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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte LIONEL BILLARD

Appeal 2015-001703
Application 13/513,126
Technology Center 1600

Before DONALD E. ADAMS, JOHN G. NEW, and
KRISTI L. R. SAWERT, *Administrative Patent Judges*.

ADAMS, *Administrative Patent Judge*.

DECISION ON APPEAL¹

This appeal under 35 U.S.C. § 134(a) involves claims 45–47 (Br. 3). Appellant waived the Appeal of pending and rejected claim 48 (*id.* (“The rejection of each of claims 45–47 is being appealed”).² Examiner entered a rejection under 35 U.S.C. § 103(a). We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ Appellant identifies “the real party in interest [as] DuPont Nutrition BioSciences ApS, a corporation of the City of Copenhagen, Denmark, which is a wholly owned subsidiary of E. I. DuPont de Nemours and Company” (Br. 3).

² Pending claims 29–44 stand “withdrawn from [] consideration [] as being drawn to a nonelected inventive group” (Br. 3).

STATEMENT OF THE CASE

Appellant's disclosure "relates to reduction of problems with off-taste derived from the activity of impurities in food containing gellan gum" (Spec. 1:3-4). Claims 45 and 47 are representative and reproduced below:

45. A method for a production of gellan gum, under mixing conditions, the method comprising:
providing a liquid medium containing the gellan gum;
adjusting a temperature of the liquid medium to facilitate enzymatic treatment;
adjusting a pH of the liquid medium to about 8.0 to facilitate the enzymatic treatment;
applying the enzymatic treatment to reduce or abolish an off-taste of a product to which the gellan gum is added, wherein the enzymatic treatment comprises adding one or more of a lysozyme or a protease capable of reducing or abolishing the enzymatic activity of one or more of *S. elodea* derived arylsulfatase or β -glucuronidase, wherein the one or more of the lysozyme or the protease are added in an amount sufficient to reduce or abolish the enzymatic activity of the one or more of the *S. elodea* derived arylsulfatase or the β -glucuronidase in the liquid medium; and
recovering the gellan gum from the liquid medium.

(Br. 16.)

47. A method for a production of gellan gum, under mixing conditions, the method comprising:
providing a liquid medium containing the gellan gum, wherein the gellan gum comprises one or more of a *S. elodea* derived arylsulfatase or a β -glucuronidase;
treating the liquid medium at a temperature between 100°C and 125°C for a period of time sufficient to reduce or abolish enzymatic activity of the one or more of the *S. elodea* derived arylsulfatase or the β -glucuronidase to reduce or

abolish an off-taste of a product to which the gellan gum is added; and
recovering the gellan gum from the liquid medium.
(*id.* at 16–17.)

The claims stand rejected as follows:

Claims 45–48 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Valli,³ Bezanson,⁴ and Kawabata.⁵

Claim 48:

Appellant waived the Appeal of pending and rejected claim 48 (Br. 3 (“The rejection of each of claims 45-47 is being appealed”)). Therefore, the rejection of claim 48 under 35 U.S.C. § 103(a) as unpatentable over the combination of Valli, Bezanson, and Kawabata is summarily affirmed.

Claims 45 and 47:

ISSUE

Does the preponderance of evidence relied upon by Examiner support a conclusion of obviousness?

FACTUAL FINDINGS (FF)

FF 1. Appellant discloses that

In pharmaceutical products gellan gum can be used to produce easy-to-swallow solid dosage forms, such as gels and coated

³ Valli et al., WO 02/060268 A2, published Aug. 8, 2002.

⁴ Bezanson et al., US 2008/0145505 A1, published June 19, 2008.

⁵ Thomas T. Kawabata et al., *Specific IgE and IgG1 Responses to Subtilisin Carlsberg (Alcalase) in Mice: Development of an Intratracheal Exposure Model*, 29 FUNDAMENTAL AND APPLIED TOXICOLOGY 238–243 (1996).

tablets, and to modify the rate of release of active ingredients from tablets and capsules.

However, when adding gellan gum it is almost inevitable that the end product is also contaminated with enzymes derived from the bacterial fermentation production of the gum, since the gellan gum is typically used in a relatively impure form. These residual enzymes (described as β -glucuronidase and arylsulphatase) are [] responsible for development of an undesirable off-taste in the end product (often described as a barn-like or cow-like taste): over time para-cresol (*p*-cresol) forms as a result of the action of enzymes produced by *S. paucimobilis*.

(Spec. 1:23–2:2.)

FF 2. We adopt the Examiner’s findings concerning the scope and content of the prior art (Ans. 3–7), and provide the following findings for reference purposes.

FF 3. Examiner finds that Valli discloses the subject matter of Appellant’s claims 45 and 47 (*see* Ans. 3–5).

FF 4. Valli discloses that “para-cresol production can be disrupted by denaturing the residual enzymes that reside in the native gellan gum” (Valli 6:17–20; *see* Ans. 4).

