

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SRAM, LLC,
Petitioner,

v.

FOX Factory, Inc.,
Patent Owner.

IPR2024-00216
Patent US 8,550,223 B2

Before MEREDITH C. PETRAVICK, WILLIAM V. SAINDON, and
FRANCES L. IPPOLITO, *Administrative Patent Judges*.

IPPOLITO, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314(a)

I. INTRODUCTION

SRAM, LLC (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–9, 11–15, and 19 of U.S. Patent No. 8,550,223 B2 (Ex. 1001, “the ’223 patent”). FOX Factory, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 8, “Prelim. Resp.”).

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the Petition and any response thereto shows “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

Considering the arguments presented, we conclude that there is a reasonable likelihood that Petitioner would prevail in challenging at least one of claims 1–9, 11–15, and 19 of the ’223 patent as unpatentable under the grounds presented in the Petition. Pursuant to § 314, we grant institution of an *inter partes* review as to these claims of the ’223 patent.

II. BACKGROUND

A. *Related Matters*

The parties indicate that the ’223 patent has been asserted in the following United States District Court actions: *FOX Factory, Inc. v. SRAM, LLC*, C.A. No. 1:23-cv-00313-RM-KAS (D. Colo.) and *FOX Factory, Inc. v. SRAM, LLC*, C.A. No. 2:22-cv-04805-DOC-JC (C.D. Cal.) (transferred to D. Colo. February 1, 2023) (collectively referred to as “District of Colorado proceeding”). Pet. 117; Paper 4, 1.

B. *Real Parties in Interest*

Petitioner identifies itself as the real party-in-interest. Pet. 117. Patent Owner identifies itself and FOX Factory Holding Corp. as the real parties-in-interest. Paper 4, 1.

C. The '223 Patent

The '223 patent, titled “Methods and Apparatus for Position Sensitive Suspension Dampening,” relates generally to methods and apparatus for use in vehicle suspension, and more specifically to methods and apparatus useful for variable and position sensitive dampening rate in vehicle shock absorbers. Ex. 1001, 1:13–16.

Figure 2, reproduced below, depicts a section view of dampening assembly 200 of a shock absorber shown in an axially extended position. *Id.* at 3:23–25.

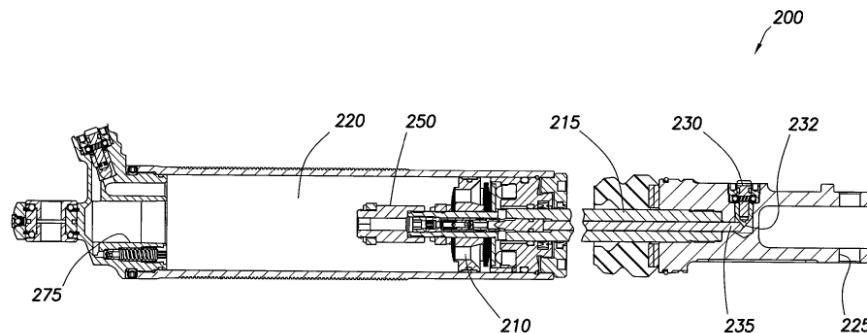


FIG. 2

Dampening piston 210 is fixed relative to shaft 215, both of which are axially movable relative to housing or chamber 220. *Id.* at 3:25–27. Piston 210 is equipped with fluid paths therethrough to permit dampening fluid within chamber 220 to be metered through piston 210. *Id.* at 3:27–29. For example, when shaft 215 moves into chamber 220, fluid moves from a first side (the compression portion) to an opposite side (the rebound portion) of chamber 220 through the paths formed in piston 210. *Id.* at 3:29–33. Piston shaft 215 includes a fluid path formed in its interior and provides for fluid communication between bottom out cup 275 and rebound portion 221 of chamber 220 during the rebound stroke. *Id.* at 5:28–32.

Figure 3A, reproduced below, is a section view showing bottom out piston 250 entering bottom out cup 275 during a compression stroke of a shock absorber. *Id.* at 3:4–6. Figure 3B, also reproduced below, is a section view showing bottom out cup 275 of Figure 3A with bottom out piston 250 fully engaged and sealed therein. *Id.* at 3:7–9.

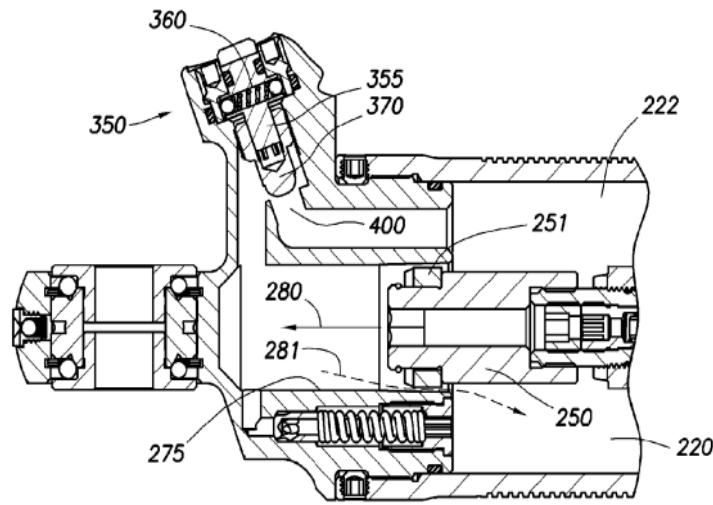


FIG. 3A

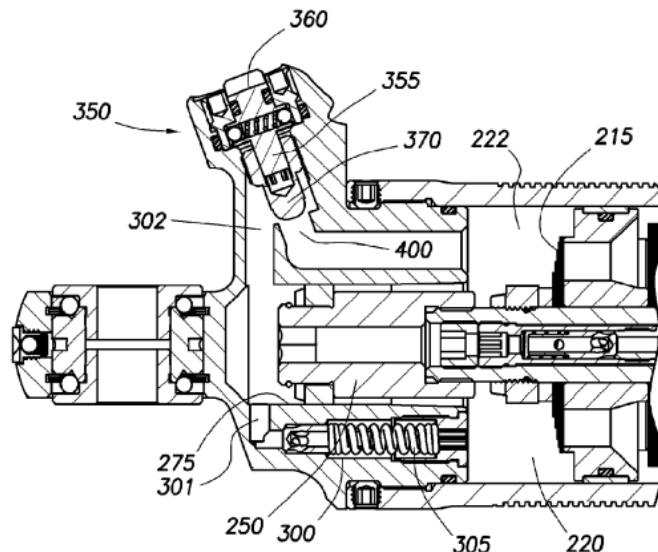


FIG. 3B

Bottom out piston 250 engages bottom out cup 275 formed at lower end of chamber 220. *Id.* at 3:41–43. User-adjustable metering valve 350 with

externally accessible adjustment features is in communication with bottom out cup 275 and can be found at end of fluid flow path 302. *Id.* at 4:31–33. Bottom out piston 250 includes piston ring or dynamic seal 251 for axially slidable engagement with an inner diameter of bottom out cup 275. *Id.* at 3:51–54. As piston 250 completely engages with bottom out cup 275, dampening can increase because shaft 215 can only progress further as fluid (e.g., substantially incompressible) is moved from bottom out cup 275 through one of two paths 301, 302 leading back into compression portion 222 of chamber 220. *Id.* at 3:64–4:2.

D. Challenged Claims

Petitioner challenges claims 1–9, 11–15, and 19. Pet. 1. Claims 1, 11, and 19 are independent claims. Claim 1 is reproduced below:

1. A damper for a shock absorber comprising:
 - a damper chamber divided by a piston and shaft into a compression and rebound portions;
 - a bottom out cup formed at an end of the compression portion;
 - and
 - a fluid flow path formed in the bottom out cup for providing fluid communication from the cup to the compression portion of the chamber during a compression stroke of the damper; wherein the capacity of the fluid flow path is adjustable.

Ex. 1001, 7:39–48.

Claim 11 is reproduced below:

11. A fluid damper comprising:
 - a damper chamber divided by a piston mounted on a movable rod, into a primary compression and a primary rebound chamber;
 - a bottom out cup in fluid communication with the damper chamber;

- a bottom out piston formed on the movable rod for sealingly engaging an interior of the bottom out cup, the damper including a first position in which the bottom out piston is not housed in the bottom out cup and a second position in which the bottom out piston is housed therein; and
- an adjustable fluid flow path formed in the cup, the flow path providing fluid communication between the cup and the primary compression chamber in a compression stroke of the damper.

Ex. 1001, 8:8–23.

Claim 19 is reproduced below:

19. A damper for a shock absorber comprising:

a fluid;

a compression chamber;

a bottom out cup;

a valve wherein;

in a compression stroke of the damper, the fluid flows from the bottom out cup to the compression chamber at a first rate with the valve in a first position and at a second rate with the valve in a second position where the first rate is greater than the second rate and the valve includes an adjuster accessible from an exterior of the shock absorber.

Ex. 1001, 8:61–9:5.

E. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–9, 11–15, and 19 would have been unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–9, 11–15, 19	102	Nakaya ¹
4, 8 ²	103	Nakaya Kodama ³

¹ U.S. Patent No. 6,558,430 B1, issued May 6, 2003 (Ex. 1005) (“Nakaya”).

² Petition includes Kodama in this challenge on pp. 37–39. Pet. 37–39.

³ U.S. Patent No. 5,405,407, issued April 11, 1995 (Ex. 1006) (“Kodama”).

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–5, 9, 11–15, 19	102	Chen ⁴
1–5, 9, 11–15, 19	103	Chen alone or with Deferme ⁵ , Kodama ⁶
1–5, 9, 11–15, 19	103	Fox ’751, ⁷ Chen, Kodama ⁸
5–9	103	Fox ’751, Chen, Nakaya, Kodama
1–5, 9, 19	102	Gartner ⁹
4	103	Gartner, Kodama

Pet. 3–4. Petitioner also relies on the Declarations of Eric Wang (Ex. 1002) and Kevin Wesling (Ex. 1003).

III. ANALYSIS

A. *Level of Ordinary Skill in the Art*

In determining the level of skill in the art, we consider the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus. Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983).

⁴ UK Patent Application No. GB2377254A, published August 1, 2003 (Ex. 1007) (“Chen”).

⁵ U.S. Patent Application Publication No. 2006/0283676 A1, published Dec. 21, 2006 (Ex. 1008) (“Deferme”).

⁶ Petition includes Kodama in this challenge on page 65. Pet. 65.

⁷ U.S. Patent No. 6,604,751 B2, issued Aug. 12, 2003 (Ex. 1009) (“Fox ’751”).

⁸ Petition includes Kodama in this challenge on p. 85. Pet. 85 (claim 4).

⁹ U.S. Patent No. 8,162,112 B2, issued Apr. 24, 2012 (Ex. 1010) (“Gartner”).

Petitioner contends that a person of ordinary skill in the art (“POSITA”) at the time of the invention of the ’223 patent “would have a degree in Mechanical Engineering and at least three years’ experience in vehicle suspension technology, or a Master’s degree in Mechanical Engineering with a concentration in design of vehicle suspension technology and/or shock absorbers.” Pet. 5–6, n.1. Patent Owner does not address the level of ordinary skill in the art at this preliminary stage of the proceeding. *See* Prelim. Resp.

