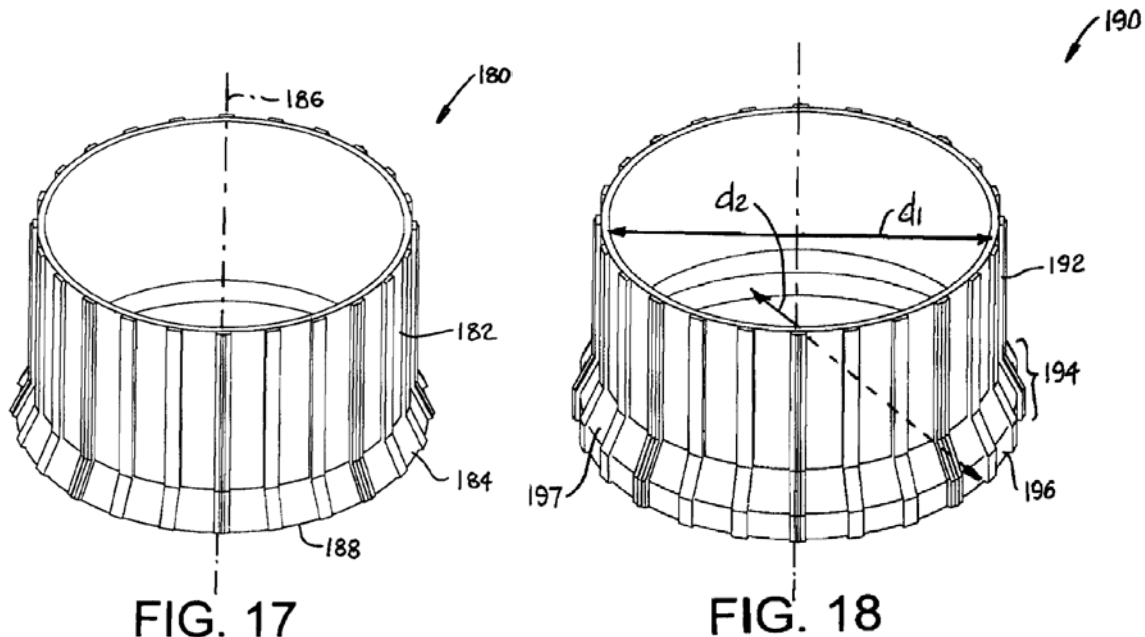
¹⁰ Throughout this Decision, we omit any bold emphasis of reference numerals in quotations from the ’388 patent and from prior art references.

Figures 2A and 2B are reproduced below:



Figures 2A and 2B “are profile and head on views[, respectively,] of a lower segment of the drive members [14] of the drive tower” shown in Figure 1. Ex. 1001, 2:13–14. As shown in these figures, “[i]n a lower segment 38 of each drive member [14], the ridge 28 includes a constant-height region 40 and a tapered region 42.” *Id.* at 3:24–25. The ’388 patent discloses that “[t]he height of the ridge 28 increases from a height h_2 in the constant-height region to a maximum height h_1 at the upper end of the tapered region.” *Id.* at 3:27–30. The low height h_2 of ridge 28 “facilitate[s] the entry of the conveyor belt 20 onto the rotating tower.” *Id.* at 3:35–38.

Figures 17 and 18 are reproduced below:



Figures 17 and 18 “are oblique views of two other versions of drive towers with outwardly extending bottom skirt portions usable with conveyor belts.” Ex. 1001, 2:58–60. In contrast to the purely “cylindrical” drive tower shown in Figure 1 (*id.* at 2:65–67), Figures 17 and 18 depict versions of drive towers with cylindrical portions (such as 182, 192, and 196), but also with other features, such as skirt portion 184 in Figure 17, and skirt portion 194 and tapered portion 197 in Figure 18. *See id.* at 6:53–62.

C. Challenged Claims

Petitioner challenges claims 9–13, of which claims 9 and 11 are independent. Claim 10 depends from claim 9, and claims 12 and 13 depend from claim 11. Independent claims 9 and 11 are reproduced below, with Petitioner’s alphanumeric designations to identify certain language:

9. [A] A spiral conveyor comprising:
[B] a drive tower extending from a bottom to a top and rotating about a vertical axis;

[C] a plurality of parallel drive members extending in length from the bottom to the top of the drive tower;

[D] wherein each of the drive members includes an outwardly projecting ridge whose distance from the vertical axis varies from the bottom to the top of the drive tower; and

[E] wherein each drive member includes a lower segment at the bottom of the drive tower and wherein the ridge in the lower segment is tapered along a portion of its length;

[F] a conveyor belt positively driven without slip on a helical path around the drive tower by the ridges of the drive members engaging an inside edge of the conveyor belt.

Ex. 1001, 8:10–24.¹¹

11. [A] A spiral conveyor comprising:

[B] a drive tower extending from a bottom to a top and having a vertical axis of rotation;

[C] a plurality of parallel drive members extending in length from the bottom to the top of the drive tower;

[D] wherein each of the drive members includes a ridge projecting radially outward to an outer edge;

[E] wherein each of the drive members includes a lower segment at the bottom of the drive tower and an upper segment extending from the lower segment toward the top of the drive tower;

[F] wherein the distance of the outer edge of the ridge from the vertical axis of rotation is a first distance in the upper segment and the distance of the outer edge of the ridge from the vertical axis of rotation is a greater second distance in a lower portion of the lower segment;

¹¹ We adopt and apply Petitioner’s designations for the elements of the challenged claims. *See* Pet. 80–81 (showing alphanumeric designations for the language in the challenged claims).

