

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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U.S. ENDOSCOPY GROUP, INC.,  
Petitioner,

v.

CDX DIAGNOSTICS, INC. and  
SHARED MEDICAL RESOURCES, LLC,  
Patent Owner.

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Case IPR2014-00642  
Patent 6,258,044 B1

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Before PHILLIP J. KAUFFMAN, SCOTT E. KAMHOLZ, and  
BARRY L. GROSSMAN, *Administrative Patent Judges*.

KAMHOLZ, *Administrative Patent Judge*.

DECISION  
Institution of *Inter Partes* Review  
37 C.F.R. § 42.108

## I. INTRODUCTION

### A. *Background*

U.S. Endoscopy Group, Inc. (“Petitioner”) filed a Corrected Petition (Paper 4, “Pet.”), requesting institution of an *inter partes* review of claims 1-39 of U.S. Patent No. 6,258,044 B1 (“the ’044 patent”). Patent Owners CDx Diagnostics, Inc. and Shared Medical Resources, LLC (collectively “Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314.

We institute *inter partes* review because we determine that the information presented in the Petition and in the Preliminary Response shows that there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the claims challenged in the Petition. *See* 35 U.S.C. § 314(a). In particular, we institute *inter partes* review with respect to claims 1-17, 19, 20, 23-28, 32, and 35-39, but not as to claims 18, 21, 22, 29-31, 33, and 34.

### B. *The ’044 Patent*

The ’044 patent relates to an apparatus for obtaining cells from multiple layers of epithelium by abrasion and without laceration. Ex. 1001, 4:55–5:8; 5:25-28. In a preferred embodiment, the apparatus includes a brush having bristles of sufficient stiffness to allow them to dislodge and sweep up cells from superficial, intermediate, and basal layers of epithelium, and to penetrate the basement membrane underlying the epithelium to reach the submucosa, without having to resort to the dangers of incisional-based biopsy. *Id.* at 4:63–5:8; 5:24-40; 9:19-20. The brush is mounted on the distal end of a handle. *Id.* at 7:8-9. The bristles may extend from wires that emanate from the distal end of the handle. The wires may form a toroid or

spiral shape that is oriented substantially perpendicular to the axis of the handle. *Id.* at 7:23-28; Fig. 4.

Independent claims 1, 12, and 26 are illustrative of the claimed subject matter and are reproduced below.

1. Apparatus to obtain cells in epithelial tissue of the body comprising:

transepithelial non-lacerational sampling apparatus to collect cells from at least two layers of said epithelial tissue, said transepithelial non-lacerational sampling apparatus comprising a brush, said brush comprising bristles having sufficient stiffness to penetrate at least said two layers of said epithelial tissue.

12. A transepithelial non-lacerational sampling apparatus to harvest cells in an oral cavity from the epithelial tissue, said epithelial tissue comprising superficial, intermediate and basal layers, and a basement membrane located between the basal layer and the submucosa, said non-lacerational sampling apparatus comprising means to traverse said superficial, intermediate and basal layers and to collect cells from said three layers.

26. A method to collect cells in epithelial tissue of the body comprising:

passing a transipithelial<sup>1</sup> non-lacerational sampling means through the epithelial tissue to collect cells from at least two layers of said epithelial tissue.

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<sup>1</sup> For purposes of this decision, we interpret the term “transipithelial” as “transepithelial.” The error appears to have been introduced by the Office. *Compare* Ex. 1002, 76 *with id.* at 42.

*C. Prior Art Relied Upon in the Petition*

Petitioner relies upon the following references, as well as the declaration of Michael Kahaleh, M.D. (Ex. 1011):

Parasher	U.S. Pat. No. 5,535,756	July 16, 1996	Ex. 1003
Markus	U.S. Pat. No. 5,407,807	Apr. 18, 1995	Ex. 1005
SpiraBrush	Specimen of Use filed in U.S. Trademark Appl. Ser. No. 74/370,500	Mar. 22, 1993	Ex. 1006
Stormby	U.S. Pat. No. 4,759,376	July 26, 1988	Ex. 1007
Boon	Boon et al., “Exploiting the ‘Toothpick Effect’ of the CytoBrush by Plastic Embedding of Cervical Samples.” <i>Acta Cytologica</i> , 35(1): 57-63	Jan.-Feb. 1991	Ex. 1008
Nomiya	U.S. Pat. No. 2,675,572	Apr. 20, 1954	Ex. 1009

