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

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte GLADWIN S. DAS

Appeal 2007-2557
Application 10/094,866
Technology Center 3700

DECIDED: July 11, 2007

Before TONI R. SCHEINER, DONALD E. ADAMS, and NANCY J. LINCK, *Administrative Patent Judges*.

LINCK, *Administrative Patent Judge*.

Concurring opinion by ADAMS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1, 3, 4, 6, 7, 8, 10, and 13, all the

pending claims in the above-referenced application.[1] We have jurisdiction to decide this case pursuant to 35 U.S.C. § 6(b).

We affirm.

STATEMENT OF THE CASE

According to the Specification, there is need in the art "to provide a stent which can be articulated to facilitate the delivery of a stent through the often tortuous pathway provided by coronary arteries to a desired final location within the patient." (Spec. at 4). The description continues, "the stent should have the ability to 'snake' around complex curves and tight curves encountered in the circulatory system, especially those associated with the coronary system which supplies critical blood flow to the heart." *Id.* Further desired is the "avoidance of any stent structure, which tend to snag or catch on the interior of the various blood vessels." *Id.* Finally, "the control of end-to-end length changes upon expansion is a desirable feature in stents." *Id.* at 5.

> In the preferred embodiments, the expandable stent . . . is expandable by enlarging an expandable balloon positioned within the stent. The preferred stent includes a plurality of modules, each of the modules being radially interconnected to form a ring configured to be expandably interconnected and being interconnected to each other in series by respective interconnection bridges. Each ring including a continuous strand of a material, the continuous strand of material being interconnected end to end so as to generally encompass a radial space with the ring. The strand of material being configured to include a repeating series of interconnected

[1] A decision affirming the rejection of all the claims in a related appeal 2007-0383 (Serial No. 10/902,318) was mailed on March 30, 2007. The decision in that appeal is hereafter referred to as "Das '318").

> repeating W-shaped strand configurations having a repeating dip, rise, dip, rise, loop, dip, rise, dip, rise, loop patterned configuration.

(*Id.* at 5.)

The Specification concludes:

> It is understood that even though numerous characteristics and advantages of various embodiments . . . have been set forth in the foregoing description, together with details of the structure and function of various embodiments . . . , this disclosure is illustrative only and changes may be made in detail, *especially in matters of shape, size and arrangement of parts . . . to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed*."

(*Id.* at 27 (emphasis added).)

The Examiner's Rejections

The Examiner relies upon the following prior art:

Ley	US 6,013,091	Jan. 11, 2000
Hojeibane	US 6,017,363	Jan. 25, 2000
Dinh	US 6,019,789	Feb. 1, 2000
Ndondo-Lay	US 6,273,908 B1	Aug. 14, 2001

Based on these references, the Examiner entered the following rejections:

1) Claims 1, 4, 7, 8, and 13 under 35 U.S.C. § 103(a) based on Ley in view of Hojeibane or Dinh; and

2) Claims 3, 6, and 10 under 35 U.S.C. § 103(a) over Ley and Hojeibane or Dinh in view of Ndondo-Lay.

Additionally, claims 1, 3, 4, 6-8, 10, and 13 stand provisionally rejected under the judicially-created doctrine of obviousness-type double patenting over claims 1-3 of Das '318 in view of Hojeibane.

With emphasis added to indicate the two disputed limitations,[2] representative claim 1 reads:

> 1. An expandable stent, the stent being expandable by enlarging an expandable balloon positioned within the stent when the stent is within a patient, the expandable stent comprising:
>
> a plurality of segments, each of the segments being configured to be expandably interconnected and being interconnected to each other in series by a plurality of interconnection bridges; each segment including a continuous strand of a material, the continuous strand of material being interconnected end to end so as to generally encompass a radial space within the segment; the strand of material being configured to include a repeating series of interconnected repeating W-shaped strand configurations having *a repeating dip, rise, dip, rise, loop, dip, rise, dip, rise, loop patterned configuration*; at least one of the plurality of interconnection bridges including *a plurality of narrowings at certain points in the interconnection bridge that permit the interconnection bridge to have greater flexibility when bending proximate the plurality of narrowings*.

ISSUES ON APPEAL

Appellant contends: (1) The Examiner "has not identified structure which corresponds to Appellant's claimed 'dip, rise, dip, rise, loop, dip, rise, dip, rise, loop' configuration" (Reply Br. 5; *see also* Br. 5); and (2) Neither

[2] These two limitations are the only limitations argued by Appellant with respect to all the pending claims. Appellant does not dispute the additional limitation in claims 3, 6, and 10 for which Ndondo-Lay was cited in the second ground of rejection. Arguments not made are waived. *See* 37 C.F.R. § 41.37(c)(1)(vii) ("Any arguments or authorities not included in the brief or a reply brief ... will be refused consideration by the Board, unless good cause is shown."). Thus, we address these two limitations with respect to claim 1.

Ley with Hojeibane nor with Dinh "teach or suggest . . . an expandable stent . . . with at least one of the . . . interconnection bridges including a plurality of narrowings at certain points in the interconnection bridge so as to have greater flexibility when bending proximate the plurality of narrowings" (Br. 8-9).

In response, the Examiner contends: (1) Ley's Fig. 1 discloses the claimed "dip, rise, dip, rise, loop, dip, rise, dip, rise, loop" configuration (Answer[3] 9; *see also* Answer 4); and (2) Hojeibane and Dinh teach the use of narrowings in interconnection bridges to increase the flexibility of a stent (Answer 6-7). Thus, according to the Examiner, "it would have been *prima facie* obvious to put one or more narrower places in a support member (18) of Ley in order to improve the flexibility of the device" (Answer 8). With these contentions before us, we frame the issues as follows:

Does Ley disclose "a repeating series of interconnected repeating W-shaped strand configurations having a repeating dip, rise, dip, rise, loop, dip, rise, dip, rise, loop patterned configuration"?

