

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NELSON PRODUCTS, INC.,
Petitioner,

v.

BAL SEAL ENGINEERING, INC.,
Patent Owner.

Case IPR2019-00630
Patent 8,561,274 C1

Before BENJAMIN D. M. WOOD, HYUN J. JUNG, and
JAMES A. WORTH, *Administrative Patent Judges*.

WOOD, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background

Nelson Products, Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1–19 of U.S. Patent No. 8,561,274 C1 (Ex. 1001, “the ’274 patent”). Bal Seal Engineering, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”).¹

We have authority under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). A decision to institute under 35 U.S.C. § 314 may not institute on fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018).

Upon considering the Petition and the evidence currently of record, we determine that Petitioner has not shown a reasonable likelihood that it would prevail in showing the unpatentability of at least one of the challenged claims. Accordingly, we deny the Petition.

B. Related Proceedings

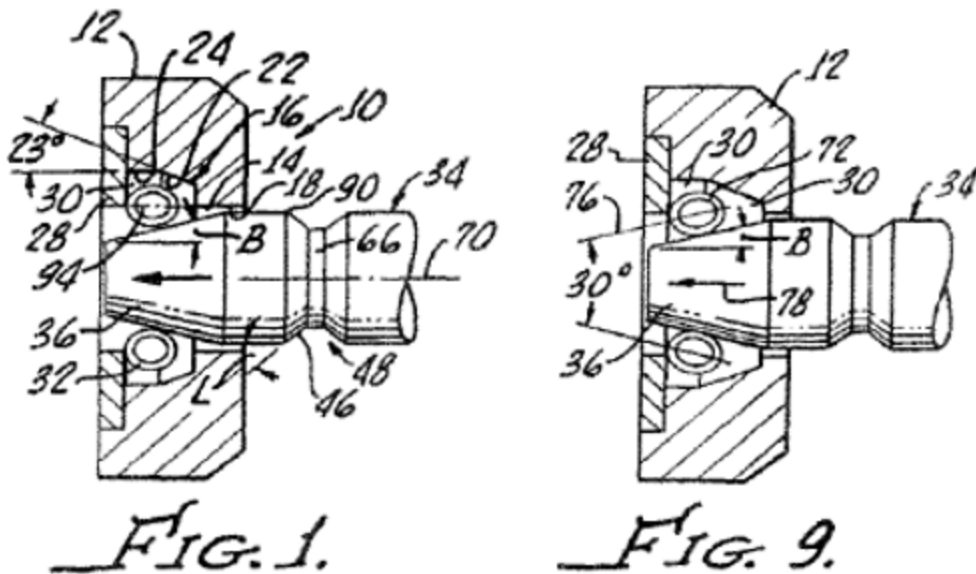
Based on the parties representations (Pet. 2–3; Paper 3, 2–3), the ’274 patent is not currently the subject of any district-court infringement litigation. The ’274 patent was the subject of an *ex parte* reexamination resulting in the issuance of 11256th Reexamination Certificate on March 12,

¹ With our authorization, Patent Owner filed a revised Preliminary Response (Paper 6), which we cite in this Decision, to correct errors in the originally filed Preliminary Response (Paper 5).

2018. Ex. 1002. U.S. Patent No. 8,166, 623, from which the '274 patent descends via a series of continuation applications (Ex. 1001, [60]), is the subject of IPR2019-00310, which was recently instituted. IPR2019-00310, Paper 9.

C. The '274 Patent

The '274 patent issued October 22, 2013 from an application filed December 20, 2012, was subject to *ex parte* reexamination, and is titled “Method for Controlling Connect and Disconnect Forces of a Connector.” Ex. 1001, [45], [22], [54]; Ex. 1002, cover page. The '274 patent describes a connector that “requires low force to connect and high force to disconnect.” Ex. 1001, 1:20–22. Figures 1 and 9, reproduced below, depict two embodiments of the '274 patent:



Figures 1 and 2, reproduced above, depict slightly different embodiments of the '274 patent connector. Both connectors comprise housing 12, retainer 28, and pin 34. Ex. 1001, 3:33–43. Housing 12 comprises bore 14 and housing groove 16 disposed on the bore inside

