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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte MICHAEL PRAZOFF

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Appeal 2007-2577  
Patent 6,379,190<sup>1</sup>  
Technology Center 2800

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Decided: July 30, 2007

Before McKELVEY, *Senior Administrative Patent Judge*, and TORCZON  
and MEDLEY, *Administrative Patent Judges*.

TORCZON, *Administrative Patent Judge*.

DECISION ON APPEAL

The claims on appeal relate generally to a connector for electrically connecting two rope lights. The examiner has rejected claims 1-8 under 35 U.S.C. 102(b) as having been anticipated. The examiner has rejected claims 1-11 under 35 U.S.C. 103 as unpatentable based on obviousness. The patentee (Prazoff) seeks review of these rejections. We affirm.

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<sup>1</sup> Michael Prazoff, *Ropelight connector*, US 6,379,190 (issued 30 April 2002). The Prazoff patent is the subject of three merged reexaminations: 90/006,327; 90/006,328; and 90/006,344.

## THE CLAIMS AND REJECTIONS

Claims 1-8 are unamended patent claims. Claims 9-11 were added during reexamination. Claims 1 and 9 are independent. Claims 2-8 depend directly or indirectly from claim 1, while claims 10 and 11 depend directly from claim 9.<sup>2</sup> Prazoff has divided the claims into four groups for the purposes of appeal: 1 and 5; 2, 6, and 8; 3, 4 and 7; and 9-11.<sup>3</sup> We will accordingly analyze a representative claim from each group.<sup>4</sup>

The examiner rejected<sup>5</sup> claims 1-8 under 35 U.S.C. 102(b) as having been anticipated by a patent to Lin.<sup>6</sup>

The examiner rejected<sup>7</sup> claims 1-11 under 35 U.S.C. 103 as having been obvious in view of patents to Chen<sup>8</sup> and Tsui.<sup>9</sup>

Analysis of both anticipation and obviousness begin with construction of the contested claim terms. In proceedings before the Office, unexpired patent claims must be given their broadest reasonable construction, taking into account any definitions in the specification.<sup>10</sup> We focus on the contested limitations.

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<sup>2</sup> Claims appendix to the appeal brief (Br.). All claim language is reproduced from the appeal brief.

<sup>3</sup> Br. 15. It is unclear where claim 7 was intended to be grouped. We have grouped it with its parent claim 3.

<sup>4</sup> 37 C.F.R. § 41.37(c)(1)(vii) (single claim represents group).

<sup>5</sup> Examiner's Answer (Ans.) 3.

<sup>6</sup> Ta-Yeh Lin, *Non-neon light*, US 4,607,317 (issued 1986) (Lin).

<sup>7</sup> Examiner's Answer (Ans.) 3.

<sup>8</sup> Scott Chen, *Flexible lamp-string device*, US 4,812,956 (issued 1989) (Chen).

<sup>9</sup> Pui-Hing Tsui, *Joy light structure*, US 5,150,964 (issued 1992).

<sup>10</sup> *In re Bass*, 314 F.3d 575, 577, 65 USPQ2d 1156, 1158 (Fed. Cir. 2002), citing *In re Yamamoto*, 740 F.2d 1569, 1571, 222 USPQ 934, 936 (Fed. Cir. 1984).

## ANTICIPATION

To anticipate, each and every claim limitation must be found, either expressly or inherently, in a single prior art reference. Moreover, the reference must enable one skilled in the art to make and use the invention. Patents, such as the Lin patent, are presumed to have been enabling.<sup>11</sup>

### *Claim 1*

Claim 1 defines the invention as follows—

1. A ropelight connector for connecting a first ropelight with a second ropelight, comprising:
  - a first connecting member having a first member head portion and a first member tail portion affixed to an end of said first ropelight, wherein a pair of parallel locking sockets is longitudinally formed on said first member head portion and a pair of tubular conductors, which are electrically extended from a pair of wires inside said first ropelight respectively, outwardly protruded from said first member head portion along said locking sockets respectively;
  - a second connecting member, having a second member head portion and a second member tail portion affixed to an end of said second ropelight, comprising a tubular shelter frame coaxially extended from said second member head portion wherein a pair of conductive terminals, which are electrically connected to a pair of wires inside said second ropelight, are outwardly extended from said second member head portion and adapted for fittingly inserting into said locking sockets to engage with said tubular conductors respectively for securely connecting said second connecting member with said first connecting member, so as to electrically connecting said first and second ropelights together; and
  - a locking means comprising a sleeve locker slidably wearing on said first connecting member and a ring-shaped

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<sup>11</sup> *E.g., Amgen, Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1354, 65 USPQ2d 1385, 1416 (Fed. Cir. 2003).

stopper for blocking an inwardly projected end shoulder of said sleeve locker in such a slidably movable manner along said first connecting member, wherein said sleeve locker, which has a diameter slightly larger than a diameter of said tubular shelter, has an inner threaded portion for screwing with an outer threaded portion of said tubular shelter, so as to fasten said first connecting member with said second connecting member.

As an initial matter, the claim uses the phrase "locking means", which raises the threshold question of whether "locking means" invokes paragraph 6 of 35 U.S.C. 112. In his appeal brief, Prazoff has not requested the limitation be construed under paragraph 6.<sup>12</sup> Nor it is apparent how a function for the "locking means" is set out in the claim. In any case, the specification expressly describes a locking means **50**, with a sleeve locker **51** and a ring-shaped stopper **52**. The sleeve locker is described as screwing onto a threaded portion **431** of the tubular shelter **43**.<sup>13</sup> From this we infer, at a minimum, that the locking means can include a sleeve with interior threads that screws onto a surface with exterior threads.

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<sup>12</sup> See 37 C.F.R. § 41.37(c)(1)(v), which require specific identification of means-plus-function limitations and their corresponding structure.

<sup>13</sup> Specification (Spec.) 4:13-24. Both the examiner and Prazoff rely on the 6,379,190 patent as the relevant specification.

Claim 1 paints a detailed picture of the claimed apparatus. As an aid to understanding the rejection, the following table sets forth how the examiner applies the Lin patent to claim 1. The reference numbers come from Lin FIG. 3 (right), which shows an exploded view of Lin's rope-light connector. Since some of the examiner's reference numerals do not align precisely with FIG. 3 or are ambiguous because Lin uses the same numerals for different elements, we slightly refine the references where appropriate.

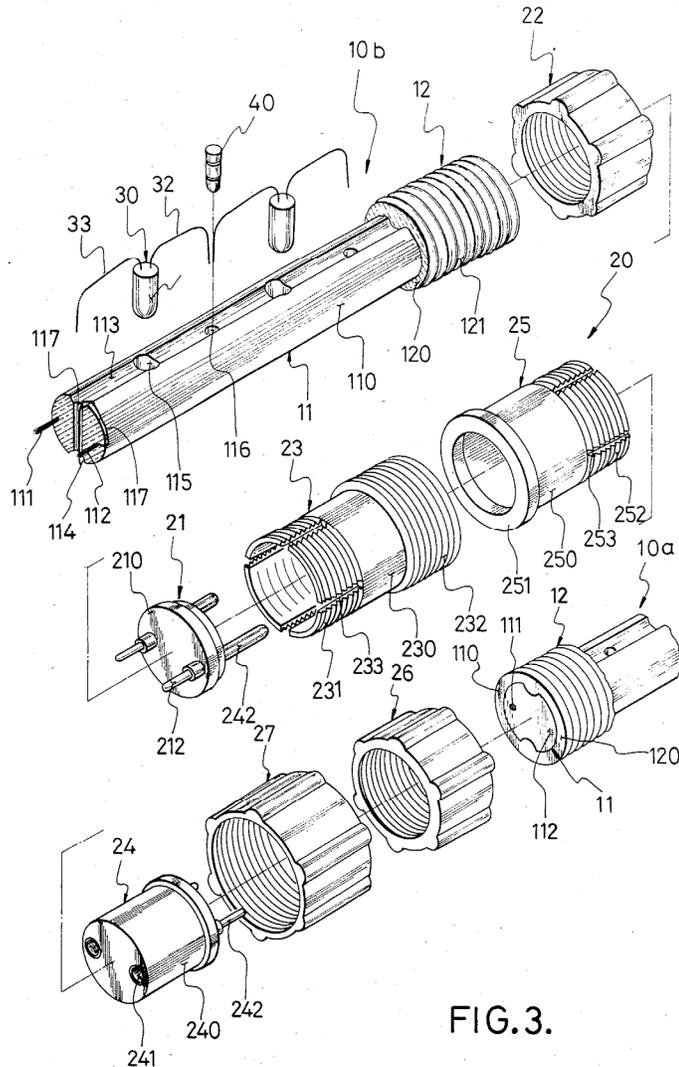


FIG. 3.

| Structure                          | Examiner's application of Lin | Refined application of Lin |
|------------------------------------|-------------------------------|----------------------------|
| a first ropelight                  | <b>10a</b>                    | ←                          |
| a second ropelight                 | <b>10b</b>                    | ←                          |
| a first connecting member          | <b>20b</b>                    | <b>24-27</b>               |
| a first member head portion        | <b>24</b><br><b>25 front</b>  | ←                          |
| a first member tail portion        | <b>25 rear</b>                | ←<br><b>esp. 252</b>       |
| a pair of parallel locking sockets | <b>241</b>                    | ←                          |

| Structure                                    | Examiner's application of Lin | Refined application of Lin |
|--|-------------------------------|----------------------------|
| a pair of tubular conductors                 | <b>in 241</b>                 | ←                          |
| a pair of wires inside said first ropelight  | <b>111</b><br><b>112</b>      | ←<br><b>in 10a</b>         |
| a second connecting member                   | <b>20a</b>                    | <b>21-23</b>               |
| a second member head portion                 | <b>230</b>                    | ←                          |
| a second member tail portion                 | <b>231</b>                    | ←                          |
| a tubular shelter frame                      | <b>232</b>                    | ←                          |
| a pair of conductive terminals               | <b>242</b>                    | ←<br><b>in 21</b>          |
| a pair of wires inside said second ropelight | <b>111</b><br><b>112</b>      | ←<br><b>in 10b</b>         |
| a locking means                              | <b>27</b>                     | <b>27</b><br><b>251</b>    |
| a sleeve locker                              | <b>(27)</b>                   | <b>27</b>                  |
| a ring-shaped stopper                        | <b>251</b>                    | ←                          |

Facially, Lin has structures meeting the limitations of claim 1. Prazoff urges several points of difference, however; any of which would undermine a finding of anticipation.

*first connecting member*

Prazoff questions the association of the claimed "first connecting member" with Lin's connecting socket **20b** (**24** and **250** in our refinement) because Lin's socket is an assembly of members rather than a single member.<sup>14</sup> This argument is not commensurate with the scope of the claim. The claim does not require the "first connecting member" to be constructed

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<sup>14</sup> Br. 17-19.

Appeal 2007-2577  
Application 90/006,344

of one (and only one) piece.<sup>15</sup> Lin expressly describes the "connecting socket **20b** [as] consist[ing] of a socket **24**, a connecting cylinder **25**, a large nut **26**, and a small nut **26**." Thus, in the mind of Lin's readers, the connecting socket **20b** is a functional unit made up of subunits. Giving claim 1 its broadest reasonable construction—as we must<sup>16</sup>—we cannot read claim 1 to exclude a first connecting member consisting of subunits.

*first member tail portion*

Prazoff objects to the examiner's association of the tail portion with the rear of Lin's connecting cylinder **25** for the same reasons stated more broadly for the first connecting member. In addition, however, Prazoff questions whether the threaded portion **252** in Lin can truly be said to be "affixed to the end of said first ropelight". Lin shows the threaded cylinder **252** with notches **253** such that tightly screwing on small nut **26** clamps cylinder **25** to a bulb-holding bar **10a**.<sup>17</sup> One of skill in the art would have understood the threaded portion **252** of connecting cylinder **25** to be "affixed" to rope light **10a** by operation of this clamping. Claim 1 does not

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<sup>15</sup> Cf. *In re Morris*, 127 F.3d 1048, 105\_, 44 USPQ2d 1023, 1029 (Fed. Cir. 1997), in which "*integrally* formed as *a* portion of" (emphasis added) was read to be broader than "fused together". If anything, Prazoff is in a weaker position since "member" is if anything even less suggestive of a unitary construction than "integral".

<sup>16</sup> See *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (reversing for reliance on a construction narrower than the broadest reasonable construction).