[G] a conveyor belt positively driven on a helical path around the drive tower by the ridges of the drive members engaging an inside edge of the conveyor belt.

Ex. 1001, 8:28–47.

D. Instituted Grounds of Unpatentability

We instituted *inter partes* review of the challenged claims based on the following grounds of unpatentability asserted by Petitioner:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
9–13	103(a)	Pupp, Roinestad
9–13	102(a)/(b)	Heber ¹²
9–13	103(a)	Heber
9–13	103(a)	Heber, Roinestad
9–13	103(a)	Roinestad2, Roinestad

II. DISCUSSION

A. The Level of Ordinary Skill in the Art

In the original Final Written Decision, we determined the applicable level of ordinary skill in the art. *See* FWD 10–11 (§ II.A). Under that definition,

a person of ordinary skill in the art “[a]t the time of the alleged invention . . . would have had a bachelor’s degree in mechanical (or similar) engineering with 1–2 years[’] experience in design of mechanical production equipment” or, “[a]lternatively, . . . might substitute several years of actual design experience for the bachelor’s degree.”

¹² US 7,347,316 B2, issued March 25, 2008 (Ex. 1004, “Heber”).

FWD 10 (quoting Pet. 12). Neither party addressed this issue on appeal. *See generally* Appeal Dec. We continue to apply the same level of ordinary skill in the art in this Final Written Decision on remand.

B. Claim Construction

In the original Final Written Decision, we construed “without slip” in element 9F as describing a system in which there is essentially no slip between the conveyor belt and the drive tower. FWD 11–15 (§ II.B). On appeal, the Federal Circuit agreed with that construction, rejecting Patent Owner’s arguments on the issue. *See* Appeal Dec. at *3–4. We continue to apply that same construction, to the extent relevant to the issues on remand.

C. Asserted Obviousness of Claims 9–13 Based on Pupp and Roinestad

Petitioner asserts that claims 9–13 of the ’388 patent are unpatentable under 35 U.S.C. § 103(a) based on Pupp and Roinestad. Pet. 3, 18–40; Pet. Reply 1–16, 21–30. Patent Owner provides arguments specifically addressing this asserted ground. *See* PO Resp. 11–41, 59–71; PO Sur-reply 1–32. We begin our analysis with an overview of the asserted prior art and then address the issues on remand.

1. Pupp

Pupp discloses “a belt conveyor comprising a drum, which is rotatably mounted on a vertical center shaft, and an endless conveyor belt, which along part of its length follows a helical path through a plurality of turns around the drum and in contact with the outside of the drum.” Ex. 1003, 1:10–14.

Figures 5 and 6 are reproduced below:

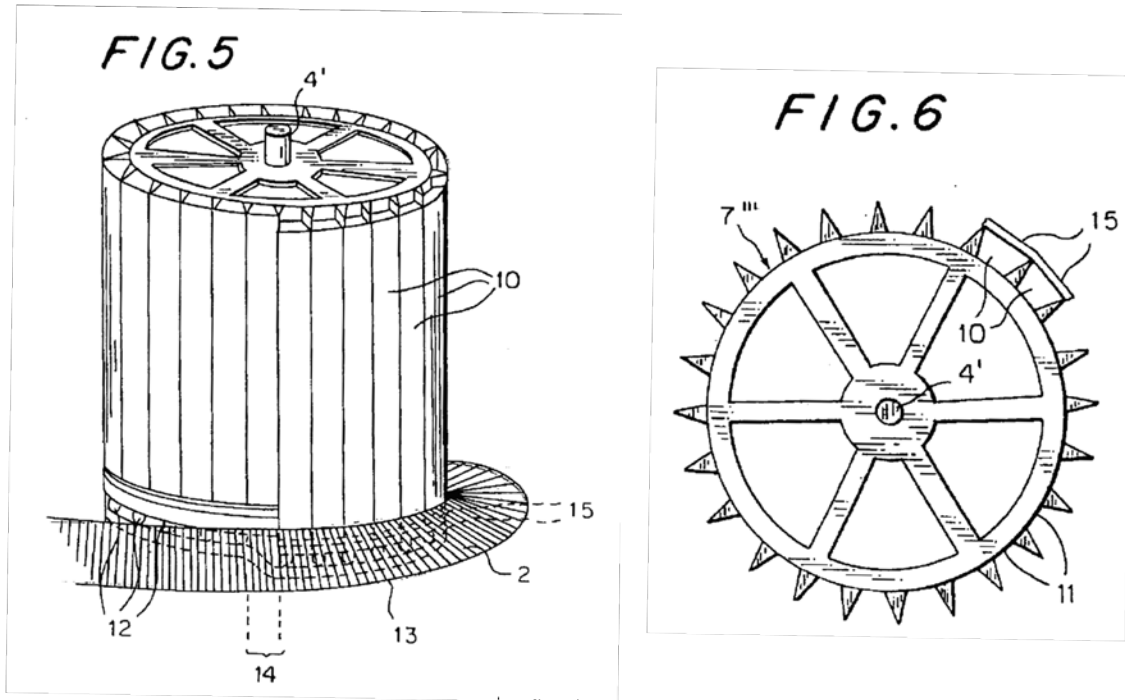


Figure 5 is “a schematic perspective view of a drum in a belt conveyor” and Figure 6 is “a schematic top plan view of the drum” in Figure 5. Ex. 1003, 2:15–18. Drum 1''' shown (but unnumbered) in Figures 5 and 6 has a “plurality of strips 10 around its outside, said strips 10 extending axially along the drum 1'''.” *Id.* at 3:15–17. Pupp discloses that “strips 10 can be kept in place by the conveyor belt 2 which is helically wound around the drum 1 in contact with the strips 10.” *Id.* at 3:18–22.

