

1                   UNITED STATES PATENT AND TRADEMARK OFFICE  
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4                   BEFORE THE BOARD OF PATENT APPEALS  
5                   AND INTERFERENCES

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8                   *Ex parte John A. Mayer*

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11                  Appeal 2008-3783  
12                  Application 10/896,242  
13                  Technology Center 3600

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16                  Decided: December 17, 2008

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19                  Before HUBERT C. LORIN, ANTON W. FETTING, and DAVID B. WALKER,  
20                  *Administrative Patent Judges.*

21                  FETTING, *Administrative Patent Judge.*

22

23                  DECISION ON APPEAL

24

25                  STATEMENT OF THE CASE

26                  John A. Mayer (Appellant) seeks review under 35 U.S.C. § 134 of a final

27                  rejection of claims 1-3, the only claims pending in the application on appeal.

28                  We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b) (2002).

27

28                  We AFFIRM.

1       The Appellant invented a nuclear fuel assembly end cap arrangement that  
2       furthers the enablement of dry storage of the nuclear fuel assembly (Specification:  
3       page 2, lines 14-27).

4       An understanding of the invention can be derived from a reading of exemplary  
5       claim 1, which is reproduced below [bracketed matter and some paragraphing  
6       added].

- 7           1. A method to control fuel material debris from leaving a fuel  
8       assembly comprising:
- 9           [1] providing a damaged boiling water reactor nuclear fuel  
10       assembly;
- 11           [2] providing a bottom end cap configured to fit in a bottom of the  
12       damaged boiling water reactor nuclear fuel assembly;
- 13           [3] inserting the bottom end cap into the damaged boiling water  
14       reactor nuclear fuel assembly such that the bottom end cap  
15       prevents debris from inside the damaged nuclear fuel assembly  
16       from leaving the bottom of the damaged fuel assembly;
- 17           [4] providing a top end cap configured to fit in a top of the  
18       damaged boiling water reactor nuclear fuel assembly and  
19       underneath a bail of the boiling water reactor fuel assembly  
20       through the use of one of slot and tab devices and spring clips;  
21       and
- 22           [5] inserting the top end cap into the top of the damaged boiling  
23       water reactor nuclear fuel assembly such that the top end cap  
24       prevents debris from inside the damaged nuclear fuel assembly  
25       from leaving the top of the fuel assembly.

26  
27  
28       This appeal arises from the Examiner's Final Rejection, mailed September 9,  
29       2005. The Appellant filed an Appeal Brief in support of the appeal on January 3,  
30       2007. An Examiner's Answer to the Appeal Brief was mailed on May 17, 2007.

1 PRIOR ART

2 The Examiner relies upon the following prior art:

Comissariat A Gt. Brit. 924,213 April 24, 1963  
L'Energie  
Atomique

Dix et al.	US 5,390,221	February 14, 1995
Lehnert et al.	US 5,550,882	August 27, 1996
Kilian	US 5,524,031	June 4, 1996
King	US 5,748,694	May 5, 1998

## 3 REJECTIONS<sup>1</sup>

4 Claims 1-3 stand rejected under 35 U.S.C. § 103(a) as unpatentable over  
5 Commissariat A L'Energie Atomique (Gt. Brit. 924,213) ('213) and King (U.S.  
6 5,748,694) or Kilian (U.S. 5,523,031).

7 Claims 1-3 stand rejected under 35 U.S.C. § 103(a) as unpatentable over  
8 Lehnert et al. (U.S. 5,550,882), Dix et al. (U.S. 5,390,221) and King (U.S.  
9 5,748,694) or Kilian (U.S. 5,523,031).

10 ISSUES

11 The issues pertinent to this appeal are

- 12 • Whether the Appellant has sustained its burden of showing that the  
13 Examiner erred in rejecting claims 1-3 under 35 U.S.C. § 103(a) as  
14 unpatentable over Commissariat A L’Energie Atomique (Gt. Brit. 924,213)  
15 (‘213) and King (U.S. 5,748,694) or Kilian (U.S. 5,523, 031).