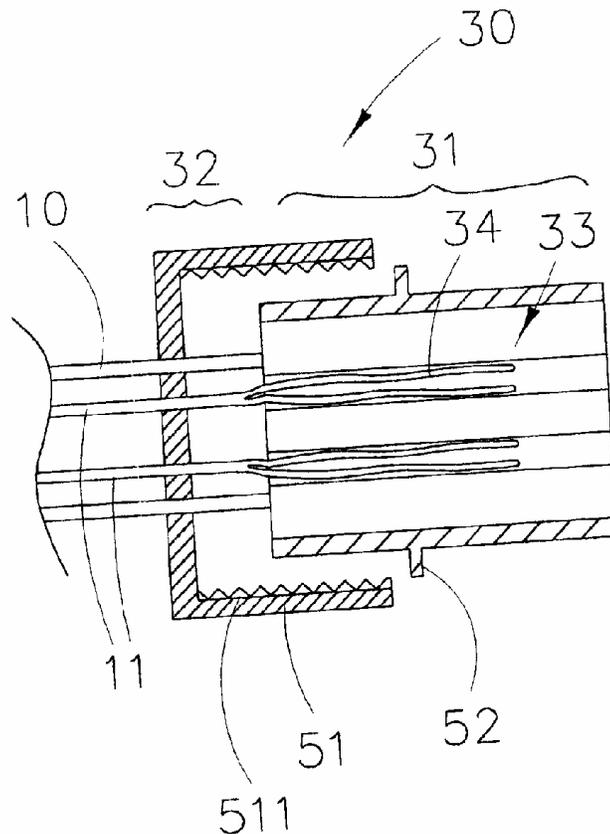
<sup>17</sup> Lin 4:26-30.

exclude the use of additional elements, such as the small nut **26**,<sup>18</sup> in affixing the tail portion to the rope light.

*tubular conductors*

Prazoff argues that Lin does not show tubular conductors protruding outwardly from the first member head.<sup>19</sup> It is true that Lin does not show the conductors in sockets **241** protruding beyond the outer surfaces of socket **24** or connector **25**. Claim 1, however, does not require the tubular conductors to extend so far. In understanding this limitation, it is instructive to consider Prazoff's disclosure. Prazoff discloses a first member head

portion **31** with locking sockets **33** and tubular conductors **34**.<sup>20</sup> A detail from Prazoff FIG. 3 (right) shows the structure. The detail shows the tubular conductors **34** projecting in an outward direction (away from the first ropelight **10**), but not beyond the outer face of the first member head portion **31**. Prazoff has not pointed us to



<sup>18</sup> Recall that Lin considers the small nut to be part of the connecting socket, so it is really an additional subunit of the same assembly.

<sup>19</sup> Br. 19.

<sup>20</sup> Spec. 3:7-14.

alternative embodiments that he might instead be claiming. Claim constructions that exclude the disclosed embodiment are disfavored. Consequently, we understand the outward protrusion of the tubular<sup>21</sup> conductors to include protrusion into but not beyond the locking sockets. Prazoff's argument is not consistent with the broadest reasonable construction of this limitation.<sup>22</sup>

*second connecting member*

Prazoff repeats his arguments that the assembly of subunits in Lin cannot satisfy the requirements of this limitation. The arguments fail as they did for the first connecting member. The word "member" in itself does not require a unitary construction or exclude an assembly of subunits. We cannot construe claim 1 more narrowly than Prazoff elected to write it.

*a pair of conductive terminals...outwardly extended from said second member head portion*

Prazoff notes that Lin's terminals **242** extend from plug **21**. From this fact, Prazoff argues that the terminals do not extend from the second member head portion.<sup>23</sup> We cannot agree. The examiner associates the second member head portion with Lin's connecting socket **20a**, which includes the plug **21**, a nut **22**, and a connecting cylinder **23**.<sup>24</sup> Thus, the

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<sup>21</sup> We note that the "tubular" conductors in Prazoff's disclosure do not appear to be tubular in shape. Hence, we construe "tubular" broadly to mean "associated with the tube-shaped socket" rather than imposing a tube-shape on the conductor itself.

<sup>22</sup> We are concerned that an argument would be advanced for a construction so at odds with the supporting disclosure.

<sup>23</sup> Br. 20.

<sup>24</sup> Spec. 3:63-68.

plug **22** is part of the head portion from which the terminals **242** must extend.

*second member tail portion*

As with the first member tail portion, Prazoff argues that Lin fails to teach a tail portion affixed to the second rope light.<sup>25</sup> The argument fails again for analogous reasons. The examiner associates the tail portion with the threaded portion **231** (which has notches **233**) of Lin's connecting cylinder **23**. The nut **22**, which is part of the overall connecting socket **20b**, is used to compress the threaded portion **231** such that it is connected to clamp onto the other rope light **10b**. One skilled in the art would understand from Lin that the connecting socket **20b** was composed of subunits, including the threaded portion **231** and nut **22**, which cooperate to fix the socket to the rope light.

*Claim 1 was anticipated*

When claim 1 is properly construed as broadly as is reasonable in view of Prazoff's specification, the scope of the claim is too broad to be consistent with Prazoff's arguments. Properly construed, claim 1 reads on the disclosure of the Lin patent. We find claim 1 to have been anticipated.

*Claim 2*

Claim 2 depends from claim 1 and adds the following limitations (emphasis added)—

wherein said first member tail portion of said first connecting member and said second member tail portion of said second

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<sup>25</sup> Br. 21.

connecting member are respectively tubular holders, each of which having a diameter slightly larger than a diameter of said respective ropelight, wherein said tubular holders are securely affixed to said ends of said first and second ropelights in such an *air tight manner*, so as to *permanently connect* said first connecting member and said second connecting member to said first ropelight and said second ropelight respectively.

The examiner applies Lin as follows:

| Structure                                      | Examiner's application of Lin | Refined application of Lin |
|--|-------------------------------|----------------------------|
| first member tail portion<br>= tubular holder  | <b>25 rear</b>                | ←<br><b>esp. 252</b>       |
| second member tail portion<br>= tubular holder | <b>231</b>                    | ←                          |
| first ropelight                                | <b>10a</b>                    | ←                          |
| second ropelight                               | <b>10b</b>                    | ←                          |

Again, the structures of the claim are facially present. Prazoff focuses on the functional "air tight" and "permanently connect" limitations to distinguish Lin.

