

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SRAM, LLC,
Petitioner,

v.

FOX FACTORY, INC.,
Patent Owner.

Case IPR2024-00216
Patent No. 8,550,223

PATENT OWNER'S RESPONSE

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I. Introduction

Patent Owner FOX Factory, Inc. is an industry leader in suspension systems, e.g., forks and shock absorbers, that make bicycle and motorcycle rides more comfortable and enjoyable, reduce wear and tear, and enhance the dynamic performance of the vehicle. U.S. Patent No. 8,550,223 is directed to a dampening mechanism in a shock absorber for minimizing bottom out conditions where, as a result of the terrain and the rider's weight, the dampening piston of the shock absorber reaches maximum compression and causes a sharp rebound. Ex. 2010, ¶¶25, 26.

Each of challenged claims 1-9, 11-15, and 19 of the '223 patent recites, among other things, a “damper,” a “bottom out cup,” and fluid flow paths between the “bottom out cup” and the compression portion of the “damper” chamber. But the four primary references asserted in the Petition (Nakaya, Chen, Fox '751, and Gartner) fail to disclose or suggest these critical features of the '223 patent claims, and therefore the Petition fails to demonstrate unpatentability. Specifically, Nakaya is directed to an air-based energy storage device (not a “damper”) to assist with forward motion of a prosthetic limb; Chen discloses dampening but does so using an arrangement of fluid flow paths that is different from the flow arrangement disclosed and claimed in the '223 patent; Fox '751 discloses a conventional shock absorber that has no “bottom out cup” technology; and Gartner fails to disclose a “bottom out cup,” instead disclosing a second shock absorber within a main shock absorber to minimize bottom out

conditions. The secondary references (Kodama and Deferme) relied on by Petitioner do not overcome the deficiencies of Nakaya, Chen, Fox '751, or Gartner because the secondary references neither supply the missing limitations, nor do they disclose the relevant “bottom out cup” technology of the '223 patent. Instead, the Petition relies on Kodama only for its disclosure of an adjustable throttle valve provided in a piston shaft, and the Petition relies on Deferme for its teaching of a piston that allows fluid flow therethrough in both the compression and rebound directions.

The challenged claims are therefore neither anticipated nor rendered obvious by the asserted prior art references. With the record fully developed, the Petition should be rejected and the challenged claims confirmed as patentable.

II. Overview of the '223 Patent

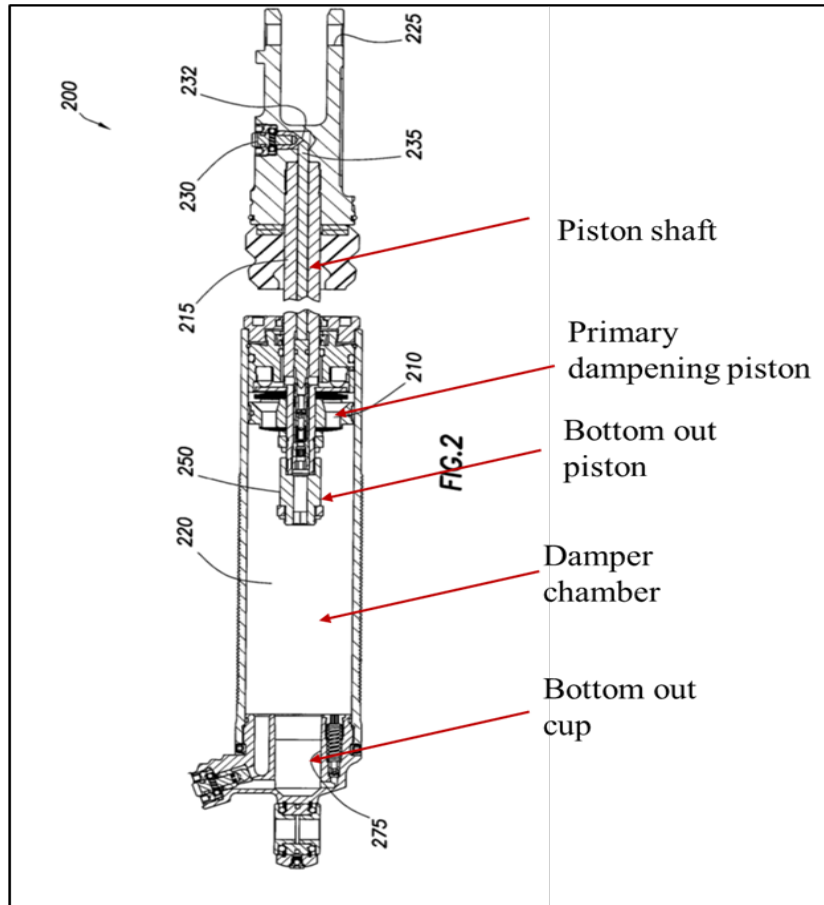
The '223 patent is directed to a user-adjustable dampening mechanism in a vehicle shock absorber. Ex. 1001, 1:13-17, 2:22-43, 7:11-15; Ex. 2010, ¶25. As testified by an inventor of the '223 patent, Mr. Wesley Allinger, the '223 patent invention is directed to a shock absorber for a two-wheeled vehicle, such as a motorcycle or a bicycle. Ex. 2009, 45:8-46:3, 49:14-54:20. Similarly, another inventor of the '223 patent, Mr. Everet Ericksen, testified that the '223 patent is directed to a user-adjustable dampening mechanism in a vehicle shock absorber. Ex. 2008, 39:14-23, 42:18-43:9.

