

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* SHIH-HUNG CHUANG

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Appeal 2007-4121  
Application 10/196,251  
Technology Center 3700

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Decided: August 27, 2008

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Before WILLIAM F. PATE III, LINDA E. HORNER, and  
JOHN C. KERINS, *Administrative Patent Judges*.

WILLIAM F. PATE III, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

This is an appeal from the final rejection of claims 4-20. These are the only claims remaining in the application.

We have jurisdiction over the appeal pursuant to 35 U.S.C. §§ 6 and 134.

The claimed invention is directed to a three-dimensional jigsaw puzzle which, when fully completed, is a self-supporting sphere. The upper and lower surfaces of each piece have an arcuate contour<sup>1</sup> so that the surfaces define a piece of uniform or unitary thickness.

Claim 4 reproduced below, is further illustrative of the claimed subject matter.

4. A three dimensional jigsaw puzzle comprising a self-supporting sphere formed by a plurality of interfitting puzzle pieces, each of said plurality of puzzle pieces having (a) a plurality of protrusions and a plurality of cutouts formed in a periphery thereof, and (b) an upper surface and an opposing lower surface, said upper surface of each of said puzzle pieces having an arcuate contour defining a spherical surface portion, said lower surface of each of said puzzle pieces having a complementary contour to said arcuate contour of a corresponding upper surface, said upper and lower surfaces being concentric to define a uniform or unitary thickness for each piece.

#### REFERENCES

The references of record relied upon by the examiner as evidence of lack of novelty and obviousness are:

DeGast	3,578,331	May 11, 1971
Novak	3,691,704	Sep. 19, 1972

#### REJECTIONS

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<sup>1</sup> We understand by “arcuate contour” Appellant means that the pieces are arcuately curved in all directions, i.e., forming a portion of a sphere.

Claims 4-7, 10 and 11 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Novak.

Claims 4-7, 10 and 11 stand rejected under 35 U.S.C. § 102(b) or 35 U.S.C. § 103 as being anticipated by or, in the alternative, as obvious over DeGast.

Claims 8, 9 and 12-20 stand rejected under 35 U.S.C. § 103 as unpatentable over DeGast.

### FINDINGS OF FACT

Novak discloses a hollow sphere with several separate structural elements for constructing the hollow sphere. See col. 1, ll. 6-10. The hollow sphere disclosed in Novak can be used as a toy. As shown in Figure 1, the assembled device is in the shape of a sphere and is comprised of several structural elements 10. The elements are disc shaped and of uniform thickness except at their peripheries where there are interfitting tongues and recesses to fasten the elements 10. See col. 2, ll. 17-27. As shown in Figure 5, the overlapping projecting tongues 15 and receiving recesses 16 result in a piece that does not have a complete unitary thickness.

DeGast shows a three-dimensional puzzle for forming a hollow ornamental object such as a three-dimensional jigsaw puzzle. The object, as seen in Figure 1, is formed of a plurality of identically shaped puzzle pieces 12 that are generally four-sided in shape having a spherical curvature, with the radius of curvature of all of the pieces 12 being identical. See col. 2, ll. 7-14. Each of the pieces has two complementary projections 14 extending outwardly from two of the four sides and complementary recesses 16

extending inwardly from the two remaining sides. See col. 2, ll. 14-17. The puzzle pieces of DeGast appear to be of uniform thickness. See Figure 2 and Figure 5.

### ISSUES

Appellant argues that neither Novak nor DeGast shows puzzle pieces of uniform or unitary thickness for each piece. Appellant further argues that neither Novak nor DeGast shows puzzle pieces with a broad-shouldered human-shaped periphery or variable radius curves. Accordingly, the issues for our consideration are whether the Appellant has established that the Examiner erred in rejecting the claims for lack of novelty or obviousness.

### PRINCIPLES OF LAW

The prior art may anticipate a claimed invention, and thereby render it non-novel, either expressly or inherently. *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349 (Fed. Cir. 2002), *cert. denied*, 538 U.S. 907 (2003). Express anticipation occurs when the prior art expressly discloses each limitation (i.e., each element) of a claim. *Id.* In addition, “[i]t is well settled that a prior art reference may anticipate when the claim limitations not expressly found in that reference are nonetheless inherent in it.” *Id.*

A claimed invention is unpatentable if the differences between it and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.” 35 U.S.C. § 103(a) (2000); *KSR Int’l v. Teleflex Inc.*, 127 S.Ct. 1727 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 13-14 (1966).

In *Graham*, the Court held that that the obviousness analysis is bottomed on several basic factual inquiries: “[(1)] the scope and content of the prior art are to be determined; [(2)] differences between the prior art and the claims at issue are to be ascertained; and [(3)] the level of ordinary skill in the pertinent art resolved.” 383 U.S. at 17. *See also KSR Int’l v. Teleflex Inc.*, 127 S.Ct. at 1734. “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 1739.

While there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness, “the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR* 127 S.Ct. at 1741.

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, 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.