*Permanently connect*

Prazoff argues that the connecting members in Lin are not permanently connected to their respective rope lights.<sup>26</sup> The examiner notes that "permanent" can be broadly construed to include a connection that is permanent unless intentionally disconnected. Resolution of this issue

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<sup>26</sup> Br. 22-23.

depends on claim construction. The question is a close one, depending heavily on the understanding of those in the art.<sup>27</sup>

The evidence we have for how those skilled in the art would understand "permanently connect" in this context is the Prazoff specification, the Lin patent, and a dictionary definition Prazoff has supplied. From Prazoff, one of skill would understand "permanently connect" to mean "securely affix" and to include molding the connectors to their respective rope lights.<sup>28</sup> Lin explains how the connectors are attached to the respective rope lights,<sup>29</sup> but does not describe a situation in which the connectors are removed from the rope lights. This omission is remarkable since Lin does address disassembly of connectors from each other, removal of power plugs, and removal of a protective cylinder.<sup>30</sup> Thus, one of skill would understand that while the connectors could be removed, Lin does not intend the connectors to be removed from the rope lights once they have

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<sup>27</sup> We are aware of precedent holding that "permanently affixed" meant "unremovable". *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1363, 52 USPQ2d 1001, 1004 (Fed. Cir. 1999) (affirming a trial court construction). We are also aware, however, of the pitfalls inherent in extending constructions from infringement cases to claims before the Office. *Morris*, 127 F.3d at 105\_, 44 USPQ2d at 1029 (explaining the differences between claim construction in court infringement actions versus agency patentability determinations). Ultimately, claim construction must be anchored in the understanding of those in the particular art at issue. *K-2 Corp.*, 191 F.3d at 1363, 52 USPQ2d at 1006.

<sup>28</sup> Spec. 3:49-63.

<sup>29</sup> Lin 3:58-4:32.

<sup>30</sup> Lin 3:58-63 and 4:41-55. The antecedent for "removal and disassembly" cited in the brief (at 23) is "light". Lin 1:11-18. Lin expects the user to connect and disconnect the rope lights from each other. As noted in the text, Lin does not indicate that the connectors are ever to be removed from the rope lights.

been installed.<sup>31</sup> Finally, Prazoff provides a dictionary definition of the adjective "permanent" (emphasis added):<sup>32</sup>

continuing or enduring (as in the same state, status, place)  
without fundamental or marked change : not subject to  
fluctuation or alteration : *fixed or intended to be fixed* :  
LASTING, STABLE

Bearing in mind our obligation to construe the claim as broadly as is reasonable in view of the specification, we conclude that "permanently connected" is satisfied if the connectors are "securely affixed" or "intended to be fixed". Molding may be preferred, but we cannot legitimately limit the scope of the claim to a preferred embodiment. Lin's connectors are intended to be securely fixed to the respective rope lights.<sup>33</sup> As we noted above, the question is a close one, but where the art is close the onus lies with the claim drafter to draft claims more precisely.<sup>34</sup>

#### *Air tight*

Prazoff notes that Lin intends the invention to be waterproof, but does not discuss any specific means of achieving this object. Prazoff contends that simple mechanical connections are not generally thought of as water

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<sup>31</sup> It is difficult to see why the end user would want to remove the connectors from the rope lights in any case.

<sup>32</sup> Br. Exhibit C: Webster's 3d New Int'l Dictionary [page number not visible] (1976).

<sup>33</sup> One skilled in the art would understand that failure to securely affix the connectors to the rope lights would adversely affect end-user safety and product durability.

<sup>34</sup> *Morris*, 127 F.3d at 1056, 44 USPQ2d at 1029 (placing "the burden of precise claim drafting squarely on the applicant").

proof.<sup>35</sup> Prazoff cites no evidence for this contention. We cannot accept attorney argument as evidence.<sup>36</sup>

Lin does more than aspire to a waterproof rope-light assembly, he purports to provide "assured waterproofness [and] resistance to pressure".<sup>37</sup> In view of this assurance, we must presume that Lin enabled those of skill to make a waterproof rope-light assembly, including connectors, by following the teachings of the Lin patent.<sup>38</sup> Given the lack of evidence to the contrary, the preponderance of evidence supports a finding that Lin's connectors are waterproof and pressure-resistant.

The contested limitation, however, is "air tight". According to the examiner, the fact that the connections are waterproof and pressure-resistant "indicat[es] that the connections are air tight".<sup>39</sup> The examiner cites no evidence for this inference, but Prazoff does not really contest it either (focusing instead on whether Lin is actually waterproof as discussed above). We find the examiner's inference to be more likely than not within the tolerances of this technology.<sup>40</sup> Since at least one source of water that can interfere with the operation of an electrical device is airborne humidity, being waterproof would require the connector to resist the diffusion of fluids, including air.

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<sup>35</sup> Br. 22.

<sup>36</sup> *In re Geisler*, 116 F.3d 1465, 1470, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).

<sup>37</sup> Lin 1:57-24.

<sup>38</sup> *Amgen, Inc.*, 314 F.3d at 1354, 65 USPQ2d at 1416 (presuming patents to be enabled).

<sup>39</sup> Ans. 8.

<sup>40</sup> We appreciate, of course, that the fabrication of selectively permeable barriers is an art unto itself.

*Claim 2 was anticipated*

When claim 2 is properly construed as broadly as is reasonable in view of Prazoff's specification and the cited evidence, a preponderance of the evidence supports the examiner's finding that claim 2 was anticipated.

*Claim 3*

Claim 3 depends from claim 1 and adds the following limitations—  
wherein said tubular shelter is integrally extended from said second member head portion of said second connecting member and encircling said conductive terminals for protecting thereof, wherein said tubular shelter has a diameter slightly larger than a diameter of said first member head portion for fittingly receiving said first member head portion therein.

The examiner applies Lin as follows:

| Structure                      | Examiner's application of Lin | Refined application of Lin |
|--------------------------------|-------------------------------|----------------------------|
| a first connecting member      | <b>20b</b>                    | <b>24-27</b>               |
| a first member head portion    | <b>24</b><br><b>25 front</b>  | ←                          |
| a second connecting member     | <b>20a</b>                    | <b>21-23</b>               |
| a second member head portion   | <b>230</b>                    | ←                          |
| a tubular shelter frame        | <b>232</b>                    | ←                          |
| a pair of conductive terminals | <b>242</b>                    | ←<br><b>in 21</b>          |

Again, the structures of the claim are facially present. Prazoff focuses on the phrase "said tubular shelter is integrally extended from said second member head portion" to distinguish Lin. Lin's large threaded cylinder **232** (which the examiner associates with the tubular shelter) does extend integrally from the rest of Lin's connecting cylinder **23** (which the examiner

Appeal 2007-2577  
Application 90/006,344

associates with the second connecting member). Prazoff argues, however, that Lin's conductors **242** (in plug **21**) do not extend outwardly from second connecting member.

Although this argument is styled as separate, it relies on a limitation in claim 1. We explained in the context of claim 1 that Prazoff's construction of the second connecting member is unduly narrow. The entire second connecting member can include subunits. The examiner associates the second connecting member with Lin's connecting plug **20a**, which includes both plug **21** and connecting cylinder **23**. When properly construed, Prazoff's second connecting member limitation reads on Lin's connecting plug **20a**, which includes sheltered terminal **242** (projecting from plug **21**) and a shelter **232** integrally extending from cylinder **23**.

