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DINSMORE & SHOHL LLP
900 Wilshire Drive
Suite 300
TROY, MI 48084

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BRYAN WASYLUCHA

Appeal 2014-005293
Application 12/685,931
Technology Center 3700

Before LINDA E. HORNER, BRANDON J. WARNER, and
LEE L. STEPINA, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Bryan Wasylucha (Appellant) seeks our review under 35 U.S.C. § 134 of the Examiner's decision rejecting claims 1–6 and 9–18, which are all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

CLAIMED SUBJECT MATTER

Appellant's claimed subject matter relates to "methods and apparatus for dental bleaching." Spec., para. 2. Claims 1 and 11 are the independent claim on appeal. Claim 1 is reproduced below.

1. A dental apparatus, the apparatus comprising:

a tray composed of a material that is moldable by hand at room temperature and customized into a U-shaped tray by application to the dentition of a user and adapted to be placed entirely within a user's mouth;

a dental whitening composition in contact with the tray; and

wherein the U-shaped tray comprises a C-shaped base portion with continuous sidewalls extending away from the C-shaped base portion.

EVIDENCE

The Examiner relied upon the following evidence in rejecting the claims:

Porter	US 3,688,406	Sept. 5, 1972
Gordon	US 5,403,578	Apr. 4, 1995
Burgio	US 6,142,780	Nov. 7, 2000
Dougherty	US 6,190,642 B1	Feb. 20, 2001
Rizoiu	US 6,616,447 B1	Sept. 9, 2003
Jacobs	US 6,896,518 B2	May 24, 2005

REJECTIONS

The Non-Final Action, dated October 16, 2012 ("Non-Final Act."), from which this appeal is taken, included the following rejections:

1. Claims 1–3 and 9 under 35 U.S.C. § 102(e) as anticipated by Jacobs.
2. Claims 1, 3, and 9 under 35 U.S.C. § 103(a) as unpatentable over Jacobs and Porter.
3. Claim 4 under 35 U.S.C. § 103(a) as unpatentable over Jacobs and Rizoiu, and alternatively, over Jacobs, Porter, and Rizoiu.

4. Claims 5 and 6 under 35 U.S.C. § 103(a) as unpatentable over Jacobs and Gordon, and alternatively, over Jacobs, Porter, and Gordon.
5. Claim 6 under 35 U.S.C. § 103(a) as unpatentable over Jacobs, Gordon, and Dougherty, and alternatively, over Jacobs, Porter, Gordon, and Dougherty.
6. Claim 10 under 35 U.S.C. § 103(a) as unpatentable over Jacobs and Burgio, and alternatively, over Jacobs, Porter, and Burgio.
7. Claims 11–17 under 35 U.S.C. § 103(a) as unpatentable over Jacobs and Rizoiu, and alternatively, over Jacobs, Porter, and Rizoiu.
8. Claim 18 under 35 U.S.C. § 103(a) as unpatentable over Jacobs, Rizoiu, and Burgio, and alternatively, over Jacobs, Porter, Rizoiu, and Burgio.

ANALYSIS

First Ground of Rejection

Appellant argues claims 1–3 and 9 as a group. Appeal Br. 2–3. We select claim 1 as representative, and claims 2, 3, and 9 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv). Claim 1 recites "a tray . . . customized into a U-shaped tray by application to the dentition of a user" and "wherein the U-shaped tray comprises a C-shaped base portion with continuous sidewalls extending away from the C-shaped base portion." Appeal Br. 9 (Claims App.). We construe the "customized" limitation of claim 1 as requiring that the tray be configured into the customized U-shape.

The Examiner found that Jacobs discloses a dental apparatus comprising a tray customized into a U-shaped tray, wherein the U-shaped tray comprises a C-shaped base portion with continuous sidewalls extending away from the C-shaped base portion. Non-Final Act. 3 (citing Jacobs, col. 2, ll. 44–46, col. 3, ll. 53–54).[1] For the reasons that follow, the Examiner's finding that Jacobs discloses the recited shape is supported by a preponderance of the evidence.