Figure 8 is reproduced below:

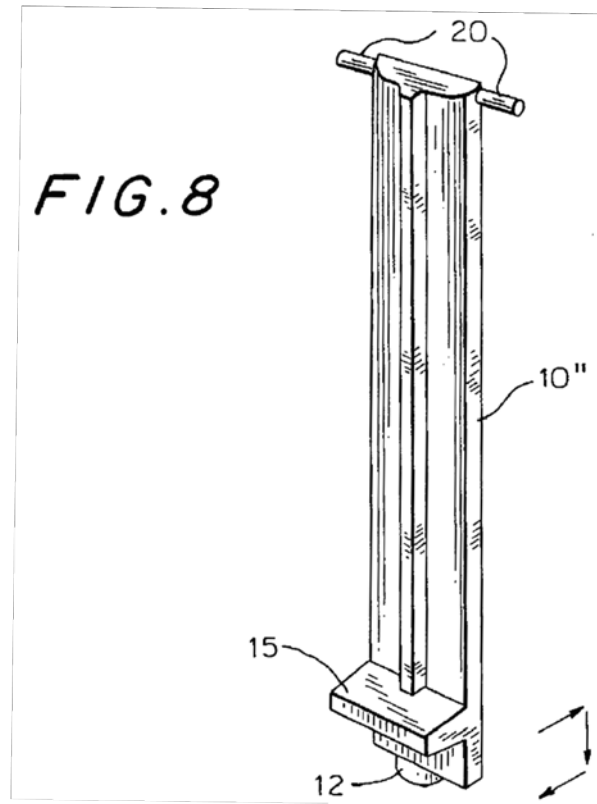


Figure 8 is “a perspective view of an alternative embodiment” of strip 10 shown in Figures 5 and 6. Ex. 1003, 2:23–24. The depicted strip 10 “has a lug 15 for supporting the inside of the lower turn of a conveyor belt, which at its side facing the drum is self-supporting.” *Id.* at 4:27–29. Although not discussed in the text, Figure 8 shows a raised structural feature along the length of the surface on the same side as lug 15—i.e., the side that would face the edge of the conveyor belt.

2. Roinestad

Roinestad discloses “[a] conveyor system including an endless flat belt . . . and a supporting and driving assembly which supports the belt in a helical path . . . and frictionally drives the belt at a plurality of locations along the inner edge of the loops.” Ex. 1005, 1:11–16.

Figure 1 is reproduced below:

