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EXAMINER	
YOUNG, WILLIAM D	

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MARK JAMES, IAIN MCCULLOCH, WARREN DUFFY, PHILIP EDWARD MAY, DAN WALKER, DAVID P. WALLER, RICHARD KENDALL CHILDERS, and SHEILA E. RODMAN[1]

Appeal 2015-006979[2]
Application 12/738,471
Technology Center 1700

Before MARK NAGUMO, N. WHITNEY WILSON, and CHRISTOPHER L. OGDEN, *Administrative Patent Judges*.

OGDEN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's final decision[3] rejecting claims 1, 6–16 and 21 in the above-identified application. We have jurisdiction pursuant to 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

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[1] Appellants identify Merck Patent GmbH as the real party in interest. Appeal Br. 1, Feb. 10, 2015.

[2] Appeal 2015-006235 in nominal divisional application 13/690,662 is decided concurrently. The timely notification, Appeal Br. 1, of the related appeal is noted with appreciation.

[3] Office Action, Sept. 25, 2014 [hereinafter Final Action].

BACKGROUND

Appellants' invention relates to "formulations comprising an organic semiconductor (OSC) and a conductive additive," which may be used "as conducting inks for the preparation of organic electronic (OE) devices, especially organic photovoltaic (OPV) cells." Spec. 1. Independent claim 1 is representative:

> 1. A formulation comprising:
> one or more organic semiconducting (OSC) compounds,
> one or more organic solvents, and
> one or more conductive additives that increase the conductivity of the formulation;
> wherein said conductive additives are volatile and/or are not capable of chemically reacting with the OSC compounds and/or wherein the conductive additives are present in a total concentration of less than 0.5 % by weight in the formulation; and
> wherein the conductive additives comprise one or more non-oxidizing organic salts and the concentration of non-oxidizing salts in the formulation is from 50 ppm to 0.1 % by weight, and
> wherein the non-oxidizing organic salts are selected from the group consisting of *phosphonium salts*, imidazolium salts and other heterocyclic salts excluding heterocyclic ammonium salts, wherein the non-oxidizing organic salts have an anion that is selected from the group consisting of halides, sulfates, acetate, formate, *tetrafluoroborate*, hexafluorophosphate, methanesulfonate, triflate (trifluoromethanesulfonate) and bis(trifluoromethylsulfonyl)imide.

Appeal Br. 11 (emphasis added).

The Examiner maintains the following grounds of rejection:

I. Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting over co-pending U.S. Patent Application No. 13/379,927 in view of Park. Final Action 2–4; Answer 2.

II. Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting over co-pending U.S. Patent Application No. 13/690,662. Final Action 2–4; Answer 2.

III. Claims 1, 6–12, 14–16, and 21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Park[4] in view of Kawasato[5] Final Action 4–6; Answer 3–4.

IV. Claim 13 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Park in view of Kawasato, and further in view of Yang.[6] Final Action 6–7; Answer 4–5.

DISCUSSION

Provisional Rejections I and II

Co-pending U.S. Patent Application No. 13/379,927 has been abandoned. *See* Notice of Abandonment, June 16, 2016. Therefore, we dismiss as moot the appeal as to rejection I.

Appellants present no substantive argument for reversing the provisional rejections of claim 1 on grounds of obviousness-type double

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[4] Byoung-Choo Park, U.S. Patent Application Pub. No. US 2007/0281386 A1 (published Dec. 6, 2007) [hereinafter Park].
[5] Takeshi Kawasato et al., U.S. Patent No. 5,888,673 (issued Mar. 30, 1999) [hereinafter Kawasato].
[6] Yang Yang et al., U.S. Patent Application Pub. No. US 2005/0003574 A1 (published Jan. 6, 2005).

patenting over U.S. Patent Application No. 13/690,662. *See* Appeal Br. 3–4; Answer 5. Therefore, we summarily affirm the Examiner's decision to provisionally reject claim 1 on the ground of rejection II. *See Hyatt v. Dudas*, 551 F.3d 1307, 1314 (Fed. Cir. 2008) (holding that the Board need not consider the merits of an uncontested ground of rejection).

Rejections III and IV

Regarding claim 1, the Examiner finds that Park teaches a composition that comprises an OSC, organic solvents, and a conductive additive that is an organic salt in which the anion includes tetrafluoroborate. Final Action 5 (citing Park ¶ 50). While Park does not disclose a specific cation required by claim 1, the Examiner finds that Kawasato "teaches an organic semiconductor formulation comprising a phosphonium salt having a phosphonium cation and a tetrafluoroborate anion." *Id.* (citing Kawasato 2:45–63). Finding that the phosphonium cation was a known "element" that performs the same function as the cations disclosed by Park, the Examiner concludes that "[i]t would have been obvious to a person of ordinary skill in the art to substitute the phosphonium salt of Kawasato for the ionic salt of Park in order to obtain a formulation containing an ionic salt comprising a cation and an anion." *Id.* at 6; *see also* Answer 6 ("It is prima facie obvious to substitute one known element for another which performs the same function." (citing *KSR Int'l v. Teleflex, Inc.*, 550 U.S. 398, 416 (2007))).

Because every ionic salt provides a cation and an anion, the Examiner's rationale for rejecting claim 1 means that the ionic salts disclosed in Park are interchangeable with every other known ionic salt. *See* Appeal Br. 1. However, Park lists a limited set of exemplary salts, and the only organic salts in this list are quaternary ammonium salts, which are

explicitly excluded from the scope of the genus of conductive additives as defined by claim 1. *See* Appeal Br. 13. The Examiner has not shown, by the preponderance of the evidence, that Park teaches an unlimited genus of suitable ionic salts. Moreover, the salts disclosed in Kawasato are chosen for a specific purpose: they are chosen "in view of a solubility to a solvent, an electric conductivity and an electrochemical stability of its solution." *See* Kawasato 2:46–48. The specific solvent is a mixture of sulfolane and a chain-like carbonate, *see id.* at 2:8–9, which is not among the list of suitable solvents disclosed by Park, *see* Park ¶ 51.

For the above reasons, we find that the Examiner has not provided a sufficient rationale for why a person of ordinary skill in the art would have understood the salts disclosed by Kawasato to be interchangeable with the salts disclosed by Park. Therefore, we reverse the Examiner's decision to reject claim 1 under 35 U.S.C. § 103(a). Because the Examiner's other findings do not remedy this deficiency, we also reverse the Examiner's decision to reject claims 6–16 and 21, which depend from claim 1.

DECISION

We dismiss, as moot, the appeal as to the Examiner's provisional rejection of claim 1 on the ground of nonstatutory obviousness-type double patenting over co-pending U.S. Patent Application No. 13/379,927, now abandoned, in view of Park.

We affirm the Examiner's decision to provisionally reject claim 1 on the ground of nonstatutory obviousness-type double patenting over co-pending U.S. Patent Application No. 13/690,662.

We reverse the Examiner's decision to reject claims 1, 6–16 and 21 under 35 U.S.C. § 103(a).

No time period for taking any subsequent action in connection with this appeal may be extended. *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART