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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JULIA HELEN TELFORD,
ANDREA WILLIAMS, and SHIPING ZHU

Appeal 2019-003828
Application 13/133,950
Technology Center 1700

Before MICHAEL P. COLAIANNI, GEORGE C. BEST, and
DEBRA L. DENNETT, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ appeals under 35 U.S.C. § 134(a) the final rejections of claims 1–13. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Conopco, Inc., d/b/a Unilever (Appeal Br. 3).

STATEMENT OF THE CASE

Appellant's invention is directed to edible composites of gas hydrate and ice; and frozen confections comprising such composites (Spec. 1:4–5). The Specification describes that a gas hydrate, i.e., a clathrate, is a crystalline solid which consists of a gas molecule surrounded by a cage of water molecules (*id.* at 4:6–7).

Claim 1 is illustrative (emphasis added):

1. A method for producing an edible composite of gas hydrate and ice, the method comprising the steps of:
 - a) contacting an aqueous solution with carbon dioxide or nitrous oxide *at a sufficiently high pressure to form a gas hydrate, but at a temperature preventing this; and then*
 - b) *reducing the temperature of the solution to form the gas hydrate and ice; characterized in that the aqueous solution contains from 0.01 to 5 wt% of an aerating agent.*

Appeal Br. 10 (Claims App.).

Appellant appeals the following rejections:

1. Claims 1–7 and 9–13 are rejected under 35 U.S.C. § 103(a) as unpatentable over Bee (US 4,738,862; issued Apr. 19, 1988), in view of Bramley et al. (US 2007/0141206 A1; published Jun. 21, 2007, “Bramley”), in further view of Susan Circone et al., *CO₂ Hydrate: Synthesis, Composition, Structure, Dissociation Behavior, and a Comparison to Structure I CH₄ Hydrate*, J. Phys. Chem. B, 107(23):5529–39 (2003) (“Circone”) (Final Act. 3–4).
2. Claim 8 is rejected under 35 U.S.C. § 103(a) as unpatentable over Bee, in view of Bramley, and Circone, and further in view of

Alder et al. (US 3,220,204; issued Nov. 30, 1965, “Alder”) (Final Act. 5).

FINDINGS OF FACT & ANALYSIS

After review of the respective positions provided by Appellant and the Examiner, we AFFIRM the Examiner’s prior art rejections under 35 U.S.C. § 103(a) for the reasons presented by the Examiner and add the following for emphasis.

A. *Rejection of claims 1–7 and 9–13 as unpatentable over the combination of Bee, Bramley, and Circone.*

Appellant’s arguments for reversal of the Examiner’s rejection to claims 1–7 and 9–13 implicitly focus on limitations recited in independent claim 1 (*see* Appeal Br. 5, 8). We select claim 1 as representative of claims 2–7 and 9–13. Accordingly, claims 2–7 and 9–13 will stand or fall with our analysis of claim 1.

With regard to claim 1, the Examiner’s findings and conclusions regarding Bee, Bramley, and Circone are located on pages 3–4 of the Final Office Action.

The Examiner finds that Bee’s production of an edible gas hydrate and ice composite would have rendered obvious each step and limitation of the method recited in independent claim 1, except that Bee does not disclose preventing the formation of a gas hydrate by adjusting the temperature (Final Act. 3). In particular, the Examiner finds that Bee explicitly discloses a method for producing an edible composite of gas hydrate and ice, comprising contacting water with carbon dioxide at a high pressure of 35 bar and a temperature of 5 °C to form a gas hydrate

and reducing the temperature to $-15\text{ }^{\circ}\text{C}$ in order to form a gas hydrate and ice

(Ans. 6 (citing Bee Abstract; 2:16–25); *see also* Spec. Fig. 1).

The Examiner finds that Circone teaches forming carbon dioxide hydrate along with phase diagrams depicting the behavior of water and carbon dioxide at given pressures and temperatures (Final Act. 3; *see* Circone Fig. 2 (graphing the “[p]ressure-temperature history during CO₂ hydrate synthesis.”)). Based on these teachings, the Examiner determines that it would have been obvious to one of ordinary skill in the art at the time of the invention to vary Bee’s temperature and pressure based on Circone’s teachings to provide the desired hydrate/clathrate result, “as this is merely leveraging already known relationships” (Final Act. 4).

Appellant argues that the Examiner’s applied prior art would not render obvious the step of “contacting an aqueous solution with carbon dioxide . . . at a sufficiently high pressure to form a gas hydrate, but at a temperature preventing this,” as recited in claim 1 (Appeal Br. 8). Specifically, Appellant contends the Examiner has not established that Circone’s teachings would have caused “one of ordinary skill to change Bee’s process of forming a chlathrate [*sic*, clathrate] and then reducing the temperature” (*id.*).

Appellant’s arguments are not persuasive.

As the Examiner concludes, one of ordinary skill in the would have been able to select a desired phase based upon Circone’s phase diagrams, which depict the known relationship between water and CO₂, at the disclosed pressures and temperatures (*see* Ans. 6–7). Essentially, we find that the only difference between Bee’s method and the claimed method is that Bee’s method does not manipulate temperature to the extent required by

the claim. We agree with the Examiner that selecting a desired phase by temperature manipulation would have applied “what is already known to affect a desired result” (*see id.* at 7). Appellant does not dispute this finding (*see* Appeal Br. 8). Appellant, moreover, does not allege any criticality with respect to separating the temperature reduction step from the preceding step of contacting an aqueous solution with CO₂ at sufficiently high pressure (*see id.*).

Therefore, in the absence of unexpected results, the preponderance of the evidence favors the Examiner’s finding and conclusion that it would have been obvious to: (i) contact an aqueous solution with carbon dioxide at a sufficiently high pressure, but at a temperature preventing gas hydrate formation and, thereafter, (ii) reduce the solution’s temperature to form a gas hydrate.

Appellant asserts that Bramley’s teaching does not remedy the “deficiencies in Bee and Circone concerning the method of forming hydrates” (Appeal Br. 9). For the reasons set forth above, we find no such deficiencies in Bee and Circone.

Thus, based on this record, we sustain this rejection.

B. Rejection of claim 8 as unpatentable over the combination of Bee, Bramley, Circone, and Adler.

With regard to claim 8, the Examiner’s findings and conclusions regarding Bee, Bramley, Circone, and Adler are located on page 5 of the Final Office Action.

Appellant’s arguments for reversal of the Examiner’s rejection to claim 8 implicitly focus on limitations recited in independent claim 1 (*see* Appeal Br. 5, 8). For the reasons set forth above, the combined teachings of

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Bee, Bramley, and Circone would have rendered claim 1 obvious.

Accordingly, claim 8 falls with our analysis of claim 1.

Thus, based on this record, we sustain this rejection.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
1-7, 9-13	103(a)	Bee, Bramley, Circone	1-7, 9-13	
8	103(a)	Bee, Bramley, Circone, Adler	8	
Overall Outcome			1-13	

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

AFFIRMED