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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* HONGWEI LIU, GEORGIOS D. KARLES, and  
SHUZHONG ZHUANG

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Appeal 2018-009048  
Application 12/155,067  
Technology Center 1700

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Before JEFFREY T. SMITH, JAMES C. HOUSEL, and  
MICHELLE N. ANKENBRAND, *Administrative Patent Judges*.

SMITH *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 7, 9, 14, 15, and 17–32. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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<sup>1</sup> 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 Philip Morris USA, Inc. (Appeal Br. 2.)

STATEMENT OF THE CASE

Appellant's invention is generally directed to a method for making wax capsules including immersing a concentric nozzle of a coextruder in a container of a hot alcohol. (Spec. ¶ 9.) Suitable hot alcohols include, methanol, ethanol, propanol, and combinations thereof. (Spec. ¶ 20.)

Claim 21 illustrates the subject matter on appeal and is reproduced below (*italics added identifying key limitations*):

21. A method for forming capsules containing an encapsulated core material comprising:

coextruding a core material of liquid hydrophilic substance and a molten wax by passage through a concentric nozzle having an inner nozzle through which the liquid hydrophilic core material passes and an outer nozzle through which the molten wax passes;

*immersing said concentric nozzle in a container of a heated liquid, said heated liquid consisting of methanol, ethanol, propanol, and combinations thereof, possessing a decreasing temperature gradient which runs vertically from an upper portion to a bottom portion of the container;*

controlling said temperature of said heated liquid in said upper portion of said container to a temperature of 2°C to 5°C hotter than the melting point of said molten wax by heating an inner surface and/or an outer surface of an upper portion of said container;

*passing the coextruded core material and molten wax from said concentric nozzle immersed in said upper portion of said heated liquid vertically downward through said liquid consisting of methanol, ethanol, propanol, and combinations thereof beginning at the upper portion to the lower portion to form discrete capsules wherein said molten wax is gradually solidified and coats said hydrophilic core material; and*

collecting said discrete capsules from the bottom portion of said heated liquid possessing said decreasing temperature gradient.

(Appeal Br. Claims Appendix 2–3.)

The following rejection is presented for our review:<sup>2</sup>

Claims 7, 9, 14, 15, and 17–32 are rejected under 35 U.S.C. § 103(a) as unpatentable over Suzuki (EP 0 595 263 A1, pub. May 4, 1994), in combination with Miyano (US 3,856,699, iss. Dec. 24, 1974), Somerville (US 3,389,194, iss. June 18, 1968), Arens (US 3,423,489, iss. Jan. 21, 1969) and Jensen (US 3,265,629, iss. Aug. 9, 1966).

#### OPINION

After review of Appellant's and the Examiner's respective positions, we REVERSE the Examiner's rejection under 35 U.S.C. § 103(a). The Examiner has reproduced the rejection on appeal in the Examiner's Answer. (Ans. 4–10.)

The Examiner finds Suzuki teaches a method of forming a core material containing capsules comprising coating a core material with a molten wax to form capsules having a coating and contacting the capsules with alcohol to solidify the coating. (Final Act. 2; Suzuki 3, ll. 35–50; 4, ll. 18–20.) The Examiner finds Miyano teaches heating an aqueous hardening solution with alcohol retards the solidification of waxy material and results in uniform capsule formation. (Final Act. 3; Miyano Col. 2, ll. 12–16.) The Examiner determines it would have been obvious to form uniform hardened seamless capsules by introducing wax capsules into a medium that has been heated. (Final Act. 3–4.) The Examiner finds Somerville teaches a method of mass producing spherical particles where the hot melt encapsulant is hardened by suspending in a stream of carrier fluid (Final Act. 4; Somerville Col. 2, l. 70–Col. 3, l. 9.) The Examiner does not find that Somerville

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<sup>2</sup> The complete statement of the rejection on appeal appears in the Final Office Action. (Final Act. 2–11.)

discloses specific types of carrier fluids. The Examiner finds Arens teaches immersing a container in a cooling bath to cause gradual cooling or in a warm bath to cause gradual heating was known to persons of ordinary skill in the art. (Final Act. 5; Arens Col. 1, ll. 40–45.) The Examiner determines it would have been obvious to a person of ordinary skill in the art to utilize a gradual cooling of the hardening medium to gradually create a seamless solidified capsule at the end of the solidification column. (Final Act. 5–6.)

Regarding the claim requirement for the hardening solution to be composed of an alcohol, the Examiner states:

Regarding the limitation of alcohol being ethanol, methanol, propanol or combination thereof (**claims 21 and 22**), Suzuki teaches wherein said heated alcohol is selected from alcohols, but the reference is silent regarding alcohol being selected from the group consisting of ethanol, methanol, propanol, and combinations thereof. However, ethanol, methanol etc., are well known in the art for ease of use and availability. Further, it was known that waxes are less soluble in alcohols as compared to water as taught by Jensen (Column 4, lines 50-60), where additives like methanol and ethanol to aid solidification of lipid capsules is disclosed. Therefore, it would have been a matter of routine determination for one of ordinary skill in the art at the time of the invention to modify Suzuki and utilize ethanol or methanol as solidifying medium. One of ordinary skill would have been motivated to choose an alcohol as claimed at least for ease of availability or cost of an alcohol and its effectiveness in achieving hardening of waxes.