When claim 3 is properly construed as broadly as is reasonable in view of Prazoff's specification, a preponderance of the evidence supports the examiner's finding that claim 3 was anticipated.

### OBVIOUSNESS

In analyzing obviousness, the scope and content of the prior art must be determined, the differences between the prior art and the claims ascertained, and the ordinary level of skill in the art resolved. Objective evidence of the circumstances surrounding the origin of the claimed subject matter (so-called secondary considerations) may also be relevant. Such secondary considerations guard against the employment of impermissible hindsight.<sup>41</sup>

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<sup>41</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17, 36 (1966), *cited with approval in KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007).

*Claim 9*

Claim 9 defines the invention as follows—

9. A ropelight connector for connecting a first ropelight with a second ropelight, comprising:

a first connecting member having a first member head portion and a first member tail portion, said first member head portion and first member tail portion being formed as a single, unitary structure,

said first member tail portion being molded to an end of said first ropelight in a permanent, airtight connection,

said first connecting member including a pair of parallel locking sockets longitudinally formed on said first member head portion and electrically coupled by a pair of conductors to respective wires inside said first ropelight;

a second connecting member having a tubular shelter, a second member head portion, and a second member tail portion, said tubular shelter, second member head portion and second member tail portion being formed as a single, unitary structure,

said second member tail portion being molded to an end of said second ropelight in a permanent, airtight connection,

said tubular shelter extending coaxially from said second member head portion and having an inside diameter sufficient to receive a forward portion of the first connecting member head portion,

said tubular shelter having external threads thereon,

said second connecting member including a pair of conductive terminals extending from said second member head portion and being electrically connected to respective wires inside said second ropelight,

said conductive terminals extending outwardly from said second member head portion and being configured to be inserted into said parallel locking sockets, thereby electrically connecting said first and second ropelights together;

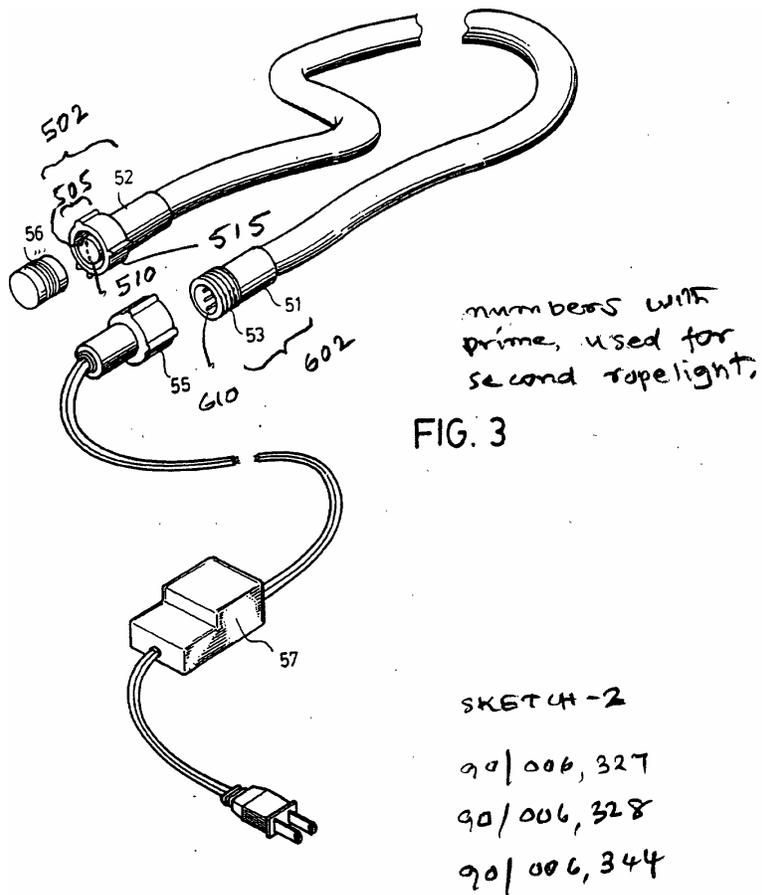
a sleeve locker movable axially along said first connecting member, said sleeve locker having a diameter slightly larger than a diameter of said tubular shelter, said sleeve locker having inside threads configured to engage said outside threads of said tubular shelter so that said sleeve locker

can be screwed onto said tubular shelter, said sleeve locker having an inwardly projecting end shoulder; and  
a ring-shaped stopper integrally formed on an external surface of said first connecting member, said ring-shaped stopper having a diameter larger than a distance defined by said inwardly-projecting end shoulder, said stopper thereby blocking said end shoulder and limiting the amount of axial movement of said sleeve locker along said first connecting member and onto said tubular shelter, so that said sleeve locker and stopper secure said first connecting member to said second connecting member.

The connector uses the open-ended "comprising" transition, which permits the inclusion of elements not listed in the claim.

*Scope and content of the art*

Claim 9, which was added during reexamination, defines the invention in even greater detail than claim 1. As with claim 1, it is helpful to understand the rejection in terms of a table and figures. The first figure is an annotated version of Chen's FIG. 3, which the examiner labeled "Sketch-2" (right)



Appeal 2007-2577  
Application 90/006,344

during prosecution.<sup>42</sup> Sketch-2 shows a rope light with a male connector **51** and a female connector **52**. The examiner's marginal note explains that for the second rope light the corresponding units would use the same reference numerals with the addition of a prime sign. Chen expressly discloses the serial connection of "many lamp-strings".<sup>43</sup> A flashing control unit **57** with a connecting end sleeve **55** and a terminal conducting contact **56** complete the circuit. The following table shows the examiner's application of Chen to claim 9.<sup>44</sup>

| Structure                                    | Chen                   |
|--|------------------------|
| a first ropelight                            | <b>not labeled</b>     |
| a second ropelight                           | <b>not labeled</b>     |
| a first connecting member                    | <b>502</b>             |
| a first member head portion                  | <b>505</b>             |
| a first member tail portion                  | <b>52</b>              |
| a pair of parallel locking sockets           | <b>510</b>             |
| a pair of conductors                         | <b>inside 510</b>      |
| a pair of wires inside said first ropelight  | <b>31-33 in FIG. 1</b> |
| a second connecting member                   | <b>602'</b>            |
| a second member head portion                 | <b>53'</b>             |
| a second member tail portion                 | <b>51'</b>             |
| a tubular shelter frame                      | <b>53'</b>             |
| a pair of conductive terminals               | <b>610'</b>            |
| a pair of wires inside said second ropelight | <b>31'-33'</b>         |
| a sleeve locker                              | <b>difference</b>      |
| a ring-shaped stopper                        | <b>difference</b>      |