For the purposes of this Decision, we adopt Petitioner’s proposal as reasonable and consistent with the prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art may reflect an appropriate level of skill in the art).

B. Principles of Law

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831 (Fed. Cir. 1990).

In *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under § 103 that requires consideration of four factors: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of non-obviousness such as “commercial success, long-felt but unsolved needs, failure of others, etc.” *Id.* at 17–18. “While the sequence of these questions might be reordered in any particular

case,” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007), the Federal Circuit has “repeatedly emphasized that an obviousness inquiry requires examination of all four Graham factors and that an obviousness determination can be made only after consideration of each factor.” *Nike, Inc. v. Adidas AG*, 812 F.3d 1326, 1335 (Fed. Cir. 2016).

We note that, with respect to the fourth *Graham* factor, the current record in this proceeding does not include any argument or evidence directed to secondary considerations of nonobviousness. The analysis below addresses the first three *Graham* factors.

C. Claim Construction

In an *inter partes* review proceeding, the Board interprets claim language using the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), as described in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b). Under that standard, we generally give claim terms their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history. *See Phillips*, 415 F.3d at 1313–14. Although extrinsic evidence, when available, may also be useful when construing claim terms under this standard, extrinsic evidence should be considered in the context of the intrinsic evidence. *See id.* at 1317–19.

According to Petitioner, “SRAM does not believe that any ’223 patent claim terms require any special definition different than their ordinary and customary meaning to a POSITA.” Pet. 16. Petitioner notes that Patent Owner “has asserted certain claim construction positions in its pending lawsuit in the District Court of Colorado.” *Id.* (citing Ex. 1014, 13–23). With regard to those constructions, Petitioner asserts that it has applied

Patent Owner’s proposed constructions from the related district court proceeding for various grounds asserted in this proceeding, and that even if Patent Owner’s constructions are applied, Petitioner has still met the threshold requirements for institution of an *inter partes* review. Pet. 16–17.

Patent Owner disagrees that no claim terms need construction. Prelim. Resp. 6. According to Patent Owner, “[a]t least the claim terms ‘bottom out cup’ and ‘bottom out cup at the end of the compression portion,’ which are present in each of the independent claims 1, 11, and 19, should be construed by the Board to resolve the disputes between the parties.” *Id.*

1. “a bottom out cup”/ “a bottom out cup at the end of the compression portion”

Patent Owner contends that the claim phrase “a bottom out cup at the end of the compression portion,” recited in claim 1, should be construed to mean “a *secondary* chamber at the *lower* end of the compression portion of the damper chamber and *configured to receive a secondary piston at the end portion of a compression stroke.*” Prelim. Resp. 7 (emphases added).

With respect to “a bottom out cup” recited in claims 11 and 19, Patent Owner proposes this to mean “a *secondary* chamber at the *lower* end of the [*primary*] compression chamber of the damper chamber and *configured to receive a secondary piston* at the end portion of a compression stroke.” *Id.* (emphases added and brackets in original).

At this stage of the proceeding, we do not adopt Patent Owner’s construction because, on this record, it appears inconsistent with the plain language of claims 1, 11, and 19, and the disclosure of the ’223 patent.

Starting with claim 1, the plain language recites in its entirety that

A damper for a shock absorber comprising:
a damper chamber divided by a piston and shaft into a
compression and rebound portions;

a bottom out cup formed at an end of the compression portion; and
a fluid flow path formed in the bottom out cup for providing fluid communication from the cup to the compression portion of the chamber during a compression stroke of the damper; wherein the capacity of the fluid flow path is adjustable.

Ex. 1001, 7:39–48 (emphases added). We note that the plain language of claim 1 recites a “damper chamber,” but does not recite “a secondary chamber at the lower end of the compression portion of the damper chamber.” Moreover, the plain language of claim 1 does not require “a secondary piston” or that “a secondary chamber” is configured to receive “a secondary piston.” Further, the express claim language expressly recites that the “bottom out cup” is at “*an end* of the compression portion” of the damper chamber, but does not require that end to be a *lower* end.

Similarly, independent claim 19 recites “a bottom out cup,” but does not recite that the bottom out cup includes a secondary chamber, a secondary piston, or that the bottom out cup is located at any end of any compression portion. Ex. 1001, 8:64.

Independent claim 11, reproduced below, recites:

a bottom out cup in fluid communication with the damper chamber;
a bottom out piston formed on the movable rod for sealingly engaging an interior of the bottom out cup, the damper including a first position in which the bottom out piston is not housed in the bottom out cup and a second position in which the bottom out piston is housed therein[.]

Ex. 1001, 8:12–19. The express language of claim 11 recites “a bottom out cup in fluid communication with the damper chamber” but does not require the bottom out cup to be at a lower end of a compression chamber. We observe that claim 11 does recite “a bottom out piston” for “sealingly

engaging an interior of the bottom out cup.” However, the “bottom out piston” is recited separately from the “bottom out cup,” whereas Patent Owner’s proposed construction introduces a “secondary piston” into the features of the “bottom out cup.”

In addition, the portions of the ’223 patent cited by Patent Owner do not support Patent Owner’s construction. *See* Prelim. Resp. 8 (citing Ex. 1001, 2:22–35, 3:1–3, 3:40–44, code (57)). For example, column 3 of the ’223 patent discloses a “*bottom out piston* is constructed and arranged to engage a bottom out cup 275 formed at the *lower end* of the chamber 220.” Ex. 1001, 3:42–44. The disclosure in column 3 expressly describes the bottom out cup as located at a lower end of chamber 220. However, the express language of claims 1, 11, and 19 does not. Elsewhere, the Abstract describes “a secondary compression chamber in fluid communication with the damper chamber.” Ex. 1001, code (57). This disclosure is consistent with the language of claim 11 (and claims 1 and 19) that does not require the secondary compression chamber to be at the lower end of the chamber. *Id.* Additionally, we note that the “bottom out piston” as described is a separate component that is not included in the “bottom out cup.” *See* Ex. 1001, 3:42–44.

Furthermore, Patent Owner points to the deposition testimony of inventor Everet Eriksen in the related district court proceeding for support. Patent Owner contends Mr. Eriksen testifies that “a bottom out cup” is:

a separate chamber that engages when the shock absorber is near the end of the stroke and *when the bottom out piston enters the bottom out cup, it now defines the second compression chamber that adds compression damping force* for the last portion of the travel of the shock absorber.

Prelim. Resp. 8–9 (citing Ex. 2008, 32:10–33:11) (emphases added). According to Patent Owner, Mr. Eriksen’s testimony is consistent with the construction of “bottom out cup” as a secondary compression chamber, at the lower end of the primary compression portion of the damper chamber, that receives a secondary piston. *Id.* at 8.

First, we are not persuaded that Mr. Eriksen’s testimony applies to our analysis. On the current record, Patent Owner has not explained or established why or how this testimony reflects a POSITA’s understanding of the claim terms, particularly because Mr. Eriksen’s background, technical or otherwise has not been explained. Second, even if the testimony is considered, we note that Mr. Eriksen does not testify that the bottom out cup is at a specific end (e.g., lower end) of a chamber. Rather, Mr. Eriksen testifies that a second compression chamber is defined once a bottom out piston (also a separate component) enters the bottom out cup. *See* Ex. 2008, 32:10–33:11. Moreover, to the extent that Patent Owner relies upon Mr. Eriksen’s testimony as extrinsic evidence, we note that this testimony is at odds with the express claim language and specification. *Phillips*, 415 F.3d at 1318 ([A] court should discount any expert testimony ‘that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.’”).

In its discussion of *Nakaya* and claim 1, Patent Owner further relies on the declaration testimony of Dr. Alexander Slocum in the related district court proceeding. Prelim. Resp. 13. There, Dr. Slocum testifies that

I agree with FOX’s construction of “bottom out cup” as “a secondary chamber at the lower end of the compression portion of the damper chamber and configured to receive a secondary piston at the end portion of a compression stroke.” FOX’s

definition is consistent with the '223 patent's description of the "bottom out cup" arrangement as a secondary dampening mechanism. *See* '223 patent, Abstract, 2:22-35, 3:1-3. Indeed, the primary compression happens in the compression portion of the damper chamber. The bottom out cup is a secondary compression chamber at the lower end of the (primary) compression portion of the damper chamber. *Id.* at 3:40-44. *The bottom out cup receives a secondary, bottom out piston near the end of a compression stroke, which then generates secondary compression forces within the bottom out cup which effectively adds to the forces being generated in the compression chamber.* For the same reasons, I also agree with FOX's proposed construction of the limitation "a bottom out cup formed at the end of the compression portion" as "a secondary chamber at the lower end of the compression portion of the damper chamber and configured to receive a secondary piston at the end portion of a compression stroke."

Ex. 2007 ¶ 44 (emphases added).

Dr. Slocum's testimony requires importing "a secondary chamber," "a secondary piston," and placement of the bottom out cup at the *lower* end of the compression portion into claims 1, 11, and 19. As discussed above, the express claim language does not require or expressly recite these features.

Accordingly, we find the Patent Owner's proposed construction to be narrower than what is supported on the preliminary record. We, therefore, do not limit the claimed "bottom out cup" to a specific location of the damper chamber or import the limitations: a secondary chamber, a secondary piston, or "generates secondary compression forces." Instead, we preliminarily construe "bottom out cup" as a "cup-shaped feature configured for providing dampening." This is consistent with disclosure of the '223 patent, which teaches that "[w]hat is needed is a *dampening system* that will prevent or mitigate *bottom out* and that can be adjusted as a ride, and

corresponding use of the shock absorber, progresses.” Ex. 1001, 2:28–31 (emphases added).

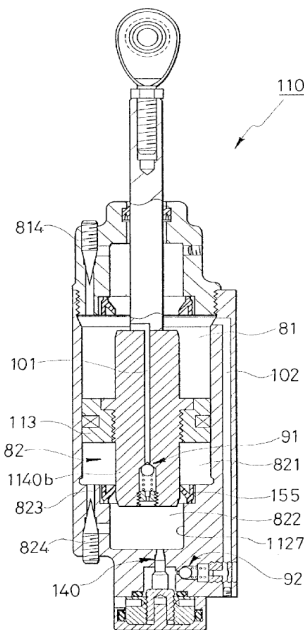
We discern further construction of these claim phrases or others is not required for the purposes of this Decision. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms that . . . are in controversy, and only to the extent necessary to resolve the controversy.’”)(quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). We note that this construction is preliminary. However, because this claim construction issue may become dispositive, the parties are invited to provide further evidence explaining how a POSITA would understand the term “bottom out cup.”

D. Ground 1A: Claims 1–9, 11–15, and 19 Anticipated by Nakaya

Petitioner asserts independent claims 1, 11, and 19 and dependent claims 2–9 and 12–15 are anticipated by *Nakaya*. Pet. 21–52. For the reasons that follow, Petitioner’s arguments and supporting evidence establishes a reasonable likelihood of prevailing with respect to this ground at this stage of the proceeding pursuant to 35 U.S.C. § 314(a).