<sup>1</sup> Rejections under 35 U.S.C. § 112 were withdrawn by the Examiner (Answer 3).

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- Whether the Appellant has sustained its burden of showing that the Examiner erred in rejecting claims 1-3 under 35 U.S.C. § 103(a) as unpatentable over Lehnert et al. (U.S. 5,550,882) and Dix et al. (U.S. 5,390,221) and King (U.S. 5,748,694) or Kilian (U.S. 5,523,031).

The pertinent issue turns on whether the prior art applied teaches limitation [4] claim 1.

## FACTS PERTINENT TO THE ISSUES

The following enumerated Findings of Fact (FF) are believed to be supported by a preponderance of the evidence.

## *Facts Related to Claim Construction*

01. The disclosure contains no lexicographic definition of “slot and tab.”
  02. The ordinary and customary meaning of a “slot” is an opening, groove, or slit.<sup>2</sup>
  03. The ordinary and customer meaning of “tab” is a projection, flap, or short strip.<sup>3</sup>

### *Facts Related to Appellant's Disclosure*

04. The top end cap is secured into position by retainers, which may be slot and tab devices or springs clips which allow non-permanent attachment of the retainer to the fuel assembly (Specification page 5, first paragraph).

‘213

<sup>2</sup> American Heritage Dictionary of the English Language (4<sup>th</sup> ed. 2000).

3 Id

1        05. ‘213 is related to fuel element holders for boiling-water atomic  
2              reactors (page 1, lines 10-12 and Figure 1, elements 10-13).

3        06. ‘213 describes a bottom end cap (Figure 1, elements 3-6) that is  
4              connected to fuel rods (Figure 1, element 2).

5        07. The fuel rods are connected to a sleeve (Figure 1, element 1) and a  
6              tube (Figure 1, element 7).

7        08. ‘213 discloses a top end cap (Figure 1, elements 9-17) including a  
8              container for the storage of separated material (Figure 1, elements 17),  
9              which are connected to a sleeve (Figure 1, element 1) and tube (Figure 1,  
10              element 7).

11        09. ‘213 describes a distributor blade (Figure 1, element 10) and a ring  
12              Figure 1, element (9) shaped in such a manner as to separate particles  
13              (page 2, lines 75-97).

14        10. The assembly is connected through the use of a socket (Figure 1,  
15              element 11) into which a central rod (Figure 1, element 12) is screwed.

16        *King*

17        11. King describes a fuel bundle filter for a nuclear reactor fuel bundle  
18              assembly (column 1, lines 5-7).

19        12. King describes a spring locking device to fasten the filter plate to the  
20              lower tie plate (column 3, lines 22-25).

21        *Kilian*

22        13. Kilian describes debris filters for boiling water reactor nuclear fuel  
23              assemblies (column 1, lines 9-12).

1       14. Kilian teaches the use of springs to secure the debris filter to the  
2                   nuclear fuel assembly (column 4, lines 23-26).

3       *Lehnert*

4       15. Lehnert describes containers for the storage and transportation of  
5                   spent nuclear fuel (column 1, lines 13-16).

6       16. Lehnert teaches a bottom lid (Figure 2a, element 48) connected to a  
7                   sleeve (Figure 2a, element 46) of the failed fuel container (Figure 2a,  
8                   element 44 and column 5, lines 64-67).

9       17. Lehnert describes the fuel container (Figure 2a, element 44) having a  
10                  top lid (Figure 2a, element 52) connected opposite of the bottom cap  
11                  (Figure 2a, element 48 and column 6, lines 9-19).

12       18. Lehnert uses screened passages (Figure 2b and Figure 2c, element  
13                  104) in the bottom lid (Figure 2c, element 48) and top lid (Figure 2b,  
14                  element 52) that are fine enough to prevent the passage of undesirable  
15                  material (column 10, lines 39-41 and 49-53).

16       19. The apparatus uses a slot and pin arrangement as fastening elements  
17                  (column 6, lines 35-37).

18       *Dix*

19       20. Dix relates to debris catching designs for boiling water reactors  
20                  (column 1, lines 8-10).