Jacobs discloses a dental bleaching tray in the form of upper and lower jaw pattern forms. Jacobs, col. 2, ll. 33–39. The upper and lower jaw patterns are cut from dental wax and "formed [] with fold lines [] to permit the pattern to be folded into a three dimensional tray when contoured to teeth along those fold lines." *Id.*, ll. 41–46. Jacobs describes that the "preferred dental wax . . . softens at less than 98° F." *Id.*, ll. 59–62. Jacobs states that the wax "is contoured by being held between the user's fingers and thumb before being placed on the teeth for forming." *Id.*, ll. 65–67. "The finished tray is then removed and bleaching solutions are placed in the tray." *Id.*, col. 3, ll. 1–2. Jacobs discloses that the tray "is capable of covering the entire set of teeth up to the gum line." *Id.*, ll. 53–54.

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[1] Alternatively, the Examiner determined that "claim [1] does not positively claim the tray being [U]-shaped and comprising a [C]-shaped base portion." Non-Final Act. 3 (determining that the claim recites only that the tray be capable of being molded into the claimed shape). We need not reach this alternative interpretation, because we find that Jacobs discloses the tray having the claimed shape.

As evidenced by the prior art, the natural shape of a typical person's teeth forms a C-shape. *See, e.g.*, Porter, col. 2, ll. 63–64 (stating that the dashed line 2 shown in Figure 1 "indicates the shape of a typical row of human teeth"). Contouring of the dental wax patterns in the manner disclosed in Jacobs along the fold-line to cover the entire set of teeth up to the gum line would result in the tray having a C-shaped base portion with continuous sidewalls extending away from the C-shaped base portion, and a U-shaped channel in which the teeth are disposed. As such, a preponderance of the evidence supports the Examiner's finding that "[t]he tray disclosed by Jacobs would have the claimed shape when used in the disclosed manner." Ans. 15; *see also* Non-Final Act. 15–16.

Claim 1 further recites "a tray composed of a material that is moldable by hand at room temperature." Appeal Br. 9 (Claims App.). As noted by the Examiner, "'[r]oom temperature' is not specifically defined in the [Appellant's] disclosure." Non-Final Act. 16; Ans. 16. Appellant's Specification describes, "The moldable support structure is composed of a pliant material such as wax or other material which readily conforms to the shape of the teeth. The support material may be molded by hand at room temperature or rendered moldable by application of heat." Spec., para. 44. This description in Appellant's Specification appears to contrast support material that is moldable by hand without the application of heat versus material that is moldable only after heating. Based on this description we understand the limitation of "a material that is moldable by hand at room

temperature" to encompass a material that is moldable by hand without the application of heat.

Jacobs describes that the "preferred dental wax . . . softens at less than 98° F." Jacobs, col. 2, ll. 59–62. Jacobs does not disclose that it is required to heat the dental wax in order to contour the tray. Instead, Jacobs discloses that the wax "is contoured by being held between the user's fingers and thumb before being placed on the teeth for forming." Jacobs, col. 2, ll. 65–67. Thus, consistent with the description provided in Appellant's Specification, the wax of Jacobs is moldable by hand without the application of heat. This disclosure in Jacobs is sufficient to meet the "moldable by hand at room temperature" limitation in claim 1. Accordingly, we find that a preponderance of the evidence supports the Examiner's finding that Jacobs discloses a tray composed of dental wax that is moldable by hand at room temperature. For these reasons, we sustain the rejection of claim 1 and claims 2, 3, and 9, which fall with claim 1, under 35 U.S.C. § 102(e) as anticipated by Jacobs.

