

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ARNOLD S. LIPPA and JAMES A. NUNLEY

Appeal No. 98-0659
Application 08/264,527

ON BRIEF

Before JERRY SMITH, FLEMING, and RUGGIERO, **Administrative Patent Judges**.

FLEMING, **Administrative Patent Judge**.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 and 10-15. The Examiner has allowed claims 2-5 and objected to claims 6-9.

The invention is directed to a method and apparatus for treating a patient for symptoms caused by tinnitus through masking the tinnitus by ultrasonic frequency signals (specification, page 1, lines 1-6 and 24-27). In one

embodiment (figure 1) a generator (page 3, lines 1-5; figure 1, item numbered 10) develops noise signals which provide sensory stimuli in the auditory range. These signals are transposed into the ultrasonic frequency range by a modulator (page 3, lines 12-16; figure 1, item numbered 12). The ultrasonic noise signals are amplified (page 3, lines 21-23; figure 1, item numbered 14) and applied through an applicator (page 3, lines 26-37; figure 1, item numbered 16) to the patient's body. Disclosed (page 3, lines 26-37) exemplary applicators include electric\vibratory transducers, speakers and electrodes.

In an alternative embodiment (figure 2), the above system is used in conjunction with a second system. The second system comprises a microphone (page 4, lines 8-12; figure 2, item numbered 22) which is used to pick up auditory stimuli, such as human speech, from the environment, and convert it into electrical input signals. The signals are transposed into the ultrasonic frequency range (figure 2, item numbered 12), amplified (figure 2, item numbered 14a), and applied to the patient's body through an applicator (figure 2, item numbered 16a).

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Representative independent claims 1 and 12 are reproduced
as follows:

1. Apparatus for treating a patient for symptoms caused
by tinnitus, comprising:

means for generating a masking noise signal in an
ultrasonic frequency range; and

means for applying said masking noise signal physically
to a selected body part of said patient to alleviate said
symptoms caused by tinnitus.

12. Apparatus for treating a patient for symptoms of
tinnitus, comprising:

means for generating a masking noise signal in an
auditory frequency range;

means for applying said masking noise signal to a
selected body part of said patient to alleviate said symptoms
of tinnitus;

transducer means for converting sounds in an auditory
frequency range into audio frequency electrical signals;

ultrasonic modulator means for converting said audio
frequency electrical signals into ultrasonic frequency
electrical signals; and

means for applying said ultrasonic frequency electrical
signals physically to a selected body part of said patient.

The Examiner relies on the following references:

Shannon et al. (Shannon) 5,285,499 Feb. 8,
1994

Matsushima et al. (Matsushima), Development Of Implanted
Electrical Tinnitus Suppressor, 1994, pages 1-17

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Claim 1 is rejected under 35 U.S.C. § 102(a)¹ as being anticipated by Matsushima.

Claims 10 and 11 are rejected under 35 U.S.C. § 103 as being unpatentable over Matsushima in view of the well-known prior art.

Claims 12-15 are rejected under 35 U.S.C. § 103 as being unpatentable over Matsushima in view of Shannon.

Rather than repeat the arguments of Appellants and the Examiner, we make reference to the brief,² reply brief,³

¹The Examiner originally rejected this claim under 35 U.S.C. § 102(e). In his Supplemental Examiner's Answer the Examiner corrected the basis for this rejection to be 35 U.S.C. § 102(a). As Appellants addressed this rejection in their Appeal Brief as based upon 35 U.S.C. § 102(a), and as it is clear that 35 U.S.C. § 102(e) cannot apply to the Matsushima journal publication, this rejection is considered as made under 35 U.S.C. § 102(a).

² Appellants filed a brief on October 7, 1996.

³ Appellants filed a reply brief on December 9, 1996.

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Examiner's answer,⁴ and supplemental Examiner's answer⁵ for the details thereof.⁶

I. OPINION

After careful review of the evidence before us, we will sustain the rejection of claim 1 under 35 U.S.C. § 102(a), and the rejection of claims 11, 13 and 14 under 35 U.S.C. § 103. We do not sustain the rejection of claims 10, 12 and 15 under 35 U.S.C. § 103.