The disclosed user-adjustable dampening mechanism is designed to minimize bottom out conditions. Ex. 1001, 1:51-2:1, 7:11-15; Ex. 2010, ¶26. While it is acceptable for the damper to bottom out occasionally in harsh conditions, bottoming out too fast and/or frequently can cause an unpleasant ride and add stress to other fork components. Ex. 2010, ¶26. Moreover, a well-tuned damper that functions well initially may start to bottom out hard as the dampening fluid heats up during use and becomes less viscous as a result. *Id.*; Ex. 1001, 1:51-64.

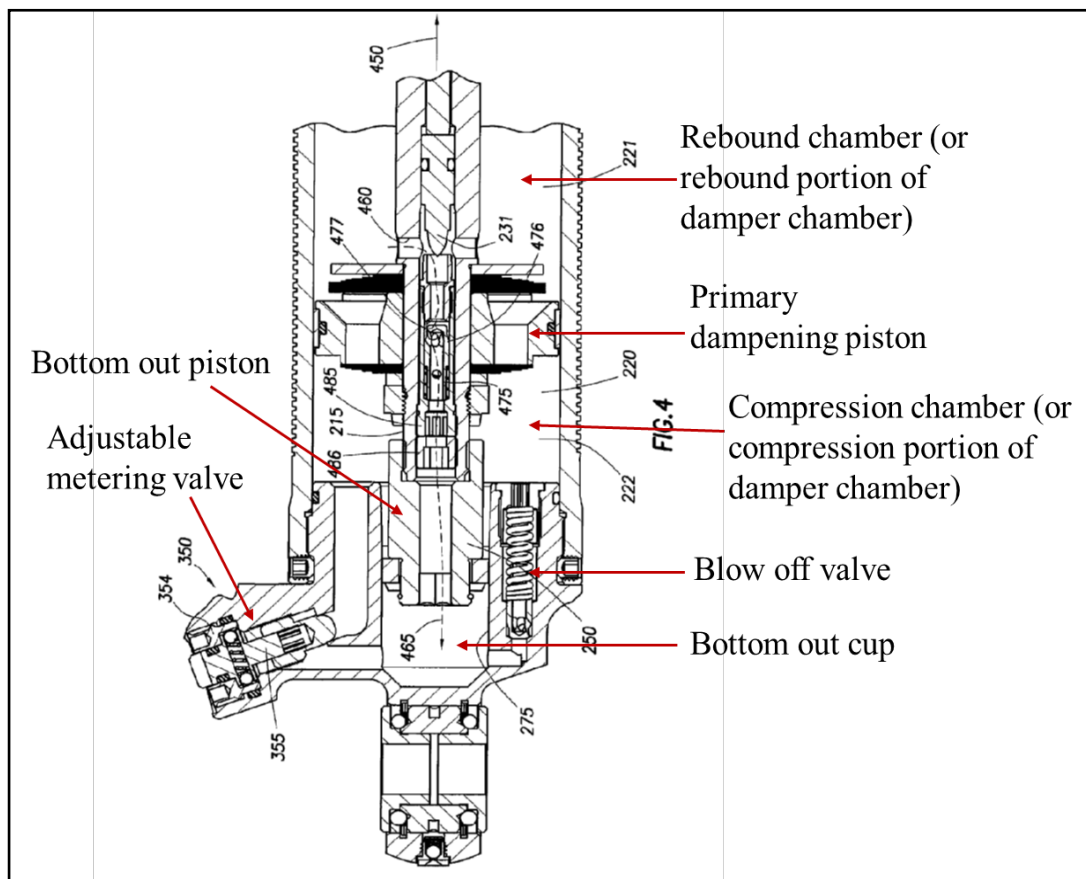
The '223 patent discloses a mechanism to minimize bottom out conditions using a user-adjustable secondary dampening mechanism that increases dampening near the end of a compression stroke. Ex. 1001, 2:22-35; Ex. 2010, ¶27; Ex. 2011, 18:18-22:12 (Petitioner's expert, Mr. Wesling, agreeing that the "bottom out cup" technology provides dampening near the end of a compression stroke); Ex. 2012, 15:6-16:19 (Petitioner's expert, Dr. Wang, also agreeing that the '223 patent is describing dampening near the end of a compression stroke using a "bottom out cup").