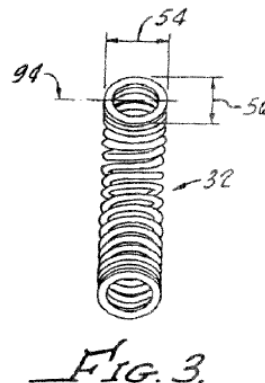
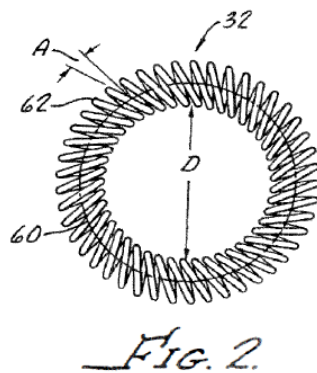
surface. *Id.* at 3:34–35. Retainer 28 is attached to housing 12 to form a sidewall of housing groove 16. Ex. 1002, 1:35–55. Housing groove 16 comprises release surface 22 between housing groove bottom 24 and bore inside surface 18. Ex. 1001, 3:35–37; Ex. 1002, 1:23–31. Release surface 22 “is disposed at an obtuse angle relative to the housing groove bottom 24.” Ex. 1002, 1:26–27. Housing groove bottom 24 “can be generally flat” and “parallel to a lengthwise housing axis.” *Id.* at 1:30–31.

Pin 34 includes a solid body and circumferential pin V-groove 48 having two tapered surfaces, one of which is load surface 46. Ex. 1002, 2:3–4. The '274 patent explains that:

[P]in 34 can be moved in a first direction and contact the radial canted coils spring 32 with the two tapered surfaces of the V-groove 48 while spacing the radial canted coil spring 32 from the flat bottom surface of the housing groove 16 to latch the pin 34 to the housing 12.

Id. at 2:10–15.

The connectors also comprise circular radial canted coil spring 32 (Figure 1) or 72 (Figure 9) disposed in spring cavity 30, which is defined by retainer 28, release surface 22, and housing groove bottom 24. Ex. 1001, 3:40–43; Ex. 1002, 1:59–67. Figures 2 and 3, reproduced below, depict front and side views of spring 32:



Figures 1 and 2, reproduced above, depict circular radial canted coil spring 32 having centerline 60 and turn angle A. Ex. 1001, 3:55–57. Turn angle A is the angle between centerline 60 and the centerline of coils 62. *Id.* at 3:57–58. The spring “can be spaced from the generally flat bottom surface of the housing groove 16 prior to insertion of the pin 34 into the housing 12” as well as “in the latched state.” Ex. 1002, 1:62–67. The force required to disconnect may be controlled by varying load angle 46 and release angle 22: “The larger the release angle 22, the higher the force to disconnect. The larger the load angle 46, the greater the force required to disconnect.” Ex. 1001, 4:42–47.

D. The Challenged Claims

Petitioner challenges claims 1–19 of the ’274 patent. Pet. 1. Claims 1 and 11 are independent. Claim 1 is illustrative of the claimed subject matter, and is reproduced below, as amended by the March 12, 2018 Reexamination Certificate:²

1. [(a)] A method for latching a pin to a housing and unlatching the pin from the housing using a spring, said method comprising:
 - [(b)] providing a housing comprising a housing bore having two bore openings and a lengthwise housing axis;
 - [(c)] said housing bore comprising a housing groove disposed on an inside surface of said housing bore between the two bore openings,
 - [(d)] said housing groove comprising a generally flat bottom surface and a tapered surface defining a release surface angled to the bottom surface, wherein said

² Claim 1 has been reformatted slightly and Petitioner’s limitation designations have been added.

generally flat bottom surface is generally parallel to the lengthwise axis;

