

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte G. DAVID JANG

Appeal 2007-3493
Application 10/419,280
Technology Center 3700

Decided: October 16, 2007

Before TONI R. SCHEINER, ERIC GRIMES, and LORA M. GREEN,
Administrative Patent Judges.

GREEN, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 65-71, 75, 77, 78, 83-85, 88, and 89. We have jurisdiction under 35 U.S.C. § 6(b). Claims 65 and 89 are representative of the claims on appeal, and read as follows:

65. An expandable stent, comprising:

a tubular structure including, a plurality of expansion struts, the expansion struts arranged in serpentine bands which extend around the circumference of the stent,

connector struts, the connector struts connecting adjacent serpentine bands, and

a plurality of cavities in the expansion struts and connector struts, the cavities extending all the way through the connector struts and the expansion struts.

89. An expandable stent, comprising:

a tubular structure including an outer surface positionable adjacent to a vessel wall, an inner surface facing a lumen of a body passageway, a plurality of expansion struts forming expansion columns which extend about the circumference of the stent, and connector struts;

a plurality of cavities formed in the outer surface of the stent and extending all the way through the inner surface of the stent, the cavities being located in both the expansion struts and the connector struts, and a coating substance extending into at least a portion of the cavities.

The Examiner relies on the following references:

Jang	US 5,954,743	Sep. 21, 1999
Thompson	US 6,132,461	Oct. 17, 2000
Ndondo-Lay	US 6,273,908 B1	Aug. 14, 2001
Baker	US 6,558,422 B1	May 6, 2003

We affirm-in-part.

DISCUSSION

Claims 65, 67, 69, 75, 77, and 78 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Thompson. As Appellant does not argue the claims separately, we focus our analysis on representative claim 65. 37 C.F.R. § 41.37(c)(1)(vii) (2006).

According to the Examiner,

Thompson discloses an expandable stent comprising a tubular structure including a plurality of struts arranged into serpentine

bands which extend around the circumference of the stent and connector struts connecting adjacent bands (see attachment 1, 2 for two different interpretations of the Thompson reference by the examiner; and arguments below), and a plurality of cavities (30) in the struts and connectors, extending all the way through the struts (fig.4, 5).

(Answer¹ 3-4.)

To anticipate, every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim.

Karsten Mfg. Corp. v. Cleveland Golf Co., 242 F.3d 1376, 1383 (Fed. Cir. 2001).

The Examiner has presented marked up drawings of Figure 2 of Thompson. Figure 2 is reproduced below.

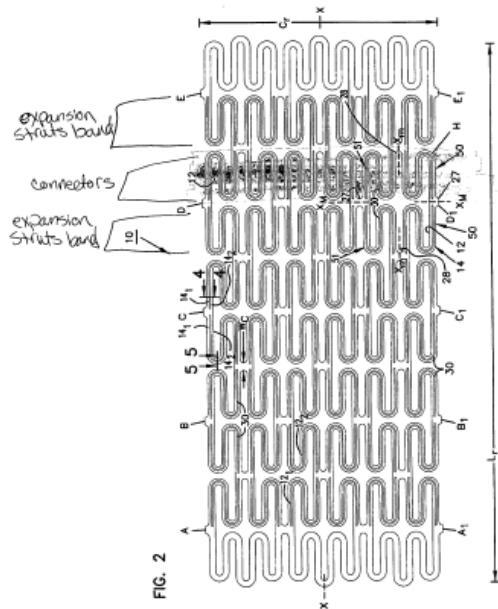
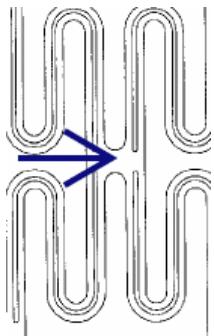


Figure 2 is a plan view of a stent disclosed by Thompson, as if the stent were longitudinally split and laid out flat. The Examiner has added notations to support her findings that the stent has bands of extension struts, as well as connectors, as required by claim 65.

According to Appellant, the stent of Thompson lacks connector struts, but is instead in the form of a plurality of expansion columns which overlap in several locations (Br.² 5-6). Thus, Appellant asserts, there is no separate structure which extends between adjacent expansion columns (*id.* at 6).

Our interpretation of Figure 2 differs slightly from that of the Examiner. Below is a blown up portion of Figure 2 of Thompson.



