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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SRINIVASAN KRISHNAN, JAMIE GORDON NICHOL, and
BRUCE CICHOWLAS

Appeal 2015-001407
Application 12/855,728
Technology Center 3700

Before JENNIFER D. BAHR, LINDA E. HORNER, and
BRANDON J. WARNER, *Administrative Patent Judges*.

WARNER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Srinivasan Krishnan et al. (“Appellants”)¹ appeal under 35 U.S.C. § 134(a) from the Examiner’s decision rejecting claims 1, 7, and 8, which are all the pending claims. *See* Br. 3. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM.

¹ According to Appellants, the real party in interest is Conopco, Inc., d/b/a Unilever. Br. 3.

CLAIMED SUBJECT MATTER

Appellants' disclosed invention relates to "a hand holdable device for simultaneously measuring multiple parameters defining a person's skin or hair condition." Spec., p. 1, ll. 7–8. Claim 1, reproduced below with emphasis added, is the sole independent claim and is representative of the subject matter on appeal.

1. A device for evaluating skin or hair condition comprising:

(i) a housing;

(ii) a hydration meter mechanism for measuring moisture, the meter being supported within the housing and having an external surface contactable against skin or hair to measure moisture content thereof, *the meter comprising at least two adjacent metallic wires that are embedded within a sensing cell with their respective capacitance sensitive to differences in dielectric constant of the environment of the sensing cell;*

wherein the external surface portion of the hydration meter surrounds a central window, the light emitting diodes being arranged to transmit light through the central window; and

(iii) a plurality of light emitting diodes arranged within the housing wherein at least one of the light emitting diodes at different times emits light and detects light reflected from the skin or hair area being evaluated;

wherein the light emitting diodes comprise one red, one blue, one green and two infrared wavelength light emitters;

wherein the light emitting diodes are angularly oriented to the central window in an angular range from 35° to 55°;

wherein one of the plurality of light emitting diodes is an infrared wavelength receiver oriented perpendicular to the central window and the skin or hair being measured; and

wherein four light emitting diodes surround a central infrared light emitting diode arranged so that the axis of each intersects at a point where the axis of the central infrared light emitting diode impinges at a surface of the skin.

EVIDENCE

The Examiner relied on the following evidence in rejecting the claims on appeal:

Amerena	US 4,860,753	Aug. 29, 1989
Ouellette	US 5,938,593	Aug. 17, 1999
Bandic	US 2008/0194928 A1	Aug. 14, 2008

Dejan Karadaglic, *Single LED Takes On Both Light-Emitting And Detecting Duties*, *Electronic Design* (July 19, 2007), <http://www.electronicdesign.com/lighting/single-led-takes-both-light-emitting-and-detecting-duties> (“Karadaglic”).

REJECTIONS

The following rejections are before us for review:

- I. Claim 8 stands rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Final Act. 3.
- II. Claims 1 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bandic, Amerena, and Karadaglic. *Id.* at 4–8.
- III. Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bandic, Amerena, Karadaglic, and Ouellette. *Id.* at 8.

ANALYSIS

Rejection I— Claim 8 as failing to comply with the enablement requirement

The Examiner determined that the Specification fails to provide an enabling disclosure for the limitation in claim 8 reciting that “data in analog form is converted to digital values, and then retransformed into an analog form as an audio wave signal for subsequent transformation back into a digital signal.” Final Act. 3. The Examiner explained that “[i]t is unclear how the signal is retransformed into an analog form as an audio wave signal from a digital signal that is not an audio signal,” and that “[t]he disclosure includes no details on this signal processing technique for this type of transformation.” *Id.*

Appellants argue that the Specification “provides adequate information to enable . . . [one of ordinary skill in the art] in the field of instrumental skin analysis and signal processing to perform the data transformation as presented in claim 8 as a matter of routine implementation using well known data handling techniques and instrumentation including commercially available microcontrollers.” Br. 7 (citing ¶ 27 of U.S. Patent Application Publication No. US 2012/0041283 A1, which corresponds to Spec., p. 6, ll. 17–27). Appellants also point to a Declaration submitted May 8, 2014, under 37 C.F.R. § 1.132 by Jamie Gordon Nichol (hereafter “Nichol Declaration”) in order to “illustrate the understanding of the [person of ordinary skill in the art] in the field of microcontrollers.” Br. 8; *see id.* at 16, Evidence App. The Examiner responds that “the affidavit referred to by Appellant[s] was submitted in a different application and was not considered

timely in the instant application.” Ans. 8. The Examiner is correct in identifying this procedural deficiency.

