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MILLEN, WHITE, ZELANO & BRANIGAN, P.C.
2200 CLARENDON BLVD.
SUITE 1400
ARLINGTON, VA 22201

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte STEVEN TIERNEY, MARTIN HEENEY, CLARE BAILEY, and
WEIMIN ZHANG

Appeal 2015-003323
Application 13/585,526
Technology Center 1700

Before CHUNG K. PAK, PETER F. KRATZ, and DEBRA L. DENNETT,
Administrative Patent Judges.

KRATZ, *Administrative Patent Judge.*

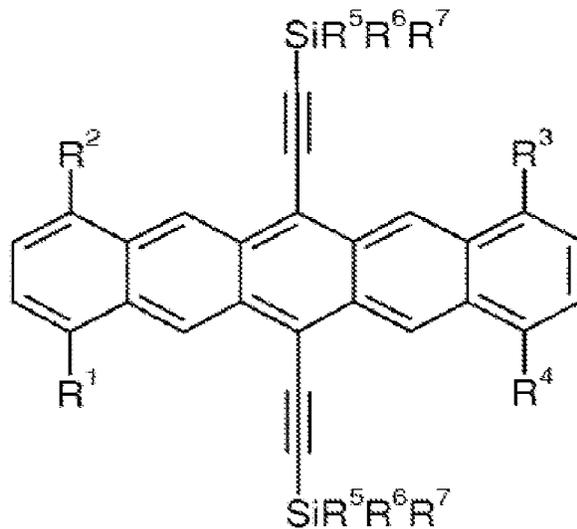
DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 14–23. We have jurisdiction pursuant to 35 U.S.C. § 6.

Appellants' claimed invention is directed to substituted pentacene compounds of a specified formula, and materials, formulations, and devices containing such compounds.

Claim 14 is illustrative and reproduced below:

14. A compound of formula Ia:



Ia

wherein

R¹⁻⁷ are identical or different carbyl or hydrocarbyl groups.

App. Br. 10 (Claims Appendix).

The Examiner relies on the following prior art reference as evidence in rejecting the appealed claims:

Brown et al.

WO 2005/055248 A2

June 16, 2005

The Examiner maintains the following grounds of rejection:

Claims 14–23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brown.

After review of the opposing positions articulated by Appellants and the Examiner and the evidence of obviousness adduced by the Examiner and the Specification evidence brought to bear on the obviousness question before us by Appellants, we determine that the Appellants' arguments and

evidence are insufficient to indicate reversible error in the Examiner's obviousness rejection. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011).

Accordingly, we affirm the stated obviousness rejection substantially for the fact findings set forth by the Examiner in the Examiner's Answer and in the Final Office Action. We offer the following for emphasis.

Appellants argue the rejected claims 14–20 together as a group and present further argument for dependent claims 21–23 based on the Specification evidence. Accordingly, we select claim 14 as the representative claim on which we decide this appeal as to claims 14–20. Moreover, we have considered the Specification evidence separately with respect to dependent claims 21–23 to the extent these claims are separately argued and separately addressed based on the Specification evidence (App. Br. 8).

Like Appellants and as found by the Examiner, Brown teaches, *inter alia*, pentacene compounds such as compounds of Formula 8 (Brown, p. 14) that can be employed in semiconductor materials and used in electronic devices (Final Act. 2–3; Ans. 2–3; Brown, p. 1, ll. 3–16, p. 2, l. 19 – p. 3, l. 16, p. 4, l. 20 – p. 6, l. 37; p. 14, l. 5 – p. 16, l. 1).

Appellants do not dispute that Brown's disclosed Formula 8 compounds, wherein X is disclosed as being most preferably silicon in Formula 8, embrace pentacene compounds within the scope of the plethora of compounds encompassed by Appellants' representative claim 14 compound formula. In particular, Appellants acknowledge "[o]ne of the subgeneric formulae of Brown (i.e., Formula 8, page 14) generically overlaps with some scope of the compounds of formula Ia of claim 14, on

appeal, because the R1-R4 and R8-R11 groups in Brown are generically defined as all possibly being substituents” (App. Br. 3).

Rather, Appellants rely on *In re Jones*, 958 F.2d 347 (Fed. Cir. 1992) and *In re Baird*, 16 F.3d 380 (Fed. Cir. 1994) and argue that the circumstances in this appeal are similar to the circumstances in *Baird* in that Brown discloses a broad generic formula A and the sub-generic Formula 8 is a non-preferred embodiment that is still very broad (App. Br. 3–4).