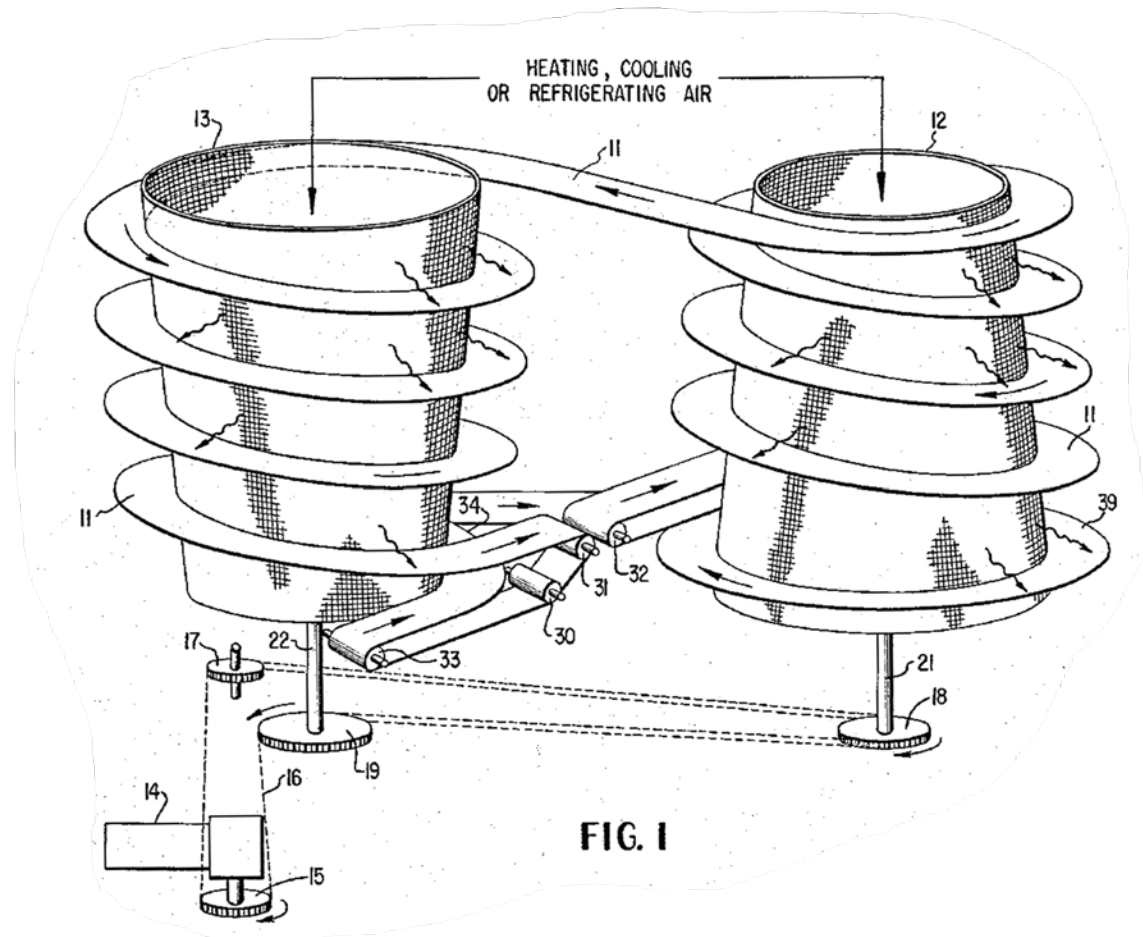


Figure 1 is a “perspective view of a conveyor system.” Ex. 1005, 4:52–53. The conveyor system shown in Figure 1 includes “endless conveyor belt 11,” which is “passed in a helical configuration successively around each of a pair of upright frusto-conical driving drums 12 and 13.” *Id.* at 5:10, 5:23–25. Roinestad discloses that “[e]ach of the drums is tapered in the direction of belt travel axially of the drum.” *Id.* at 5:25–26.

Figure 5 is reproduced below:

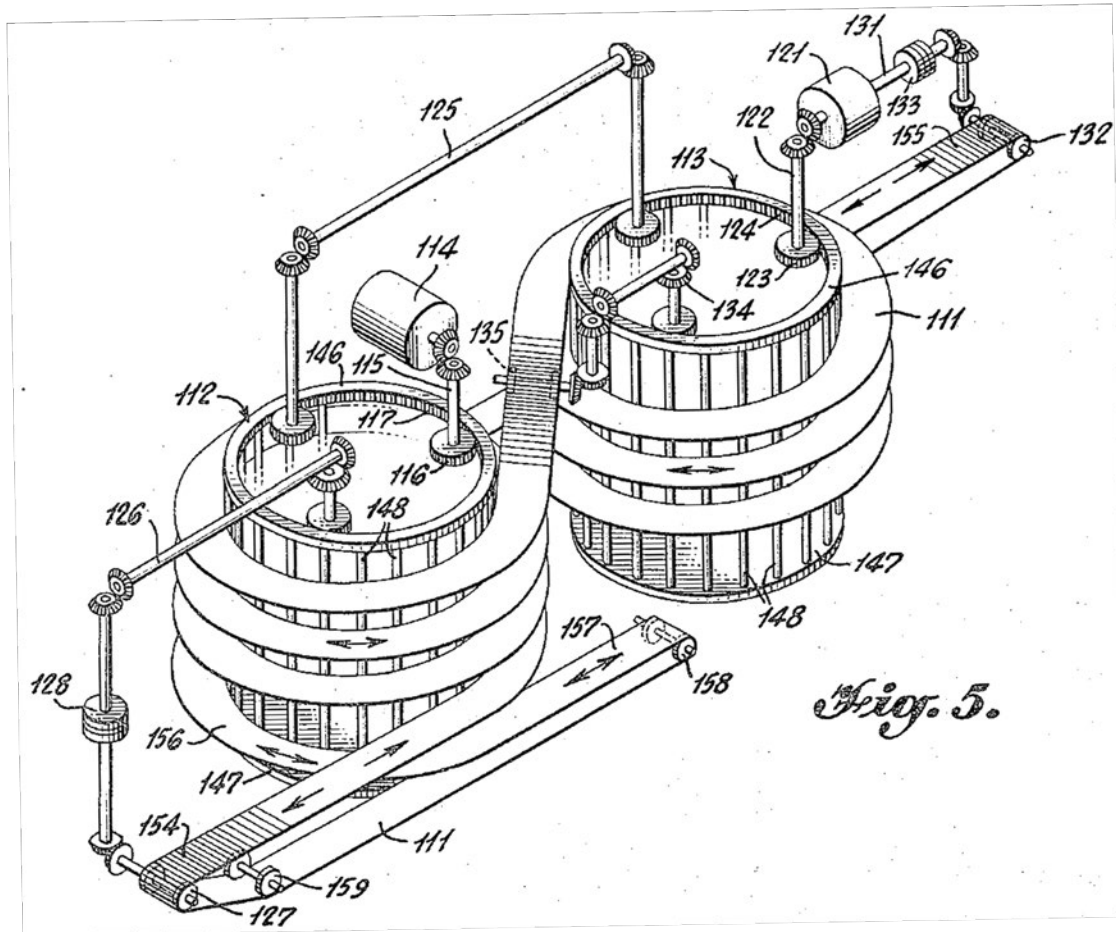


Figure 5 is “a perspective view of a . . . modified conveyor system.” Ex. 1005, 4:61–62. The conveyor system shown in Figure 5 includes “belt 111 . . . passed in a helical configuration successively around each of a pair of upright driving drums 112 and 113.” *Id.* at 8:28–30. Driving drums 112 and 113 include “top and bottom members 146 and 147 respectively, which are connected by a series of vertical driving bars 148 positioned around the periphery of the drum at circumferentially spaced locations.” *Id.* at 9:23–27. Roinestad discloses that “bars 148 engage in [a] frictional driving relationship [with] the radially inner edge of the belt.” *Id.* at 9:30–32 (discussing Fig. 8).