The rules for filing an appeal to the Board require that “[a] brief shall not include any new or non-admitted amendment, or any new or non-admitted affidavit or other Evidence.” 37 C.F.R. § 41.37(c)(2). The Patent Rules also state that “[a]n affidavit or other evidence submitted after a final rejection or other final action . . . may be admitted upon a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented.” 37 C.F.R. § 1.116(e).

Our review of the record of the instant application reveals that the Examiner denied entry of the Nichol Declaration because it was filed after a final rejection and because Appellants “failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented.” Advisory Act. 1. As such, because the Nichol Declaration has not been entered in the record of the instant application, it represents non-admitted evidence, which we do not consider here.

Insofar as the substance of the enablement requirement is concerned, the dispositive issue is whether Appellants’ disclosure, considering the level of ordinary skill in the art as of the date of the application, would have enabled a person of such skill to make and use the claimed invention without undue experimentation. *In re Strahilevitz*, 668 F.2d 1229, 1232 (CCPA 1982). Some factors to be considered in determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in

the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

Here, the Examiner considers relevant *Wands* factors, and concludes that Appellants' Specification lacks sufficient disclosure to enable those having ordinary skill in the art to make and/or use the claimed invention without undue experimentation. *See* Ans. 7–8. Namely, the Examiner explains:

By applying *In [r]e Wands* factors, the scope is not enabling since: the state of the prior art describes creating an audio signal based on digital values; the amount of direction provided by the invention does not include a signal processing technique for transforming the signal from non-audio digital to audio analog signal; and the quantity of experimentation needed to make the claimed invention based on the content of the disclosure would be undue experimentation as no exact examples of the claimed scope are found in the original disclosure.

Id.

As to the state of the prior art, we agree with the Examiner's determination that, though the prior art describes producing an audio signal from digital values, Appellants' disclosure does not provide sufficient direction for implementing a signal processing technique that transforms a *non-audio* digital signal into an analog audio signal. Notably, the description in the Specification cited by Appellants "is essentially the same as the claim language," and "does not include an explanation of the signal processing technique nor a particular processing element that the technique occurs on." Ans. 8; *see* Spec., p. 6, ll. 17–27. Although the Specification mentions a microcontroller, "there does not appear to be an explanation of how the microcontroller can transform a signal from a non-audio form to an audio form." Ans. 8. As such, the Specification does not sufficiently

demonstrate the existence of working examples of a device that transforms data as claimed. Moreover, Appellants do not specifically respond to the analysis of the *Wands* factors provided in the Examiner's Answer and, most notably, do not present any evidence on the record to support their assertion that implementing the data transformation required by claim 8 would be a matter of routine implementation applying well-known data handling techniques and microcontrollers. *See* Br. 8.

After careful consideration of the record before us, we agree with the Examiner that Appellants' Specification does not provide an enabling disclosure of converting the analog data from the hydration meter and light emitting diodes to digital values that are retransformed into an analog audio wave signal such that one of ordinary skill in the art could make and use the claimed invention without undue experimentation. Accordingly, we sustain the rejection of claim 8 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

*Rejection II – Claims 1 and 7 as unpatentable
over Bandic, Amerena, and Karadaglic*

Appellants present arguments against Rejection II of claims 1 and 7 as a group. *See* Br. 9–11. We select independent claim 1 as representative of the issues that Appellants present with regard to Rejection II, with dependent claim 7 standing or falling therewith. *See* 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner found that Bandic teaches a device for evaluating skin or hair condition, substantially as claimed, “but does not teach the specific skin moisture sensors.” Final Act. 5. Next, the Examiner found that “Amerena teaches a skin monitoring apparatus with a hydration meter

mechanism for measuring moisture . . . comprising at least two adjacent metallic wires that are embedded within a sensing cell with their respective capacitance sensitive to differences in dielectric constant.” *Id.*; *see also id.* at 5–6 (citing Amerena, Abstract, Figs. 3–4, col. 3, ll. 31–58). The Examiner concluded that, given the teachings of the prior art, it would have been obvious to one of ordinary skill in the art at the time of the invention “to modify Bandic with the skin moisture electrodes of Amerena, because the skin moisture sensors are a simple substitution of [one] known element for another to yield predictable results and leads to better skin analysis using more than one method of determining skin parameters.” *Id.* at 6; *see also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