Second Ground of Rejection

Appellant argues claims 1, 3, and 9 as a group. Appeal Br. 4. We select claim 1 as representative, and claims 3 and 9 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner found that "Porter teaches a flat dental tray (Fig. 1) that is for applying a dental composition and is U-shaped, wherein the flat dental tray is formed into a U-shaped tray having a C-shaped base with continuous sidewalls extending there from." Non-Final Act. 7 (citing Porter, col. 2,

ll. 50–52; Fig. 4). The Examiner determined that assuming, *arguendo*, Jacobs does not show the claimed shaped tray, it would have been obvious to one of ordinary skill in the art at the time of Appellant's invention to "modify Jacobs to include the shape shown by Porter in order to adapt the flat tray for use in delivering compositions to the teeth." *Id.*

The Examiner's articulated reasoning to explain the proposed modification is based on rational underpinnings. *See* Appeal Br. 4 (arguing that the articulated reasoning is "overly broad"). Porter demonstrates that the shape of a typical row of human teeth is C-shaped. Porter, col. 2, ll. 63–64, Fig. 1. Further, Porter teaches that a dental tray for use to apply a dental composition to teeth is preferably C-shaped to match the shape of a typical row of human teeth, and is formed to have a U-shaped channel by "being bent along its center with its inside and outside edges extending in the same direction so as to form a support structure adapted to fit over a row of teeth." Porter, col. 3, ll. 45–52, Fig. 4.[2] Based on this disclosure in Porter, even if one were to determine that the tray of Jacobs, once contoured to fit around a person's teeth, would not necessarily assume the claimed shape, Porter provides ample evidence that it was known in the art to use the claimed shape for dental trays and that such a shape conforms to a typical row of

[2] Appellant's Specification also acknowledges that "[s]upport structures for dental treatment are known in the art and illustratively include a strip of sheet materials and a shaped dental tray approximately the shape of a tooth, part or all of a dental arch or both dental arches. A typical dental tray has a U-shape in order to fit the average dental arch and channels are formed therein for insertion of the teeth during treatment." Spec., para. 26.

human teeth and can be used to deliver compositions to the teeth. As such, the Examiner's articulated reasoning for modifying the tray of Jacobs is gleaned from the teachings of the prior art and is based on rational underpinnings. In other words, modifying the tray of Jacobs to use the shape disclosed in Porter is nothing "more than the predictable use of prior art elements according to their established functions." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). As such, Appellant has not demonstrated error in the Examiner's second ground of rejection. Accordingly, we sustain the rejection of claims 1, 3, and 9 under 35 U.S.C. § 103(a) as unpatentable over Jacobs and Porter.

Third Ground of Rejection

Claim 4 depends from claim 1 and recites, "wherein the whitening composition is in a form selected from the group consisting of: gel, emulsion, gum, putty, liquid and paste." Appeal Br. 9 (Claims App.). Appellant appears to argue that the rejection should not be sustained because the Examiner failed to demonstrate unpatentability of all members of the Markush group recited in claim 4. Appeal Br. 3 (arguing that the Examiner's stated rationale "lacks a *nexus* to Appellant's claim limitations" because it "is sufficiently broad that [it] does not apply to the specific forms and compositions set forth by Appellant"). We know of no authority, nor has Appellant pointed to such authority, which would require that the Examiner must find that all members of a Markush group would have been obvious over the prior art. Rather, to demonstrate unpatentability of claim 4, the Examiner must show only that it would have been obvious to one having

ordinary skill in the art at the time of Appellant's invention to use at least one of the listed forms of whitening composition.

Jacobs discloses use of a whitening solution in its dental tray. Jacobs, col. 3, ll. 65–66. The Examiner found that "Rizoiu teaches using a whitening composition in the form of a gel." Non-Final Act. 4, 7 (citing Rizoiu, col. 6, line 59). The Examiner determined that it would have been obvious to one of ordinary skill in the art at the time of Appellant's invention to modify Jacobs, alone or as modified by Porter, "to include a gel as taught by Rizoiu in order to provide the whitening composition in a form that effective in delivering active ingredients to teeth." Non-Final Act. 4, 7–8. We agree with the Examiner's reason to modify Jacobs in the manner claimed. *See* Appeal Br. 3 (arguing the rationale is "overly simplified").