1. Nakaya (Ex. 1005)

Nakaya is a U.S. patent titled “Air-Cylinder Apparatus for Prosthetic Limb.” Ex. 1005, code (54). *Nakaya* relates to an air-cylinder apparatus for use in a prosthetic limb designed for assisting the bending and stretching motion of an amputee’s knee. *Id.* at 1:6–8. *Nakaya* discloses the use of air as working fluid for the air-cylinder apparatus for its compressibility properties. *Id.* at 1:25–26. Figure 8 depicts air-cylinder apparatus 110 and is reproduced below:



Nakaya discloses that air-cylinder apparatus 110 comprises cylinder body 112. *Id.* at 6:25–26. The interior of cylinder body 112 is divided, by piston 113, into first chamber 81 located on the head side and second chamber 82 located on the bottom side. *Id.* at 6:37–39. In particular, Nakaya discloses chamber 822 as a predetermined chamber which is defined within middle sized-diameter hole 1127. *Id.* at 9:6–10. At bottom part 112b, there is provided throttle passage 823 as an auxiliary passage for communicating with two chambers 821, 822. *Id.* at 9:12–15. Nakaya discloses a screw type needle valve 824 as a throttle valve. *Id.* at 9:16–17. Additionally, Nakaya describes throttle valve 824 can be “set” between 0.003–0.004 mm² for varying amounts of pressure in the chamber 821. *Id.* at 9:19–20, 9:27–29.

2. Claim 1

Petitioner contends that Nakaya discloses every limitation of claim 1. Pet. 21–33. Patent Owner opposes. Prelim. Resp. 11.

a) A damper for a shock absorber comprising:

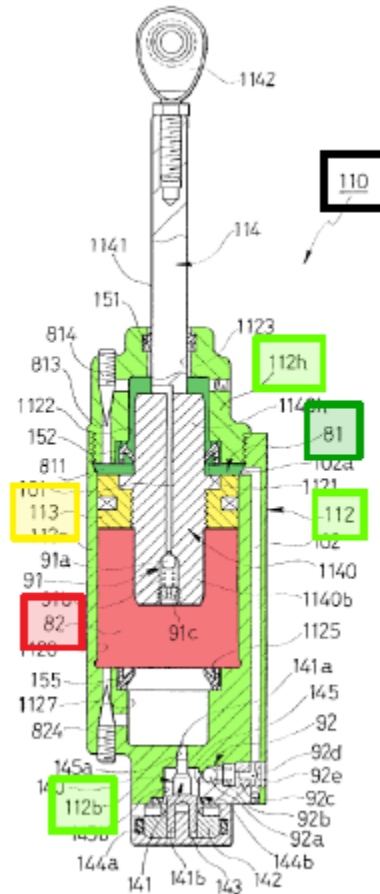
Petitioner contends that “Nakaya discloses a fluid-based (air being the fluid) damper of a shock absorber 110 for a suspension system.” Pet. 21 (citing Ex. 1005, code (57), Figs. 7–9, 17–19).

To the extent that the preamble is limiting, Patent Owner argues Nakaya’s air cylinder apparatus for a prosthetic limb is not a “damper” and Nakaya does not disclose that air-cylinder body 112 can dampen or absorb shock impulses. Prelim. Resp. 12. Patent Owner contends that

Nakaya simply teaches an apparatus for adjusting pressure characteristics and generating appropriate resisting force in accordance with the bending and stretching motion of an amputee’s knee in order to attain a natural walking style over a wide range of walking speeds. Even if the pressure within a chamber 82 (the alleged “compression portion” or “compression chamber”) of air-cylinder body 112 increases due to bending motion of the knee, such increase in pressure is desired because it applies the necessary resistance to propel walking.

Id. (citing Ex. 1005, 1:6–13, 2:23–37).

Based on the current record, Petitioner has provided sufficient explanation and supporting evidence that Nakaya discloses a “damper” for the purposes of institution. In the Petition, Petitioner provides an annotated version of Nakaya’s Figure 7, reproduced below:



Pet. 21. Annotated version of Nakaya's Figure 7 on page 21 of the Petition mark the damper in light green. *Id.* Referring to the annotated figure, Petitioner asserts that

[t]he damper is formed by a cylindrical body 112 (light green) that is closed on either end by head part 112h and bottom part 112b (light green). The volume formed in the damper is divided by a piston 113 (yellow) into a compression portion 82 (light red) and a rebound portion 81 (dark green).

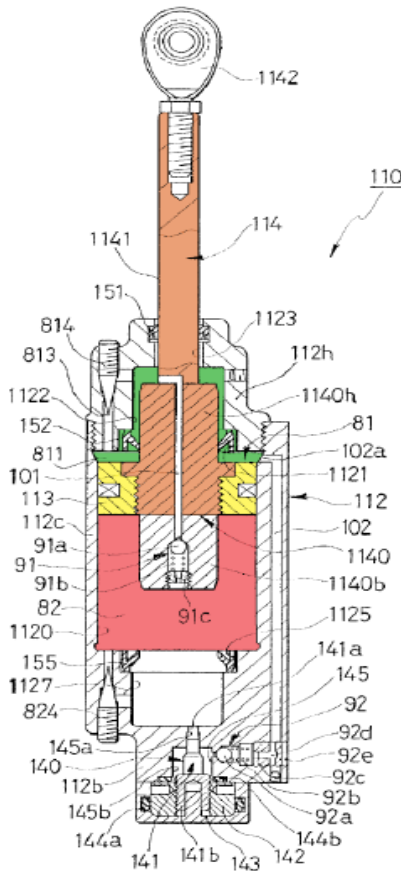
Id. (citing Ex. 1005, Fig. 7; Ex. 1002 ¶ 52; Ex. 1003 ¶ 52), 29 (citing Ex. 1005, Fig. 7; Ex. 1002 ¶ 89; Ex. 1003 ¶ 89). Petitioner further relies on the expert testimonies of Mr. Eric Wang and Mr. Kevin Wesling, which at this stage support Petitioner's reading of Nakaya. *See* Ex. 1002 ¶¶ 52, 89; Ex. 1003 ¶¶ 52, 89.

We note that Patent Owner contends that Nakaya's apparatus 110 "is designed to aid in the forward motion of a prosthetic limb, i.e., to propel walking." Prelim. Resp. 11–12. Even so, Patent Owner has not explained how this contradicts Petitioner's position that Nakaya also provides damping or shock absorption with that forward motion. *See* Pet. 21 (citing Ex. 1002 ¶ 52; Ex. 1003 ¶ 52). Nonetheless, we invite the parties to continue to develop the record on this issue after institution.¹⁰

b) a damper chamber divided by a piston and shaft into a compression and rebound portions;

Petitioner contends that Nakaya discloses "a damper chamber divided by a piston and shaft into a compression and rebound portions." Pet. 29–30. Petitioner provides an annotated version of Nakaya's Figure 7, reproduced below:

¹⁰ At this stage, we need not decide whether the preamble is limiting because we are persuaded that Nakaya discloses the preamble of claim 1, for the reasons given by Petitioner.



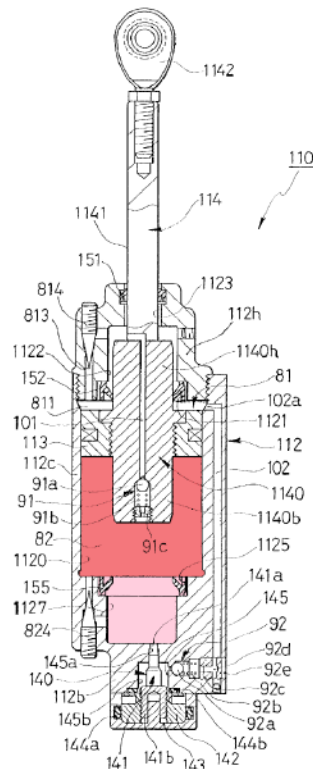
Id. at 30. Petitioner’s annotated version of Figure 7 from page 30 of the Petition marks piston 113 in yellow; piston shaft/rod 114 in dark orange; compression portion in light red; and rebound portion 81 in dark green. Pet. 29 (citing Ex. 1005, Fig. 7; Ex. 1002 ¶ 90; Ex. 1003 ¶ 90).

At this stage, Patent Owner does not specifically contest Petitioner’s contentions with respect to this limitation, aside from the arguments discussed for the preamble. *See* Prelim. Resp. 11–12.

Based on the preliminary record, we are persuaded that Nakaya discloses this limitation for the reasons given by Petitioner. *See* Pet. 21, 29.

c) a bottom out cup formed at an end of the compression portion

For this limitation, Petitioner provides an annotated version of Nakaya’s Figure 7, reproduced below:



Pet. 31. Petitioner’s annotated version of Figure 7 from page 31 of the Petition marks bottom out cup 1125, 1127 in pink at the end of compression portion 82 in light red. Pet. 31 (citing Ex. 1005, Fig. 7; Ex. 1002 ¶ 91; Ex. 1003 ¶ 91).

Patent Owner argues that Nakaya does not disclose that holes 1125, 1127 are a “bottom out cup” and that a “bottom out cup” is a secondary compression chamber that is configured to receive a secondary piston at the end portion of a compression stroke. Prelim. Resp. 32 (citing Ex. 2007 ¶ 44; Ex. 1001, 2:22–35, 3:1–3, 3:40–44). Patent Owner further contends that

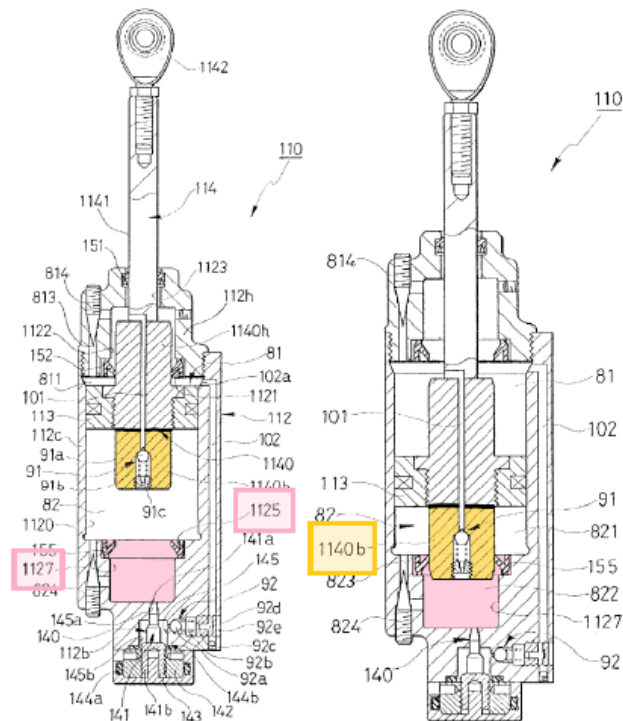
when the bending degree of the knee increases and section 1140 of piston rod 114 (which is not a secondary piston) enters holes 1125, 1127 such that chamber 82 is divided into two chambers 821, 822, then secondary compression forces are not generated by piston rod 114 in chamber 822 (defined by hole 1127). Ex. 1005, 9:1–36. Rather, pressure in chamber 822 is increased by constant throttle valve 140. *Id.*

Nowhere does Nakaya disclose receiving a secondary piston near the end of the compression stroke to generate secondary compression forces in holes 1125, 1127.

Prelim. Resp. 13 (emphases omitted).