A. Rejection of Claim 1 under 35 U.S.C. § 102(a)

It is axiomatic that anticipation of a claim under 35 U.S.C. § 102 can be found only if the prior art reference discloses every element of the claim. *See In re King*, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986) and *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick*

⁴ The Examiner's Answer was mailed November 12, 1996.

⁵ The Supplemental Examiner's Answer was mailed March 6, 1997. A response by the Examiner to Appellants' Reply Brief was mailed January 8, 1997 and stated that the reply brief had been entered and considered but no further response by the Examiner was necessary.

⁶ This case was remanded to the Examiner on December 13, 1999 as paper number 14 was not in the application file. The Examiner provided a copy of paper number 14 and forwarded the file to the Board of Patent Appeals and Interferences.

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Co., 730 F.2d 1452, 1458, 221 USPQ 481, 485 (Fed. Cir. 1984).

"Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention."

RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984), **cert. dismissed**, 468 U.S. 1228 (1984), **citing Kalman v. Kimberly-Clark Corp.**, 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983) **cert. denied**, 465 U.S. 1026 (1984).

Appellants argue⁷ that Matsushima does not disclose means for generating a masking noise signal in an ultrasonic frequency range, and means for applying the masking signal physically to a patient to alleviate the symptoms caused by tinnitus. Specifically, Appellants assert that Matsushima teaches that the frequency of the stimulating signal for tinnitus relief is 10 Hz and that the 30 kHz conduction frequency relates to the magnetic coupling system between the coils of this reference and has nothing to do with the

⁷Brief, page 5, and Reply Brief, page 2.

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electrical stimulus signal applied to the coil for tinnitus treatment.

Appellants further assert that the circuit of figure 1 of this reference provides no modulation of the stimulus signal because the circuit contains no modulator.

Finally, Appellants argue⁸ that the Matsushima signal is not a masking noise signal for masking the symptoms of tinnitus, but rather is an electrical signal applied to a temporal bone for a predetermined amount of time as part of a stimulus treatment regimen.

The Examiner contends⁹ that figure 6 on page 23 of Matsushima illustrates the efficacy between the first and second coil according to stimulus frequency expressed as a relation between the gain on the y-axis and the frequency on the x-axis. As the graph says nothing about conduction frequency, the Examiner asserts that the 10 Hz signal is modulated with respect to the conduction frequency where optimization occurs around 30 kHz.

⁸ Brief, page 6, and Reply Brief, page 4.

⁹ Answer, page 6.

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The Examiner further argues¹⁰ that since figure 3 of Matsushima shows the pair of coils (stimulus and conduction coils) in a contiguous relation such as in a mixer/modulator configuration, the 10Hz signal is modulated¹¹ onto the 30 kHz conduction signal as shown by figures 3 and 6 of this reference.

In respect to Appellants' argument that the output signals of Matsushima are not applied physically to the patient to treat tinnitus, the Examiner notes line 7 of the abstract of this reference as providing for the first coil being implanted in the temporal bone of the patient's ear, thus being in physical contact with the patient. Moreover, the Examiner notes that the second coil is on the ear of the patient and thus in physical contact with the patient, and notes the picture of figure 2 for support.

The abstract of Matsushima is then cited by the Examiner to show that the Matsushima device provided complete tinnitus

¹⁰Brief, page 7.

¹¹Although the Answer uses the word "masked," it is apparent from the context of the sentence that the Examiner intended to use the word "modulated."

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suppression following twice-a-day stimulation, and this teaching is sufficient to read on the invention as claimed.

As regards Appellants' statement that the conduction frequency has nothing to do with the stimulus signal, the Examiner agrees that this is correct to some extent, and states that the conduction frequency modulates the stimulus frequency to suppress tinnitus. Furthermore, the Examiner addresses Appellants' contention that the stimulus frequency is not modulated by noting that the purpose of the stimulus signal generator is to generate the 10 Hz signal, and once generated it is modulated by the coil carrying the conduction frequency.

We note that the preamble of claim 1 recites "Apparatus for treating a patient for symptoms caused by tinnitus" The Matsushima article is replete with disclosure of an apparatus for such treatment. For example, the title to the article is "DEVELOPMENT OF IMPLANTED ELECTRICAL TINNITUS SUPPRESSOR," and the abstract of the article notes the treatment of 2 tinnitus patients. In addition, sections 5-7 of the article discuss implantation of the device in the

patients, evaluation of the tinnitus suppressor, and the results of its use on the patients.

