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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* SASWATI DATTA, WILLIAM RANDALL BELCHER,  
SANDRA LOU MURAWASKI, MANNIE LEE CLAPP, STEVEN  
HARDY PAGE, RICHARD TWEDDELL III, LOUIS FAY WONG,  
MAGDA EL-NOKALY, SOHINI PALDEY, and RONALD R. WARNER<sup>1</sup>

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Appeal 2015-005292  
Application 13/790,592  
Technology Center 1600

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Before ULRIKE W. JENKS, RYAN H. FLAX, and  
DEVON ZASTROW NEWMAN, *Administrative Patent Judges*.

NEWMAN, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal under 35 U.S.C. § 134 involves claims to a method of product evaluation. The Examiner entered final rejections for obviousness.

We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

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<sup>1</sup> Appellants identify the Real Party in Interest as The Procter & Gamble Company of Cincinnati, Ohio. App. Br. 1.

STATEMENT OF THE CASE

*Background*

The present invention [] describes methods of use of a substrate having properties of mammalian keratinous tissue (“substrate”) developed by the applicants. A substance, examples of which are consumer products, can be topically applied to the substrate, which can be analyzed by a wide variety of methods to gain insight into properties of the substance and/or substrate. The data obtained from the analysis can provide insight into properties such as product deposition, adhesion, cleansing, feel, and appearance, which in turn can be correlated to consumer needs and preferences.

Spec. 2:11–17.

The following rejections are before us to review:

- A. Claims 1–7 and 9–11 are rejected under 35 U.S.C. § 103(a) as unpatentable over Woolston,<sup>2</sup> Ramkumar,<sup>3</sup> Zahouani,<sup>4</sup> Carnaby,<sup>5</sup> and Koenig<sup>6</sup> (Ans. 2).

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<sup>2</sup> US 2003/0233861 A1, published Dec. 25, 2003 (“Woolston”)

<sup>3</sup> US 6,397,672 B1, issued June 4, 2002 (“Ramkumar”)

<sup>4</sup> US 7,958,775 B2, issued June 14, 2011 (“Zahouani”)

<sup>5</sup> US 5,727,567, issued Mar. 17, 1998 (“Carnaby”)

<sup>6</sup> US 2003/0109811 A1, published June 12, 2003 (“Koenig”)

B. Claim 8 is rejected under 35 U.S.C. § 103(a) as unpatentable over Woolston, Ramkumar, Zahouani, Carnaby, Koenig, Morykwas,<sup>7</sup> and Lambers<sup>8</sup> (Ans. 6).

Claims 1–11 are on appeal. Sole independent claim 1 illustrates the appealed subject matter and reads as follows:

1. A method of product evaluation comprising the steps of:
  - a) providing an artificial first substrate having a physical property representative of mammalian keratinous tissue;
  - b) providing a second substrate;
  - c) contacting at least one of the substrates to an instrument capable of measuring frictional force using a load cell;
  - d) bringing the first substrate into contact with the second substrate;
  - e) moving the first substrate with respect to the second substrate in a controlled manner while maintaining substantially continuous contact between the first substrate and the second substrate; and
  - f) measuring the frictional force generated by the movement of the first substrate relative to the second substrate.

App. Br. Claims App'x. 9.

With regard to the first rejection, we select claim 1 as representative of the claims subject to this ground of rejection. 37 C.F.R. § 41.37(c)(1)(iv).

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<sup>7</sup> M.J. Morykwas et al., *Zeta Potential of Synthetic and Biological Skin Substitutes: Effects on Initial Adherence*. 79(5) PLAST. RECONSTR. SURG. 732–9 (May 1987)(“Morykwas”).

<sup>8</sup> H. Lambers et al., *Natural Skin Surface pH is on Average Below 5, Which is Beneficial for its Resident Flora*, 28(5) INT. J. COSMET. SCI. 359–70 (Oct. 2006)(“Lambers”).

Appellants do not separately argue the rejection of claim 8 under 35 U.S.C. § 103(a) as unpatentable over Woolston, Ramkumar, Zahouani, Carnaby, Koenig, Morykwas, and Lambers, but rely on their arguments pertaining to the first rejection (*see* App. Br. 7). Accordingly, we address these rejections together and find it necessary to consider only Woolston, Ramkumar, Zahouani, Carnaby, and Koenig, using claim 1 as representative of the claims subject to the grounds of both rejections.

#### ISSUE

The issue with respect to the rejections is: Does the evidence of record support the Examiner’s conclusion that Woolston, Ramkumar, Zahouani, Carnaby, and Koenig suggest the invention of claim 1?

#### FACTUAL FINDINGS (FF)

FF 1. The Specification discloses “[s]ubstrate,’ as used herein, means one or more materials which may have one or more physical properties representative of keratinous tissue.” Spec. 7: 1–2.

FF 2. The Specification discloses “[k]eratinous tissue,’ as used herein, means keratin-containing layers disposed as the outer layer of mammalian epidermal tissue, including skin, hair, nails, lips, vulvar region, buttock, and nails.” Spec. 5: 20–22.

FF 3. Woolston discloses prior art methods for assessing the condition of hair, including “measuring the degree of friction generated by subjecting the hair to certain conditions,” assessment “by means of deformation of a deformable assembly on a probe,” “comparing forward and reverse friction forces. . . . by means of a torque meter,” and “passing a fluid in turbulent

flow over a bundle of hair and measuring friction by detecting pressure loss in the fluid.” (Woolston ¶¶ 4–7).

FF 4. Woolston discloses:

According to a first aspect of the invention we provide a method for measuring the friction generated by a bundle of hair fibres [sic], comprising providing a friction member, drawing the friction member through the bundle of hair, whereby a frictional noise signal is generated, and capturing the frictional noise signal by a noise sensor. Generally the captured noise signal is converted to a form that can be displayed. The converted signal is then displayed using display means. Such means may include, but is not limited to display screens selected from the group consisting of a computer screen, a cathode ray tube device, and a liquid crystal display device.

Woolston ¶ 16.

FF 5 Koenig discloses:

An in vitro testing method for predicting a coefficient of friction exhibited by a material passed over human skin, in vivo. A material operatively connects between a scaffold and a load cell and a synthetic sheet mounts on the scaffold. A porous layer is applied to an exposed surface of the synthetic sheet, forming a simulated human tissue. The material engages the simulated human tissue and moves relative to the scaffold to measure the coefficient of friction between the material and the simulated human tissue with the load cell.

Koenig Abstract.

FF 6 Koenig discloses:

To evaluate the coefficient of friction between the simulated human tissue 41 and the test material 23, the test apparatus 21 moves the test material relative to the scaffold 33

to measure the frictional force between the test material and the simulated human tissue with the load cell 29. Because the normal force applied by the mass 107 is known and constant, the frictional force measured by the load cell 29 is proportional to the coefficient of friction. Typically, the scaffold 33 and simulated human tissue 41 remain stationary, while the load cell 29 pulls the test material 23 across the simulated human tissue. However, any relative motion between the test material 23 and the simulated human tissue 41 may be used to create friction.

Koenig ¶ 28 (emphasis omitted).

### *Principle of Law*

An invention is not patentable under 35 U.S.C. § 103 if it is obvious. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 427 (2007). Under § 103: The scope and content of the prior art are to be determined, differences between the prior art and the claims at issue are to be ascertained, and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). A central question in analyzing obviousness is “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *KSR*, 550 U.S. at 417.

## ANALYSIS

The Examiner finds that,

Woolston discloses an evaluation method for assessing the condition of hair [], the method comprising measuring friction in a human hair sample (wherein “hair” is a “keratinous tissue”

as stated at paragraph 23 of the instant specification as published) by providing a friction member (an “artificial first substrate” of claim 1) and a hair sample (a “second substrate” of claim 1 []), continuously contacting the friction member and the hair sample by drawing the friction member through the hair in a controlled manner, and measuring the resulting frictional force between the friction member and the hair sample using a noise sensor []. Woolston teaches that the amount of friction generated between the friction member and the hair is related to the roughness/smoothness of the hair (i.e., the “feel” of the hair), such that the method can be used to assess the condition of the hair, and in particular the degree to which the hair is damaged . . . .

(Ans. 2)

The Examiner finds that, with regard to claim 1, “Woolston does not further expressly disclose that [] the frictional force is measured using a load cell as recited by claim 1.” *Id.* at 3. The Examiner finds this element supplied by Koenig:

Koenig discloses a method for predicting a coefficient of friction exhibited by a material passed over human skin using a load cell . . . . Koenig teaches that as friction between skin and a personal care product increases, the likelihood of causing damage to the skin also increases, and further that determining the frictional properties of a particular skin care product yields information about the way the product will feel on skin during use.

*Id.* at 4.

We adopt and incorporate by reference the Examiner’s findings and conclusions as presented in the Final Action mailed May 29, 2014, and Answer. We find the subject matter of Appellants’ claimed invention prima

facie obvious in view of Woolston and Koenig alone.<sup>9</sup> The Board may rely upon less than all the references cited by the Examiner. *See In re May*, 574 F.2d 1082, 1090 (CCPA 1978). We address the arguments raised by Appellants on appeal below.

