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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte LILY LEUNG FEE, DONALD F. STEENSON, ROBERT ERICKSON, MARK STUEBER, ANITA J. HALL, FRANK TIEGS, STEVE HARRIS, and CRAIG BOLT

Appeal 2019-003702
Application 14/890,745
Technology Center 1700

Before JEFFREY B. ROBERTSON, JAMES C. HOUSEL, and JANE E. INGLESE, *Administrative Patent Judges*.

INGLESE, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant[1] requests our review under 35 U.S.C. § 134(a) of the Examiner's decision to finally reject claims 1 and 3–20.[2] We have jurisdiction over this appeal under 35 U.S.C. § 6(b).

We REVERSE.

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[1] We use the word "Appellant" to refer to the "applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies General Mills, Inc. and Oregon Potato Company as the real parties in interest. Appeal Brief filed December 31, 2018 ("Appeal Br.") at 4.

[2] Final Office Action entered July 16, 2018 ("Final Act.") at 1.

CLAIMED SUBJECT MATTER

Appellant claims a continuous method for producing vegetable products having a retained firmness. Appeal Br. 4–5. Claim 1, the sole pending independent claim, illustrates the subject matter on appeal, and is reproduced below with contested subject matter italicized:

> 1. A continuous method for producing vegetable products having a retained firmness, the method comprising the steps of:
>
> a) providing a continuous vegetable product treatment device comprising a vegetable product treatment chamber having a vegetable product inlet, a vegetable product outlet, a vegetable product transport mechanism in the vegetable product treatment chamber for urging the vegetable product toward the vegetable product outlet, and at least one liquid introduction orifice for introducing a liquid in the vegetable product treatment chamber;
>
> b) introducing vegetable products into the vegetable product treatment chamber via the vegetable product inlet;
>
> c) introducing liquid into the vegetable product treatment chamber via the vegetable product inlet and/or the liquid introduction orifice;
>
> d) urging the vegetable product toward the vegetable product outlet by operation of the vegetable product transport mechanism while *contacting the vegetable product with calcium and maintaining* the temperature of the vegetable product in the vegetable product treatment chamber at a temperature of from about 125°F to about 160°, and *the liquid in the vegetable product treatment chamber at a pH of from about 5 to about 7 throughout the continuous method by addition of a base solution to the liquid*, the vegetable product being urged toward the vegetable product outlet at a rate so that individual vegetable products reside in the vegetable product treatment chamber for a time of from about 20 minutes to about 60 minutes;
>
> e) removing the vegetable product from the vegetable product treatment chamber via the vegetable product outlet to provide heat treated vegetable products; and

> f) blanching the heat treated vegetable products in a subsequent blanching step at a temperature ranging from about 190°F to 210°F for a time of from about two to about 10 minutes.

Appeal Br. 23 (Claims Appendix) (emphasis added).

REJECTION

The Examiner maintains the rejection of claims 1 and 3–20 under 35 U.S.C. § 103 as unpatentable over Bourne[3] in view of Davidson[4] and Chukwu[5] in the Examiner's Answer entered March 7, 2019 ("Ans.").[6]

FACTUAL FINDINGS AND ANALYSIS

Upon consideration of the evidence relied upon in this appeal and each of Appellant's contentions, we reverse the Examiner's rejection of claims 1 and 3–20 under 35 U.S.C. § 103 for reasons set forth in the Appeal and Reply Briefs, and below.

Claim 1 requires the recited continuous method for producing vegetable products having a retained firmness to comprise, in part, introducing vegetable products into a vegetable product treatment chamber, introducing liquid into the vegetable product treatment chamber, contacting the vegetable products in the treatment chamber with calcium, and maintaining the liquid in the vegetable product treatment chamber at a pH of

[3] US 5,607,712, issued March 4, 1997.
[4] US 3,722,401, issued March 27, 1973.
[5] US 2008/0069923 A1, published March 20, 2008.
[6] The Examiner withdrew the rejection of claims 8–10 under 35 U.S.C. § 112(a), and rejection of claims 8–10 under 35 U.S.C. § 112(b), in the Answer. Ans. 7.

from about 5 to about 7 throughout the continuous method by addition of a base solution to the liquid.

The Examiner finds that Bourne discloses a continuous method for improving the firmness of vegetables that comprises contacting vegetables in a treatment chamber with calcium acetate at a concentration that "provides a final product pH of 5.2." Final Act. 4 (citing Bourne col. 4, ll. 63–68); Ans. 8 (citing Bourne col. 11, ll. 22–23). The Examiner finds that "Bourne [thus] teaches the addition of a pH modifying component, calcium salt." Ans. 8. The Examiner finds that Bourne, however, does not disclose maintaining liquid in the treatment chamber at a pH of from about 5 to about 7 throughout the continuous method by addition of a base solution to the liquid. Final Act. 5–6.

The Examiner finds that Chukwu discloses treating vegetables with a pH-modifying component to achieve and maintain a pH within the range of 2 to 7, which the Examiner finds encompasses the acidic pH taught by Bourne. Final Act. 6 (citing Chukwu ¶¶ 36–38); Ans. 8–9. The Examiner finds that Chukwu discloses that the pH-modifying component can include a calcium salt such as calcium acetate, the same calcium salt disclosed in Bourne, and the Examiner finds that Chukwu teaches "the addition of a base for its art recognized purpose of providing a particular pH range, importantly a same acidic pH range . . . [as] taught by Bourne." Ans. 8–9. (citing Chukwu ¶ 38 and Bourne col. 5, l. 10). The Examiner concludes that "given the same desired pH modifying to achieve a same pH range" it would have been obvious to one of ordinary skill in the art before the effective filing date of the present application to treat vegetables in Bourne's method with additional pH modifying components as taught by Chukwu, such as a base

solution, "to maintain a pH in the range of 5–7 as taught by Chukwu." Final Act. 6; Ans. 9.

