

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BAOHUA QI and BENJAMIN R. MATTES

Appeal 2008-2013
Application 10/910,169
Technology Center 2800

Decided: June 30, 2008

Before CHUNG K. PAK, CATHERINE Q. TIMM, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

Opinion for the Board filed by *Administrative Patent Judge* SMITH.

Opinion Dissenting filed by *Administrative Patent Judge* PAK

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

Statement of the Case

This is an appeal under 35 U.S.C. § 134 from a final rejection of claims 17-19, 23-26, and 31-34. Claims 1-16, 20-22, and 27-30 have been

withdrawn from consideration. (App. Br. 2). We have jurisdiction under 35 U.S.C. § 6.

Appellants' invention relates to an apparatus for measuring relative humidity comprising conductive polymer fibers. An understanding of Appellants' invention can be determined from independent claims 17, 23, and 31 which appear below:

17. Apparatus for measuring relative humidity, comprising in combination:

- (a) at least one first conducting polymer fiber;
- (b) means for measuring the electrical resistance of said at least one first conducting polymer fiber, whereby the relative humidity is determined;
- (c) at least one second conducting polymer fiber, said second conducting polymer fiber being isolated from changes in humidity;
- (d) means for measuring the resistance of said at least one second polymer fiber, whereby the temperature of said at least one second polymer fiber is determined; and
- (e) means for correcting said relative humidity for variations in temperature.

23. Apparatus for providing humidity, comprising in combination:

- (a) at least one conducting polymer fiber;
- (b) means for applying electric current to said at least one conducting polymer fiber effective for controlling the amount of water absorbed thereon; and
- (c) means for measuring the resistance of said at least one polymer fiber, such that the relative humidity to which said fiber is exposed can be determined.

31. A method for providing humidity, comprising the steps of:
- (a) applying electric current to at least one conducting polymer fiber effective for controlling the amount of water absorbed thereon; and
 - (b) measuring the resistance of the at least one polymer fiber, such that the relative humidity to which the fiber is exposed can be determined.

Claims 17-19, 23-26, and 31-34 stand rejected under 35 U.S.C. § 103 (a) as unpatentable over Suda (U.S. Patent No. 6,229,318, dated May 8, 2001) in view of Kishimoto (U.S. Patent No. 5,433,462, dated June 6, 1995).

The principal issue in this appeal is whether the Examiner has carried the burden of establishing a prima facie case in the rejection advanced on appeal which turns on the issues addressed below.

Independent claim 17 describes an apparatus for measuring relative humidity comprising a means for measuring the electrical resistance of the first conducting polymer fiber to determine the relative humidity; and a means for measuring the resistance of a second polymer fiber to determine the temperature of the second polymer fiber. Independent claim 23 describes an apparatus for providing humidity comprising a means for applying electric current to a conducting polymer fiber for controlling the amount of water absorbed thereon; and a means for measuring the resistance of a polymer fiber, such that the relative humidity to which the fiber is exposed can be determined.

The resolution of the issues with respect to the rejection of appealed claims 17 and 23 as well so claims dependent therefrom under § 103(a)

requires that the “means-plus-function” language in the claims must first be interpreted by giving the claim terms their broadest reasonable interpretation consistent with the written description provided in Appellants’ Specification as it would be interpreted by one of ordinary skill in this art. *See In re Morris*, 127 F.3d 1048, 1054-55 (Fed. Cir. 1997)(“[T]he PTO applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant’s specification.”); *In re Donaldson Co.*, 16 F.3d 1189, 1192-95 (Fed. Cir. 1994)(*en banc*)(“[T]he ‘broadest reasonable interpretation’ that an examiner may give means-plus-function language is that statutorily mandated in [35 U.S.C. § 112,] paragraph six.”); *In re Zletz*, 893 F.2d 319, 321-22 (Fed. Cir. 1989)(citing *In re Prater*, 415 F.2d 1393, 1404-05 (CCPA 1969)(“During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow. When the applicant states the meaning that the claim terms are intended to have, the claims are examined with that meaning, in order to achieve a complete exploration of the applicant’s invention and its relation to the prior art.”).

