

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.
Petitioner

v.

THX LTD.
Patent Owner

Case IPR2014-00234
Patent 8,457,340

Before MICHAEL W. KIM, BARBARA A. PARVIS, and
BRIAN P. MURPHY, *Administrative Patent Judges*.

PARVIS, *Administrative Patent Judge*.

DECISION
Decision on Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

On December 6, 2013, Apple Inc. (“Petitioner”) filed a Petition (Paper 3, “Pet.”) requesting an *inter partes* review of claims 1-7 and 29-34 of U.S. Patent No. 8,457,340 (Ex. 1001, “the ’340 patent”). Patent Owner, THX Ltd., LLC (“Patent Owner”) filed a Preliminary Response (Paper 11, “Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314.

The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides as follows:

THRESHOLD.—The Director may not authorize an *inter partes* review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 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.

Upon consideration of the Petition and Preliminary Response, we determine that Petitioner has not established a reasonable likelihood that it would prevail in showing the unpatentability of each of claims 1-7 and 29-34 of the ’340 patent. Accordingly, pursuant to 35 U.S.C. § 314, we do not institute an *inter partes* review as to claims 1-7 and 29-34 of the ’340 patent.

A. *The ’340 Patent*

The ’340 patent is directed to sound reproduction, and in particular narrow profile speaker configurations and systems. Ex. 1001, Title, 1:27-29. The ’340 patent describes a speaker configuration having a narrow sound output region. *Id.* at 3:30-34. Figure 1 of the ’340 patent is reproduced below.

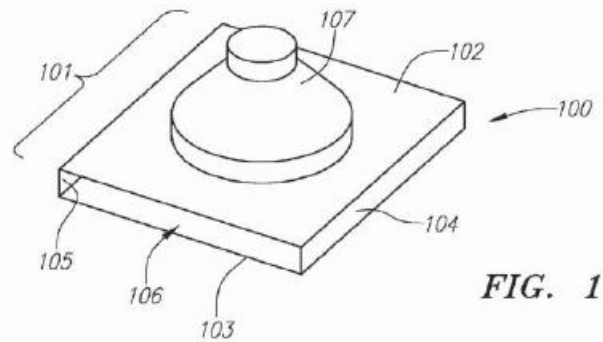


Figure 1 illustrates an oblique frontal view of a narrow profile speaker unit.

As illustrated in Figure 1, narrow profile speaker unit 100 has speaker 107 supported by baffle 101. Baffle 101 includes mounting surface 102, sound reflecting surface 103 disposed in parallel orientation to mounting surface 102, and sidewalls 104 and 105. Together, surfaces 102, 103, 104, 105 collectively define sound duct 115. Ex. 1001, 6:2-6.

In operation, speaker 107 receives audio signals from an audio signal source, such as a CD player, cassette player, radio, or sound processor. Ex. 1001, 6:16-21. Sound waves from speaker 107 are directed toward sound reflecting surface 103 and turned by ninety degrees. *Id.* at 6:10-12, 24-26. Sound duct 115 then carries the reflected sound waves to output slot 106 and they are emanated, while retaining a sufficient degree of sound quality. *Id.* at 7:27-36.

B. Related Matters

The '340 patent is the subject of litigation in *THX Ltd. V. Apple Inc.*, Civil Action No. 3:13-cv-01161 (N.D. Cal.). Pet. 1.

C. Illustrative Claim

Claims 1, 7, and 29 are the independent claims challenged by Petitioner. Claims 2-6 and 30-34 each depend, directly or indirectly, from either claim 1 or claim 29. Claim 1 is reproduced below:

1. A narrow profile sound system, comprising:
 - a drive unit disposed on a mounting surface, said mounting surface forming a barrier acoustically isolating the drive unit's forward radiation from its rearward radiation;
 - a sound reflecting surface facing the drive unit; and*
 - a narrow sound duct terminating in an elongate output slot, the sound duct being defined by the sound reflecting surface, the mounting surface, and an interior sidewall disposed between the sound reflecting surface and the mounting surface that follows a rear contoured edge of the drive unit opposite the sound duct, such that the sound duct provides a substantially straight path from the drive unit to the output slot;*whereby forward radiation from the drive unit is turned at a substantially right angle and channeled through the sound duct directly towards the output slot.

Emphasis added.