Figure 11 is reproduced below:

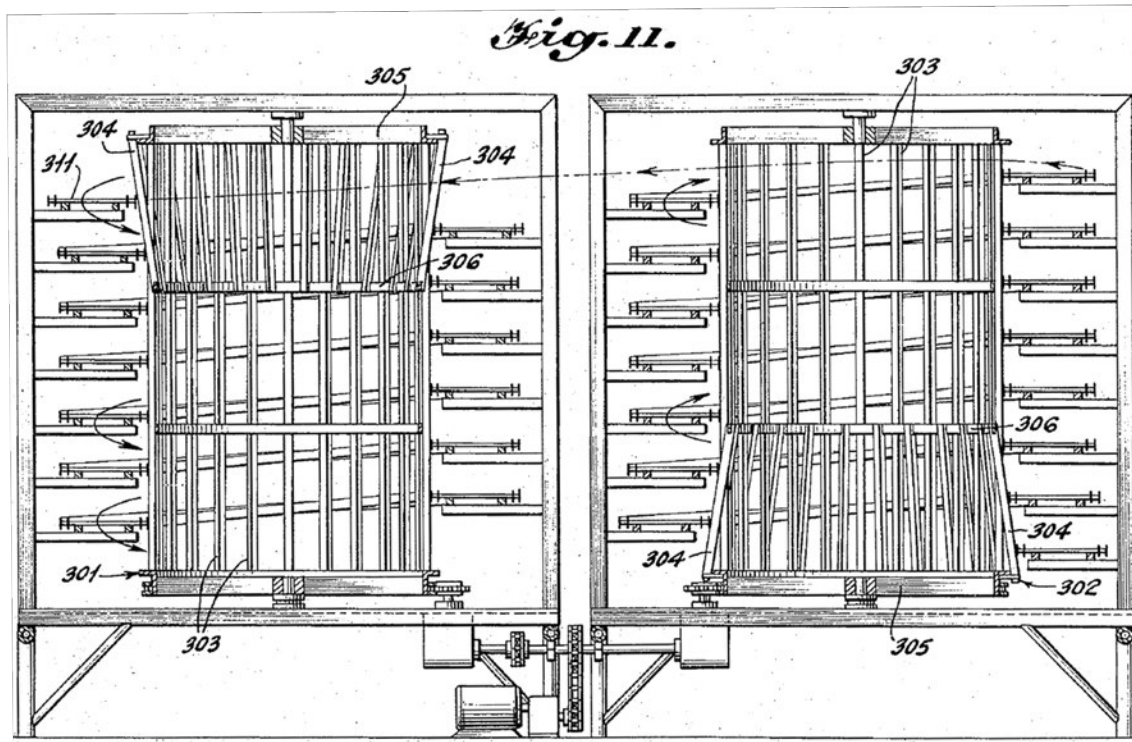


Figure 11 is a “vertical sectional view of [a] modification of the driving drums.” Ex. 1005, 5:4–5. Drums 301 and 302 depicted in the left side and right side, respectively, both include (1) a set of driving bars 303 in a generally cylindrical portion of the drum, and (2) a set of tapered driving rods 304 in a tapered portion of the drum at the “belt entrance ends.” *Id.* at 12:34–40. Drum 301 (on the left) has a tapered upper end, whereas drum 302 (on the right) has a tapered lower end. *Id.* at 12:40–42.

3. Analysis

a. Independent Claim 9

We concluded, in the original Final Written Decision, in view of the complete record at that stage (including the objective evidence of nonobviousness) that Petitioner had demonstrated by a preponderance of the

evidence that claim 9 would have been obvious based on Pupp and Roinestad. *See* FWD 21–80 (§ II.C.3.a).

On appeal, the Federal Circuit agreed with our original findings and conclusions as to claim 9 in the context of this asserted ground, rejecting Patent Owner’s contrary arguments as to element 9E, element 9F, and the reasons to combine Pupp and Roinestad. *See* Appeal Dec. at *5–7 (§ III.C (addressing element 9F); § IV (addressing element 9E); § V (addressing the reasons to combine Pupp and Roinestad)). Thus, our prior determination that Petitioner has demonstrated by a preponderance of the evidence that claim 9 would have been obvious based on Pupp and Roinestad remains final.

b. Dependent Claim 10

Claim 10 depends from claim 9 and adds the requirement that “the distance of the ridge from the vertical axis in the lower segment is constant below the portion that is tapered.” Ex. 1001, 8:25–27. For claim 10, Petitioner contends that “[t]he combination of Pupp and Roinestad disclose the additional limitation recited in claim 10.” Pet. 30. To support its arguments, Petitioner identifies certain passages in the cited references and explains the significance of each passage. Pet. 30–31. Petitioner also articulates reasons to combine the relied-upon aspects of Pupp and Roinestad, and a basis for a reasonable expectation of success. Pet. 31.

