

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HOLT'S CIGAR HOLDINGS, INC.,
Petitioner,

v.

BOVEDA INC.,
Patent Owner.

Case IPR2015-01845
Patent 6,921,026 B2

Before BRIAN J. MCNAMARA, HYUN J. JUNG, and
CHRISTOPHER M. KAISER, *Administrative Patent Judges*.

KAISER, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

INTRODUCTION

A. Background

Holt's Cigar Holdings, Inc. ("Petitioner") filed a Corrected Petition (Paper 4, "Pet.") requesting an *inter partes* review of claims 14, 15, and 17–22 of U.S. Patent No. 6,921,026 B2 (Ex. 1001, "the '026 patent"). Pursuant to 35 U.S.C. § 314(a), we determined that the Petition showed a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of the challenged claims, and we instituted an *inter partes* review. Paper 9 ("Inst. Dec.").

After institution, Boveda, Inc. ("Patent Owner") filed a Patent Owner Response. Paper 11 ("Resp."). Petitioner filed a Reply to the Patent Owner Response. Paper 12 ("Reply"). An oral hearing was held before the Board. Paper 19 ("Tr.").

We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. Having considered the record before us, we determine that Petitioner has not shown by a preponderance of the evidence that any of the challenged claims are unpatentable.

B. Related Matters

Neither party has identified any related matters involving the '026 patent. Pet. 1; Paper 6. We note that a related patent, U.S. Patent No. 5,936,178, was challenged in Case IPR2015-01844, in which *inter partes* review was not instituted.

C. The Asserted Ground of Unpatentability

We instituted review as to a single asserted ground of unpatentability: Petitioner contends that claims 14, 15, and 17–22 of the '026 patent are

unpatentable under 35 U.S.C. § 103 as obvious over Saari.¹ Inst. Dec. 7–12, 20; Pet. 23–35. Petitioner’s obviousness argument relies on a declaration from Fernando J. Muzzio, Ph.D. Ex. 1003 (“the Muzzio Declaration” or “Muzzio Decl.”).

D. The ’026 Patent

The ’026 patent relates to humidity control devices that can maintain a desired humidity level. Specifically, the ’026 patent describes a humidity control device that includes

a case with a plurality of openings, a polymeric pouch having walls sufficiently permeable to permit migration of water through the film in the form of water vapor and yet thick enough to prevent the escape of liquid water, and a solution including an organic or an inorganic solute (e.g., salt or sugar), vegetable gum and water.

Ex. 1001, 6:34–41. The ’026 patent describes the saturated solution as “contain[ing] excess solute (e.g., salt or sugar crystals) and [as] preferably made more viscous with a thickening agent.” *Id.* at 6:44–46. The device described in the ’026 patent “includes oxygen scavenging material disbursed in [the] combination of solute, vegetable gum and water.” *Id.* at 6:41–43. “The case may be of any suitable size and shape.” *Id.* at 6:49.

E. Illustrative Claim

Of the challenged claims in the ’026 patent, claim 14 is independent and illustrative. It recites:

14. A humidity control device for maintaining a desired humidity[,]

¹ Saari, U.S. Patent No. 5,936,178, issued Aug. 10, 1999 (Ex. 1011) (“Saari”).

said device comprising a protective case, a water vapor permeable pouch and a thickened saturated salt solution,
said case comprising wall means defining an enclosure, said wall means including a plurality of openings through which water vapor may freely move,
said pouch being formed of a thin wall polymer film through which water vapor may pass,
said thickened saturated salt solution comprising water, salt and a thickening agent, said thickening agent being present in an amount sufficient to thicken the salt solution,
said salt solution being contained within the polymeric pouch and sealed from escape from the pouch[,]
said pouch containing the thickened salt solution,
said pouch being contained within the protective case to protect the pouch from rupture, and
wherein the salt solution has a viscosity of 1500-10,000 cps in an environment with a relative humidity of less than 5%.

Ex. 1001, 14:1–17 (paragraphing added for clarity).

ANALYSIS

A. Claim Construction

In an *inter partes* review, we construe claim terms in an unexpired patent according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard). Claim terms also generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

1. “*Environment*”

The only claim term for which both parties propose constructions is “environment.” Pet. 4; Resp. 3–5. In the Institution Decision, we construed “environment” as “a finite three-dimensional space wherein the relative humidity is to be modified or controlled.” Inst. Dec. 6–7. Subsequently, Patent Owner argued that this definition does not capture the full scope of spaces in which the user of the claimed humidity control device intends for the humidity to be controlled, because it is limited “to only those areas [in which the humidity is] yet to be modified or controlled,” excluding those spaces in which the humidity is currently being or has been modified or controlled. Resp. 3–5. Accordingly, Patent Owner argues that “environment” should be construed as “a finite three-dimensional space in which the relative humidity is to be modified or controlled, is in the process of being modified or controlled, or has been modified or controlled.” *Id.* Petitioner argues that Patent Owner’s suggested additions are unnecessary because our earlier construction is not limited to spaces in which the humidity control or modification will take place in the future. Reply 1–2. We agree with Patent Owner that the term “environment” should not be limited to humidity control that takes place in the future, and we agree with Petitioner that the construction adopted in our Institution Decision is not so limited. Accordingly, we construe “environment” as “a finite three-dimensional space wherein the relative humidity is to be modified or controlled.” To the extent that this construction could be interpreted as excluding humidity modification or control that is ongoing or that happened in the past, we reject such an interpretation.

2. *Other Terms*

In addition to “environment,” Petitioner proposes constructions for “wall means” and “amount sufficient to thicken the salt solution.” Pet. 4. Patent Owner does not dispute either of these proposed constructions on the trial record. Resp. 1–29. We need not construe either “wall means” or “amount sufficient to thicken the salt solution” in order to resolve this case, so we do not construe either term expressly. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy”). Accordingly, there are no additional terms that we need to construe expressly at this time.

B. Asserted Obviousness over Saari

Petitioner argues that claims 14, 15, and 17–22 would have been obvious to a person of ordinary skill in the art in light of Saari. Pet. 23–35. To prevail in its challenge, Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

1. *Saari*

Saari is directed to “[a] humidity control device for use in maintaining a desired humidity.” Ex. 1011, at [57]. Saari discloses a protective case with walls with a plurality of openings, a water vapor-permeable pouch made of thin-wall polymer film, a thickened saturated salt solution made from water, salt, and sufficient thickening agent to thicken the solution, and the ability of water vapor to pass through both the openings in the protective case and the walls of the pouch. *Id.* at [57], 9:43–57. In addition, Saari discloses that the viscosity of the thickened solution may be “in excess of

2500 cps,” “between 1500 cps and 5000 cps,” “2500 cps,” or “less than 2500 cps.” *Id.* at 7:30, 7:34–39.

2. Analysis of Obviousness over Saari

In arguing obviousness over Saari, Petitioner argues that the limitations of each of claims 14, 15, and 17–22 are taught or suggested by Saari. Pet. 9–35. Patent Owner does not contest Saari’s disclosure of the limitations of each claim, except that Patent Owner argues that Saari does not disclose, teach, or suggest the following limitation of claim 14: “wherein the salt solution has a viscosity of 1500–10,000 cps in an environment with a relative humidity of less than 5%.” Resp. 6–28.

After reviewing the evidence of record, we find that Petitioner has shown by a preponderance of the evidence that Saari teaches or suggests each of the limitations of claim 14 other than the disputed viscosity limitation. Saari teaches “[a] humidity control device for maintaining a desired humidity[,] said device comprising a protective case, a water vapor permeable pouch and a thickened saturated salt solution.” Ex. 1011, at [57], 1:14–15, 5:28–32, 5:43–52, 7:65–8:9. Saari also teaches “said case comprising wall means defining an enclosure, said wall means including a plurality of openings through which water vapor may freely move.” *Id.* at 3:35–38, 5:43–49, 6:21–22. In addition, Saari teaches “said pouch being formed of a thin wall polymer film through which water vapor may pass.” *Id.* at 2:49–55, 6:31–51. Saari teaches “said thickened saturated salt solution comprising water, salt and a thickening agent.” *Id.* at 2:41–48, 6:63–7:28. Saari also teaches “said thickening agent being present in an amount sufficient to thicken the salt solution, said salt solution being contained within the polymeric pouch and sealed from escape from the pouch[,] said