Next, this claim recites "means for generating a masking noise signal in an ultrasonic frequency range." Initially, it is noted that Appellants have described¹² an embodiment of their invention wherein electromagnetic signals are applied to the patient's body by electrodes. The signals are in the ultrasonic frequency range which Appellants recognize¹³ to be above 20,000 hertz and extending to approximately the 100,000 hertz range, with an ultrasonic carrier of 25,000 to 30,000 hertz being found to work well. Claim 11, which is dependent from claim 1, is directed to this mode of electrode application of such signals to a patient.

Appellants have admitted¹⁴ that the Matsushima signal is an electrical signal applied to the patient. The article is also replete¹⁵ with references to their device providing

¹² Specification, page 3, lines 35-37.

¹³ Specification, page 3, lines 12-17.

¹⁴ Brief, page 6, and Reply Brief, page 3.

¹⁵ See, inter alia, sections 2, 5.2, 6.4 and 9; figures 1-3.

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electrical stimulation and using electrodes. Furthermore, Matsushima discloses¹⁶ using a carrier frequency near 30 kHz and stimulation signals of which 10 Hz, which was the lowest frequency among the comparisons, and the one which most strongly suppressed the tinnitus. Thus the Matsushima tinnitus suppressor operates in the ultrasonic frequency range.

Therefore, as both Matsushima's and Appellants' apparatus supply electrical noise signals in the ultrasonic frequency range to the patient, this section of the claimed "means for generating a masking noise signal in an ultrasonic frequency range" is disclosed by Matsushita.

Finally, claim 1 recites "means for applying said masking noise signal physically to a selected body part of said patient to alleviate said symptoms caused by tinnitus." These means are the electrodes which are implanted in the patient's ear as discussed in the second paragraph above.

Appellants' argument that Matsushima teaches that the 30 kHz conduction frequency relates to the magnetic coupling system between the coils of this reference and has nothing to

¹⁶ Section 8, first paragraph.

do with the electrical stimulus signal applied to the coil for tinnitus treatment is found unavailing as Matsushima also teaches the carrier frequency to be near 30 kHz, as found above. Similarly, Appellants' assertion that the circuit of figure 1 of Matsushima provides no modulation of the stimulus signal because the circuit contains no modulator, is unavailing because of Matsushima's disclosure of using a carrier frequency which is modulated by a stimulation frequency.¹⁷

Accordingly, we sustain the rejection of claim 1 under 35 U.S.C. 102(a).

B. Rejection of claims 10 and 11 under 35 U.S.C. § 103

Appellants argue¹⁸ generally that the limitations of these claims are not suggested by the prior art. Appellants then assert that there is no factual basis for the proposition in the final rejection that the Matsushima coil vibrates, and that it is well known that an inductive coil such as that of

¹⁷Note, inter alia, section 7.1 where Matsushima discusses the use of modulation frequencies of 10, 100 and 1000 Hz upon a carrier signal.

¹⁸Brief, page 6.

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Matsushima et al can not function as transducer as alleged in the Office action.

As regards claim 11, Appellants argue that Matsushima fails to disclose the use of an electrode as an applicator means as claimed.

The Examiner asserts¹⁹ that as Matsushima teaches a pair of coils (electrodes), one of which is implanted in the ear and generates conduction and stimulus frequencies, at least one of the coils must vibrate. The Examiner then reasons that as Appellants do not know what type of coil Matsushima used, their statement that the reference's coil is like other coils is opinion without factual basis. Furthermore, the Examiner asserts that without the coils vibrating the suppression of tinnitus could not be realized.

Finally, the Examiner cites lines 7 and 8 of the abstract of Matsushima to show that one of the coils is implanted inside the temporal bone, and asserts that this coil causes the bone about the ear to vibrate.

As regards to claim 10, we find that the Examiner has failed to set forth a **prima facie** case. It is the burden of

¹⁹ Answer, page 4.

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the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found in the prior art, or by implications contained in such teachings or suggestions. **In re Sernaker**, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). "Additionally, when determining obviousness, the claimed invention should be considered as a whole; there is no legally recognizable 'heart' of the invention." **Para-Ordnance Mfg. Inc., v. SGS Importers Int'l, Inc.**, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995), **cert. denied**, 519 U.S. 822 (1996) **citing W.L. Gore & Assocs., Inc. v. Garlock, Inc.**, 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), **cert. denied**, 469 U.S. 851 (1984).