*Id.*, at 1740. We must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.  
*Id.*

With regard to arguments that there is no teaching, suggestion, or motivation (TSM) for the combination of references, in *KSR* the Supreme Court held that a rigid application of such a mandatory formula as TSM was incompatible with its precedent concerning obviousness. *See KSR* at 1741.

Section 112, second paragraph, is satisfied if a person skilled in the field of the invention would reasonably understand the claim when read in the context of the specification. *Marley Mouldings Limited v Mikron Industries, Inc.*, 417 F.3d 1356, 1359 (Fed. Cir. 2005) (citing *Union Pac. Res. Co. v. Chesapeake Energy Corp.*, 236 F.3d 684, 692 (Fed. Cir. 2001) (the definiteness requirement set forth in § 112, ¶ 2 "focuses on whether those skilled in the art would understand the scope of the claim when the claim is read in light of the rest of the specification")); *Miles Labs., Inc. v. Shandon*, 997 F.2d 870, 875 (Fed. Cir. 1993) (if the claims "reasonably apprise those skilled in the art of the scope of the invention, § 112 demands no more"); *In re Moore*, 439 F.2d 1232, 1235 (CCPA 1971) (the indefiniteness inquiry asks whether the claims "circumscribe a particular area with a reasonable degree of precision and particularity").

Whether a specification complies with the written description requirement of 35 U.S.C. § 112, first paragraph, is a question of fact. *Regents of Univ. of Cal. v. Eli Lilly and Co.*, 119 F.3d 1559, 1566 (Fed. Cir. 1997), *cert. denied*, 523 U.S. 1089 (1998)(citing *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563 (Fed. Cir. 1991)). To fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention." *Id.* (citing *Lockwood v. American*

*Airlines, Inc.*, 107 F.3d 1565, 1572 (1997) and *In re Gosteli*, 872 F.2d 1008, 1012 (Fed. Cir. 1989) (“[T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed.”)). Thus, an applicant complies with the written description requirement “by describing the invention, with all its claimed limitations, not that which makes it obvious,” and by using “such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention.” *Lockwood*, 107 F.3d at 1572 .

It is important to note that “[t]he invention is, for purposes of the ‘written description’ inquiry, whatever is now claimed.” *Vas-Cath*, 935 F.2d at 1564.

#### ANALYSIS

Turning first to the construction of the independent claims on appeal, we note that the claims state that the upper and lower surfaces of the puzzle pieces are concentric to “define a uniform or unitary thickness for each piece.” We construe this “define” language to require the puzzle pieces to be of uniform or unitary thickness throughout. Thus, turning to the Novak reference, we find that the puzzle pieces disclosed therein are not of uniform thickness throughout, inasmuch as the recesses and tongues are of less thickness than the piece interiors. Accordingly, we reverse the § 102 rejection based on the evidence of Novak.

Turning to the patent to DeGast, Appellant argues that DeGast does not disclose puzzle pieces of uniform or unitary thickness. We disagree. While the text of the specification is silent with respect to the thickness of the pieces of DeGast, patent drawings are good for what they disclose.

In fact, a predecessor to our reviewing court has stated that a drawing in a utility patent can be cited against the claims of a utility patent application even though the feature shown in the drawing was unintended or unexplained in the specification of the reference patent. *See In re Aslanian*, 590 F.2d 911, 914 (CCPA 1979) (citing *In re Meng*, 492 F.2d 843, 847 (CCPA 1974) (the staggered cheese slices case); *In re Seid*, 161 F.2d 229 (1947); *In re Wagner*, 63 F.2d 987, 988 (CCPA 1933)). In this instance, it appears that Figure 2 shows a puzzle piece of uniform thickness. Appellant argues that there is no disclosure that the inner and outer surfaces of DeGast's pieces are concentric so as to result in a piece of uniform thickness. It is our view that there is no reason to suspect that puzzle pieces shown in Figure 2 vary in thickness throughout the pieces. We acknowledge that the underside of the pieces in Figure 2 are not shown in the drawing. However, the underside of the pieces are shown in Figure 5 and this figure shows the pieces of the second embodiment, along with the pieces in Figure 6, to be of uniform thickness. There is no reason to suspect that the pieces of the Figure 1 embodiment of DeGast are any different. Additionally, we note that the holes 24 in the pieces of DeGast seem to illustrate constant thickness on the sidewalls thereof.

Consequently, with respect to Appellant's argument that DeGast does not show puzzle pieces of uniform or unitary thickness, we simply believe that it is more likely than not that the puzzle pieces of DeGast are of uniform thickness as the Examiner has found. Therefore, by a preponderance of the evidence, we believe that DeGast explicitly discloses puzzle pieces of uniform thickness. We consider the amount of disclosure in DeGast as to

uniform thickness to be similar to the amount of disclosure in Appellant's original specification as to this feature. Thus, if Appellant is allowed to provide claims directed to a uniform thickness, based on his scant disclosure, we are constrained to say that DeGast discloses the same feature based on the disclosure in DeGast.

