

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MICHAEL CHARLES GRADY,
CONGLING QUAN,
and MASOUD SOROUSH

Appeal 2007-0159
Application 10/850,019
Technology Center 1700

Decided: June 18, 2007

Before THOMAS A. WALTZ, JEFFREY T. SMITH, and
LINDA M. GAUDETTE, *Administrative Patent Judges*.

GAUDETTE, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the Examiner's final rejection of claims 1-16, 18, and 26-31. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

Appellants' invention relates to a process of polymerizing acrylate monomers at elevated temperatures in the absence of free radical initiator and styrene monomers. Independent Claim 1 is reproduced below:

1. A batch or semi-batch process of polymerization comprising:

heating in a reactor a reaction mixture comprising one or more thermally polymerizable acrylate monomers to a polymerization temperature ranging from 120°C to 500°C; and

polymerizing said reaction mixture into a polymer.

The Examiner relies on the following prior art references to show unpatentability:

Brand	US 4,546,160	Oct. 8, 1985
Campbell ('590)	US 6,346,590 B1	Feb. 12, 2002
Chiefari	US 6,376,626 B1	Apr. 23, 2002
Campbell ('026)	US 6,388,026 B1	May 14, 2002
Campbell ('144)	US 6,552,144 B1	Apr. 22, 2003
Villalobos	US 6,605,681 B1	Aug. 12, 2003
Paquet, Jr.	US 2004/0010091 A1	Jan. 15, 2004

The Examiner made the following rejections:

1. Claims 1-16, 18, and 26-31 under 35 U.S.C. § 103(a) as unpatentable over Campbell '026.
2. Claims 1-16, and 26-31 under 35 U.S.C. § 103(a) as unpatentable over Villalobos or Campbell '144 or Campbell '590.

3. Claims 1-9, 12-16, and 26-31 under 35 U.S.C. § 103(a) as unpatentable over Brand.
4. Claims 1-16, and 26-31 under 35 U.S.C. § 103(a) as unpatentable over Paquet.
5. Claims 1-16, 18, and 26-31 under 35 U.S.C. § 102(b) as anticipated by Chiefari.

ISSUE

The Examiner contends that the applied prior art discloses or suggests the invention as claimed. Appellants contend that the prior art references fail to disclose or suggest acrylate monomers that can spontaneously polymerize at elevated temperature without the presence of free radical initiator or styrene monomers. The issue before us is: Has the Examiner properly established that each of the claimed features is taught or suggested by the cited prior art?

For the reasons discussed below, we answer this question in the affirmative.

Accordingly, we affirm as to all five grounds of rejection.

RELEVANT FINDINGS OF FACT

- 1) Chiefari discloses a method of preparing poly(butyl acrylate) under batch polymerization conditions in which a reaction mixture comprising butyl acrylate is heated at 150°C. (Example 1).
- 2) Campbell '026 discloses a method of preparing poly(butyl acrylate) in which n-butyl acrylate is heated to temperatures of

285°C (Example 5) and 315°C (Example 6) during continuous mixing (Abstract).

- 3) Villalobos and Campbell '144 disclose continuous polymerization processes conducted at a high temperature (160 to 270°C) wherein a reactor is charged with at least one epoxy-functional acrylic monomer and a non-functional acrylate monomer (Villalobos, claims 1 and 2; Campbell '144, claims 1 and 10).
- 4) Campbell '590 discloses a high temperature (175 to 345°C) continuous polymerization process wherein a reactor is charged with at least one radically polymerizable group such as ethyl acrylate and methyl acrylate. (Campbell '590, 3:13-14, 4:25-28, and 6:16).
- 5) Brand discloses a high temperature (180 to 270°C) continuous polymerization process wherein a reactor is charged with an acrylic monomer, e.g., methyl acrylate and ethyl acrylate. (Brand, 5:6-7).
- 6) Paquet discloses a coating composition prepared by polymerizing a monomer mixture that includes one or more non-functional acrylate monomers at a temperature of 120 to 300°C. (Paquet, Abstract and [0040]).

ANALYSIS AND CONCLUSIONS

Appellants have neither explicitly stated that the claims are separately patentable nor provided subheadings identifying any claim(s) which are

separately argued as to any ground of rejection. *See* 37 CFR § 41.37(c)(1)(vii) (2006). Appellants do, however, reference claims 26-31 within the text of their argument (*see* Br. 4). Accordingly, while we may properly decide this appeal on the basis of independent claim 1 alone with respect to each ground of rejection, we have given consideration to Appellants' assertion that the temperature ranges recited in claims 26-31 patentably distinguish over the applied prior art. (*See, infra*, 6-7).

The Examiner found that Chiefari discloses the invention as claimed. The Examiner found that Campbell '026, Villalobos, Campbell '144, Campbell '590, Brand, and Paquet each disclose the invention as claimed in claim 1 with the exception that the references teach continuous processes. It is the Examiner's position that it would have been obvious to one of ordinary skill in the art at the time of the invention to have used a batch or semi-batch process in place of a continuous processes because it is conventional to do so in bulk homogeneous polymerization systems. (Answer 5-8).