Based on the preliminary record, Petitioner has the better position for institution. First, we note that we have not adopted Patent Owner's claim construction as discussed above (*see supra* § III.C), and therefore do not agree that the term "bottom out cup" warrants the importation of limitations such as "a secondary piston," "a secondary compression chamber," or "secondary compression forces," etc. Patent Owner's reliance on the Specification and the district court testimony of Dr. Alexander Slocum to import these limitations is not persuasive. *Id.*

Second, we observe that Petitioner provides annotated versions of Nakaya's Figures 7 and 8 on page 22 of the Petition (reproduced below).



Pet. 22. In annotated versions of Figures 7 and 8, Petitioner has marked the bottom out cup (holes 1125, 1127) in light pink and enlarged-diameter section 1140 of piston 113 in yellow. With these annotated figures in mind, we note that Nakaya discloses “piston 113 is integrally supported by the piston rod 114. The piston rod 114 integral with the piston 113 comprises an enlarged-diameter section 1140 for supporting the piston 113.” Ex. 1005, 6:41–44. Nakaya further teaches that at bottom part 112b of cylinder body 112 “there are provided two holes [1125, 1127] each having a different diameter along an axial direction of the bottom part 112b.” *Id.* at 8:36–37. Nakaya explains that

[o]n the step part between the middle sized-diameter hole 1127 and the enlarged-diameter hole 1125, there is provided a lip type seal member 155 for sealing the outer periphery of the projection 1140b of the piston rod 114. The seal member 155 is adapted to seal the outer periphery of the projection 1140b of the enlarged diameter section 1140 at a stage where the bending angle of the knee exceeds a predetermined value.

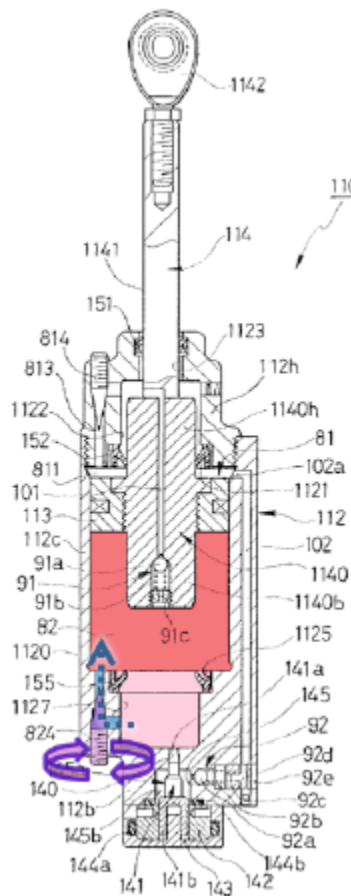
Id. at 8:49–56. Based on these teachings, we understand Nakaya to disclose that holes 1125, 1127 receive enlarged-diameter section 1140 of piston 113 when the knee prosthetic is bent, and that seal member 155 is adapted to seal the outer periphery of projection 1140b when projection 1140b engages the holes, i.e., bottom out cup.

Additionally, Petitioner asserts that Nakaya’s air-cylinder apparatus 110 includes a damper with a “compression portion,” shown in light red in the annotated version of Figure 7 from page 30 of the Petition.

mentioning, however, that the parties may further develop the record on these issues. *See* Prelim. Resp. 13.

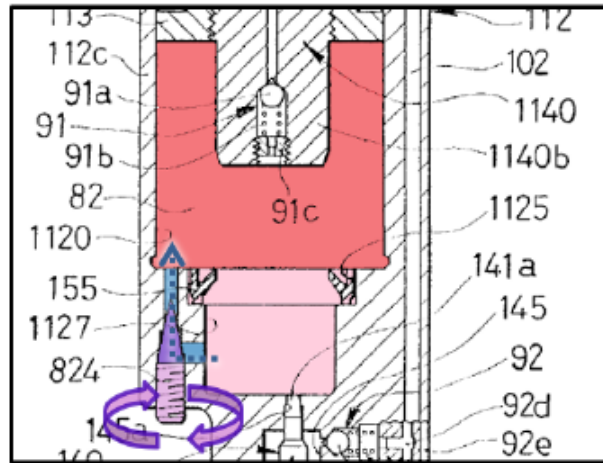
d) a fluid flow path formed in the bottom out cup for providing fluid communication from the cup to the compression portion of the chamber during a compression stroke of the damper;

For these limitations, Petitioner contends that Nakaya discloses throttle passage 823 between chamber 821 and chamber 822. Pet. 31–32. To better explain, Petitioner provides an annotated version of Nakaya’s Figure 7, reproduced below:



Id. at 32. Annotated version of Figure 7 on page 32 of the Petition marks compression portion 82 in light red, bottom out cup in pink (1125, 1127),

and fluid path 823 in blue. *Id.* Petitioner also provides a zoomed-in view of Petitioner's annotated Figure 7 of Nakaya.



Id. Petitioner's annotated figure shows fluid flow path 823 in blue with a purple arrow indicating flow direction between chamber 821 in red and chamber 822 in pink. *Id.*

In response, Patent Owner contends that fluid flows from chamber 82 to holes 1125, 1127 instead of the other way around. Prelim. Resp. 15 (citing Ex. 1005, 7:19–34, 8:27–33, 9:1–36). Patent Owner further asserts that

based on the air-flow directions through throttle passage 813 (having throttle needle valve 814) and second passage 102 (having throttle valve 140), a person skilled in the art would have readily understood that air flows from chamber 82 to holes 1125, 1127 (or from chamber 821 to chamber 822 when chamber 82 is divided by the piston rod entering holes 1125, 1127), and not the other way around as required by the claims.

Prelim. Resp. 15 (citing Ex. 1005, Figs. 7–8).

At this juncture, the preliminary record better supports Petitioner. Patent Owner urges us to apply the air flow directions of throttle passages 813 and 102 to throttle passage 823. However, passages 813, 102, and 823 are three different passages connecting different structures in Nakaya. For

passage 813, Nakaya discloses that “[t]he air in the cushion chamber 811 flows towards the second chamber 82 only through a throttle passage 813 formed in the head part 112h.” Ex. 1005, 7:19–21. With regard to passage 102, Nakaya further discloses that

the constant throttle valve 140 is disposed on the second passage 102 and its valve body 141 is confronted with the opening leading to the second chamber 82, the flow of air from the second chamber 82 towards the first chamber 81 is normally restricted.

Id. at 8:27–31.

Neither passage 813 nor passage 102 provides a fluid flow path between Nakaya’s chamber 822 (i.e., bottom out cup) and chamber 821 (i.e., compression portion), and therefore provides minimal if any disclosure regarding the separate, distinct passage 823.

Additionally, Nakaya discloses that “throttle passage 823 . . . [is] an auxiliary passage for communicating with the two chambers 821, 822.” *Id.* at 9:13–14. Nakaya discloses that throttle passage 823 is between “chamber 821 located within the cylinder tube 112c and defined by the piston 113 and the seal member 155” and chamber 822, “which is defined within the middle sized-diameter hole 1127 when the projection 1140b is sealed by seal member 155 to divide chamber 82.” *Id.* at 9:2–6, 9:12–14, Fig. 8. Nakaya indicates that the

where the bending degree of the knee is increased and the second chamber 82 is divided into two, the constant throttle valve 140 increases the pressure in the chamber 822 and *the throttle valve 824 increases the pressure in the chamber 821.*

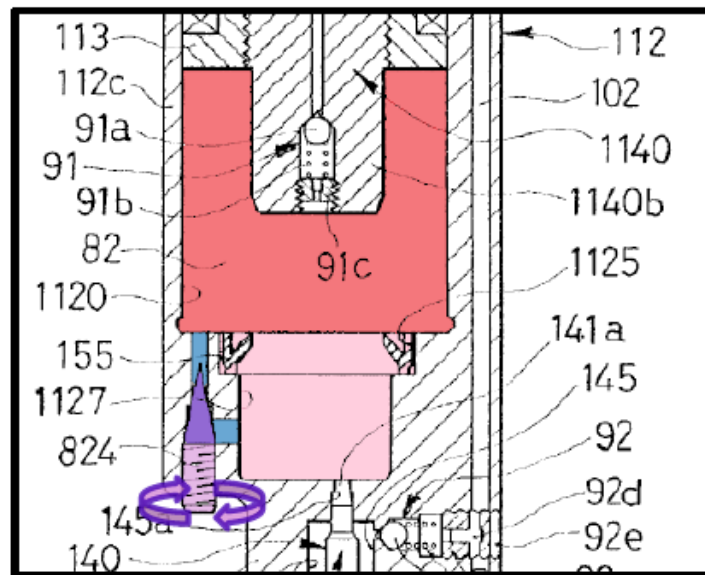
Id. at 9:24–29 (emphases added).

Patent Owner contends that a POSITA would understand air to flow from chamber 821 to chamber 822 when chamber 82 is divided into two chambers. Prelim. Resp. 15. However, Patent Owner’s reading appears to

contradict Nakaya's teaching that the pressure in chamber 821 *increases* rather than decreases. In other words, it is not clear how the pressure in chamber 821 increases if air flows out from chamber 821 to chamber 822 through flow path 823 per Patent Owner's reading. Instead, Nakaya's disclosure is more consistent with Petitioner's view that fluid flows from chamber 822 into chamber 821 to increase pressure. Nonetheless, the parties are invited to further develop the record on this issue after institution.

e) wherein the capacity of the fluid flow path is adjustable.

Petitioner contends that Nakaya discloses "wherein the capacity of the fluid flow path is adjustable." Pet. 33. Petitioner provides a zoomed-in and annotated version of Nakaya's Figure 7, reproduced below:



Id. The annotated figure shows screw type needle valve 824 in purple. *Id.* Referring to the annotated figure, Petitioner explains that the fluid flow path is adjustable via screw type needle valve 824. Pet. 33.

Patent Owner maintains that Nakaya does not disclose these limitations because Nakaya discloses the reverse fluid flow path direction. *See* Prelim. Resp. 15.

Based on the preliminary record, Petitioner's position is persuasive, particularly in light of Nakaya's disclosure that screw type needle valve 824 can be used to increase pressure in chamber 821. Ex. 1005, 9:24–29.

f) Conclusion

After review of the arguments and evidence, we determine that Petitioner has established a reasonable likelihood of succeeding in showing that Nakaya anticipates claim 1.

3. Dependent Claims 2 and 3

Dependent claims 2 and 3 each depend, directly or indirectly, from independent claim 1. Ex. 1001, 7:49–53. Petitioner contends Nakaya discloses the limitations of “the capacity of the flow path is adjustable with an adjustable valve, the valve restricting the fluid flow” (claim 2) and “the adjustable valve is manually adjustable and accessible externally of the damper” (claim 3).

For these limitations, Petitioner contends that Nakaya's screw type needle valve 824 is manually adjustable and externally accessible, and restricts the fluid flow when present in fluid flow path 823. Pet. 33 (citing Ex. 1005, Fig. 7; Ex. 1002 ¶¶ 94–95; Ex. 1003 ¶¶ 93–94).

Patent Owner does not address any of Petitioner's arguments regarding these specific limitations beyond what it has presented for claim 1.

Based on the preliminary record, we are persuaded that Petitioner has shown a reasonable likelihood that claims 2 and 3 are anticipated by Nakaya. *See* Pet. 33.

4. *Dependent Claim 4*

Claim 4 depends directly or indirectly, from independent claim 1. Ex. 1001, 7:53–56. Claim 4 recites “the adjustable valve can be adjusted between a closed position and a plurality of open positions.” *Id.*

For these limitations, Petitioner contends that a screw type needle valve can be adjusted to “an effectively infinite number of positions between open and closed.” Pet. 34.

Patent Owner does not address any of Petitioner’s arguments regarding these specific limitations beyond what it has presented for claim 1.

Based on the preliminary record, we are persuaded, on this record, that Petitioner shows a reasonable likelihood of prevailing in demonstrating that claim 4 is anticipated by Nakaya. *See id.*

5. *Dependent Claims 5–9*

Dependent claims 5–9 depend directly from independent claim 1. Ex. 1001, 7:57–8:4.

For claim 5, Petitioner contends Nakaya discloses fluid path 101 between bottom out cup 1125, 1127 and the rebound portion of chambers 81, 82. Pet. 35 (citing Ex. 1005, Fig. 8; Ex. 1002 ¶ 96; Ex. 1003 ¶ 95).

For claim 6, Petitioner contends Nakaya’s fluid path 101 is adjustable with a check valve 91 to permit the flow of fluid in a single direction between the chambers 81, 82, bottom out cup, and the rebound portion. Pet. 36 (citing Ex. 1005, Fig. 7; Ex. 1002 ¶ 97; Ex. 1003 ¶ 96).

For claim 7, Petitioner asserts that Nakaya discloses that check valve 91 is arranged in fluid path 101 between holes 1125, 1127 (i.e., bottom out cup) and the rebound portion to permit fluid communication between the holes and the rebound portion during a rebound stroke of shaft 114. Pet. 36–37 (citing Ex. 1005, Fig. 8; Ex. 1002 ¶ 98; Ex. 1003 ¶ 97).

For claim 8, Petitioner contends that Nakaya's screw type needle valve 814 adjusts the volume of fluid traveling through throttle passage 813 and first passage 101. Pet. 37–38.

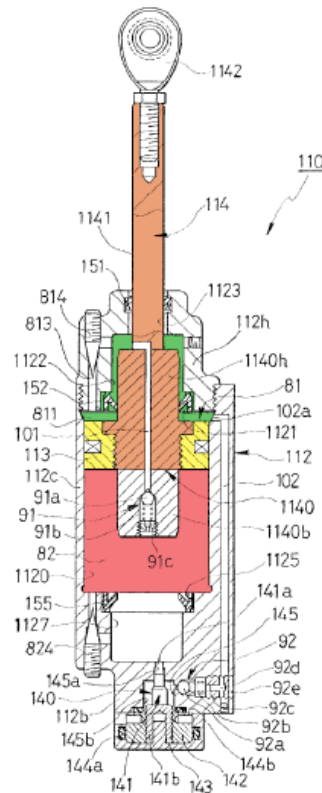
Petitioner further asserts that Nakaya discloses fluid paths 140 and 102, which disclose “a second fluid flow path within the bottom out cup” required by claim 9. Pet. 40.

Patent Owner does not address any of Petitioner's arguments regarding these specific limitations beyond what it has presented for claim 1.

Based on the preliminary record, we are persuaded that Petitioner has shown a reasonable likelihood that claims 5–9 are anticipated by Nakaya. *See* Pet. 36–40.

6. *Claim 11*

For independent claim 11, Petitioner contends Nakaya discloses a fluid damper that includes “a damper chamber divided by a piston mounted on a movable rod, into a primary compression and a primary rebound chamber.” Pet. 41. For these limitations, Petitioner provides an annotated version of Nakaya's Figure 7, reproduced below:



Id. Petitioner's annotated version of Figure 7 shows piston 113 (yellow) mounted on a moveable piston shaft/rod 114 (dark orange) that divides the damper chamber into primary compression chamber (light red) and primary rebound chamber 81 (dark green). *Id.* Referring to Nakaya's Figure 7, Petitioner asserts that holes 1125, 1127 (i.e., bottom out cup) is in fluid communication with primary compression chamber 82.¹¹

Claim 11 further recites:

a bottom out piston formed on the movable rod for sealingly engaging an interior of the bottom out cup, the damper including a first position in which the bottom out piston is not housed in

¹¹ We note that Petitioner alternatively relies on a separate embodiment disclosed in Nakaya's Figure 17. Pet. 41–42. However, Petitioner has not explained sufficiently if these arguments apply to its anticipation or obviousness challenge. *Id.* For our discussion here, we focus on Petitioner's arguments made with respect to Nakaya's Figures 7 and 8.

the bottom out cup and a second position in which the bottom out piston is housed therein.

Ex. 1001, 8:14–19.

For these limitations, Petitioner argues that Nakaya discloses a first position in which bottom out piston 1140b is not housed in bottom out cup 1125, 1127, as shown in Nakaya’s Figure 7. Pet. 43. Petitioner adds that Nakaya discloses a second position in Figure 8 in which bottom out piston 1140b is housed therein and engaged with seal members 155. *Id.* (citing Ex. 1005, Figs. 7–8; Ex. 1002 ¶ 106; Ex. 1003 ¶ 104).

Claim 11 further recites

an adjustable fluid flow path formed in the cup, the flow path providing fluid communication between the cup and the primary compression chamber in a compression stroke of the damper.

Ex. 1001, 8:20–23. Petitioner argues that Nakaya discloses fluid flow path 823 formed in holes 1125, 1127 for fluid communication between holes 1125, 1127 and primary compression chamber 82 during a compression stroke of the damper. Pet. 45 (citing Ex. 1005, 9:22–30). Petitioner adds that this path is “adjustable via screw type needle valve 824.” *Id.*

Patent Owner does not address any of Petitioner’s arguments regarding these specific limitations beyond what it has presented for claim 1.

Based on the preliminary record, we are persuaded that Petitioner has shown a reasonable likelihood that claim 11 is anticipated by Nakaya for the reasons provided by Petitioner and for the reasons discussed above with respect to claim 1.

7. Dependent Claims 12–15

Dependent claim 12–15 depends, directly, or indirectly, from independent claim 1. Ex. 1001, 8:24–35. Petitioner contends Nakaya

discloses all claim elements required by dependent claims 12–15. Pet. 46–49.

Patent Owner does not address any of Petitioner’s arguments regarding these specific limitations beyond what it has presented for claim 1. *See generally* Prelim. Resp. 15–20.

Based on the preliminary record, we are persuaded that Petitioner has shown a reasonable likelihood that claims 12–15 are anticipated by Nakaya. *See* Pet. 46–49.

8. *Claim 19*

Petitioner contends that independent claim 19 is anticipated by Nakaya. Pet. 50–52. Petitioner largely relies on the same citations and arguments presented for claims 1 and 11. *Id.*

Patent Owner does not address any of Petitioner’s arguments regarding these specific limitations beyond what it has presented for claim 1. *See generally* Prelim. Resp. 15–20.

Based on the preliminary record, we are persuaded that Petitioner has shown a reasonable likelihood that claim 19 is anticipated by Nakaya. *See* Pet. 50–52.

9. *Conclusion*

After review of the arguments and evidence, we determine that Petitioner has established a reasonable likelihood of succeeding in showing that Nakaya anticipates claims 1–9, 11–15, and 19.

E. Ground 1B: Claims 4 and 8 Obvious over Nakaya and Kodama

1. Kodama (Ex. 1006)

Kodama is a U.S. patent titled “Cylinder for Artificial Leg.” Ex. 1006, code (54). Kodama relates to a cylinder used in an artificial leg for a person having an upper thigh cut and an upper thigh stub. *Id.* at 1:5–7.

Figure 2 of Kodama, reproduced below, is a longitudinal sectional view showing the “stretched” state of the prior art cylinder. *Id.* at 3:55–57.

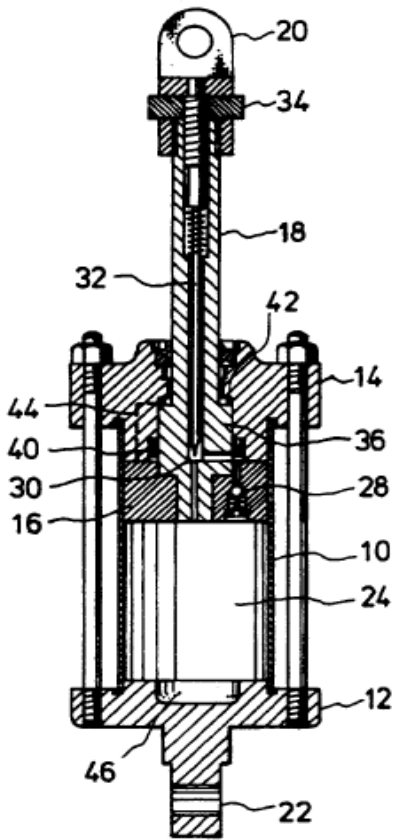
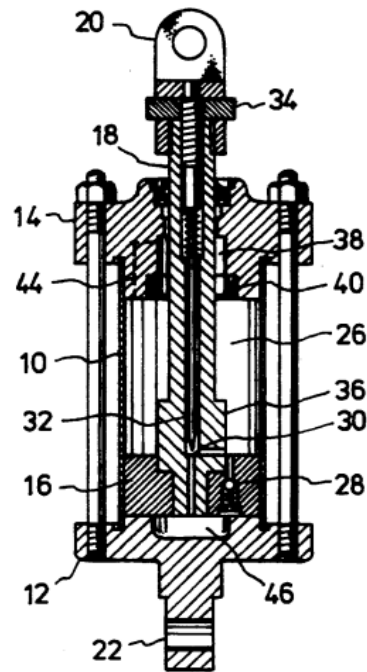


Figure 3, also reproduced below, is a longitudinal sectional view showing the “contracted” state of the cylinder of Figure 2. *Id.* at 3:58–59.



Kodama discloses that within the cylinder, piston 16 partitions the inner cavity of sleeve 10 into head chamber 24 adjacent to head cover 12 and rod chamber 26 adjacent to rod cover 14. *Id.* at 1:34–36. Piston rod 18 taught in Kodama includes throttle valve 30 having needle valve body 32 and also connects head chamber 24 to rod chamber 26. *Id.* at 1:48–51. Valve body 32 can be moved forward and backward by adjusting screw 34 to change the aperture of throttle valve 30. *Id.* at 1:51–53. Kodama also teaches that by adjusting throttle valve 30, the contracting resistance of the cylinder can be adjusted. *Id.* at 1:54–56.

2. *Claims 4 and 8*

For claim 4, Petitioner contends that

[e]ven if Nakaya did not disclose a closed position (which it does), such a feature would have been obvious to a POSITA using the same equipment featured in Nakaya. A POSITA would have been motivated to provide a closed position to allow for a greater range of damping characteristic for Nakaya's shock

absorber 110, including in view of Kodama disclosing a needle valve (Kodama's throttle valve 130) with a closed position.

Pet. 34 (citing Ex. 1005, Fig. 4; Ex. 1006, 4:58–5:2; Ex. 1002 ¶ 94; Ex. 1003 ¶ 93).