- [(e)] providing a pin comprising an elongated solid body defining a pin longitudinal axis, a pin insertion end comprising a tapered surface relative to the pin longitudinal axis, and a pin groove disposed about said elongated solid body, said pin groove comprising a V-groove comprising two tapered surfaces that converge in a direction of the pin longitudinal axis;
- [(f)] receiving a radial canted coil spring, said radial canted coil spring comprising a plurality of coils each comprising a major axis, a minor axis, and a wire diameter sized to cooperate with the pin groove and the housing groove in the housing bore to permit latching and unlatching between said pin and said housing; wherein said radial canted coil spring has a ratio value of major axis to minor axis of between 1.0 to 1.5;
- [(g)] moving the pin in a first direction relative to the housing to capture the radial canted coil spring between the pin groove and the housing groove in the housing bore and contacting the radial canted coil spring with the two tapered surfaces of the V-groove while spacing the radial canted coil spring from the flat bottom surface of the housing groove to latch the pin to the housing;
- [(h)] wherein the tapered surface of the pin insertion end lifts the plurality of coils during insertion of the pin in the first direction into the housing bore, said movement in the first direction produces a connect force;
- [(i)] wherein at least one of the two tapered surfaces of the pin groove abuts the plurality of coils during disconnection of the pin from the housing by moving the pin in a second direction relative to the housing,

which is opposite the first direction, said movement in the second direction produces a disconnect force; and; [(j)] wherein the disconnect force to disconnect the pin from the housing is at least three times greater than the connect force to connect the pin to the housing.

E. Asserted Grounds of Unpatentability

Petitioner contends that the challenged claims are unpatentable based on the following specific grounds (Pet. 3):

No.	References	Basis	Claims Challenged
1	DM3M ³ and PN-164D ⁴ or Richards ⁵	§ 103	1–3 and 6–8 ⁶
2	DM3M, PN-164D or Richards, and the '276 Patent ⁷	§ 103	4, 5, 10
3	DM3M, PN-164D or Richards, and the '078 Patent ⁸	§ 103	9, 11–15, and 17–19
4	DM3M, PN-164D or Richards, the '078 Patent, and the '276 Patent	§ 103	16

Petitioner also relies on the Declarations of Carl Nelson (Ex. 1010) and Hugh Q. Cook (Ex. 1011). Patent Owner supports the patentability of the challenged claims with the Declaration of Erik Fort (Ex. 2001).

³ Bal Seal Catalog No. DM3M Rev. A, published July 17, 1992 (Ex. 1003).

⁴ Bal Seal Product News No. PN-164D (Ex. 1004), undated, but alleged to have been publically available before July 17, 1992. *See* Pet. 4.

⁵ U.S. Pat. No. 5,570,719 to Richards (Ex. 1005).

⁶ Petitioner's grounds list (Pet. 3) includes claim 5 with ground 1, but claim 5 is discussed in connection with ground 2 (Pet. 34).

⁷ U.S. Pat. No. 5,139,276 to Balsells (Ex. 1006).

⁸ U.S. Pat. No. 5,108,078 to Balsells (Ex. 1007).

II. ANALYSIS

A. Level of Ordinary Skill in the Art

Patent Owner asserts that one of ordinary skill in the art of latching connectors “would be someone with at least a bachelor’s degree in engineering and at least three years of direct practical experience in designing latching connectors.” Prelim. Resp. 26–27 (citing Ex. 2001 ¶¶ 77–78). This definition is consistent with that proffered by Petitioner’s Declarant, Mr. Cook. Ex. 1011 ¶ 9. Accordingly, for purposes of determining whether to institute the Petition, we adopt Patent Owner’s definition. We also presume that the cited prior art references reflect the level of ordinary skill at the time of the invention. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

B. Claim Construction

Because the Petition was filed after November 13, 2018, the effective date of the USPTO’s change to the claim-construction standard in trial proceedings before the Board, we construe the claims “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b) (Nov. 2018); *see Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005). Any special definitions for claim terms must be set forth with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

We construe the following claim term in limitation (g) of claim 1:

spacing the radial canted coil spring from the flat bottom surface of the housing groove