21       21. Dix describes a debris catcher or trap incorporating straining  
22                  structures and layers for a two phase separation based on weight (column  
23                  4, lines 33-38).

### *Facts Related To The Level Of Skill In The Art*

22. Neither the Examiner nor the Appellant has addressed the level of ordinary skill in the pertinent arts of nuclear fuel assemblies at boiling water reactors. We will therefore consider the cited prior art as representative of the level of ordinary skill in the art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (“[T]he absence of specific findings on the level of skill in the art does not give rise to reversible error ‘where the prior art itself reflects an appropriate level and a need for testimony is not shown’”) (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985).

## PRINCIPLES OF LAW

## *Claim Construction*

During examination of a patent application, pending claims are given their broadest reasonable construction consistent with the specification. *In re Prater*, 415 F.2d 1393, 1404-05 (CCPA 1969); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

Limitations appearing in the specification but not recited in the claim are not read into the claim. *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369 (Fed. Cir. 2003) (claims must be interpreted “in view of the specification” without importing limitations from the specification into the claims unnecessarily).

21        Although a patent applicant is entitled to be his or her own lexicographer of  
22        patent claim terms, in *ex parte* prosecution it must be within limits. *In re Corr*,  
23        347 F.2d 578, 580 (CCPA 1965). The applicant must do so by placing such  
24        definitions in the Specification with sufficient clarity to provide a person of  
25        ordinary skill in the art with clear and precise notice of the meaning that is to be

1 construed. *See also In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (although  
2 an inventor is free to define the specific terms used to describe the invention, this  
3 must be done with reasonable clarity, deliberateness, and precision; where an  
4 inventor chooses to give terms uncommon meanings, the inventor must set out any  
5 uncommon definition in some manner within the patent disclosure so as to give  
6 one of ordinary skill in the art notice of the change).

7 *Obviousness*

8 A claimed invention is unpatentable if the differences between it and the  
9 prior art are “such that the subject matter as a whole would have been obvious at  
10 the time the invention was made to a person having ordinary skill in the art.”  
11 35 U.S.C. § 103(a) (2000); *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1729-30  
12 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 13-14 (1966).

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

20 “When a work is available in one field of endeavor, design incentives and  
21 other market forces can prompt variations of it, either in the same field or a  
22 different one. If a person of ordinary skill can implement a predictable variation,  
23 § 103 likely bars its patentability.” *Id.* at 1740.

24 “For the same reason, if a technique has been used to improve one device,  
25 and a person of ordinary skill in the art would recognize that it would improve

1 similar devices in the same way, using the technique is obvious unless its actual  
2 application is beyond his or her skill.” *Id.*

3 “Under the correct analysis, any need or problem known in the field of  
4 endeavor at the time of invention and addressed by the patent can provide a reason  
5 for combining the elements in the manner claimed.” *Id.* at 1742.

6 ANALYSIS<sup>4,5</sup>

7 *Claims 1-3 rejected under 35 U.S.C. § 103(a) as unpatentable over*  
8 *Commissariat A L’Energie Atomique (Gt. Brit. 924,213) (‘213), and King (U.S.*  
9 *5,748,694) or Kilian (U.S.5,523,031)*

10 The Appellant argues these claims as a group.

11 Accordingly, we select claim 1 as representative of the group.

12 37 C.F.R. § 41.37(c)(1)(vii) (2007).

13 The Examiner found that ‘213 described all of the limitations of claim 1,  
14 except the ‘213 disclosure is not directed towards “a method to control fuel  
15 material debris” (Answer p. 4, first paragraph). The Examiner found that “a  
16 method to control fuel material debris” is an intended use and the structure  
17 disclosed by ‘213 is capable of performing a method to control fuel material debris  
18 (Answer page 4, first paragraph). With respect to the feature of “one of slot and  
19 tab devices and spring clips” from limitation [4] (Answer p. 4, last paragraph), the  
20 Examiner first equated the slot and tab device to a socket and screw structure

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<sup>4</sup> Appellant’s arguments with respect to the objections to the drawings are not an appealable matter and as such the arguments are not being considered.

<sup>5</sup> The Examiner withdrew the 35 U.S.C §112, first paragraph written description requirement, 35 U.S.C. §112, first paragraph enablement, and 35 U.S.C. §112,

1 (Answer page 4, last paragraph). Additionally, the Examiner found that Kilian and  
2 King each described the use of spring clips as fastening elements.

3 The Appellant contends that ‘213 fails to describe limitation [4] of claim 1 (Br.  
4 9, second paragraph). More specifically, Appellant argues that ‘213 fails to  
5 disclose slot and tab devices, because nut and bolt arrangements are not the same  
6 as slot and tab arrangements.

7 We disagree with the Appellant. First, only limitation [4] is being contested  
8 and all other limitations are described by ‘213 (FF 06, FF 08, and FF 09). The  
9 contested portion of claim 1 functionally requires fitting a top end cap to the  
10 assembly through the use of either 1) slot and tab devices *or* 2) spring clips. As  
11 such, the cited references need only teach one of the two recited fastening  
12 structures. First, Kilian and King describe the use of spring clips as fastening  
13 elements in a nuclear fuel assembly (FF 11, 12, 13, and 14). As such, the  
14 combination of Kilian or King with ‘213 describe claim 1. Second, the terms  
15 “slot” (FF 02) and “tab” (FF 03) configured such that they are not permanent  
16 fastening elements (FF 04) are sufficiently broad that the screw and socket  
17 structure taught by ‘213 (FF 10) describes a “slot” and “tab.” A slot is an opening  
18 (FF 02) and a tab is a projection (FF 03). ‘213’s screw is a projection from its  
19 central rod 12 that fits into the opening of its socket 11 (FF 10). More generally, a  
20 slot and tab structure is functionally a superset of a screw and socket structure in  
21 that a slot/socket is an opening that the insertion of a tab/screw fastens the two  
22 elements together. Thus, a screw and socket structure functionally describes an  
23 embodiment of a slot and tab structure.

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second paragraph indefiniteness, rejections (Answer: page 3 first paragraph). As such Appellant’s arguments with respect to these rejections are moot.

1       The Appellant has not sustained their burden of showing that the Examiner  
2       erred in rejecting claims 1-3 under 35 U.S.C. § 103(a) as unpatentable over ‘213,  
3       and King or Kilian for the reasons above.

4

5       *Claims 1-3 rejected under 35 U.S.C. § 103(a) as unpatentable over Lehnert et  
6       al. (U.S. 5,550,882) and Dix et al. (U.S. 5,390,221), and King (U.S. 5,748,694) or  
7       Kilian (U.S. 5,523,031)*

8       The Appellant argues these claims as a group.

9       Accordingly, we select claim 1 as representative of the group.

10      37 C.F.R. § 41.37(c)(1)(vii) (2007).

11      The Examiner found that Lehnert taught all of the limitations of claim 1, except  
12     the Lehnert structure was different from the present invention in that Lehnert  
13     controlled fuel material debris by totally enclosing the assemblies within a  
14     container with top and bottom end caps and not by inserting end caps into the  
15     assemblies (Answer 6-7). The Examiner found that Dix described a debris filter  
16     that is inserted in the assembly and implicitly concluded that it would have been  
17     obvious to combine these features from Dix to Lehnert in order to minimize  
18     redundant features and shipping weight (Answer 7). The Examiner also found that  
19     Lehnert failed to literally describe slot and tab devices and made the same analysis  
20     of equivalents *supra* and found that Lehnerts teaching of pins as a fastening  
21     element is the same as a slot and tab. The Examiner additionally found that Kilian  
22     or King described the use of spring clips as fastening elements (Answer 9).

23      The Appellant contends 1) Lehnert fails to teach limitation [4] of claim 1,  
24     specifically that a pin is not a slot and tab arrangement (Br. 10, fourth paragraph  
25     and Br. 13, second paragraph), 2) Dix, King, and Kilian fail to teach limitation [4]

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1 of claim 1, and 3) proper evidence of motivation for modifying or combining the  
2 references has not been provided (Br. 12, second paragraph).

3 We disagree with the Appellant. First, only limitation [4] is being contested  
4 and all other limitations are described by Lehnert and Dix (FF 15-21).