Appellants contend that the prior art references fail to disclose or suggest that acrylate monomers can spontaneously polymerize at elevated temperatures without the presence of free radical initiator or styrene monomers, as in Appellants' invention. The Examiner responds by pointing out that the claims do not require acrylate monomers which themselves act as thermal initiators. The Examiner further points out that the claim language does not preclude the presence of a free radical initiator/source, nor are the claims limited to high temperature, spontaneous acrylate polymerization without a chemical or a photochemical initiator/source.

We concur with the Examiner's position. Patentability begins with the legal question "what is the invention claimed?" *See Panduit v. Dennison Mfg. Co.*, 774 F.2d 1082, 1093, 227 USPQ 337, 344 (Fed. Cir. 1985). In this case, the claimed method steps are introduced by the term "comprising." Likewise, the components of the reaction mixture are introduced by the term "comprising." This means that the claims, when given their broadest reasonable construction, read on a process which includes, for example, a step of adding a free radical initiator/source. *See Invitrogen Corp. v. Biocrest Mfg., L.P.*, 327 F.3d 1364, 1368, 66 USPQ2d 1631, 1634 (Fed. Cir. 2003) (use of the open-ended term "comprising" to introduce method steps does not preclude additional, unrecited steps). Appellants have not directed us to any portion of the Specification which indicates that a narrower claim construction is warranted. *See In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000) (during examination, claims are given their broadest reasonable interpretation consistent with the specification). Moreover, even though the prior art does not specifically recognize the feature of spontaneous polymerization, the Examiner's burden of proof is met where, as here, the Examiner has established that the prior art discloses polymerization of the claimed monomers using the same or similar polymerization techniques. *See In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349-50, 64 USPQ2d 1202, 1206 (Fed.Cir. 2002) (Inherent anticipation does not require that the ordinary artisan would have recognized the inherent disclosure). *See also, In re Spada*, 911 F.2d 705, 708-09, 15 USPQ2d 1655, 1657-58 (Fed. Cir. 1990).

With respect to the Examiner's rejections under 35 U.S.C. § 103, Appellants additionally argue that the Examiner has failed to show that it would have been obvious to have used a batch or semi-batch process. As pointed out by the Examiner, it is generally considered obvious to one of ordinary skill in the art to convert a batch process to continuous operation and vice versa. (Answer 9-10). *See In re Korpi*, 160 F.2d 564, 566, 73 USPQ 229, 230 (CCPA 1947). Appellants have not provided any evidence of unexpected results in the use of a batch or semi-batch process as compared with the relied-upon prior art continuous processes. In fact, Appellants' own Specification teaches that the polymerization process of the invention may be a continuous process. (Specification 2).

Appellants also contend that the prior art teaches away from their invention because some of the working examples utilize reaction temperatures which are outside of Appellants' claimed range. *See* (Br. 4 and 9). This argument is also unpersuasive, since a reference is relevant for all that it fairly teaches and not only for what is indicated as preferred. *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969). Moreover, a *prima facie* case of obviousness exists where the prior art and claimed ranges overlap, as well as in those cases where the claimed range and the prior art range, though not overlapping, are sufficiently close that one skilled in the art would have expected them to have the same properties. *See, e.g.*, *In re Geisler*, 116 F.3d 1465, 1469, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997) (acknowledging that a claimed invention was rendered *prima facie* obvious by a prior art reference whose disclosed range (50-100 Angstroms) overlapped the claimed range (100-600 Angstroms)); *In re Woodruff*, 919

F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990) (concluding that a claimed invention was rendered obvious by a prior art reference whose disclosed range ("about 1-5%" carbon monoxide) abutted the claimed range ("more than 5% to about 25%" carbon monoxide)).

Accordingly, we conclude that the Examiner has properly established a *prima facie* case of anticipation and obviousness as to claims 1-16, 18, and 26-31 which Appellants have failed to rebut.

ORDER

The rejection of claims 1-16, 18, and 26-31 under 35 U.S.C. § 103(a) as unpatentable over Campbell '026 is affirmed.

The rejection of claims 1-16 and 26-31 under 35 U.S.C. § 103(a) as unpatentable over Villalobos or Campbell '144 or Campbell '590 is affirmed.

The rejection of claims 1-9, 12-16, and 26-31 under 35 U.S.C. § 103(a) as unpatentable over Brand is affirmed.

The rejection of claims 1-16 and 26-31 under 35 U.S.C. § 103(a) as unpatentable over Paquet is affirmed.

The rejection of claims 1-16, 18, and 26-31 under 35 U.S.C. § 102(b) as anticipated by Chiefari is affirmed.

Appeal 2007-0159
Application 10/850,019

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

AFFIRMED

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