FF 5. Valli discloses the treatment of “gellan gum [] first with lysozyme, followed by treatment with an alkaline caustic agent and optional neutralization, then treatment with a protease. The protease is capable of reacting at a pH of about 8 or higher. This latter alternative method optimizes pH conditions in order to provide optimal reactive conditions” (Valli 7:19–25; *see* Ans. 3).

FF 6. Valli discloses heating gellan broth “to a temperature ranging from about 25°C to about 100°C by techniques well-known in the art” (Valli 8:19–22; *see* Ans. 3).

FF 7. Examiner finds that Bezanson discloses a process for producing gellan gum, which makes use of the protease “subtilisin Carlsberg,” which Kawabata recognizes is “alcalase” (Ans. 4).

FF 8. Appellant discloses that when thermal treatment is the *sole* treatment of a gellan broth, heating the gellan broth to a temperature of “100°C lead to a p-cresol off-taste,” whereas heating a gellan broth to a temperature of “120°C led to no p-cresol off-taste” (Spec. 15:3:7).

ANALYSIS

Based on the combination of Valli, Bezanson, and Kawabata, Examiner concludes that, at the time Appellant’s invention was made, it would have been prima facie obvious “to add an alcalase in the method of Valli with a reasonable expectation for successfully obtaining a gellan composition, since Bezanson discloses that an alcalase, a protease, is used in a process for preparing a gellan gum” (Ans. 4). In addition, Examiner reasons that a person of ordinary skill in this art would optimize the temperature of the gellan reaction mixture “as a matter of routine experimentation” (*id.*).

Claim 45:

Initially, we note that alcalase is not required for the method of Appellant’s independent claim 45. In this regard, we note that Appellant failed to adequately rebut the Examiner’s finding that Valli alone reads on the subject matter of Appellant’s claim 45. The Board may rely upon less than all the references cited by the Examiner. *See In re May*, 574 F.2d 1082, 1090 (CCPA 1978); *In re Kronig*, 539 F.2d 1300, 1304 (CCPA 1976).

Nevertheless, to be complete, as Examiner makes clear, Bezanson and Kawabata are relied upon to support a finding that the enzyme, alcalase, is known to be useful in the preparation of gellan (Ans. 5–6; FF 2, 7). Therefore, notwithstanding Appellant’s contention to the contrary, Examiner did not rely upon Bezanson and/or Kawabata to suggest reaction conditions for the preparation of gellan. Accordingly, we are not persuaded by Appellant’s contentions that because Bezanson suggests reactions conditions that differ from Valli’s, the combination of Valli and Bezanson would “change[] Valli’s principle of operation” (Br. 6; *see id.* at 5–10).

Valli teaches the production of gellan with reduced para-cresol and, therefore, does not have an off-taste (FF 2, 4–6). Therefore, we are not persuaded by Appellant’s contention that Bezanson and Kawabata, both relied upon to disclose the protease alcalase, are not concerned with reducing the off-taste of gellan and, therefore, “one of ordinary skill in the art would not have looked to Bezanson or Kawabata” for combination with Valli (Br. 10–11; *cf.* FF 2,7; Ans. 6).

Claim 47:

Appellant recognizes that Valli “teaches that ‘the gellan broth is heated to a temperature ranging from about 25°C to about 100°C’” (Br. 11; FF 6). Nevertheless, Appellant contends that “Appellant[] found, as shown in the As-filed Specification, that [] treatment at 100°C led to a p-cresol off-taste whereas treatment at 120°C lead to no p-cresol off-taste. *As-Filed Specification*, p. 15, ll. 3-6” (Br. 12, FF 8). We are not persuaded by Appellant’s asserted unexpected result. Initially, we note that the portion of Appellant’s disclosure relied upon relates to the use of heat as the *sole*

treatment, whereas Appellant's claim 47 is open to and includes Valli's method comprising enzymatic and heat treatment (*see* FF 7; *cf.* FF 2–6 and Br. 16–17). In addition, the method of Appellant's claim 47 requires heat treatment at a temperature of between 100°C and 125°C (*see* Br. 16–17). Valli discloses a heat treatment at a temperature of about 100°C. In this regard, Examiner finds that “[t]he temperature of about 100°C in the method of Valli does overlap or is close to the claimed temperature” (Ans. 7). Further, as Examiner explains, “the argument of ‘treatment at 100°C led to a p-cresol off-taste whereas treatment at 120°C led to no p-cresol off-taste’ is not commensurate with the scope of [] claim[] [47]” (Ans. 7).

CONCLUSION OF LAW

The preponderance of evidence relied upon by Examiner support a conclusion of obviousness.

The rejection of claim 48 under 35 U.S.C. § 103(a) as unpatentable over the combination of Valli, Bezanson, and Kawabata is summarily affirmed.

The rejection of claims 45 and 47 under 35 U.S.C. § 103(a) as unpatentable over the combination of Valli, Bezanson, and Kawabata is affirmed. Claim 46 is not separately argued and falls with claim 45.

TIME PERIOD FOR RESPONSE

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