Petitioner does not offer a construction for this term. Patent Owner also does not expressly construe this term, but in arguing that DM3M does not teach limitation (g), Patent Owner states that “[n]one of the cited figures of the DM3M catalog show **spacing between the CCS [canted coil spring] and the flat bottom surface** of the housing groove in the latched state.” Prelim. Resp. 51. Thus, Patent Owner implies that spacing the radial canted coil spring from the flat bottom surface of the housing groove requires that there be space *between* the spring and the flat bottom surface of the housing groove after the pin is moved to the latched position. This construction is consistent with the plain meaning of “space.” See <https://www.merriam-webster.com/dictionary/space> (last visited Aug. 2, 2019) (defining “space” (transitive verb) as “to place at intervals or arrange with space between”). It is also consistent with the Specification of the ’274 patent, because the figures depicting the connectors in a latched state appear to show space between the radial canted coil spring and the flat bottom surface of the housing groove. See, e.g., Ex. 1001, Figs. 5, 6, 13, 14. Therefore, for purposes of this Decision, we interpret “spacing the radial canted coil spring from the flat bottom surface of the housing groove” to mean providing space between the radial canted coil spring and the flat bottom surface of the housing groove when the connector is latched. We further determine that, at this stage of the proceeding, no other claim term requires express construction. See *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that only terms that are in controversy need to be construed, and “only to the extent necessary to resolve the controversy”).

C. Ground 1: Claims 1–3 and 5–8—Obviousness—DM3M and either PN-164D or Richards

Petitioner contends that claims 1–3 and 5–8 would have been obvious over DM3M and either PN-164D or Richards. Pet. 18–32. Patent Owner opposes. Prelim. Resp. 49–55.

1. Principles of Law

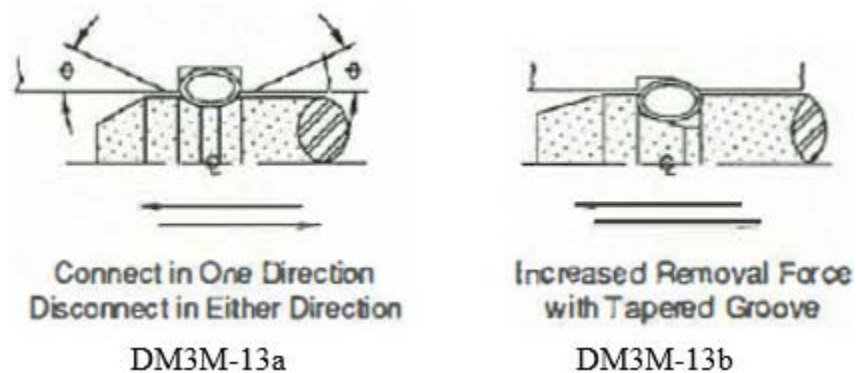
“A patent for a claimed invention may not be obtained though the invention is not identically disclosed or described as set forth in [35 U.S.C. § 102], if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.” 35 U.S.C. § 103(a) (2011).⁹ Obviousness is a question of law based on underlying factual considerations that “include the scope and content of the prior art, the differences between the prior art and the claimed invention, the level of ordinary skill in the art, and any relevant secondary considerations” of non-obviousness, including commercial success of the patented product or method, a long-felt but unmet need for the functionality of the patented invention, and the failure of others who have unsuccessfully attempted to accomplish what the patentee has achieved. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). The obviousness analysis should not be conducted “in a narrow, rigid manner,” but should instead focus on whether a claimed invention is merely “the

⁹ Because the ’274 patent issued from an application filed before March 16, 2013, the effective date of the amendments to 35 U.S.C. § 103 enacted by the Leahy-Smith America Invents Act, we apply the pre-AIA version of the statute. *See* Leahy-Smith America Invents Act (AIA), Pub. L. No. 112–29, § 3(n)(1), 125 Stat. 284, 293 (2011).

result[] of ordinary innovation,” which is not entitled to patent protection.
KSR Int’l Co. v. Teleflex Inc., 550 U.S. 398, 406 (2007).

2. *DM3M (Ex. 1003)*

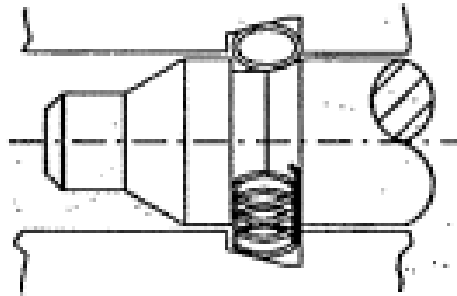
DM3M is a catalog titled “canted coil springs,” and appears to be produced by Patent Owner. Ex. 1003, 1. DM3M describes and depicts various uses for circular canted coil springs, including for latching and holding mechanisms. *Id.* at 6. In its analysis, Petitioner relies on two figures on page 13 of DM3M, which Petitioner designates “DM3M-13a” and “DM3M-13b.” Pet. 8–9. These figures are reproduced below:



Petitioner represents that DM3M-13a, reproduced above, depicts a latching connector comprising a radial spring; a housing with a housing groove, the housing groove having a bottom surface and two sidewalls; and a solid body pin with a tapered insertion end and a pin groove, the pin groove having a bottom surface and two tapered surfaces. *Id.* at 8. Petitioner represents that DM3M-13b, reproduced above, depicts a latching connector having a housing groove with a tapered surface that intersects with the bottom surface at an angle. *Id.* at 9.

3. *PN-164D (Ex. 1004)*

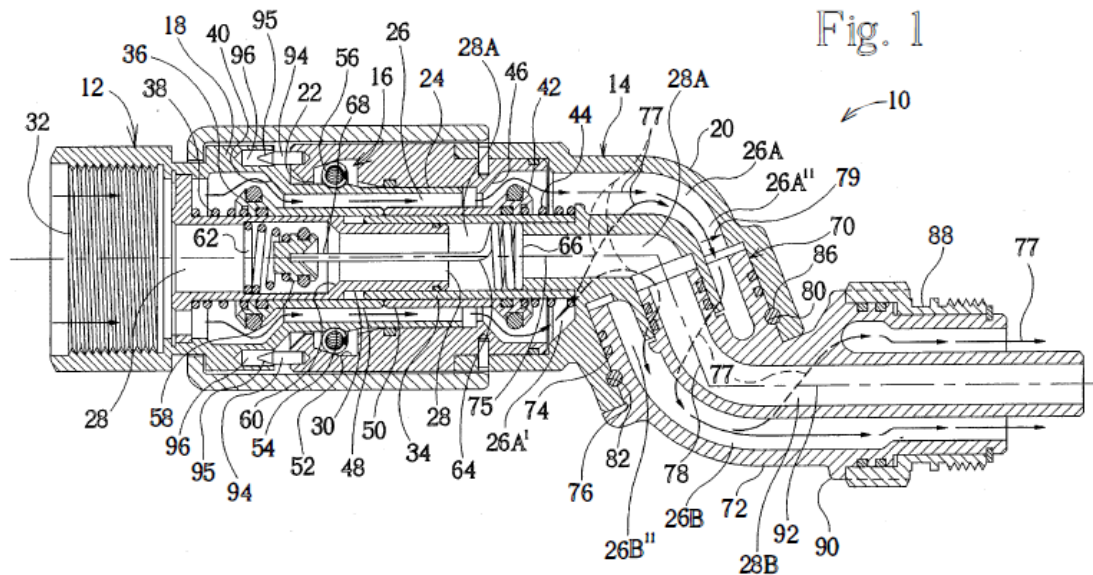
PN-164D is a publication titled “Latching and Holding with Bal Seal Canted-Coil Circular Welded Springs, Product News #164D,” and bears the name of Patent Owner Bal Seal Engineering Company, Inc. Ex. 1004, 1. It is undated, but Petitioner states that it “is referenced in DM3M and was therefore publically available at least as early as July 17, 1992.” Pet. 4; *see* Ex. 1003 (DM3M), 13 (“For added designs and information on housing and piston designs, dimensional data, connect and disconnect forces with latching, holding and locking capabilities, request PN-164.”). In its analysis Petitioner relies on a portion of Figure 2, reproduced below:



Petitioner represents that the portion of Figure 2 of PN-164D on which it relies, reproduced above, depicts a housing groove comprising a bottom surface, a tapered surface, and two side walls. Pet. 10.