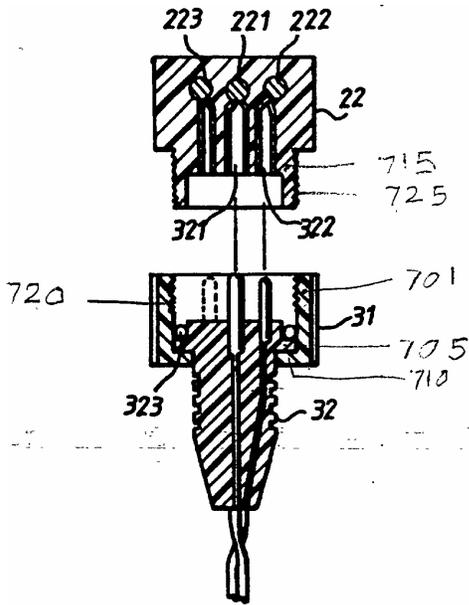
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<sup>42</sup> Examiner T.C. Patel, *Office Action in Ex Parte Reexamination 17* (entered 14 March 2003), in Reexam. Control No. 90/006,327.

<sup>43</sup> Chen 1:18-21 (disclosing serial bulbs and serial lamp-strings); 2:67-68 (disclosing serial lamp-strings connected using the disclosed connectors).

<sup>44</sup> Ans. 5-6.

Tsui discloses a "joy light" structure, which appears to be a main conductor to which string lights are connected through sockets on the main conductor.<sup>45</sup> The examiner relies on Sketch-4, based on Tsui FIG. 2, to



**Fig. 2**

SKETCH-4  
 90/006,327  
 90/006,328  
 90/006,344

explain the relevance of Tsui to the invention in claim 9. Sketch-4 (left) shows detail from Tsui's invention in which a female connector **22** on the main conductor aligns with a male conductor **31** on a string-light strand.

Note the waterproofing gasket **323** in the male connector **31**.<sup>46</sup> As before, a table succinctly summarizes the examiner's application of Tsui to the invention of claim 9.

| Structure                          | Tsui       |
|------------------------------------|------------|
| a first connecting member          | <b>31</b>  |
| a second connecting member         | <b>22</b>  |
| a tubular shelter frame            | <b>715</b> |
| —outer threads                     | <b>725</b> |
| a sleeve locker                    | <b>701</b> |
| — inwardly projecting end shoulder | <b>710</b> |

<sup>45</sup> Tsui 1:40-44. Christmas tree lights are an example of string lights. Tsui 1:8-12.

<sup>46</sup> See also Tsui 1:54-56 (describing the gasket as a "water-proof rubber ring to avoid moisture permeation and thus [permitting] indoor and outdoor application").

| Structure             | Tsui       |
|-----------------------|------------|
| —inner threads        | <b>720</b> |
| a ring-shaped stopper | <b>705</b> |

*Argued differences*

Prazoff notes that Chen does not illustrate the serial connection of rope lights, but rather connects to a power source and a terminal plug.<sup>47</sup> As noted before, however, Chen discusses serial connection of rope lights<sup>48</sup> and explains that it is accomplished "according to the same technology of the invention as required."<sup>49</sup> Prazoff is wrong to characterize the examiner's discussion of serial rope lights in Chen as "speculative"<sup>50</sup> since Chen provides explicit support for such series.<sup>51</sup>

Prazoff argues that the inside of the sleeve **505** on Chen's female connector **52** is "plainly visible" and "shows utterly no threading".<sup>52</sup> It is true that Chen does not show threading inside the sleeve **505**. It is nevertheless clear that such threading must exist to engage the threading on the terminal plug **56** and on the male connector **53'** any serial rope light. A

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<sup>47</sup> Br. 29.

<sup>48</sup> Chen 1:18-21.

<sup>49</sup> Chen 2:67-68.

<sup>50</sup> Br. 29.

<sup>51</sup> Prazoff notes, Br. 29, that the "written disclosure of Chen is negligible." Chen's written disclosure is little more than one page (two columns) long. It is thus remarkable that Prazoff would argue that there is no evidence in Chen for serial combination of rope lights using the same connectors despite the express teaching in Chen.

<sup>52</sup> Br. 30.

preponderance of the evidence supports an inference that the sleeve **505** has threading inside.<sup>53</sup>

Prazoff argues that Chen will not work without the terminal conducting contact plug **56**, while Prazoff requires no such plug. This argument has little relationship to the scope of claim 9. First, the plug **56** is a feature of Chen's overall rope-light system. Claim 9 is more narrowly directed to a connector (or, more precisely, paired connectors) within a rope-light system. Thus, the presence or absence of the plug has no relevance to the claim on appeal. Alternatively, claim 9 uses the open-ended "comprising" transition, which would permit the inclusion of other elements in the claim beyond those listed. Thus, the plug **56** could be an alternative accessory for use with the female half of Prazoff's connector. Finally, we note that the claim does not specify how current flows through a series of rope lights so we have no basis for crediting the argument that Prazoff's rope lights necessarily operate without some sort of terminal conductor.

Prazoff correctly notes that Tsui is not directed to rope lights.<sup>54</sup> Tsui teaches a main conductor with connections for string lights. We understand Prazoff to be arguing that Tsui is not analogous art. Art is analogous if it can satisfy one or more of at least two tests. First, is the art from the same field of endeavor, regardless of the problem addressed? Second, if not, then is the reference reasonably pertinent to the particular problem with which the inventor is involved?<sup>55</sup> Tsui is analogous under both tests.

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<sup>53</sup> Even if it did not, adding such threading to better engage the threading on its opposite connectors would be an obvious improvement.

<sup>54</sup> Br. 35.

<sup>55</sup> *In re Bigio*, 381 F.3d 1320, 1325, 72 USPQ2d 1209, 1212 (Fed. Cir. 2004).

Prazoff, Chen, and Tsui all operate in the same field, providing linear arrays of decorative or novelty lighting for indoor and outdoor use to technically unsophisticated end-users.<sup>56</sup> End-users would see the rope lights of Prazoff and Chen and the joy light of Tsui as competing and largely interchangeable solutions to indoor and outdoor decorative or novelty lighting challenges. Moreover, Tsui's connectors are directly pertinent to the problem both Prazoff and Chen face: how to provide an easily connected (and disconnected), physically secure, fluid-tight connector for lighting conductors.

Prazoff correctly notes that Tsui is directed to a power cord connected to lamp-strings rather than rope lights in series.<sup>57</sup> We note, however, that Chen contemplates connection with either a power cord or other rope lights.