Appellants argue the ordinarily skilled artisan “would not be prompted to combine the elements of Woolston, Ramkumar, Zahouani, Carnaby and Koenig to reproduce the method recited in claim 1 of the present application with a reasonable expectation of success. App. Br. 2. Appellants argue,

The entire description of Woolston is directed to measuring frictional noise generated by running a comb through hair (e.g., with a microphone), and displaying the corresponding waveform on a visual display unit. Woolston even discloses that “[i]n the method it is **necessary** to use both a friction member and a **noise sensor**.”[] Thus, while Woolston may be directed, generally, to a method of assessing hair condition/damage, the way in which it accomplishes this (i.e., the principle of operation) is by measuring frictional noise with a noise sensor and correlating the frictional noise to a level of hair damage. In contrast, the principle of operation of the load cell of Koenig is by determining load (i.e., force) versus time for two surfaces in moved across one another. []

Consequently, the Office’s assertion that substituting the load cell of Koenig for the frictional noise sensor of Woolston does not change the principle of operation of the device of Woolston is clearly erroneous.

App. Br. 3–4.

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<sup>9</sup> We recognize that the Examiner relied on the teachings of Ramkumar, Zahouani, Carnaby, Morykwas, and Lambers to address elements pertaining to Appellants’ dependent claims; however, as Appellants have not separately argued those claims, we do not address them here. 37 C.F.R. § 41.37(c)(1)(iv).

According to Appellants, the

noise sensor of Woolston and the load cell of Koenig **function differently and produce different results**. That is, the ‘result’ of the noise sensor of Woolston is a displayed waveform produced from the vibration of comb tines contacting hair, which can then be correlated to the level of damage in hair, whereas the ‘result’ of the load cell of Koenig is a measurement of force versus time.

*Id.* at 4. Appellants argue the Examiner failed to “properly support the position that the skilled artisan would be able to predictably indicate the level of damage to hair based on the force versus time output of the load cell of Koenig.” *Id.* Appellants argue that without such reasoning, “it cannot be said that substituting the load cell of Koenig for the noise sensor of Woolston would yield predictable results.” *Id.* at 5. Appellants further argue “substitution of the load cell of Koenig for the noise sensor of Woolston is not a **simple** substitution” and that it is “not unreasonable to conclude that additional modifications would need to be made to the load cell of Koenig so that it could be adapted for use in a comb,” including that “different hardware,” “different correlating means” and adaptation due to “the sheer size of the device in Koenig” may be necessary. *Id.*

The Examiner responds that Woolston’s principle of operation is “the drawing of a friction member through hair to generate friction between the member and the hair, measuring the degree of said friction, and correlating the degree of friction to the condition of the hair, wherein more friction indicates a rougher condition of the hair.” Ans. 8. Thus, the Examiner argues, the principle of operation is “preserved despite the modifications to Woolston laid out by the rejection.” *Id.*

The Examiner further finds that Koenig is shown to be “capable of measuring frictional forces between a friction member and a sample of tissue that is keratinous in nature.” *Id.* Specifically, the Examiner finds that,

[s]ince Koenig expressly teaches that a load cell can be used to measure the friction between a material that is in contact with, and moving with respect to, a sample comprising tissue that is also keratinous in nature, the skilled artisan would reasonably expect that a load cell could be used to determine the condition of the hair in the Woolston method.

*Id.* at 9. The Examiner finds Woolston “expressly discloses that it is known in the art that devices and techniques other than a noise sensor can be used to determine the condition of hair by measuring its frictional properties and nowhere discredits the concept of using devices other than a noise sensor.”

*Id.* The Examiner argues that because Woolston’s guidance teaches other mechanisms are possible, and discloses mechanisms such as “measur[ing] the condition of hair by comparing forward and reverse friction forces by means of a torque meter” and Koenig teaches use of a load cell as a device “capable of measuring the degree of friction between keratinous tissue and a friction member moving with respect to each other,” replacing the noise sensor of Woolston with the load cell of Koenig is a “simple substitution of one known element for another to obtain predictable results.” *Id.* at 10 (emphasis omitted).

Appellants respond in their Reply Brief that “the Office has completely excluded the noise sensor of Woolston from the principle of operation analysis [] even though the noise sensor is at the very heart of the device in Woolston.” Reply Br. 2. Appellants argue that when “the noise sensor is properly included, the modification proposed by the Office (i.e.,

substituting the force sensor of Koenig for the noise sensor of Woolston) clearly changes this principle of operation.” *Id.* Appellants point to teachings in Woolston regarding the desirability of a means for measuring the “levels of damage across a range of hair types” as “implicitly teach[ing] away from the use of conventional force measurement [a load cell] for assessing damage to hair.” *Id.* (Emphasis omitted.). Appellants further argue that “Woolston and Koenig both contain ample disclosure for the skilled artisan to easily conclude that the size, type and placement of their respective hardware [] size are different” and point to disclosures in the references describing and depicting placement of the relevant components. *Id.* at 3. Appellants argue these disclosures would be understood by one of skill in the art to mean the “respective devices employ very different hardware, and that the hardware of Koenig would need to be substantially modified for use with the device in Woolston,” meaning the substitution would not be simple and results would not be predictable, precluding a finding of obviousness. *Id.* at 4. Appellants argue,

the Office should identify some physical embodiment that the skilled artisan is allegedly starting with, based on a reading of the primary reference as a whole, and provide reasoning for each proposed modification in a logical path that leads to the embodiment ultimately used to support the *prima facie* case.

*Id.* Appellants contend the Examiner, in failing to do so, has not provided “the requisite reasoning to support a logical progression from the exemplified device of Woolston to the hypothetical device proposed in the Examiner’s Answer.” *Id.* at 5.

Appellants' arguments do not persuade us that a preponderance of the evidence fails to support the Examiner's prima facie case as to claim 1. As the Examiner established, the prior art teaches multiple methods of using an apparatus to measure friction on keratinous tissue, which Appellants' Specification defines to include "skin" or "hair" or a substrate having the properties of keratinous tissue (FF 1 & 2). These prior art methods include assessing friction "by means of deformation of a deformable assembly on a probe," "comparing forward and reverse friction forces . . . by means of a torque meter," and "passing a fluid in turbulent flow over a bundle of hair and measuring friction by detecting pressure loss in the fluid," (FF 3) as well as Woolston's method of measuring the frictional noise signal (FF 4) and Koenig's measurement of frictional force using a load cell method (FF 5 & 6). We agree with the Examiner that substituting the load cell of Koenig is a simple substitution of the use of a different apparatus to measure friction of a keratinous tissue that is per se obvious. *See In re Fout*, 675 F.2d 297, 301 (CCPA 1982) ("Because both [references] teach a method for separating caffeine from oil, it would have been prima facie obvious to substitute one method for the other. Express suggestion to substitute one equivalent for another need not be present to render such substitution obvious."). Appellants provide no evidence that the substitution is impossible, but argue there would be difficulties apparent to one of skill in the art based on information in the references themselves. Reply Br. 3. This argument is unpersuasive as some adaptation of prior art for use in a new manner is expected. *See Leapfrog Enterprises, Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007) (finding it obvious to adapt a known product "using modern electronic components in order to gain the commonly

understood benefits of such adaptation, such as decreased size, increased reliability, simplified operation, and reduced cost”). Absent evidence demonstrating why the proposed obvious substitution would not function as proposed, Appellants’ attorney arguments are insufficient to overcome a prima facie case of obviousness. *See In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974) (“Attorney’s argument in a brief cannot take the place of evidence.”).

We are also not persuaded by Appellants’ argument that Woolston’s disclosure regarding the desirability of a means for measuring the “levels of damage across a range of hair types” implicitly teaches away from the use of a load cell for measurement for assessing damage to hair because Woolston does not discourage use of a load cell. Reply Br. 2 (emphasis omitted). Instead, “[t]he prior art’s mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed.” *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). We find that one of ordinary skill in the art would have a reasonable expectation of success in substituting the load cell taught by Koenig instead of the noise sensor used by Woolston. “Obviousness does not require absolute predictability of success. . . . For obviousness under § 103, all that is required is a reasonable expectation of success.” *In re O’Farrell*, 853 F.2d 894, 903–04 (Fed. Cir. 1988) (citations omitted).

### *Conclusion of Law*

We affirm the rejection of claim 1 under 35 U.S.C. § 103(a) as unpatentable over Woolston, Ramkumar, Zahouani, Carnaby, and Koenig.

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Claims 2–7 and 9–11 have not been argued separately and therefore fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

As discussed above, Appellants have waived arguments directed to Morykwas and Lambers (*see* App. Br. 7). We, therefore, also affirm the rejection of claim 8 under 35 U.S.C. § 103(a) as unpatentable over Woolston, Ramkumar, Zahouani, Carnaby, Koenig, Morykwas, and Lambers. *See Hyatt v. Dudas*, 551 F.3d 1307, 1314 (Fed. Cir. 2008) (“In the event of such a waiver, the PTO may affirm the rejection of the group of claims that the examiner rejected on that ground without considering the merits of those rejections.”).

#### SUMMARY

We affirm the rejection of claims 1–11 for obviousness.

#### TIME PERIOD FOR RESPONSE

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

AFFIRMED