Rizoiu teaches "a dentrifice, including, but not limited to pastes and gels" that is placed in a dental tray to be used as a whitening composition. Rizoiu, col. 6, l. 58 – col. 7, l. 13. As such, Rizoiu demonstrates that gel was a known form for a whitening composition at the time of Appellant's invention and was a suitable form for use in a dental tray. The Examiner's reason to modify Jacobs to use a whitening composition in the form of a gel because it is "a form that is effective in delivery active ingredients to teeth" is based on rationale underpinnings and is sufficient reasoning on which to base a determination of obviousness. In other words, the proposed modification of Jacobs to employ a whitening composition in the form of a gel is the "mere substitution of one element for another known in the field" to yield a predictable result. *KSR*, 550 U.S. at 416. We sustain the rejection

of claim 4 under 35 U.S.C. § 103(a) as unpatentable over Jacobs, alone or in combination with Porter, and further in view of Gordon.

Fourth Ground of Rejection

Claim 5 depends from claim 1 and further recites, "wherein the whitening composition is in a microencapsulated form." Appeal Br. 9 (Claims App.). As to claim 5, the Examiner found that "Gordon teaches a dental composition comprising whitening composition being microencapsulated." Non-Final Act. 5, 8 (citing Gordon, col. 3, l. 31). The Examiner determined that it would have been obvious to one of ordinary skill in the art at the time of Appellant's invention to modify Jacobs, alone or as modified by Porter, "to have microencapsulated whitening composition, as taught by Gordon, in order to provide a stable composition retaining maximum effectiveness of the composition." *Id.*

Appellant does not present any arguments contesting the Examiner's finding as to Gordon or the Examiner's articulated reasoning for the proposed modification of Jacobs/Porter with the teaching of Gordon. Appeal Br. 3 (presenting arguments directed only to the "matter of obvious choice" rationale relied on by the Examiner in the rejection of claim 6). As such, we summarily sustain the rejection of claim 5 under 35 U.S.C. § 103(a) as unpatentable over Jacobs, alone or in combination with Porter, and further in view of Gordon. We need not reach the Examiner's rejection of claim 6, which further limits claim 5, under this ground of rejection, because we find an adequate basis to sustain the rejection of claim 6 under the fifth ground of rejection, as explained *infra*.

Fifth Ground of Rejection

Claim 6 depends from claim 5 and recites, "wherein the microencapsulated form is selected from the group consisting of: agar gel beads, liposomes and niosomes." Appeal Br. 9 (Claims App.). The Examiner found that "Dougherty teaches carrying dental materials using liposomes." Non-Final Act. 6, 9 (citing Dougherty, col. 4, ll. 14–19). The Examiner determined that it would have been obvious to one of ordinary skill in the art at the time of Appellant's invention to modify Jacobs as modified by Gordon, alone or as further modified by Porter, "by providing the microencapsulated form as liposomes, as taught by Dougherty, for the purpose of effectively delivering active materials to the teeth." *Id.*

Appellant challenges the Examiner's reliance on Dougherty, arguing that because Dougherty "relates to irrigants to be used with vibratory scaling apparatus and lavage . . . one would not look to . . . Dougherty to address the problem posed by Appellant." Appeal Br. 4. As such, Appellant presents what appears to be an argument that Dougherty is not analogous art to the claimed invention. Appellant's argument, however, addresses only one of the two tests used to define the scope of analogous art test, i.e., whether the prior art is reasonably pertinent to a problem facing the inventor. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004) (stating that "[t]wo separate tests define the scope of the analogous art" test). In response, the Examiner clarifies that Dougherty qualifies as analogous art under the other test, because Dougherty is from the same field of endeavor as Appellant's invention, *viz*, "the delivery of dental compositions to teeth." Ans. 18.