D. Prior Art Relied Upon

Sadaie	WO 00/52958	Sept. 8, 2000	Ex. 1003 ¹
Harris	US 7,010,138	Mar. 7, 2006	Ex. 1004
Fujihara	JP S58-050781	Apr. 6, 1983	Ex. 1005 ²

¹ Sadaie is a Japanese language publication. Petitioner submitted the Japanese language publication as Exhibit 1014 and an English language translation as Exhibit 1003. All citations herein are to the English language translation.

² Fujihara is a Japanese language publication. Petitioner submitted the Japanese language publication as Exhibit 1016 and an English language

Villa	GB 2184323	June 17, 1987	Ex. 1007
Anderson	US 4,620,317	Oct. 28, 1986	Ex. 1008
Virva	US 3,687,220	Aug. 29, 1972	Ex. 1009
Tichy	US 5,517,574	May 14, 1996	Ex. 1010
Shin	US 6,415,035	July 2, 2002	Ex. 1011
Reams	US 4,196,790	Apr. 8, 1980	Ex. 1012
Robbins	US 2,694,462	Nov. 16, 1954	Ex. 1013

E. Alleged Grounds of Unpatentability

The information presented in the Petition sets forth Petitioner’s contentions of unpatentability of claims 1-7 and 29-34 of the ’340 patent based on the following specific grounds.

Claims Challenged	Basis	Reference(s)
1, 3, 4, 29, 31, and 32	§ 102	Sadaie
2 and 30	§ 103	Sadaie and Robbins
5 and 33	§ 103	Sadaie and Villa or Anderson
6 and 34	§ 103	Sadaie and Shin
7	§ 103	Sadaie and Fujihara or Reams
1, 2, 6, 29, 30, and 34	§ 102	Harris
3, 4, 31, and 32	§ 103	Harris, Tichy, and Virva
5 and 33	§ 103	Harris and Villa or Anderson
7	§ 103	Harris and Fujihara

translation as Exhibit 1005. All citations herein are to the English language translation.

II. ANALYSIS

A. *Claim Construction*

We determine the meaning of certain claim terms for purposes of this decision. In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the patent specification. 37 C.F.R. § 42.100(b); Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012). Under the broadest reasonable construction standard, claim terms 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). Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Dictionaries may be relied on so long as the dictionary definition does not contradict a definition found in or ascertained by reading the patent documents. *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1584 n.6 (Fed. Cir. 1996). We must be careful not to read a particular embodiment appearing in the written description into the claim if the claim language is broader than the embodiment. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993). We construe the terms below in accordance with these principles.

1. “*straight path*”

Each of independent claims 1, 7, and 29 recites “straight path.” Neither party provides a proposed construction for “straight path.” Patent Owner, however, asserts that Sadaie does not disclose or suggest a sound duct that provides a straight path from the drive unit to the output slot.

Prelim. Resp. 32. For the purpose of evaluating Patent Owner’s arguments, we construe the term “straight path.”

Claim terms, such as “straight path,” must be construed in view of their claim context. Each of independent claims 1 and 29 recites, *inter alia*, the following elements: (1) “a drive unit,” (2) “a sound reflecting surface facing the drive unit,” (3) a “narrow sound duct terminating in an elongate output slot . . . such that the sound duct provides a substantially *straight path* from the drive unit to the output slot,” and (4) “whereby forward radiation [of sound waves] from the drive unit is turned at a substantially right angle and channeled through the sound duct directly towards the output slot” (emphasis added). Ex. 1001, 30:9-26, 32:45-60. Independent claim 7 recites similar limitations. *Id.* at 30:43–31:4. In the context of the claims, sound waves from the drive unit are redirected by the sound reflecting surface at a substantially right angle, and channeled through the narrow sound duct along a straight path towards an output slot or aperture. Accordingly, because the recited “narrow sound duct” provides context for “straight path,” through which the sound waves travel, we look to references in the ’340 patent specification to “sound duct” to understand “straight path.”

