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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ADRIAN NANIA, JACOB MATHEWS,
NOAH BARLOW MASS, DANIEL BOSTON, HADI MALEK,
and MICHAEL ROBERT TINSKEY

Appeal 2018-004288
Application 15/219,600
Technology Center 3600

Before MICHAEL L. HOELTER, JAMES P. CALVE, and LISA M. GUIJT,
Administrative Patent Judges.

GUIJT, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellants¹ appeals under 35 U.S.C. § 134(a) from the Examiner's
rejection² of claims 1–20. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ Appellants identify the real party in interest as Ford Global Technologies, LLC. Appeal Br. 1.

² Appeal is taken from the Final Office Action dated June 23, 2017.

STATEMENT OF THE CASE

Claims 1, 8, and 16 are the independent claims on appeal. Claim 8, reproduced below, is exemplary of the subject matter on appeal.

8. A vehicle roof panel comprising:
 - a support structure having a first section defined by an outer periphery of the support structure; and
 - a solar panel module disposed within the first section, and including a solar array adhered to a plate having a plurality of ribs extending across an area of the solar array, the ribs having a V-shaped cross-section spaced throughout the first section to support the solar panel module within the support structure.

THE REJECTIONS

I. Claims 8, 9, 14, and 16–18 stand rejected under 35 U.S.C. § 103 as unpatentable over Teschner '816 (US 2002/0053816 A1; published May 9, 2002) and Suga (US 8,916,019 B2; issued Dec. 23, 2014).

II. Claims 1, 6, and 7 stand rejected under 35 U.S.C. § 103 as unpatentable over Teschner '816, Suga, and Jang (US 2012/0291841 A1; published Nov. 22, 2012).

III. Claims 2–5 stand rejected under 35 U.S.C. § 103 as unpatentable over Teschner '816, Suga, Jang, and Paetz (US 6,942,288 B2; issued Sept. 13, 2005).

IV. Claim 10 stands rejected under 35 U.S.C. § 103 as unpatentable over Teschner '816, Suga, and Shimizu (US 2011/0088749 A1; published Apr. 21, 2011).

V. Claims 11 and 12 stand rejected under 35 U.S.C. § 103 as unpatentable over Teschner '816, Suga, and Pätz (US 6,331,031 B1; issued Dec. 18, 2001).

VI. Claim 13 stands rejected under 35 U.S.C. § 103 as unpatentable over Teschner '816, Suga, and Chihlas (US 2014/0102518 A1; issued Apr. 17, 2014).

VII. Claim 15 stands rejected under 35 U.S.C. § 103 as unpatentable over Teschner '816, Suga, and Teschner '148 (US 6,517,148 B1; issued Feb. 11, 2003).

VIII. Claims 19 and 20 stand rejected under 35 U.S.C. § 103 as unpatentable over Teschner '816, Suga, and Schmidt (US 7,834,265 B2; issued Nov. 16, 2010).

ANALYSIS

Rejection I

Appellants argue claims 8, 9, 14, and 16–18 as a group. We select claim 8 as representative, with claims 9, 14, and 16–18 standing or falling with claim 8. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Regarding independent claim 8, the Examiner finds that Teschner '816 discloses a support structure (i.e., motor vehicle roof 10) with sections (i.e., front and rear roof openings (i.e., 12, 14)), and a solar panel module with a solar array (i.e., solar cells 32), as claimed. Final Act. 3. The Examiner determines that Teschner '816 fails to disclose a solar panel module including a solar array adhered to a plate having ribs extending across an area of the solar array, wherein the ribs have a V-shaped cross-section spaced throughout a section of the support structure to support the solar panel module within the support structure, as claimed, and the Examiner relies on Suga for disclosing “a solar panel bifacial array” that may be supported by “an underlying plate” with “V-shaped ribs at 4” and

having a reflective surface “to enhance solar energy collection.” *Id.* The Examiner reasons that it would have been obvious “to provide in [Teschner ’816] the bifacial array, plate and ribs of [Suga] . . . to both support the solar array as well as to increase solar output.” Ans. 3 (emphasis added); *see also* Final Act. 3.

Appellants submit that Suga discloses that “the light reflection plate has ‘a corrugated (concavo-convex) shape . . . arranged on a back surface side of the solar cell elements 2 so as to reflect sunlight incident inside the module from the front surface side of the module towards the front surface side of the module,’” and thus, “the light reflection plate has an intended purpose to reflect sunlight.” *Id.* at 3 (quoting Suga 4:20–26). Appellants argue that

[u]sing the light reflection plate of Suga as the underlying plate with V-shaped ribs in combination with Teschner [’816] renders the light reflection plate of Suga unsatisfactory to reflect sunlight. For example, it is unclear how light will reflect off the light reflection plate when the light reflection plate is supporting a solar array. Using the light reflection plate as V-shaped ribs in combination with the solar cells of Teschner [’816] prevents the light reflection plate from reflecting sunlight.