For claim 8, Petitioner argues that “it would have been obvious to a POSITA to modify Nakaya to include Kodama's adjustable flow path including Kodama's throttle valve 30 . . . , needle valve 32 . . . , and adjusting screw 34[.]” Pet. 38–39 (citing Ex. 1006, 1:22–56, Figs. 2, 3; Ex. 1002 ¶ 101; Ex. 1003 ¶ 99).

Patent Owner does not address these claims under this ground specifically. *See generally* Prelim. Resp. 10–15.

Based on the preliminary record, we are persuaded that Petitioner has shown a reasonable likelihood that claims 4 and 8 would have been obvious over the combination Nakaya and Kodama.

F. Grounds 2A and 2B: Claims 1–9, 11–15, and 19 Anticipated by Chen or Obvious over Chen alone or with Deferme and Kodama

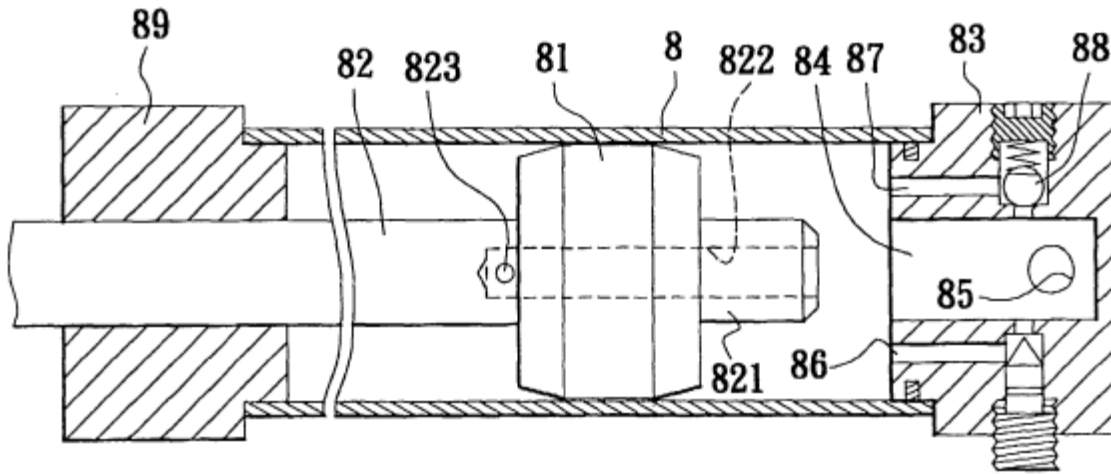
Petitioner asserts independent claims 1, 11, and 19 and dependent claims 2–9 and 12–15 are anticipated by *Chen* or would have been obvious over *Chen* alone or in view of *Deferme* and Kodama. Pet. 52–76.¹²

1. Chen (Ex. 1007)

Chen is a UK published patent application titled “Buffer structure for a hydraulic cylinder.” Ex. 1007, code (54). *Chen* “relates to a buffer structure for one end of a hydraulic cylinder and, more particularly, to a buffer structure for the rear end of an all-liquid single-acting hydraulic

¹² The listing of grounds on page 3 indicates claims 1–5, 9, 11–15, and 19 are challenged. Pet. 3. However, the heading on page 52 lists claims 1–9, 11–15, and 19. Pet. 52. For completeness, we include claims 1–9, 11–15, and 19 in our discussion.

cylinder.” *Id.* at 1:2–4. Figure 4 of Chen, reproduced below, is a sectional view of a conventional all-liquid single-acting hydraulic cylinder.



Chen’s Figure 4, which is labeled “Prior Art” in the reference, shows a conventional all-liquid single-acting hydraulic cylinder 8. *Id.* at 1:5–6. As shown, one end of piston 81 has projecting post 821. *Id.* at 1:6–7. Cap 83 at the front end includes accommodating cavity 84 that cooperates with projecting post 821. *Id.* at 1:7–9. Accommodating cavity 84 further communicates with oil outlet 85. *Id.* at 1:9–10. In addition, cap 83 includes two small diameter flow ways 86, 87 which communicate with oil outlet 85. *Id.* at 1:10–11.

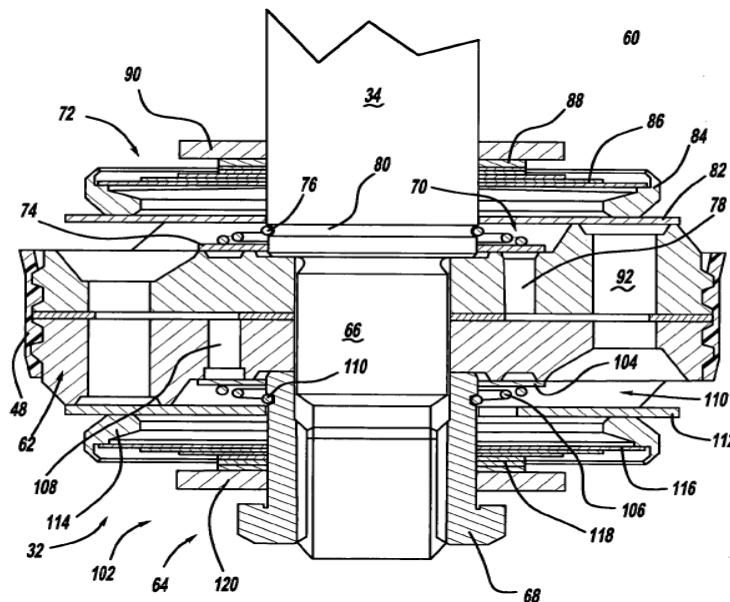
Check ball valve 88 is disposed in one flow way 87 whereby the oil can only flow one-way therethrough during the forward stroke of piston 81. *Id.* at 1:11–13. Piston 81 is formed with an internal hole 822 extending into piston rod 82. *Id.* at 1:14–15. Internal hole 822 has vent 823 formed at the joint between piston rod 82 and piston 81. *Id.* at 1:15–16.

Chen teaches that when piston 81 moves to the front end of hydraulic cylinder 8, projecting post 821 fits into accommodating cavity 84 to block the same. *Id.* at 1:20–22. At this time, the oil in hydraulic cylinder 8 can

only flow through small diameter flow way 86 into accommodating cavity 84 and then flow out from oil outlet 85. *Id.* Flow way 86 has a small cross-sectional area so that little oil flow is drained out from hydraulic cylinder 8 and the back pressure is increased to buffer the moving speed of the piston 81. *Id.*

2. *Deferme (Ex. 1008)*

Deferme is a US published patent application titled “Four-piece piston.” Ex. 1008, code (54). Deferme relates generally to hydraulic dampers or shock absorbers for use in a suspension system such as a suspension system used for automotive vehicles. *Id.* ¶ 2. Figure 3 of Deferme, reproduced below, is an enlarged side view, partially in cross section, of a piston assembly from a shock absorber.



As shown in Deferme’s Figure 3, piston assembly 32 comprises a compression valve assembly 60, multi-piece piston body 62 and extension valve assembly 64. *Id.* ¶ 19. “Compression valve assembly 60 comprises a bleed flow check valve 70 and a damping valve 72.” *Id.* ¶ 20. Piston rod 34

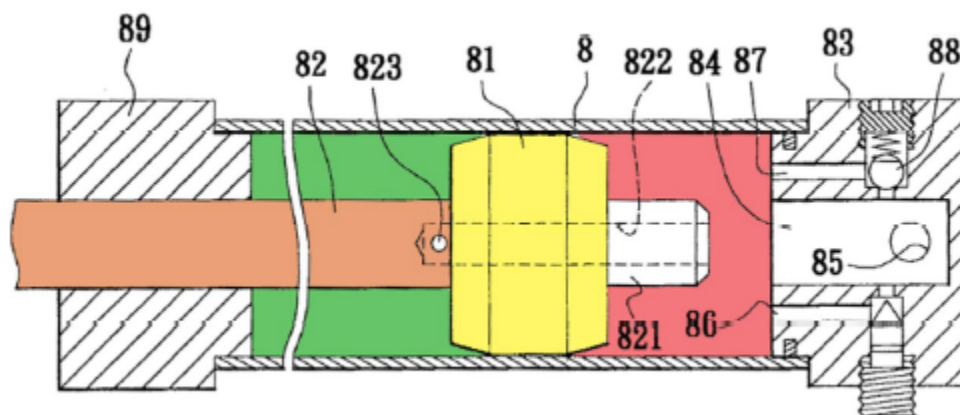
defines reduced diameter section 66 onto which multi-piece piston body 62 and extension valve assembly 64 are located. *Id.*

3. Claim 1

a) Petitioner's Contentions

Petitioner contends that Chen discloses every limitation of claim 1, or alternatively, that Chen alone or in view of Deferme renders obvious claim 1. Pet. 52–67.

According to Petitioner, Chen discloses a conventional suspension damper. *Id.* at 52 (citing Ex. 1007, p. 5, lines 1–6, Figs. 4–6). Petitioner provides an annotated version of Chen's Figure 4, reproduced below:



Id. at 59. Petitioner's annotated version of Figure 4 on page 59 of the Petition marks piston 81 (yellow), piston shaft/rod 82 (dark orange), compression portion (light red), and rebound portion (dark green). Petitioner further asserts that Chen's accommodating cavity 84 discloses a bottom out cup and projecting post 821 discloses a bottom out piston. *Id.* at 53. Petitioner adds that "Chen discloses three different fluid channels [86, 87] from the bottom out cup, with two extending into the compression portion (light red) and one into the rebound portion." *Id.* at 54. Of these,

Petitioner contends that fluid channel 86 is adjustable via a needle valve externally actuated by an adjuster. *Id.* at 54.

Alternatively, Petitioner contends that

[a] POSITA would have been motivated to modify Chen to have Deferme's means for adjusting the flow of fluid (e.g., Deferme, Fig. 3 below, including two one-way valves 72, 102) through Chen's piston 81 (Fig. 4 below), or replace Chen's piston 81 with Deferme's 32, at least because a means for adjustment would allow for a more versatile device having a range of damping and spring values. Such a modification would have been predictable at least because the process of modifying or substituting Chen's piston 81 would have been simple to a POSITA, and the combined Chen/Deferme device would be reasonably expected to function to allow an adjustable fluid flow through Chen's piston 81.

Pet. 57 (citing Ex. 1007, Fig. 4; Ex. 1008, Fig. 3; Ex. 1002 ¶ 80; Ex. 1003 ¶ 80).

b) Patent Owner's Contentions

Patent Owner contends that "accommodating cavity 84 is not a 'bottom out cup' under a proper construction of that term" because Chen's accommodating cavity 84 is not a "secondary compression chamber that is configured to receive a secondary piston at the end portion of a compression stroke." Prelim. Resp. 15–17 (citing Ex. 2007 ¶ 44; Ex. 1001, 2:22–35, 3:1–3, 3:40–44). Patent Owner asserts that when the bottom out cup receives a secondary piston (i.e., a bottom out piston) near the end of a compression stroke, secondary compression forces are generated within the "bottom out cup," which effectively adds to the forces being generated in the compression chamber. *Id.* (citing Ex. 2007 ¶¶ 40–42, 44).