We find that the Examiner's contention that one of the coils of Matsushima must vibrate is without adequate foundation. Matsushima is devoid of any teaching that a coil comprises an electric/vibratory transducer and no evidence has been provided to support the contention that such coil must vibrate. Furthermore, Matsushima discloses their device to operate by **electrical** tinnitus suppression, as we have discussed above, and not by vibration.

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We are not inclined to dispense with proof by evidence when the proposition at issue is not supported by a teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration. Our reviewing court requires this evidence in order to establish a **prima facie** case. **In re Piasecki**, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984); **In re Knapp-Monarch Co.**, 296 F.2d 230, 232, 132 USPQ 6, 8 (CCPA 1961); **In re Cofer**, 354 F.2d 664, 668, 148 USPQ 268, 271-72 (CCPA 1966). Furthermore, our reviewing court states in **In re Piasecki**, 745 F.2d at 1472, 223 USPQ at 788 the following:

The Supreme Court in **Graham v. John Deere Co.**, 383 U.S. 1 (1966), focused on the procedural and evidentiary processes in reaching a conclusion under Section 103. As adapted to ex parte procedure, Graham is interpreted as continuing to place the "burden of proof on the Patent Office which requires it to produce the factual basis for its rejection of an application under section 102 and 103". **Citing In re Warner**, 379 F.2d 1011, 1020, 154 USPQ 173, 177 (CCPA 1967).

Therefore, we will not sustain the rejection of claim 10 under 35 U.S.C. § 103 as being unpatentable over Matsushima.

As to claim 11, we note that this claim further limits claim 1 only in that the applying means comprises an

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electrode. As we have found above that Matsushima uses electrodes to apply the electrical signal to the patient, this claim is obvious over Matsushima. "[A] disclosure that anticipates under Section 102 also renders the claim invalid under Section 103, for 'anticipation is the epitome of obviousness." *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548, 220 USPQ 193, 198 (Fed. Cir. 1983) (citing *In re Fracalossi*, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982)).

Therefore, we will sustain the rejection of claim 11 under 35 U.S.C. § 103 as being unpatentable over Matsushima.

C. Rejection of claims 12-15 under 35 U.S.C. § 103

As regards to claim 12, Appellants argue²⁰ generally that neither Matsushima nor Shannon discloses the features of the invention therein claimed, and thus no combination of these references would result in the claimed invention.

²⁰ Brief, page 7.

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Specifically, Appellants assert that Matsushima does not disclose applying a noise signal to the body, or the production of an auditory frequency range signal. In addition, Appellants again assert that the coils of Matsushima do not constitute transducer means.

As regards to the Shannon reference, Appellants note that this reference is not concerned with treatment of tinnitus symptoms and as such is irrelevant to both the claimed invention as well as [the Matsushima]. Appellants also assert that no purpose has been articulated in the final Office action for the proposed modification to "modulat[e] the conduction frequency with the stimulus frequency of Matsushima et al" as stated in the office action.

Finally, Appellants argue²¹ that the Office action fails to explain the proposed modification of the Matsushima device in view of Shannon, and that there is no modulator in the Matsushima device.

The Examiner asserts²² that the signal generator shown by figure 1 of Matsushima generates a 10 Hz signal among other

²¹ Brief, page 8.

²² Answer, page 10.

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signals, and the 10 Hz signal yields optimal results for tinnitus suppression. In addition, the Examiner reiterates that the signal is applied to the patient's body by the implant to the patient's skull bone surrounding the inner ear and the other coil placed in the hearing aid housing which is placed around the patient's ear.

As evidence that Matsushima uses an auditory signal, the Examiner notes that 10 Hz and 30 kHz, the stimulus and conduction frequencies respectively, yielded optimum results for tinnitus suppression but that figure 6 and section 6.1 show that other frequencies which are in the auditory range can be chosen.

Finally, the Examiner admits that Matsushima does not specifically refer to an ultrasonic modulator, and cites Shannon to show modulation of frequencies which are ultrasonic as well as in the audio range. In the rejection,²³ the Examiner finds that since Matsushima and Shannon are both directed to audio signals and ultrasonic signals, the modulating of audio signals into the ultrasonic frequency range as disclosed by Shannon would have been recognized in

²³ Brief, page 5.