Would the invention of claim 1, including "a plurality of narrowings at certain points in the interconnection bridge that permit the interconnection bridge to have greater flexibility when bending," have been obvious, in view of the teachings of Ley and Hojeibane or Ley and Dinh?

[3] "Answer" refers to "Corrected Examiner's Answer" (mailed Oct. 23, 2006).

FINDINGS OF FACT[4]

Claim Interpretation

1. The phrase "the strand of material being configured to include a repeating series of interconnected repeating W-shaped strand configurations having a repeating dip, rise, dip, rise, loop, dip, rise, dip, rise, loop patterned configuration" does not, to our knowledge, have a well-recognized meaning in the stent art. Further it is not defined in the Specification, except through the description of a preferred embodiment. Significantly, it is not limited by the claim language to a configuration shown in any of the figures, for example with language such as "shown in Fig. 9." Thus, we give these claim terms their broadest reasonable interpretation consistent with the Specification.

2. The term "loop" means: "a curving or doubling of a line so as to form a closed or partially open curve within itself through which another line can be passed or a hook may be hooked." Webster's Ninth New Collegiate Dictionary 705 (1990) ("Webster's").

3. The language "include" prefaces "a repeating series of interconnected repeating W-shaped strand configurations having a repeating dip, rise, dip, rise, loop, dip, rise, dip, rise, loop patterned configuration." Thus, the claim language does not exclude additional twists and turns, et cetera, from the configuration, so long as the configuration satisfies the language of the claim.

4. The terms in the claim phrase "a plurality of narrowings . . . in the interconnection bridge that permit the interconnection bridge to have greater flexibility when bending" are not further defined in the Specification.

[4] Findings of Fact are abbreviated "FF."

5. Thus, we give these terms their broadest reasonable interpretation, finding "narrowings" means part of the bridge where its width has been decreased (*see* Webster's 787 (defining "narrow" to mean "of less than standard width")); and "increase in flexibility" means any increase in ability to bend without breaking (*see* Webster's 473 (defining "flexible") and 400 (defining flexible relative to "elastic")).

The Prior Art

6. Appellant does not dispute Ley discloses all the limitations of claim 1, except "the strand of material being configured to include a repeating series of interconnected repeating W-shaped strand configurations having a repeating dip, rise, dip, rise, loop, dip, rise, dip, rise, loop patterned configuration" and "a plurality of narrowings at certain points in the interconnection bridge that permit the interconnection bridge to have greater flexibility when bending proximate the plurality of narrowings."

7. Ley discloses the disputed "dip, rise, dip, loop" (s*ee* Ley's Figs. 1, 3 and 4 (below)[5]), in which Ley illustrates the repeating pattern "dip, rise, dip, rise, loop, dip, rise, dip, rise, loop," in the form of a "W", as indicated by the Examiner (Answer 9). The dips are labeled 14 and designated "dip," the rises are not numbered but are designated "rise," and the loops are labeled 19 and designated "loops."

8. The loop encompasses an area on each side of the "circumferentially extending support members," also designated 19. (Col. 2, ll. 44-45.) Thus, the loop in Ley's figures, relied upon to satisfy the claim

[5] The figures (pp. 8-9 *infra*) were previously annotated by the Examiner in Das '318 and reproduced in the Das '318 opinion.

language, has a support member extending from its center and also appears to have a small indentation where the support member is secured. (*See* Figs. 3 & 4.)

9. The repeat pattern of Ley is best illustrated in Fig. 1. *See* the bolded areas on each side of the figure, with the left side labeled to indicate the repeating pattern.

10. The language of claim 1 does not exclude the support member extending from the center of the loop, or its minor indentation, or require a reversal of orientation of the strand. The loop continues "to form a . . . partially open curve within itself through which another line [could] be passed." Webster's 705.

Fig. 1

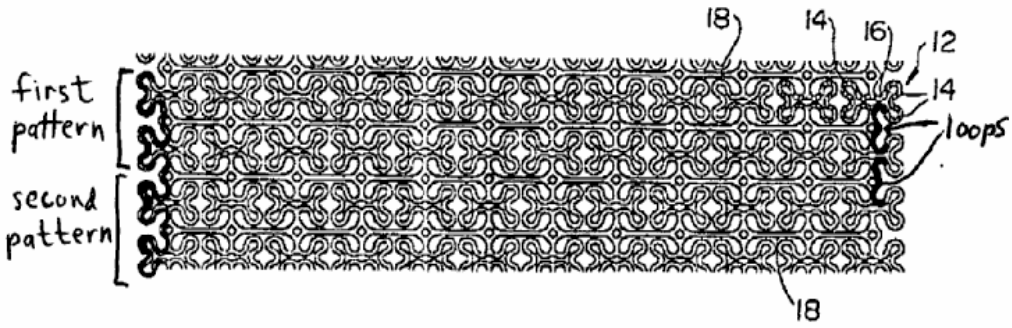


Fig.3

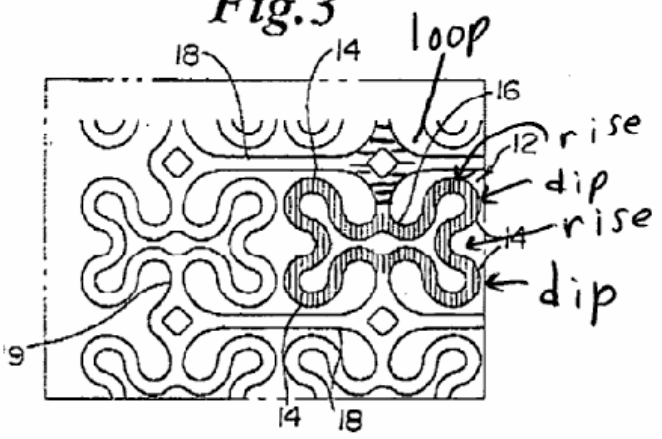
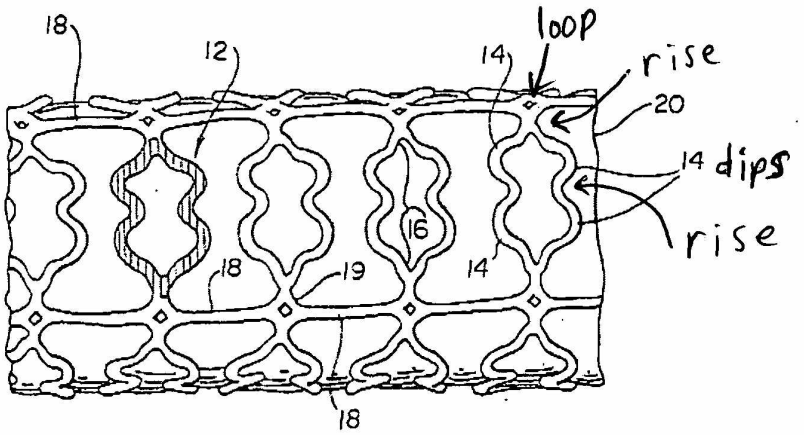


Fig.4



11. With respect to the "plurality of narrowings" limitation, "Hojeibane . . . teaches that connection[s] with narrowing midpoints to improve flexure were known." (Answer 6 (citing col. 6, ll. 30-44).)

12. Hojeibane further teaches that "alternate designs of the connector to insure flexibility are possible, and contemplated." (Col. 6, ll. 42-44.)

13. While Dinh focuses on "changing the dimensions of the unit cell" rather than those of specific components to vary flexibility, Dinh additionally teaches "changing . . . the length *and width* of the unit cell

components," i.e., the connector, to do so. (Col. 5, ll. 64-66 (emphasis added); *see also* col. 7, ll. 8-12 ("the structure of the connecting segment itself" can be "varied to alter flexibility of the stent").)

14. Dinh's Figures 4A and 6D at least would have suggested varying the width of certain portions of the interconnecting bridge to provide additional flexibility; and Figure 4A, when viewed with Figure 4B, would have suggested doing so at two points in the bridge in that narrowed bend 134 in Figure 4A corresponds to two bends in Figure 4B (138 and an unnumbered bend). (*See* FIGS. 4A, 4B & 6D.)

15. Based on the teachings of Hojeibane or Dinh, the skilled artisan seeking more flexibility in a stent would have known to decrease the width of Ley's interconnecting bridges in "a plurality" of locations to obtain such flexibility and would have had a reasonable expectation of obtaining such increased flexibility by doing so.

Other Findings

16. The scope and content of the prior art and the level of skill in the art are reflected in the cited prior art, all relating to improving stent design.

17. "A person of ordinary skill is also a person of ordinary creativity, not an automaton." *KSR Int'l Co. v. Teleflex Inc*., 127 S. Ct. 1727, 1742, 82 USPQ2d 1385, 1397 (2007).

PRINCIPLES OF LAW

During examination proceedings,

> claims are given their broadest reasonable interpretation consistent with the specification. *See In re Graves,* 69 F.3d 1147, 1152, 36 USPQ2d 1697, 1701 (Fed.Cir.1995); *In re Etter,* 756 F.2d 852, 858, 225 USPQ 1, 5 (Fed.Cir.1985) (en

> banc). [This] proposition "serves the public interest by reducing the possibility that claims, finally allowed, will be given broader scope than is justified," *In re Yamamoto,* 740 F.2d 1569, 1571, 222 USPQ 934, 936 (Fed.Cir.1984), and it is not unfair to applicants, because "before a patent is granted the claims are readily amended as part of the examination process," *Burlington Indus., Inc. v. Quigg,* 822 F.2d 1581, 1583, 3 USPQ2d 1436, 1438 (Fed.Cir.1987).

In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Thus, "the PTO applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification." *In re Morris*, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997).

"Although the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments . . . in the specification will not generally be read into the claims." *Constant v. Advanced Micro-Devices*, 848 F.2d 1560, 1571, 7 USPQ2d 1057, 1064 (Fed. Cir. 1988). *See also United Carbon Co. v. Binney & Smith Co*., 317 U.S. 228, 232 (1942) ("The claims measure the invention.").

It is "the general rule that words in patent claims are given their ordinary meaning in the usage of the field of the invention, unless the text of the patent makes clear that a word was used with a special meaning." *Toro Co. v. White Consol. Indus.*, 199 F.3d 1295, 1299, 53 USPQ2d 1065, 1067 (Fed. Cir. 1999).

"In assessing whether subject matter would have been non-obvious under § 103, the Board follows the guidance of the Supreme Court in *Graham v. John Deere Co.* The Board determines '"the scope and content

of the prior art,"' ascertains '"the differences between the prior art and the claims at issue,"' and resolves '"the level of ordinary skill in the pertinent art.'"'" *In re Kahn*, 441 F.3d 977, 985, 78 USPQ2d 1329, 1334-35 (Fed. Cir. 2006) (quoting *Dann v. Johnston*, 425 U.S. 219, 226, 189 USPQ 257, 260 (1976) (quoting *Graham*, 383 U.S. at 17, 148 USPQ at 467)). "Against this background, the Board determines whether the subject matter would have been obvious to a person of ordinary skill in the art at the time of the asserted invention." *Id.*, 78 USPQ2d at 1335.

"One of the ways in which an [application's] subject matter can be proved obvious is by noting that there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the . . . claims." *KSR Int'l*, 127 S. Ct. at 1742, 82 USPQ2d at 1397.

While "rejections on obviousness grounds cannot be sustained by mere conclusory statements," *Kahn*, 441 F.3d at 988, 78 USPQ2d at 1336, a determination that a claimed invention would have been obvious "need not seek out precise teachings directed to specific subject matter of the . . . claim, for [the Board] can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR Int'l*, 127 S. Ct. at 1741, 82 USPQ2d at 1396. Thus, "a reference must be considered not only for what it expressly teaches, but also for what it fairly suggests." *In re Burckel,* 592 F.2d 1175, 1179, 201 USPQ 67, 70 (CCPA 1979), *quoted with approval in In re Baird*, 16 F.3d 380, 383, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994).