Appellant contends that "the Examiner's definition is too broad" and that "Appellant's purpose is to deliver an active material *in the form of a whitening composition*." Reply Br. 2 (again arguing that one would not look to Dougherty "to address the problem posed by Appellant").

"Th[e field of endeavor] test for analogous art requires the PTO to determine the appropriate field of endeavor by reference to explanations of the invention's subject matter in the patent application, including the embodiments, function, and structure of the claimed invention." *Bigio*, 381 F.2d at 1325 (citations omitted). Appellant's Specification describes generally that "[t]his invention relates to methods and apparatus for dental bleaching." Spec., para. 2. The Specification further describes, "Although the invention is described as appropriate for delivering a dental whitening composition and for use in a method for whitening teeth, it is appreciated that a support structure as described herein may be used to deliver other treatments via an oral route." Spec., para. 78 (providing examples of other dental compositions). In light of the fact that the invention described in Appellant's Specification is not limited to delivery of a dental whitening compound, the Examiner's finding as to the "field of endeavor" as encompassing "the delivery of dental compositions to teeth" is not overly broad. Dougherty's disclosure pertains to provision of medicaments to the teeth, which medicaments include "antiseptics, anti-microbials, fluorides, enzyme inhibitors, and monoclonal antibodies." Dougherty, col. 4, ll. 14–17. We agree with the Examiner that a person of ordinary skill in the art would have considered Dougherty to be related to the same subject matter as

the claims at issue. *KSR*, 550 U.S. at 418 ("[T]he analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for [an examiner] can take account of the inferences and creative steps that a person of ordinary skill in the art would employ."). Thus, we sustain the rejection of claim 6 under 35 U.S.C. § 103(a) as unpatentable over Jacobs, alone or in combination with Porter, and further in view of Gordon and Dougherty.

Sixth Ground of Rejection

Claim 10 depends from claim 9[3] and recites, "wherein the textured surface comprises a plurality of hexagonal cells." Appeal Br. 9 (Claims App.). The Examiner found that "Burgio teaches using a honeycomb/ hexagonal structure for medication." Non-Final Act. 6, 9 (citing Burgio, col. 7, ll. 44–50). The Examiner determined that it would have been obvious to one of ordinary skill in the art at the time of Appellant's invention to modify Jacobs, alone or as modified by Porter, "to have the support structure having a honeycomb/hexagonal textured surface, as taught by Burgio, in order to minimize the flow of the composition away from the target oral structure and to retain the composition at the desired area longer thereby being more effective at treating the oral structure." *Id.* at 6, 9–10.

Jacobs discloses that the inside of its dental tray can be textured to assist in holding bleaching material. Jacobs, Abst., col. 3, ll. 2–4, col. 3, l. 67 – col. 4, l. 2. Burgio addresses the problem of rapid diminishment of

[3] Claim 9 depends from claim 1 and recites, "wherein the tray comprises a textured surface." Appeal Br. 9 (Claims App.).

the volume of bleaching solution that remains in conventional dental trays. Burgio, col. 2, ll. 22–25. The cited portion of Burgio teaches that the use of projections in the form of honeycomb (i.e., hexagonal) structures "may have a small medication-receiving recess or cavity" that allows the medication to "remain in the cavities for a longer period of time." Burgio, col. 7, ll. 44–53. The Examiner's articulated reason for modifying the textured surface in the structure of Jacobs to include the hexagonal cavities of Burgio is found in the explicit teachings of Burgio itself. Ans. 18 ("Burgio clearly establishes a motivation for modifying a textured surface to be made up of a plurality of hexagonal cells"). *See* KSR at 417 ("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"). Appellant has not demonstrated error in this ground of rejection. Appeal Br. 4 (arguing the Examiner's rationale is derived from Appellant's disclosure). For these reasons, we sustain the rejection of claim 10 under 35 U.S.C. § 103(a) as unpatentable over Jacobs, alone or in combination of Porter, and further in view of Burgio.