Appellants contend that the disclosed preferences for and examples of Formula 8 compounds furnished by Brown would not direct one of ordinary skill in the art to a compound according to claim 14 which would require compounds wherein the inner positions of the two end rings (R₁, R₄, R₈, and R₁₁ positions of Brown) have substituents rather than compounds wherein the two outer positions of the end rings (R₂, R₃, R₉, and R₁₀ positions) of Brown’s Formula 8 have substituents as provided for in Brown’s disclosed Formula 8 preferences (*id.*)¹ Given the large number of compounds embraced by Brown’s Formulae and Brown’s disclosed exemplified and preferred compound groups wherein substituents are positioned on the two end rings at locations other than the R₁, R₄, R₈, and R₁₁ positions of Formula 8 of Brown, Appellants contend that the present facts are analogous to the facts in *Baird*. Appellants argue that the present record suggests that the Examiner has not established that an ordinarily skilled artisan would have been led to select a compound within the scope of Formula 8 of Brown

¹ The inner positions of the two end rings (R₁, R₄, R₈, and R₁₁) of Brown’s Formula 8 corresponds to positions R³, R⁴, R¹, R² of Appellants’ claimed compound formula.

wherein the substituents are located at the R₁, R₄, R₈, and R₁₁ positions according to Brown's Formula 8 (App. Br. 3–5; Reply Br. 1–2).

We are not persuaded. The present case is significantly different from that of *Baird*. In *Baird*, the claimed invention was directed to a fusible toner including a binder resin comprising a bisphenyl A polyester and was limited to only three possible choices for a contained carboxylic acid. The claimed invention was rejected as obvious over a reference relating to developer compositions comprising the polymeric esterification product of a dicarboxylic acid and a diphenyl of a generic formula which contained a broad range of variables and the applied reference was estimated to encompass “more than 100 million different diphenyls, only one of which is bisphenyl A.” *In re Baird*, 16 F.3d at 382. In *Baird*, the court found there was nothing in the disclosure of the prior art that led to selecting the particularly claimed species at issue from such a genus that encompassed an extremely large number of compounds in reaching a determination that the prior art “appears to teach away”. *Id.* at 382–83. *Cf. Ex parte Min-Hong Fu*, 2008 WL 867826 (BPAI 2008, precedential) (Board found a surfactant corresponding to that claimed as part of an imaging member charge transport layer was not taught away by the applied prior art – and rejected a per se non-obviousness “approach” of claimed subject matter including recited surfactant species where prior art disclosure was generic and not taught away from such species).

Appellants' claims in the present case, however, are not so narrow. Unlike in *Baird*, Appellants' claim 14 is not limited to a few compounds but rather is directed to a compound of a generic formula that encompasses a large number of compounds. Moreover, Brown does not teach away from

selecting a compound of Formula 8 that includes substituents at the inner positions of the two end rings (R₁, R₄, R₈, and R₁₁ positions of Brown). Rather, Brown expressly teaches that the end ring positions R₁, R₄, R₈, and R₁₁, R₂, R₃, R₉, and R₁₀ can each independently comprise hydrogen or can comprise a substituent selected from a list set forth by Brown (p. 14, l. 10 – p. 15, l. 18). Accordingly, the Examiner has reasonably determined that it would have been obvious for one of ordinary skill in the art to arrive at a compound within the scope of representative claim 14 from Brown’s disclosure. *See, e.g., Merck & Co., Inc. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (“That the ‘813 patent discloses a multitude of effective combinations does not render any particular formulation less obvious. This is especially true because the claimed composition is used for the identical purpose.”); *In re Corkill*, 771 F.2d 1496, 1500 (Fed. Cir. 1985) (obviousness rejection of claims affirmed in light of prior art teaching that “hydrated zeolites will work” in detergent formulations, even though “the inventors selected the zeolites of the claims from among ‘thousands’ of compounds”); *see also, In re Susi*, 440 F.2d 442, 445 (CCPA 1971) (obviousness rejection affirmed where the disclosure of the prior art was “huge, but it undeniably include[d] at least some of the compounds recited in appellant’s generic claims and [was] of a class of chemicals to be used for the same purpose as appellant’s additives”). After all, it is well settled that all of the disclosure in a reference must be considered, including the non-preferred embodiments. *Merck & Co., Inc. v. Biocraft Labs., Inc.*, 874 F.2d at 807; *In re Kaslow*, 707 F.2d 1366, 1373, (Fed. Cir. 1983); *In re Fracalossi*, 681 F.2d 792, 793–94 (CCPA 1982); *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976).

In addition, Appellants argue that Brown is non-enabling as to teaching a method for making a compound that would have substituents in positions that satisfies the limitations of claim 14 (App. Br. 5–6; Spec. 2–3). However, Brown enjoys a presumption that its disclosure is enabling. *In re Antor Media Corp.*, 689 F.3d 1282, 1288 (Fed. Cir. 2012) (“we now hold that a prior art printed publication cited by an examiner is presumptively enabling”); *In re Sasse*, 629 F.2d 675, 681 (CCPA 1980) (placing burden of demonstrating non-enablement of a reference on applicant).²

Here, Appellants’ argument and Specification citation fall short of producing a basis for establishing that Brown does not provide an enabling disclosure for its pentacene compounds, inclusive of those claimed. In particular, we observe that portions of Appellants’ Specification as cited by Appellants provides a discussion concerning how certain prior art synthesis methods furnish “little success in constructing the pentacene ring network precursors in high and reproducible yields” and states that “a more successful alternative method is highly desirable” for the claimed