Sound duct 115 is a partially closed volume defined by opposed mounting surface 102 and sound reflecting surface 103, as well as opposing side walls 104, 105. Ex. 1001, 6:2-8, 6:27-33, Figs. 1-2B. Sound reflecting surface 103 is spaced at a distance from both a front face of speaker 107 and mounting surface 102 such that sound duct 115 “does not permit soundwaves . . . to unfold significantly within the confines of the duct . . . ,

as pressure effects will tend to cause the lateral soundwaves that emanate from the output slot . . . to have sound quality and dynamic range comparable to the soundwaves initially emitted from the speaker . . . itself.” *Id.* at 6:30-36. The use of the terms “unfold,” “within,” and “pressure” indicates that sound waves are compressed within and move through a volume. It follows that the “path” traveled by the sound waves should be understood in the context of the volume defined by the sound duct, such as the rectangular sound duct shown in Figures 2B or 19B. *See, e.g.*, Ex. 1001, Figs. 2B, 19B.³

Having set forth the context of “path,” we now construe “straight,” also in the context of a volume, as it modifies “path.” Merriam-Webster Online Dictionary defines “straight” as “not having curves, bends, or angles.” Merriam-Webster Online Dictionary, <http://www.merriam-webster.com/dictionary/straight> (last visited Apr. 17, 2014) (Ex. 3001); *see also* The Random House Dictionary 875 (Jess Stein ed., 1978) (“without a bend, angle or curve”) (Ex. 3002). When we construe “path” in the context

³ Because the path is traveled by sound, a dictionary definition of sound is useful in ascertaining the way in which one of ordinary skill in the art would use claim term. *Starhome GMBH v. AT&T Mobility LLC*, 743 F.3d 849, 856-57 (Fed. Cir. 2014). We consult the Columbia Encyclopedia, which defines “sound” as follows: “any disturbance that travels through an elastic medium such as air, ground, or water to be heard by the human ear. . . .” The Columbia Encyclopedia (2013) (Ex. 3003); *see also* Illustrated Dictionary of Science, Andromeda (1988) (“Mechanical disturbance, such as a change of pressure, particle displacement or stress, propagated in an elastic medium ([e.g.,] air or water), that can be detected by an instrument or by an observer who hears the auditory sensation it produces.”) (Ex. 3004).

of sound waves traveling toward output slot 106, we note the dictionary definitions for “straight” are consistent with the ’340 patent specification. For example, Figures 1 through 2B of the ’340 patent illustrate sound duct 115 where reflected sound waves are turned and travel to output slot 106, without curves, bends, or angles. Ex. 1001, Figs. 1-2B; *see also, id.* at Figs. 7, 12D, and 19B. Although the sound waves are turned at a substantially right angle in sound duct 115, the context of the claim limitation makes clear that the “straight path” is to be ascertained subsequent to the “turn.”

For the reasons given above, we determine the broadest reasonable interpretation of “straight path,” in the context of the ’340 patent claims consistent with the specification, is “a sound duct, within which sound waves are turned and travel to an output, without curves, bends, or angles.”

2. *“sound reflecting surface”*

The term “sound reflecting surface” is recited in independent claims 1, 7, and 29. Petitioner does not offer a construction for “sound reflecting surface.”⁴ Patent Owner contends that “sound reflecting surface” is “a flat surface composed of a rigid, reflective material with a high degree of acoustic reflectivity in comparison with other structural elements of the sound system.” Prelim. Resp. 11.

⁴ Petitioner, however, does not dispute that “sound reflecting surface” is distinct from “sound damping material,” and, instead, asserts that “sound damping material” is “material that absorbs sound waves in an audible frequency range.” Pet. 15; *see also* Ex. 1002 ¶ 38.

Although the '340 patent specification does not define “sound reflecting surface” *per se*, the specification discloses that sound reflecting surface 103 reflects sound waves emitted from speaker 107 such that the sound waves emerging from output slot 106 are of a “sound quality and dynamic range comparable to the soundwaves initially emitted from the speaker . . . itself.” Ex. 1001, 6:27-36. The specification of the '340 patent states also, “a reflecting surface disposed immediately in front of the face of the speaker cone *redirects the sound output*, through a sound duct or otherwise, and causes the sound to emanate from a slot or other aperture.” *Id.* at 3:35-38 (emphasis added); *see also* 5:30-33 and 7:40-44 (“A sound reflecting surface . . . *directs the soundwaves* towards an output slot in the ceiling” (emphasis added)). Accordingly, like the specification, we use the terms “reflect” and “redirect” interchangeably.