The Examiner also found that Bandic discloses “an infrared wavelength receiver oriented perpendicular to the central window and the skin or hair being measured (Figure 4, wherein the central detection window is surrounded by a ring of LEDs and paragraph 47),” but acknowledged that “Bandic does not explicitly state that the receiver is a light emitting diode.” Final Act. 6–7. However, the Examiner found that “it is well-known that LEDs can be used to both emit and detect light.” *Id.* at 7. Specifically, the Examiner found that “Karadaglic teaches this well-known property wherein an LED is used to detect light at wavelengths just shorter than the light it emits (i.e. typically, an LED detects light at a wavelength somewhat shorter than the light it emits, making it a wavelength-selective detector).” *Id.* (italics omitted). The Examiner concluded that, given the teachings of the prior art, it would have been obvious to one of ordinary skill in the art at the time of the invention “to use a light emitting diode because it is well-known

to be used as both an emitter and detector and is an inexpensive means to detect the reflected light.” *Id.*

The Examiner also acknowledged that Bandic “does not explicitly state the number of electrodes that are in the ring.” *Id.* However, the Examiner concluded that, given the teachings of the prior art, it would have been obvious to one of ordinary skill in the art at the time of the invention “to modify Bandic, Amerena, and Karadaglic with the optimum number of LEDs since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art.” *Id.*

Appellants argue that Amerena does not teach or suggest a hydration meter having “at least two adjacent metallic wires that are embedded within a sensing cell,” as claimed. *See* Br. 10. In particular, Appellants assert that “Amerena discloses an embodiment where the electrodes make direct electrical contact with the skin” (*id.* (citing Amerena, col. 3, l. 40)), whereas, in contrast, “the claimed capacitive pickup never directly contacts the skin electrically because the electrode wires are ‘embedded in a sensing cell’ as claimed” (*id.* (underlining omitted)). This argument is not persuasive of error because it insists upon an overly narrow reading of the language of claim 1, which does not exclude direct electrical contact between the wires of the hydration meter sensing cell and the skin. Appellants do not point to, nor do we discern, anything in the Specification that would necessitate an interpretation of “embedded within” as excluding direct contact between the wires and the skin. The Specification describes only that “[m]etallic electrical conducting wires, preferably of copper on a circuit board, are embedded within a hardened resin of the sensing cell.” *Spec.*, p. 4,

ll. 13–15. Figure 3 of Amerena shows electrodes 26, 28 and metallic wires 46, 48 inside body channel 42 of probe unit 22, such that the electrodes and wires are sufficiently “embedded within,” as recited in the claim.²

Appellants argue that one of ordinary skill in the art “would have no reasonable expectation of success for the claimed skin and hair condition evaluation device from the combination of the art of record and their knowledge in the field absent hindsight of [Appellants’] invention.” Br. 13. Appellants assert that they “have surprisingly found that a combination of the claimed hydration meter and LED emitting and detecting device and their relationship and cooperation with each other and with the claimed embedded electrodes provided enhanced functionality.” *Id.* This argument is not persuasive because Appellants do not offer any evidence or explanation to show that the results of the claimed invention are unexpected compared with the closest prior art. *See In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991) (“[W]hen unexpected results are used as evidence of nonobviousness, the results must be shown to be unexpected compared with the closest prior art.”) (citing *In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984)). Moreover, regarding the allegation of improper hindsight, Appellants do not identify any knowledge relied upon by the Examiner that was gleaned only from Appellants’ disclosure and that was

² We note that an ordinary meaning of “within” is simply “in or into the interior” or “inside.” *See Merriam-Webster’s Collegiate Dictionary* (11th ed. 2003). This ordinary meaning is consistent with the claim language and Appellants’ Specification, which does not impart any special definition to compel a different, or narrower, construction of “within,” as recited in the claim. *See Spec.*, p. 4, ll. 13–15.

not otherwise within the level of ordinary skill at the time of the invention. *See In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971).

Appellants also argue that “Karadaglic’s generic disclosure of LED properties fails to remedy deficiencies of Bandic and Amerena.” Br. 11. However, as we do not find a deficiency in the combination of Bandic and Amerena, this argument does not apprise us of error in the Examiner’s rejection.

Accordingly, we sustain the rejection of claim 1, and of claim 7 falling therewith, under 35 U.S.C. § 103(a) as being unpatentable over Bandic, Amerena, and Karadaglic.

