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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte TAKESHI MURASHIGE,
DAISUKE HATTORI, and TADAYUKI KAMEYAMA

Appeal 2019-003834
Application 14/389,849
Technology Center 1700

Before MICHAEL P. COLAIANNI, GEORGE C. BEST, and DEBRA L. DENNETT, *Administrative Patent Judges*.

BEST, *Administrative Patent Judge.*

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1–8 of Application 14/389,849. Final Act. (December 26, 2017).[2] We have jurisdiction under 35 U.S.C. § 6.

For the reasons set forth below, we ***affirm***.

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[1] We use the word "Appellant" to refer to "Applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies Nitto Denko Corp., as the real party in interest. Appeal Br. 2.

[2] Claim 9 is withdrawn from consideration and, thus, is not subject to the appealed rejections. Final Act. 2; Appeal Br. 2.

I. BACKGROUND

The ’849 Application describes a transparent sheet, comprising a glass substrate, for use in a flat panel display or a solar cell. Spec. ¶ 2. The ’849 Application describes that the sheet is thin and flexible to allow for roll-to-roll manufacturing. *Id.* According to the Specification, a resin film bonded to the glass substrate by an adhesion layer prevents the glass from cracking, while maintaining its flexibility. *Id.* at ¶¶ 3, 5, 6.

Claim 1 is representative of the ’849 Application’s claims and is reproduced below from the Claims Appendix A of the Appeal Brief (emphasis added).

> 1. A transparent sheet, comprising:
>
> an inorganic glass; and
>
> a resin film bonded onto one side, or each of both sides, of the inorganic glass through an adhesion layer,
>
> wherein:
>
> the inorganic glass has a thickness of from 35 μm to 100 μm;
>
> *the adhesion layer has a single-layer thickness of more than 10 μm* and (the thickness of the inorganic glass×0.3) μm or less;
>
> *the adhesion layer has a modulus of elasticity at 25°C of from 2.0 GPa to 10 GPa*; and
>
> a ratio of a total thickness of the resin film to the thickness of the inorganic glass is from 0.9 to 4.

Appeal Br. 7 (Claims Appendix A) (emphasis added).

II. REJECTIONS

On appeal, the Examiner maintains the following rejections:

1. Claim 1 is rejected on the grounds of nonstatutory obviousness-type double patenting (OTDP) as unpatentable over the combination of claims 1 and 9–11 of Hattori '869,[3] Murashige,[4] and Hattori '277.[5] Final Act. 3–5.
2. Claims 1–8 are rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Murashige and Hattori '277. Final Act. 6–10.
3. Claim 8 is rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Murashige, Hattori '277, and Burroughes.[6] Final Act. 10.

III. DISCUSSION

Appellant argues for reversal of all of the rejections at issue based upon the limitations recited in claim 1. *See* Appeal Br. 4–5; Reply Br. 3–5. We, therefore, select claim 1 as representative of the claims subject to these grounds of rejections and limit our discussion to this claim. 37 C.F.R. § 41.37(c)(1)(iv).

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[3] US 8,911,869 B2, issued Dec. 16, 2014.

[4] WO 2011/048861 A1, published April 28, 2011. We cite US 2012/0196103 A1, published Aug. 2, 2012, as the English-language equivalent.

[5] WO 2011/136327 A1, published Nov. 3, 2011. We cite US 2013/0032277 A1, published Feb. 7, 2013, as the English-language equivalent.

[6] US 2003/0124341 A1, published July 3, 2003.

A. Rejection of claim 1 as unpatentable over the combination of Hattori '869's claims 1 and 9–11, Murashige, and Hattori '277.

According to Appellant, the combination of Murashige and Hattori '277 does not describe or suggest the following limitations of claim 1: (1) "the adhesion layer has a modulus of elasticity at 25°C of from 2.0 GPa to 10 GPa" and (2) "the adhesion layer has a single-layer thickness of more than 10 μm." *See generally* Appeal Br. 4–5; Reply Br. 3–5.

We note that Appellant does not dispute the Examiner's findings with respect to Hattori '869's claims 1 and 9–11. Neither does Appellant dispute the Examiner's findings that the combination of Murashige and Hattori, either with or without Hattori '869's claims 1 and 9–11, describes or suggests that the requisite modulus of elasticity is measured at 25°C. Final Act. 5, 7; *see generally* Appeal Br. 4–5; Reply Br. 3–5.

For the reasons set forth below, we are not persuaded by Appellant that Murashige's and Hattori '277's combined teachings do not describe or suggest the disputed limitations of claim 1.

