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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte WILLIAM F. FEEHERY, DENNIS DAMON WALKER,
STEPHEN SORICH, CHARLES DOUGLAS MACPHERSON,
ALBERTO GOENAGA, and GORDANA SRDANOV

Appeal 2015-005573
Application 11/758,318
Technology Center 1700

Before TERRY J. OWENS, PETER F. KRATZ, and JULIA HEANEY
Administrative Patent Judges.

HEANEY, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellants¹ request review pursuant to 35 U.S.C. § 134(a) of a decision of the Examiner rejecting claims 1–17 of Application 11/758,318. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

BACKGROUND

The subject matter on appeal relates to a process for making a multicolor organic light-emitting diode (“OLED”). Br. 2.

¹ Appellants identify the real party in interest as E.I. Du Pont De Nemours and Company. Br. 1.

Claim 1, reproduced below from the Claims Appendix of the Appeal Brief, is illustrative of the subject matter on appeal:

1. A process for making a multicolor organic light-emitting diode, said diode comprising a plurality of first subpixel areas and a plurality of second subpixel areas, said process comprising:

forming a patterned anode on a substrate, and

forming a non-patterned continuous hole injection layer comprising a conductive polymer and a fluorinated acid polymer over the anode;

forming a non-patterned continuous primer layer over the hole injection layer, wherein the primer layer comprises insulative material selected from the group consisting of vinyl polymers, vinyl oligomers, (meth)acrylate polymers, and (meth)acrylate oligomers, and has a thickness of 50Å or less; and

wherein there is substantially no crosstalk observable between the first subpixels and the second subpixels.

Appellants' Specification ("Spec.") defines a hole injection layer as a layer that "facilitates injection and migration of positive charges through the thickness of such layer ... with relative efficiency and small loss of charge." Spec., p. 4, ll. 6–10. Further, the Specification defines a hole transport layer as a layer that "facilitates migration of positive charges through the thickness of such layer ... with relative efficiency and small loss of charge." *Id.*, ll. 11–16. The Specification further describes: "In one embodiment, the primer layer comprises a hole transport material. Any hole transport material may be used for the primer layer." *Id.*, p. 39, ll. 17–19.

REFERENCES

The Examiner relied upon the following prior art in rejecting the claims on appeal:

Li et al.	US 2002/0076576 A1	June 20, 2002 ("Li")
Nishiguchi et al.	US 2004/0202778 A1	Oct. 14, 2004 ("Nishiguchi")
Ichimura et al.	US 2004/0265627 A1	Dec. 30, 2004 ("Ichimura")
Hsu et al.	WO 2004/029128 A2	Apr. 8, 2004 ("Hsu")

KIM ET AL., *Effect of Acidification Treatment and Morphological Stability of Sulfonated Poly(arylene ether sulfone) Copolymer Proton-Exchange Membranes for Fuel-Cell Use above 100 °C*, 41 J. POLYMER SCIENCE: PART B: POLYMER PHYSICS 2816–2828 (2003) ("Kim").

THE REJECTIONS

1. Claims 1–13 and 15 are rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Nishiguchi, Hsu, and Li.
2. Claim 14 is rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Nishiguchi, Hsu, Li, and Kim.
3. Claims 16 and 17 are rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Nishiguchi, Hsu, Li, and Ichimura.

DISCUSSION

Appellants argue only claims 1 and 16, and do not argue for separate patentability of claims 2–15 and 17. App. Br. 7. Accordingly, we focus our discussion on claim 1, the only independent claim, and claim 16.

Nishiguchi discloses a method of manufacturing an OLED device comprising steps of forming pixel electrodes on a transparent glass substrate (¶ 56), and coating the electrodes with a hole transport layer forming material, such as an aqueous solution of PEDOT (¶ 58). The Examiner finds

that PEDOT is a conductive polymer. Final Act. 3. The Examiner further finds that Nishiguchi discloses a five-layer type OLED device including a hole injection layer, a hole transport layer, a light emission layer, an electron transport layer, and an electron injection layer. *Id.*, citing Nishiguchi ¶ 26. The Examiner acknowledges that Nishiguchi does not disclose that its hole injection layer comprises a fluorinated acid polymer, but determines that it would have been obvious to a person of ordinary skill in the art to have included a fluorinated acid polymer along with Nishiguchi's conductive polymer, because Hsu teaches that providing a fluorinated acid polymer with a conductive polymer in a hole injection layer improves various properties of the layer. *Id.*, citing Hsu 1:26–38, 2:1–6, 2:25–31, 6:10–11. The Examiner further determines that a person of ordinary skill in the art would have understood from Li's disclosure that PEDOT doped with poly(vinyl carbazole) can be used as an insulative material in place of PEDOT in a hole transport layer, with a reasonable expectation of success (Final Act. 3–4, citing Li ¶ 34).

Appellants argue that the Examiner has not established obviousness for several reasons, among them the following: (1) Nishiguchi's light-emitting (“EL”) material is not a “non-patterned continuous” layer as recited in claim 1; (2) Nishiguchi does not disclose a primer layer; (3) Nishiguchi's hole transport layer is not a hole injection material; (4) Nishiguchi does not disclose an insulative polymer or oligomer; and (5) Hsu does not teach or disclose an insulative primer layer. Br. 3–6.

We are not persuaded that Appellants identify reversible error in the rejection. Appellants' argument that Nishiguchi's EL material does not form a “non-patterned continuous” layer is not persuasive because claim 1 does not require that an EL layer is non-patterned and continuous. Appellants

have not responded to the Examiner's finding, based on the Specification's statement that the primer layer may comprise hole transport material, that Nishiguchi's hole transport layer corresponds to the primer layer recited in claim 1 (Final Act. 3); Appellants' Brief does not address that finding and no reply brief was filed. Similarly, Appellants do not address the Examiner's finding that PEDOT doped with poly(vinyl carbazole) is an insulative material, as disclosed in Li. Final Act. 4. Appellants' arguments that Nishiguchi does not disclose an insulative polymer, and Hsu does not teach an insulative primer layer, are not persuasive because they attack the references individually rather than the combined teachings as presented by the Examiner. *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981) ("the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.") Accordingly, Appellants have not shown reversible error by the Examiner.

Claim 16 depends from claim 1 and additionally recites "forming a hole transport layer over the primer layer." Br. 10, Claims Appx. The Examiner finds that Ichimura's method of forming an OLED display explains that "use of a plurality of hole transport layers stacked on one another improves the hole transporting ability of each layer." Final Act. 5, citing Ichimura ¶ 149. Appellants argue that Ichimura does not teach a hole transport layer in conjunction with an insulating primer layer. Br. 7. Appellants' argument is not persuasive of reversible error because it does not address the Examiner's finding as to Ichimura.

SUMMARY

We affirm the rejections of claims 1–17.

Appeal 2015-005573
Application 11/758,318

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