Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte JAMES CHARLES BOHLING
and
ERIC GUSTAVE LUNDQUIST

_____

Appeal No. 2003-0715
Application No. 09/873,806

_____

ON BRIEF

_____

Before WARREN, DELMENDO, and POTEATE, Administrative Patent Judges.

DELMENDO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 (2002) from the examiner's final rejection of claims 1 through 10 (final Office action mailed Mar. 19, 2002, paper 9) in the above-identified application. Claim 11, which is the only other

pending claim, remains withdrawn from further consideration pursuant to 37 CFR § 1.142(b) (1959).[1]

The subject matter on appeal relates to a process for cleaning weak acid cation exchange resins. Regarding their invention, the appellants allege (specification, page 4, lines 9-12): "We have found that selected steam treatment at a specified point in the processing of the weak acid cation exchange resin is critical to providing a final weak acid cation exchange resin useful as a component in potable water treatment systems..." Further details of this appealed subject matter are recited in representative claims 1 and 7 reproduced below:

> 1. A process for cleaning weak acid cation exchange resins comprising:
>
> (a) converting a weak acid cation exchange resin, substantially in neutralized salt form, to a hydrogen-form weak acid cation exchange resin by regenerating with an acid regenerant; and
>
> (b) contacting the hydrogen-form weak acid cation exchange resin with 1 to 15 kilograms of steam per kilogram of hydrogen-form weak acid cation exchange resin at a resin bed temperature of 100 to 180°C for a period of at least one hour.
>
> 7. The process of claim 1 further comprising contacting the hydrogen-form weak acid cation exchange

[1] The appellants' statement in the appeal brief (filed Aug. 5, 2002, paper 13, p. 1) regarding the status of claims is erroneous.

resin from step (b) with 0.4 to 5 grams, per kilogram of hydrogen-form weak acid cation exchange resin, of an antimicrobial agent selected from one or more of peroxides, (C_2-C_3)alcohols and inorganic chloride salts.

The examiner relies on the following prior art references as evidence of unpatentability:

Nagai et al. (Nagai)	4,245,053	Jan. 13, 1981
Ballard et al. (Ballard)	5,900,146	May 04, 1999
Kubota et al. (Kubota)	5,954,965	Sep. 21, 1999

Claims 1 through 6, 9, and 10 on appeal stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ballard and Nagai. (Examiner's answer mailed Sep. 4, 2002, paper 14, pages 5-7.) Correspondingly, claims 7 and 8 on appeal stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ballard, Nagai, and Kubota. (Id. at page 7.)

We affirm these rejections.[2]

[2] The appellants submit that "[c]laims 1-10 stand or fall together." (Appeal brief, p. 3.) We interpret this statement to mean that the claims in each of the two grounds of rejection stand or fall together; that is, claims 1-6, 9, and 10 stand or fall together and claims 7 and 8 stand or fall together.

Claims 1-6, 9, and 10: Ballard & Nagai

Ballard describes a process for activating and cleaning a weak acid cation exchange resin beads comprising:

(a) hydrolyzing the resin beads; and

(b) cleaning the beads by: (i) washing including treatment with an alcohol; (ii) steam stripping; or (iii) steam stripping porogens from the beads and then washing them to remove any free solid particulate material.

(Column 1, lines 7-18; column 6, lines 12-39.) In Example 2, Ballard teaches converting a neutralized salt form of the resin (beads containing sodium acrylate functional groups) to the hydrogen-form with hydrochloric acid, which is described in the present specification as an "acid regenerant." (Specification, page 5, line 27 to page 7, line 16.)

Similarly, Nagai describes a process for cleaning and treating weak acid cation exchange resins comprising:

(a) cleaning the beads with hot water to remove suspension stabilizer, unreacted monomer, and pore forming agent; and

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Accordingly, for the first ground of rejection, we confine our discussion to claim 1; for the second ground of rejection, we confine our discussion to claim 7. 37 CFR § 1.192(c)(7)(1995).

(b) hydrolyzing the beads by treating the beads with a hydrolysis agent such as hydrochloric acid.

(Column 5, lines 7-32.) Nagai also teaches that the "loaded" beads (i.e., the spent or "exhausted" beads), which the examiner found to be the same as the appellants' starting resin "substantially in neutralized salt form" recited in step (a) of appealed claim 1, may be regenerated for re-use by treatment with a regenerating agent such as hydrochloric acid. (Column 6, lines 62-66.) Nagai further teaches that "[t]he resin can be used repeatedly after being given an ordinary pre-treatment such as washing with alkali, water, acid and water." (Column 6, lines 66-68.)

Given these teachings in the prior art, we share the examiner's view (answer, page 6) that the subject matter of appealed claim 1 would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103. Specifically, we agree with the examiner that one of ordinary skill in the art would have been led, prima facie, to determine (by mere routine experimentation) the optimum relative amounts, conditions, and purification times for the steam treatment in either Ballard or Nagai, thus arriving at a process encompassed by appealed claim 1. In re Peterson, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382 (Fed. Cir. 2003)("The normal desire of

scientists or artisans to improve upon what is generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980)("[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art."); In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.").

The appellants argue that "[n]o hot water treatment of the hydrolyzed weak acid resin is taught or suggested" in Nagai. (Appeal brief, page 4.) We disagree. As pointed out by the examiner, it is the regenerated resin (Nagai's column 6, lines 62-66) which is considered to be the hydrogen-form weak acid cation exchange resin. Once regenerated, one of ordinary skill in the art would have found it prima facie obvious to pre-treat the resin (i.e., clean the resin prior to actual use in a water purification process) with water (e.g., steam) as suggested in the references.

