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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/223,204	09/12/2005	Volker Hohmann	03100252AA	6588
30743	7590	02/28/2013	EXAMINER	
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C. 11491 SUNSET HILLS ROAD SUITE 340 RESTON, VA 20190			FAHNERT, FRIEDRICH	
			ART UNIT	PAPER NUMBER
			2654	
			MAIL DATE	DELIVERY MODE
			02/28/2013	PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte VOLKER HOHMANN

Appeal 2011-001335
Application 11/223,204
Technology Center 2600

Before JOSEPH F. RUGGIERO, MARC S. HOFF, and
ELENI MANTIS MERCADER, *Administrative Patent Judges*.

MANTIS MERCADER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from a final rejection of claims 1-9. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

THE INVENTION

Appellant's claimed invention is directed to limiting the dynamic range of audio signals (S) providing for control of the dynamic range limiting on the basis of the instantaneous frequency of the audio signal (S) which is to be compressed as a control parameter. *See* Abstract.

Independent claim 1, reproduced below, is illustrative of the subject matter on appeal.

1. A method for limiting the dynamic range of audio signals (S), characterized by control of the dynamic range limiting on the basis of the instantaneous frequency of the audio signal (S) which is to be compressed as a control parameter.

REFERENCES and REJECTIONS

1. The Examiner rejected claims 1-3 and 6-8 under 35 U.S.C. § 103(a) as being unpatentable over Holube (US 6,198,830 B1; issued Mar. 6, 2001) in view of Jeruchim (Jeruchim et al., Simulation of communication systems, modeling, methodology, and techniques, 2nd Ed., ISBN 0-306-46267, Springer, 10/31/2000, page 256).
2. The Examiner rejected claims 4 and 5 under 35 U.S.C. § 103(a) as being unpatentable over Holube in view of Jeruchim et al. and further in view of Ludvigsen (US 6,628,795 B1; issued Sept. 30, 2003).

3. The Examiner rejected claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Holube, Jeruchim and further in view of Ludvigsen.

ISSUE

The issue is whether the Examiner erred in finding that the combination of Holube and Jeruchim teaches the limitation of a “dynamic range limiting on the basis of the instantaneous frequency of the audio signal (S) which is to be compressed as a control parameter” as recited in claim 1.

PRINCIPLE OF LAW

Our reviewing court states that “the words of a claim ‘are generally given their ordinary and customary meaning.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc)(internal citations omitted). The description in the Specification can limit the apparent breadth of a claim in two instances: (1) where the Specification reveals a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess; and (2), where the Specification reveals an intentional disclaimer, or disavowal, of claim scope by the inventor. *Id.* at 1316.

The claims, of course, do not stand alone. Rather, they are part of “a fully integrated written instrument” consisting principally of a specification that concludes with the claims. For that reason, claims “must be read in view of the specification, of which they are a part.” . . . [T]he specification “is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.”

Id. 1315 (citations omitted).

ANALYSIS

Claims 1-3 and 6-8

Appellant argues that the term “instantaneous frequency” as defined in Jeruchim has technically nothing to do with a real actual frequency (App. Br. 21). Appellant asserts that Jeruchim describes the instantaneous frequency as being the derivative of a phase modulated signal, which has nothing to do with an actual frequency (App. Br. 21).

We do not agree. Appellant’s Specification refers us to Douglas J. Nelson, “Cross-spectral methods for processing speech,” *Journal of Acoustic Society of America*, Vol. 110, No. 5, pt 1, November 2001, page 2577 for determining the instantaneous frequency according to known methods (Spec. 5:36-6:13). The Examiner quoted, from the Nelson reference, the definition of instantaneous frequency as being an “*instantaneous estimate of the rate of change of the phase with respect to time*,” and therefore representing “*a re-estimation of the frequency of the dominant signal component*” (Ans. 7). Accordingly, we do not agree with Appellant’s assertion that Jeruchim’s instantaneous frequency described as the derivative of a phase modulated signal, has nothing to do with an actual frequency (App. Br. 21). The Examiner interpreted the term “instantaneous frequency” in a manner consistent with the guidance given in Appellant’s Specification. *See Phillips.*, 415 F.3d at 1315. We note that Appellant has not contested the Examiner’s citation to the Nelson reference defining the instantaneous frequency (*see Reply Br. 1-5*).

Appellant further argues that Jeruchim discloses a mathematical model to describe a behavior of a power signal which is not the same as

limiting the audio signal by the instantaneous frequency of the signal (App. Br. 22).

We do not agree with Appellant's arguments. We agree with the Examiner that Appellant misinterpreted the teaching of Jeruchim regarding the dynamic range of a signal based on the instantaneous frequency (Ans. 7 and 8). Jeruchim provides a method where the instantaneous frequency output $f(k)$ controls the gain of the amplifier (triangle shown in Figure 5.27; pg. 256). The first equation in Jeruchim (pg. 256) shows how the amplitude of the output $y(k)$ is controlled by the instantaneous frequency $f(k)$:

$$y(k) == g[A(k)f(k)]\exp \{f\theta(k)+f\phi[A(k), f(k)]\}$$

We agree with the Examiner that in the above equation $A(k)$ is the amplitude at the output of the filter $H(f)$ and $\theta(k)$ is the corresponding phase (Ans. 7-8). The amplitude of the output signal $g[A(k)f(k)]$ is thus controlled by the instantaneous frequency (Ans. 8). Accordingly, we agree with the Examiner that Jeruchim teaches that the instantaneous frequency can control the gain of the output amplifier (*See* Ans. 3).

Holube teaches limiting the dynamic range of audio signals by variation of the compression ratio of the amplification element, particularly the AGC amplification element (col. 2, ll. 16-24). Jeruchim teaches that the instantaneous frequency can control the gain of the output amplifier as we discussed *supra*. Thus, we conclude that it would have been obvious to one skilled in the art at the time of the invention to use the teaching of Jeruchim to replace the gain control part of Holube so that the instantaneous frequency would control the gain of the output amplifier AGC.

Appellant further asserts that the "amplifier" of Jeruchim's Figure 5.27 to which the Examiner refers is not identified as an amplifier in the

conventional sense, but rather constitutes a nonlinear system characterized by a two-dimensional complex table (App. Br. 23).

We do not agree. It is conventional in the electrical engineering arts to symbolize an amplifier as a triangle as shown in Figure 5.27, and as such no further identification is needed to show that it is in fact an amplifier (*see e.g.* the operational amplifier indicated as a triangle in *Electrical Symbols & Electronic Symbols*,

http://www.rapidtables.com/electric/electrical_symbols.htm, last visited 02/25/2013). Also, there is an output $y(k)$ indicated in Figure 5.27 from the amplifier which is a function of the instantaneous frequency as discussed above. Thus, we do not agree with the Appellant's assertion that the amplifier is a nonlinear system characterized by a two-dimensional complex table.

Accordingly, we affirm the Examiner's rejection of claim 1 and for the same reasons the rejections of claims 2-4 and 6-8.

Claims 4, 5, and 9

We also affirm the Examiner's rejections of claims 4, 5, and 9 because Appellant did not present any additional arguments of patentability.

CONCLUSION

The Examiner did not err in finding that the combination of Holube and Jeruchim teaches the limitation of a "dynamic range limiting on the basis of the instantaneous frequency of the audio signal (S) which is to be compressed as a control parameter" as recited in claim 1.

Appeal 2011-001335
Application 11/223,204

DECISION

The Examiner's decision rejecting claims 1-9 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(2010).

AFFIRMED

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