

**UNITED STATES PATENT AND TRADEMARK OFFICE**

---

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

---

*Ex parte* WILLIAM WEBB, PAUL DARLINGTON, and OLIVER WRIGHT

---

Appeal No. 2002-1839  
Application No. 09/199,751

---

ON BRIEF

---

Before HAIRSTON, BARRY, and LEVY, *Administrative Patent Judges*.

BARRY, *Administrative Patent Judge*.

DECISION ON APPEAL

A patent examiner rejected claims 1-15. The appellants appeal therefrom under 35 U.S.C. § 134(a). We reverse.

BACKGROUND

The invention at issue concerns a "horn loudspeaker." A horn loudspeaker comprises a horn having a throat and mouth and an electroacoustic driver mounted at or adjacent the throat and directed along the horn. Such "horn loading" of the driver increases electroacoustic efficiency and controls the radiating pattern of the driver. (Spec. at 1.) According to the appellants, however, the pattern control achieved by

horn loading is imperfect and frequency dependent "despite the claims of so-called constant directivity horns." (*Id.*)

Accordingly, the object of the invention is "to provide a controllable polar response, so that the output of the system can be tailored to its environment or to [a] listener's taste." (Appeal Br. at 3.) More specifically, the inventive horn loudspeaker comprises a horn (22) having a throat (26) and a mouth (30); a primary electroacoustic driver (24) mounted at or adjacent the throat of the horn and directed along the horn; and secondary electroacoustic drivers (32T, 32B, 32L, 32R) mounted partway along the horn and directed thereacross. The secondary drivers are used to change the local impedance conditions in the horn and, therefore, to change the polar response of the horn loudspeaker. (Spec. at 15.) Filters (12A, 12E) filter an input signal (34) to produce a filtered signal for the primary driver of each of the secondary drivers. According to the appellants, such filters may be designed to increase directivity, to "flatten the polar response within a specified included radiation angle, or to increase omnidirectionality." (*Id.*)

A further understanding of the invention can be achieved by reading the following claims.

1. A horn loudspeaker, comprising:

a) a horn having a throat and a mouth;

b) primary electro-acoustic driver mounted at or adjacent the throat of the horn and directed generally along the horn; and

c) at least one secondary electro-acoustic driver mounted part-way along the horn, spaced from the throat, and directed generally across the horn.

10. A horn loudspeaker system, comprising:

a) a horn having a throat and a mouth;

b) a primary electro-acoustic driver mounted at or adjacent the throat of the horn and directed generally along the horn;

c) at least one secondary electro-acoustic driver in a side surface of the horn and directed generally across the horn; and

d) a signal processor for processing input signals to at least one said secondary driver to control the polar response of the horn loudspeaker.

Claims 1 and 3-9 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,437,540 ("Murakami"). Claims 2 and 10-15 stand rejected under 35 U.S.C. § 103(a) as obvious over Murakami in view of U.S. Patent No 5,784,474, ("Kohut").

#### OPINION

Our opinion addresses the rejections of the following groups of claims:

- claims 1-9
- claims 10-15 .

Claims 1-9

Rather than reiterate the positions of the examiner or appellants *in toto*, we address the main point of contention therebetween. The examiner asserts, "[a]lthough in Fig. 6 Murakami indicated 30a as the throat of the sound horn 30, it's clear to the extend [sic] that the horn structure formed by fitting plate 8 . . . can be viewed as an horn extension of sound horn 30 (i.e., sound horn 30 and fitting plate 8 formed in/as a continuous extension)." (Examiner's Answer at 3-4.) The appellants argue, "Murakami does not teach or hint at the concept of speakers downstream of the throat of the horn." (Appeal Br. at 5.)

"Analysis begins with a key legal question -- *what is the invention claimed?*" *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987). In answering the question, "the Board must give claims their broadest reasonable construction. . . ." *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1668 (Fed. Cir. 2000).

Here, independent claim 1 specifies in pertinent part the following limitations: "at least one secondary electro-acoustic driver mounted part-way along the horn, spaced from the throat, and directed generally across the horn." Giving the independent claim its broadest, reasonable construction, the limitations require at least one secondary

electro-acoustic driver that is mounted partway along a horn, downstream from the throat of the horn.

"Having construed the claim limitations at issue, we now compare the claims to the prior art to determine if the prior art anticipates those claims." *In re Cruciferous Sprout Litigation*, 64 USPQ2d 1202, 1206 (Fed. Cir. 2002). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (citing *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 715, 223 USPQ 1264, 1270 (Fed. Cir. 1984); *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548, 220 USPQ 193, 198 (Fed. Cir. 1983); *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 771, 218 USPQ 781, 789 (Fed. Cir. 1983)). "[T]here is no anticipation 'unless all of the same elements are found in exactly the same situation and united in the same way . . . in a single prior art reference.'" *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 894, 221 USPQ 669, 673 (Fed. Cir. 1984) (citing *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 771, 218 USPQ 781, 789 (Fed. Cir. 1983)).

Here, Murakami's "FIG. 6 is a side-elevational view, in longitudinal cross-section, of still another embodiment of the present invention, wherein the loud-speaker of a

construction as shown in FIGS. 3 and 4 has been incorporated in the horn speaker. . . ."