Id.

We are not persuaded by Appellants’ argument. Teschner ’816 discloses placing solar cells 32 directly beneath transparent planes 34, 36. *See, e.g.*, Teschner ’816 ¶ 23 (“transparent panes **34** and **36** are each provided on their bottom surfaces with solar cells **32** at their rear edge”). The Examiner proposes modifying Teschner ’816, which the Examiner correctly determines fails to disclose the details of solar cells 32, in view of the teachings of Suga, and in particular, as set forth *supra*, “to provide in

[Teschner '816] the bifacial array, plate and ribs of [Suga].” Final Act. 3. Thus, the Examiner’s rejection is to construct solar cells 32 of Teschner '816 as disclosed in Suga, wherein the solar cells (or solar cell module 1) include

bifacial photovoltaic solar cell elements **2**, a front surface plate **3** . . . , a light reflective plate **4** having a corrugated (concavo-convex) shape and arranged on the back surface side of the solar cell elements **2** so as to reflect sunlight incident inside the module from the front surface . . . towards the front surface side of the module, and a resin part **5** made from an encapsulation resin for securing the solar cell elements **2** and arranged between the front surface plate **3** and the light reflection plate **4**.

Suga 2:15–27, Fig. 1.³ Thus, we do not agree with Appellants that placing Suga’s solar cell module 1 directly beneath the transparent planes 34, 36 of Teschner '816 would render Suga’s reflection plate 4 unsatisfactory for reflecting sunlight.

Additionally, Appellants argue that the Examiner has failed to provide “motivation or objective reason to combine the disclosures to Teschner [’816] and Suga.” Appeal Br. 4. Further, Appellants submit that the Examiner’s rationale is “inconsistent with the actual disclosure to Suga, namely that a flexible, plastic substrate has a reasonable expectation of success to support the solar array.” Reply Br. 2. Appellants contend that

the “V-shaped ribs at 4” [are] described [in] Suga as a light reflection plate that “comprises a plastic substrate 6...and a thermoplastic resin film 7.” . . . The disclosure to Suga further

³ To the extent Appellants are interpreting the Examiner’s rejection as constructing solar cells 32 of Teschner '816 with only the bifacial array 2 and ribbed plate 4, without at least resin part 5, such an interpretation is unreasonable. *See* Reply Br. 2. Moreover, Suga teaches the necessity of including transparent material in the construction of a solar cell module having a concavo-convex shaped reflection plate. *See, e.g.*, Suga 6:8–14.

finds that the encapsulation resin is “a soft and transparent resin having excellent flexibility.” . . . It is unclear why one of ordinary skill would use highly flexible and plastically deformable substrate to support a delicate solar array.

Id. (citing Suga 4:24–24, 33–36).

Again, we are not persuaded by Appellants’ argument. As set forth *supra*, the Examiner has articulated a rationale for modifying Teschner ’816, in view of Suga, namely, “to both support the solar array as well as to increase solar output.” Ans. 3. Indeed, Suga discloses that “light reflection plate 4 comprises a plastic substrate 6 which is subjected to corrugated concavo-convex processing and a thermoplastic resin film 7 having a light reflection surface capable of reflecting sunlight and bonded to a surface of the plastic substrate 6.” Suga 4:34–38. Suga expressly discloses that “[a]s the plastic substrate 6, a metallic plate made from aluminum, stainless steel, brass, copper, or iron, or an expandable resin sheet having plastically deformable properties can be used.” *Id.* 4:39–41 (emphasis added). Suga further discloses that “plastic substrate 6” has “rigidity” (*id.* 6:61–63), and that “the light reflection plate 4 is a structure obtained by subjecting the thin plastic substrate 6 to sheet metal processing, . . . such that light reflection plate 4 itself functions as a spring to flexibly absorb thermal contraction stress” (*id.* 7:45–50). Thus, a preponderance of the evidence supports the Examiner’s finding that substrate 6 is a component in Suga’s solar cell module 1 that provides support. Appellants’ reference to Suga’s soft and transparent encapsulation resin (i.e., resin part 5) is not relevant to the Examiner’s reliance on Suga’s light reflection plate 4 for providing a plate having V-shaped ribs capable of supporting the solar cells, or a solar module, within motor vehicle roof 10 of Teschner ’816.

Accordingly, we sustain the Examiner's rejection of independent claim 8 and claims 9, 14, and 16–18 fall therewith.

Rejections II–VIII

Appellants argue that the Examiner's reliance on Jang, Paetz, Shimizu, Pätz, Chihlas, Teschner '148, and Schmidt fails to cure the deficiencies in the Examiner's reliance on the combination of Teschner '816 and Suga, however, because we do not agree that the Examiner's rejection is deficient, we sustain the Examiner's rejection of claims 1, 2–7, 10–13, 15, 19, and 20. *See* Appeal Br. 4–6; Reply Br. 2.

DECISION

The Examiner's decision rejecting claims 1–20 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). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED