THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 28

UNITED STATES PATENT AND TRADEMARK OFFICE

MAILED

JUL 28 1995

PAT.&T.M. OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ANTHONY S. ROBBIN

Appeal No. 95-1429
Application 08/095,371[1]

HEARD: JULY 13, 1995

Before CALVERT, COHEN and McQUADE, Administrative Patent Judges.

COHEN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the refusal of the examiner to allow claims 16 through 22, all the claims remaining in the application, as amended subsequent to the final rejection.

Appellant's disclosed invention pertains to an architectural body and to a method for constructing an

[1] Application for patent filed July 8, 1993. According to the appellant, the application is a continuation of Application 07/877,972, filed May 4, 1992, abandoned; which is a continuation of Application 07/429,933, filed October 31, 1989, abandoned.

architectural body. A basic understanding of the invention can be derived from a reading of exemplary claims 16 and 20, copies of which are appended to this opinion.

This panel of the board relies upon the following evidence of obviousness in the present and parent applications, in a new ground of rejection introduced, infra:[2]

Baer	3,722,153	Mar. 27, 1973
Lalvani	4,723,382	Feb. 9, 1988

"Quasicrystals", David Nelson, Scientific American, pages 43 through 57, August, 1986

"Quasicrystals", Paul Joseph Steinhardt, American Scientist, Volume 74, pages 586 through 597, November-December 1986

"Quasicrystals with arbitrary orientational symmetry", Joshua E. S. Socolar, Paul J. Steinhardt, and Dov Levine (Socolar), Physical Review B, Volume 32, Number 8, pages 5547 through 5550, October 15, 1985

The following rejection is the sole rejection before us for review.

Claims 16 through 22 stand rejected under 35 USC § 112, second paragraph, as being indefinite.

The full text of the examiner's rejection and response to the argument presented by appellant appears in the answer

[2] Based upon the submitted documents in the application file and the listing of documents in the appeal brief (pages 9 and 10) and Appendix B, it is readily apparent to us that appellant has copies of the references relied upon in the new ground of rejection.

(Paper No. 24), while the complete statement of appellant's argument can be found in the brief (Paper No. 23).

OPINION

In reaching our conclusion on the indefiniteness issue raised in this appeal, this panel of the board has carefully considered appellant's specification and claims,[3] and the respective viewpoints of appellant and the examiner. As a consequence of our review, we make the determination which follows.

We do not sustain the examiner's rejection of appellant's claims under 35 USC § 112, second paragraph.

Claims are considered to be definite, as required by the second paragraph of 35 USC § 112, when they define the metes and bounds of a claimed invention with a reasonable degree of precision and particularity. See In re Venezia, 530 F.2d 956, 189 USPQ 149 (CCPA 1976).

We fully understand the examiner's point of view that the claimed subject matter is indefinite for the reason that it sets forth structural options and choices within the scope of the claimed architectural body and method. However, we do not discern that these choices or options add uncertainty or

[3] Read in light of appellant's specification, and consistent with the language of method claim 20, it is apparent to us that in claim 16, line 5, "each" refers to the selected plurality of members.

ambiguity to the claimed subject matter. The claims expressly set forth the optional structures from which a choice or selection is to be made. Therefore, notwithstanding that a plurality of different structures may optionally be selected from to effect the claimed architectural body and method, we determine that the aforementioned structural options in the claims do not render the claims indefinite under 35 USC § 112, second paragraph.

NEW GROUNDS OF REJECTION

Under the authority of 37 CFR 1.196(b), this panel of the board introduces the following new grounds of rejection.

Claims 16 through 22 are rejected under 35 USC § 112, second paragraph, as being indefinite.[4]

Independent claims 16 and 20 specify a "dome, space frame, vault, sphere and the like". The phrase "and the like" adds an ambiguity to the claims. When we consider this language in light of the overall disclosure, we are uncertain as to what additional structure is "like" a dome, space frame, vault, and

[4] Claims 19 and 22 set forth the computer code of a computer algorithm. The examiner's attention is drawn to the proposed examination guidelines for computer-implemented inventions published in the Federal Register, Vol. 60, No. 106, Friday, June 2, 1995, pages 28778 through 28780. A copy of the proposed guidelines is appended to this opinion. The proposed guidelines in part I, section B, item 2(a) advise that claims using programming code should be rejected under 35 USC § 112, second paragraph, and objected to under 37 CFR 1.52(a).

sphere. See Ex parte Kristensen, 10 USPQ2d 1701 (BPAI 1989) and Ex parte Remark, 15 USPQ2d 1498 (BPAI 1990). Therefore, the phrase "and the like" renders the claims indefinite.

While the claims are indefinite for the reason set forth above, we understand the subject matter to the extent that we can apply prior art, infra.

Claims 16 through 22 are rejected under 35 USC § 103 as being unpatentable over Baer in view of Nelson, Steinhardt, Socolar, Lalvani, and the acknowledgement by appellant of knowledge in the art prior to the present invention, found in the "RESPONSE TO PROTEST UNDER 37 CFR Section 1.291" in grandparent application 07/429,933.