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the pertinent art of Matsushima. Then the Examiner finds that it would have been obvious to a person having ordinary skill in the art, at the time the invention was made, to combine the teachings of these two references for the purpose of modulating the conduction frequency with the stimulus frequency of Matsushima in order to make the present invention.

As regards to claim 12, we find that the Examiner has failed to set forth a *prima facie* case. As we stated above, it is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found in the prior art, or by implications contained in such teachings or suggestions. We are not inclined to dispense with proof by evidence when the proposition at issue is not supported by a teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration.

The Federal Circuit states that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." **In**

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re Fritch, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), **citing In re Gordon**, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). "Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor." **Para-Ordnance**, 73 F.3d at 1087, 37 USPQ2d at 1239, **citing W. L. Gore & Assocs.**, 721 F.2d at 1551, 1553, 220 USPQ at 311, 312-13. In addition, our reviewing court requires the Patent and Trademark Office to make specific findings on a suggestion to combine prior art references. **In re Dembiczak**, 175 F.3d 994, 1000-01, 50 USPQ2d 1614, 1617-19 (Fed. Cir. 1999). As pointed out by our reviewing court, we must first determine the scope of the claim. "[T]he name of the game is the claim." **In re Hiniker Co.**, 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998).

Claim 12, lines 7 and 8, provides "transducer means for converting sounds in an auditory frequency range into audio frequency electrical signals." This limitation is not disclosed by Matsushima and the Examiner points to Shannon for its teaching of such a transducer. However, Shannon is not concerned with the treatment of tinnitus symptoms. This

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reference is directed to translating audiometric signals into the ultrasonic range, which can be delivered by an ultrasonic transducer, to allow an individual to perceive the ultrasonic signal as audible sound.

Merely because Matsushima and Shannon are directed in some manner to audio and ultrasonic signals does not provide a basis for the claimed use of a transducer for converting sounds in an auditory frequency range into audio frequency electrical signals. This finding is further supported by the earlier claim limitation²⁴ of "means for generating a masking noise signal in the ultrasonic frequency range." There is clearly no need in Matsushima for both the signal generator and the converter as claimed.

Therefore, we will not sustain the rejection of claim 12 under 35 U.S.C. § 103 as being unpatentable over Matsushima when taken with Shannon.

As regards claim 13, Appellants argue²⁵ generally that neither Matsushima nor Shannon suggests the claimed method. Specifically, Appellants assert that Matsushima does not teach

²⁴ Brief, page 10, lines 3-4.

²⁵ Brief, page 8.

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the generation of a masking noise signal, does not teach the use of an ultrasonic masking noise signal, and fails to show the conversion of an electrical signal into a human sensory signal. Appellants then assert that Shannon fails to cure these deficiencies.

In addition, Appellants argue that since Matsushima does not apply an audiometric signal to a patient, there is nothing in Matsushima which would be modified by Shannon.

As regards to claim 14, Appellants argue that neither of these references teaches the generation of a first audio frequency masking signal and transposing it to an ultrasonic frequency range.

Regarding claim 15, Appellants argue that neither reference teaches the step of converting the masking noise signal of claim 14 into a vibratory signal.

We note that the preamble of claim 13 recites "[a] method for treating a patient for symptoms of tinnitus" The Matsushima article is replete with disclosure of methods and apparatus to be used with the method for such treatment. For example, the title to the article is "DEVELOPMENT OF IMPLANTED ELECTRICAL TINNITUS SUPPRESSOR," and the abstract of the

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article notes the treatment of 2 tinnitus patients. In addition, sections 5-7 of the article discuss implantation of the device in the patients, evaluation of the tinnitus suppressor, and the results of its use on the patients.

Next, this claim recites "generating a masking noise signal in an ultrasonic frequency range." We again note that Appellants have described²⁶ an embodiment of their invention wherein electromagnetic signals are applied to the patient's body by electrodes. The signals are in the ultrasonic frequency range which Appellants recognize²⁷ to be above 20,000 hertz and extending to approximately the 100,000 hertz range, with an ultrasonic carrier of 25,000 to 30,000 hertz being found to work well. Claim 11 is directed to this mode of electrode application of such signals to a patient.

