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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte LESLIE ANDREW CHEWTER, SIVAKUMAR SADASIVAN
VIJAYAKUMARI, and JEROEN VAN WESTRENEN

Appeal 2015-007043
Application 13/727,801
Technology Center 1700

Before PETER F. KRATZ, CATHERINE Q. TIMM, and
JENNIFER R. GUPTA, *Administrative Patent Judges*.

KRATZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's Final Rejection of claims 1–14. We have jurisdiction pursuant to 35 U.S.C. § 6.

Appellants' claimed invention is directed to a process for preparing a xylene-containing product by contacting an oxygenate feedstock, such as methanol, with a conversion catalyst, such as ZSM-5, under conversion conditions to form an effluent including, *inter alia*, olefins, xylene, benzene, and toluene, and separating xylene from the effluent of the conversion step to yield a xylene-containing product. At least a portion of an aromatics-

containing stream separated from the effluent, which aromatics stream includes benzene and toluene, is recycled to the conversion step.

Claim 1 is illustrative and reproduced below:

1. A process for the preparation of an aromatic product comprising xylene, which process comprises the steps of:

a. converting an oxygenate feedstock in an oxygenate-to-olefins conversion system, comprising a reaction zone in which an oxygenate feedstock is contacted with an oxygenate conversion catalyst under oxygenate conversion conditions, to obtain a conversion effluent comprising benzene, toluene, xylene and olefins;

b. separating at least a portion of the benzene and toluene from the conversion effluent to form an aromatics containing stream;

c. separating the olefins from the conversion effluent;

d. separating xylene from the conversion effluent to produce a xylene product stream; and

e. recycling at least a portion of the aromatics containing stream to step a).

App. Br. 5.

The Examiner relies on the following prior art references as evidence in rejecting the appealed claims:

Bozzano et al.	US 7,834,227 B2	Nov. 16, 2010
Claude et al.	US 7,883,618 B2	Feb. 8, 2011
Nesterenko et al.	US 2011/0196113 A1	Aug. 11, 2011
Brown et al.	US 8,048,388 B2	Nov. 1, 2011

The Examiner maintains the following grounds of rejection:

Claims 1–7, 9–11, and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bozzano in view of Brown. Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bozzano in view of Brown and Nesterenko. Claims 12 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bozzano in view of Brown and Claude.

After review of the opposing positions articulated by Appellants and the Examiner, the applied prior art, and Appellants' claims and Specification disclosures, we determine that the Appellants' arguments are insufficient to identify reversible error in the Examiner's obviousness rejections. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011).

Accordingly, we affirm the stated obviousness rejections for substantially the fact findings and the reasons set forth by the Examiner in the Examiner's Answer and the Final Office Action. We offer the following for emphasis only.

Concerning the Examiner's first stated rejection, Appellants argue the rejected claims together as a group. Also, Appellants do not present additional arguments against the Examiner's separately stated rejections involving certain dependent claims. Rather, Appellants rely on the argument made with respect to the first stated rejection (App. Br. 4). Accordingly, we select claim 1 as the representative claim on which we focus in deciding this appeal.

Appellants argue that the process of Bozanno, which is contended as being directed to aromatics co-production in a methanol to propylene production process, is different than Brown's process of manufacturing para-

xylene via a methylation reaction of pygas¹ feedstock over a suitable catalyst (App. Br. 3). Based thereon, Appellants argue that “it would not have been obvious to combine their [Bozzano’s and Brown’s] teachings to arrive at the present invention, especially in view of the specific teaching in Bozzano to send the C₆ stream to a second reactor for performing transalkylating reactions” (App. Br. 3).

We are not persuaded of reversible error in the Examiner’s obviousness rejections by this argument for substantially the reasons set forth by the Examiner (Ans. 2–13; Final Act. 3–10).

In particular, the Examiner has determined without dispute that Bozzano teaches or suggests a process corresponding to Appellants’ representative claim 1 process but for disclosing the aromatics recycling to the conversion reaction zone comprising the recycling of an aromatics stream that includes, *inter alia*, benzene and toluene (Ans. 3; Final Act. 6).

The Examiner finds that Bozzano teaches or suggests a process for converting an oxygenate-containing feedstock (i.e., methanol) over a catalyst to form a product effluent stream that includes xylenes (C₈ aromatic), olefins and other C₇ and C₆ aromatics, wherein xylenes can be separated from the effluent (Ans. 3; Final Act. 5–6; Bozzano, col. 3, ll. 5–59; col. 4, ll. 43–67; col. 5, ll. 20–33; col. 6, ll. 13–62; col. 7, ll. 14–25, 3945). The Examiner finds that Bozzano teaches that a stream containing C₇ aromatics can be recycled to the conversion reactor (Ans. 3).

¹ “[P]ygas is a byproduct of olefin production by steam cracking hydrocarbons such as naphtha [or] gas oil feedstocks” and contains aromatics, including benzene and toluene, and non-aromatics (Brown; col. 7, l. 63 – col. 8, l. 15).

The Examiner finds that Brown teaches or suggests recycling benzene and toluene to a methylation reaction zone, in a process substantially similar to the process of Bozzano wherein Brown's methylation zone substantially corresponds to the conversion reaction of Bozzano and both processes substantially employ similar "feed chemicals, reaction catalyst, reaction conditions, effluents, and similar steps for separating the effluents" (Ans. 4, 8–12). Based thereon, the Examiner reasonably maintains that one of ordinary skill in the art would have been led to recycle at least some of both toluene and benzene in the process of Bozzano in order to provide for a higher yield of xylene, a desirable co-product, as taught by Brown (Ans. 4, 10–12; Brown, col. 26, ll. 29–32).

Appellants do not specifically dispute the Examiner's determination that Bozzano can employ the same ZSM-5 catalyst as employed by Brown and that Bozzano and Brown use similar feedstocks and overlapping reaction conditions (Ans. 9–11). In this regard, Appellants acknowledge that "[o]xygenate-to-olefin processes are well described in the art" and that "[i]n principle, every known OTO [oxygenate-to-olefins] conversion system and process can be used in conjunction with the present invention, including processes known as Methanol-to-Olefins (MtO) and Methanol to Propylene (MtP)" (Spec. 1, l. 8; 2, ll. 16–18). Hence, we concur with the Examiner that Appellants' conclusive argument against the Examiner's proposed combination of references does not indicate that the skill in the relevant art is such that one of ordinary skill in the art would not have been led to recycle at least some of an aromatics stream including benzene and toluene to the oxygenate-to-olefins conversion reaction zone of Bozzano for further

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conversion to a desirable xylene co-product as an obvious option as suggested by Brown.

Consequently, the evidence and argument of record weighs in favor of the Examiner's obviousness determination. It follows that we shall sustain the Examiner's obviousness rejections.

CONCLUSION/ORDER

The Examiner's decision to reject the appealed claims 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).

AFFIRMED