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The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KAZUFUMI OGAWA
and TADASHI OHTAKE

Appeal No. 95-1628
Application 08/067,750¹

HEARD: OCTOBER 15, 1997

Before KIMLIN, WARREN and OWENS, *Administrative Patent Judges*.
WARREN, *Administrative Patent Judge*.

Decision on Appeal

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 1 through 7. Claims 8 through 16 are also of record and have been withdrawn from consideration by the examiner as directed to a nonelected invention. Claim 1 is illustrative of the claims on appeal:

1. A foamed plastic containing cells, comprising a foaming monomer having a conjugate unsaturated carbon group in the cells, wherein the foaming monomer is reacted to form an oligomer having more than a dimer, or to form a polymer.

¹ Application for patent filed May 26, 1993.

The appealed claims as represented by claim 1² are drawn to a foamed plastic, the cells of which contain an oligomer or a polymer derived from a monomer used as a foaming agent. According to appellants, the internal pressure of the cells is reduced and the foamed plastic provides improved soundproofing and heat insulating applications (specification, e.g., pages 1 and 5).

The references relied on by the examiner are:

Nemphos 1960	2,956,960	Oct. 18,
Gavoret 1968	3,386,926	Jun. 4,
Matsunaga et al. (Matsunaga) 1976	3,976,605	Aug. 24,
Chandalia et al. (Chandalia) 1980	4,181,781	Jan. 1,

The examiner has rejected claims 1 through 7 on appeal under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over Gavoret, Matsunaga, Nemphos or Chandalia. The examiner has also rejected appealed claims 1 through 7 under 35 U.S.C. § 112, first paragraph, enablement, and second paragraph. We reverse.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the examiner's answer and to appellants' main and reply briefs for a complete exposition thereof.

Opinion

² Appellants state in their brief (page 2) that the appealed claims "stand or fall together." Thus, we decide this appeal based on appealed claim 1. 37 CFR § 1.192(c)(5) and (6)(1993).

We have carefully reviewed the record on this appeal and based thereon conclude that we cannot subscribe to either of the grounds of rejection advanced by the examiner.

In so considering the record, we have, as an initial matter, arrived at an understanding of the language of the claims on appeal and, as a matter of law, pronounce the meaning of that language. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979-81, 34 USPQ2d 1321, 1329-31 (Fed. Cir. 1995)(*in banc*), *aff'd*, 116 S.Ct. 1284 (1996). In doing so, we are mindful that we must give the broadest reasonable interpretation to the terms of this claim consistent with appellants' specification as it would be interpreted by one of ordinary skill in this art. *In re Morris*, ___ F.3d ___, ____, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

We are of the opinion that the language of appealed claim 1 permits the claim to encompass any foamed plastic having cells which contain one or more oligomers, which are more than a dimer, and/or one or more polymers derived from a monomer having a conjugated unsaturated carbon group and which is capable of foaming the plastic, as of the point in time when such a product is produced. *Cf. Exxon Chemical Patents Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555-58, 35 USPQ2d 1801, 1802-05 (Fed. Cir. 1995). In addition, the transitional term "comprising" would permit the cells of the foamed plastic to contain unreacted monomer as well as other ingredients, such as "radical polymerization initiators" and other oligomers and polymers. *See Exxon Chemical Patents*, 64 F.3d at 1555, 35 USPQ2d at 1802; *In re Baxter*, 656 F.2d 679, 686, 210 USPQ 795, 802 (CCPA 1981). We observe in this respect that appellants'

specification discloses that the internal pressure of the foamed plastics can be further reduced through the use of such initiators (e.g., pages 8 and 16-17). We are further of the view that the terms "an oligomer" and "a polymer" are entitled to their ordinary meaning in the art which is an oligomer or polymer formed from either homo- or co- monomers. Thus, the cells may contain homo-oligomers and -polymers which are derived from the foaming monomer *per se* and/or co-oligomers and -polymers derived from the foaming monomer with other monomers, oligomers and polymers which may be in the cell or otherwise associated with the contents of the cell in such manner that they can be "reacted" with the foaming monomer present in the cell.

In construing appealed claim 1, we cannot agree with the examiner that the phrase "foaming monomer is reacted" is indefinite (answer, page 4) since appellants' specification clearly discloses several schemes by which the monomer "is reacted to form an oligomer . . . or to form a polymer." Thus, we are of the view that one skilled in this art would reasonably understand the subject matter claimed through the use of this phrase. *The Beachcombers, Int'l. v. WildeWood Creative Prods.*, 31 F.3d 1154, 1158, 31 USPQ2d 1653, 1656 (Fed. Cir. 1994); *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986). We also cannot agree with the examiner that the term "'plastic' is too broad" which issue the examiner has framed as an enablement issue (answer, page 3). This term must be construed within the context of all of the claim limitations and not in a vacuum. *In re Geerdes*, 491 F.2d 1260, 1262-63, 180 USPQ 789, 791-92 (CCPA 1974). Thus, it is clear from

appealed claim 1 as a whole that the "plastic" must be "foamed" and "containing cells" which cells contain "an oligomer" or "a polymer" derived from the specified "foaming monomer." The examiner has not carried his burden of providing a reasonable explanation, supported by the record as a whole, why the assertions as to the scope of objective enablement set forth in the specification with respect to the "foamed plastic" of appealed claim 1 is in doubt, including reasons why the description of the invention in the specification would not have enabled one of ordinary skill in this art to practice the claimed invention without undue experimentation, and has thus failed to establish a *prima facie* case under the enablement requirement of the first paragraph of § 112. *In re Strahilevitz*, 668 F.2d 1229, 1232, 212 USPQ 561, 563 (CCPA 1982); *In re Marzocchi*, 439 F.2d 220, 223-24, 169 USPQ 367, 369-70 (CCPA 1971).