Additionally, the '340 patent specification distinguishes sound reflecting surface 103 from sound damping material 319, where sound damping material 319 is disposed along sidewalls 304, 305 and around a periphery of speaker 307. In particular, sound damping material 319 is described as “prevent[ing], e.g., *undesirable interference or reflections* within the duct or chamber.” Ex. 1001, 8:25-30 (emphasis added). Sound damping material 319 comprises preferably non-resonant material with sound absorbing qualities. *Id.* at 8:40-43. Accordingly, the '340 patent specification describes a sound reflecting surface that redirects sound waves, whereas a sound damping surface absorbs sound, inside the sound duct. Thus, where the specification goes to great lengths to distinguish sound reflecting surfaces from sound damping surfaces, but being mindful that

embodiments from the specification must not be imported impermissibly into the claim, we determine that under a broadest reasonable construction, “sound reflecting surface” is a surface not made of sound damping material. Furthermore, given that “sound damping material” is different from a “sound reflecting surface” and recited as a separate claim limitation, it follows that a sound reflecting surface is not made of sound damping material.

Patent Owner asserts the “sound reflecting surface” must be flat and rigid, relying on various embodiments for support. Prelim. Resp. 11-13. Patent Owner does not contend, however, that the ’340 patent provides a special definition for “sound reflecting surface” that expressly includes “flat” or “rigid” with reasonable clarity, deliberateness, and precision. *Id.*; see *In re Paulsen*, 30 F.3d at 1480. Patent Owner has not explained sufficiently how its proposed construction avoids reading particular embodiments into the claim.

We, therefore, decline to adopt Patent Owner’s construction in its entirety and construe “sound reflecting surface,” in the context of the ’340 patent, as “a surface that redirects sound waves output from a speaker, not made of sound damping material.”

3. *Other Terms*

Petitioner and Patent Owner each propose to construe additional terms including, for example, terms in dependent claims. We determine that no express construction of these additional terms is necessary for the purpose of this decision.

B. Asserted Anticipation of Claims 1 and 29 by Sadaie

Petitioner contends that claims 1 and 29 are anticipated by Sadaie. Pet. 19-24, 26-27. Petitioner's contentions regarding claim 29 refer back to claim 1 by stating, for example, "[s]ee discussion of limitation 1(a)." Pet. 27. Thus, in the analysis of recitations that are found in both claims 1 and 29, we cite to Petitioner's contentions regarding claim 1.

1. Sadaie

Sadaie describes a speaker system that is small and has base range reproduction capability. Ex. 1003, 2. Figure 3 of Sadaie illustrates a cross-sectional view of one embodiment of a speaker system (*id.* at 7) and is reproduced below.

FIG. 3

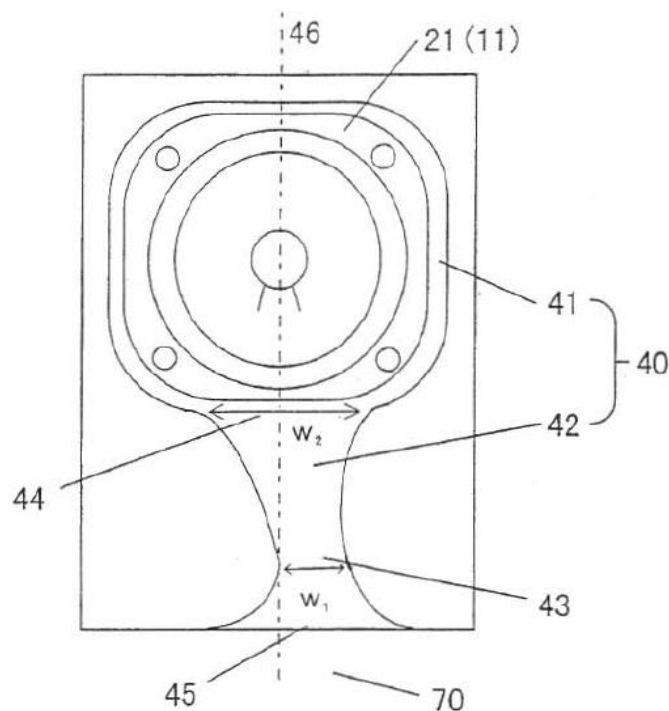


Figure 3 illustrates a cross-sectional view of a speaker system

As illustrated in Figure 3, the speaker system has speaker units 11 and 21, each of which is mounted in an enclosure. Ex. 1003, 7. Sound guiding part 40 has sound source space 41 and sound path 42. *Id.* at 8. Sound source space 41 surrounds speaker units 11 and 21. *Id.* Acoustic waves radiated from speaker units 11 and 21 are propagated through sound source space 41 and sound path 42 to free space 70. *Id.*

Sound path 42 contributes to widening a bass reproduction band. Ex. 1003, 8. Sadaie explains that to satisfy this demand, sound path 42 has a specific shape, which is described with respect to particular portions of sound path 42. *Id.* Sound path 42 has the following portions, also referred to as sections: connected portion 44 (which connects sound source space 41 and sound path 42), intermediate section 43, and exit section 45. Sadaie describes a specific shape of sound path 42 as follows: (1) the width of intermediate section 43 is narrower than the width of connected portion 44 and the width of exit section 45, and (2) sound path 42 is asymmetrical to axis 46 of the acoustic wave guiding direction of sound path 42. *Id.*

Figure 14 illustrates a cross-sectional view of an alternative embodiment of the speaker system (Ex. 1003, 11) and is reproduced below.

