

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* STEVE MACEY

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Appeal 2008-2292  
Application 10/364,080  
Technology Center 2600

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Decided: August 11, 2008

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Before SCOTT R. BOALICK, JOHN A. JEFFERY,  
and KEVIN F. TURNER, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134 from the Examiner's rejection of claims 1-3, 5, 7, 8, 10, 12-14, and 17-19. We have jurisdiction under 35 U.S.C. § 6(b). We affirm-in-part.

## STATEMENT OF THE CASE

Appellant invented an audio system for a spa. Specifically, audio transducers are bonded to the spa's shell such that vibration energy is coupled into the spa shell. As a result, audio is reproduced with a full range of frequencies.<sup>1</sup> Claims 1 and 17 are illustrative:

1. A spa audio system comprising:

a spa shell having a top sheet and an underside layer;

a puck having a fixed circumference and thickness formed from a solid material bonded to the spa shell by the underside layer and contained, at least in part, by the underside layer; and

an audio transducer contained within a housing having a vibrating surface, the vibrating surface of the audio transducer being physically attached to the puck for coupling sound vibration energy into the puck.

17. A method for making an acoustically active hot tub, the steps of the method comprising:

a. molding a sheet of thermoplastic into a predetermined form;

b. bonding a plurality of pucks, each puck having a fixed circumference and thickness formed from a solid material to the underside of the sheet of thermoplastic by encapsulating each puck, at least in part, by the thermoplastic;

c. applying a layer of structural foam to the underside of said sheet of thermoplastic to form a hot tub shell with the pucks held by the structural foam; and

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<sup>1</sup> See generally Spec. ¶¶ 0001-03.

d. physically attaching a plurality of audio transducers, each transducer contained within a housing having a vibrating surface, by the vibrating surface, one to each one of said plurality of pucks.

The Examiner relies on the following prior art references to show unpatentability:

Lehr	US 2,890,297	June 9, 1959
Ohaus	US 5,369,868	Dec. 6, 1994
Fenner, Jr. (“Fenner”)	US 5,473,700	Dec. 5, 1995
Oltman	US 5,619,582	Apr. 8, 1997
Nakamura	JP 03-015423 A	Jan. 23, 1991

1. Claims 1, 2, 10, 13, 14, and 17-19 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Nakamura and Ohaus.
2. Claim 3 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Nakamura, Ohaus, and Oltman.
3. Claim 12 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Nakamura, Ohaus, and Fenner.
4. Claims 5, 7, and 8 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Nakamura, Ohaus, Fenner, and Lehr.

Rather than repeat the arguments of Appellant or the Examiner, we refer to the Briefs and the Answer for their respective details. In this decision, we have considered only those arguments actually made by Appellant. Arguments which Appellant could have made but did not make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

**THE REJECTION OVER NAKAMURA AND OHAUS**

We first consider the Examiner's obviousness rejection of claims 1, 2, 10, 13, 14, and 17-19 over Nakamura and Ohaus (Ans. 4-10).

*Claims 1 and 2*

Regarding representative claim 1,<sup>2</sup> Appellant argues that the cited prior art does not teach or suggest a *puck* bonded to the spa shell as claimed. Appellant notes that the puck in the present application "is an individual cylindrical part having two flat surfaces that border a solid interior of a certain thickness" (App. Br. 9).<sup>3</sup> With this interpretation, Appellant contends the circular "edge part" 1c<sup>4</sup> of Nakamura's bathtub speaker frame is not a puck since it lacks a solid interior and therefore cannot provide a central node for transmitting sound waves to a spa shell (App. Br. 10; Reply Br. 5). Appellant also argues that even if Nakamura is modified by the teachings of Ohaus as the Examiner proposes, the faceplate 36 would be spaced apart from the spa shell by supports 38. As such, Appellant argues, Ohaus does not teach bonding a puck to the spa shell via the underside layer (App. Br. 11-12; Reply Br. 6-7).

The Examiner responds that Appellant's arguments with respect to the interpretation of the term "puck" are not in the claim. The Examiner further notes that, in light of Ohaus, ordinarily skilled artisans would have attached

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<sup>2</sup> Appellant argues claims 1 and 2 together as a group. *See* App. Br. 9-12. Accordingly, we select claim 1 as representative. *See* 37 C.F.R.

