

The opinion in support of the decision being entered today  
is *not* binding precedent of the Board

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* RANDY E. KEEN,  
ALAN KODER, and DAVID EVANS

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Appeal 2007-1689  
Application 10/431,627  
Technology Center 1700

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Decided: September 25, 2007

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Before CHARLES F. WARREN, THOMAS A. WALTZ, and  
CATHERINE Q. TIMM, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

DECISION ON APPEAL

Applicants appeal to the Board from the decision of the Primary Examiner finally rejecting for at least the second time claims 1 through 20 in the Office Action mailed October 18, 2005. 35 U.S.C. §§ 6 and 134(a) (2002); 37 C.F.R. § 41.31(a) (2006).

We affirm the decision of the Primary Examiner.

Claim 1 illustrates Appellants' invention of an apparatus for automatic polynucleotide synthesis, and is representative of the claims on appeal:

1. An apparatus for maintaining a closed continuous anhydrous system for automated polynucleotide synthesis, comprising: a) a plurality of moisture-resistant reagent containers, b) a dry box capable of forming a seal over a synthesis platform of an automated polynucleotide synthesizer, c) moisture-resistant tubing connecting said reagent containers to said dry box, d) a reagent gas feed connecting said reagent containers to a gas, wherein said gas pressurizes said reagent containers, and e) a digital gas regulator connected to said reagent gas feed, wherein said gas regulator maintains constant pressure in said reagent containers.

The Examiner relies on the evidence in these references:

Penhasi <sup>1</sup>	US 3,725,010	Apr. 3, 1975
Bardman	US 2003/0236374 A1	Dec. 25, 2003

Appellants request review of the following grounds of rejection under 35 U.S.C. § 103(a) advanced on appeal (Br. 4):

Claims 1 through 3, 5 through 13, and 15 through 20 as unpatentable over Penhasi (Answer 3); and

claims 4 and 14 as unpatentable over Penhasi in view of Bardman (*id.* 5).

Appellants argue the claims in each ground of rejection as a group (Br. in entirety). Thus, we decide this appeal based on claims 1 and 4. 37 C.F.R. § 41.37(c)(1)(vii) (2006).

The issues in this appeal are whether the Examiner has carried the burden of establishing a *prima facie* case in each of the grounds of rejection advanced on appeal.

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<sup>1</sup> We find that in fact US 3,725,010 issued to Harry A. Penhasi (*see* Penhasi col. 1, l. 4).

We agree with the Examiner's findings of fact from the disclosures of Penhasi and Bardman, and the application thereof to the elements of claim 1 (Answer 4-6).

Appellants do not dispute the Examiner's findings but contend the preambular language "for automated polynucleotide synthesis" defines the invention and thus is a claim limitation which when coupled with the required "dry box capable of forming a seal over a synthesis platform of an automated polynucleotide synthesizer" in the body of the claim, excludes protein and polypeptide synthesizers; Penhasi and Bardman are non-analogous art to the claimed invention; and thus, that the Examiner has not established motivation and a reasonable expectation of success necessary for a *prima facie* case of obviousness (Br. 5-9). Appellants' basis for each of these contentions with respect to Penhasi is the difference in chemical and biological affect between polynucleotides, which can be synthesized with the claimed apparatus encompassed by claim 1, and the proteins and polypeptides which can be synthesized by the apparatus disclosed by Penhasi; and with respect to Bardman is that the reference is drawn to synthetic resins which are not polynucleotides (Br. 5-7; Reply Br. 3-7). Thus, with respect to Penhasi, Appellants contend the reference is not in the field of endeavor involving the synthesis of polynucleotides, and because "the chemistries for peptide sequencing and/or synthesis are entirely different from the one for polynucleotide synthesis . . . one skilled in the art would not look to Penhasi for any teaching relevant to polynucleotide synthesis" (Br. 5-6; Reply Br. 4-7).

The Examiner responds the claims are directed to an apparatus for polynucleotide synthesis, and “the apparatus of Penhasi . . . comprises all essential structural elements of the claimed invention” and “is capable of providing conditions necessary for polynucleotide synthesis” (Answer 6-7). The Examiner contends “[t]here does not appear to be any structure inherently associated with ‘polynucleotide synthesizer,’” arguing “a vessel is capable of allowing a variety of functions to be performed” (*id.* 8).

We add the following to the Examiner’s findings with respect to Penhasi. Penhasi would have disclosed to one of ordinary skill in this art that the invention disclosed therein “relates in general to an apparatus for automatically performing chemical processes and more particularly to an apparatus for automatically determining the amino acid sequence in proteins and/or peptides containing an N number of amino acid units regardless of the amino acid chain length” (Penhasi col. 1, ll. 33-37). Penhasi acknowledges the fundamental characteristic of proteins and peptides is their exact sequence of the amino acid units; the synthesis of the exact amino sequence and the determination of whether that sequence has been achieved is difficult manually; and automation of the process requires precautions with the synthesizer with respect to a number of sources of contamination to maintain purity, leading to a number of objectives in these respects for the disclosed synthesizer apparatus (*id.* col. 1, l. 41, to col. 4, l. 42).