As noted above, Figure 2 is a plan view of a stent disclosed by Thompson. The portion of the stent pointed to by the added arrow reads on “connector struts, the connector struts connecting adjacent serpentine bands,” as a strut³ may be defined as part of a structure whose principal function is to hold things apart. In the stent of Thompson, the connector strut, as pointed out in the blown up portion of Figure 2 of Thompson, holds apart the adjacent expansion struts arranged in serpentine bands around the

² All references to the Brief (Br.) are to the Amended Brief on Appeal dated March 6, 2007.

³ strut. Dictionary.com. *On-line Medical Dictionary*. Academic Medical Publishing & CancerWEB. <http://dictionary.reference.com/browse/strut> (accessed: October 04, 2007).

circumference of the stent. Note that the Specification does not provide a different definition of a strut, and our mandate is to give claims their broadest reasonable construction. *In re American Academy of Science Tech Center*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). “An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process.” *In re Zletz*, 893 F.2d 319, 322 (Fed. Cir. 1989).

Appellant argues further that the expansion struts do not have a plurality of cavities; rather, each expansion strut at most has only a single opening therein.

Claim 65 recites a stent comprising “a plurality of cavities in the expansion struts and connector struts, the cavities extending all the way through the connector struts and the expansion struts.” Thus, all that is required is that there be a plurality of cavities on the stent, and not on each expansion strut. As the stent of Thompson has a plurality of cavities, it meets that limitation of claim 65.

Thus, we find that Thompson teaches all of the limitations of claim 65, and the rejection is affirmed.

Claims 65-67, 69, 75, 77, 78, 83-85, 88, and 89 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Ndondo-Lay.

As to claim 65, the Examiner relies on Ndondo-Lay for teaching “an expandable stent (1) comprising a tubular structure (fig.5, 6) including a plurality of struts (3) arranged into serpentine bands (each loop 3 may be considered a band, or each pair of loops 3 may be considered a band; see attachment 3, 4) which extend around the circumference of the stent and

connector struts (2 or 6 see fig.3, 4) connecting adjacent bands, and a plurality of cavities (5) in the struts and connectors, extending all the way through the struts (cavities 5 are disclosed to be either craters or holes, craters extending only partially through and holes extending all the way through; col.7,lines 33-37; col.8, lines 40-42).” (Answer 4.)

As to claim 89, Ndondo-Lay is cited for teaching “a stent comprising a tubular structure having an[] outer and inner surface, expansion struts (3) and connector struts (2), and a plurality of cavities (5) formed in the outer surface and extending through the inner surface (Ndondo-Lay discloses two embodiments, craters-extending partially, and holes extending fully, the hole embodiment reads on the claim), the cavities located in the expansion and connector struts, and a coating (col.7 line 55-col.8 line 22, lines 50-52) extending into the cavities (5; see attachment 3).” (*Id.* at 4-5.)

The Examiner has presented a marked up copy of Figure 6 of Ndondo-Lay, reproduced below.

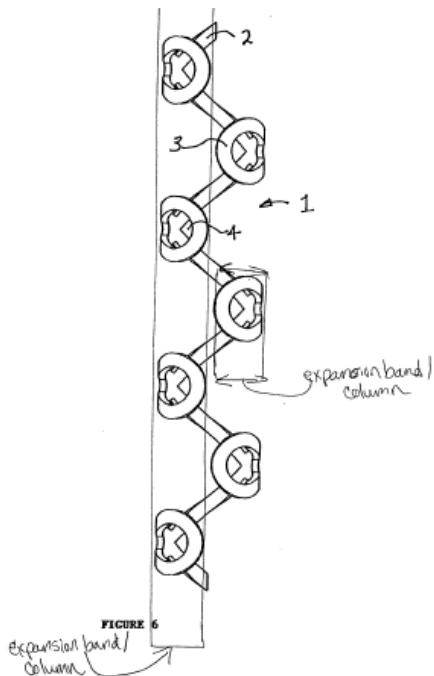


Figure 6 of Ndondo-Lay is an elevation view of a stent taught by Ndondo-Lay and shown in Figure 5 as it would appear after placement and expansion (Ndondo-Lay, col. 5, ll. 1-2).

Appellant argues that Ndondo-Lay lacks expansion struts arranged in serpentine bands that extend around the circumference of the stent. We agree, and the rejection is reversed.

Figure 5 of Ndondo-Lay is reproduced below.