In view of the “means-plus-function” recitations, the claims must be interpreted with respect to whether any or all of the “means-plus-function” limitations specify a function without defining structure sufficient to satisfy that function. We find no indication on the record that the Examiner has properly considered the “means-plus-function” limitations in claims 17 and 23 as well as the claims dependent thereon with respect to the strictures of

35 U.S.C. § 112, sixth paragraph, since the “corresponding structure” in the Specification and “equivalents” thereof with respect to the “means-plus-function” limitations have not been determined in a manner consistent with the requirements of this statutory provision before applying the references to the claims. *See* Ans., e.g., 3-10.¹ *See, e.g., Donaldson*, 16 F.3d at 1195 (“[T]he PTO was required by statute to look to Schuler’s specification and construe the ‘means’ language recited in the last segment of claim 1 as limited to the corresponding structure disclosed in the specification and equivalents thereof.”). Therefore, the Examiner did not consider all of the claim limitations in making out the grounds of rejection under § 103(a). *See, e.g., In re Geerdes*, 491 F.2d 1260, 1262-63 (CCPA 1974)(in considering grounds of rejection “every limitation in the claim must be given effect rather than considering one in isolation from the others”); *cf. Donaldson*, 16 F.3d at 1195-97; *see also, e.g., In re Paulsen*, 30 F.3d 1475, 1478-79 (Fed. Cir. 1994); *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).²

Accordingly, in the absence of appropriate consideration of all of the claim limitations, the Examiner has not established a prima facie case of

¹ In this respect, Appellants have not adequately identified the means-plus-function limitations or the structure(s) described in the Specification corresponding to each claimed function in summarizing the claimed invention as required by 37 C.F.R. § 41.37(c)(1)(v).

² Moreover, 37 C.F.R. § 41.37(v) requires the record for appeal must include for each independent claim involved in the appeal, every means plus function and step plus function as permitted by 35 U.S.C. § 112, sixth paragraph, must be identified and the structure, material, or acts described in the specification as corresponding to each claimed function must be set forth. This analysis is important to insure proper analysis of the claimed subject matter has been considered and presented for review.

obviousness of claims 17-19 and 23-26 therefore, we reverse the grounds of rejection of these claims under 35 U.S.C. § 103(a).

We now turn to the subject matter of independent claim 31 specifically addressing the Examiner's stated rejection.

We have thoroughly reviewed each of Appellants' arguments for patentability. However, we are in complete agreement with Appellants that the claimed subject matter would not have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will reverse the Examiner's rejection.

The Examiner bears the initial burden of presenting a prima facie case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). In order to establish a prima facie case of obviousness, the Examiner must show that each and every limitation of the claim is described or suggested by the prior art or would have been obvious based on the knowledge of those of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988). “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)(*quoted with approval in KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007)).

The Examiner has not established obviousness in this case. Upon consideration of the record as a whole in light of Appellants' contentions, we agree with Appellants that elements constituting a “teaching away” from the claimed invention are present in Suda. *See, e.g., Kahn*, 441 F.3d at 985-86 (“A reference may be said to teach away when a person of ordinary skill,

upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” (Quoting *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994))).

The Examiner rejected claim 31 (and claims 17-19, 23-26, and 32-34) under 35 U.S.C. 103(a) as being unpatentable over Suda in view of Kishimoto. The Examiner contends that Suda discloses an apparatus for measuring relative humidity (as required by claim 17) and an apparatus and method for providing humidity (as required by claims 23 and 31). The Examiner acknowledged that Suda does not disclose that the conducting element is a polymer fiber, but that Kishimoto discloses a temperature sensor wherein the conducting element is a polymer fiber. Therefore, the Examiner concluded that it would have been obvious to one skilled in the art to incorporate the polymer fibers of Kishimoto into the sensor of Suda for the purpose of making the sensor flexible making and therefore less breakable. (Ans. 3).

We do not find the Examiner's arguments persuasive because they failed to take into account the problem confronting Suda. Suda discloses his invention “relates to humidity sensor for detecting humidity, and more specifically, it relates to an electrical resistance type humidity sensor which uses woodceramics and which is inexpensive, small, excellent in heat resistance, and with high accuracy.” (Suda, col. 1, ll. 7-10). Suda seeks to overcome the disadvantages associated with ceramic humidity sensors by utilizing woodceramics. (Suda, col. 1-2 generally). Thus, we agree with Appellants that Suda teaches away from use of other than woodceramic

materials. (App. Br. 7). Consequently, Suda may not properly be used in framing a 35 U.S.C. §103 rejection of claims to that invention as suggested by the Examiner. Suda does not discuss nor compare polymeric conductive materials and the problems associated there with. Furthermore, the replacement and/or removal of the woodceramics of Suda would eliminate the described point of novelty of the stated invention.

