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Drinker Biddle & Reath LLP (WM)
222 Delaware Avenue, Ste. 1410
Wilmington, DE 19801-1621

EXAMINER
BALASUBRAMANIAN, VENKATARAMAN

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ANDREAS KERN, HANS-ULRICH PRÖBSTLE, TILO JOHN, WOLFGANG STEINER, and HEIKO MAAS[1]

Appeal 2014-007842
Application 12/738,049
Technology Center 1600

Before MELANIE L. McCOLLUM, JOHN G. NEW, and JACQUELINE T. HARLOW, *Administrative Patent Judges*.

McCOLLUM, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 involving claims to a process for preparing melamine. The Examiner has rejected the claims as anticipated and obvious. We have jurisdiction under 35 U.S.C. § 6(b). We reverse.

STATEMENT OF THE CASE

Claims 1, 2, 4, 5, 7, 9, 10, 12, and 13 are pending and on appeal (App. Br. 2). We will focus on claim 1, the only independent claim on appeal, which reads as follows:

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[1] Appellants identify the real party in interest as BASF SE (App. Br. 2).

1. A process for preparing melamine by converting urea in the presence of a solid catalyst in one reactor or in a plurality of reactors connected in series in the temperature range from 370°C to 430°C, cooling the gas formed in the urea conversion in a gas cooler to a temperature from 320°C to 380°C and filtering the gas formed in the urea conversion in a hot gas filter, removing the melamine by desublimation and recycling a portion of the gas present after the melamine removal ("cycle gas") into the reactor or the reactors, which comprises performing all of the above stages at a pressure in the range from 4 bar abs. to 10 bar abs and wherein, after the melamine removal, 5 to 50% of the cycle gas is branched off and fed into the reactor as "fluidizing gas" without passing through a urea scrubber and at least some of the remainder of cycle gas is fed to the urea scrubber.

Claims 1, 2, 4, 5, 7, 9, 10, 12, and 13 stand rejected under 35 U.S.C. § 102(b) as anticipated by Kaasenbrood (DE 2,060,929 published June 16, 1971, using US 3,697,519 issued Oct. 10, 1972, as an English-language equivalent) (Ans. 2).[2]

Claims 1, 2, 4, 5, 7, 9, 10, and 12 stand rejected under 35 U.S.C. § 102(b) as anticipated by Bruls et al. (US 4,348,520 issued Sept. 7, 1982) ("Bruls") (Ans. 3).

Claims 1, 2, 4, 5, 7, 9, 10, 12, and 13 stand rejected under 35 U.S.C. § 103(a) as obvious over Kaasenbrood (Ans. 4).

Claims 1, 2, 4, 5, 7, 9, 10, 12, and 13 stand rejected under 35 U.S.C. § 103(a) as obvious over Bruls (Ans. 7).

KAASENBROOD

In the anticipation rejection, the Examiner finds that Kaasenbrood "teaches a process for preparing melamine, which includes instant process" (Ans. 2). In particular, the Examiner finds:

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[2] For point citations to Kaasenbrood, we will refer to the US equivalent.

> Ka[a]senbrood teaches a process for preparing melamine from urea in the presence of a catalyst at a temperature [o]f 390°C and a pressure of 8 atmospheres. Before desublimation of the melamine, the reaction gas is filtered, in the course of it is cooled down in the conduit. The pressure during the desublimation was maintained between 5 and 10 atmospheres. A portion of the reaction gas present after the removal of the melamine is recycled into the melamine reactor.

(*Id.*)

In the obviousness rejection, the Examiner finds that Kaasenbrood "does not specifically state a range of 5 to 50% as required by instant claim 1" (*id.* at 4). However, the Examiner finds: "Ka[a]senbrood clearly teaches that part of the non-condensed gases is sent to melamine reactor and the remaining part to urea synthesis. More specifically . . . Ka[a]senbrood teaches 26 % of the gases condensed, 57% sent to melamine reactor and remaining to urea reactor." (*Id.* at 4–5.) Thus, the Examiner concludes that the range of 5 to 50% would have been obvious (*id.* at 5–7).

