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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte THOMAS K. TSOTSIS, MARVI A. MATOS, ALPANA
RANADE, and LAURA M. MURPHY

Appeal 2019–004753
Application 13/833,686
Technology Center 1700

BEFORE BEVERLY A. FRANKLIN, MICHAEL G. McMANUS, and
JANE E. INGLESE, *Administrative Patent Judges*.

FRANKLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner’s decision to reject claims 1–8, 10, and 32. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as The Boeing Company. Appeal Br. 1.

CLAIMED SUBJECT MATTER

Claim 1 is illustrative of Appellant's subject matter on appeal and is set forth below:

1. A composite, comprising: a substrate comprising a fiber reinforced polymeric matrix, and a barrier coating comprising a silicon-oxy-carbide (SOC) layer having a thickness from about 10 to about 400 nm, the SOC layer attached directly to at least one surface of the substrate, wherein the fibers comprise carbon or graphite fibers, and the polymeric matrix is selected from a polyimide, an epoxy, bismaleimide, and a cyanate ester.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Yanagihara et al.	JP2010- 158832	July 22, 2010
McCormick et al.	US 2008/0241506 A1	Oct. 2, 2008
Durandean et al.	US 2009/0202817 A1	Aug. 13, 2009
CAS Registry Number: 39345-87-4, SciFinder® American Chemical Society (ACS), 2016 (hereafter "RN "33-3"). David R. Harding et al., "Oxidation Protective Barrier Coatings for High-Temperature Polymer Matrix Composites", J. Mater. Res., Vol. 9, No. 6, Jun 1994, Cambridge.org (hereafter "Harding"). Cas Registry Number 7839-33-3 Scifinder (2017) (hereafter "RN "33-3").		

REJECTIONS

1. Claims 1–8, 10, and 32 are rejected under pre-AIA 35 U.S.C. §103(a) as obvious over Yanagihara (English machine translation) as evidenced by RN ‘87-4, further in view of McCormick, and further in view of Harding as evidenced by RN ‘33–3.

2. Claim 2 is rejected under pre-AIA 35 U.S.C. §103(a) as obvious over Yanagihara as evidenced by RN ‘87-4, in view of McCormick, further in view of Harding as evidenced by RN ‘33-3, and further in view of Durandean.

OPINION

We review the appealed rejections for error based upon the issues identified by Appellant and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential), *cited with approval in In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) (“[I]t has long been the Board’s practice to require an applicant to identify the alleged error in the examiner’s rejections.”). After considering the evidence presented in this Appeal (including the Examiner’s Answer, the Appeal Brief, and the Reply Brief), we are persuaded that Appellant identifies reversible error. Thus, we reverse the Examiner’s rejections, with the following emphasis.

We agree with Appellant that the Examiner’s proposed modification of Yanagihara in view of McCormick is misplaced. We refer to the Examiner’s position as set forth on pages 5–7 of the Final Office Action. Therein, the Examiner states:

- a. However Yanagihara does not expressly disclose the polyamide-imide resin is an imide resin with a coating of the silicon oxycarbide as well as a nitride.
- b. McCormick discloses in the abstract protected polymeric film comprises a polymeric film substrate having a first major surface and a second major surface opposite the first major surface, and a protective structure provided on at least the first major surface of the substrate, wherein the protective structure comprises a layer of boron oxide and an inorganic barrier layer such as inorganic oxide, oxynitride, or oxycarbide, such as silicon oxides, nitrides or carbides; and metals such as silicon, aluminum or combinations thereof (See ¶ 0006). From ¶ 0025 of McCormick the term “polymeric” refers to homopolymers and copolymers, as well as homopolymers or copolymers that may be formed in a miscible blend such as for polyimide (For Claim 10) or polyamideimides. McCormick discloses at Fig. 1 and ¶ 0023 that the inorganic barrier layer 18 is intermediate substrate 12 and boron oxide layer 16 {i.e. the inorganic layer is directly on the polyimide}. McCormick divulges at ¶s 0002, 0008 and 0018 that the protected polymeric film has a reduced tendency to transmit moisture providing protective structures with reduced inherent, but potentially undesirable, tendency of polymeric films to transmit moisture which inhibition of the transmission of moisture can be used in a variety of applications such as for substrates for use with organic electronic devices such as organic electroluminescent devices, organic transistors, liquid crystal displays, and other electronic components.

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Here the polyamide imide and polyimide with an inorganic barrier layer thereon of silicon oxycarbide or silicon nitride is for a protective layer to inhibit the transmission of moisture.

- c. One of ordinary skill in the art would have considered it obvious at the time of the invention to have from Yanagihara a composite of a polymer like polyamideimide having directly attached a silicon oxycarbide plasma deposited gas barrier coating of a thickness of 5 to 300 nm, as afore-described, where from McCormick the

polyamideimide is substituted or used with polyimide substrate and the silicon oxycarbide is used with or for silicon nitride motivated to have a protective layer to inhibit the transmission of moisture as for the composite of Claims 1–10 and 32.

The Examiner states that the motivation to combine Yanagihara with McCormick is “to have a protective layer to inhibit the transmission of moisture as for the composite.” Ans. 20–21.

However, as Appellant explains in the Appeal Brief, McCormick relies on the “protective structure” (more particularly, the boron oxide layer) to provide protection against moisture. Appeal Br. 8. Appellant explains that McCormick states “the present invention provides a method for reducing the transmission of moisture by a polymeric film by applying a protective structure, such as those described above, to at least a first major surface of the polymeric film.” McCormick, ¶ [0009]; Reply Br. 5–6. Appellant states that McCormick clearly defines the “protective structure” as “the layer of boron oxide and the inorganic barrier layer that have been provided on the polymeric film substrate.” *Id.* at ¶ [0019]. Reply Br. 6. Appellant argues that it is the protective structure that provides moisture protection, not the underlying substrate. Appellant states that, thus, if one of ordinary skill in the art were motivated to modify Yanagihara in view of McCormick to provide moisture protection to the composite of Yanagihara, such would result in the substitution of the barrier layer of Yanagihara with the protective structure of McCormick. Appellant thus submits that the moisture protection disclosed in McCormick provides no motivation regarding modification of the substrate of Yanagihara as proposed by the Examiner. Reply Br. 6. We are persuaded by this line of argument.

Furthermore, as Appellant points out, the substrate film of Yanagihara requires transparency, and nowhere does McCormick describe the polyimide as being transparent. Appeal Br. 7–8.

Appellant also submits that the further modification of Yanagihara in view of the teachings of Harding would destroy the light transmittance of Yanagihara’s film for the reasons stated by Appellant on pages 9–10 of the Appeal Brief, with which we agree.

In view of the above, we agree with Appellant that on this record, the Examiner’s proposed modification of Yanagihara appears to be premised on an impermissible use of hindsight after review of Appellant’s disclosure, rather than on a supported reason to modify Yanagihara available to an ordinarily skilled artisan and consistent with the teachings thereof. *KSR Int’l. Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (The fact finder must be aware “of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning”; citing *Graham v. John Deere Co.*, 383 U.S. 1, 36 (1966) (warning against a “temptation to read into the prior art the teachings of the invention in issue”)).

We therefore reverse the rejections.

CONCLUSION

We reverse the Examiner’s decision.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Reversed	Affirmed
1-8, 10 and 32	103	Yanagihara, RN '87-4, McCormick and Harding	1-8, 10 and 32	
2	103	Yanagihara, RN '87-4, McCormick, Harding, RN '33-3 and Durandeu	2	
Overall Outcome			1-8, 10 and 32	

REVERSED