*Rejection III – Claim 8 as unpatentable
over Bandic, Amerena, Karadaglic, and Ouellette*

Regarding the additional limitations of dependent claim 8, the Examiner acknowledged that the combination of Bandic, Amerena, and Karadaglic does not disclose “the conversion of analog to digital and transformation to an audio signal.” Final Act. 8. However, the Examiner found that “Ouellette teaches a skin moisture device in which the data generate[d] is in analog form, and wherein the data in analog form is converted to digital values and then retransformed into an analog form as an audio signal for transmission.” *Id.* (citing Ouellette, col. 11, l. 50 – col. 12, l. 52). The Examiner interpreted the recitation of “for subsequent transformation back into a digital signal” as being directed to intended use, and found that “[t]he audio signal of Ouellette is capable of being transformed into a digital signal using a simple analog to digital converter (ADC).” *Id.* The Examiner concluded that, given the teachings of the prior

art, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teachings of Bandic, Amerena, and Karadagic with the signal processing technique taught by Ouellette, “because it is the application of a known technique [(i.e., Ouellette’s signal processing)] to improve a similar device in the same way.” *Id.*; *see also KSR Int’l Co.*, 550 U.S. at 417.

Appellants argue that Ouellette does not teach or suggest “wherein the hydration meter and light emitting diodes generate data in analog form, and wherein the data in analog form is converted to digital values and then retransformed into an analog form as an audio wave signal for subsequent transformation back into a digital signal,” as claimed. *See* Br. 11–12. In particular, Appellants assert that “Ouellette’s measured skin condition is displayed and ‘communicated audibly through a voice synthesizer system.’” *Id.* at 11 (underlining omitted). According to Appellants, “[a] key difference between claim [8] and Ouellette is that the claimed audio frequency wave or electrical signal could not be heard or understood by a person.” *Id.* at 11–12. “This is because it is a wave or electrical signal for subsequent transformation back into a digital signal as presently claimed and is therefore inaudible.” *Id.* at 12. We are not persuaded by Appellants’ argument.

Initially, we note that Appellants’ reliance on the Nichol Declaration to support their position (*see id.*) is unavailing because, as discussed *supra*, the Nichol Declaration has not been entered into the record of the instant application. *See* Advisory Act. 1. Therefore, the Nichol Declaration is not considered.

With regard to the argument that the claimed audio wave signal is inaudible (*see* Br. 12), as stated by our reviewing court in *In re Hiniker Co.*,

150 F.3d 1362, 1369 (Fed. Cir. 1998), “the name of the game is the claim.” It is well established that limitations not appearing in the claim cannot be relied upon for patentability. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982). Here, claim 8 only recites, in relevant part, that “data in analog form is converted to digital values and then retransformed into an analog form as an audio wave signal for subsequent transformation back into a digital signal.” Br. 15, Claims. App. We see nothing in the language of claim 8 that would limit the audio wave signal to inaudible form.

However, even if the claim did require that the audio wave signal be inaudible, Ouellette discloses “voice synthesizer 136 having two programmable voice synthesizer control chips U2 and U3.” Ouellette, col. 12, ll. 25–27 (boldface omitted). “The outputs of the voice chips, SPK, are connected through blocking diodes D1 to drive a transistor Q3 that acts in combination with resistors R24, R25 and a potentiometer VR1 to produce a volume control for the speaker LS1.” *Id.*, ll. 32–36 (boldface omitted). As such, the audio *signal* output from Ouellette’s voice chips U2, U3 to transistor Q3, resistors R24, R25, and potentiometer VR1 would remain inaudible until it is emitted by speaker LS1 as an audible audio output. To the extent that Ouellette’s system may produce a synthesized *audible* output from speaker LS1, Appellants do not point to any evidence on the record, or provide any persuasive technical reasoning, to explain why the audio *signal* output from Ouellette’s voice synthesizer control chips U2, U3 would be different from the claimed audio wave signal.

Accordingly, we sustain the rejection of claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Bandic, Amerena, Karadagic, and Ouellette.

DECISION

We AFFIRM the Examiner's decision rejecting claim 8 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

We AFFIRM the Examiner's decision rejecting claims 1 and 7 under 35 U.S.C. § 103(a) as being unpatentable over Bandic, Amerena, and Karadagic.

We AFFIRM the Examiner's decision rejecting claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Bandic, Amerena, Karadagic, and Ouellette.

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