On the record before us, however, the Examiner does not provide a persuasive, reasoned explanation supported by objective evidence for why one of ordinary skill in the art would have modified Bourne's method in the manner proposed, for reasons expressed by Appellant (Appeal Br. 13–17; Reply Br. 2–4) and discussed below.

Bourne discloses a "two-step blanch" process for increasing the firmness of canned vegetables that are frozen before canning, which involves a first "lower temperature" blanch followed by a "higher temperature" blanch. Bourne col. 2, ll. 14–32. Bourne discloses that the firmness of the vegetables can be further improved by contacting the vegetables with an acid to reduce the pH of the vegetable tissue to a pH below about 4.5, such as a pH of about 4.2, preferably by including an acid in the blanch water used in the second blanching step. Bourne col. 2, ll. 51–55; col. 4, ll. 49–54; col. 11, ll. 19–28. Bourne discloses that the firmness of the vegetables can also be further improved by contacting the vegetables with a calcium salt, preferably by including a calcium salt in the blanch water used in the first and/or second blanching steps. Bourne col. 2, ll. 57–61; col. 4, l. 63–col. 5, l. 1; col. 11, ll. 19–28. Bourne discloses that the firmness of the vegetables can be maximized by contacting the vegetables with both an acid and a calcium salt, preferably by including an acid in the blanch water used in the second blanching step, and by including a calcium salt in the blanch water used in the first and/or second blanching steps. Bourne col. 2, l. 63–col. 4, l. 3; col. 5, ll. 12–23; col. 11, ll. 19–33.

Chukwu discloses applying an activated aqueous enzyme composition to raw whole vegetables to enzymatically tenderize, hydrolyze, and/or degrade the vegetables. Chukwu ¶¶ 12, 13. Chukwu discloses that the pH of the aqueous enzyme composition is preferably about 2.0 to about 7.0, and Chukwu indicates that the aqueous enzyme composition may include one or more pH-modifying components "effective to modify the pH of an aqueous composition and activate the enzyme component of the bioactive composition." Chukwu ¶¶ 35–37. Chukwu discloses that the "pH-modifying component generally includes an acidulant, a basic agent, a buffering agent, a salt, or any combinations thereof." ¶ 37. Chukwu discloses that "[b]asic compounds like sodium hydroxide or the like may also be included as part of the pH-modifying component," and "[c]ombinations of weak organic acids and their corresponding salts are used to form the pH-modifying component when the goal is to provide a pH buffered system that stays within a particular range." Chukwu ¶¶ 37, 38.

Thus, Chukwu discloses adding a pH-modifying component, which may include a basic compound, to an aqueous enzyme composition that degrades whole vegetables, to modify the pH of the aqueous composition in order to activate enzymes in the composition. Bourne, in contrast, discloses adding an acid to water used to blanch vegetables, to lower the pH of the vegetables in order to improve the firmness of the vegetables when they are subsequently frozen and then canned. The methods disclosed in Chukwu and Bourne, therefore, have contrasting purposes. Specifically, Chukwu's method involves enzymatically degrading whole vegetables, which, as Appellant points out (Appeal Br. 15), one of ordinary skill in the art would have understood would make the vegetable tissue less firm, while Bourne's

method increases the firmness of vegetable tissue. Chukwu's method also uses a pH-modifying component to adjust the pH of an aqueous enzyme composition, while Bourne's method uses acid to lower the pH of vegetable tissue. And Chukwu adjusts the pH of the enzyme composition to activate enzymes in the composition, while Bourne lowers the pH of vegetable tissue to improve vegetable firmness.

In view of these numerous differences between Chukwu and Bourne's methods, the Examiner does not articulate reasoning having rational underpinning that explains why one of one of ordinary skill in the art would have modified Bourne's method in the manner proposed. As Appellant argues (Appeal Br. 15–16), the Examiner does not persuasively explain why Chukwu's disclosure of using a pH-modifying component to adjust the pH of an aqueous enzyme composition that degrades vegetables would have led one of ordinary skill in the art to modify Bourn's method of treating vegetables with an acid to increase their firmness, by further treating the vegetables in Bourne's method with "a base solution" in order "to maintain a pH in the range of 5–7 as taught by Chukwu." In particular, Chukwu explicitly discloses using a combination of a weak organic acid and its corresponding salt to form a pH-modifying component when the goal is to provide a pH buffered system that stays within a particular range, rather than forming a pH-modifying component with only a basic compound or solution, and Bourne discloses that lowering the pH of vegetable tissue to a pH of below about 4.5, rather than a pH of 5–7, improves the firmness of the vegetable tissue.

Because the Examiner does not rely on Davidson for any disclosure that cures the deficiencies in the Examiner's reliance on Bourne and

Chukwu discussed above (Final Act. 5), we do not sustain the Examiner's rejection of claims 1 and 3–20 under 35 U.S.C. § 103.

CONCLUSION

Claims	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 3–20	103	Bourne, Davidson, Chukwu		1, 3–20

REVERSED