First, the Examiner found Murashige teaches that resin film 11, 11′ is bonded onto a side or both sides of inorganic glass 10 through an adhesion layer 13, 13′. Final Act. 5 (citing Murashige ¶¶ 14, 27, 90–93; Figs. 2(a), 2(b)). The Examiner further found that Murashige's adhesion layer 13, 13′ has a modulus of elasticity of from 1–15 GPa, which transfers stress from resin film 11, 11′ to inorganic glass 10. Final Act. 5 (citing Murashige ¶ 93). In other words, Murashige's preferred modulus of elasticity for adhesion layer 13, 13′ overlaps the claimed adhesion layer's modulus of elasticity of from 2.0–10 GPa.

Second, the Examiner found Hattori '277 discloses that resin film 21 is bonded onto a side or both sides of inorganic glass 30 through an adhesion layer 41 having a thickness of 0.001–20 μm. Final Act. 5 (citing Hattori '277 ¶¶ 35–43, 46–66, 82, 93). The Examiner further found Hattori '277 teaches that an adhesion layer 41 having this thickness possesses greater adhesive strength over conditions in which the temperature and humidity are high. Final Act. 5 (citing Hattori '277 ¶ 93)).

The Examiner determined that it would have been obvious to one of ordinary skill in the art at the time of the invention to employ the thickness of Hattori '277's adhesion layer 41 for Murashige's adhesion layer 13, 13' in a modified transparent sheet. Final Act. 5. The Examiner found that the ordinarily skilled artisan would have been motivated to incorporate Hattori '277's adhesion layer's thickness because doing so provides "greater adhesive strength over high-temperature and high-humidity conditions." *Id.* (citing Hattori '277 ¶ 93)).

Appellant argues that it would not have been obvious to one of ordinary skill in the art at the time of the invention to combine Hattori '277's and Murashige's teachings. *See generally* Appeal Br. 4–5. In particular, Appellant argues that Hattori '277 only teaches that a thermoplastic resin adhesive layer having a low modulus of elasticity possesses a favorable thickness of 0.001–20 μm. *Id*. Appellant contrasts these teachings with Murashige's. According to Appellant, Murashige only teaches that a UV-cured adhesive layer having a high modulus of elasticity possesses a favorable thickness of less than or equal to 10 μm. *Id*.; *see* Murashige ¶ 114.

These arguments are not persuasive.

In an obviousness inquiry, the fact that a specific embodiment is taught to be preferred is not controlling, since all disclosures of the prior art,

including unpreferred embodiments, must be considered. *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (citing *In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976)); *see also In re Inland Steel Co.*, 265 F.3d 1354, 1361 (Fed. Cir. 2001) (explaining that a preferred embodiment does not necessarily teach away from a non-preferred embodiment); *In re Boe*, 355 F.2d 961, 965 (CCPA 1966) (all of the disclosures in a reference, including non-preferred embodiments, "must be evaluated for what they fairly teach one of ordinary skill in the art").

In this case, Appellant has not identified reversible error in the Examiner's consideration that Murashige's adhesion layer may be modified to possess an unpreferred thickness greater than 10 μm. *See Merck*, 874 F.2d at 807. As the Examiner found, Murashige's *preferred* adhesion layer thickness of 10 μm or less confers excellent adhesion without impairing bending properties. Answer 12 (citing Murashige ¶ 92). Like Murashige, the Examiner found that Hattori '277 similarly teaches an adhesive layer with desirable bending properties. Answer 12 (citing Hattori '277 ¶ 8). We agree with the Examiner that an adhesion layer having a thickness greater than 10 μm, which maintains excellent adhesion without impairing bending properties, would have been "within the purview of Murashige's transparent sheet." Answer 12; *see* Murashige ¶ 92.

Appellant, therefore, has not persuaded us that the Examiner reversibly erred in determining that the ordinarily skilled artisan would have been motivated to modify Murashige's adhesion layer with Hattori '277's adhesion layer's thickness up to 20 μm in order to maintain flexibility and adhesive strength under conditions of high temperature and humidity. Answer 13 (citing Hattori '277 ¶¶ 8, 93).

Appellant asserts that the Examiner's applied prior art would not have rendered obvious the claimed adhesive layer because the ordinarily skilled artisan would have understood "that mechanical properties of [Hattori '277's] adhesive layer formed of a thermoplastic resin are quite different from that of [Murashige's] adhesive layer formed of a curable resin." Appeal Br. 4. Appellant argues that Hattori '277: (i) discloses that the "adhesive composition preferably contains a thermoplastic resin (B) exhibiting compatibility with the thermoplastic resin (A)" and (ii) provides "[s]pecific examples of the thermoplastic resin (B)." Reply Br. 3–4 (citing Hattori '277 ¶ 54). Appellant argues, on the other hand, that Murashige discloses specific examples of an active energy ray-curable resin and a thermosetting resin as "material[s] for constructing the adhesion layer." Reply Br. 3 (citing Murashige ¶ 91).