pouch containing the thickened salt solution.” *Id.* at 2:49–55, 5:28–32, 5:43–49, 7:16–28. Finally, Saari teaches “said pouch being contained within the protective case to protect the pouch from rupture.” *Id.* at 3:48–59, 5:55–6:30.

Petitioner, however, has not shown by a preponderance of the evidence that Saari teaches or suggests the final limitation, “wherein the salt solution has a viscosity of 1500–10,000 cps in an environment with a relative humidity of less than 5%.” The parties do not agree as to the meaning of this limitation. Specifically, Petitioner argues that the phrase “has a viscosity . . . in an environment with a relative humidity of less than 5%” should be interpreted to mean that the salt solution in a humidity control device must remain within the claimed viscosity range once the device and the environment in which the device is placed have reached equilibrium, even if the starting condition of the environment is a relative humidity of less than five percent. Pet. 25–26; Reply 17. Patent Owner argues that this phrase means that the viscosity of the salt solution need remain in the claimed range only while the environment has a relative humidity between zero and five percent, with the viscosity of the solution being immaterial once the solution has lost enough water to raise the relative humidity of the environment above five percent. Tr. 29:23–31:2; *see also* Resp. 24–25 (arguing Saari is “silent about any viscosity at all in an environment of less than 5%”). Under either interpretation, Petitioner has not shown that Saari teaches or suggests this limitation.

Using Petitioner’s interpretation, Petitioner must show by a preponderance of the evidence that Saari teaches or suggests a device with, among other things, a salt solution that has a viscosity of between 1,500

centipoise and 10,000 centipoise when that device is placed into an environment with less than five percent relative humidity and then is allowed to come into equilibrium with the environment. Petitioner directs us to two pieces of record evidence to demonstrate this. First, Petitioner directs us to the disclosure in Saari of viscosity values that are unaccompanied by any description of the conditions under which they were measured. Pet. 24; Ex. 1011, 7:28–39. Saari teaches a preferred viscosity of 2,500 centipoise, acceptable viscosities between 1,500 centipoise and 5,000 centipoise, and a range of viscosities “in excess of 2500 [centipoise] . . . to an actual gel.” Ex. 1011, 7:28–39. Each of these ranges or values overlaps a portion of the claimed range of 1,500 to 10,000 centipoise, so each of them would be sufficient to show that Saari teaches or suggests the claimed range, assuming they were measured under the recited conditions. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 782 (Fed. Cir. 1985) (“[W]hen, as by a recitation of ranges or otherwise, a claim covers several compositions, the claim is ‘anticipated’ if *one* of them is in the prior art.” (emphasis in original)).

Petitioner directs us to a second piece of record evidence to argue that Saari’s teachings would have been understood by a person of ordinary skill in the art as teaching or suggesting viscosity measured under these conditions. Pet. 25–26 (citing Ex. 1003 ¶¶ 92–101). Specifically, Petitioner’s declarant, Dr. Muzzio, testifies that, using a humidity control device of a size and construction disclosed in Saari in an environment of a size disclosed in Saari and with zero percent relative humidity, approximately one-tenth of one percent of the water in the device would be lost to the environment in the process of the device coming to equilibrium with the environment. Ex. 1003 ¶¶ 94–96. Because “the change in water

