Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOSEPH THOMAS FITZGEORGE
and
WILLIAM GERARD HAWKINS

Appeal No. 2002-0771
Application No. 09/294,288

ON BRIEF

Before KIMLIN, TIMM, and JEFFREY T. SMITH, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal involves claims 1-10 and 12-19 which are all the claims pending in the application. We have jurisdiction under 35 U.S.C. § 134.

THE CLAIMED INVENTION

Appellants' invention relates to a method and apparatus for diffusing one fluid, such as an ozone gas, into another fluid, such as water. Claim 1 is illustrative:

1. An apparatus for diffusing a first fluid into a second fluid, comprising:

a membrane having a porosity which is sufficient to allow the first fluid to pass therethrough;

a first passageway configured to apply the first fluid to a first surface of the membrane; and

a second passageway configured to apply the second fluid to a second surface of the membrane which is opposite to the first surface thereof such that the second fluid forms a vortex with sufficiently low pressure to cause the first fluid to move from the first passageway through the membrane into the second passageway and become diffused into the second fluid;

in which the second passageway is configured such that said vortex at least partially shears the first fluid at the second surface of the membrane;

the first fluid comprises bubbles; and

the vortex at least partially shears the bubbles such that they are broken up and scattered into smaller bubbles.

THE REJECTION

Claims 1-10 and 12-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,405,497 issued to Torregrossa on April 11, 1995 (Answer at 3-5). Because Appellants have not persuaded us of reversible error on the part of the Examiner, we affirm. Our reasons follow.

OPINION

According to Appellants, claims 1-9 and 12-18 are to stand or fall together while claims 10 and 19 are to be considered separately (Brief at 4). Therefore, our main focus will be on claims 1 and 10 which we select to decide the appeal in accordance with 37 CFR § 1.192(c)(7)(2002).

Claim 1 is directed to an apparatus. "[A]pparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch & Lomb, Inc.*, 909 F.2d 1464, 1468, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). Therefore, the patentability of an apparatus claim depends on the claimed structure, not on the use or purpose of that structure, *Catalina Marketing Int'l Inc. v. Coolsavings.com Inc.*, 289 F.3d 801, 809, 62 USPQ2d 1781, 1785 (Fed. Cir. 2002), or the function or result of that structure. *In re Danly,* 263 F.2d 844, 848, 120 USPQ 528, 531 (CCPA 1959); *In re Gardiner*, 171 F.2d 313, 315-16, 80 USPQ 99, 101 (CCPA 1948). If the prior art structure possesses all the claimed characteristics including the capability of performing the claimed function, then there is a *prima facie* case of unpatentability. *In re Ludtke*, 441 F.2d 660, 663-64, 169 USPQ 563, 566-67 (CCPA 1971).

The Examiner makes the point that the device of Torregrossa is identical to Appellants' claimed device (Answer at 3). We agree. The apparatus of Torregrossa contains the membrane (gas porous wall 16), the first passageway (gas filled chamber 18), and the second passageway (vortex chamber 12) required by claim 1. In fact, the structures are configured in the same way,

i.e. an annular passageway surrounding a membrane defining a cylindrical passageway (compare Fig. 1 of Torregrossa with Appellants' Fig. 3).

The only argued distinctions between the claimed apparatus and that of Torregrossa relate to function. Namely, the function of creating a vortex with particular shearing properties in the second passageway. The question we must answer, in regard to the apparatus claims, is whether the apparatus is capable of being operated to create such a vortex.

We answer that question in the affirmative. There is no dispute that Torregrossa explicitly describes creating a vortex in the vortex chamber 12. Nor is there any dispute that gas enters the vortex chamber through the membrane as small bubbles. Both the apparatus configuration and the method of using it are substantially the same as described by Appellants in their specification. Therefore, there is a reasonable basis to conclude from these similarities in structure and operation that the apparatus of Torregrossa is indeed inherently capable of creating a vortex which shears the bubbles as claimed.

Because each and every structural limitation is described explicitly or inherently by Torregrossa, we find that the apparatus of claim 1 is, in fact, anticipated by Torregrossa. While the Examiner made the rejection under 35 U.S.C. § 103(a), lack of novelty is the ultimate or epitome of obviousness. *In re Fracalossi*, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982). Therefore, we conclude that the Examiner established a *prima facie* case of unpatentability with respect to the subject matter of claim 1 and those claims falling therewith.

With regard to claim 10, Appellants argue that, because Torregrossa does not disclose or suggest any pressure value at the inner surface of the porous wall, a person of ordinary skill in the art would not be able to calculate a pressure difference across the wall as required by claim 10 (Brief at 16). Claim 10 is an apparatus claim. Therefore, the pertinent question is whether the first and second passageways have a structure which possesses the capability of being operated to create the claimed pressure difference of 5-20 psig. Torregrossa describes an apparatus with a gas filled chamber 18, membrane and vortex chamber 12 of the same general shape as the first passageway, membrane and second passageway depicted by Appellants (Fig. 3). Torregrossa describes forming a vortex so that bubbles emerging from the membrane encounter a high pseudo-gravitation field generated by the vortex which moves the bubbles to the center of the vortex (Torregrossa at col. 1, ll. 22-26). As recognized by Appellants, in order for such movement to occur, there must be a pressure difference across the membrane (Brief at 14, ¶ 6). It is reasonable to conclude that the apparatus of Torregrossa is capable of producing a pressure difference of 5-20 psig across the membrane.