*D. The Asserted Grounds of Unpatentability*

Petitioner asserts that the challenged claims are unpatentable based on the following grounds:

<b>Reference(s)</b>	<b>Basis</b>	<b>Claims Challenged</b>
Parasher	§ 102	1-8, 11-17, 23-28, and 31-39
Parasher and Markus	§ 103	9, 10, 19, and 20
Parasher and SpiraBrush	§ 103	18, 21, and 22
Parasher and Nomiya	§ 103	18, 21, and 22
Stormby, Boon, and Parasher	§ 103	1-8, 11-18, and 21-39
Stormby, Boon, Parasher, and Markus	§ 103	9, 10, 19, and 20

<b>Reference(s)</b>	<b>Basis</b>	<b>Claims Challenged</b>
Stormby, Boon, Parasher, and SpiraBrush	§ 103	18, 21, and 22
SpiraBrush and Parasher	§ 103	1-8, 11-18, and 21-39
SpiraBrush, Parasher, and Markus	§ 103	9, 10, 19, and 20

## II. DISCUSSION

### A. Claim Construction

Petitioner proposes a construction of the terms “transepithelial” (occurring in all claims), “non-lacerational” (occurring in all claims), “abrasive surface” (in claims 4 and 24), and “tip stiffness” (in claims 9 and 19). Pet. 7. Patent Owner does not comment on these proposed constructions in the Preliminary Response.

We have considered Petitioner’s proposed constructions, but determine that no express constructions of these or other terms are necessary for purposes of this decision.

### B. Anticipation by Parasher

Petitioner argues that claims 1-8, 11-17, 23-28, and 31-39 are anticipated by Parasher. Pet. 7-21.

#### 1. Claims 1-11, 14-17, and 37-39

With regard to claim 1, Petitioner asserts that Parasher’s device 1 includes brush 9 having semi-rigid bristles 11 that permit collection, without laceration, of a tissue sample sufficient to qualify as a biopsy. Pet. 8-10 (citing, *inter alia*, Ex. 1003, 2:12-40, 4:46-59, 5:46-57, Figs. 4a-4c).

Petitioner asserts, citing Dr. Kahaleh’s declaration for support, that a person

of ordinary skill in the art would have understood a biopsy sample to include fragments of tissue all the way down to the submucosa, as well as fragments of the basement membrane. Pet. 9-10 (citing Ex. 1011 ¶ 10).

Patent Owner argues that Parasher does not disclose a brush that penetrates more than one epithelial layer, nor does it disclose a brush that reaches the submucosa or other connective tissue. Prelim. Resp. 4-6.

We agree with Patent Owner that Parasher does not disclose expressly that its brush obtains tissue that includes deep epithelial layers, submucosa, or connective tissue. But Patent Owner does not address the testimony of Dr. Kahaleh, a physician and professor of clinical medicine whose relevant training and experience persuade us, on this record, that he is qualified to testify as to the understanding of a person of ordinary skill in the art at the time of the invention. *See* Ex. 1011 ¶ 2 (citing Dr. Kahaleh’s curriculum vitae); *id.* at ¶¶ 4-5.

We accept, for purposes of this decision, Dr. Kahaleh’s testimony that one of ordinary skill in the art would have understood the term “biopsy” as referring to a tissue sample that contains fragments of epithelial tissue, basement membrane, and submucosa. *See id.* ¶ 10. On this record, we conclude that this evidence, in combination with Petitioner’s evidence that Parasher discloses the structural features recited in claim 1, is sufficient to demonstrate a reasonable likelihood that Petitioner would prevail in establishing that claim 1 is anticipated by Parasher. We also have considered the arguments and evidence of record concerning dependent claims 2-8, 11, and 14-17, *see* Pet. 12-15, and are persuaded of a reasonable likelihood that Petitioner would prevail in establishing that they are anticipated by Parasher as well. We determine that Petitioner has

demonstrated a reasonable likelihood that it would prevail in establishing that Parasher anticipates claims 37-39 for the same reasons discussed as to claim 1. *See* Pet. 19-21.

2. *Claims 12, 13, and 23-25*

Claim 12 is directed to a “transepithelial non-lacerational sampling apparatus.” The recited purpose of the apparatus is “to harvest cells in an oral cavity from the epithelial tissue.” The epithelial tissue is recited as having “superficial, intermediate and basal layers, and a basement membrane,” the last of which is recited as being “located between the basal layer and the submucosa.” The only structure recited for the apparatus is “means to traverse said superficial, intermediate and basal layers and to collect cells from said three layers.”