FIG. 14

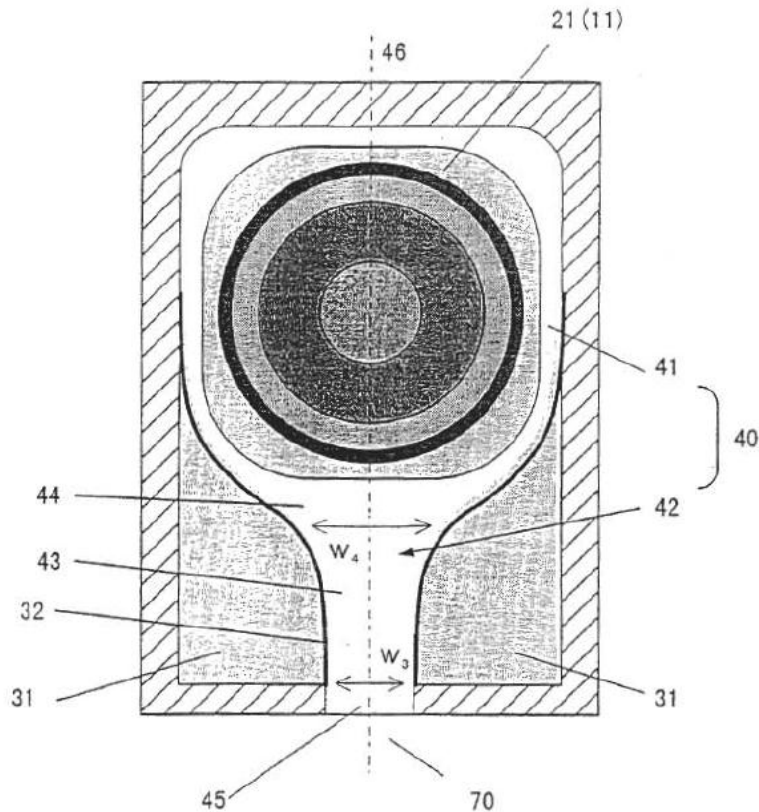


Figure 14 illustrates a cross-sectional view of a speaker system

The speaker system illustrated in Figure 14 also has speaker units 11 and 21, each of which is mounted in an enclosure. Ex. 1003, 11. At least part of a section defining sound guiding part 40 is configured from pressure absorbing material. *Id.* Sadaie explains that in this embodiment shape requirements of sound path 42 differ because of use of pressure absorbing material. *Id.* at 13. In particular, Sadaie states that an effect similar to when sound path 42 has an asymmetrical shape is obtained as long as a width of a narrowest section of sound path 42 is narrower than a width of connecting portion 44. *Id.*

2. *Claims 1 and 29*

Each of claims 1 and 29 recites: “a narrow sound duct terminating in an elongate output slot . . . such that the sound duct provides a substantially straight path from the drive unit to the output slot.” As set forth above, we construe the aforementioned claim limitation as “a sound duct, within which sound waves are turned and travel to an output, without curves, bends, or angles.” Petitioner states that Sadaie discloses a narrow sound duct terminating in an elongate output slot by describing narrow sound duct 40, which includes source space 41 and sound path 42 terminating in output slot 45. Pet. 21 (citing Ex. 1003, 7-15, Figs. 16-18). Petitioner contends that sound duct 40 provides a substantially straight path from drive unit 11 to output slot 45. Pet. 22 (citing Ex. 1003, 3, 4, 8, 9, 14-15, 20, Figs. 4, 5, 8, 14, 15, and 18-22). In support of its contention, Petitioner relies on the Declaration of its expert, Dr. Jeffrey S. Vipperman. Pet. 23 (Ex. 1002 ¶ 52).