We now turn to the examiner's rejection of the appealed claims based on prior art, mindful of the construction that we have made of appealed claim 1. The examiner points out that Gavoret, Matsunaga, Nemphos and Chandalia recite at least the use of butadiene or cyclopentadiene in the processes disclosed therein, which monomers having a conjugated unsaturated carbon group. The examiner particularly notes that

Gavoret specifically incompletely polymerizes the conjugated diene so that it can be contained in the closed cells of the polymer after it is foamed. [Answer, page 3.]

Thus, the examiner concludes that since

heat is used in all the references to bring about the foaming of the polymers to be foamed ... it appears that it would be inherent that the references of record also produce oligomers or polymers. [Answer, page 5.]

The burden is upon the examiner to establish that the products of the applied references are identical or substantially identical to the products defined in product-by-process style in appealed claim 1 even though produced by a *different* process in order to make out a *prima facie* case of anticipation or obviousness. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990); *In re Thorpe*, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985); *In re Best*, 562 F.2d 1252, 1255-56, 195 USPQ 430, 433-34 (CCPA 1977). In order to carry his burden, the examiner must provide in the record evidence and/or scientific reasoning to establish the reasonableness of his position that the prior art processes produce the claimed foamed plastic as the mere possibility or probability that such a result may be inherent in the processes is not sufficient. See *In re Oelrich*, 666 F.2d 5478, 581, 212 USPQ 323, 326 (CCPA 1981); *Ex parte Levy*, 17 USPQ2d 1461, 1462-64 (Bd. Pat. App. & Int. 1990), and cases cited therein; *Ex parte Skinner*, 2 USPQ2d 1788 (Bd. Pat. App. & Int. 1987).

Indeed, it is not apparent to us from the record that the processes disclosed in the references would at some point inherently produce a foamed plastic which has cells containing an oligomer or a polymer derived from a foaming monomer having a conjugated unsaturated carbon group. In *Gavoret*, it is apparent that

a portion of the hydrocarbon component remains within the pearls of the copolymer for subsequent function as the expansion agent. [Col. 2, lines 22-24.]

Indeed, this reference provides in Example 6 that butadiene along with butene was used to prepare polystyrene pearls and further that butadiene and other monomers containing a

conjugated unsaturated group may be employed instead of butene in this and other Gavoret Examples (see, col. 1, lines 54-58) to prepare separated pearls, which pearls are subsequently expanded "by conventional means" (col. 3, lines 6-10). However, there is no reasonable indication in Gavoret that even if butadiene or another such monomer would be resident in the pearls of Gavoret Example 6 or in pearls prepared according to other reference Examples and teachings, the pearls would contain at some point in their preparation or expansion at least one oligomer or polymer derived from said monomers. Similarly, in Nemphos (e.g., Example 1 and col. 3, lines 41-47) and Matsunaga (e.g., Examples 4 and 5, and col. 4, lines 50-58, col. 5, lines 21-29, col. 6, lines 8-12 and 25-31), there is no reasonable suggestion that the use of cyclopentadiene, which can reasonably be selected as the volatile liquid foaming agent, would result at some point in cells containing at least one oligomer or polymer derived from said monomer through admixture with resin, either in the barrel of an extruder or by hand, and subsequent preparation of the foamed plastic sheet. Finally, in Chandalia, the selection of a preferred monomer containing a conjugated unsaturated group (col. 5, lines 52-55) to co-react with an azo di-ester polyol and/or a peroxy di-ester polyol in a graft copolymerization simultaneously with polyurethane polymerization (e.g., col. 1, line 56, to col. 2, line 3), even though the same would reasonably qualify as an "additional foaming agent" (col. 6, lines 20-39), does not provide reasonable assurance that the selection of such monomers would result at some point in cells containing at least one oligomer or polymer derived from said monomers.

In view of these teachings of the prior art, the mere allegation by the examiner that the presence of heat in the foaming step would inherently produce the claimed foamed plastic does not establish that the processes as disclosed in the references would *necessarily* produce a product that is identical or substantially identical to the claimed product. *Levy*, 17 USPQ2d at 1464; *Skinner*, supra.

Accordingly, we fail to find in the record any factual basis or scientific reasoning which establishes that the examiner's position is a reasonable one that requires appellants to establish that the processes of the prior art do not in fact produce a product that is identical or substantially identical to the claimed foamed plastic. Thus, we reverse this ground of rejection in its entirety.

The examiner's decision is reversed.

Reversed

Appeal No. 95-1628
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EDWARD C. KIMLIN)	
Administrative Patent Judge)	
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)	
CHARLES F. WARREN)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
)	
)	
TERRY J. OWENS)	
Administrative Patent Judge)	

Morrison & Foerster, LLP
2000 Pennsylvania Avenue, N.W.
Washington, D.C. 20006-1888