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EXAMINER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte HORST BURGHARDT MINKOFSKI

Appeal 2017-003994
Application 11/265,408
Technology Center 2600

Before DEBRA K. STEPHENS, SHARON FENICK, and
DAVID J. CUTITTA II, *Administrative Patent Judges*.

FENICK, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) from the Examiner’s final rejection of claims 1–5. Appeal. Br. 3. Claims 6, 8, 17, 20, and 28–35 are allowed. *Id.* We have jurisdiction under 35 U.S.C. § 6(b)(1).

We affirm-in-part.

Invention

Appellant’s invention “relates to the field of sound baffling devices, and more particularly the use of an enclosure containing a vacuum to baffle sound.” Spec. 1.

Exemplary Claims

Claims 1 and 4, reproduced below with certain limitations emphasized, are exemplary:

1. A hermetically sealed enclosure having an internal pressure ranging from atmospheric to a high vacuum and comprising a force generating means for regulating a property of said hermetically sealed enclosure,

said force generating means selected from the group consisting of an electrostatic force generating means, and a strut force generating means containing a transduction circuit, said transduction circuit hermetically enclosed within said strut force generating means,

and;

wherein said property is selected from the group consisting of a thermal property, and a characteristic acoustic impedance,

so that said force generating means is effective to regulate said thermal property, and said characteristic acoustic impedance.

4. The hermetically sealed enclosure of claim 1 further comprising a sound absorbing material enclosed within said hermetically sealed enclosure, wherein;

said sound absorbing material is prevented from contacting the enclosure walls directly and;

the incident sound transmitted through said hermetically sealed enclosure into said sound absorbing material is inversely proportional to said characteristic acoustic impedance, so that when said characteristic acoustic impedance is decreased the incident sound transmitted through said hermetically sealed enclosure and absorbed by said sound absorbing material is increased, or;

when said characteristic acoustic impedance is increased the incident sound transmitted through said hermetically sealed enclosure and absorbed by said sound absorbing material is decreased,

so that by varying said characteristic acoustic impedance of said hermetically sealed enclosure, the absorption and reflection of the sound incident on said hermetically sealed enclosure is regulated.

Rejections

The Examiner rejects claims 1–3 under pre-AIA 35 U.S.C. § 103(a) as unpatentable over Ledonne (US 5,125,031; issued June 23, 1992) and Nakamura (US 2001/0005422 A1; pub. June 28, 2001). Final Action 3–6.

The Examiner rejects claim 4 under pre-AIA 35 U.S.C. § 103(a) as unpatentable over Ledonne, Nakamura, and Parker et al. (US 2005/0094837 A1; pub. May 5, 2005). Final Action 7–8.

The Examiner rejects claim 5 under pre-AIA 35 U.S.C. § 103(a) as unpatentable over Ledonne, Nakamura, and Wang et al. (US 2005/0089184 A1; pub. Apr. 28, 2005). Final Action 8–11.

Issues

A. Did the Examiner err in finding that the combination of Ledonne and Nakamura teaches or suggests “a force generating means for regulating a property of said hermetically sealed enclosure . . . wherein said property is selected from the group consisting of a thermal property, and a characteristic acoustic impedance, so that said force generating means is effective to regulate said thermal property, and said characteristic acoustic impedance,” as recited in claim 1?

B. Did the Examiner err in finding that the combination of Ledonne and Nakamura teaches or suggests “[a] hermetically sealed enclosure having an

internal pressure ranging from atmospheric to a high vacuum” as recited in claim 1?

C. Did the Examiner err in combining Ledonne and Nakamura?

D. Did the Examiner err in finding that the combination of Ledonne and Nakamura teaches or suggests the regulation of a thermal property, wherein “said thermal property is a thermal impedance” as recited in claims 2 and 3?

E. Did the Examiner err in finding that the combination of Ledonne, Nakamura, and Parker teaches or suggests claim 4?

Analysis

A: “characteristic acoustic impedance”

The Examiner finds that the combination of Ledonne and Nakamura teaches the regulation of the characteristic acoustic impedance of a hermetically sealed enclosure in Nakamura’s sealed enclosure with electrostatic speakers affixed to the surface of the speaker box, which the Examiner finds “produce sound pressure that will generate/regulate acoustic properties (including acoustic impedance) within the speaker box.” Final Action 2 (citing Nakamura ¶ 19), 4. The Examiner notes that the definition of characteristic acoustic impedance is not in the claim, and thus, finds the cited teachings of Nakamura, in teaching a change in acoustic impedance, teaches or suggests the regulation of characteristic acoustic impedance of claim 1. Answer 10; Final Action 2.