4. *Richards (Ex. 1005)*

Richards teaches “a breakaway hose coupling for releasably joining two fuel dispensing devices in fluid communication” that incorporates both fuel and vapor passages. Ex. 1005, 1:5–11. Figure 1 depicts Richards’ coupling, and is reproduced below:



As depicted in Figure 1, reproduced above, breakaway hose coupling 10 comprises first and second valve assemblies 12 and 14, which include first and second valve housings 18, 20, respectively; and disconnect mechanism 16, which joins the valve assemblies together. *Id.* at 3:33–44. Mechanism 16 includes canted coil spring 56 disposed within registering annular grooves 52 and 54. *Id.* at 4:51–62. Richards teaches that “the force necessary to effect disengagement can be preselected by selecting the appropriate canted-coil spring 56 and by selectively dimensioning the grooves 52 and 54.” *Id.* at 4:63–65.

5. Discussion

a. Independent Claim 1

(1) Currently Undisputed Limitations

Petitioner contends that DM3M teaches limitations (a)-(c), (e), (f), (h), and (i). Pet. 18–20, 23–27. Petitioner further contends that limitations (d) and (j) are taught by DM3M, PN-164D, and Richards. *Id.* at 20–23, 27–28.

Patent Owner does not dispute these contentions at this stage of the proceeding.

(2) Limitation (g)

Petitioner contends that DM3M, and particularly Figure DM3M-13a, teaches limitation (g). This limitation reads:

[M]oving the pin in a first direction relative to the housing to capture the radial canted coil spring between the pin groove and the housing groove in the housing bore and contacting the radial canted coil spring with the two tapered surfaces of the V-groove while spacing the radial canted coil spring from the flat bottom surface of the housing groove to latch the pin to the housing.

As discussed above, we construe “spacing the radial canted coil spring from the flat bottom surface of the housing groove” to require providing space between the radial canted coil spring and the flat bottom surface of the housing groove when the connector is latched. Petitioner relies on DM3M-13a to teach limitation (g). According to Petitioner, “DM3M-13a teaches a pin that can be inserted into a housing from right to left such that the canted coil spring is seated in the v-groove of the pin groove. The pin can also be disconnected from the housing from left to right.” Pet. 25. Patent Owner responds that both DM3M-13a and -13b “utilize grooves that constrain both the [outer diameter] and the [inner diameter] of the [spring] coils,” and therefore, the figures do not “show spacing between the CCS and the flat bottom surface of the housing groove in the latched state.” Prelim. Resp. 51 (citing Ex. 2001 ¶ 134) (emphasis omitted).

On this record, Petitioner has not persuaded us that DM3M-13a teaches limitation (g). In particular, Petitioner has not explained how DM3M-13a teaches providing space between the radial canted coil spring and the flat bottom surface of the housing groove when the connector is

latched. Accordingly, Petitioner has not satisfied its pleading requirement. *See* 37 C.F.R. § 42.104(b)(4) (“The petition must specify where each element of the claim is found in the prior art patents or printed publications relied upon”). Nor is such a space apparent from our independent review of the evidence.

(3) Conclusion With Respect to Claim 1

Because Petitioner has not persuaded us, on this record, that DM3M-13a teaches limitation (g), we are not persuaded that Petitioner has shown a reasonable likelihood of prevailing with respect to claim 1.

b. Claims 2, 3, and 5–8

Claims 2, 3, and 5–8 depend from claim 1. Therefore, for the reasons discussed above, we are not persuaded that Petitioner has shown a reasonable likelihood of prevailing with respect to these claims.

c. Conclusion With Respect to Ground 1

Based on the current record, we are not persuaded that Petitioner has shown a reasonable likelihood of prevailing with respect to Ground 1.