5 The Appellant first contends that Lehnert fails to teach a slot and tab  
6 arrangement. We are not persuaded by this argument. Lehnert uses a slot and pin  
7 structure to fasten two elements together (FF 19). As discussed above, the breadth  
8 of the terms slot and tab functionally include an open structure (such as a slot) (FF  
9 02) and an inserted structure (such as a tab or pin)(FF 03) to fasten two elements  
10 together. Thus, Lehnert and Dix describe claim 1.

11 The Appellant next argues that Dix fails to teach limitation [4] of claim 1.  
12 First, Appellant's contention that Dix fails to teach this limitation does not persuade  
13 us of error on the part of the Examiner because the Appellant responds to the  
14 rejection by attacking the references separately, even though the rejection is based  
15 on the combined teachings of the references. Nonobviousness cannot be  
16 established by attacking the references individually when the rejection is  
17 predicated upon a combination of prior art disclosures. *See In re Merck & Co.*  
18 *Inc.*, 800 F.2d 1091, 1097, 231 USPQ 375, 380 (Fed. Cir. 1986).

19 The Appellant additionally contends that both King and Kilian fail to teach  
20 limitation [4] of claim 1. As discussed above, the claim language only requires a  
21 slot and tab *or* spring clips. Kilian and King describe the use of spring clips and  
22 thus the combination of Kilian or King, and Lehnert and Dix describe claim 1.

23 The Appellant finally contends that the Examiner erred by not providing proper  
24 evidence of a motivation to modify or combine the references (Br. 11). We are not

1 persuaded by this argument. As discussed in the *KSR Int'l Co. v. Teleflex Inc.*, 127  
2 S.Ct. 1727, 1742 (2007),

3 [o]ften, it will be necessary for a court to look to interrelated teachings  
4 of multiple patents; the effects of demands known to the design  
5 community or present in the marketplace; and the background  
6 knowledge possessed by a person having ordinary skill in the art, all  
7 in order to determine whether there was an apparent reason to  
8 combine the known elements in the fashion claimed by the patent at  
9 issue. To facilitate review, this analysis should be made explicit. See  
10 *In re Kahn*, 441 F. 3d 977, 988 (CA Fed. 2006) ('[R]ejections on  
11 obviousness grounds cannot be sustained by mere conclusory  
12 statements; instead, there must be some articulated reasoning with  
13 some rational underpinning to support the legal conclusion of  
14 obviousness').

15 As our precedents make clear, however, the analysis need not seek out  
16 precise teachings directed to the specific subject matter of the  
17 challenged claim, for a court can take account of the inferences and  
18 creative steps that a person of ordinary skill in the art would employ.

19 We find that the motivation of minimizing redundant features and minimizing  
20 shipping weight would have been apparent to one of ordinary skill in the art. As  
21 such, we find that the Examiner provided some articulated reasoning with some  
22 rational underpinning to support the legal conclusion that the combination of  
23 Lehnert, Dix, and King/Kilian would have been obvious to one of skill in the art at  
24 the time the invention was made.

25 The Appellant has not sustained their burden of showing that the Examiner  
26 erred in rejecting claims 1-3 under 35 U.S.C. § 103(a) as unpatentable over  
27 Lehnert and Dix, and King or Kilian for the reasons above.

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1 CONCLUSIONS OF LAW

2 The Appellant has not sustained its burden of showing that the Examiner erred  
3 in rejecting claims 1-3 under 35 U.S.C. § 103(a) as unpatentable over the prior art.

4 DECISION

5 To summarize, our decision is as follows:

- 6 • The rejection of claims 1-3 under 35 U.S.C. § 103(a) as unpatentable over  
7 ‘213, and King or Kilian is sustained.
- 8 • The rejection of claims 1-3 under 35 U.S.C. § 103(a) as unpatentable over  
9 Lehnert and Dix, and King or Kilian is sustained.

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

12

13 AFFIRMED

14

15

16 JRG

17

18 KENYON & KENYON LLP  
19 ONE BROADWAY  
20 NEW YORK, NY 10004