Relying on the specification description at page 8, lines 1-7, the appellants argue: (appeal brief, page 5)

> [I]f the treatment is conducted below about 100°C or the contact time is less than 1 hour, the quality of the final resin as measured by the efficiency of trihalomethane removal by mixed-bed systems containing the weak acid cation exchange resin is unsatisfactory, e.g., the resin contains undesirable residual extractable materials that contribute odor.

This argument is unpersuasive. The appellants have failed to identify the factual basis (i.e., objective evidence) to support this allegation. In this regard, it is well settled that mere lawyer's arguments and conclusory statements, which are unsupported by factual evidence, are entitled to little probative value. In re Geisler, 116 F.3d 1465, 1470, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); In re De Blauwe, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984); In re Wood, 582 F.2d 638, 642, 199 USPQ 137, 140 (CCPA 1978); In re Lindner, 457 F.2d 506, 508-09, 173 USPQ 356, 358 (CCPA 1972).

Referring to the data summarized in Table 1 and the description at page 9, line 26 to page 11, line 7 of the specification, the appellants allege an "unexpected improvement (3-8% absolute difference in 'chloroform removal efficiency') for resin treated by the method of the present invention..." (Appeal brief, page 5.) We do not find the proffered evidence to be sufficient for the following reasons.

First, the appellants have not compared the claimed invention against the closest prior art, which is either Ballard

or Nagai. That is, none of the comparative resins (Resins 1-3) are representative of the relied upon prior art in which the neutralized salt form of the resin is hydrolyzed with hydrochloric acid and subjected to steam or hot water treatment. In re Baxter Travenol Labs, 952 F.2d 388, 392, 21 USPQ 1281, 1285 (Fed. Cir. 1991)("[R]esults must be shown to be unexpected compared with the closest prior art.").

Second, the appellants have failed to identify the factual basis for asserting that a 3-8% absolute difference in chloroform removal efficiency would have been considered statistically significant and unexpected by one of ordinary skill in the art. In re D'Ancicco, 439 F.2d 1244, 1248, 169 USPQ 303, 306 (CCPA 1971)(holding that the appellants failed to rebut a prima facie case of obviousness where the asserted differences between the claimed foams and prior art foams were not shown to be significant); In re Freeman, 474 F.2d 1318, 1324, 177 USPQ 139, 143 (CCPA 1973)(explaining that in order for a showing of unexpected results to be probative evidence of nonobviousness, an applicant must establish (1) that there actually is a difference between the results obtained through the claimed invention and those of the prior art and (2) that the difference actually obtained would not have been expected by one skilled in the art at the time of invention).

Third, the relied upon evidence is not commensurate in scope with the claims. For example, the relied upon example (Resin 4) is limited to a specific crosslinked polyacrylonitrile in sodium form that is later converted to an acid form with sulfuric acid and then treated with steam under specific conditions. By contrast, appealed claim 1 is significantly broader in scope. In re Kulling, 897 F.2d 1147, 1149, 14 USPQ2d 1056, 1058 (Fed. Cir. 1990)("'[O]bjective evidence of nonobviousness must be commensurate in scope with the claims.'")(quoting In re Lindner, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972)); In re Dill, 604 F.2d 1356, 1361, 202 USPQ 805, 808 (CCPA 1979) ("The evidence presented to rebut a prima facie case of obviousness must be commensurate in scope with the claims to which it pertains.").

The appellants also refer (appeal brief, page 6) to Tables 1-2 of the specification, but we find this evidence equally unavailing for the same reasons.

For these reasons, we uphold the examiner's rejection on this ground.

Claims 7 & 8: Ballard, Nagai, & Kubota

As we discussed above, Ballard teaches that the beads may be cleaned by steam stripping porogens from the beads followed by washing, which includes treatment with an alcohol. (Column

6, lines 29-42.) We therefore determine that one of ordinary skill in the art would have been led, prima facie, to further treat the optimally steam-stripped beads of Ballard with a washing sequence that includes an optimum alcohol treatment, thus arriving at a process encompassed by appealed claim 7.

Regarding the examiner's reasoning, the appellants' principal argument is that Kubota is "directed to strong base anion exchange resins (not weak acid cation exchange resins) and disclose 'steam sterilization' (not antimicrobial agents) for the anion resin" and that therefore "there is no incentive for one of ordinary skill in the art to further treat a different type of resin (i.e., the weak acid cation exchange resins that are the subject of [the] [a]ppellants' invention) with antimicrobial agents, such as peroxides and inorganic chloride salts..." (Appeal brief, page 8.) We disagree.

The examiner has relied on Kubota for its teaching that alcohol may be used to sterilize ion exchange resins. Although Kubota's invention focuses on strong basic anion exchange resins, it does not change the fact that alcohol is a sterilizing agent. When applied to weak acid cation exchange resins, one of ordinary skill in the art would have reasonably expected that an alcohol would retain its sterilizing properties. Moreover, it is the collective teachings of the

prior art that support the examiner's determination of obviousness. In re Keller, 642 F.2d 413, 426, 208 USPQ 871, 882 (CCPA 1981)("[O]ne cannot show non-obviousness by attacking references individually where, as here, the rejections are based on combinations of references.").

For these reasons, we uphold this ground of rejection as well.

Summary

In summary, we affirm the examiner's 35 U.S.C. § 103(a) rejections of (i) appealed claims 1 through 6, 9, and 10 as unpatentable over Ballard and Nagai; and (ii) appealed claims 7 and 8 as unpatentable over Ballard, Nagai, and Kubota.

The decision of the examiner is affirmed.

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

AFFIRMED

Charles F. Warren Administrative Patent Judge	)	
Romulo H. Delmendo Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
Linda R. Poteate Administrative Patent Judge	)	

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