In exemplary embodiments, the dampening system includes, among other features, 1) a damper chamber that is subdivided by a primary dampening piston into a primary compression chamber and a primary rebound chamber, 2) a cup-shaped secondary compression chamber (also known as a bottom out chamber or bottom out cup) that is provided at the lower end of the damper chamber and is in fluid communication with the compression portion of the damper chamber, and 3) a bottom

out piston connected to the end of the piston shaft and spaced apart from the primary dampening piston. Ex. 1001, 1:43-55, 3:23-47; Ex. 2010, ¶27. Annotated Figures 2 and 4 of the '223 patent (shown below) show these features of the claimed invention.



Ex. 1001, Fig. 2 (annotations added); Ex. 2010, ¶27.



Ex. 1001, Fig. 4 (annotations added); Ex. 2010, ¶27.

Towards the end of a compression stroke, the bottom out piston enters and seals the bottom out cup, such that most of the fluid cannot exit the cup except through either a fluid flow path that includes a user-adjustable metering valve, or a fluid flow path with a blow off valve. Ex. 1001, 3:40-4:2. When the bottom out piston engages the bottom out cup, dampening is increased because the piston shaft can only progress as dampening fluid (which is generally incompressible) is forced out from the bottom out cup through one of the two flow paths. Ex. 2010, ¶28. By regulating the flow of dampening fluid out of the bottom out cup using the metering valve, the effective

dampening rate that the shock absorber experiences due to the bottom out piston entering the bottom out cup can be adjusted by the user depending on the terrain, temperature, and other use conditions. *Id.*; Ex. 1001, 3:31-40, 7:19-22.

The blow off valve is a safety mechanism that is set to “blow off” when pressure in the bottom out cup reaches a preset threshold (typically due to rapid compression of the fluid caused by high velocity of the dampening piston in the bottom out cup). Ex. 1001, 4:3-30, 7:22-28; Ex. 2010, ¶29. The opening of the blow off valve allows dampening fluid in the bottom out cup to exit when a threshold pressure is reached, and to enter the compression portion of the damper chamber, thereby lowering the excess pressure in the bottom out cup. Ex. 2010, ¶29.