Prazoff faults the cited art for lacking an "explicit suggestion...to substitute Tsui's sleeve and stopping ring for Chen's connector."<sup>58</sup> This omission is true, but not particularly relevant since explicit motivation to combine has never been a requirement for obviousness.

Prazoff argues that Tsui uses the connectors for a different purpose.<sup>59</sup> Let us assume for the sake of argument that Tsui's connection of lamp-strings to a power cord differs meaningfully from Prazoff's connection of rope lights to each other or from Chen's connection of a rope light to either a

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<sup>56</sup> Both Chen and Tsui identify Christmas lights as an application for their inventions.

<sup>57</sup> Br. 35-36. Tsui probably uses the independent locking sleeve **505** to reduce the twisting forces generated between the power cord and the added lamp-lights. Such twisting would be less of a problem between two short rope lights in series, but would become a problem with longer rope lights (or with many rope lights connected in series).

<sup>58</sup> Br. 36.

<sup>59</sup> Br. 37.

power cord or another rope light. The case law does not require the reference and the claimed invention to have precisely the same purpose.<sup>60</sup>

Prazoff argues that Tsui does not explicitly disclose that the sleeve **505** is axially slidable.<sup>61</sup> Prazoff is correct that Tsui neither illustrates nor describes the sleeve **505** as moving axially. A reference, however, must be considered together with the knowledge of one of ordinary skill in the pertinent art. A reference need not explain every detail since it is speaking to those skilled in the art.<sup>62</sup> Tsui's sleeve **505** has a shoulder **710** that abuts a ring stopper **705** on the connector. Moreover, the connector has a face abutting the shoulder **710** that is broader than needed for the sleeve to rotate freely. Finally, the inner threads **720** on the sleeve **505** are spaced apart from both the stopper ring **705** and the gasket **323**, providing room for the sleeve **505** to move axially. Despite Tsui's silence on the question, we find a preponderance of the evidence supports the examiner's position that one of skill in the art would understand that Tsui's sleeve **505** moves axially.

*Level of skill in the art*

We look to the evidence of record—the applicant's disclosure, the cited references, and any declaration testimony—in resolving the ordinary level of skill in the art.<sup>63</sup> In particular, we are interested in what those of skill in the art knew and could do at the time of filing. Prazoff's disclosure

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<sup>60</sup> *In re Dillon*, 919 F.2d 688, 692-94, 16 USPQ2d 1897, 1901-02 (Fed. Cir. 1990) (en banc); *In re Beattie*, 974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992)

<sup>61</sup> Br. 37 n.3. The functional limitation in claim 9 is "movable axially".

<sup>62</sup> *In re Paulsen*, 30 F.3d 1475, 14\_, 31 USPQ2d 1671, 1675 (Fed. Cir. 1994).

<sup>63</sup> *Ex parte Jud*, 2006 WL 4080053 at \*2 (BPAI) (rehearing with expanded panel).

Appeal 2007-2577  
Application 90/006,344

does not expressly say anything about what was known at the time of filing. Prazoff provides little or no guidance on the materials and methods used to fabricate the components of his invention. From Prazoff's silence we infer that those skilled in the art were proficient in fabricating rope lights with little or no additional guidance.<sup>64</sup>

Chen and Tsui, which predate Prazoff by roughly a decade, provide some additional guidance. Chen discloses different lighting-circuit options<sup>65</sup> and discusses the use of polyvinyl chloride tubing for protection and water proofing.<sup>66</sup> Tsui also provides lighting-circuit diagrams<sup>67</sup> and suggests the use of a rubber gasket for water-proofing the connections. Both Chen and Tsui close their written disclosures with expressions of confidence that those in the art will readily appreciate modifications that can be made to their respective inventions.

Prazoff has not pointed us to testimony regarding the level of skill in the art. We have reviewed the two Prazoff declarations regarding commercial success for the sake of completeness. The declarations, to the extent they could be considered relevant on the question of skill, are consistent with the discussion above.

We find that one of skill in the art at the time the Prazoff application was filed would have been broadly familiar with materials and methods of fabrication used in making rope lights and similar flexible lighting devices. In particular, the artisan would have known of materials and structures used

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<sup>64</sup> We presume for the purposes of this appeal that Prazoff's disclosure is enabling. *Ex parte Bhide*, 42 USPQ2d 1441, 1447 (BPAI 1996).

<sup>65</sup> Chen FIGS. 2 and 5.

<sup>66</sup> Chen 1:42-45, noting that "PVC" is flexible, but shock and water resistant.

<sup>67</sup> Tsui FIGS. 4 and 5.

to make electrical connections in such devices easy to use, yet secure and safe. The artisan would have understood the advantages of using threaded sleeves to connect male and female. The artisan would have understood that threaded connections are desirable because they are safe, easy to use, and fluid-resistant (permitting outdoor use). They would have appreciated that leakage could be avoided by integrating the connector into the protective jacket over the rope light or by adding a gasket where it would be desirable to have a moving part.

*Secondary considerations*

As an initial matter, we note that Prazoff argues the examiner improperly ignored evidence of secondary considerations until too late.<sup>68</sup> We review the merits of the rejection. A defect in procedure must be addressed by petition not appeal.<sup>69</sup> Moreover, Prazoff had—and used—an opportunity to address the merits<sup>70</sup> so there would be no due-process problem in reaching merits as any procedural irregularity is minor and harmless. Rather than remand at this late date and delay resolution of the matter further, we exercise our discretion to reach the merits on the record before us.<sup>71</sup>

Objective evidence contrary to a conclusion of obviousness must be considered, but may be unavailing particularly in the face of a strong facial

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<sup>68</sup> *Prazoff's Response To The Examiner's Sept. 29, 3006 Paper 1-7* (filed 18 Oct. 2006) (Resp.).

<sup>69</sup> *E.g., In re Voss*, 557 F.2d 812, 816, 194 USPQ 267, 270 (CCPA 1977) (affirming board refusal to review a petitionable matter).

<sup>70</sup> Resp. 8-11.

<sup>71</sup> "All reexamination proceedings under this section, including any appeal to the Board of Patent Appeals and Interferences, will be conducted with special dispatch within the Office." 35 U.S.C. 305.