Appellant argues that the characteristic acoustic impedance is “known and used in the acoustic art, and therefore requires no further explanation.” Reply Br. 6. Appellant further argues that the acoustic impedance described by the Examiner is different than characteristic acoustic impedance, which is

a characteristic of a medium through which sound will travel. Appeal Br. 6–9, 14–15, 16; Reply Br. 4–5, 5–7. Appellant’s Specification appears to support its argument that the acoustic impedance described is a characteristic of a medium in an enclosure, rather than of the enclosure. Spec. 3 (“[A] means for admitting and removing . . . is capable of admitting and removing *fluids having different densities and acoustic impedances to and from the enclosure.*” (Emphasis added))

However, the Examiner finds that the speaker box of Nakamura changes the acoustic impedance by changing the shape of the sealed enclosure. Final Action 4; Answer 10, 11–12. And, as the Appellant admits, a change in shape in an enclosure may change the volume of the enclosure, which can change the density of the gas in the enclosure, and consequently, would change the characteristic acoustic impedance. Appeal Br. 11–12 (“[T]here may be a momentary change in shape [of the Nakamura speaker box].”; “Increasing the volume of the enclosure . . . result[s] in a decrease in the characteristic acoustic impedance.”); *Id.* at 18 (“[T]he operation does not produce any permanent change but rather oscillatory change, which will cease to exist when the speaker is turned off. In any event there is no change in the characteristic acoustic impedance *that falls within the ‘is effective to’ standard.*” (Emphasis added)).

While Appellant argues that the “net change” in shape and characteristic acoustic impedance is zero, because the change in shape is “momentary,” this argument is not commensurate with the scope of the claim, which requires only regulation of characteristic acoustic impedance and not a change lasting more than any specified length of time. Appeal Br. 11. Additionally, with respect to “effective to,” Appellant argues that

“[t]he prior art does not show an electrostatic force generating means capable of controlling a range of ambient pressure equivalent to what is shown by the [A]pplicant’s invention (indicated by the ‘effective to’ wording).” Appeal Br. 7; Reply Br. 4–5. Additionally, Appellant argues, with respect to specific acoustic impedance, that any change due to the pressure generated by the Nakamura speaker “is not capable of providing a permanent change in specific acoustic impedance at all.” *Id.* at 11. These arguments by Appellant, however, are also not commensurate with the scope of the claims. While the claims do require that “said force generating means is effective to regulate said thermal property, and said characteristic acoustic impedance” the claim term does not require the argued degree of effectiveness and Appellant does not specify how “effective”-ness can be judged or that the control would require a permanent change. We do not agree that the broadest reasonable interpretation of this term should be narrowed, as argued by Appellant, to require a permanent change.

Thus, we are not convinced by Appellant’s arguments of error in the Examiner’s conclusion that characteristic acoustic impedance is regulated as required by claim 1 in the proposed combination of Ledonne and Nakamura.

B: “[a] hermetically sealed enclosure having an internal pressure ranging from atmospheric to a high vacuum”

The Examiner finds that Ledonne, in combination with Nakamura, teaches “[a] hermetically sealed enclosure having an internal pressure ranging from atmospheric to a high vacuum,” as recited in claim 1. Final Action 4. Appellant argues that the range of the vacuum taught in Ledonne is much smaller than the range indicated in the claim. Appeal Br. 13. However, the disclosure in the prior art of any value within a claimed range is sufficient to establish a prima facie case of obviousness. *Cf. In re*

Wertheim, 541 F.2d 257, 267 (CCPA 1976) (the disclosure in the prior art of any value within a claimed range is an anticipation of the claimed range).

Appellant argues unexpected results with respect to the selection of the range in claim 1. Appeal Br. 16. This would be more applicable were the claim to include a limitation to a subrange of a range disclosed in the prior art, rather than the opposite, as is the present case. *See, e.g., In re Malagari*, 499 F.2d 1297, 1302 (CCPA 1974). In any case, the Appellant presents no evidence of such results nor discusses them specifically.