Although the structural limitation is presented, arguably, in means-plus-function format, we determine on the present record that it does not invoke 35 U.S.C. § 112, sixth paragraph.<sup>2</sup> That statutory provision is limited to an element “in a claim for a combination.” 35 U.S.C. § 112, ¶ 6 (2010). Claim 12 recites only one structural limitation—the “means to traverse” limitation. It is thus a “single means” claim, which has been held not to invoke 35 U.S.C. § 112, sixth paragraph. *In re Hyatt*, 708 F.2d 712, 715 (Fed. Cir. 1983) (“[No] provision [of 35 U.S.C. § 112] saves a claim drafted

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<sup>2</sup> Section 4(c) of the Leahy-Smith America Invents Act (“AIA”) re-designated 35 U.S.C. § 112, sixth paragraph as 35 U.S.C. § 112(f). Pub. L. No. 112-29, 125 Stat. 284, 296 (2011). Because the ’044 patent has a filing date before September 16, 2012 (effective date of § 4(c) of the AIA), we will refer to the pre-AIA version of § 112.

in means-plus-function format which is not drawn to a combination, i.e., a single means claim.”).

We agree with the Petitioner on the present record that, whatever else claim 12 covers, it encompasses a non-lacerational brush with stiff bristles as described in the '044 patent. We are persuaded of a reasonable likelihood that Petitioner would prevail in establishing that Parasher anticipates claim 12, for the same reasons as given above for claim 1. We also have considered the arguments and evidence of record concerning dependent claims 13 and 23-25, *see* Pet. 16-17, and are persuaded of a reasonable likelihood that Petitioner would prevail in establishing that they are anticipated by Parasher as well.

3. *Claims 26-28 and 31-36*

Petitioner's argument concerning independent method claim 26 is substantially similar to its argument for claim 1. Pet. 17 (referring to Pet. 8-12). Petitioner does not address whether the recited “transepithelial<sup>3</sup> non-lacerational sampling means” invokes § 112, sixth paragraph. We determine on the present record that this limitation does not invoke § 112, sixth paragraph, because the limitation is not presented “in a claim for a combination.” *See* 35 U.S.C. § 112 ¶ 6. The “sampling means” is the only structural limitation recited in method claim 26, and it forms part of the only method step recited. There is no “combination” in claim 26, of either structure or method steps. On this basis, we determine for purposes of this decision that claim 26 does not invoke § 112, sixth paragraph.

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<sup>3</sup> *See* n.1, *supra*.



We determine that, whatever other structures it encompasses, the “transepithelial non-lacerational sampling means” covers a stiff-bristled non-lacerational brush capable of penetrating epithelium, as disclosed in the ’044 patent. We agree with Petitioner, on the present record, that Parasher discloses a brush having this structure and capability, and that Parasher’s disclosure that the brush can obtain a sample that qualifies as a biopsy would be understood by one of ordinary skill in the art as disclosing that the brush collects cells from layers of the epithelium down to the submucosa. *See* Ex. 1011 ¶ 10. We also have considered the arguments and evidence of record concerning dependent claims 27, 28, 32, 35, and 36, *see* Pet. 18-19, and are persuaded of a reasonable likelihood Petitioner would prevail in establishing that that they are anticipated by Parasher as well.

We are not persuaded of a reasonable likelihood that Petitioner would prevail in establishing that Parasher anticipates claims 31, 33, and 34. Claims 31 and 34 require that the epithelial tissue sampled include oral epithelial tissue, and claim 33 requires that the epithelial tissue have a keratinized layer from beneath which the sample is obtained. For claims 31 and 34, Petitioner cites Parasher at column 1, lines 54-67; column 2, lines 1-40; and column 3, lines 60-67, as disclosing the collecting of cells from oral epithelial tissue. Pet. 18-19 (chart). Upon review of this evidence, we discern no disclosure of sampling oral epithelium. The cited passages are concerned entirely with sampling the ducts of the biliary tree and other “duct-like” organs, such as the esophagus and stomach. *See, e.g.*, Ex. 1003, 2:35-40. There is no mention of oral epithelium tissue.