Appellants have admitted²⁸ that the Matsushima signal is an electrical signal applied to the patient. The article is

²⁶ Specification, page 3, lines 35-37.

²⁷ Specification, lines 12-17.

²⁸ Brief, page 6.

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also replete²⁹ with references to their device providing electrical stimulation and using electrodes. Furthermore, Matsushima discloses³⁰ using a carrier frequency near 30 kHz and stimulation signals of which 10 Hz, which was the lowest frequency among those compared, and the one which most strongly suppressed the tinnitus. Thus, the Matsushima tinnitus suppressor operates in the ultrasonic frequency range.

Therefore, as both Matsushita's and Appellants' apparatus supply electrical noise signals in the ultrasonic frequency range to the patient, the claimed "generating a masking noise signal in an ultrasonic frequency range" is disclosed by Matsushima.

Claim 13 then recites "converting said masking noise signal into a human sensory signal." The circuitry disclosed by Matsushima at section 2 and figure 1 provide such conversion through the application of the electrical signal to

²⁹ See, inter alia, sections 2, 5.2, 6.4 and 9; figures 1-3.

³⁰ Section 8, first paragraph.

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the patient's body where it is sensed by the tinnitus suppression and drowsiness it engenders.

Finally, claim 13 recites "applying said sensory signal to a selected body part of said patient to alleviate said symptoms of tinnitus." These means are the electrodes of Matsushima which are implanted in the patient's ear as discussed in the second paragraph above.

Appellants' arguments that Matsushima fails to disclose the application of audiometric signals to a patient is unavailing as this claims fails to recite such limitation.

As regards to claim 14, we find that Matsushima discloses³¹ using stimulation waveforms modulated by 100 Hz or 1000 Hz (both clearly in the audio frequency range), and a carrier frequency of near 30 kHz,³² in the ultrasonic frequency range. While Matsushima teaches that 1000 Hz was least effective for the suppression and 10 Hz was most effective for the suppression, the use of the audio range signals is none-the-less clearly disclosed. We also note Matsushima's disclosure of using a carrier frequency which is modulated by

³¹ Sections 6.1 and 7.1.

³² Section 8.

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a stimulation frequency.³³ Thus, Matsushima discloses all the steps of this claim.

As we have found above that Matsushima discloses all the limitations of claims 13 and 14, these claims are obvious over Matsushima. "[A] disclosure that anticipates under Section 102 also renders the claim invalid under Section 103, for 'anticipation is the epitome of obviousness.'" **Connell** 722 F.2d at 1548, 220 USPQ at 198 (**citing Fracalossi**, 681 F.2d at 794, 215 USPQ at 571).

Therefore, we will sustain the rejection of claims 13 and 14 under 35 U.S.C. § 103 as being unpatentable over Matsushima.

As regards to claim 15, we find that the Examiner has failed to set forth a **prima facie** case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found in the prior art, or by implications contained in such teachings or suggestions.

³³ See, **inter alia**, section 7.1 where Matsushita et al discusses the use of modulation frequencies of 10, 100 and 1000 Hz upon a carrier signal.

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We here again repeat our finding above as to claim 10, that the Examiner's contention that one of the coils of Matsushima must vibrate is without adequate foundation. Matsushima is devoid of any teaching that a coil comprises an electric/vibratory transducer and no evidence has been provided to support the contention that such coil must vibrate. Furthermore, [the Matsushima] disclose their devices to operate solely by **electrical** tinnitus suppression.

We are not inclined to dispense with proof by evidence when the proposition at issue is not supported by a teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration.

Therefore, we will not sustain the rejection of claim 15 under 35 U.S.C. § 103 as being unpatentable over Matsushima when taken with Shannon.

Accordingly, we affirm the rejection of claims 13 and 14 under 35 U.S.C. § 103 and reverse the rejection of claim 15 under 35 U.S.C. § 103.

We have sustained the rejection of claim 1 under 35 U.S.C. § 102(a), and the rejection of claims 11, 13 and 14

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under 35 U.S.C. § 103. We do not sustain the rejection of claims 10, 12 and 15 under 35 U.S.C. § 103.

II. NEW GROUNDS OF REJECTION

We make the following new grounds of rejection for claim 12 under 35 U.S.C. § 103, pursuant to 37 CFR § 1.196(b). The new grounds of rejection are based on Matsushima taken with Shannon, for reasons other than given by the Examiner.

