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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/488,414	09/17/2014	Dirk Meister	1941/1018	9010
2101	7590	11/20/2018	EXAMINER	
Sunstein Kann Murphy & Timbers LLP 125 SUMMER STREET BOSTON, MA 02110-1618			GHAND, JENNIFER LEIGH-STEWAR	
			ART UNIT	PAPER NUMBER
			3792	
			NOTIFICATION DATE	DELIVERY MODE
			11/20/2018	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* DIRK MEISTER, MATHIAS KALS,  
and PETER SCHLEICH

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Appeal 2017-010773<sup>1</sup>  
Application 14/488,414  
Technology Center 3700

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Before RICHARD M. LEBOVITZ, TIMOTHY G. MAJORS, and  
DAVID COTTA, *Administrative Patent Judges*.

LEBOVITZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal involves claims directed to a signal processing arrangement for generating electrode stimulation signals to stimulation contacts in a cochlear implant electrode array. The Examiner rejected the claims under 35 U.S.C. § 102 as anticipated and under 35 U.S.C. § 103 as obvious. Appellants appeal the Examiner's determination that the claims are unpatentable. We have jurisdiction under 35 U.S.C. § 6(b). The §§ 102 and 103 rejections are affirmed-in-part.

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<sup>1</sup> The real-party-in-interest is listed as Med-El Elektromedizinische GmbH in the Appeal Brief ("Br.") on page 2.

## STATEMENT OF THE CASE

The Examiner finally rejected claims 1–14 as follows:

Claims 1–3, 5–10, and 12–14 under 35 U.S.C. § 102(a)(1) as anticipated by Meister et al. (U.S. Pat. Appl. Publ. 2012/0004706 A1, published Jan. 5, 2012) (“Meister”). Ans. 2.

Claims 4 and 11 under 35 U.S.C. § 103 as obvious in view of Meister. Ans. 7–8.

Independent claim 1, which is representative, is reproduced below:

1. A signal processing arrangement for generating electrode stimulation signals to stimulation contacts in a cochlear implant electrode array, the arrangement comprising:

a signal filter bank configured to transform an input sound signal into a plurality of band pass signals each representing an associated frequency band of audio frequencies;

an envelope processing module configured to process the band pass signals in a sequence of sampling time frames, wherein for each time frame, the processing includes calculating for each band pass signal at least one signal envelope higher order dynamic property that is changing during the time frame; and

a channel selection module configured to select in each time frame, one or more of the band pass signals based on the higher order dynamic properties to produce the electrode stimulation signals to the stimulation contacts.

Br. 14 (Claims Appendix).

## ANTICIPATION REJECTION

### *Rejection and issue*

Claim 1 is directed to a “signal processing arrangement for generating electrode stimulation signals to stimulation contacts in a cochlear implant electrode array.” The arrangement is claimed to comprise three components:

a signal filter bank, an envelope processing module, and a channel selection module. The Examiner found that Meister describes a signal processing arrangement with all three components recited in claim 1, anticipating the claim under 35 U.S.C. § 102. Final Act. 2–3.

Appellants do not dispute that Meister describes a signal filter bank and envelope processing module as claimed (“The teachings of the Meister reference are similar as to the first two elements.”). Br. 6. However, Appellants contend that Meister does not describe a channel selection module with all the features required by the claim. *Id.*

The claimed “channel selection module” is recited in claim 1 to be “configured to select in each time frame, one or more of the band pass signals based on the higher order dynamic properties to produce the electrode stimulation signals to the stimulation contacts.” Appellants argue that “selecting is what is novel and inventive in Claim 1 that is not taught or suggested by the Meister prior art reference.” Br. 6. Appellants contend that in claim 1 “each and every band pass signal is not used to produce the stimulation signal.” *Id.* at 10. Appellants contend that while Meister may perform different signal processing on different bandwidths, Meister processes “each of the band pass signals” such that “a corresponding Stimulation Timing Signal . . . will be generated – always.” *Id.* In contrast, Appellants contend that the claimed channel selection module is configured such that:

. . . at different moments in time, different numbers of band pass channels are used to produce the stimulation signals, sometimes there may be just a few different signal channels, at other times, there may be many different signal channels, depending [on] how “at least one signal envelope higher order dynamic property” is changing at any given moment in time.

*Id.*

The Examiner, citing paragraph 42 of Meister, found that Meister describes performing “higher order” processing on band pass signals. Ans. 9–10. The Examiner states that the disputed limitation is an “intended use” and that Meister is “configured to use one or more of the bandpass signals based on ‘higher order dynamic properties’ to produce stimulation signals to the stimulation contacts.” *Id.* at 11.

Paragraph 42 of Meister, relied upon by the Examiner as teaching the claimed channel selection module, discloses that of the 12 channels carrying band pass signals, channels 1–3 are processed differently than channels 4–12. While channels 4–12 are processed by FSL processing, “Channels 1–3 are lower frequency channels that were not selected for FSL processing . . . because their bandwidth is too low to contain unresolved harmonics of an average human speaker.” Meister ¶ 42. Rather, “Channels 1-3 are processed similar to FSP with pulses at zero-crossings of the band pass time-signal.” *Id.* Thus, while Meister applies different processing algorithms to the band pass signals, Meister uses all the channels to produce electrode stimulation signals. This fact is not disputed by the Examiner.

Appellants do not argue that the band pass signals in each channel of Meister are not subject to “higher order” processing as required by claim 1. Instead, Appellants argue that the “configured to select” language in the claim requires that the channel selection module use the higher order properties to select which channels to use “to produce the electrode stimulation signals” and that the claimed module is configured to not necessarily select all the channels to produce stimulation signals to the ear. Br. 10.

