

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WILLIAM H. WANG, DARREN S. CREWS,
and BRIAN H. KIM

Appeal 2008-1150
Application 11/167,492
Technology Center 2800

Decided: July 9, 2008

Before KENNETH W. HAIRSTON, ANITA PELLMAN GROSS, and
JOHN A. JEFFERY, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's rejection of claims 1-30. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

STATEMENT OF THE CASE

Appellants invented an electro-optical communication system including a pluggable electro-optic module that is received within a U-shaped electrical connector. The connector is surface mounted to a printed circuit board.¹ Claim 1 is illustrative:

1. A method comprising:

providing a pluggable, planar, female electrical connector to receive a planar, male electro-optical module within said connector in a coplanar relationship; and

surface mounting said connector to a printed circuit board.

The Examiner relies on the following prior art references to show unpatentability:

| | | |
|--------|--------------------|---------------|
| Kayner | US 5,767,999 | Jun. 16, 1998 |
| Berg | US 6,074,228 | Jun. 13, 2000 |
| Jewell | US 2004/0184707 A1 | Sep. 23, 2004 |

1. Claims 1-5 and 11-14 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Kayner.
2. Claims 1-8, 11-18, 21-27, and 30 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Berg.
3. Claims 9, 10, 19, 20, 28, and 29 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Berg and Jewell.

Rather than repeat the arguments of Appellants or the Examiner, we refer to the Brief and the Answer for their respective details. In this

¹ See generally Abstract; Spec. 3:11–4:23.

decision, we have considered only those arguments actually made by Appellants. Arguments which Appellants could have made but did not make in the Brief have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

OPINION

The Anticipation Rejection

We first consider the Examiner's anticipation rejection of claims 1-5 and 11-14 over the disclosure to Kayner (Ans. 3-4). Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. *RCA Corp. v. App. Dig. Data Sys., Inc.*, 730 F.2d 1440, 1444 (Fed. Cir. 1984); *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554 (Fed. Cir. 1983).

Regarding independent claim 1, Appellants argue that the Examiner's interpretation of the recited term "surface mounting" is erroneous. According to Appellants, the term would be understood by ordinarily skilled artisans to mean that components sit on the surface of printed circuit boards and are soldered to conductive pads. This meaning, Appellants contend, is evidenced by a dictionary definition of the term (Br. 11; Ev. App.).

The Examiner notes that the term "surface mount" is not defined in the Specification, and the Specification is silent regarding the use of heat and/or solder to affix a component to a printed circuit board. As such, the Examiner contends, the scope and breadth of the term "surface mount" does

not preclude mounting a component to a printed circuit board via hardware (e.g., pins) as in Kayner (Ans. 10-11).

The issue before us, then, is whether Appellants have shown that the Examiner erred in construing the term “surface mounting” to include affixing a component to a printed circuit board via hardware, and not necessarily via soldering. For the following reasons, we find that Appellants have shown such error.

The Specification of the present application does not expressly define the term “surface mounting.” However, the Specification indicates that “[t]he connector 16 includes *surface mountable* legs 24 that *electrically and physically* connect by *surface mounts* to lands 31 on the printed circuit board 22[,]” and that “leads 18 may be *surface mounted* on bond pads 19....” (Spec. 4:14-18; emphasis added). While this passage is somewhat ambiguous regarding the exact nature of such surface mounts, the record before us, considered as a whole, nonetheless clearly evidences that surface mounting requires soldering.

In the Evidence Appendix of the Brief, Appellants provide a definition of “surface mount” which indicates that “[c]omponents sit on the surface of printed circuit boards and are *soldered* to conductive pads. In the ‘thru-the-hole’ process, component leads are placed through holes in the boards and are sent through *wave soldering* for attachment....” (Ev. App.) This definition, in our view, clearly requires soldering.

In reaching our conclusion, we note that the Examiner has not persuasively rebutted Appellants’ dictionary definition, and we decline to broaden the interpretation of “surface mounting” to include attachments that do not involve soldering. That is, we find the Examiner’s reliance on Berg

(Ans. 11) in this regard unavailing. Berg teaches that the electrical connector 24 and spring clip 27 are surface-mounted on printed circuit board 26 (Berg, col. 3, ll. 55-58). Two pins 47, 49 extend from the lower surface of the connector block 36 of connector 24 to facilitate mounting to the board (Berg, col. 4, ll. 33-41; Figs. 3-5). While it is unclear from Berg whether solder is used in connection with these pins, to assert that no solder would be used in such a connection simply strains any reasonable interpretation of the reference, particularly in view of Berg's express use of "solder processes" prior to mounting the guide rail 38 to the circuit board (Berg, col. 4, ll. 41-45). Furthermore, Berg expressly states the "conventional *solder reflow* processes can be used to surface-mount contacts 40." (Berg, col. 4, ll. 63-64; emphasis added). Such a teaching only reinforces our conclusion that ordinarily skilled artisans would construe surface-mounting as involving soldering, particularly in light of the dictionary definition of the term.