Seventh Ground of Rejection

Appellant argues claims 11–17 as a group. Appeal Br. 6–7. We select claim 11 as representative, and claims 12–17 stand or fall with claim 11. 37 C.F.R. § 41.37(c)(1)(iv). Claim 11 is directed to a method for treating a dental surface of a user comprising, *inter alia*, the step of providing a dental apparatus comprising "a moldable, U-shaped support

structure composed of a material that is moldable by hand at room temperature, and wherein the U-shaped support structure comprises a C-shaped base portion with continuous sidewalls extending away from the C-shaped base portion." Appeal Br. 10 (Claims App.). Claim 11 further recites a step of "exposing the dental surface to light emitted by a light source, thereby treating the dental surface." *Id.*

The Examiner found that Jacobs discloses the method called for in claim 11, except for exposing the dental surface to light. Non-Final Act. 11. The Examiner found that "Rizoiu teaches a dental composition comprising whitening composition that is activated by exposing it to light." *Id.* The Examiner determined that it would have been obvious to modify the method of Jacobs to include the exposing step, as taught by Rizoiu, "in order to make use of well-known compositions that are light activated to better whiten the teeth." *Id.* Alternatively, similar to the rejection of claim 1, the Examiner determined that it would have been obvious to modify Jacobs to include the shape of Porter. *Id.* at 12–13.

To the extent that Appellant contests the Examiner's findings that Jacobs discloses the claimed support structure and the Examiner's proposed modification of Jacobs with the teachings of Porter (Appeal Br. 6), such arguments are unavailing for the same reasons discussed *supra* in our analysis of claim 1. We further find that the Examiner articulated adequate reasoning based on rational underpinnings for the proposed modification of Jacobs/Porter to include the claimed exposing step in light of the teaching of

Rizoiu. *See* Appeal Br. 6–7 (contesting the Examiner's basis for the proposed combination).

Rizoiu is directed to a method and apparatus to improve the effectiveness of the whitening agent during teeth whitening. Rizoiu, col. 1, ll. 51–53. Specifically, Rizoiu teaches that "electromagnetic radiation, especially when combined with a dentrifice, such as a paste, gel, cream, or powder, may improve dental hygiene, for example by whitening teeth." *Id.*, col. 4, ll. 11–14. In the method disclosed by Rizoiu, a dentrifice with an active ingredient sensitive to electromagnetic radiation is placed in the dental tray, which is fit over the teeth, and electromagnetic radiation sources expose the dental surface to light, to treat the dental surface. *Id.*, col. 5, ll. 5–29, col. 6, l. 58 – col. 7, l. 13, and col. 7, ll. 57–58. The Examiner's articulated reason for modifying the method of Jacobs/Porter to add a step of exposing the dental surface to light to better whiten the teeth is found in the explicit teachings of Rizoiu itself. *See KSR*, 550 U.S. at 417 ("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"). For these reasons, we sustain the rejection of independent claim 11 and dependent claims 12–17, which fall with claim 11, under 35 U.S.C. § 103(a) as unpatentable over Jacobs, alone or in combination with Porter, and further in view of Rizoiu.

Eighth Ground of Rejection

Claim 18 depends from claim 17 and recites, "wherein the textured surface comprises a plurality of hexagonal cells." Appeal Br. 11 (Claims App.). Appellant's argument contesting the Examiner's proposed modification of Jacobs with the teachings of Burgio (Appeal Br. 7) is unavailing for the same reasons discussed *supra* in our analysis of the rejection of claim 10. In particular, the Examiner's articulated reason for modifying the textured surface in the structure of Jacobs to include the hexagonal cavities of Burgio is found in the explicit teachings of Burgio itself. For these reasons, we sustain the rejection of claim 18 under 35 U.S.C. § 103(a) as unpatentable over Jacobs, alone or in combination with Porter, and further in view of Rizoiu and Burgio.

DECISION

The decision of the Examiner to reject claims 1–6 and 9–18 is AFFIRMED.

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

AFFIRMED