New grounds of rejection under 35 U.S.C. § 103

Claim 12 is rejected under 35 U.S.C. § 103 as obvious over Matsushima and Shannon.³⁴

All of the claimed elements of the claimed apparatus are written in means-plus-function language. Except for the claim subparagraphs directed to transducer means and ultrasonic modulator means, the remaining subparagraphs all recite a means for performing a specified function without the recital of structure to perform the claimed function. See 35 U.S.C. § 112, Para. 6 (1994); **Cole v. Kimberly-Clark Corp.**, 102 F.3d 524, 531, 41 USPQ2d 1001, 1006 (Fed. Cir.), **cert. denied** 522

³⁴ We note that although both Matsushima and Shannon were applied by the Examiner against this claim under a 35 U.S.C. § 103 rejection, Appellants did not present any 35 U.S.C. § 112, sixth paragraph, analysis or present any arguments of "non-equivalence" thereunder.

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U.S. 812 ("To involve [Section 112, Para. 6], the alleged means-plus-function claim element must not recite a definite structure which performs the described function.") The proper construction of a means-plus-function claim limitation requires interpreting the limitation in light of the corresponding structure, material, or acts described in the written description, and equivalents thereof, to the extent that the written description provides such disclosure. **See In re Donaldson Co.**, 16 F.3d 1189, 1193, 29 USPQ2d 1845, 1848 (Fed. Cir. 1994) (in banc). Structure disclosed in the written description is "corresponding" to the claimed means under Section 112, Para. 6, if the structure is linked by the written description or the prosecution history to the function recited in the claim. **See B. Braun Medical, Inc. v. Abbott Labs.**, 124 F.3d 1419, 1424, 43 USPQ2d 1896, 1990 (Fed. Cir. 1997); **see also Chiuminatta Concrete Concepts Inc. v. Cardinal Indus., Inc.**, 145 F.3d 1303, 1308, 46 USPQ2d 1752, 1755-56 (Fed. Cir. 1998).

In the first subparagraph of this claim, the specific function associated with the means limitation is generating a masking noise signal in an auditory frequency range.

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The only structure disclosed³⁵ for implementing the aforesaid function of the "means" is the noise signal generator.

The means-plus-function clause is construed as limited to the corresponding structure disclosed in the specification and equivalents thereof. This structure is met by the circuit of figure 1, and the modulation recited at sections 7.1 and 8 of Matsushima. ***Pennwalt Corp. v. Durand-Wayland, Inc.***, 833 F.2d 931, 4 USPQ2d 1737 (Fed. Cir. 1987), ***cert. denied***, 484 U.S. 961 (1988). As Appellants' embodiment and Matsushima apply a modulating signal in an auditory frequency range upon a carrier signal in the ultrasonic frequency range, they perform the same function. As Appellants have not disclosed any particular circuitry for the masking signal generator, and show only a "black box," the generators are equivalent. They perform the same claimed function in substantially the same way to achieve substantially the same result.³⁶

³⁵ Specification, page 3, lines 1-11, and item 10 of figures 1 and 2.

³⁶ ***Dawn Equipment Co. v. Kentucky Farms, Inc.***, 140 F.3d 1009, 1019-20, 46 USPQ2d 1109, 1116 (Fed. Cir. 1998).

In the second subparagraph of this claim, the specific function associated with the means limitation is "applying said masking noise signal to a selected body part of said patient to alleviate said symptoms of tinnitus." One of the means disclosed³⁷ by Appellants for implementing the aforesaid function of the "means" is an electrode.

This means-plus-function clause is construed as limited to the corresponding structure disclosed in the specification and equivalents thereof. This structure is met by the electrodes which are attached to the patient as recited at sections 2, 5.2, 6.4 and 9, and shown in figures 1-3, of Matsushima. As Appellants' embodiment and Matsushima both use electrodes to apply their noise signal, they perform the same function and as Appellants have not disclosed any particular electrodes for applying the signal to the patient, the electrodes of Matsushima are an equivalent. They perform the same claimed function in substantially the same way to achieve substantially the same result.

³⁷ Specification, page 3, lines 35-37, and claim 11.