DISCUSSION

Based on the above findings and principles of law, we conclude claim 1 would have been obvious to one of ordinary skill in the art based on the teachings of Ley in view of Hojeibane or Dinh.

Appellant urges us to compare the figures in his Specification with those of the prior art. (*See* Reply Br. 5-8 (referring to Appellant's Figures 8 to 15). Contrary to Appellant's suggestion, while our claim interpretation must be consistent with the Specification, we do not limit a claim's scope to the disclosed embodiments, absent some clear direction to do so. Had Appellant wanted to so limit his claims, he clearly could have done so by adding the language "as shown in Figure . . . ."

Citing to a description of "preferred stents," Appellant argues "the sequence of structures . . . in Ley . . . does not reverse the orientation of the strand as disclosed and claimed by Appellant." (Reply Br. 9 (citing Spec. 24, ll. 11-23).) Appellant further argues that the "loops in Ley . . . contain intervening structure, the support structure, which passes through the loops" and "equates to a 'loop, loop, intervening support structure, loop, loop.'" (Reply Br. 9.)

As found above, under the broadest reasonable interpretation, the claim language does not require a reverse of orientation of the strand and does not exclude Ley's additional structure; further it does not require Ley's loop (as identified by the Examiner) to be considered more than one loop. (FFs 1-3, 7-10.) While Appellant's interpretation may be a reasonable one, we find the Examiner's is also reasonable and consistent with the broad teachings of the Specification. Thus, given our charge regarding how we are to interpret claims during prosecution, we adopt that of the Examiner.

With respect to the second disputed limitation, i.e., "a plurality of narrowings . . . in the interconnection bridge," Appellant disputes the Examiner's findings regarding the teachings of Hojeibane and Dinh. (Reply Br. 10-12.) Both Hojeibane and Dinh identify the problem of increasing stent flexibility and how to address it. Hojeibane expressly discloses making connectors narrower at their midpoints to increase flexibility and suggests "alternate designs of the connector to insure flexibility are possible, and contemplated." (FFs 11, 12 (citing col. 6, ll. 30-44).) Alternatively Dinh discloses the value of flexibility in a stent and suggests changing the width of the connector to vary it. (FF 13 (citing col. 5, ll. 63-66).) With this teaching in mind, Dinh's stent designs, disclosed in FIGs. 4A, 4B and 6D, at least suggest narrowing part of the connecting segment in more than one place. (FF 14.)

Thus, the skilled artisan desiring more flexibility in a stent, and aware of Hojeibane or Dinh, would have had reason to include "a plurality of narrowings" in Ley's connector to solve the problem of increasing the stent's flexibility. Additionally, that artisan would have had a reasonable expectation that adding such narrowings would in fact solve the problem. (FF 15.)

Obviousness-Type Double Patenting

Claims 1, 3, 4, 6-8, 10, and 13 stand provisionally rejected under the judicially-created doctrine of obviousness-type double patenting over claims 1-3 of Das '318. Appellant does not dispute this ground of rejection. Thus, we summarily affirm it.

CONCLUSION

In summary, we affirm the Examiner's § 103(a) rejection of claim 1 based on Ley in combination with either Hojeibane or Dinh . Further, as Appellant did not separately argue any additional limitations in the remaining claims, we affirm the rejections of these claims 3, 4, 6-8, 10, and 13, including that of claims 3, 6, and 10 based on Lay in combination with either Hojeibane or Dinh in view of Ndondo-Lay. Finally, we affirm the provisional double patenting rejection of claims 1, 3, 4, 6-8, 10, and 13 over claims 1-3 of Das '318.

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) (2006).

AFFIRMED

Adams, Administrative Patent Judge, concurring.

I join with the majority's decision to affirm the rejection of claims 1, 3, 4, 6-8, 10, and 13 under the judicially-created doctrine of obviousness-type double patenting.

I disagree with the majority's decision to affirm the rejection of claims 1, 3, 4, 6 and 7 under 35 U.S.C. § 103(a). I agree, however, that claims 8, 10, and 13 are prima facie obvious in view of the cited prior art. However, my reasoning differs from that of the Examiner and the majority.

DISCUSSION

The first step in an obviousness analysis is to determine the meaning and scope of each claim. *Amazon.com, Inc. v. Barnes and noble.com, Inc.*, 239 F.3d 1343, 1351, 57 USPQ2d 1747, 1752 (Fed. Cir. 2001). "Only when a claim is properly understood can a determination be made whether the claim . . . renders obvious the claimed invention." *Amazon*, 239 F.3d at 1351, 57 USPQ2d 1752 (Fed. Cir. 2001). Accordingly, I provide an interpretation of each claim on appeal below.

Further, while the majority is quick to point out that "arguments not made are waived" (*supra* n. 2), I note that Appellant has no burden to rebut a rejection of obviousness until a prima facie case has been established. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). "In rejecting claims under 35 U.S.C. § 103, the [E]xaminer bears the initial burden of presenting a *prima facie* case of obviousness. *In re Oetiker,* 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Only if that burden is met, does the burden of coming forward with evidence or argument shift to the applicant. *Id.*" *Rijckaert*, at 1532, 28 USPQ2d at

1956. Simply stated, "[w]hen the references cited by the [E]xaminer fail to establish a *prima facie* case of obviousness, the rejection is improper and will be overturned." *In re Fine,* 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

Obviousness:

Claims 1, 4, 7, 8, and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ley and Hojeibane; or Ley and Dinh. In addition, claims 3, 6, and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ley, Hojeibane, and Ndondo-Lay; or Ley, Dinh, and Ndondo-Lay.

The majority limits their analysis to independent claim 1[6]. Therefore, I begin my analysis there.