For claim 33, Petitioner cites the same passages from Parasher as disclosing sampling from a keratinized epithelium. *See* Pet. 19. Petitioner

fails to explain, however, which of the anatomic structures disclosed, if any, have a keratinized epithelium. Petitioner relies on Dr. Kahaleh's testimony to the effect that Parasher is *capable* of sampling oral epithelia and keratinized epithelia, Pet. 10 (citing Ex. 1011 ¶ 17), but evidence of capability is not sufficient to show that Parasher discloses the particular method recited in claim 33.

For these reasons, we determine that Petitioner has demonstrated a reasonable likelihood that it would prevail in establishing that Parasher anticipates claims 1-8, 11-17, 23-28, 32, and 35-39, but not claims 31, 33, and 34.

*C. Obviousness over Parasher and Markus*

Petitioner challenges claims 9, 10, 19, and 20 for obviousness under 35 U.S.C. § 103(a) over Parasher and Markus. Pet. 21-24. Claims 9 and 19, depending ultimately from claim 1 and claim 12, respectively, require that the "tip stiffness" of each bristle be "between 0.04 and 0.2 lbs/inch." Claims 10 and 20, depending from claims 9 and 19, respectively, require that the bristles protrude "between 0.05-0.2 inches."

Petitioner acknowledges that Parasher does not disclose stiffness or length properties for its bristles, but argues that Markus discloses a similarly-structured and operated brush having bristle stiffness and length within the recited ranges. Pet. 22. Petitioner argues that the similarities between the Parasher and Markus brushes would have made the substitution

of Markus's bristles in the Parasher brush a simple substitution to obtain a predictable result. *Id.*<sup>4</sup>

Patent Owner argues that Markus is not analogous to the claimed subject matter, because it concerns a brush that is used to sweep the bore of a catheter to retrieve fibrin for infectious contamination testing, not a "cell harvesting device." Prelim. Resp. 6. This argument is unpersuasive, because Markus itself characterizes "cytology brushes which are used to collect cells" as within the prior art to its catheter brush. *See* Ex. 1005, 2:8-9. Thus, the evidence presently of record does not support Patent Owner's contention that catheter brushes are non-analogous to cell harvesting devices.

Upon consideration of the parties' arguments and evidence, we are persuaded of a reasonable likelihood that Petitioner would prevail in establishing that claims 9, 10, 19, and 20 are unpatentable over Parasher and Markus.

#### *D. Obviousness over Parasher and Nomiya*

Petitioner challenges claims 18, 21, and 22 for obviousness under 35 U.S.C. § 103(a) over Parasher and Nomiya. Pet. 58-59. Claim 18, which depends from claim 12, requires that the bristles be held by wires, extending

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<sup>4</sup> Petitioner argues, alternatively, that the claimed property ranges are merely optimal or workable ranges that would have been the obvious result of routine experimentation. Pet. 21-22. Petitioner cites *In re Aller*, 220 F.2d 454, 456 (CCPA 1955) in support of its argument. This argument is not persuasive, because Petitioner has not explained how the properties in question are recognized as result-effective variables. *See In re Antonie*, 559 F.2d 618, 620 (CCPA 1977) (recognizing limitation of the *Aller* rule to cases involving "result-effective variables").

from a distal end of the handle, to form brushing surfaces that abrade epithelial tissue. Claims 21 and 22, each depending from claim 18, require that the wires form a toroid or spiral shape, respectively, which is oriented substantially perpendicular to the axis of the handle.

Petitioner argues that it would have been “routine and obvious” to “modify the brush of Parasher in the view of the brush structure of Nomiya.” Pet. 58. Petitioner argues further that the two brushes are capable of traversing passages and are similar in size and shape and that the modification is a simple substitution of “one brush for another.” *Id.* at 58-59.

We determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail in establishing that claims 18, 21, and 22 are unpatentable for obviousness over Parasher and Nomiya, because Petitioner has not explained adequately the nature of the modifications that would have been obvious to one of ordinary skill. Petitioner has asserted simply that it would have been obvious to modify the Parasher brush in view of the Nomiya brush structure, but Petitioner has not identified what structures would have been modified, or how they would have been modified, to reach the claimed subject matter. Petitioner’s generic assertion that the modification amounts to a simple substitution of “one brush for another” to obtain predictable results does not provide the specificity required to show unpatentability based on the proposed combination of references. Nor is Petitioner’s assertion supported by credible evidence establishing that the substitution is simple or would provide predictable results. *See Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011) (“Obviousness requires more than a mere showing that the prior art includes

separate references covering each separate limitation in a claim under examination. Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.”) (citations omitted). In sum, Petitioner does not present a coherent obviousness argument.