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The third and fourth subparagraphs of this claim recite specific means for performing the claimed function. The third subparagraph provides for a "transducer" to perform the function of converting sounds in an auditory frequency range into audio frequency electrical signals. The fourth subparagraph provides an "ultrasonic modulator" to perform the function of converting the audio frequency signals into ultrasonic frequency electrical signals. Thus, these subparagraphs collapse the assumption that 35 U.S.C. § 112, sixth paragraph, is invoked.³⁸

In the final subparagraph of this claim, the specific function associated with the means limitation is "applying said ultrasonic frequency electrical signals physically to a

³⁸ *See Personalized Media Communications, LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 704-05, 48 USPQ2d 1880, 1887 (Fed. Cir. 1998) (finding that "digital detector" could not be construed as means-plus-function limitation; "detector" is not generic structural term, but rather had well-known meaning to those skilled in the art); *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583, 39 USPQ2d 1783 (Fed. Cir. 1996) (Section 112, para. 6, could not apply to "detent mechanism" simply because claim took its name from function; "detent" had well understood meaning in the art); *Cole*, 102 F.3d at 531, 41 USPQ2d at 1006 (no means-plus-function treatment where claim described both structure and location).

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selected body part of said patient." The means disclosed³⁹ by Appellants for implementing the aforesaid function of the "means" is an applicator 16a.

This means-plus-function clause is construed as limited to the corresponding structure disclosed in the specification and equivalents thereof. This structure is met by the ultrasonic transducer 12 and headset 14 of Shannon. As Appellants' embodiment and Shannon both apply ultrasonic frequency signals physically to the patient, they perform the same function and as Appellants have not disclosed any particular applicator for applying the signal to the patient, the transducer and headset of Shannon are an equivalent. They perform the same claimed function in substantially the same way to achieve substantially the same result.

Having established the applicability of 35 U.S.C. § 112, sixth paragraph, as regards this claim, we turn to the prior art. The preamble of claim 1 recites "[a]pparatus for treating a patient for symptoms caused by tinnitus" The Matsushima article is replete with disclosure of an apparatus for such treatment. For example, the title to the

³⁹ Specification, page 4, lines 22-25.

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article is "DEVELOPMENT OF IMPLANTED ELECTRICAL TINNITUS SUPPRESSOR," and the abstract of the article notes the treatment of 2 tinnitus patients. In addition, sections 5-7 of the article discuss implantation of the device in the patients, evaluation of the tinnitus suppressor, and the results of its use on the patients for treating a patient for symptoms of tinnitus.

The means recited in the first two subparagraphs of this claim are met by Matsushima as set forth above in the means-plus-function analysis.

Shannon teaches the last three means recited in this claim. The hearing aid of Shannon uses a transducer to convert speech sounds to an electrical signal $S(t)$ in the audio frequency. See figures 1 and 2, and column 3, lines 41-43. Elements 2-16 of Shannon convert the audio frequency electrical signals into ultrasonic frequency electrical signals. Components 12 and 14 of Shannon apply the ultrasonic frequency electrical signals physically to the patient.

Thus, Matsushima discloses the tinnitus treating component of this claim and Shannon discloses the aid for improved hearing of speech. We find that it would have been

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obvious to one of ordinary skill in the art to combine it with the enhanced hearing aid which Shannon teaches⁴⁰ is for the hearing impaired and is designed for use in high noise and high-interference environments. As tinnitus patients suffer from ringing and other noises, and as both patients of Matsushima had hearing impairments⁴¹ in addition to tinnitus, it would have been obvious to use both the apparatus for the suppression of tinnitus as disclosed by Matsushima and the apparatus for improved hearing of sound as disclosed by Shannon for these patients.

III. CONCLUSION

This decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b). 37 CFR § 1.196(b) provides that "[a] new ground of rejection shall not be considered final for purposes of judicial review."

37 CFR § 1.196(b) also provides that the appellants, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new

⁴⁰ Column 3, lines 41-51.

⁴¹ Sections 5.1.1 and 5.1.2.

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ground of rejection to avoid termination of proceedings (37
CFR § 1.197(c)) as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner

(2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART AND 37 CFR § 1.196(b)

JERRY SMITH)
Administrative Patent Judge))
)
)
) BOARD OF PATENT
MICHAEL R. FLEMING)
Administrative Patent Judge) APPEALS AND
)