Col. 3, ll. 21-25. Although the embodiment includes "speaker units 10 to 18," col. 4, l. 13, the examiner fails to show that any of the speaker units is mounted partway along the horn so that it is downstream from the throat thereof. To the contrary, the reference teaches that the "speaker units 10, 12, . . . are intensively arranged **behind** . . . the sounding horn 30. . . ." *Id.* at ll. 21-22 (emphasis added). The absence of such a showing "negates anticipation." *Kloster Speedsteel AB v. Crucible, Inc.*, 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986). Therefore, we reverse the anticipation rejection of claim 1 and of claims 3-9, which depend therefrom.

"In rejecting claims under 35 U.S.C. Section 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness." *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993)(citing *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)). "A *prima facie* case of obviousness is established when the teachings from the prior art itself would . . . have suggested the claimed subject matter to a person of ordinary skill in the art." *In re Bell*, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)).

Here, the examiner fails to allege, let alone show, that the addition of Kohut cures the aforementioned deficiency of Murakami. Absent a teaching or suggestion of at least one secondary electro-acoustic driver that is mounted partway along a horn, downstream from the throat of the horn, the examiner fails to present a *prima facie* case of obviousness. Therefore, we reverse the obviousness rejection of claim 2.

#### Claims 10-15

Admitting that "what's not taught by Murakami for the horn loudspeaker . . . is a signal processor for processing input signals to the at least one secondary driver to control the polar response and the specific electronic components for the processor as claimed," (Final Rejection at 3-4<sup>1</sup>), the examiner asserts, "[i]t would have been obvious . . . to modify the horn loudspeaker of Murakami with a signal processor as shown by Kohut in order to process a input audio signal to apply to the different drivers of the horn loudspeaker to produce or improve audio response of the horn speaker." (*Id.* at 4.) The appellants argue, "Murakami teaches away from separate and differentiated control of the individual loudspeakers in his array; he wishes all of his speakers to operate in unison to provide an imaginary 'vibrating plane' at the baffle-board 6 or throat 30a, with *no interference* (column 4 lines 30-37)." (Reply Br. at 4-5.)

---

<sup>1</sup>We advise the examiner to copy his rejections into his examiner's answers rather than merely referring to a "rejection . . . set forth in prior Office Action. . . ." (Examiner's Answer at 3.)

"When prior art contains apparently conflicting references, the Board must weigh each reference for its power to suggest solutions to an artisan of ordinary skill. The Board must consider all disclosures of the prior art. . . ." *In re Young*, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991) (citing *In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976)). See, e.g., *In re Merck*, 800 F.2d 1091, 1097, 231 USPQ 375, 380 (Fed. Cir. 1986) ("Petersen must be read, not in isolation, but for what it fairly teaches in combination with the prior art as a whole.").

Here, we agree with the examiner that "Kohut discloses a circuit or processor for improving the polar response of horn loaded loudspeaker system including a signal processor . . . for processing input signals to different loudspeakers to control the polar response of the loudspeaker system." (Examiner's Answer at 4.) In its own words, the secondary reference "relates to multi-way loudspeaker systems utilizing active or passive electronics for optimization, and more particularly to improving the polar response of a multi-way speaker system which uses a horn-loaded high frequency driver." Col. 1, ll. 8-12. Such an improvement, moreover, points toward combining Kohut with a multi-way speaker system.

Our assessment does not stop, however, with Kohut. We "must consider the passages and references which point away from the invention as well as those said to

point toward it." *General Tire & Rubber Co. v. Firestone Tire & Rubber Co.*, 349 F.Supp 345, 359, 174 USPQ 427, 445 (N.D. Ohio 1972). "A reference teaches away impliedly when a modification or combination would render inoperable the invention disclosed in the reference." Lance Leonard Barry, *Teaching A Way Is Not Teaching Away*, 79 J. Pat. & Trademark Off. Soc'y 867, 872 (1997).

Here, we agree with the appellants that "[i]t is basic objective [sic] of Murakami et al that the several speakers should behave as a single sound source defined by the throat aperture." (Appeal Br. at 7.) In its own words, the primary reference discloses that "[t]he sound pressure produced from each of the speaker units 10, 12, . . . concentrates on the substantial center axis of . . . the throat 30a to thereby create an imaginary vibrating plane of high sound pressure density at that position." Col. 4, ll. 30-35. Regarding the examiner's proposal to "modify[] Murakami with Kohut which including [sic] a processor for applying different signals to the different speakers of Murakami," (Examiner's Answer at 4), we agree with the appellants that such a modification "would . . . result in the interference between the speaker outputs and the sound coloration that Murakami et al are trying to avoid." (Appeal Br. at 7.)

Because the examiner's proposal to apply different signals to the different speakers of Murakami would have defeated the latter's objective of arranging several

speakers to behave as a single sound source, we are not persuaded that an artisan would have been motivated to combine the references in the proposed manner despite any desire to improve the polar response of a multi-way speaker system. Therefore, we reverse the obviousness rejection of claims 10-15.

CONCLUSION

In summary, the rejection of claims 1 and 3-9 under § 102(b) and the rejection of claims 2 and 10-15 under § 103(a) are reversed.

REVERSED

KENNETH W. HAIRSTON	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
	)	
LANCE LEONARD BARRY	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS
	)	AND
	)	INTERFERENCES
	)	
	)	
STUART S. LEVY	)	
Administrative Patent Judge	)	

Appeal No. 2002-1839  
Application No. 09/199,751

Page 11

HODGSON RUSS ANDREWS WOODS & GOODYEAR  
INTELLECTUAL PROPERTY PRACTICE GROUP  
1800 ONE M & T PLAZA  
BUFFALO, NY 14203-2391