Patent Owner asserts that Sadaie’s sound path incorporates features designed to preclude a straight path, and that all Sadaie’s embodiments describe a sound path with curves, bends, or at least a relatively narrow mid-section or exit section. Prelim. Resp. 32-33. Patent Owner further states that even in embodiments shown in Figures 14 and 15, which illustrate portions of sound path 42 that appear closest to being straight, Sadaie describes sound path 42 as having a monotonically decreasing width. *Id.* As illustrated in Figure 14, the width referred to as “W₃” is less than the width referred to as “W₄.” Ex. 1003, Fig. 14. The corresponding disclosure in Sadaie indicates that to obtain an effect similar to embodiments have an asymmetrical path, “it is sufficient that the width of the narrowest section of

. . . sound path 42 be narrower than the width of . . . connecting portion 44.”

Id. at 13. We agree with Patent Owner.

Petitioner does not explain adequately how Sadaie discloses a substantially straight path in light of (1) Sadaie’s textual description of sound path 42 as having an asymmetrical or curved shape (Ex. 1003, 8, 9, 13, 15) and (2) Sadaie’s figures illustrating paths that are asymmetrical or narrow such that, for example, exit section 45 is narrower than other sections of sound path 42 (*id.* at Figs. 3, 4, 5, 8, 14, 15, 18, 19, and 22). Turned sound waves traveling through sound path 42 of Sadaie to output slot 45 would encounter such curves, bends, and angles of asymmetrical, curved, or other “non-straight” paths illustrated in the figures of Sadaie. The disclosure of Sadaie is contrary to the broadest reasonable construction of the aforementioned “straight path” limitation, which requires “a sound duct, within which sound waves are turned and travel to an output, without curves, bends, or angles.”

Petitioner also relies on Dr. Vipperman (Pet. 23 (citing Ex. 1002 ¶ 52)), who makes similar assertions as Petitioner, but does not provide further evidentiary support. Ex. 1002 ¶ 52. For example, Dr. Vipperman states that the claimed straight path is shown in Figures 16-18 of Sadaie. *Id.* (citing Ex. 1003, 10, 14-15, Figs. 16-18). Regarding this embodiment, Sadaie, however, states, “[n]ote that the present embodiment illustrates a sound path 42 having an asymmetrical flat shape relative to an axis of an acoustic wave guiding direction.” Ex. 1003, 15; *see also* Fig. 18. Dr. Vipperman’s statement that the “straight path” limitation is shown in Sadaie, for example in Figures 16-18 (Ex. 1002 ¶ 52), even though Figure 18

shows a demonstrably curved sound path, is conclusory and entitled to little or no weight. 37 C.F.R. § 42.65(a); *see also Monsanto Co. v. Pioneer Hi-Breed Int'l*, IPR2013-00022, Paper 43 (PTAB Apr. 11, 2013) (denying petition).

Based on the record before us, Petitioner has not shown a reasonable likelihood that it would prevail in demonstrating that each of claims 1 and 29 are anticipated by Sadaie.

C. Asserted Anticipation of Claims 1 and 29 by Harris

Petitioner contends that claims 1 and 29 of the '340 patent are anticipated by Harris. Pet. 43-49. Petitioner's contentions regarding claim 29 refer back to claim 1 by stating, for example, "[s]ee discussion of limitation 1(a)." Pet. 48-49. Thus, in the analysis of recitations that are found in both claims 1 and 29, we cite to Petitioner's contentions regarding claim 1.

1. Harris

Harris describes a loudspeaker comprising a sound source 2, 3 and duct 6 that is coupled to sound source 2, 3 to direct acoustic energy from sound source 2, 3. Ex. 1004, 1:31-34, 4:15-23. Figure 4 illustrates a cross-sectional view of an embodiment of the loudspeaker (*id.* at 2:16-17) and is reproduced below.

Figure 4

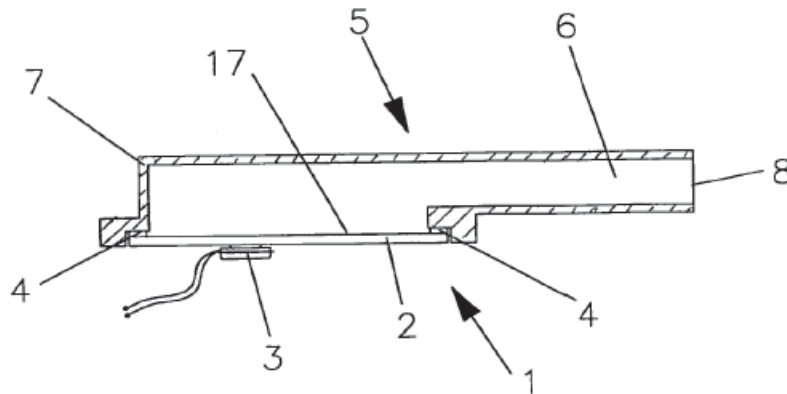


Figure 4 is a cross-sectional view of a loudspeaker.