D. Ground 2: Claims 4, 5, and 10—Obviousness—DM3M, PN-164D or Richards, and the '276 Patent

Petitioner asserts that claims 4, 5, and 10 would have been obvious over DM3M, PN-164D or Richards, and the '276 patent. Pet. 33–35.

1. *The '276 Patent (Ex. 1006)*

The '276 patent describes “garter-type spring assemblies best suited for radial loading of the spring.” Ex. 1006, 1:24–26. Figure 5 is reproduced below:

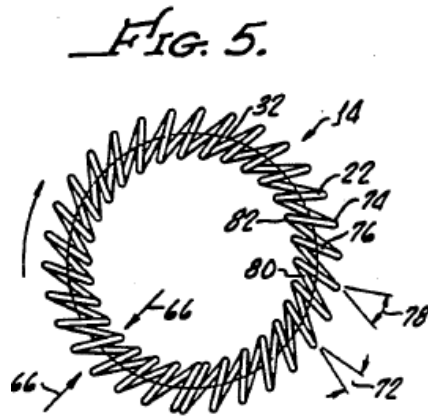


Figure 5, reproduced above, depicts spring 4 having a plurality of coils 22 that are “interconnected in a manner forming a circular spring having a primary load-deflection characteristic along a radial direction as indicated by arrow 66.” *Id.* at 4:31–35. The ’276 patent also describes and depicts springs with various “turn angles θ .” *Id.* at 5:31–53, Figs. 8–9e, 10a–13b. The ’276 patent teaches that “[b]y varying the turn angle θ , different loads can be obtained [such that] the higher the turn angle θ , the higher the force developed.” *Id.* at 53–57.

2. Discussion

Claims 4, 5, and 10 ultimately depend from claim 1, and therefore Petitioner relies on its discussion of claim 1 in connection with Ground 1 to address the limitations of claim 1, including limitation (g), discussed above. Because Petitioner has not persuaded us that the cited prior art references teach this limitation, we are not persuaded that Petitioner has shown a reasonable likelihood of prevailing with respect to Ground 2.

*E. Ground 3: Claims 9, 11–15, and 17–19—Obviousness—
DM3M, PN-164D or Richards, and the '078 Patent*

Petitioner contends that claims 9, 11–15, and 17–19 would have been obvious over DM3M, PN-164D or Richards, and the '078 patent. Pet. 35–41. Patent Owner opposes. Prelim. Resp. 56–61.

1. The '078 Patent (Ex. 1007)

The '078 patent “relates to canted-coil springs retained in a cavity [of a seal] with interference between the spring coils and the cavity to retain the spring in a selected orientation for subsequent loading of the spring.” Ex. 1007, 1:14–19. Figure 16 is reproduced below:

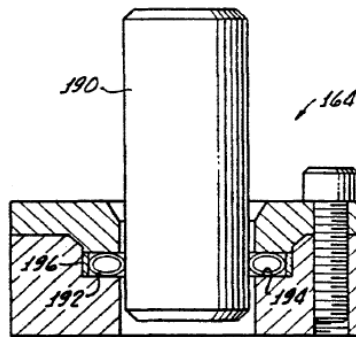


Fig. 16.

Figure 16, reproduced above, depicts fixture 164 comprising “piston 190 for radially compressing a spring 192 within a groove 194.” *Id.* at 8:48–49. Spacers 196 “compress the spring 192 from an out-side diameter thereof toward an inside diameter thereof.” *Id.* at 8:50–51. Fixture 164 is used to generate the force-versus-deflection curve depicted in Figure 19. *Id.* at 9:33–33.

2. *Discussion*

a. Independent claim 11

Independent Claim 11 is similar to claim 1 except that it: (1) recites “a retainer attached to the housing having a bore opening and defining a sidewall of a housing groove;” and (2) does not recite “spacing the radial canted coil spring from the flat bottom surface of the housing groove to latch the pin to the housing.” Petitioner refers to its discussion of claim 1 for all of claim 11’s limitations except for the retainer. Pet. 36. As noted above, Patent Owner does not dispute that these limitations are taught by the cited references.

