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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte EBEN BAYER and GAVIN McINTYRE

Appeal 2019-005168
Application 15/266,640
Technology Center 1600

Before ERIC B. GRIMES, ULRIKE W. JENKS, and
ROBERT A. POLLOCK, *Administrative Patent Judges*.

POLLOCK, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant[1] appeals under 35 U.S.C. § 134(a) from the Examiner's rejections of claims 1–11. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

STATEMENT OF THE CASE

Appellant's invention relates to methods of making self-supporting composite materials comprising discrete particles bonded together with a network of fungal mycelia. Claim 1 is representative:

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[1]We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42. According to Appellant, the Real Party in Interest is Ecovative Design LLC. Appeal Br. 1.

1. A method of making a composite material comprising the steps of

forming an inoculum including a preselected fungus;

forming a mixture of a substrate of discrete particles and a nutrient material, said nutrient material being capable of being digested by said fungi;

adding said inoculum to said mixture; and

allowing said fungus to digest said nutrient material in said mixture over a period sufficient to grow hyphae and to allow said hyphae to form a network of interconnected mycelia cells through and around all of said discrete particles thereby bonding all of said discrete particles together with said network to form a self-supporting composite material.

Claims 1–11 stand rejected for non-statutory double patenting over claims 3, 4, 6, and 11 of Bayer[2] in view of Rai.[3]

ANALYSIS

Claim 3 of Bayer recites:

3. A method of making a composite material comprising

the steps of

forming an inoculum including a preselected fungus;

forming a mixture of a substrate of discrete particles and a nutrient material, said nutrient material being capable of being digested by said fungi;

adding said inoculum to said mixture;

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[2] Bayer et al., U.S. 9,485,917 B2, issued Nov. 8, 2016.
[3] (Chapter 21, "Production of Edible Fungi" of "Fungal Biotechnology in Agricultural, Food, and Environmental Applications" Edited by Dilip K. Arora, Publisher Marcel Dekker, Inc., 2004, pp. 383-404.

> allowing said fungus to digest said nutrient material in said mixture over a period sufficient to grow hyphae and to, allow said hyphae to form a network of interconnected mycelia cells through and around said discrete particles thereby bonding said discrete particles together to form a self-supporting composite material;
>
> and wherein said fungus is selected from the group consisting of at least one of *Pleurotus ostreatus, Agaricus arvensis, Ganoderma tsugae* and *Inonotus obliquus*.

Bayer 22:43–49. Bayer claims 4, 6, and 11 recite similar methods but do not specify the species of fungal inoculum. *See id.* at 22:43–23:11, 23:28–43, 24:31–39.

Rai teaches methods for the commercial mushroom cultivation. According to the Examiner:

> Rai teaches the technique of placing the mixture in a cavity of predetermined shape in a molding form defining a cavity with an open top prior to adding said inoculum to said mixture in said cavity (substrate ... filled into polybags aka "breathing bags" which have an opening and a particular shape/a molding form) (see for example, p.387 last paragraph line 11, p. 388 1st paragraph, and p. 398 2nd paragraph lines 1-4), (containers including glass bottles and polypropylene bags (p. 388 1st paragraph), and allowing passage of carbon dioxide from within said cavity through a filter disk in said lid and allowing passage of oxygen through said filter disc from without said lid into said cavity, incubating in dark area, and regulating the temperature within said cavity and also discloses regulating the temperature within said cavity (substrate and nutrients are placed in polybags having a special breather patch) (p. 395 2nd paragraph lines 6-8), and further teaches bags are incubated in dark area (see for example. P. 398 2nd paragraph lines 8-9). Rai also discloses regulating the temperature within said cavity (maintaining temperature for mycelium to colonize) (see for example, p. 391 1st paragraph lines 19-21).

Final Rej. 5–6.