Figure 4 shows a loudspeaker arrangement in which housing 5 defining a parallel sided duct 6 has closed end 7 and open end 8. Ex. 1004, 4:48-50. Resonant bending-wave panel 2 is supported on resilient suspension 4 so that acoustic radiation from one face 17 facing into housing 5 is directed along duct 6 and is emitted from open end 8. *Id.* at 4:51-56.

Harris states that the embodiment described with respect to Figure 4 is an arrangement as shown in Figures 1 and 2. Ex. 1004, 4:48-49. As described with respect to Figure 1, loudspeaker 1 is driven by vibration exciter 3 fed with an electrical audio signal. *Id.* at 4:15-20. Housing 5 is made from any suitable non-resonant material. *Id.* at 4:25-26.

2. Claims 1 and 29

Each of claims 1 and 29 recites, “a sound reflecting surface facing the drive unit.” As set forth above, we construe “sound reflecting surface” as “a surface that redirects sound waves output from a speaker, not made of sound damping material.” Petitioner asserts that Harris discloses this limitation, stating that the inner surface of sound duct 6 faces speaker driver 2. Pet. 45

(citing Ex. 1004, 4:20-33, 4:48-56, Figs. 1, 2, 4-6). Patent Owner indicates that Harris does not disclose that the inner surface of duct 6 facing the speaker driver discloses “a sound reflecting surface,” as recited in each of claims 1 and 29. Prelim. Resp. 47-48. We agree with Patent Owner.

Since the claimed sound reflecting surface faces the drive unit, first, we look to Petitioner’s identification of the elements of Harris corresponding to the claimed drive unit. Petitioner identifies resonant bending-wave panel 2 as corresponding to the recited drive unit, for example, by referring to “drive unit (2)” and “speaker driver (2).” Pet. 44-45. We also note that Harris describes that loudspeaker 1 comprises resonant bending-wave panel 2, which is driven by vibration exciter 3 located adjacent to resonant bending-wave panel 2. Ex. 1004, 4:15-20, Fig. 4. Vibration exciter 3 is fed with an electrical audio signal adjacent to resonant bending-wave panel 2. *Id.* at Fig. 4. Face 17 is adjacent to and part of the speaker driver mechanism, also formed by resonant bending-wave panel 2 and vibration exciter 3. *Id.* at Fig. 4.

Regarding any “sound reflecting surface” facing resonant bending-wave panel 2, Petitioner identifies the inner surface of sound duct 6 facing resonant bending-wave panel 2. Pet. 45. Petitioner supports this assertion by citing to two excerpts of Harris, as well as several figures. Pet. 45 (citing Ex. 1004, 4:20-33, 4:48-56, Figs. 1, 2, 4-6).⁵

⁵ We note that Dr. Viperman briefly mentions this element, but does not add to what is discussed in the Petition. Ex. 1002 ¶ 92.

The excerpts relied on by Petitioner are reproduced below.

The panel 2 is resiliently mounted by its edges on a resilient suspension 4 in a housing 5 in the form of a parallel sided shallow slot-like duct 6 having a closed end 7 and an open end 8 which opens into a flared horn section 9 which ends at opening or termination 10. The housing may be made from any suitable non resonant material such as those materials from which loudspeaker enclosures are normally constructed, e.g. medium density fibreboard or plastics. Alternatively, at least the duct may be made of a flexible material, provided that it is suitably dense so as to be substantially non resonant in the frequency range of its intended use. Thus the duct may be in the form of a flexible pipe, e.g. of high density polyethylene or the like.

Ex. 1004, 4:20-33.

FIG. 4 shows a loudspeaker arrangement generally as shown in FIGS. 1 and 2 above and in which a housing 5 defining a parallel sided duct 6 has an open end 8 which terminates the duct, and a closed end 7. The housing supports a resonant bending-wave panel 2 on a resilient suspension 4 so that acoustic radiation from one face 17 of the panel facing into the housing 5 is directed along the duct to a remote location wherein the sound radiation is emitted from the open end of the duct.