Patent Owner contends that no secondary compression forces are generated by Chen's projecting post 821 in accommodating cavity 84

because projecting post 821 is not a piston and is configured to fit into the accommodating cavity 84 to block oil flow from hydraulic chamber 8 through accommodating cavity 84 via oil outlet 85. *Id.* (citing Ex. 1007, 1:18–22).

Additionally, Patent Owner contends that Chen explicitly teaches flow way 86 directs flow of oil from the compression portion of hydraulic chamber 8 to accommodating cavity 84, rather than the other way around. Prelim. Resp. 19 (citing Ex. 1007, 1:18–26).

With respect to Petitioner’s obviousness challenge, Patent Owner contends that “the Petition does not explain how and why oil from Chen’s accommodating cavity 84 would flow through Chen’s projecting post 821 and into (and through) Deferme’s piston” and, further, “Chen alone or in view of Deferme does not disclose, teach, or suggest an adjustable fluid flow path from the bottom out cup to the compression chamber.” Prelim. Resp. 19–20.

c) Discussion

“When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” 37 C.F.R. § 42.108(a). We must “either (1) institute as to all claims challenged in the petition and on all grounds in the petition, or (2) institute on no claims and deny institution.” Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019),¹³ 5–6, 64; *see also* 37 C.F.R. § 42.108(a), *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1359–60 (Fed. Cir. 2018) (stating a decision to

¹³ Available at <https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf?MURL=Tri alPracticeGuideConsolidated>

institute is “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”). Thus, because we have decided to grant institution on Ground 1 with respect to claims 1–9, 11–15, and 19, we must do the same for all challenged claims for Ground 2, including claim 1.

We note, however, that there is a question as to whether the hydraulic cylinder shown in Figure 4 of Chen discloses “a fluid flow path formed in the bottom out cup for providing fluid communication from the cup to the compression portion of the chamber during a compression stroke of the damper.” Ex. 1001, 7:44–47. We discern that Chen teaches projecting post 821 fits into accommodating cavity 84 when piston 81 moves to the front end of hydraulic cylinder 8. Ex. 1007, p. 1, ll. 20–22. Chen further teaches when that happens, oil in hydraulic cylinder 8 can only flow through the small diameter flow way 86 into accommodating cavity 84 and out oil outlet 85. *Id.* at page 1, lines 22–24. Additionally, Patent Owner has raised concerns regarding the “simple substitution” of Deferme’s piston for Chen’s piston. *See* Prelim. Resp. 19–20; Pet. 56–58.

The parties are encouraged to develop the record on these issues after institution.

4. *Claims 2–9, 11–15, and 19*

Petitioner contends Chen discloses the limitations recited in independent claims 11 and 19, and dependent claims 2–9 and 12–15. Pet. 63–76.

At this stage, we have decided to institute *inter partes* review based on Grounds 1A–1B, and must also institute Ground 2. *See* 37 C.F.R. § 42.108(a). Nevertheless, we reiterate that the parties are encouraged to develop the record on issues as discussed above for claim 1.

For clarity of the record, we note that for claim 4, Petitioner asserts “Kodama discloses a needle valve (Kodama’s throttle valve 130) that includes a closed position.” Pet. 65 (citing Ex. 1007, Fig. 4; Ex. 1006, 4:58–5:2; Ex. 1002 ¶ 125; Ex. 1003 ¶ 119). To the extent that Petitioner relies on Kodama for obviousness challenges, these arguments are noted for the record.

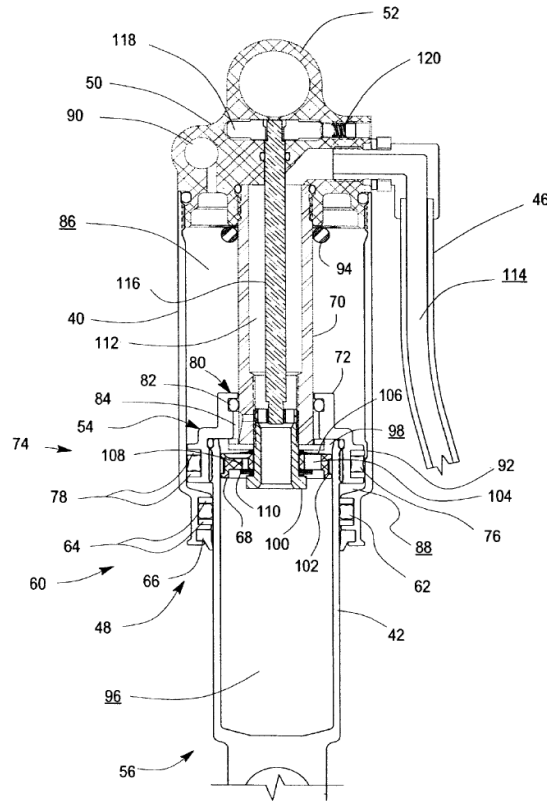
Additionally, Petitioner includes claims 6–8 in this challenge, but does not appear to fully address claims 6–8 in this section of the Petition. *See* Pet. 3, 52–76. The parties may address this issue after institution.

G. Ground 3: Claims 1–5, 9, 11–15, and 19 Obvious over Fox ’751 and Chen

Petitioner asserts in Ground 3 that independent claims 1, 11, and 19 and dependent claims 2–5 and 12–15 would have been obvious over *Fox ’751* in view of *Chen*. Pet. 76–94.

I. Fox ’751 (Ex. 1009)

Fox ’751 is a U.S. patent titled “Inertia Valve Shock Absorber.” Ex. 1009, code (54). Fox ’751 relates to vehicle suspensions systems, and more particularly, to acceleration sensitive damping arrangements suitable for use in vehicle dampeners (e.g., shock absorbers, struts, front forks). *Id.* at 1:12–16. Figure 3A of Fox ’751, reproduced below, is an enlarged cross-section of a main portion of a shock absorber. *Id.* at 7:43–44.



Fox '751 discloses shock absorber 38 that operates as both a suspension spring and as a damper. *Id.* at 9:45–46. Shock 38 is primarily comprised of air sleeve 40, shock body 42 and reservoir 44. *Id.* at 9:49–50. As shown in Figure 3A, hydraulic hose 46 physically connects the main body of shock 38 (air sleeve 40 and shock body 42) to reservoir 44. *Id.* at 9:50–52. Reservoir 44 may also be directly connected to the main body of shock absorber 38, such as being integrally connected to, or monolithically formed with, air sleeve 40. *Id.* at 9:52–56.

I. Discussion

At this stage, we have decided to institute *inter partes* review based on Grounds 1A–1B, and must also institute Ground 3. *See* 37 C.F.R. § 42.108(a).

Nevertheless, we note that Petitioner generally contends Fox ‘751 discloses a conventional suspension damper for a shock absorber 38 having an overall structure similar to that recited in the claims challenged in the current Petition. Pet. 76. Moreover, Petitioner asserts that the shock absorber 38 in the Fox ‘751 reference is otherwise ripe for improvement, having no specialized bottom out resistance beyond the simple bottom out bumper⁹⁴. *Id.* at 78. When combining Fox ‘751 with Chen, Petitioner states “a POSITA would modify Fox’s typical damper to include Chen’s bottom out control system including Chen’s bottom out cup 84; bottom out piston 821; two side passageways 86, 87, and piston shaft passageway 822, 823.” *Id.* at 79. Petitioner argues the proposed prior art modifications would merely be the combination of known prior art elements (Fox ‘751’s typical shock absorber 38 and Chen’s known bottom out cup system) according to known methods. *Id.* at 80. Furthermore, Petitioner believes a POSITA would have a motivation to combine because the combination would “merely be a simple substitution of one known element (Chen’s known bottom out cup system) for another (Fox ‘751’s plain and relatively featureless damper).” *Id.*

In response, Patent Owner argues that Chen does not teach or suggest a bottom out cup or an adjustable fluid flow path from Chen’s accommodating cavity 84 (the alleged “bottom out cup”) to Chen’s hydraulic chamber 8. Prelim. Resp. 20.

The parties may further develop these issues after institution, specifically Petitioner’s proposed modification of Fox ‘751 with Chen’s accommodating cavity 84.

H. Ground 4: Claims 5–9 Obvious over Fox ‘751, Chen, Nakaya, and/or Kodama

Petitioner asserts that dependent claims 5–9 would have been obvious over the combination of *Fox ‘751, Chen, Nakaya* and/or *Kodama*. Pet. 95–104. Petitioner argues that

a POSITA would modify Fox ‘751/Chen’s piston shaft/rod to incorporate Nakaya’s adjustable path system (including Nakaya’s passage 101, throttle passage 813, and adjustment screw 814) and/or Kodama’s adjustable path system (including Kodama’s throttle valve 30, needle valve 32, and adjusting screw 34).

Id. at 95 (citing Ex. 1002 ¶ 86; Ex. 1003 ¶ 86). Petitioner adds this modification would have been a simple substitution and the application of a known technique (the use of a flow path through a piston shaft). *Id.* at 96.

Patent Owner does not address this ground in its Preliminary Response, but does address the combination of Fox ‘751 and Chen as discussed above. *See generally* Prelim. Resp. 20–21.

The parties may further develop these issues (e.g., the asserted combination of Fox ‘751 and Chen) after institution, including whether a POSITA would have it obvious to modify Fox ‘751 with Chen’s accommodating cavity 84.

I. Ground 5: Claims 1–5, 9, and 19 Anticipated by Gartner or Obvious over Gartner with Kodama

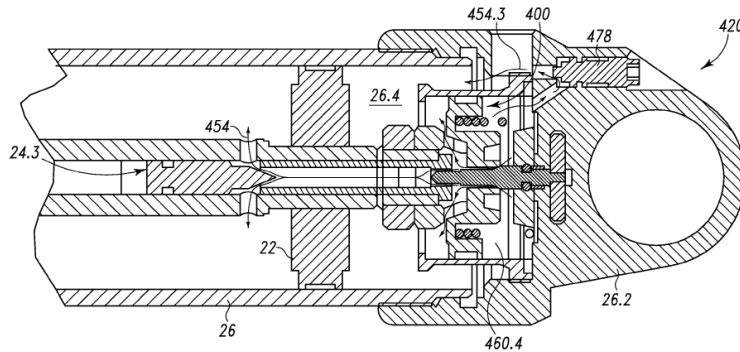
Finally, Petitioner asserts independent claims 1 and 19 and dependent claims 2–5, and 9 is anticipated by Gartner or would have been obvious over Gartner in view of Kodama. Pet. 105–116.

1. Gartner (Ex. 1010)

Gartner is a U.S. patent titled “Methods and Apparatus for Protecting a Shock Absorber from Bottoming.” Ex. 1010, code (54). *Gartner* relates to

“shock absorbers having multiple flowpaths for the con-strained flow of hydraulic fluid during compression of a vehicle suspension.” *Id.* at 1:37–40.

Figure 12A of Gartner, reproduced below, is a cutaway side view of shock absorber 420.