content is minimal,” Dr. Muzzio testifies that “the viscosity of the salt solution is *unlikely to vary significantly*” when the relative humidity of the environment is raised from zero to the equilibrium value of 74 percent. *Id.* ¶ 97 (emphasis added). This final point, however, is unsupported by any persuasive underlying evidence or reasoning. Although it seems reasonable to expect that small changes in the composition of a solution occasioned by small changes in the amount of water present in the solution would lead only to small changes in viscosity, our rules do not permit us to give significant weight to “[e]xpert testimony that does not disclose the underlying facts or data on which the opinion is based.” 37 C.F.R. § 42.65(a). Dr. Muzzio did not supply any test data regarding the actual change in viscosity that would be caused by the change in relative humidity discussed in his thought experiment, nor did he supply any scientific reasoning to support his conclusion that small changes in water content are “unlikely” to cause viscosity “to vary significantly.” Further, Dr. Muzzio does not explain how large an “insignificant” variance in viscosity is, making it impossible for us to conclude that the change in viscosity in his thought experiment is small enough to keep the actual measured viscosity of Saari’s salt solution within the range recited in the challenged claims. And Petitioner does not direct us to any evidence of record that supplies the missing support for Dr. Muzzio’s opinions. Accordingly, we conclude that, under Petitioner’s proposed interpretation of “has a viscosity . . . in an environment with a relative humidity of less than 5%,” Petitioner has not shown by a preponderance of the evidence that Saari teaches or suggests the limitation “wherein the salt solution has a viscosity of 1500–10,000 cps in an environment with a relative humidity of less than 5%.”

The same faults render Petitioner's argument unsuccessful under Patent Owner's proposed interpretation of "has a viscosity . . . in an environment with a relative humidity of less than 5%." Under Patent Owner's interpretation, Petitioner must show by a preponderance of the evidence that Saari teaches or suggests a device with, among other things, a salt solution that has a viscosity of between 1,500 centipoise and 10,000 centipoise when that device is placed into an environment with less than five percent relative humidity, and that the viscosity remains within this range when the humidity of the environment reaches five percent. Dr. Muzzio provides some testimony on this point: "Since the range of '0–74%' encompasses 'less than 5%,' the viscosity of the salt solution is also unlikely to vary significantly in an environment with a relative humidity of less than 5%." Ex. 1003 ¶ 98. This testimony rests on the unsupported testimony that the viscosity is "unlikely to vary significantly" between zero and 74 percent. For the same reasons discussed above regarding paragraph 97 of the Muzzio Declaration, we find that paragraph 98 is unsupported. Accordingly, we conclude that, under Patent Owner's proposed interpretation of "has a viscosity . . . in an environment with a relative humidity of less than 5%," Petitioner has not shown by a preponderance of the evidence that Saari teaches or suggests the limitation "wherein the salt solution has a viscosity of 1500–10,000 cps in an environment with a relative humidity of less than 5%."

The limitation "wherein the salt solution has a viscosity of 1500–10,000 cps in an environment with a relative humidity of less than 5%" is part of claim 14 of the '026 patent, so Petitioner's failure to prove by a preponderance of the evidence that Saari teaches or suggests this limitation

means that Petitioner has failed to prove by a preponderance of the evidence that claim 14 as a whole is unpatentable under 35 U.S.C. § 103 as obvious over Saari. The other challenged claims, claims 15 and 17–22, all depend directly or indirectly from claim 14 and therefore include all the limitations of claim 14. 37 C.F.R. § 1.75(c). Accordingly, Petitioner’s failure to prove by a preponderance of the evidence that Saari teaches or suggests this limitation also means that Petitioner has failed to prove by a preponderance of the evidence that claims 15 and 17–22 are unpatentable under 35 U.S.C. § 103 as obvious over Saari.

CONCLUSION

Upon consideration of the full record after trial, we determine that Petitioner has not proven by a preponderance of the evidence that any of the challenged claims are unpatentable.

ORDER

It is hereby

ORDERED that claims 14, 15, and 17–22 of U.S. Patent No. 6,921,026 B2 have not been proven unpatentable;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 318(b), upon expiration of the time for appeal of this decision, or the termination of any such appeal, a certificate shall issue confirming the patentability of claims 14, 15, and 17–22 of U.S. Patent No. 6,921,026 B2; and

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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