While we affirm with respect to all of the claims on the above basis based on the fact that all the claims stand or fall with claims 1 and 10, we also note that the Examiner advances several other bases for concluding the claims are unpatentable. Namely, the Examiner finds that the claimed shearing, bubble break up, and scattering inherently occur in the process described by Torregrossa. The Examiner also advances an obviousness rationale based on routine

experimentation. Appellants have failed to convince us that the Examiner committed reversible error with respect to these alternative rationales.

Here, it is reasonable to conclude that, due to the similarities in the apparatus, the fluids treated, and the flow of the fluids, the bubbles of Torregrossa are effected in the same way as claimed. That is enough to support a finding of inherency which is sufficient to shift the burden to Appellants to show that there is, indeed, a difference. *See In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657-58 (Fed. Cir. 1990); *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433-34 (CCPA 1977); *In re Skoner*, 517 F.2d 947, 950, 186 USPQ 80, 82-83 (CCPA 1975).

Contrary to the arguments of Appellants (Brief at 7-11), the fact that Torregrossa describes the bubbles as moving toward the center of the vortex does not mean that bubble break up and scattering due to shearing does not inherently occur (Brief at 7). Appellants acknowledge that the vortex of Torregrossa imparts a shearing force on the gas (Brief at 7). It is reasonable to conclude that this shearing force would necessarily break up and scatter the bubbles since Terregrossa generates the vortex in an apparatus identical or substantially identical to that of Appellants using the same or substantially the same fluids. Whether Torregrossa described bubble break up and scattering or even knew it was occurring is beside the point. "Inherency is not necessarily coterminous with the knowledge of those of ordinary skill in the art." *In re Cruciferous Sprout Litigation*, 301 F.3d 1343, 1349, 64 USPQ2d 1202, 1206 (Fed. Cir. 2002)(*quoting MEHL/Biophile Int'l Corp. v. Milgraum*, 192 F.3d 1362, 1365, 52 USPQ2d 1303, 1305-06 (Fed. Cir. 1999)). Under such circumstances, it is justifiable to shift the burden to

Appellants to show that there is indeed a difference. Appellants provide no objective evidence that bubble break up and scattering does not occur in the process of Torregrossa.

Appellants have also failed to convince us of reversible error in the Examiner's alternate determination that bubble break up and scattering is the result of relative flow velocities and amount of shear and that the result would have been arrived at through routine experimentation (Answer at 4-5). Torregrossa wishes to optimize mass transfer and indicates that a large interfacial surface area, a high degree of agitation, and a large number of bubbles result in rapid mass transfer (Torregrossa at col. 1, ll. 26-36). Bubble break up and scattering lead to higher levels of interfacial surface area and more sites for reaction. Thus, when conducting routine experimentation to optimize mass transfer, one of ordinary skill in the art would have arrived at relative flow velocities and shear amounts which break up and scatter the bubbles. We agree with the Examiner that Torregrossa teaches the general conditions of the claimed process such that a *prima facie* case of obviousness is established. *See In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Appellants argue that Torregrossa teaches away from the invention by disclosing that the gas bubbles are moved to the center of the vortex (Brief at 13; citing Torregrossa at col. 1, ll. 18-36). But bubble movement to the center does not preclude bubble break up and scattering. Moreover, Torregrossa goes on to state that large interfacial surface area contributes to rapid mass transfer. Breaking up the bubbles leads to larger interfacial surface area. Therefore, the disclosure, rather than leading away, is compatible with bubble break up. Torregrossa does not

"teach away" as Torregrossa does not suggest that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant. *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994).

Appellants argue that applying the shear force to break up the bubbles produces an unexpected result. The result is not referred to in the specification as being unexpected and we note that attorney arguments in the brief cannot take the place of evidence. *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972). Nor is there any objective evidence of unexpected results. In addition, Appellants provide no evidence that the asserted increase in efficiency is an increase in comparison to the efficiency of Torregrossa. *See In re Baxter Travenol Labs.*, 952 F.2d 388, 392, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991)(The "difference in results" must be established as being between the claimed subject matter and the closest prior art.).

After reviewing the totality of the evidence before us, it is our conclusion that, the Examiner established a *prima facie* case of unpatentability with respect to the subject matter of claims 1-10 and 12-19 which has not been sufficiently overcome by Appellants.

CONCLUSION

To summarize, the decision of the Examiner to reject claims 1-10 and 12-19 under 35 U.S.C. § 103(a) 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

EDWARD C. KIMLIN Administrative Patent Judge	)
CATHERINE TIMM Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
JEFFREY T. SMITH Administrative Patent Judge	)

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