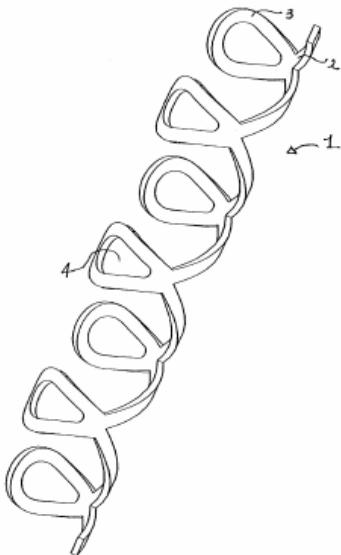


Figure 5 is an elevation view of the stent shown in Figure 6, prior to placement and expansion (Ndondo-Lay, col. 4, ll. 65-67.) As can be seen from Figures 5 and 6, it is not what the Examiner labels the Expansion band column (the appendages 3) that provides for the expansion of the stent. The expansion of the stent is instead provided for by the backbone 2. Thus, Ndondo-Lay does not teach a plurality of expansion struts, the expansion struts arranged in serpentine bands. Therefore, Ndondo-Lay does not teach each and every limitation of claim 65, and the rejection must be reversed.

As to claim 89, claim 89 requires “a plurality of expansion struts forming expansion columns which extend about the circumference of the

stent.” As explained above, what provides for the expansion in the strut of Ndondo-Lay is the backbone 2, and as the stent of Ndondo-Lay does not have a “plurality” of backbones, but instead only has a single backbone, the rejection is also reversed as to claim 89.

Claims 65-71, 75, 77, 78, and 89⁴ stand rejected under 35 U.S.C. § 103(a) as being obvious over the combination of Jang and Baker. As Appellant does not argue claims 66-71, 75, 77, and 78 separately, they stand or fall with representative claim 65.

Jang is cited for teaching “an expandable stent substantially as claimed.” (Answer 5.) The Examiner notes that Jang fails to teach forming cavities in the stent (*id.*).

Baker is cited for teaching the formation of cavities of different shapes, sizes, and angles on medical devices, including stents (*id.*). The cavities extend through the entire surface of the medical device, and are used to deliver a coating of drug when the device is implanted (*id.*). The Examiner concludes “[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Jang's stent structure, with Baker's teaching of placing various types of drug coating

⁴ We note that the rejection does not include claims 83-85 and 88. Upon return of the administrative file, the Examiner may wish to consider whether these claims would be obvious over the teachings of Jang and Baker, as combined with Ndondo-Lay. We also note Appellant's statement in the Specification that the “main invention . . . is not an invention of the stent itself,” rather it is “the particular measures designed to increase drug coating or attachment capacity of a stent by adding exposed surface areas or reservoir capacity of the stent, without increasing the width or thickness of the stent struts or without increasing the metal fraction of the stent.” (Specification 2.)

containing cavities on stents, in order to have a stent with Jang's specific strut structure capable of releasing drugs during implantation.” (*Id.* at 5-6.)

“In rejecting claims under 35 U.S.C. § 103, the Examiner 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.” *In re Rijckaert*, 9 F.3d 1531, 1532 (Fed. Cir. 1993) (citations omitted). In order to determine whether a *prima facie* case of obviousness has been established, we consider the factors set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1996): (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the relevant art; and (4) objective evidence of nonobviousness, if present.

Appellant argues that Baker does not provide any teachings as to how the indentations should be distributed around the stent, thus, the combination does not teach providing a stent with cavities in both the connector struts and the expansion struts (Br. 9).

Baker teaches placement of a plurality of indentations on a medical device for delivery of a biologically active substance (*see, e.g.*, Baker, col. 1, “Summary of the Invention.”) Thus, it would have been obvious to the ordinary artisan to place indentations on both the expansion struts and connector struts to maximize the amount of the desired biological substance that can be delivered through placement of the device. As noted by the United States Supreme Court,

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

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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.

KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1740 (2007).

As to claim 89, Appellant merely reiterates his arguments as to claim 65 (Br. 10), and the rejection is affirmed for the reasons set forth above.

CONCLUSION

In summary, we affirm the rejection of claims 65, 67, 69, 75, 77, and under 35 U.S.C. § 102(e) as being anticipated by Thompson; and the rejection of claims 65-71, 75, 77, 78, and 89 under 35 U.S.C. § 103(a) as being obvious over the combination of Jang and Baker. We reverse, however, the rejection of claims 65-67, 69, 75, 77, 78, 83-85, 88, and 89 under 35 U.S.C. § 102(e) as being anticipated by Ndondo-Lay.

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-IN-PART

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