§ 41.37(c)(1)(vii).

<sup>3</sup> We note that Appellant's interpretation of the term "puck" in the Reply Brief is slightly different: "a cylindrical *disc* having two flat surfaces that border a solid interior" (Reply Br. 2, 5; emphasis added).

<sup>4</sup> Nakamura refers to this structure as a "rim part" 1c (Nakamura 8:8).

a sound source unit (or other electrical device) to the spa shell without being spaced apart from the shell by using a threaded protrusion instead of a blind bolt (Ans. 17-18).

### ISSUE

The issue before us, then, is whether Appellant has shown that the Examiner erred in finding that the limitations of claim 1 would have been obvious to ordinarily skilled artisans in view of the collective teachings of Nakamura and Ohaus. The issue turns on whether (1) the rim part 1c of Nakamura is reasonably construed as a “puck,” and, (2) if so, whether the prior art teaches or suggests bonding this puck to a spa shell as claimed. For the following reasons, we find that no such error has been shown.

### FINDINGS OF FACT

1. Nakamura discloses a bathtub speaker and sound system in which a sound source unit 10 is attached to the sidewall of a bathtub 20 (Nakamura 9:7-8; Fig. 1).

2. The sound source unit 10 comprises a dish-shaped frame 1 with a rim part 1c for attachment to the bathtub sidewall 20a via adhesive bonding (Nakamura 8:5-9; 9:22-24; Figs. 2, 3).

3. Ohaus discloses a tub 10 including an enclosed mounting bracket 37 to attach electrical devices thereto. The bracket is enclosed within a polymeric coating 18 disposed over the non-finish side of the tub to distribute the weight of the attached object over the polymeric material (Ohaus, col. 3, ll. 24-56; Figs. 2A-2C).

4. Fenner attaches a transducer 100 to a bulkhead wall 180 via a threaded fastener 20 (Fenner, col. 4, ll. 51-56; Figs. 1 and 1A).

5. Lehr discloses a transducer assembly with two housing parts 11, 12 secured via detachable fasteners that define a closed chamber (Lehr, col. 2, ll. 29-57; Fig. 2).

#### PRINCIPLES OF LAW

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

Discussing the question of obviousness of claimed subject matter involving a combination of known elements, *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), explains:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* [*v. AG Pro, Inc.*, 425 U.S. 273 (1976)] and *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969)] are illustrative—a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

*KSR*, 127 S. Ct. at 1740. If the claimed subject matter cannot be fairly characterized as involving the simple substitution of one known element for

another or the mere application of a known technique to a piece of prior art ready for the improvement, a holding of obviousness can be based on a showing that “there was an apparent reason to combine the known elements in the fashion claimed.” *Id.* at 1740-41. Such a showing requires,

“some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.”

*Id.* at 1741 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

If the Examiner’s burden is met, the burden then shifts to the Appellant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

## ANALYSIS

We find no error in the Examiner’s position that the circular rim part 1c of Nakamura’s frame 1 fully meets a “puck” as claimed—even under Appellant’s own definition. As shown in Figures 2 and 3 of Nakamura, the rim part 1c is essentially an annular disc with a definite thickness that essentially functions as a mounting flange for the frame for the sound source unit (FF 2). As such, Nakamura’s rim part 1c fully meets Appellant’s definition (i.e., “an individual cylindrical part having two flat surfaces that border a solid interior of a certain thickness”). While the interior of this annular structure is not *completely* solid, its interior is in fact solid

throughout the width of the ring. In short, nothing in the claim language interpreted in light of the Specification precludes an annular “puck” such as that shown in Nakamura. That Appellant’s disclosed puck 127 has a hole in the middle to accommodate stud 125 as shown in Figure 2 of the present application only bolsters our conclusion.

We also find no error in the Examiner’s reliance on Ohaus for teaching bonding such a puck via the underside layer as claimed. Based on Ohaus’ fundamental teaching of enclosing a mounting bracket for a tub within an underlying polymeric coating (FF 3), ordinarily skilled artisans would have ample reason to utilize such a bonding technique with respect to the mounting structure of the frame of Nakamura, namely the rim part 1c. That is, we see no reason why the rim part (i.e., the “puck”) of Nakamura could not be contained, at least in part, by an underside layer in view of the teachings of Ohaus.