In addition, with regard to all the claims, we agree with Appellants that it is the woodceramics material of Suda which is the active part of the sensor, it varying in electrical resistance in response to both humidity and temperature. As stated by Suda, “[t]he humidity sensor ... is constituted so as to use woodceramics of the only material with linear characteristics to humidity and, with the surface sealed the other woodceramics make into a humidity non-sensitive structure, acting as a temperature sensor” (Suda, col. 3, ll. 38-45). The conductive fibers or yarns of Kishimoto do not respond to temperature and humidity changes, they are electrodes attached to a thermosensitive layer 9. It is the thermosensitive layer 9 that responds to temperature changes (Kishimoto, col. 6, ll. 10-18). The Examiner has not established that one of ordinary skill in the art would employ the yarn of Kishimoto as the humidity and temperature responsive material (woodceramic of Suda), nor that the yarn if used as a another structure of the Suda apparatus would result in an apparatus with conductive fibers and means for measuring the electrical resistance of the conducting polymer fiber required by claims 17 and 23 or a process including measuring the resistance of the polymer fiber required by claim 31. The Examiner has not established obviousness in this case.

Appeal 2008-2013
Application 10/910,169

For the foregoing reasons and those presented in the Brief, the rejections of claims 17-19, 23-26, and 31-34 under 35 U.S.C. § 103(a) is reversed.

ORDER

The rejection of claims 17-19, 23-26, and 31-34 under 35 U.S.C. § 103(a) is reversed.

REVERSED

PAK, Administrative Patent Judge, dissenting.

I respectfully dissent from the majority's view for the following reasons.

As is apparent from the Answer, Brief and Reply Brief, Appellants have not questioned the Examiner's implicit interpretation of all the claimed limitations, including the claimed means-plus-function limitations. (Compare Ans. 3-5, with App. Br. 6-13 and Reply Br. 2-3). Nor have Appellants challenged the Examiner's explicit finding that Suda teaches a humidity sensor having, *inter alia*, a woodceramic substrate, the claimed means-plus-function elements, and electrodes as first and second conducting elements. (Compare Ans. 3-5, with App. Br. 6-13 and Reply Br. 2-3). Appellants' only contention is that one of ordinary skill in the art would not have been led to employ the claimed first and second conducting polymer fibers in Suda's humidity sensor (App. Br. 6-13 and Reply Br. 2-3). See 37 U.S.C. § 41.37(c)(1)(viii) (2005) ("Any arguments or authorities not included in the brief or a reply brief filed pursuant to § 41.41 will be refused consideration by the Board..."); *Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1320-21 n. 3 (fed. Cir. 2005) (Any arguments not raised in the Brief are considered waived.); *In re Klopffestein*, 380 F.3d 1345, 1347-48 (Fed. Cir. 2004) (The undisputed factual findings were not disturbed; only the issue raised by Appellants was considered); *Gechter v. Davidson*, 116 F.3d 1454, 1457 (Fed. Cir. 1997) (requiring the interpretation of the disputed limitations (not undisputed limitations) only prior to determining the applicability of § 103).

The dispositive question is, therefore, would one of ordinary skill in the art have been led to use conducting polymer fibers as the electrodes (not the woodceramic substrate) of Suda's humidity sensor within the meaning of 35 U.S.C. § 103(a)? On this record, I answer this question in the affirmative.

As correctly found by the Examiner (Ans. 3), Kishimoto teaches using conductive yarns (conducting polymer fibers) as electrodes in a temperature sensor (See col. 6, ll. 10-17 and col. 5, ll. 10-33). The Examiner has also correctly found that Kishimoto teaches that the conducting polymer fibers include, *inter alia*, polyaniline which is said to assist in making its sensor flexible (col. 2, ll. 15-20 and col. 5, ll. 10-33).

Given the above teachings, I agree with the Examiner that one of ordinary skill in the art would have been led to employ the conducting polymer fibers taught by Kishimoto as the electrodes of Suda's humidity sensor, with a reasonable expectation of successfully obtaining the advantage of forming flexible electrodes useful for Suda's humidity sensor. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740 (2007) (quoting *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 282 (1976)) (“[W]hen a patent ‘simply arranges old elements with each performing the same function it had been known to perform’ and yields no more than one would expect from such an arrangement, the combination is obvious.”).

Accordingly, I would affirm the Examiner's decision rejecting the claims on appeal under 35 U.S.C. § 103(a).

Appeal 2008-2013
Application 10/910,169

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