Initially, it is noted that appellant points out (specification, page 2) that it is a primary object of the present invention to provide an architectural body having a quasicrystal structure.[5] Further, according to appellant (specification, page 6) a computer program is used for making a mathematical model of a quasicrystal. The computer program generates the coordinate positions of the vertices and connect arrays for the quasicrystal architectural bodies. The program uses the deBruijn dual method of first constructing a topological

[5] We consider an architectural body to broadly denote any building structure, including a habitable building structure. Webster's New Collegiate Dictionary, G. & C. Merriam Company, Springfield, Massachusetts, 1979.

net or substructure, and then filling the net with cells (specification, page 7). Elongated members, for example, are then connected at the appropriate vertices generated by the computer program to effect the architectural body of quasicrystal structure.

Akin to appellant, Baer appreciated the beauty and striking appearance of a crystal-like building structure (Figure 9). The structure is configured from elongated linear structural elements interconnected by nodes or connectors. While Baer was particularly interested in icosahedrons for their five-fold symmetry, he noted that they cannot occur in crystals. This was in the 1970s. In the 1980s, as the Nelson, Steinhardt, and Socolar documents reveal, quasicrystals were discovered, leading to the generation of three dimensional quasicrystalline structures with symmetries forbidden for ordinary crystals. Further, Lalvani informs us that those of ordinary skill in the art understood that a non-periodic architectural building structure because of its non-repetitive aspects has a strong aesthetic appeal as compared to periodic building structures.

In applying the test for obviousness,[6] we reach the conclusion that it would have been obvious to one having ordinary skill in the art at the time appellant's invention was made, from a combined consideration of the applied teachings, to configure a crystal-like architectural or building structure, such as taught by Baer, with the appearance of a quasicrystal, a known quasiperiodic structure. In our opinion, the incentive on the part of one of ordinary skill for making this modification would have simply been to obtain the aesthetic benefit of the non-repetitive crystalline appearance of the known quasicrystal configuration. As to a determination of the location of vertices by using a computer algorithm implementing the deBruijn method, appellant's response to the protest clearly indicates to us that such a determination would have been obvious to one having ordinary skill in the art at the time of appellant's invention, and simply involved a routine task of developing a computer

[6] The test for obviousness is what the combined teachings of references would have suggested to one of ordinary skill in the art. See In re Young, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991) and In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

program for generating the location of vertices of a quasicrystal configuration relying upon a known mathematical method. This latter determination, of course, presumes skill on the part of one versed in the art, and not the converse. See In re Sovish, 769 F.2d 738, 226 USPQ 771 (Fed. Cir. 1985). Thus, in our opinion, the claimed architectural body and method would have been obvious under 35 USC § 103.

In summary, this panel of the board has reversed the examiner's rejection of claims 16 through 22 under 35 USC 112, second paragraph, and introduced new rejections pursuant to 37 CFR 1.196(b).

The decision of the examiner is reversed.

Any request for reconsideration or modification of this decision by the Board of Patent Appeals and Interferences based upon the same record must be filed within one month from the date of the decision (37 CFR 1.197). Should the appellant elect to have further prosecution before the examiner in response to the new rejection under 37 CFR 1.196(b) by way of amendment or showing of facts, or both, not previously of record, a shortened statutory period for making such response is hereby set to expire two months from the date of this decision.

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

REVERSED, 37 CFR 1.196(b)

IAN A. CALVERT)
Administrative Patent Judge)
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IRWIN CHARLES COHEN) BOARD OF PATENT
Administrative Patent Judge) APPEALS
) AND
) INTERFERENCES
)
JOHN P. McQUADE)
Administrative Patent Judge)

Appeal No. 95-1429
Application 08/095,371

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Appendix

16. An architectural body for use as a dome, space frame, vault, sphere and the like comprising a plurality of members selected from the group consisting of a) elongated linear elements and node means for joining said linear elements, and b) two plates in the form of rhombii, each having corner angles of 63.44 degrees and 116.56 degrees assembled into a three dimensional cell having dihedral angles of one of a) 36 degrees and 144 degrees, and b) 72 degrees and 108 degrees, a plurality of said cells being joined together in a three dimensional structure forming the architectural body as an internal reaction structure at least one cell deep and characterized by a preselected set of vertices that has both icosahedral symmetry, and non-periodicity such that said body has the property that a load imposed on part of the structure of the body is diffused in all directions throughout the structure rather than being translated directly through the structure, said preselected set of vertices being a portion of all those vertices satisfying locations generated by an algorithm implementing the deBruijn dual method within the space occupied by the architectural body.

Appendix Cont'd

20. A method for constructing an architectural body for use as a dome, space frame, vault, sphere and the like comprising the steps of selecting a plurality of members selected from the group consisting of a) elongated linear elements, and node means for joining said linear elements and b) two plates in the form of rhombii, each having corner angles of 63.44 degrees and 116.56 degrees which when assembled form a three dimensional cell having dihedral angles of one of a) 36 degrees and 144 degrees, and b) 72 degrees and 108 degrees, and joining said plurality of members together in a three dimensional structure to form said architectural body, with an internal reaction structure at least one cell deep and characterized by a preselected set of vertices that has both icosahedral symmetry, and non-periodicity such that said body has the property that a load imposed on the body is diffused in all directions throughout the structure rather than translated directly through the structure, said preselected set of vertices being a portion of all those vertices satisfying locations generated by an algorithm implementing the deBruijn dual method within the space occupied by the architectural body.