Referring to the discussion of element 9D, Petitioner states that:

Pupp and Roinestad disclose to [one of ordinary skill in the art] (Ex. 1008 at 9:10–14) that the distance of the outer ridge of the drive members to the vertical axis is either tapered (Ex. 1005 at 12:37–48, Figs. 11–13) or non-tapered (Ex. 1003 at 4:14–15, [4:]26–27, Fig. 8).

Pet. 30. According to Petitioner, claim 10 “would have been obvious as a simple design choice for [one of ordinary skill in the art] to combine a non-tapered and a tapered section of Pupp and Roinestad to provide a drive tower with drive members having an outer ridge whose distance from the vertical axis is constant below a portion that is tapered such as . . . in Roinestad Figure 11, left side.” Pet. 30–31 (citing O’Keefe Pet. Decl. ¶¶ 64–67, 85, 86). Petitioner also relies on the same motivations to combine Pupp and Roinestad and the alleged reasonable expectation of success as presented in the Petition as to claim 9. Pet. 31 (stating that one of ordinary skill in the art “would have had motivation to combine and reasonable expectation of success from combining Pupp and Roinestad to teach element 10[a] for the same reasons discussed with element 9[d] above”).

Having considered the arguments and evidence in the complete record, we determine that the preponderance of the evidence supports Petitioner’s position that claim 10 would have been obvious. We first address the subject matter of claim 10 and then turn to Petitioner’s discussion of design choice. As to the subject matter of claim 10, the record supports Petitioner’s position that Roinestad, when considered as a whole, discloses the requirement that “the distance of the ridge from the vertical axis in the lower segment is constant below the portion that is tapered.” Ex. 1001, 8:25–27. Specifically, we find that Roinestad Figure 11, left side discloses a configuration that would satisfy the subject matter of claim 10 in the context of the proposed combination of Pupp and Roinestad in that the left side of Roinestad’s Figure 11 depicts a “lower segment”—including at the location of reference numeral 303—in which the “distance of the ridge from the vertical axis” is “constant below the portion that is tapered” (as

depicted in the upper portion of the left side of Roinestad’s Figure 11). *See* Pet. 30 (discussing Roinestad’s Figure 11, left side (citing O’Keefe Pet. Decl. ¶¶ 64–67, 85, 86)).

This position is supported by the cited testimony of Mr. O’Keefe who states that Roinestad “describes a spiral conveyor that combines a number of [tapered and non-tapered] segments so as to result in a drive tower with various patterns of tapered and non-tapered segments based on the design choice of” one of ordinary skill in the art. O’Keefe Pet. Decl. ¶ 86, *cited at* Pet. 30–31. According to Mr. O’Keefe, “[o]ne of the particular patterns of the segments chosen as an example of design choice in Roinestad is that in Figure 12 . . . which shows a tapered upper segment and non-tapered segment below the tapered segment in order to reduce the amount of stress exerted on the belt.” *Id.*¹³

Patent Owner does not dispute that Roinestad discloses the subject matter recited in claim 10. Instead, Patent Owner challenges Petitioner’s reliance on design choice (which we address below). *See* PO Resp. 59. In a sentence of Mr. Straight’s Declaration not mentioned by Patent Owner, Mr. Straight states that “[n]one of the cited references show a ridge from the top to the bottom with a constant lower portion below the taper” Straight Decl. ¶ 176, *cited at* PO Resp. 59. As an initial matter, this assertion is made by Mr. Straight, but not Patent Owner. *See* Consolidated Trial Practice Guide 35–36 (Nov. 2019), <https://www.uspto.gov/TrialPracticeGuideConsolidated> (citing *Cisco Sys., Inc. v. C-Cation Techs., LLC*,

¹³ Although Mr. O’Keefe discusses Figure 12 of Roinestad and Petitioner discusses Figure 11, we note that Figure 12 is a section view of one of the drums in Figure 11. *See* Ex. 1005, 5:6–7.

IPR2014-00454, Paper 12 (PTAB Aug. 29, 2014) (informative) (discussing 37 C.F.R. § 42.6(a)(3) and stating, “parties that incorporate expert testimony by reference in their petitions, motions, or replies without providing explanation of such testimony risk having the testimony not considered by the Board”). Moreover, Mr. Straight’s position is not supported by the record, which, as discussed above, shows that Roinestad Figures 11 and 12 collectively disclose the subject matter of claim 10.

We turn now to Petitioner’s reliance on “simple design choice” in the context of claim 10 (*see* Pet. 30–31), which Patent Owner challenges. *See* PO Resp. 59 (citing Straight Decl. ¶ 176).¹⁴ Having considered the arguments and evidence in the complete record, for the reasons below, we determine that one of ordinary skill in the art, considering Roinestad as a whole, would have arrived at the shape recited in claim 10 based on design choice. We are persuaded by Petitioner’s argument and evidence that the prior art, including Roinestad, teaches a *limited number* of configurations for the overall drum shape: tapered, cylindrical, and a mixture of tapered and cylindrical. *See* Pet. 30–31 (citing O’Keefe Pet. Decl. ¶¶ 64–67, 85, 86); *see also* Pet. Reply 23 (discussing how one of ordinary skill in the art “would simply optimize the design for the particular application by choosing from the limited number of design option choices available (e.g., friction or positive drive) and the *limited number of known drive surface design options available* (e.g., tapered, cylindrical or a mixture of tapered or cylindrical surfaces)” (emphasis added)). Indeed, in the Petition’s discussion of element 9D, Petitioner states that “Roinestad expressly discloses

¹⁴ In the Sur-reply, Patent Owner does not address claim 10 in the context of this asserted ground.

substantially cylindrical drive towers (Fig. 5) as alternatives to conical or tapered drive towers (Fig. 1) and drive towers that combine tapered and cylindrical sections (Fig. 11).” Pet. 20–21. Petitioner then states that one of ordinary skill in the art “would have underst[oo]d that the drive tower could be cylindrical or tapered as a mere design choice.” Pet. 21 (citing O’Keefe Pet. Decl. ¶¶ 79–80).