Regarding the limitation of temperature of hardening medium being about 2°C to 5°C hotter than the melting point of said wax, Suzuki as applied to claim 21, teaches a method wherein the temperature at the upper level of the heated alcohol is about 2°C to 5°C hotter than the melting point of said wax (See Example 1 of Miyano). Thus, heating the hardening medium to 2–5°C higher than the melting temperature of wax was known in the art as taught by Miyano. Therefore, one of ordinary skill

would have been motivated to increase the temperature of hardening medium as claimed for the known purpose of making smooth seamless wax capsules. The limitation of type of alcohol has already been discussed in view of Jensen in claim 21.

(Final Act. 5–6.)

Appellant argues Suzuki utilizes an aqueous solution, for encapsulating a hydrophilic core with a wax shell, not methanol, ethanol, or propyl alcohol as the claimed invention requires. (Appeal Br. 9.) Appellant argues Miyano, Somerville, Arens, and Jensen do not overcome the teachings of Suzuki because none of the references describe or suggest using a liquid consisting of methanol, ethanol, or propyl alcohol in a method of encapsulating a hydrophilic core with a wax shell. (Appeal Br. 9–19.)

The dispositive issue on appeal is:

Did the Examiner err in determining that Suzuki in combination with Miyano, Somerville, Arens, and Jensen describe or suggest a method of forming a core material containing capsules comprising passing the coextruded core material and molten wax in a heated liquid consisting of methanol, ethanol, propanol, and combinations thereof to solidify the coating as independent claim 21 requires?<sup>3</sup>

Implicit in our review of the Examiner's obviousness analysis is that the claim must first have been correctly construed to define the scope and meaning of each contested limitation. *See Gechter v. Davidson*, 116 F.3d 1454, 1460 n.3 (Fed. Cir. 1997). During examination of a patent application, a claim is given its broadest reasonable construction consistent

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<sup>3</sup> Independent claims 21, 26, and 32 all require the same heated liquid. We will limit our discussion to independent claim 21.

with the specification. *In re Prater*, 415 F.2d 1393, 1404–05 (CCPA 1969). “[T]he words of a claim ‘are generally given their ordinary and customary meaning.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal citations omitted). “We have cautioned against reading limitations into a claim from the preferred embodiment described in the specification, even it is the only embodiment described, absent clear disclaimer in the specification.” *In re American Academy of Science Tech. Center*, 367 F.3d 1359, 1369 (Fed. Cir. 2004). “It is the applicants’ burden to precisely define the invention, not the PTO’s.” *In re Morris*, 127 F.3d 1048, 1056 (Fed. Cir. 1997).

The Specification discloses capsules containing an encapsulated core material are formed by passing the coextruded core material and molten wax from a concentric nozzle through a hot alcohol solvent. (Spec. ¶ 17.) The Specification states:

Suitable hot alcohols include, without limitation, methanol, ethanol, propanol, combinations thereof, and the like. In a most preferred embodiment, ethanol is used.

(Spec. ¶ 20.)

Independent claim 21 states “said heated liquid consisting of methanol, ethanol, propanol, and *combinations thereof*.” (Emphasis added.) Thus, the claimed invention requires that the heated liquid must have at least one of methanol, ethanol, and propanol or mixtures thereof. *Abbott Labs. v. Baxter Pharmaceutical Products Inc.*, 334 F.3d 1274, 1280 (Fed. Cir. 2003).

The Examiner has not identified teachings in Suzuki, Arens, Somerville, Miyano, and Jensen, taken alone or in combination that suggests using a liquid consisting of methanol, ethanol, or propanol in a method of encapsulating a hydrophilic core with a wax shell as required by independent

claim 21. Miyano describes an aqueous heating solution that can comprise polyvinyl alcohol; however, there is no description of other suitable alcohols. (*See* Miyano col. 2.) Jensen describes a colloidal dispersion of a gelable hydrophilic colloid, e.g., gelatin, agar-agar and albumin, which is prepared by utilizing a phase separation material that may comprise methanol, ethanol, or propanol. (Jensen col. 4, ll. 38–58.) The Examiner has not adequately explained how the teachings of Jensen that are directed to hydrophilic colloids are relevant to the use for waxes that Suzuki requires. The Examiner’s conclusory statement, reproduced above, that “ethanol, methanol etc., are well known in the art for ease of use and availability” is insufficient evidence to establish the obviousness of the claimed subject matter. Thus, the Examiner has not adequately explained how the teachings of Suzuki, Arens, Somerville, Miyano, and Jensen, taken alone or in combination would have suggested using a liquid consisting of methanol, ethanol, or propyl alcohol in a method encapsulating a hydrophilic core with a wax shell, as independent claim 21 requires.

Accordingly, for these reasons we do not sustain the appealed rejection.

CONCLUSION

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
7, 9, 14, 15, 17-32	103(a)	Suzuki, Miyano, Somerville, Arens, Jensen		7, 9, 14, 15, 17-32

REVERSED