Ex. 1004, 4:48-56.

Harris states that duct 6 should be made from material that is suitably dense so as to be substantially non-resonant in the frequency range of its intended use, and provides exemplary materials, including fiber board and plastics. Ex. 1004, 4:20-33. Harris does not indicate whether these exemplary materials are sound damping materials. Petitioner's expert states that fiber and damped polymer composites are examples of materials that absorb sound waves in an audible frequency range. Ex. 1002 ¶ 40.

Petitioner's expert has not provided sufficient evidence of non-damping properties of the materials described in Harris. Ex. 1002 ¶ 92. Petitioner, therefore, has not shown sufficiently that Harris's mention of fiber board and plastics indicates that inner surface of duct 6 is not made of sound damping materials, as required by our construction of "sound reflecting surface."

Petitioner, therefore, has not shown sufficiently that Harris describes "a sound reflecting surface facing the drive unit," as recited in each of claims 1 and 29. Based on the record before us, Petitioner has not shown a reasonable likelihood that it would prevail in demonstrating that claims 1 and 29 are anticipated by Harris.

D. Dependent Claims 2-6 and 30-34

Each of dependent claims 2-6 and 30-34 depend, directly or indirectly, from either claim 1 or claim 29. For the reasons discussed above with respect to claims 1 and 29, Petitioner has not shown a reasonable likelihood that it would prevail in demonstrating that each of claims 2-6 and 30-34 are unpatentable.

E. Asserted Obviousness of Independent Claim 7

Independent claim 7 is similar in scope to independent claims 1 and 29, except that independent claim 7 recites a "two speaker" embodiment, such that two speaker drivers are next to each other. Petitioner asserts the following grounds: (1) claim 7 is obvious over Sadaie and Fujihara or Reams, and (2) claim 7 is obvious over Harris and Fujihara. Pet. 37-43, 56-60. Specifically, Petitioner asserts that it would have been obvious to combine the structure of Sadaie (Pet. 40) and Harris (Pet. 58) with Fujihara

and Reams, each of which are cited for disclosing two speaker embodiments. Pet. 40-43, 59-60.

Claim 7 recites limitations similar to those discussed with respect to claims 1 and 29. For example, claim 7 recites “a first narrow sound duct terminating in a first sound output aperture . . . whereby forward radiation from said first drive unit is turned at a substantially right angle and travels along a substantially straight path to exit the first sound output aperture.” Petitioner refers to its contentions regarding claim 1 for these limitations. Pet. 39 (“*See, e.g.,* Section VIII(A)(1)(a)-(c) (discussion of limitations 1(b)-1(g)); Vipperman Decl. ¶ 83 (Ex. 1002).”). As discussed above with respect to claim 1, Petitioner does not identify sufficient disclosure in Sadaie of reflected sound that is directed in a straight path to an output aperture. And Petitioner does not cite either Fujihara or Reams as remedying this deficiency of Sadaie with respect to independent claim 7.

Additionally, regarding “a sound reflecting surface facing the drive unit,” as recited in claims 1 and 29, claim 7 recites similar limitations, which merely differ in that they reflect first and second speakers. In particular, claim 7 recites “a first sound reflecting surface facing said first drive unit,” and “a second sound reflecting surface facing said second drive unit.” As discussed above with respect to claim 1, Petitioner has not shown sufficiently that Harris describes a sound reflecting surface facing a drive unit. And Petitioner does not cite Fujihara as remedying this deficiency of Harris with respect to independent claim 7.

For the reasons discussed, Petitioner has not shown a reasonable likelihood that it would prevail in showing that claim 7 is obvious.

III. CONCLUSION

For the foregoing reasons, we determine that the information presented in the Petition does not establish that there is a reasonable likelihood that Petitioner would prevail in showing unpatentability of claims 1-7 and 29-34 of the '340 patent.

IV. ORDER

Accordingly, it is

ORDERED that pursuant to 35 U.S.C. § 314, an *inter partes* review is not instituted as to claims 1-7 and 29-34 of the '340 patent on any of the grounds.

IPR2014-00234
Patent 8,457,340

FOR PETITIONER:

David Cavanaugh
Natalie Pous
WILMER CUTLER PICKERING HALE & DORR LLP
david.cavanaugh@wilmerhale.com
natalie.pous@wilmerhale.com

FOR PATENT OWNER:

Christopher Kelley
PERKINS COIE LLP
ckelley@perkinscoie.com