In view of this interpretation, we turn to Kayner – a reference that, in our view, fails to disclose surface mounting as claimed. At best, Kayner indicates that the universal module guides 12 (which the Examiner reasonably equates to the recited connector) "are *flat mounted* on the PC board 124 using PC board locator pins 112 and PC board retention feet 108" (Kayner, col. 5, ll. 56-58; Fig. 1A; emphasis added). But because this technique does not necessarily involve soldering, we find that "flat mounting" these module guides (connectors) with respect to the printed circuit board in Kayner simply does not *surface mount* these components to the board, in light of the term's ordinary and customary meaning.

For the foregoing reasons, Appellants have persuaded us of error in the Examiner's anticipation rejection of representative claim 1. Therefore,

we will not sustain the Examiner's rejection of that claim nor dependent claims 2-5 for similar reasons.

We will also not sustain the Examiner's anticipation rejection of independent claim 11 which recites commensurate limitations. Significantly, nothing on the record before us establishes that the electrical connector of Kayner is necessarily surface mountable. Therefore, we will not sustain the Examiner's rejection of claim 11 nor dependent claims 12-14 for similar reasons.

The Obviousness Rejection Over Berg

We now consider the Examiner's obviousness rejection of claims 1-8, 11-18, 21-27, and 30 over Berg (Ans. 4-8). In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

Discussing the question of obviousness of a patent that claims a combination of known elements, the Court in *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007) explains:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, 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. *Sakraida [v. AG*

Pro, Inc., 425 U.S. 273 (1976)] and *Anderson's-Black Rock[, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969)] are illustrative—a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

KSR, 127 S. Ct. at 1740.

If the claimed subject matter cannot be fairly characterized as involving the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement, a holding of obviousness can be based on a showing that “there was an apparent reason to combine the known elements in the fashion claimed.” *Id.* at 1740-41. Such a showing requires “some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.* at 1741 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

If the Examiner’s burden is met, the burden then shifts to the Appellants to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

Regarding representative claim 1,² Appellants argue that the Examiner failed to make a prima facie case of obviousness since the

² Appellants argue claims 1-8, 11-18, 21-27, and 30 together as a group. *See* Br. 12. Accordingly, we select claim 1 as representative. *See* 37 C.F.R. § 41.37(c)(1)(vii).

Examiner's assertions regarding the perceived importance (or non-importance) of various aspects of the invention are "of no value whatsoever in the patentability determination" and therefore inappropriate (Br. 12).

The Examiner takes the position that while Berg differs from the claimed invention in that Berg discloses a pluggable, planar *male* electrical connector to receive a planar, *female* electro-optical module, reversing the respective genders for these components (i.e., providing a planar *female* electrical connector to receive a planar *male* electro-optical module) would have been obvious to ordinarily skilled artisans (Ans. 11-12).

The issue before us, then, is whether Appellants have shown that the Examiner erred in finding that reversing the genders of Berg's connector and module to provide a pluggable, planar *female* electrical connector to receive a planar, *male* electro-optical module as claimed would have been obvious to ordinarily skilled artisans at the time of the invention. For the following reasons, we find Appellants have shown no such error.

At the outset, Appellants have not disputed the Examiner's findings regarding the specific teachings of Berg (Ans. 4-8). Accordingly, we adopt these undisputed factual findings as our own.

We agree with the Examiner that merely reversing the genders of Berg's pluggable, planar *male* electrical connector to receive a planar, *female* electro-optical module would have been obvious to ordinarily skilled artisans at the time of the invention. As best seen in Figures 2 and 5 of Berg, each contact 40 of the connector 24 has an upper portion 44 that protrudes slightly from the connector block 36 to facilitate electrical contact (Berg, col. 4, ll. 51-67; Figs. 2, 5). When the module 22 is inserted into the connector 24, the contact pads 60 of the module's circuit board 58 ultimately

contact the upper portions 44 of the connector's contacts 40. Also, the connector's spring clip 27 engages and contacts a grounding pad on the upper surface of the module's circuit board 58 (Berg, col. 5, l. 53 - col. 6, l. 24; Figs. 6A-6E).

Although it is the connector in Berg whose contacts' upper portions 44 project to contact the corresponding contact pads of the inserted module, we see no reason why ordinarily skilled artisans could not have reversed such an arrangement such that the module would comprise projecting contacts that contact corresponding pads on the connector when the module is inserted into the connector. Such a modification would effectively reverse the respective "genders" of the connector and module in Berg and, in our view, be tantamount to a predictable variation of the mating functionality between the connector and the module. *See KSR*, 127 S. Ct. at 1740 ("If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability."). Such a variation, in our view, would have predictably achieved commensurate results as in Berg, namely electrical and physical connection between the module's printed circuit board 58 and the corresponding contacts of the connector.