Furthermore, we are in agreement with the Examiner that, in view of the cruciform embodiment of DeGast which appears to show both the inner and outer surfaces of the piece with concentric surfaces providing uniform thickness, it would have been obvious to construct the pieces of the first, spherical, embodiment in like manner, if they are not already of uniform thickness, as we believe to be the case. Therefore, we affirm the § 102 and § 103 rejections based on the disclosure of DeGast. That is, we affirm the § 102 rejection of claims 4-7, 10 and 11 and the § 103 rejections of those same claims.

With respect to the rejection of claims 8, 9, and 12-20 under 35 U.S.C. § 103 as obvious over DeGast, we will not affirm this rejection. The Examiner merely includes a conclusory statement that it would have been obvious to provide six puzzle pieces that meet at a common point. Answer at 4. However, a conclusory statement does not provide the rational basis required in a proper *Graham* analysis. Thus, the Examiner provides no explanation with rational underpinning as to exactly why or how one would modify the puzzle of DeGast so that six pieces meet in a common point. Consequently, the rejection of claims 8, 9, and 12-20 can not be affirmed on this ground.

*New Grounds of Rejections under 37 C.F.R. § 41.50(b).*

Pursuant to our authority under 37 C.F.R. § 41.50(b) we enter the following rejections of the claimed subject matter on appeal.

Claims 6-8, 10-13, and 18-20 are rejected under 35 U.S.C. § 112, first paragraph. More specifically, claims 6, 10-13, and 18-20 are rejected based on the lack of written descriptive support in the originally filed application for the limitation first found in claim 6 directed to a puzzle piece with a periphery of a variable radius curve. There is no support for this limitation in the written specification as originally filed, and support for this limitation cannot be gleaned from an inspection of the drawings.

Claims 7, 8, 11, 12, 13 and 20 are rejected under 35 U.S.C. § 112, first paragraph, in that there is no descriptive support in the application as originally filed for a plurality of puzzle pieces having a “broad-shouldered human-shape periphery.” As we construe this term, we assume it to be directed to the shape of a profile of the human body with somewhat broad shoulders. However, in the shape of the puzzle pieces from the drawings as originally filed, we do not see what could be regarded as arms or legs that would serve to make up the portion of the profile of a human shape. Accordingly, the application as originally filed does not provide support for the broad-shouldered human-shaped periphery.

Claims 9, 13, 15 and 17-20 are rejected under 35 U.S.C. § 112, second paragraph. Claim 9 is an example. The claim states that as many as six of the plurality of puzzle pieces meet at a common point at several locations on the sphere. We note that as shown in the drawings as originally filed, as many as six of a plurality of puzzle pieces meet at one single common point on the location on the sphere (as properly claimed in claims 8, 12, 14 and

16), while another six puzzle pieces may meet at a common point at another location on the sphere. We find no locations where six discrete puzzle pieces meet at common points at several locations on the sphere as appears to be claimed in claims 9, 13, 15 and 17-20. We consider these claims to be misdescriptive of the subject matter Appellant regards as the invention.

### SUMMARY

The rejection of claims 4-7, 10 and 11 under 35 U.S.C. § 102 as anticipated by Novak is reversed. The rejection of claims 4-7, 10 and 11 under 35 U.S.C. § 102 as anticipated by DeGast is affirmed. The rejection of claims 4-7, 10 and 11 under 35 U.S.C. § 103 as unpatentable over DeGast is affirmed. The rejection of claims 8, 9, and 12-20 under 35 U.S.C. § 103 as unpatentable over DeGast is reversed.

New rejections of claims 6-8, 10-13, and 18-20 under 35 U.S.C. § 112, first paragraph, and claims 9, 13, 15 and 17-20 under 35 U.S.C. § 112, second paragraph, have been entered by the Board pursuant to 37 C.F.R. § 41.50(b).

Regarding the affirmed rejection(s), 37 C.F.R. § 41.52(a)(1) provides "Appellant may file a single request for rehearing within two months from the date of the original decision of the Board."

In addition to affirming the Examiner's rejection(s) of one or more claims, this decision contains new grounds of rejection pursuant to 37 C.F.R. § 41.50(b) (2007). 37 C.F.R. § 41.50(b) provides "[a] new ground of

rejection pursuant to this paragraph shall not be considered final for judicial review."

Regarding the new ground of rejection, Appellant must, *WITHIN TWO MONTHS FROM THE DATE OF THE DECISION*, exercise one of the following options with respect to the new ground of rejection, in order to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . ; or

(2) *Request rehearing*. Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

Should Appellant elect to prosecute further before the Examiner pursuant to 37 C.F.R. § 41.50(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejections, the effective date of the affirmance is deferred until conclusion of the prosecution before the Examiner unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.

If Appellant elects prosecution before the Examiner and this does not result in allowance of the application, abandonment or a second appeal, this case should be returned to the Board of Patent Appeals and Interferences for final action on the affirmed rejections, including any timely request for rehearing thereof.

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

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Application 10/196,251

AFFIRMED-IN-PART  
37 C.F.R. § 41.50(b)

vsh

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