Then, in the discussion of claim 10, Petitioner expressly refers *back* to the discussion of the limited number of configurations in the section addressing element 9D, before concluding:

Consequently, the alleged invention would have been obvious as a simple design choice for [one of ordinary skill in the art] to combine a non-tapered and a tapered section of Pupp and Roinestad to provide a drive tower with drive members having an outer ridge whose distance from the vertical axis is constant below a portion that is tapered such as below in Roinestad Figure 11, left side.

Pet. 30–31 (emphasis added) (citing O’Keefe Pet. Decl. ¶¶ 64–67, 85, 86). In the cited testimony, Mr. O’Keefe states that the selection between the limited number of configurations by one of ordinary skill in the art “would be nothing more than a mere design choice of selecting for each section [of the drum] one of two design options (tapered or non-tapered)” (O’Keefe Pet. Decl. ¶ 66), and that, in Figure 12, Roinestad “describes a spiral conveyor that combines a number of [tapered and/or non-tapered] segments so as to result in a drive tower with various patterns of tapered and non-tapered segments based on the design choice of” one of ordinary skill in the art. O’Keefe Pet. Decl. ¶ 86, *cited at* Pet. 30–31.

Here, the record supports that one of ordinary skill in the art would have had a limited number of configurations of the drum from which to

make a simple design choice. *See, e.g., CRFD Rsch., Inc. v. Matal*, 876 F.3d 1330, 1347 (Fed. Cir. 2017) (discussing selecting between “two predictable choices” as part of a “simple design choice” and citing *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.”)).

Patent Owner argues that this selection is “not merely an obvious design choice” because the recited “constant” distance in claim 10 functions differently than the prior art in that the “constant” distance feature “improves the initial engagement of the ridge with the inside edge of the belt” in that, “[i]f the ridge terminated in a tapered portion, rather than a constant portion, the inward tilt of the ridge away from the incoming belt would make for a rougher, less reliable initial engagement.” PO Resp. 59 (citing Straight Decl. ¶ 176); *see also, e.g., In re Rice*, 341 F.2d 309, 314 (CCPA 1965) (discussing a design choice rejection and stating that “Appellant has failed to show that the change in the [aspects at issue as compared to the prior art] result in a difference in function or give unexpected results”).

With this assertion, Patent Owner and Mr. Straight (who largely repeats the statements of Patent Owner) incorrectly assume that claim 10 *requires* the conveyor belt to enter at the “lower segment” with the “constant” distance feature. But claim 10 is not limited to such an embodiment in that neither claim 9 nor claim 10 recite *anything* about the *direction of entry* of the “conveyor belt”; instead, claim 9 merely requires the *presence* of such a “belt.” *See* Ex. 1001, 8:10–27. In addition, in the cited testimony, Mr. Straight states that the prior art does not “discuss the

advantages” of the configuration recited in claim 10 (Straight Decl. ¶ 176, *cited at* PO Resp. 59), but as noted by the Federal Circuit,

the motivation to combine analysis does not require the Board to “seek out precise teachings directed to the specific subject matter of the challenged claim,” because the Board “can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007)).

Appeal Dec. at *8. Here, the complete record supports that one of ordinary skill in the art that one of ordinary skill in the art, considering Roinestad as a whole, would have arrived at the shape recited in claim 10 based on design choice.

For the reasons discussed above, the evidence presented by Petitioner strongly indicates that claim 10 would have been obvious over the combination of Pupp and Roinestad. For the reasons discussed in the original Final Written Decision (FWD 64–79 (§ II.C.3.a.8)), Patent Owner’s objective evidence weighs only slightly in favor of nonobviousness. When considering all the evidence of obviousness and nonobviousness together (*see In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1079 (Fed. Cir. 2012)), we find Petitioner’s strong evidence of obviousness outweighs Patent Owner’s objective evidence of nonobviousness. Thus, we conclude Petitioner has demonstrated by a preponderance of the evidence that claim 10 would have been obvious based on Pupp and Roinestad.

c. Claims 11–13

We concluded, in the original Final Written Decision, in view of the complete record at that stage (including the objective evidence of nonobviousness) that Petitioner had demonstrated by a preponderance of the

evidence that independent claim 11 and claims 12 and 13 (which depend from claim 11) would have been obvious based on Pupp and Roinestad. *See* FWD 83–92 (§ II.C.3.c–d).