For this reason, we decline to institute review of claims 18, 21, and 22 for obviousness over Parasher and Nomiya.

*E. Obviousness over Parasher and SpiraBrush*

Petitioner challenges claims 18, 21, and 22 for obviousness under 35 U.S.C. § 103(a) over Parasher and SpiraBrush. Pet. 24-27.

Petitioner argues that it would have been obvious “to modify the brush of Parasher in view of the brush structure of SpiraBrush” and that the modification is a simple substitution of “one bristle orientation for another,” without explaining what modifications would have been obvious to make, how they would have been made, or why the modification is no more than a “simple substitution.” *See* Pet. 26-27. As discussed above, this argument is too vague as to the nature of the combination to demonstrate a reasonable likelihood that Petitioner would prevail in establishing that the challenged claims are unpatentable over the asserted art. For this reason, we decline to institute review of claims 18, 21, and 22 for obviousness over Parasher and SpiraBrush.

*F. Obviousness over Stormby, Boon, and Parasher*

Petitioner challenges claims 1-8, 11-18, and 21-39 for obviousness under 35 U.S.C. § 103(a) over Stormby, Boon, and Parasher. Pet. 28-42.

Petitioner challenges claims 9, 10, 19, and 20 for obviousness over Stormby, Boon, Parasher, and Markus. *Id.* at 43-44. Petitioner challenges claims 18, 21, and 22 for obviousness over Stormby, Boon, Parasher, and SpiraBrush. *Id.* at 44-46.

Petitioner argues that it would have been obvious to “modify . . . Stormby in view of Parasher” and that the modification is a simple substitution of “one set of brush components for another.” Pet. 30. Petitioner also argues that “[t]he Cytobrush® of Stormby modified in view of Parasher would yield transepithelial, non-lacerational brush with bristles having sufficient stiffness to collect cells from at least two layers of epithelial tissue.” *Id.* at 31. As discussed above, these arguments are too vague as to the nature of the modification, and unsupported by credible evidence showing that the modification is no more than a “simple substitution,” to demonstrate a reasonable likelihood that Petitioner would prevail in establishing that the challenged claims are unpatentable over the asserted art. For this reason, we decline to institute review of claims 1-39 for obviousness over the various combinations of Stormby, Boon, Parasher, Markus, and SpiraBrush.

*G. Obviousness over SpiraBrush and Parasher*

Petitioner challenges claims 1-8, 11-18, and 21-39 for obviousness under 35 U.S.C. § 103(a) over SpiraBrush and Parasher. Pet. 46-57. Petitioner challenges claims 9, 10, 19, and 20 for obviousness over SpiraBrush, Parasher, and Markus. *Id.* at 57-58.

Petitioner argues that it would have been obvious to “modify . . . SpiraBrush in view of Parasher” and that the modification is a simple substitution of “one set of brush components for another.” Pet. 47.

Petitioner also argues that “the brush of SpiraBrush modified in view of Parasher is a transepithelial, non-lacerational brush with bristles having sufficient stiffness to collect cells from at least two layers of epithelial tissue.” Pet. 48. As discussed above, these arguments are too vague, and unsupported by credible evidence, to demonstrate a reasonable likelihood that Petitioner would prevail in establishing that the challenged claims are unpatentable over the asserted art. For this reason, we decline to institute review of claims 1-39 for obviousness over the various combinations of SpiraBrush, Parasher, and Markus.

### III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has demonstrated that there is a reasonable likelihood of its proving unpatentability of claims 1-17, 19, 20, 23-28, 32, and 35-39 of the '044 patent.

The Board has not made a final determination on the patentability of the challenged claims.

### IV. ORDER

Accordingly, it is

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review is hereby instituted as to claims 1-17, 19, 20, 23-28, 32, and 35-39 of U.S. Patent No. 6,258,044 on the following grounds of unpatentability:

- A. Claims 1-8, 11-17, 23-28, 32, and 35-39 for anticipation under 35 U.S.C. § 102 by Parasher; and
- B. Claims 9, 10, 19, and 20 for obviousness under 35 U.S.C. § 103(a) over Parasher and Markus;

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FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, the trial commencing on the entry date of this decision; and

FURTHER ORDERED that the trial is limited to the grounds identified above, and no other grounds are authorized.



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