For the retainer limitation, Petitioner relies on the ’078 Patent, Figure 16. *Id.* at 36–37. Petitioner asserts that “[t]he ’078 Patent, Fig. 16, shows a housing attached to a retainer via a screw,” and “[t]he retainer forms a sidewall of the housing groove.” *Id.* at 36. According to Petitioner, “[i]t would be obvious to a person skilled in the art in light of the teachings of the ’078 Patent to include a retainer in a latching connector because retainers were known to facilitate assembly of the spring in a housing mounted latching connector at the time of the invention.” *Id.* at 37 (citing Ex. 1011 ¶ 76).

Patent Owner disputes that one of ordinary skill in the art would have combined the retainer taught by the ’078 patent with the connector depicted in Figure DM3M-13a, at least in the manner that Petitioner proposes. Patent Owner asserts that “[t]he ’078 patent does not suggest using a retainer for forming a sidewall but rather a **retainer for compressing or loading the minor axis** of the CCS.” Prelim. Resp. 58 (citing Ex. 2001 ¶ 148). Thus,

according to Patent Owner, Petitioner proposes employing the '078 patent's retainer contrary to "its intended use." *Id.*

On this record, we are not persuaded that one of ordinary skill in the art would have combined DM3M with the '078 patent in the manner that Petitioner proposes. Notably, Figure 16 of the '078 patent does not depict a connector; instead, it depicts "a jig for determining the load-deflection characteristics of springs made in accordance with the present invention." Ex. 1007, 4:30–32; *see also id.* at 8:21–24 (stating that "fixtures, or jigs" shown in Figures 14–17 may be used to determine "the load-deflection characteristics of spring[s] made in accordance with the present invention.")). Petitioner has not pointed us to anything in the '078 patent suggesting that one of ordinary skill in the art would have used fixture 164 depicted in Figure 16 for anything other than as a test jig. Because the '078 patent does not actually teach employing a retainer in a "connector," it provides little if any support for Petitioner's contention that "retainers were known to facilitate assembly of the spring in a housing mounted latching *connector* at the time of the invention." Pet. 37 (emphasis added). Petitioner's declarant provides testimony substantially similar to Petitioner's contention. *See* Ex. 1011 ¶¶ 75–76. That testimony does not cite any additional evidence or sufficiently explain the statement that "retainers were known to facilitate assembly of the spring in a housing mounted latching connector at the time of the invention." *See id.* Petitioner does not otherwise explain why one of ordinary skill in the art would have used a retainer employed in a test jig in the connector depicted in DM3M-13a. Accordingly, we are not persuaded that Petitioner has a reasonable likelihood of showing that claim 11 would have been obvious over DM3M, PN-164D or Richards, and the '078 patent.

b. Claims 12–15 and 17–19

Claims 12–15 and 17–19 ultimately depend from claim 11. Thus, for the reasons stated above, Petitioner has not shown a reasonable likelihood of establishing that any of claims 12–15 and 17–19 would have been obvious over DM3M, PN-164D or Richards, and the '078 patent.

c. Claim 9

Claim 9 depends from claim 1. For the reasons discussed above with respect to claim 1, we are not persuaded that Petitioner has a reasonable likelihood of prevailing with respect to claim 9.

3. *Conclusion as to Ground 3*

For the reasons discussed above, we are not persuaded that Petitioner has a reasonable likelihood of showing that claims 9, 11–15 and 17–19 would have been obvious over DM3M, PN-164D or Richards, and the '078 patent.

F. Ground 4: Claim 16—Obviousness—DM3M, PN-164D or Richards, the '078 Patent, and the '276 Patent

Claim 16 ultimately depends from claim 11. Thus, for the reasons stated above with respect to claim 11, we are not persuaded that Petitioner has a reasonable likelihood of prevailing with respect to claim 16.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has not shown that there is a reasonable likelihood that it would prevail with regard to at least one of the claims challenged in the Petition.

IV. ORDER

For the reasons given, it is

ORDERED that the Petitioner is *denied* and no trial is instituted.

PETITIONER:

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