According to the Examiner, one of ordinary skill in the art would have found it obvious

> to apply the known technique of placing the mixture [of substrate and nutrient material] in a cavity of predetermined shape in a molding form defining a cavity with an open top prior to adding said inoculum to said mixture in said cavity, allowing passage of carbon dioxide from within said cavity through a filter disk in said lid and allowing passage of oxygen through said filter disc from without said lid into said cavity, incubating in dark area, and regulating the temperature within said cavity taught by Rai et al. during the method(s) of making a composite material taught by claims 3, 4, 6 and 11 of [Bayer].

Id. at 6.

Appellant responds, inter alia, that "claim 1 differs from each of claims 3, 4, 6 and 11 of [Bayer] at least in requiring a network of interconnected mycelia cells through and around **all of** the discrete particles and **bonding all of** said **particles together."** Appeal Br. 4. Likewise, Rai lacks

> any teaching of allowing a fungus to grow hyphae and to allow said hyphae to form a network of interconnected mycelia cells through and around **all of** the discrete particles in a substrate in order to bond all of said discrete particles together with said network to form a self-supporting composite material,

as required by the instant claims. *Id.* Moreover, Appellant contends,

> the Examiner fails to present any evidence that a person of ordinary skill in the art would conclude that the methods of making a composite material recited by independent claims 1, 5 and 9 ... of the instant application would have been obvious over claims 3, 4, 6 and 11 of [Bayer] in view of **Rai**.

Id. at 4–5. On the present record, we agree with Appellant that the Examiner does not sufficiently establish that the claims on appeal are invalid for obviousness type double patenting over Bayer claims 3, 4, 6, and 11 in view of Rai.

In an earlier appeal, we addressed claim language reciting a method in which fungal hyphae "form a network of interconnected mycelia cells through and around [a substrate of] discrete particles thereby bonding said discrete particles together to form a self-supporting composite material." *See* Appeal 2016-000561, Decision dated February 29, 2016 at 2, 5. Focusing on "said discrete particles," we interpreted this language as "not requiring that *all* substrate particles be bound together." *See* Appeal 2016-000561 Decision on Rehearing dated April 12, 2016 at 2. In light of this construction, we affirmed a rejection over Mushroom Growers'[4] because Appellant's declaration evidence[5] indicated that a culture prepared according to that reference formed a self-supporting block with a friable interior—which we interpreted as evidence that the method taught by Mushroom Growers' does not result in "a network of interconnected mycelia cells through and around all of said discrete particles thereby bonding all of said discrete particles together," as presently set forth in claim 1 on appeal. *See, generally,* Appeal 2016-000561, Decision and Decision on Rehearing.

The Examiner bears an initial burden of factually supporting an articulated rejection (*In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992)),

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[4] Mushroom Growers' Handbook 2: *Shiitake Cultivation*, MushWorld, pp. 73–90 (2005).
[5] Declaration under 37 CFR § 1.132 of Gavin McIntyre filed March 2, 2015.

the particular posture of this case, however, requires a fuller explanation than that presently provided by the Examiner. Given Appellant's evidence that the method of Mushroom Growers' failed to result in the invention as presently claimed, it was incumbent on the Examiner to, for example, point to critical differences in the presently cited references as compared to Bayer, or otherwise explain why—despite the apparently contrary evidence relating to Mushroom Growers'—one of ordinary skill in the art would have expected the methods of Bayer claims 3, 4, 6, and 11 in combination with the methods of Rai would have resulted in the claimed invention. As the Examiner has not sufficiently explained the reasons for the instant rejection in light of the countervailing evidence of record, we reverse.

SUMMARY

"The PTO carries its procedural burden of establishing a prima facie case when its rejection satisfies 35 U.S.C. § 132, in 'notify[ing] the applicant . . . [by] stating the reasons for [its] rejection, or objection or requirement, together with such information and references as may be useful in judging of the propriety of continuing the prosecution of [the] application.'" *In re Jung*, 637 F.3d 1356, 1362 (Fed. Cir. 2011). On the record before us, and for the reasons set forth above, the Examiner has not satisfied the burden to show that the challenged claims are unpatentable by a preponderance of the evidence.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–11	Non-statutory double patenting	Bayer as evidenced by Rai		1–11

REVERSED