Appeal 2007-2577  
Application 90/006,344

case of obviousness.<sup>72</sup> For instance, in *Graham*, the court was decidedly underwhelmed by the secondary considerations in view of the very close prior art.<sup>73</sup>

However, these factors do not, in the circumstances of this case, tip the scales of patentability. The Scoggin invention, as limited by the Patent Office and accepted by Scoggin, rests upon exceedingly small and quite non-technical mechanical differences in a device which was old in the art. At the latest, those differences were rendered apparent in 1953 by the appearance of the Livingstone patent, and unsuccessful attempts to reach a solution to the problems confronting Scoggin made before that time became wholly irrelevant. It is also irrelevant that no one apparently chose to avail himself of knowledge stored in the Patent Office and readily available by the simple expedient of conducting a patent search—a prudent and nowadays common preliminary to well organized research.

Moreover, in an *ex parte* process, the burden of showing with hard evidence a nexus between commercial success and the claimed invention lies with the applicant (or in this case, patentee).<sup>74</sup> Unlike a party in an invalidity action, the examiner has little ability to develop independent objective evidence supporting or refuting a claim of commercial success.

Prazoff offers in evidence two declarations from himself. The examiner raised three objections to the declaration evidence.<sup>75</sup> The first two are a quibble about whether or not all rope-light sales in the United States

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<sup>72</sup> *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1372, 82 USPQ2d 1321, 1338 (Fed. Cir. 2007); *Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 768, 9 USPQ2d 1417, 1426 (Fed. Cir. 1988).

<sup>73</sup> *Graham*, 383 U.S. at 36.

<sup>74</sup> *In re Huang*, 100 F.3d 135, 139-140, 40 USPQ2d 1685, 1689 (Fed. Cir. 1996); *Paulsen*, 30 F.3d at 1482, 31 USPQ2d at 1676 (reexamination).

<sup>75</sup> *Acknowledgement of Reply Brief* 4 (entered 29 Sept. 2006).

Appeal 2007-2577  
Application 90/006,344

use the claimed invention. The second objection notes that advertising rather than innovation could explain the alleged sales success.

The examiner's quibble about the degree of market dominance is misplaced. It hardly makes a difference whether all or just nearly all sales fall within the scope of the claims. What matters more is that massive copying in the face of an issued patent is equivocal evidence at best. Prazoff's patent issued in early 2002. When Prazoff declared in 2003 that substantially all rope lights used his invention, he listed limitations of the patent claims.<sup>76</sup> By definition, added claims 9-11 cannot have broadened the scope of the patent claims.<sup>77</sup> Thus, if we credit Prazoff's testimony, the market used the structures Prazoff claims despite Prazoff's issued patent claiming exclusive rights to the structure. In such cases, copying suggests that the market respects the product, but not the patent.<sup>78</sup>

The examiner's concern about advertising is more to the point. In the second declaration, Prazoff states:<sup>79</sup>

Due to the success of my invention, L'Image [Prazoff's company] won a 2001 Target Bullseye Award.

The award states, in part:<sup>80</sup>

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<sup>76</sup> *Declaration of Michael Prazoff* 6 (¶16) (submitted 12 May 2003) (1st Declaration).

<sup>77</sup> "No proposed amended or new claim enlarging the scope of a claim of the patent will be permitted in a reexamination proceeding under this chapter." § 305.

<sup>78</sup> *Cable Elec. Prod. v. Genmark, Inc.*, 770 F.2d 1015, 1028, 226 USPQ 881, 889 (Fed. Cir. 1985); *Vandenberg v. Dairy Equip. Co.*, 740 F.2d 1560, 1567, 224 USPQ 195, 199 (Fed. Cir. 1984).

<sup>79</sup> *Second Declaration of Michael Prazoff* 4-5 (¶29) (submitted 12 May 2003) (2d Declaration).

<sup>80</sup> 2d Declaration, attachment.

The first ad in February proved to be a great success. L'Image reacted immediately and was able to produce and ship from overseas nearly double what was originally forecasted on eight new items, and did so in time for the second ad that ran just 5 weeks later. At the same time they were working nonstop to bring new colors and designs to the assortment.

The examiner's interpretation of this accolade is reasonable. The award specifically attributes success to the February advertisement. It credits L'Image with logistical skill and with innovation on features not covered by the claims, such as new colors. The award does not mention the claimed connectors at all.

We note two additional points for consideration. First, both declarations are from the inventor and assignee. While inventor or assignee testimony are not inherently incredible, the declarant's interest (financial, emotional, etc.) in the outcome is a highly material fact to consider when assigning weight to the evidence.<sup>81</sup> Second, Prazoff notes that Underwriters Laboratories changed its safety standards such that multi-part connectors (such as the one in the Lin patent) are no longer allowed.<sup>82</sup> If we credit Prazoff's testimony, the change in the standard alone could explain (and even motivate) the stated industry shift to connectors with unitary constructions. Prazoff does not point us to sufficient information (such as when the standard changed) for us to evaluate the significance of this point further.

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<sup>81</sup> *Cf. Ferring B.V. v. Barr Labs. Inc.*, 437 F.3d 1181, 1188, 78 USPQ2d 1161, 1167 (Fed. Cir. 2006) (withheld relationship information was highly material for purposes of inequitable conduct).

<sup>82</sup> 2d Declaration 4 (¶28).

In sum, Prazoff's evidence of secondary considerations is equivocal at best. One could infer commercial success based on the limitations of the claims, but one could just as easily attribute the success to other considerations such as advertising, logistical skill, other design features, or changing industry standards. Prazoff has failed to establish adequate nexus between the commercial success and the claim limitations.

*The subject matter of claims 9-11 would have been obvious*

The examiner has successfully shown that all of the limitations of claim 9 existed in two related prior art references. The combination of Tsui's locking sleeve and Chen's rope light unites existing elements in a predictable way to achieve an expected result. Tsui's sliding locking sleeve would be an improvement over Chen's static locking sleeve since it would be easier for consumers to use.

Prazoff has not argued claims 10 and 11 separately. We conclude that their claimed subject matter would have been obvious as well.

*Claims 1-8*

We have already found claims 1-8 to have been anticipated, so the obviousness question is moot. Alternatively, claims 1-8 would have been obvious. The claims are not argued separately so they all stand or fall with claim 9.<sup>83</sup>

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<sup>83</sup> We noted that Prazoff mentions limitations of claims 1, 2, 9, and 11 in a footnote. Br. 48 n.6. The footnote, however, erroneously assumes that Chen does not teach serial connection of rope lights. Once the full scope of Chen's teachings are considered, the differences noted in the footnote become irrelevant.

Appeal 2007-2577  
Application 90/006,344

HOLDING

The examiner's finding that claims 1-8 were anticipated is AFFIRMED. The examiner's conclusion that claims 1-11 would have been obvious is AFFIRMED. Consequently, the examiner's final rejection is—

AFFIRMED

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