Shock absorber 420 includes means for externally adjusting the second flow path. *Id.* at 9:22–24. Shock absorber 420 includes one or more features for externally adjusting the damping characteristics of second internal shock absorber 400. *Id.* at 9:25–27. Auxiliary path 454.3 includes a first passageway in end cap 26.2 interconnecting compression volume 460.4 with adjustment screw 478. *Id.* at 9:35–37. The external end of screw 478 is sealed from the fluid environment, and includes an adjustment feature such as an internal hex head or external hex head. *Id.* at 9:37–40. The other end of screw 478 is in fluid communication with the first passageway previously described, and also with a second passageway that is in fluid communication with compression volume 26.4. *Id.* at 9:40–43. Screw 478 is threadably received within end cap 26.2. *Id.* at 9:43–44. As the screw is turned along the threads, a nose of screw 478 projects more or less into the second flow passage, and thereby forms more or less of a restriction to flow. *Id.* at 9:45–47. Adjustment of screw 478 results in a fixed-characteristic fluid bypass. *Id.* at 9:47–48. Gartner also discloses that “[f]luid from compression volume

160.4 flows through one or more orifices or passageways 154.1 in piston 150.” *Id.* at 6:2–3. One flowpath for hydraulic fluid is through central passage 550.1, through central orifice 555, and into internal passage 24.1 of rod 24.

I. Discussion

Again, we have decided to institute *inter partes* review based on Grounds 1A–1B, and must also institute Ground 5. *See* 37 C.F.R. § 42.108(a).

Still, we note that Petitioner generally contends Gartner discloses a damper for shock absorber 420 with a bottom out cup 260, 460 formed at the end of compression portion 26.4. *Pet.* 108–109 (citing *Ex.* 1010, *Fig.* 12A; *Ex.* 1002 ¶ 179; *Ex.* 1003 ¶ 174). Petitioner further asserts that fluid flow path 454.3 from bottom out cup 260, 460 provides fluid communication from the cup to the compression portion of the chamber during a compression stroke. *Id.* at 110. Petitioner adds that the capacity of the fluid flow path 454.3 is adjustable via adjustable screw type needle valve 478. *Id.*

Patent Owner argues that Gartner does not disclose a “bottom out cup” in accordance with the construction Patent Owner provided (i.e., a secondary chamber that is configured to receive a secondary piston at the end of the compression stroke). *Prelim. Resp.* 21. Patent Owner states Gartner actually discloses second internal shock absorber 400 placed within shock absorber 420. *Id.* at 21–22 (citing *Ex.* 1010, *Abstract*, 9:25–27, *Fig.* 12a). Patent Owner adds that “[i]nternal shock absorber 400 includes a damper chamber divided by a piston into a compression chamber (460.4) and a rebound chamber,” however, Patent Owner maintains “[c]ompression chamber 460.4 of shock absorber 400 is not a ‘bottom out cup.’” *Id.* at 22.

After institution, the parties may further develop these issues, including whether Gartner’s shock absorber teaches a bottom out cup.

IV. 35 U.S.C. § 314(A) DISCRETION

35 U.S.C. § 314(a) states that

“[t]he Director may not authorize an inter partes review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

The language of § 314(a) expressly provides the Director with discretion to deny institution of a inter partes review. *See Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 1231, 2140 (2016) (“[T]he agency’s decision to deny a petition is a matter committed to the Patent Office’s discretion.”); Consolidated Trial Practice Guide November 2019 (“TPG”) at 55, <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

The Board’s precedential order in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 5—6 (PTAB Mar. 20, 2020) (precedential) (“the Fintiv Order”) identifies several factors for analyzing issues related to the Director’s discretion to deny institution in view of related litigation, with the goal of balancing efficiency, fairness, and patent quality.

When considering related litigation, the Board evaluates the following factors (“*Fintiv* factors”):

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;

4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board's exercise of discretion, including the merits. *Fintiv* Order at 5–6.

On June 21, 2022, the Director issued a Memorandum setting forth an “Interim Procedure for Discretionary Denials in AIA Post Grant Proceedings with Parallel District Court Litigation.” (“Guidance Memo”). The Guidance Memo states that “to benefit the patent system and the public good, the PTAB will not rely on the *Fintiv* factors to discretionarily deny institution in view of parallel district court litigation where a petition presents compelling evidence of unpatentability.” *Id.* at 2. “Compelling, meritorious challenges are those in which the evidence, if unrebutted in trial, would plainly lead to a conclusion that one or more claims are unpatentable by a preponderance of the evidence.” *Id.* at 4.

With these *Fintiv* factors and the Director’s guidance in mind, we consider the parties’ contentions.

A. Factor 1: whether the court granted a stay or evidence exists that one may be granted if this proceeding is instituted

Patent Owner asserts that Petitioner has requested a stay of the Colorado case, but the district court has not yet ruled on Petitioner’s motion. Prelim. Resp. 25. In addition, Patent Owner contends it is unlikely a stay will be granted given the “advanced stage” of the case and other factors. *Id.*

At the time of this Decision, the Board has not been informed that the District of Colorado proceeding has been stayed. We decline to speculate on

the likelihood of a stay in the District of Colorado proceeding. Thus, we find this factor is neutral.

B. Factor 2: proximity of the court's trial date to the Board's projected statutory deadline for a final written decision

At the time of filing its Petition, Petitioner asserted that no trial date was set by the district court. Pet. 18. However, Patent Owner argues that since the date of filing the Petition, the court in the District of Colorado proceeding has set a trial date for January 27, 2025. Furthermore, because the trial in the Colorado case is currently scheduled to predate the Board's projected statutory deadline for a final written decision by more than 4 months, Patent Owner contends that factor 2 favors denial of institution. Prelim. Resp. 27.

This factor weighs somewhat in favor of discretionary denial. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15, 13 (PTAB May 13, 2020) (informative) (“Because the currently scheduled District Court trial is scheduled to begin two months before our deadline to reach a final decision, this factor weighs somewhat in favor of discretionary denial in this case.”).

C. Factor 3: investment in the parallel proceeding by the court and the parties

Under this factor, we consider “the amount and type of work already completed in the parallel litigation by the court and the parties at the time of the institution decision.” *Fintiv* Order at 9.

Patent Owner contends that there has been significant investment in the District of Colorado. Prelim. Resp. 28. According to Patent Owner, at the filing of its Preliminary Response, “the parties had exchanged infringement, invalidity, and non-infringement contentions; completed claim construction briefing and hearing; and completed fact discovery.” *Id.*; *see*

Ex. 2003 at 4–6. Furthermore, at the time of the expected institution decision, most of the key case milestones will have been completed, and only pretrial procedures and trial will remain. *Id.*

At the filing of the Petition, Petitioner maintained the district court has not provided any analysis of prior art invalidity issues, and the parties are only in the preliminary stages of discovery. Pet. 18; *see* Ex. 1015 ¶ 15. Patent Owner contends that Petitioner has not been diligent in filing its Petitions, having waited a year from the filing of the amended complaint on November 30, 2022, to file the Petition on November 30, 2023. Prelim. Resp. 29.

From our review of Exhibit 2003, the parties have exchanged infringement, invalidity, and non-infringement contentions; completed claim construction briefing and hearing; and completed fact and expert discovery. *See* Ex. 2003, 4–8. Dispositive motions were due June 6, 2024. *Id.* at 8. Because there has been significant investment by the parties and the district court in the parallel proceeding, including the completion of preliminary disclosures, claim construction briefs and hearing, and fact and expert discovery, we weigh the third *Fintiv* factor as favoring discretionary denial.

D. Factor 4: overlap between issues raised in the petition and in the parallel proceeding

Patent Owner argues that “each of the challenged claims—claims 1-9, 11-15, and 19 of the ’223 patent—are asserted by Patent Owner against Petitioner/defendant in the Colorado case.” Prelim. Resp. 30; *See* Ex. 1006, 1, 4. Furthermore, according to Patent Owner, “Petitioner’s invalidity contentions also indicate that the art and arguments in both proceedings will overlap significantly.” Prelim. Resp. 30–31.

Per the preliminary invalidity contentions in the District of Colorado proceeding, Petitioner’s asserted references in this proceeding—Chen, Fox, Nakaya, Gartner, Kodama, and Deferme—are also at issue in the related district court matter. Ex. 2006, 7, 16–17; Pet. 3–4. Claims 1–9, 11–15, and 19 of the ’223 patent are also involved in both proceedings. *Id.* Further, Petitioner has not provided *Sotera or Sand Revolution* stipulations. *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 18–19 (P.T.A.B. Dec. 1, 2020) (precedential as to § II.A)); *Sand Revolution II, LLC v. Continental Intermodal Group*, IPR2019-01393, Paper 24 at 11–12 (P.T.A.B. June 16, 2020) (informative). Thus, we weigh the fourth *Fintiv* factor as favoring discretionary denial.

E. Factor 5: whether the petitioner and the defendant in the parallel proceeding are the same party

The parties do not dispute that the same parties involved in the present proceeding are also involved in the parallel district court proceeding regarding the ‘233 patent. *See* Pet. 18; Prelim. Resp. 25. This factor weighs in favor of exercising discretion to deny institution, or is at least neutral.

F. Factor 6: other circumstances that impact the Board's exercise of discretion, including the merits

Petitioner asserts that “[t]he merits of the Grounds presented herein are compelling, clear evidence of unpatentability.

Patent Owner argues that “the Board should deny institution under §314(a) because *Fintiv* factors 1–5 favor denial and the Petition does not present ‘compelling unpatentability challenges’ to overcome denial under factor 6.” Prelim. Resp. 33 (citing *Fintiv* Memorandum at 4–5).

Here, we find that the evidence, if unrebutted in trial, demonstrates that it is highly likely that Petitioner would prevail under at least Ground 1

with respect to claim 1. At this stage, Patent Owner has not sufficiently put into question Petitioner's seemingly straightforward case for claim 1 being anticipated by Nakaya. As discussed above, Petitioner identifies all limitations in Nakaya and, on this record, Petitioner's position appears very strong. *See supra* Section § III.D. As such, we determine, based on the evidence of record, that Petitioner presents a compelling, meritorious challenge with respect to at least one claim. Having identified compelling merits, we decline to exercise discretion to deny institution under § 314(a). *Fintiv* Memo, 5 (“[T]he PTAB will not deny institution based on *Fintiv* if there is compelling evidence of unpatentability.”). However, “a determination of ‘compelling’ merits should not be taken as a signal to the ultimate conclusion after trial” because “all relevant evidence likely will not have been adduced at the point of institution [and] trial should produce additional evidence that may support a determination in the Final Written Decision that unpatentability has not been adequately proven.” *OpenSky Indus., LLC v. VLSI Tech. LLC*, IPR2021-01064, Paper 102 at 49–50 (PTAB Oct. 4, 2022).

V. CONCLUSION

After considering the Petition and the Preliminary Response, and accompanying exhibits and testimony, we determine that Petitioner has demonstrated a reasonable likelihood of success in proving that at least one claim of the '223 patent is unpatentable. Accordingly, we institute an *inter partes* review of claims 1–9, 11–15, and 19 on all grounds presented in the Petition with respect to these claims. 35 U.S.C. §314(a).

At this preliminary stage, the Board has not made a final determination with respect to the patentability of the challenged claims or

any underlying factual or legal issue. The Board's final determination will be based on the record as developed during the *inter partes* review.

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. §314(a), an *inter partes* review of claims 1–9, 11–15, and 19 of the '223 Patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. §314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '223 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

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Patent US 8,550,223 B2

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