We find Appellants acknowledge it was known in the art that “polynucleotide synthesis remains a complex, multi-step process that requires a series of high efficiency chemical reactions” involving “the

sequential addition or coupling of each nucleotide in a final polynucleotide product” (Specification 1). Appellants further acknowledge it was known that a “problem in the synthesis of polynucleotides is the presence of contaminants in the final polynucleotide product” from a number of sources to maintain purity to obtain “polynucleotides of high quality and long length” for a number of different applications (*id.* 2-3).

We determine the plain language of claim 1 specifies an apparatus for maintaining a closed continuous anhydrous system comprising at least the five specified components arranged to maintain the closed continuous anhydrous system. On this record, like the Examiner, we determine the preambular language “for automatic polynucleotide synthesis” and the limitation the apparatus has a “dry box capable of forming a seal over a synthesis platform of an automated polynucleotide synthesizer” in the body of the claim, requires only that the claimed apparatus must be capable of functioning with an automated polynucleotide synthesizer and otherwise adds no additional structural limitation(s). Thus, this claim language in fact conveys a method or intended use concept which does not specifically structurally further limit the claimed apparatus. *See, e.g., In re Yanush*, 477 F.2d 958, 959, 177 USPQ 705, 706 (CCPA 1973); *In re Casey*, 370 F.2d 576, 579-80, 152 USPQ 235, 237-39 (CCPA 1967); *In re Otto*, 312 F.2d 937, 939-40, 136 USPQ 458, 459-60 (CCPA 1963); *see also, e.g., Corning Glass Works v. Sumitomo Elect. U.S.A.*, Inc., 868 F.2d 1251, 1257, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989); *In re Stencel*, 828 F.2d 751, 754-55, 4 USPQ2d 1071, 1073 (Fed. Cir. 1987), and cases cited therein (“Whether a [statement] . . . of intended purpose constitutes a limitation to

the claims is, as has long been established, a matter to be determined on the facts of each case in view of the claimed invention as a whole.”).

On this record, we determine the Examiner has established a prima facie case of obviousness of the claimed apparatus encompassed by claim 1, as we interpret this claim, over the apparatus disclosed by Penhasi alone and as combined with Bardman. We are not persuaded otherwise by Appellants’ contentions. The well known biological significance of polynucleotides and of proteins and polypeptides is not at issue here. Indeed, the issue is whether one of ordinary skill in the art of sequencing polynucleotides would have recognized that Penhasi’s apparatus for sequencing proteins and polypeptides is capable of performing the processes and reactions necessary for polynucleotide synthesis. We determine this person would have recognized that, like polynucleotide sequencing, the sequencing of proteins and polypeptides requires sequentially building the polymer chain with appropriate units in a prescribed pattern leading to a precise product. Thus, as one of ordinary skill in this art further would have known, the need for a controlled process environment ensuring the purity of the product at each synthesis step is paramount. In this respect, the Examiner finds Penhasi’s apparatus accomplishes these objectives without regard to the chemical processing involved, and, in our opinion, properly concludes this apparatus would have commended itself to the attention of one of ordinary skill in this art even though it is in a related area of endeavor. *See, e.g., In re Clay*, 966 F.2d 656, 659-60, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992).<sup>2</sup> Indeed, Appellants do not contend there are aspects of the chemical

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<sup>2</sup> A reference is reasonably pertinent if, even though it may be

processes involved with automated polynucleotide synthesis which would have led one of ordinary skill in this art away from Penhasi's apparatus.

We agree with Appellants that Bardman's polymer compositions are in a different field of endeavor. However, one of ordinary skill in the apparatus arts would have looked to other fields of endeavor to obtain a component which logically would have commended itself to this person's attention in considering a problem with an apparatus. *See, e.g., KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740, 82 USPQ2d 1385, 1396 (2007) ("if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill"); *Clay*, 966 F.2d at 659-60, 23 USPQ2d at 1060-61. The Examiner points out one of ordinary skill in this art would have reasonably used a silicon caulk as taught by Bardman to seal feed connections in Penhasi's system.

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in Penhasi alone and combined with Bardman, with Appellants' countervailing evidence of and argument for nonobviousness and conclude that the claimed

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in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering the problem. Thus, the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve.

*Clay*, 966 F.2d at 659-60, 23 USPQ2d at 1060.

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invention encompassed by appealed claims 1 through 20 would have been obvious as a matter of law under 35 U.S.C. § 103(a).

The Primary Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

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