We, however, find that the Examiner's proposed modification is reasonable because Hattori '277's teachings do not limit the adhesive layer's material to only the preferred thermoplastic resin. *See Merck*, 874 F.2d at 807. Likewise, Murashige's teachings do not limit forming the adhesive layer from only a curable resin material. Rather, Murashige explicitly discloses that "[a]ny appropriate resin can be adopted as a material for constructing the adhesion layer." Murashige ¶ 91; *see In re Fritch*, 972 F.2d 1260, 1264–65 (Fed. Cir. 1992) (a reference stands for all of the specific teachings thereof as well as the inferences one of ordinary skill in the art would have reasonably been expected to draw therefrom).

Appellant, therefore, has not identified reversible error in the Examiner's determination that it would have been obvious to one of ordinary skill in the art at the time of the invention to employ the thickness of Hattori

’277’s adhesion layer 41 for Murashige’s adhesion layer 13, 13’ in a modified transparent sheet.

In view of the foregoing, we determine that the Examiner did not reversibly err in rejecting claim 1 as unpatentable over the combination of Hattori ’869’s claims 1 and 9–11, Murashige, and Hattori ’277.

B. Rejection of claims 1–8 as unpatentable over the combination of Murashige and Hattori ’277.

Appellant essentially proffers the singular argument discussed above that the combination of Murashige and Hattori ’277 does not describe or suggest the claimed adhesion layer’s disputed limitations. *See generally* Appeal Br. 4–5; Reply Br. 3–5. The Examiner understood that Appellant’s singular argument applies to the OTDP and the § 103(a) rejections. Answer 12. Appellant does not dispute the Examiner’s understanding.

Appellant, thus, implicitly argues that the rejection of claim 1 as unpatentable over the combination of Murashige and Hattori ’277 should be reversed for the reasons set forth in arguing for reversal of the rejection claim 1 as unpatentable over the combination of Hattori ’869’s claims 1 and 9–11, Murashige, and Hattori ’277.

As discussed above, we have affirmed the rejection of claim 1 as unpatentable over the combination Hattori ’869’s claims 1 and 9–11, Murashige, and Hattori ’277. Moreover, the Examiner also found that

> the thickness for the adhesion layer **13**, **13′** Murashige discloses overlaps that for Hattori ’277’s adhesion layer **41**, namely in the range of 10 μm or less. [*See* Murashige ¶ 92.] Therefore, the remainder of the broad range Hattori ’277 discloses for the adhesion layer **41**, namely more than 10 μm to 20 μm, can be viewed as an improvement on Murashige’s disclosure in that the additional thickness in the adhesion layer provides greater adhesive strength in the specified conditions than a lesser

> thickness. As such, it would have been further obvious to modify the adhesion layer . . . Murashige discloses to have a thickness from more than 10 μm and 20 μm or less to obtain said increase in adhesive strength without over-compromising transparency.

Final Act. 8 (citing Hattori '277 ¶ 93).

The Appeal Brief does not address this finding in any way. *See* Appeal Br. 4–5.

In view of the foregoing, we determine that the Examiner did not reversibly err in rejecting claim 1 as unpatentable over the combination of Murashige and Hattori '277. Accordingly, we also affirm the rejection of claims 2–8, which depend from claim 1.

C. Rejection of claim 8 as unpatentable over the combination of Murashige, Hattori '277, and Burroughes.

For the reasons set forth above, Appellant implicitly relied upon the same unpersuasive arguments that the rejection of claim 8 as unpatentable over the combination of Murashige, Hattori '277, and Burroughes should be reversed because the Examiner has not established a prima facie case of obviousness with respect to independent claim 1. *See generally* Appeal Br. 4–5; Reply Br. 3–5. As discussed above, we have affirmed the rejections of claim 1. We, therefore, also affirm the rejection of claim 8, which depends from claim 1.

IV. CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1		Hattori '869's claims 1, 9–11, Murashige, Hattori '277 Obviousness Type Double Patenting	1	

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–8	103(a)	Murashige, Hattori ’277	1–8	
8	103(a)	Murashige, Hattori ’277, Burroughes	8	
Overall Outcome			1–8	

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