Appellant's burden is to show that the results are surprising or unexpected compared to those taught by the closest prior art. *See In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991). This burden has not been met.

Thus, we are not convinced by Appellant's arguments of error in the Examiner's conclusion that Ledonne, in combination with Nakamura, teaches or suggests a hermetically sealed enclosure with the claimed range of internal pressure.

C: Combination of Ledonne and Nakamura

Appellant presents arguments that appear to relate to the combination of Ledonne and Nakamura. Specifically, Appellant argues that there is a requirement for a "strict basis in record evidence as a reason to modify the prior art." Appeal Br. 6. However, Appellant does not address the reason provided by the Examiner for the modification. *See* Final Action 4.

Appellant also appears to argue that the prior art is not analogous prior art. Appeal Br. 6–7. This appears to be related to a prior rejection over different prior art. *Id.* at 6 (discussing that "the prior art presented consists of a hearing aid (US Patent Pub. 20040264725 A1)"). Prior art is analogous when it is (1) from the same field of endeavor as the claimed invention; or

(2) reasonably pertinent to the particular problem faced by the inventor, if the art is not from the same field of endeavor. *In re Bigio*, 381 F.3d 1320, 1325–26 (Fed. Cir. 2004). Appellant does not argue, except with respect to the hearing aid reference (US 2004/0264725 A1), which is not used in the rejections at issue in this appeal, that the prior art is not in the same field of the endeavor as the claimed invention or reasonably pertinent to the particular problem faced by the inventor. *See* Appeal Br. 6. In fact, each reference relates to an acoustic device or speaker, and Appellant’s invention includes “ear phone” or headphone devices which include such speakers. Appeal Br. 7; Spec. 75. Accordingly, we are not persuaded the art is from a different field of endeavor as the claimed invention.

Thus, we are not convinced by Appellant’s arguments of error in the Examiner’s combination of Ledonne and Nakamura.

Additional Arguments and Conclusion with respect to Claims 1 and 5

Appellant presents several additional arguments with respect to claim

1. First, Appellant argues that:

It is important to note that the transduction circuit in claim 1, as described in the [S]pecification, shows transducers that are embedded in the framework of an enclosure with fixed walls; in the frame and in the struts. None of these transducers may be found on the surface of any part of the framework of the enclosure. Therefore piezoelectric speakers on the surface of a computer, since they are not embedded, cannot be prior art, since the combination of the elements would be different.

Appeal Br. 7, 15. However, the claim recites the “force generating means” is “selected from the group consisting of an electrostatic force generating means[] and a strut force generating means.” The Examiner relies on “electrostatic force generating means,” not “strut generating means” to teach the recited “force generating means” while Appellant appears, in this portion

of the Appeal Brief, to be arguing “strut generating means.” *See* Final Action 4; Answer 2. Additionally, Appellant’s discussion appears to focus on elements described in the Specification but not claimed, and thus, the arguments are not commensurate with the scope of the claims.

Appellant additionally argues that use of sound waves in Nakamura contrasts with the “purpose of the invention in the rejected claims,” and “[h]aving untrammelled speakers blaring away inside the enclosure” “is really at odds with the purpose of the invention.” Appeal Br. 13–14. However, again, this distinction is not commensurate with the scope of the claims, where the features of a “quiet and sedentary” system with “substantially passive elements” are not recited, and does not address the Examiner’s combination. *See id.* at 14.

Appellant also argues that “*Ledonne* shows a vacuum high enough to prevent the transmission of sound,” and that this is at odds with the claim 1 invention which “allows sound transmission into the enclosure at low levels of rarefaction of the air or gas in the enclosure.” *Id.* at 15. No limitation of the claims is squarely addressed in this argument, and, while noting that claim 1 is directed to an enclosure “having an internal pressure ranging from atmospheric to a high vacuum,” we find the discussion of sound transmission to not be commensurate with the scope of the claim.

Having reviewed the arguments presented by Appellant with respect to claim 1, we are not persuaded of error in the Examiner’s rejection of claim 1. No different arguments are advanced with respect to claim 5. *Id.* at 20. Thus, for the same reasons, we are not persuaded of error in the Examiner’s rejection of claim 5.