Thus, the key issue in this rejection is whether the “configured to select” limitation recited in the “channel selection module” is met by the module of Meister which uses all the channels to produce electrode stimulation signals.

*Analysis*

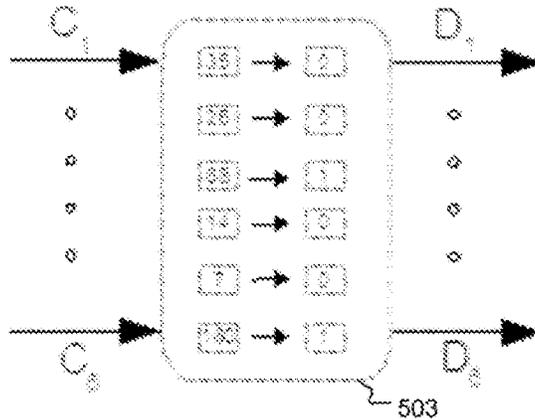
We begin with the claim language. During *ex parte* prosecution, claims are given their broadest reasonable interpretation consistent with the description of the invention in the specification. *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989). In this case, the channel selection module is “configured to select . . . one or more of the band pass signals . . . to produce the electrode stimulation signals” based “on the higher order dynamic properties.” The term “configured” is not defined in the Specification. Accordingly, we adopt its definition in a general purpose dictionary to mean “set up for operation especially in a particular way.”<sup>2</sup> Thus, the module must be set up to choose (“select”) one or more of the band pass signals to produce the electrode stimulation signals that are applied to the auditory nerve. While the claim covers the selection of only one of the band pass signals, or as many as all of the band pass signals, where each selection is based on its higher order dynamic properties, the module must be set up to choose which signals to use “to produce the electrode stimulation signals.” Accordingly, we do not agree with the Examiner that “configured to select” is simply an “intended use” of the claimed “channel selection module.

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<sup>2</sup> <https://www.merriam-webster.com/dictionary/configure> (last accessed November 7, 2018).

Rather, the module must be set up and comprise a structure that chooses a signal based on its higher order dynamic properties.

Consistent with our interpretation, Figure 6 of the Specification shows a channel selection module with a structure that selects two channels from six channels for stimulation. Spec. 34. Figure 6 is reproduced below:



As explained in the Specification, the embodiment of Figure 6 shows “m=6 input band pass channels where n=2 channels [88 and 180] with the maximum values of the dynamic property C are selected for stimulation.” Spec. ¶ 34. The Specification further discloses that the “channel selection module 503 sets the output values of the selected channels [88 and 180] to one and the remaining m-n channels are set to output values of zero (and therefore not selected for stimulation).” *Id.*

The Examiner did not establish that Meister teaches or suggests a module which selects “one or more” band pass channels to produce electrode stimulation signals as required by claim 1. The use of *all* the signals for electrode stimulation is described by Meister and covered by the claims, but that teaching is insufficient alone to meet the claim limitation because a module must also be set up to select the band pass signals based

on their higher order dynamic properties. The Examiner did not assert that Meister's disclosure described a module with that capability, but rather based the rejection on an interpretation of the claim that only required higher order dynamic properties to be applied to the band pass signals and characterized "configured to select" limitation as an intended use, which did not structurally distinguish over Meister's teachings. Because we do not agree with the Examiner's claim interpretation, we reverse the rejection of claim 1, and dependent claims 2, 3, and 5-7.

#### Claim 8

Claim 8 is a method claim which comprises a step of "selecting in each time frame, one or more of the band pass signals based on the higher order dynamic properties to produce the electrode stimulation signals to the stimulation contacts."

We decide the rejection of this claim differently than claim 1. While claim 1 is required to have a structure which can select "one or more of the bandpass signals," such a structure is not recited in claim 8. The claim is met when one or more of the band pass signals are selected. Appellants did not dispute the Examiner's finding (Final Act. 7; "Meister discloses wherein one band pass signal is selected for each time frame based on the higher order dynamic properties") that all the band pass signals in Meister are selected based on higher order dynamic properties. Consequently, we conclude that the "selecting" step is met by Meister. Appellants did not dispute that all other limitations in the claim are met by Meister. Consequently, the anticipation rejection of claim 8 is affirmed. Dependent

claims 9, 10, and 12–14 were not argued separately and thus fall with claim 8. *See* 37 C.F.R. 41.37(c)(1)(iv).

### OBVIOUSNESS REJECTION

The Examiner rejects claims 4 and 11 as obvious over Meister. Ans. 7–8. With regard to claim 4, the Examiner finds that Meister does not explicitly teach the recited limitation that the pulse scaling module follows the channel selection module, but that it would have been obvious to rearrange these modules for purposes of accuracy. *Id.* at 8. The Examiner also found the Meister does not teach the step of weighting follows the step of selecting as in claim 11, but found it would have been obvious to do so to provide higher accuracy. *Id.*

Appellants rely only on their arguments related to anticipation in responding the obviousness rejection. App. Br. 13.

For reasons explained above, Appellants' argument is persuasive as to claim 4, which depends indirectly from claim 1, and unpersuasive as to claim 11, which depends indirectly from claim 8. Accordingly, the obviousness rejection of claim 4 is reversed and the obviousness rejection of claim 11 is affirmed.

### SUMMARY

The anticipation rejection of claims 1–3 and 5–7 is reversed.

The anticipation rejection of claims 8–10 and 12–14 are affirmed.

The obviousness rejection of claim 4 is reversed.

The obviousness rejection of claim 11 is affirmed.

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TIME PERIOD

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).

AFFIRMED-IN-PART