For the foregoing reasons, Appellants' arguments have not persuaded us of error in the Examiner's rejection of representative claim 1. Accordingly, we will sustain the Examiner's rejection of that claim and claims 2-8, 11-18, 21-27, and 30 which fall with claim 1.³

³ Since we affirm the Examiner's rejection solely on the basis of the Berg disclosure, we need not address the Examiner's position regarding the Hartman reference (Ans. 11-12), a reference that was not relied upon in the statement of the rejection. *See In re Hoch*, 428, F.2d 1341, 1342 n.3, (CCPA 1970) ("Where a reference is relied on to support a rejection, whether or not

The Obviousness Rejection over Berg and Jewell

We now consider the Examiner's obviousness rejection of claims 9, 10, 19, 20, 28, and 29 over Berg and Jewell (Ans. 8-9). Regarding representative claim 9,⁴ we note that Appellants do not dispute the Examiner's reliance on the teachings of Jewell to cure the perceived deficiencies of Berg with respect to including two integrally molded lenses and reflector within the module (Ans. 9). Rather, Appellants traverse the Examiner's assertion "that Berg is considered to be well within the common knowledge of those of ordinary skill in the art" and contend that the Examiner must provide documentary evidence in this regard (Br. 12).

Appellants further contend that ordinarily skilled artisans would not see a way to connect two planar components in a co-planar relationship as claimed in light of the teachings of the prior art. Also, Appellants argue that the proposed modification would render the prior art unsatisfactory for its intended purpose, namely with respect to element 32 which accepts the connectors and houses components (Br. 12-13).

The Examiner acknowledges that Berg does not disclose a coplanar relationship in an axis *parallel* to the components such as that disclosed in Appellants' Specification. The Examiner, however, takes the position that the scope of the recited coplanar relationship does not preclude a

in a 'minor capacity,' there would appear to be no excuse for not positively including the reference in the statement of the rejection.").

⁴ Appellants argue claims 9, 10, 19, 20, 28, and 29 together as a group. See Br. 12-13. Accordingly, we select claim 9 as representative.

relationship where the components have an axis *perpendicular* to their respective surfaces, as in Berg (Ans. 13).

The Examiner also reiterates that reversing the male/female relationship of the connector and module in Berg would have been obvious to ordinarily skilled artisans and that such a reversal would not render the resulting structure unsuitable for its intended purpose since “the reversal would support communication between the connector and module” (Ans. 14).

The issue before us, then, is whether Appellants have shown that the Examiner erred in finding that (1) reversing the male/female relationship of the connector and module in Berg would have been obvious to ordinarily skilled artisans; (2) that the proposed modification would not render the prior art unsuitable for its intended purpose; and (3) the surface-perpendicular axes of the connector and module in Berg meets a coplanar relationship as claimed. For the following reasons, we conclude that Appellants have shown no such error.

First, as we discussed previously, we find no error in the Examiner’s findings regarding reversing the respective “genders” of the connector and module in Berg and, in our view, it would be tantamount to a predictable variation of the mating functionality between the connector and the module. Our previous discussion in this regard applies equally here, and we therefore incorporate that discussion by reference.

Second, Appellants have not addressed—let alone shown error in—the Examiner’s position (Ans. 5, 13) regarding the “coplanar” relationship with respect to the perpendicular (vertical) axes of the connector and module in Berg. That is, Appellants have simply not persuasively rebutted the

Examiner's position regarding the scope and breadth of the claim as including a "coplanar" relationship as including the components' shared perpendicular axes when engaged as shown, for example, in Figure 6E of Berg.

Furthermore, apart from Appellants' merely conclusory assertions, we find nothing on this record proving that the Examiner's proposed modification, namely with respect to reversing the gender of the mated components, would render the device unsuitable for its intended purpose. In our view, irrespective of the gender of the respective components' mating contacts, the components would still function in accordance with their established functions and be electrically and mechanically connected together.

For the foregoing reasons, Appellants' arguments have not persuaded us of error in the Examiner's rejection of representative claim 9. Accordingly, we will sustain the Examiner's rejection of that claim and claims 10, 19, 20, 28, and 29 which fall with claim 9.

DECISION

We have not sustained the Examiner's anticipation rejection of claims 1-5 and 11-14. We have, however, sustained the Examiner obviousness rejections with respect to all claims on appeal. Therefore, the Examiner's decision rejecting claims 1-30 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)(1)(iv).

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AFFIRMED

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