Claim 1:

Claim 1 is drawn to an expandable stent. The stent comprises a plurality of *segments* that are "expandably interconnected" to each other in series by a plurality of *interconnection bridges.* Thus, the claimed stent comprises (1) segments and (2) interconnection bridges.

[6] *Supra* n. 2.

Each segment comprises[7] a *continuous strand* of material and claim 1 provides structural requirements for this continuous strand of material. Specifically, the continuous strand of material:

1. Is interconnected end to end so as to generally encompass a radial space within the segment and

2. Comprises a repeating series of interconnected repeating W-shaped strand configurations.

Claim 1 requires that the interconnected repeating W-shaped strand configurations have a repeating dip, rise, dip, rise, loop, dip, rise, dip, rise, loop patterned configuration.

The majority takes issue with the structural requirements of the segments. According to the majority, the recited structure for the segments "does not, to our knowledge, have a well-recognized meaning in the stent art" (*supra* 6). Nevertheless, the majority concludes that "the claim language does not exclude additional twists and turns, et cetera, from the configuration, so long as the configuration satisfies the language of the claim" (*id.*). If, by this statement, the majority is intimating that the terms "including" or "comprising" permit alterations within a defined sequence (e.g., dip, *dip*, rise, dip, rise, *rise*, loop, *loop*, . . . etc.), they have cited no precedent to support this interpretation of the claim. Instead, the majority asserts that the claim terms are given "their broadest reasonable interpretation consistent with the Specification (*supra* 6). In this regard, I

[7] I interpret the term "including," as it is used in claim 1, to mean "comprising." *See* Manual of Patent Examining Procedure § 2111.03 ("The transitional term "comprising", which is synonymous with "including," "containing," or "characterized by," is inclusive or open-ended and does not exclude additional, unrecited elements or method steps.")

note that "[a]lthough the PTO must give claims their broadest reasonable interpretation, this interpretation must be consistent with the one that those skilled in the art would reach." *In re Cortright*, 165 F.3d 1353, 1358, 49 USPQ2d 1464, 1467 (Fed. Cir. 1999). In my opinion, the majority's interpretation of claim 1 is not consistent with the one that those skilled in the art would reach.

In my opinion, when all the terms in claim 1 are considered as a whole[8] the sequence defined by the dip, rise, dip, rise, loop, dip, rise, dip, rise, loop patterned configuration becomes clear. Specifically, each *segment* comprises a *single strand* of material that is configured to comprise a repeating series of interconnected repeating W-shaped configurations. As if to teach a child to write a "W", you start at the top and dip to the bottom, rise to the middle, dip again, and rise again. The *single strand* repeatedly follows this pattern interconnecting each "W" with a "loop." According to claim 1, this is the pattern of the *single strand* that makes up each *segment*.

While claim 1 requires the *interconnection bridges* to interconnect each *segment* in series, as claim 1 is written, the *interconnection bridges* do not play a part in this "W-shaped" configuration of the single stranded segments. This is where both the Examiner's and majority's analysis is flawed as it applies to Appellant's claim 1.

Finally, claim 1 requires that at least one of the plurality of interconnection bridges comprises a plurality of narrowings at certain points to permit the interconnection bridge to have greater flexibility when bending

[8] *See Merck & Co. v. Teva Pharms. USA, Inc.,* 395 F.3d 1364, 1372, 73 USPQ2d 1641, 1648 (Fed. Cir. 2005) ("A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.")

proximate the plurality of narrowings. The number of narrowings is undefined by the claim and therefore reads on the range of 2 up to some undefined end point.

Ley:

Ley is relied upon to teach "the repeating pattern 'dip, rise, dip, rise, loop, dip, rise, dip, rise, loop,' in the form of a 'W'" (*supra* 7). Ley discloses seven different stent configurations. Both the Examiner and majority rely on Ley's first configuration (Answer 4-5 and *supra* 7 respectively). This configuration is represented by Ley's figures 1-4 (Ley, col. 2, ll. 29-30). Ley teaches that the stent comprises a metal tube that has been etched or preferably laser cut to the configuration shown in figure 1 (Ley, col. 2, ll. 30-34). Ley teaches that "[t]he configuration is made up of a series of curvilinear expansion cell elements generally indicated at 12 (see darkened example in FIG. 3 for clarity) having relatively wide end portions 14 joined by relatively narrow center portions 16" (Ley, col. 2, ll. 35-39, emphasis removed). Ley teaches that the cells are arranged longitudinally and in substantially parallel rows (Ley, col. 2, ll. 39-42 and FIG. 1). These expansion cells are equivalent to Appellant's *segments*. These expansion cells do not have Appellant's claimed repeating W-shaped configuration.

Ley also teaches support members which can be viewed as equivalent to Appellant's *interconnection bridges*. Specifically, Ley teaches

> [a] plurality of longitudinally extending elongate support members 18 are included, one each being disposed between adjacent rows of cells 12. Also, a plurality of circumferentially extending support members 19, preferably substantially normal to support members 18 are also positioned between the rows of cells 12 to intersect portions of the support members 18 and to

> interconnect them to the narrow center portions 16 of the cells 12.

(Ley, col. 2, ll. 42-49 and FIGS. 3-4, emphasis removed.)

Notwithstanding, Ley's detailed disclosure of the relationship between the cells (segments) and support members (interconnecting bridges) the majority finds that

> Ley discloses the disputed "dip, rise, dip, loop" (*see* Ley's Figs. 1, 3 and 4 . . .), in which Ley illustrates the repeating pattern "dip, rise, dip, raise, loop, dip, rise, dip, rise, loop," in the form of a "W", as indicated by the Examiner (Answer 9). The dips are labeled 14 and designated "dip," the rises are not numbered but are designated "rise," and the loops are labeled 19 and designated "loops."

(*Supra* 7.)