² Brown is the International Publication of PCT Application No. PCT/GB2004/004973 and U.S. Patent Application No. 10/580552 is the U.S. National Stage entry of the latter International Application (PCT/GB2004/004973), which U.S. National Stage Patent Application issued as U.S. Patent No. 7842942. It is well settled that a published U.S. patent enjoys a presumption of validity and operability. 35 U.S.C. § 282; *University of Rochester v. G.D. Searle & Co., Inc.*, 358 F.3d 916, 920 (Fed. Cir. 2004); *In re Spencer*, 261 F.2d 244, 246 (CCPA 1958). This presumption applies to the enablement requirement of the first paragraph of 35 U.S.C. § 112 and can only be overcome by clear and convincing evidence. *Nat’l Recovery Techs., Inc. v. Magnetic Separation Sys., Inc.*, 166 F.3d 1190, 1195 (Fed. Cir. 1999); *G.D. Searle & Co., Inc.*, 358 F.3d at 920. The burden of proving a prior art patent invalid for lacking enablement rests on Appellants. *Spencer*, 261 F.2d at 246.

compounds (Spec. 3, ll. 3–7). The mere fact that the described prior art alternative method may have provided lower yield than Appellants’ method does not establish lack of enablement as to the relevant subject matter for one of ordinary skill in the art; rather, this Specification disclosure buttresses the presumption of an enabling disclosure for the applied reference. Consequently, Appellants argument as to the non-enabling disclosure of Brown lacks merit.

We have reconsidered the propriety of the Examiner’s obviousness rejection anew in light of Appellants’ Specification test results; however, the cited Specification Example 2 fails to tip the weight of the evidence bearing on the obviousness of the claimed subject matter in Appellants’ favor. After all, it is well settled that Appellants bear the burden of production to establish that the reported tests results are unexpected, that the comparisons are with the closest prior art, and that the showing is reasonably commensurate in scope with the claimed subject matter. *See In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972).

The Specification evidence (Example 2) relied upon by Appellants (Appeal Br. 6–8; Spec. pp. 36 and 37) falls considerably short in meeting Appellants’ burden at least because Example 2 is drawn to one particular compound (Compound 9; Spec. p. 36) and is considerably narrower in scope than the subject matter embraced by representative claims 14 and 21 through 23, which encompass a myriad of compounds. Moreover, Appellants argued comparison of the linear mobility results obtained for the device made with Compound 9 in Example 2 of the subject Specification with reported mobility results for Compound 4 and Compounds 19 and 20 of Brown lacks merit for additional reasons. While Appellants report that the device

employed in Example 2 of the subject Specification was prepared as described in Brown (WO 2005/055248 A2), Appellants' argument that the devices (OFET's) were tested in a similar manner for their properties is not substantiated with evidence (App. Br. 6). In this regard, and as noted by the Examiner, Brown employs a different total solids content and a different solvent in making the devices tested in Brown (Examples 14 and 26) than Appellants employ in Example 2 (Ans. 9). Moreover, it appears that Appellants employed a different dielectric material for the gate insulator layer than the insulator material employed by Brown as a comparison of Appellants' Example 2 with Brown's disclosure at page 51 reveals. Nor is it clear that Appellants and Brown employed the same methodology in determining the mobility values reported for their separate respective examples.

Appellants' argument respecting the difference in solvents employed by Brown and Appellants for the examples compared by Appellants in the Appeal Brief not being relevant is not supported by evidence.

In particular and consistent with the Examiner's determination as to the lack of significance of the reported test results, Appellants have not proffered any persuasive scientific explanation articulating why the reported results for the single example said to be made would have been logically expected to accrue over the extensive scope of the representative claim 14 subject matter (and/or the scope of the subject matter of separately contested dependent claims 21, 22, and/or 23) so as to discharge Appellants' burden of establishing unexpected results that are reasonably commensurate in scope with the claimed subject matter. *In re Greenfield*, 571 F.2d 1185, 1189 (CCPA 1978) (quoting *In re Tiffin*, 448 F.2d 791, 792 (CCPA 1971))

(“Establishing that one (or a small number of) species gives unexpected results is inadequate proof, for ‘it is the view of this court that objective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to support.”); *see also In re Dill*, 604 F.2d 1356, 1361 (CCPA 1979). Moreover, Appellants have not established that the results for comparison examples presented are comparative examples that have been shown to be truly representative of the closest prior art, particularly given the breadth of the claimed subject matter.

Appellants fail to demonstrate unexpected results for compounds that are reasonably commensurate in scope with representative claim 14 and/or separately argued claims 21 through 23 for reasons advanced by the Examiner, and as further discussed above.

Based on the totality of the record, including due consideration of Appellants’ evidence and arguments, we determine that the preponderance of evidence weighs most heavily in favor of an obviousness determination for the claimed subject matter. Thus, upon consideration of the arguments and evidence of record, we determine that the Examiner has reasonably established that representative claim 1, as well as separately argued claims 21, 22, and 23, would have been obvious to one of ordinary skill in the art over the applied prior art.

Accordingly, we affirm the Examiner’s rejection of the appealed claims under 35 U.S.C. § 103(a).

CONCLUSION/ORDER

The Examiner’s decision to reject the appealed claims is affirmed.

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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