D: “thermal impedance”

Appellant argues that the combination of Ledonne and Nakamura do not teach or suggest the regulation of a thermal property, wherein “said thermal property is a thermal impedance,” as recited in claims 2 and 3. Reply Br. 5.

The Examiner argues that “[t]hermal impedance/resistance is defined as a heat property and a measurement of a temperature difference by which an object or material resists a heat flow” and that the electrostatic speaker of Nakamura would create and thereby impact the thermal impedance. Answer 11. Appellant appears to agree that heat may be generated by Nakamura’s speaker. Appeal Br. 16 (“the electrostatic speaker may create heat”); Reply 5. While Appellant characterizes the effect of such “trivial levels” of heat as causing “trivial or non existent” changes in thermal impedance, Appellant argues that “a change in thermal impedance does not amount to the creation of thermal impedance.” Reply Br. 5. However, the claims require that the thermal property be regulated, not created, and we determine that a means of changing thermal impedance teaches or suggests the claimed means for regulating thermal impedance.

Thus, we are not convinced by Appellant’s arguments of error in the Examiner’s conclusion that the combination of Ledonne and Nakamura teaches or suggests the regulation of a thermal property, wherein the thermal property is a thermal impedance.

Having reviewed the arguments with respect to claim 1 (from which claims 2 and 3 depend) and the arguments presented by Appellant with respect to “thermal impedance” in claims 2 and 3, we are not persuaded of error in the Examiner’s rejection of these claims.

E: Claim 4

With respect to claim 4, Appellant argues that, contrary to the Examiner’s findings and conclusions, Parker does not teach or suggest “sound absorbing material enclosed within said hermetically sealed enclosure” wherein “said sound absorbing material is prevented from contacting the enclosure walls directly” because the sound absorbing material in Parker lies against a duct. Appeal Br. 18–19, 25 (Claims Appx.).

The Examiner responds that Figure 9 of Parker “illustrates the sound damping material 90 not being within direct contact of the speaker enclosure 61.” Answer 13. Figure 9 of Parker is reproduced below:

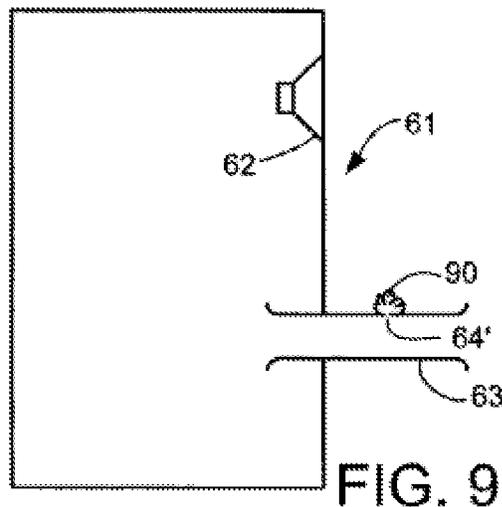


Figure 9 of Parker is a diagrammatic view of a form of the Parker invention with an acoustic damping material 90 located on a port tube 63' outside of a loudspeaker enclosure 61 with a vent 64'. Parker ¶¶ 22, 46.

We agree with Appellant that Parker does not explain in detail whether the duct (port tube 63') is an “enclosure wall” of Parker’s loudspeaker enclosure, in the terms of the disputed limitation. If the duct were to be considered an enclosure wall, then Parker’s Figure 9 does not

teach or suggest the claim limitation, as the damping material is thus not “prevented from contacting the enclosure walls directly,” as required by the disputed limitation. However, this damping material of Parker’s Figure 9 is on the outside of the loudspeaker enclosure 61, regardless of whether that enclosure does or does not include port tube 63’, and does not teach or suggest “sound absorbing material *enclosed within*” (emphasis added) an enclosure as required by claim 4.

Therefore, we find Appellant’s arguments regarding the disputed limitation to be persuasive. Accordingly, we do not sustain the Examiner’s obviousness rejections of claim 4.

DECISION

We affirm the Examiner’s decision rejecting claims 1–3 and 5.

We reverse the Examiner’s decision rejecting claim 4.

Pursuant to 37 C.F.R. § 1.136(a)(1)(iv), no time period for taking any subsequent action in connection with this appeal may be extended.

AFFIRMED-IN-PART