The problem with this analysis is that what the Examiner and the majority characterize as "loops" are derived from the support members (interconnecting bridges) and are *not* derived from the cells (segments). Stated differently, in order to arrive at Appellant's claimed invention the Examiner and the majority merge the *segments* and the *interconnecting bridges* into one structure and label this hybrid structure a W-shaped configuration with complete disregard for the structural requirements set forth in Appellant's claim 1 and in Ley. The majority admits as much, asserting that

> [t]he loop encompasses an area on each side of the "circumferentially extending support members," also designated 19. (Col. 2, ll. 44-45.) Thus, the loop in Ley's figures, relied upon to satisfy the claim language, has a support member extending from its center and also appears to have a small indentation where the support member is secured. (*See* Figs. 3 & 4.)

(*Supra* 7.) It should go without saying that this is quite different from the structure set forth in Appellant's claim 1.

According to Appellant's claim 1, a *single strand* of material makes up each *segment* which comprises a repeating series of interconnected repeating W-shaped strand configurations. Claim 1 requires that the segments are interconnected end to end so as to generally encompass a radial space within the segment. Interconnection bridges are used to interconnect each *segment* in series. In contrast, following the majority's rationale, support member 19 of Ley represents the "loops" in Appellant's claimed configuration (*supra* 7). However, as clearly illustrated in Ley's figure 3 these so called "loops" would be the same as the loops of an adjacent segment in every other repeating pattern along the stent when viewed from left to right. This is not what Appellant's have claimed.

Further, this is more than a trivial difference. Ley teaches that the stent is expanded relative to the cells. Specifically Ley discloses that

> [w]hen the stent is expanded, as shown in FIG. 4, on a balloon 20 the cells 12 take on a new configuration as shown, the members making up the stent being indicated by the same numbers as used in FIG. 1 and FIG. 3. Again, one cell is shown darkened for clarity.

(Ley, col. 2, ll. 53-57.) Thus, it is the cells that provide the stent with its expandable properties, not the interconnecting bridges or support members that simply function to lock the cells in place in substantially parallel rows (Ley, col. 2, ll. 39-42). As the majority recognizes, the same is true of Appellant's claimed stent (*supra* 2-3, quoting page 5 of Appellant's Specification). Therefore, it cannot be said that the configuration of the stent set forth in Appellant's claim 1 is obvious in view of Ley's stent.

Neither the Examiner nor the majority provide evidence establishing that Ley teaches a *segment* (cell) that comprises a *continuous strand* of material configured to include a repeating series of interconnected repeating W-shaped strand configurations having a repeating dip, rise, dip, rise, loop, dip, rise, dip, rise, loop patterned configuration as is required by Appellant's claim 1. Instead, all the Examiner and the majority have demonstrated is that Ley teaches segments (cells) and associated support members (interconnecting bridges) that together form a stent configuration that approximates Appellant's claimed structure. This rationale is clearly illustrated by the "first pattern" and "second pattern" annotation of Fig. 1 (*supra* 8). This is, however, not what Appellant's have claimed.

As set forth in *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007).

> a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.

Both the Examiner and the majority rely on Ley to teach a stent within the scope of Appellant's claimed invention. However, as discussed above, this reliance on Ley is misplaced. I recognize the Examiner's and the majority's reliance on Hojeibane and Dinh to teach that it would have been prima facie obvious to modify Ley's stent to include a plurality of narrowing in the interconnection bridge (Answer 6-8; *supra* 13-14). However, neither

the Examiner nor the majority explain how Hojeibane and Dinh make up for the deficiencies in Ley as discussed above. Accordingly, it is my opinion that the Examiner failed to meet his initial burden[9] of establishing a prima facie case of obviousness. Similarly, I find that the majority's analysis is not supported by the factual evidence on this record. Accordingly, I would reverse the rejection of claim 1 under 35 U.S.C. § 103(a) over the combination of Ley and Hojeibane or Ley and Dinh.

Claim 4:

While the majority focuses on claim 1, I note that independent claim 4 does not require the W-shaped strand configuration set forth in claim 1. To the contrary, independent claim 4 requires that each segment comprises a *continuous strand* of material that:

1. Is interconnected end to end so as to generally encompass a radial space within the segment and

2. Comprises a repeating series of interconnected repeating *S-shaped* strand configurations.

The remainder of claim 4 is the same as claim 1.

Neither the Examiner nor the majority favor this record by directing attention to a teaching in Ley of a stent having an *S-shaped* strand configuration. "In rejecting claims under 35 U.S.C. § 103, the [E]xaminer bears the initial burden of presenting a *prima facie* case of obviousness. Only if that burden is met, does the burden of coming forward with evidence or argument shift to the applicant." *Rijckaert*, at 1532, 28 USPQ2d at 1956,

[9] The initial burden of presenting a prima facie case of obviousness rests on the Examiner. *Oetiker*, at 1445, 24 USPQ2d at 1444.

citation omitted. Having failed to address the specific limitations of this claim, it cannot be said that the Examiner met his burden of establishing that claim 4 is prima facie case obviousness over the combination of Ley and Hojeibane or Ley and Dinh. If the Examiner fails to establish a prima facie case, the rejection is improper and will be overturned. *Fine*, at 1074, 5 USPQ2d at 1598. Accordingly, I would reverse the rejection of claim 4 under 35 U.S.C. § 103(a) over the combination of Ley and Hojeibane or Ley and Dinh.

Claim 7:

Claim 7 depends from and further limits the continuous strand of material set forth in claim 4 to be configured to also comprise a repeating series of interconnected repeating W-shaped strand configurations having a repeating dip, rise, dip, rise, loop, dip, rise, dip, rise, loop patterned configuration. While claim 7 permits the continuous strand to include both S- and W-shaped strand configurations, the use of the term "including" or "comprising" does not permit alterations (e.g., additional twists and turns, et cetera) within the defined S- and W-shaped configurations. Nevertheless, having failed to identify any disclosure in the evidence relied upon to teach a stent comprising an S-shaped configuration, the Examiner failed to establish a factual basis to support the rejection. Accordingly, I would reverse the rejection of claim 7 under 35 U.S.C. § 103(a) over the combination of Ley and Hojeibane or Ley and Dinh.