On appeal, the Federal Circuit agreed with the findings and conclusions as to claims 11–13 in the context of this asserted ground, rejecting Patent Owner’s contrary arguments as to the reasons to combine Pupp and Roinestad. *See* Appeal Dec. at *7 (§ V). Thus, our prior determination that Petitioner has demonstrated by a preponderance of the evidence that claims 11–13 would have been obvious based on Pupp and Roinestad remains final.

D. Asserted Grounds Involving Heber

In the original Final Written Decision, we concluded, in view of the complete record, that Petitioner had not demonstrated by a preponderance of the evidence (1) that claims 9–13 are anticipated by Heber (*see* FWD 92–96 (§ II.D)), (2) that claims 9–13 would have been obvious based on Heber (*see* FWD 96–97 (§ II.E)), and (3) that claims 9–13 would have been obvious based on Heber and Roinestad (*see* FWD 97–99 (§ II.F)). On appeal, neither party raised any issues as to the findings and conclusions regarding these asserted grounds. *See generally* Appeal Dec. Thus, our prior determinations as to the grounds involving Heber remain final.

E. Asserted Obviousness of Claims 9–13 Based on Roinestad2 and Roinestad

Petitioner asserts that claims 9–13 of the ’388 patent are unpatentable under 35 U.S.C. § 103(a) based on Roinestad2 and Roinestad. Pet. 3, 55–76; Pet. Reply 3–4, 13–30. Patent Owner provides arguments addressing this asserted ground. *See* PO Resp. 24–30, 55–71; PO Sur-reply 1–32.

1. Claims 9 and 10

Petitioner contends that the proposed combination of Roinestad2 and Roinestad renders obvious independent claim 9 and dependent claim 10. Pet. 55–67. We concluded, in the original Final Written Decision, in view of the complete record at that stage (including the objective evidence of nonobviousness) that Petitioner had not demonstrated by a preponderance of the evidence that claims 9 and 10 would have been obvious based on Roinestad2 and Roinestad. *See* FWD 101–06 (§ II.G.2.a–b).

Because the ground based on Pupp and Roinestad is dispositive as to claims 9 and 10, we need not reach the asserted ground of Roinestad2 and Roinestad as to claims 9 and 10. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding that a petitioner “is entitled to a final written decision addressing all of the claims it has challenged”); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App’x 984, 990 (Fed. Cir. 2020) (nonprecedential) (stating that the “Board need not address issues that are not necessary to the resolution of the proceeding,” such as “alternative arguments with respect to claims [the Board] found unpatentable on other grounds”); *SK Hynix Inc. v. Netlist, Inc.*, IPR2017-00692, Paper 25 at 40 (PTAB July 5, 2018) (determining all challenged claims to be unpatentable and not addressing additional grounds).

2. Claims 11–13

We concluded, in the original Final Written Decision, in view of the complete record at that stage (including the objective evidence of nonobviousness) that Petitioner had demonstrated by a preponderance of the evidence that independent claim 11 and claims 12 and 13 (which depend

from claim 11) would have been obvious based on Roinestad2 and Roinestad. *See* FWD 106–122 (§ II.G.2.c–d).

On appeal, the Federal Circuit agreed with the findings and conclusions as to claims 11–13 in the context of this asserted ground, rejecting Patent Owner’s contrary arguments as to the reasons to combine Roinestad2 and Roinestad. *See* Appeal Dec. at *7 (§ V). Thus, our prior determination that Petitioner has demonstrated by a preponderance of the evidence that claims 11–13 would have been obvious based on Roinestad2 and Roinestad remains final.

III.CONCLUSION

Upon consideration of the briefing and the evidence of record, we determine that Petitioner has proven, by a preponderance of the evidence, the unpatentability of claims 9–13 of the ’388 patent.¹⁵

¹⁵ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding, 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. §§ 42.8(a)(3), (b)(2).

In summary:

Outcome of the original Final Written Decision:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
9–13	103(a)	Pupp, Roinestad	9, 11–13	10
9–13	102(a)/(b)	Heber		9–13
9–13	103(a)	Heber		9–13
9–13	103(a)	Heber, Roinestad		9–13
9–13	103(a)	Roinestad2, Roinestad	11–13	9, 10
Overall Outcome			9, 11–13	10

Outcome Following this Final Written Decision on Remand:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
9–13	103(a)	Pupp, Roinestad	9–13	
9–13	102(a)/(b)	Heber		9–13
9–13	103(a)	Heber		9–13
9–13	103(a)	Heber, Roinestad		9–13
9–13	103(a)	Roinestad2, Roinestad ¹⁶	11–13	
Overall Outcome			9–13	

¹⁶ As discussed above (*see* § II.E.1), we do not reach claims 9 and 10 in the context of the asserted ground based on Roinestad2 and Roinestad.

IV. ORDER

For the reasons above, it is:

ORDERED that Petitioner has proven by a preponderance of the evidence that claims 9–13 are unpatentable;

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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Patent 10,023,388 B2

FOR PETITIONER:

Robert F. Altherr, Jr.
Christopher B. Roth
John Hutchins
BANNER AND WITCOFF, LTD.
raltherr@bannerwitcoff.com
croth@bannerwitcoff.com
jhutchins@bannerwitcoff.com
AshworthIPRService@bannerwitcoff.com

FOR PATENT OWNER:

Jennifer C. Bailey
Eric Brueckner
ERISE IP, P.A.
Jennifer.Bailey@EriseIP.com
Eric.Brueckner@EriseIP.com
PTAB@eriseip.com