Such a modification would not space the bracket away from the tub as Appellant argues, but rather merely contain at least the attached rim part 1c in an additional underlying layer associated with the tub. At a minimum, such an enhancement would more evenly distribute the weight of the attached sound source unit in Nakamura by transferring some of that weight to the additional layer as Ohaus suggests (FF 3).

Furthermore, we are not persuaded by Appellant’s contention (App. Br. 10; Reply Br. 5-6) that the rim part 1c would couple destructively interfering sound waves into the bathtub wall. Not only has Appellant provided no evidence on this record to support this assertion, we find that the direct mechanical engagement between the rim part 1c, the frame, and

the sound source unit would provide some amount of acoustical coupling between the sound source unit and the tub.

For the foregoing reasons, Appellant has not persuaded us of error in the Examiner's rejection of representative claim 1. Therefore, we will sustain the Examiner's rejection of that claim, and claim 2 which falls with claim 1.

*Claims 10, 13, 14, and 19*

Although Appellant nominally argues the Examiner's rejection of claims 10, 13, 14, and 19 separately (App. Br. 12-13), Appellant's arguments do not particularly point out errors in the Examiner's rejection of these claims apart from reiterating the same arguments we considered above with respect to claims 1 and 2. Therefore, we sustain the rejection of these claims for the same reasons discussed above with respect to claims 1 and 2.

*Claims 17 and 18*

Regarding representative claim 17<sup>5</sup> which calls for a method of making an acoustically active hot tub, Appellant argues that the bonding step is not suggested by the prior art since there is no disclosure of a puck. Appellant also argues that the step of attaching the transducers in Nakamura would necessarily precede the step of applying a layer of structural foam as taught by Ohaus. As such, after the pucks of the prior art assembly were bonded to the spa shell using the foam as suggested the prior art, Appellant contends that it would be impossible to access the interior of the Nakamura

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<sup>5</sup> Appellant argues claims 17 and 18 together as a group. *See* App. Br. 13-14. Accordingly, we select claim 17 as representative.

enclosure to perform the final step of the process, namely attaching an audio transducer to its corresponding puck (App. Br. 13-14).

At the outset, since we find that Nakamura amply discloses a puck as claimed, we are not persuaded that the Examiner erred in relying on the cited prior art for the puck bonding step for the reasons previously discussed.

The pivotal issue before us, then, is whether Appellant has shown that the Examiner erred in finding that the prior art teaches or suggests the manufacturing method of claim 17. The issue turns on whether the final recited step of physically attaching the transducers to corresponding pucks (step (d)) can be performed by the method suggested by the collective teachings of the cited prior art. For the following reasons, we find that no such error has been shown.

Appellant's argument is premised on the assumption that the last recited step of claim 17 (step (d)) must be performed after the first three steps.<sup>6</sup> But method steps are not ordinarily construed to require an order unless they expressly or implicitly require performance in that order. *Altiris v. Symantec Corp.*, 318 F.3d 1363, 1369 (Fed. Cir. 2003) (citing *Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323 (Fed. Cir. 2001)). "First, we look to the claim language to determine if, as a matter of logic or grammar, [the method steps] must be performed in the order written." *Altiris*, 318 F.3d at 1369. If the claim language itself does not require performing the steps in that order, we then look to the Specification "to determine whether *it* 'directly or implicitly requires such a narrow construction.'" *Id.* at 1370.

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<sup>6</sup> See App. Br. 14 (characterizing the transducer attachment step as the "final step").

Turning to the language of claim 17, we find that the first three steps (Steps (a)-(c)) must be performed in the order recited since (1) Step (b) requires a thermoplastic sheet in a certain form to which the pucks are bonded, and (2) Step (c) requires holding the pucks by the structural foam that is applied to the underside of the thermoplastic sheet.

Step (d), however, need not be the last step in this process. All this step requires is physically attaching each of a plurality of transducers to each one of a plurality of pucks. The claim language simply does not require this step to be performed last, nor do we see any reason why this step could not be performed before bonding the pucks to the thermoplastic sheet. Indeed, step (d) could very well be performed *first* given the scope of the claim language.

Nor does Appellant's Specification mandate a different result. Although Paragraph 0012 of the Specification<sup>7</sup> describes the attachment between the transducer element 121 and the puck 127, this passage by no means requires that this attachment occur after the pucks are bonded to the thermoplastic sheet and held by structural foam.