Claims 3 & 6:

Claim 3 depends from claim 1 and claim 6 depends from claim 4. Claims 3 and 6 both depend from and further limit the continuous strand of material of their respective independent claim to have an outer surface including cavities at certain points in the strand that are at least partially filled with a composition containing a medicinal agent selected to provide medical desirable effects upon being positioned within a patient.

The Examiner finds that the combination of Ley and Hojeibane, or Ley and Dinh "fails to disclose cavities containing medicament as claimed" (Answer 8). To make up for this deficiency the Examiner relies on Ndondo-Lay to teach that is was well known in the art "to put medicament-containing cavities in similar stents. . ." (*id*.). Ndondo-Lay, however, fails to make up for the deficiencies in the combination of Ley and Hojeibane, or Ley and Dinh. Accordingly, I would reverse the rejection of claims 3 and 6 under 35 U.S.C. § 103(a) over the combination of Ley, Hojeibane, and Ndondo-Lay; or Ley, Dinh, and Ndondo-Lay.

Claims 8, 10, and 13:

Claims 8, 10, and 13 stand on a different footing.

Claim 8:

Claim 8 is drawn to a stent that comprises (1) segments and (2) interconnection bridges. Claim 8 provides structural requirements for the relationship between the segments and the interconnection bridges.

Specifically, each of the segments has a plurality of individual expansion cells that:

(1) comprise a continuous strand of a material; and

(2) are radially interconnected to form a ring of individual expansion cells.

More specifically, the individual expansion cells are interconnected to each other in series by one of a plurality of interconnection bridges.

Each segment is interconnected to an adjacent segment by one of the plurality of interconnection bridges.

Claim 8 also requires that the continuous strand of material is deformable such that the ring can be deformed from a first configuration, wherein each ring has a first circumference and each expansion cell has a first radial length, to a second configuration, wherein each ring has a second circumference greater than the first circumference and each expansion cell has a second radial length greater than the first radial length.

Claim 8 further requires at least one of the plurality of interconnection bridges to comprise a plurality of narrowings at certain points in the interconnection bridge that permit the interconnection bridge to have greater flexibility when bending proximate the plurality of narrowings.

In addition to each individual expansion cell comprising a continuous strand of material, claim 8 further requires that the continuous strand of material in each segment is interconnected with itself so as to generally encompass a radial space within the respective segment.

As I understand claim 8, the stent comprises segments and interconnection bridges. Each segment comprises a plurality of individual expansion cells interconnected to each other by interconnection bridges.

Therefore, each individual expansion cell within each segment comprises a continuous strand of material that is interconnected to itself to generally encompasses a radial space within the segment. Interconnection bridges are used to connect each individual expansion cell to another within each segment and to adjacent segments. The continuous strand of material is deformable to allow individual expansion cells to exhibit two configurations, wherein the circumference of the second "expanded" configuration is greater than that of the first configuration. In addition, the claim requires that at least one of the interconnection bridges comprises a plurality of narrowings at certain points in the interconnection bridge to permit the interconnection bridge to have greater flexibility when bending proximate the plurality of narrowings.

Ley teaches a stent that "is made up of a series of curvilinear expansion cell elements generally indicated at 12 (see darkened example in FIG. 3 for clarity) having relatively wide end portions 14 joined by relatively narrow center portions 16" (Ley, col. 2, ll. 35-39, emphasis removed). Ley teaches that the cells are arranged longitudinally and in substantially parallel rows (Ley, col. 2, ll. 39-42 and FIG. 1). These expansion cells (e.g., element 12 in Ley's FIG. 3) are equivalent to Appellant's *individual expansion cells*.

Ley also teaches support members which can be viewed as equivalent to Appellant's *interconnection bridges*. Specifically, Ley teaches

> [a] plurality of longitudinally extending elongate support members 18 are included, one each being disposed between adjacent rows of cells 12. Also, a plurality of circumferentially extending support members 19, preferably substantially normal to support members 18 are also positioned between the rows of cells 12 to intersect portions of the support members 18 and to

> interconnect them to the narrow center portions 16 of the cells 12.

(Ley, col. 2, ll. 42-49 and FIGS. 3-4, emphasis removed.)

Ley's expansion cells:

(1) comprise a continuous strand of a material; and

(2) are radially interconnected to form a ring of individual expansion cells.

More specifically, Ley's individual expansion cells are interconnected to each other in series by one of a plurality of interconnection bridges. Accordingly, Ley teaches a configuration that is consistent with Appellant's segments. Each of Ley's segments is interconnected to an adjacent segment by one of the plurality of interconnection bridges.

Like the stent of claim 8, the continuous strand of material used in Ley's stent is deformable such that the ring (element 12 of Ley's FIG. 3) can be deformed from a first configuration, wherein each ring has a first circumference and each expansion cell has a first radial length, to a second configuration, wherein each ring has a second circumference greater than the first circumference and each expansion cell has a second radial length greater than the first radial length (*Cf.* Ley FIG. 3 and FIG. 4).

Ley does not teach a plurality of narrowings in at least one interconnection bridge to provide greater flexibility when bending proximate the narrowings. However, Hojeibane and Dinh make up for this deficiency in Ley.

Hojeibane teaches a flexible stent wherein connectors are made narrower at their midpoints to enhance the flexure at this point (Hojeibane, col. 6, ll. 30-44). Similarly, Dinh teaches a stent that comprises a unit cell

that includes, *inter alia*, a connecting bar (Dinh, col. 4, ll. 5-15) or connecting segment (Dinh, col. 6, ll. 62-64). According to Dinh, "[t]he connecting segment most broadly is any means to join one unit cell to another, to connect one plurality of unit cells to another for formation of a stent from the unit cells of the invention (Dinh, col. 6, l. 64 – col. 7, l. 1). As I understand it, Dinh's connecting bars and segments are equivalent to Appellant's interconnection bridges. According to Dinh, the flexibility of the unit cell can be varied by changing the length and width of the unit cell components, *e.g.* the connecting bar (Dinh, col. 5, ll. 63-66). No doubt, neither Hojeibane nor Dinh expressly teach a plurality of narrowings, however, both references teach a narrowing in the interconnection bridges results in a more flexible stent. Common sense would dictate that the flexibility results from bending proximate the narrowings. [10] In addition, Dinh teaches that the dimensions of the entire connecting bar or segment can be varied (Dinh, col. 6, ll. 29-36).