Analysis

Appellants argue: "Ka[a]senbrood does not disclose, either expressly or inherently, feeding 5 to 50% of the cycle gas to the reactor. Ka[a]senbrood further does not disclose, either expressly or inherently, branching off and feeding such cycle gas to the reactor without passing through a urea scrubber." (App. Br. 9.) We conclude that the Examiner has not set forth a prima facie case that Kaasenbrood teaches or suggests that "5 to 50% of the cycle gas is branched off and fed into the reactor as 'fluidizing gas' without passing through a urea scrubber," as recited in claim 1.

As acknowledged by the Examiner (Ans. 4), Kaasenbrood specifically teaches that "57 percent [of the gas stream] is recycled to melamine

synthesis reactor A" (Kaasenbrood, col. 6, ll. 28–36). However, even if we conclude that Kaasenbrood teaches or suggests the claimed range, we agree with Appellants that the Examiner does not adequately explain how Kaasenbrood teaches or suggest feeding the claimed amount into the reactor *without passing through a urea scrubber*.

In particular, Appellants argue:

> Ka[a]senbrood discloses that all cycle gas is "introduced through line 16 into condenser J, where the gases are contacted with a urea melt supplied by mixing vessel K via line 20." Ka[a]senbrood at col. 5, lines 4-7. In other words, in Ka[a]senbrood all cycle gas is fed to a condenser which acts as a scrubber according to the language in the instant specification, where it is brought into contact with a urea melt. Thus, there is nothing in Ka[a]senbrood to disclose or suggest feeding cycle gas to the reactor without passing through a urea scrubber, as required by the pending claims.

(App. Br. 10.) We conclude that the Examiner does not adequately explain why Kaasenbrood's "condensor J, where the gases are contacted with a urea melt," is not considered a urea scrubber (Kaasenbrood, col. 5, ll. 4–6).

Conclusion

The Examiner has not set forth a prima facie case that Kaasenbrood teaches or suggests that "5 to 50% of the cycle gas is branched off and fed into the reactor as 'fluidizing gas' without passing through a urea scrubber," as recited in independent claim 1. We therefore reverse the anticipation and obviousness rejections over Kaasenbrood.

BRULS

The Examiner finds that "Bruls teaches a process for preparation of melamine comprising cooling the off gas with ammonia and or melamine"

(Ans. 3). The Examiner also finds that Bruls teaches that "the major portion of off-gas mixture of ammonia and carbon dioxide is recirculated to the reaction zone as fluidized gas for the bed of catalytically active material" (*id.*). In addition, the Examiner finds:

> Bruls teaches the process wherein urea and thermal decomposition products are converted to melamine in the presence of a gas mixture containing ammonia and carbon dioxide in a reaction zone containing fluidized bed of catalytically active material at temperature and pressure which include instant temperature and pressure and the melamine is . . . subsequently desublimated from the melamine containing gas mixture in a desublimation zone by a dry-capture method within the temperature and pressure range as in instant process and the major portion of desublimator off-gas mixture containing ammonia and carbon dioxide is compressed and recirculated to the reaction zone as fluidizing gas for the bed of catalytically active material without intervening treatment to remove gaseous impurities from the desublimator off-gas as required by the instant process.

(*Id.*) (*See also id.* at 7–8.)

Analysis

Appellants argue that "[t]here is nothing in Bruls to suggest the use of a hot gas filter" (App. Br. 16). We conclude that the Examiner has not set forth a prima facie case that Bruls teaches or suggests a method comprising "filtering the gas formed in the urea conversion in a hot gas filter," as recited in claim 1.

Conclusion

The Examiner has not set forth a prima facie case that Bruls teaches or suggests "filtering the gas formed in the urea conversion in a hot gas filter,"

as recited in independent claim 1. We therefore reverse the anticipation and obviousness rejections over Bruls.

REVERSED