Since we find that claim 17 does not preclude attaching the transducers to the pucks before bonding, we are not persuaded of error in the Examiner's findings that this limitation (in addition to the other recited limitations of claim 17) is taught or suggested by the collective teachings of the cited prior art.

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<sup>7</sup> In the Summary of Claimed Subject Matter section of the Appeal Brief, Appellant indicates that Paragraph 0012 corresponds to the subject matter recited in Step (d) of claim 17. *See* App. Br. 7.

For the foregoing reasons, Appellant has not persuaded us of error in the Examiner's rejection of representative claim 17. Therefore, we will sustain the Examiner's rejection of that claim, and claim 18 which falls with claim 17.

**THE REJECTION OVER NAKAMURA, OHAUS, AND OLTMAN**

Likewise, we will sustain the Examiner's obviousness rejection of claim 3 over Nakamura, Ohaus, and Oltman (Ans. 10-11). We find that Appellant has not persuasively rebutted the Examiner's prima facie case of obviousness for this claim, but merely noted that the addition of Oltman fails to cure the deficiencies of the cited prior art in connection with representative claim 1 (App. Br. 14; Reply Br. 8). Thus, we are not persuaded that the Examiner erred in rejecting claim 3 for the same reasons discussed above with respect to claim 1. The rejection is therefore sustained.

**THE REJECTION OVER NAKAMURA, OHAUS, AND FENNER**

We now consider the Examiner's obviousness rejection of claim 12 over Nakamura, Ohaus, and Fenner (Ans. 11-12). Appellant argues that the Examiner's combination of references is improper since, among other things, there would be no need to attach Nakamura's rim part 1c to the frame by means of a threaded shaft since they are integral structures (App. Br. 15). Appellant adds that the combination would also result in an air gap between the pucks and the spa shell in light of Ohaus' displaced structure (App. Br. 15-16; Reply Br. 10).

The Examiner responds that Fenner teaches connecting a transducer to a puck via a threaded connection (bolt 20), and that there are “blocks” shown in Figures 5 and 7 of Fenner that must be pucks (Ans. 19). The Examiner adds that by using a stud, the resultant combination would not have an air gap as alleged by Appellant (Ans. 20).

The issue before us, then, is whether Appellant has shown that the Examiner erred in finding that the vibrating surface of the audio transducers is attached to respective pucks by a threaded shaft. The issue turns on whether there is an apparent reason to combine the known elements in the fashion claimed that is supported by articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. For the following reasons, we find that Appellant has shown such an error.

As we indicated previously, we find no error in the Examiner’s interpretation of Nakamura’s rim part 1c as a “puck.” But we fail to see any rational basis for attaching such a “puck” to the associated transducer via a threaded shaft since Nakamura’s rim part is already integral with the frame of the sound source unit (and its associated transducer) as Appellant indicates. As an integral structure that essentially functions as a mounting flange, we simply fail to see how or why this thin peripheral flange (“puck”) could or should be attached to a transducer via a threaded shaft.

Although Fenner does teach attaching a transducer 100 to a bulkhead wall 180 via a threaded fastener 20 (FF 4), we still fail to see how or why ordinarily skilled artisans could attach a peripheral flange (which the Examiner identifies as the “puck”) to a transducer via a threaded connection.

Because the “puck” of the base reference to Nakamura is so different structurally from the mounting arrangement of Fenner, we find that the Examiner’s proposed modification simply strains reasonable limits.

We acknowledge the Examiner’s identification of the unlabeled “blocks” in Figures 5 and 7 of Fenner that are disposed between the transducer housings 100 and the wall of the tank 51 (Fig. 5) and vessel hull 71 (Fig. 7), respectively. Although these “blocks” in these figures appear rectangular, the Examiner’s assertion that they must be pucks (Ans. 19) is merely speculative.

In any event, even if these unlabeled structures could somehow be considered “pucks” (a finding which is unsupported by the record before us), the Examiner’s observation is inconsistent with the logic used in the rejection which relied on the base reference to Nakamura for teaching bonding a puck to a spa shell, namely the rim part 1c. As we noted above, we fail to see how or why Nakamura’s peripheral rim part that is integral with the frame could or should be attached to the transducer with a threaded fastener.

For the foregoing reasons, Appellant has persuaded us of error in the Examiner’s rejection of claim 12. Therefore, we will not sustain the Examiner’s rejection of that claim.

#### **THE REJECTION OVER NAKAMURA, OHAUS, FENNER, AND LEHR**

We now consider the Examiner’s obviousness rejection of claims 5, 7, and 8 over Nakamura, Ohaus, Fenner, and Lehr (Ans. 12-16). Regarding claim 5, the Examiner adds the disclosure of Lehr to show that it would have been obvious to the skilled artisan at the time of the invention to mount the

transducer and puck in an enclosure and glue the puck at the enclosure's closed end (Ans. 21). Appellant argues that the Examiner has failed to reasonably articulate why it would have been obvious to the skilled artisan at the time of the invention to use an enclosure with an open and closed end and glue the puck inside the enclosure at the closed end (App. Br. 17-18; Reply Br. 10-12).

The issue before us, then, is whether Appellant has shown that the Examiner erred in finding that ordinarily skilled artisans would have mounted the transducer and puck of the cited prior art in an enclosure and glued the puck at the enclosure's closed end, as claimed. The issue turns on whether there is an apparent reason to combine the known elements in the fashion claimed that is supported by articulated reasoning with some rational underpinning to justify the Examiner's obviousness conclusion. For the following reasons, we find that Appellant has shown such an error.

While we find no error in the Examiner's interpretation of Nakamura's rim part 1c as a "puck," we fail to see any rational basis for enclosing such a "puck" in a separate enclosure, let alone an enclosure with an open and closed end as claimed. As an integral structure integral that essentially functions as a mounting flange for its integral frame, we simply fail to see how this how or why this thin peripheral flange ("puck") could or should be enclosed within a separate enclosure such as that disclosed by Lehr (FF 5).

Even if such a modification were possible (which we fail to see on this record), and even if Lehr's enclosure had an open and closed end (a

feature requiring an undisclosed modification of Lehr's enclosure),<sup>8</sup> we do not see a rational basis on the record before us to modify the prior art structure (particularly Nakamura) by somehow gluing this "puck" in the closed end of an enclosure apart from Appellant's own disclosure.<sup>9</sup>

For the foregoing reasons, Appellant has persuaded us of error in the Examiner's rejection of claim 5. Therefore, we will not sustain the Examiner's rejection of that claim, and dependent claims 7 and 8 for similar reasons.

#### CONCLUSIONS OF LAW

Appellant has not shown that the Examiner erred in rejecting (1) claims 1, 2, 10, 13, 14, and 17-19 under § 103(a) over Nakamura and Ohaus, and (2) claim 3 under § 103(a) over Nakamura, Ohaus, and Oltman.

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<sup>8</sup> Arriving at this type of enclosure would, as the Examiner recognizes (Ans. 13), require ordinarily skilled artisans to remove only one housing part of Lehr's enclosure, yet leave the other part intact. While Lehr does use removable fasteners for the housing parts (FF 5), we find the Examiner's modification of Lehr—a modification that effectively results in *one-half of an enclosure*—problematic given the purpose of the enclosure in Lehr. Nevertheless, even if such a modification were suggested by Lehr, we still find the Examiner's modification of the other cited prior art (particularly Nakamura) in view of Lehr problematic for the reasons indicated in this opinion.

<sup>9</sup> It is well settled that obviousness determinations "can not be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the...invention. There must be a teaching or suggestion within the prior art, or within the general knowledge of a person of ordinary skill in the field of the invention, to look to particular sources of information, to select particular elements, and to combine them in the way they were combined by the inventor." *ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 546 (Fed. Cir. 1998).

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Appellant has, however, shown that the Examiner erred in rejecting (1) claim 12 under § 103(a) over Nakamura, Ohaus, and Fenner, and (2) claims 5, 7, and 8 under § 103(a) over Nakamura, Ohaus, Fenner, and Lehr.

#### DECISION

We have sustained the Examiner's rejections with respect to claims 1-3, 10, 13, 14, and 17-19. We have not, however, sustained the Examiner's rejections with respect to claims 5, 7, 8, and 12. Therefore, the Examiner's decision rejecting claims 1-3, 5, 7, 8, 10, 12-14, and 17-19 is affirmed-in-part.

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

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