In my opinion, a person of ordinary skill in the art reading the combined teachings of Hojeibane and Dinh would recognize that to obtain a stent with optimal flexibility the number of narrowings in any given interconnection bridge must be optimized. As set forth in *In re Huang*, 100 F.3d 135, 139, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996),

> [t]his court and its predecessors have long held . . . that even though applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the

[10] Evidence is to be viewed through the lens of a person of ordinary skill in the art with consideration of common knowledge and common sense. *Dystar Textilfarben GMBH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1367, 80 USPQ2d 1641, 1650 (Fed. Cir. 2006).

> modification was within the capabilities of one skilled in the art, unless the claimed ranges "produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art." *In re Aller,* 42 C.C.P.A. 824, 220 F.2d 454, 456, 105 USPQ 233, 235 (1955); *see In re Woodruff,* 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990).

Therefore, it is my opinion that a minor modification of the prior art, such as optimizing the number of narrowings in an interconnection bridge to include more than one does not distinguish the claimed product from the prior art. *See KSR,* at 1741, 82 USPQ2d at 1396 (It is proper to "take account of the inferences and creative steps that a person of ordinary skill in the art would employ."). "When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense." *KSR*, at 1732, 82 USPQ2d at 1397.

I am not persuaded by Appellants' assertion that neither Hojeibane nor Dinh teach a plurality of narrowings (Br. 7 and 8). Instead, based on the foregoing discussion, it is my opinion that it would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made to modify Ley's stent to include a plurality of narrowings in at least one interconnection bridge for the expected benefit of increasing the flexibility of the stent as taught by both Hojeibane and Dinh.

On reflection, it is my opinion that the stent set forth in claim 8 is prima facie obvious under 35 U.S.C. § 103(a) over the combination of Ley, Hojeibane, and Dinh.

Claim 13:

Claim 13 depends from claim 8 and further requires that each pair of adjacent segments are interconnected with one another by at least two interconnection bridges. As discussed above, the combination of Ley, Hojeibane, and Dinh teach the stent of claim 8. Dinh further teaches that "[t]he number and position of the connecting segments joining pluralities can be varied to alter the flexibility of the stent, as can the structure of the connecting segment itself . . ." (Dinh, col. 7, ll. 8-11). Stated differently, in addition to teaching narrowings in the interconnection bridges, Dinh teaches that the number of interconnection bridges interconnecting segments can be varied to alter the flexibility of the stent.

In my opinion, it would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made to modify Ley's stent to include a plurality of narrowings in at least one interconnection bridge and more than one interconnection bridge for the expected benefit of optimizing the flexibility of the stent as taught by both Hojeibane and Dinh.

On reflection, it is my opinion that the stent set forth in claim 13 is prima facie obvious under 35 U.S.C. § 103(a) over the combination of Ley, Hojeibane, and Dinh.

Claim 10:

Claim 10 depends from and further limits the continuous strand of material of claim 8 to have an outer surface including cavities at certain points in the strand that are at least partially filled with a composition containing a medicinal agent selected to provide medical desirable effects upon being positioned within a patient. As discussed above, the

combination of Ley, Hojeibane, and Dinh teach the stent of claim 8. The combination of Ley, Hojeibane, and Dinh does not teach a stent wherein the outer surface of the continuous strand of material comprises cavities that area at least partially filled with a composition containing a medicinal agent. However, Ndondo-Lay makes up for this deficiency in the combination of Ley, Hojeibane, and Dinh.

Ndondo-Lay teaches a stent comprising a plurality of cavities, e.g., small holes or craters that are pre-filled with a biologically active agent prior to placement on the stent in the patient (Ndondo-Lay, col. 7, ll. 30-38). According to Ndondo-Lay, once the stent is placed in a patient, the biologically active agent will be released from the stent at the site of placement, thereby having its greatest effects directly at the desired location, without prior dilution throughout the body of the patient (Ndondo-Lay, col. 7, ll. 38-43).

Based on the foregoing, it is my opinion that it would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made to modify the stent taught by the combination of Ley, Hojeibane, and Dinh to include small holes or craters that are at least partially filled with a biologically active agent, e.g., a medicament, that will benefit the patient upon release from the stent.

Accordingly, it is my opinion that the stent set forth in claim 10 is prima facie obvious under 35 U.S.C. § 103(a) over the combination of Ley, Hojeibane, Dinh, and Ndondo-Lay.

Obviousness-type double patenting:

The claims are discussed above. Since Appellant did not address it, the majority is correct in summarily affirming the provisional rejection of claims 1, 3, 4, 6-8, 10, and 13 under the judicially created doctrine of obviousness-type double patenting.

CONCLUSION

I concur with the majority's decision to affirm the rejection of claims 1, 3, 4, 6-8, 10, and 13 under the judicially-created doctrine of obviousness-type double patenting.

I dissent from the majority's decision to affirm the rejection of claims 1, 3, 4, 6 and 7 under 35 U.S.C. § 103(a).

I concur with the majority's conclusion that claims 8 and 13 are prima facie obvious in view of Ley, Hojeibane and Dinh; and that claim 10 is prima facie obvious in view of Ley, Hojeibane, Dinh and Ndondo-Lay. However, my reasoning differs from that of the Examiner and the majority.

Ssc

Cyr & Associates, P.A.
Pondview Plaza
5850 Opus Parkway, Suite 114
Minnetonka, MN 55343