During normal operation, however, the blow off valve remains closed and dampening fluid from the bottom out cup exits through a metering valve and enters the compression portion of the damper chamber. Ex. 1001, 5:6-21. The valve is provided with user-adjustable features to set the bottom out dampening rate, i.e., to set the rate at which dampening fluid exits the bottom out cup. *Id.* at 4:31-35, 5:6-21; Ex. 2010, ¶30. For example, when the valve is opened very little, the bottom out dampening rate will be high as all the fluid being pushed by the bottom out piston must flow through the restricted passage of the metering valve into the compression portion of the damper chamber. Ex. 2010, ¶30.

In the evolution of shock absorbers for vehicles, the patented invention of the '223 patent represents important advancements in the user-adjustability of a shock's dampening mechanism and minimizing bottom out disturbances near the end of a compression stroke. *Id.* at ¶33.

III. Claim Construction

Petitioner argues that the '223 patent claim terms do not require “any special definition different than their ordinary and customary meaning to a POSITA.” Pet. at 16. Petitioner nonetheless asserts that it has “applied the same interpretation to the prior art here as Fox has applied for infringement purposes,” but fails to specify those interpretations. *Id.* Patent Owner disagrees that no claim terms need construction. At least the claim term “bottom out cup,” which is present in each of the independent claims 1, 11, and 19, and the term “fluid communication from the cup to the compression portion of the chamber” in claim 1 should be construed by the Board to resolve the disputes between the parties in this IPR proceeding.¹

¹ Patent Owner has presented additional terms for claim construction in the parallel district court litigation between the parties involving the '223 patent, but those additional terms are not relevant to the patentability disputes in this IPR.

A. “a bottom out cup”

Claim Term	FOX’s Proposed Construction	SRAM’s Proposed Construction	PTAB’s Initial Construction
“a bottom out cup” (claims 1, 11, and 19)	“cup-shaped feature configured for providing dampening only at the end portion of a compression stroke”	Plain and ordinary meaning. To the extent any construction is required, the plain and ordinary meaning would be construed as: “a cup-shaped feature”	cup-shaped feature configured for providing dampening. (DI, 14)

The term “bottom out cup” is a technical term that does not have a well-defined or well understood meaning. Ex. 2010, ¶35. The appropriate meaning of the term should therefore be determined based on the intrinsic record. *See Kaneka Corp. v. Xiamen Kingdomway Grp. Co.*, 790 F.3d 1298, 1305 (Fed. Cir. 2015) (finding that because the term “sealed” may have more than one plain and ordinary meaning, the appropriate definition needed to be ascertained from the intrinsic evidence); *see also In re Glaug*, 283 F.3d 1335, 1340 (Fed. Cir. 2002).

Patent Owner believes that its previous 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,” which was proposed in Patent Owner’s Preliminary Response and in the district court litigation, is correct. *See* Ex. 2010, ¶¶35, 36. Nevertheless, the Board’s construction of “bottom out cup” as a “cup-shaped feature configured for providing dampening” may be sufficient to resolve the disputes related to Ground V (alleged unpatentability based on Ganatra) if the construction is clarified to state that the “bottom out cup” provides dampening only at the end portion of a compression stroke.² *Id.* at ¶37. This clarification is needed to distinguish between any cup-shaped damper chamber and the “bottom out cup” whose purpose is to increase dampening in the final stages of a shock absorber’s compression stroke. *Id.*; Ex. 1001, 1:65-2:9, 2:22-26. Indeed, Petitioner’s experts³ also agree that the “bottom out cup” technology provides

² The claim construction of “bottom out cup” is not pertinent to the disputes related to Grounds I-IV; it is only relevant for Ground V.

³ The Petition is supported by two declarations—one from Dr. Eric Wang (Ex. 1002) and another from Petitioner’s long-time employee, Mr. Kevin Wesling (Ex. 1003), who testified that he spent only “four or five” hours working with Petitioner’s counsel to prepare his declaration. Ex. 2011, 9:7-10:4. A side-by-side comparison of the two declarations shows that they are substantively the same, with the same annotated figures and opinions in both declarations.

dampening near the end of a compression stroke. Ex. 2011, 18:18-22:12; Ex. 2012, 15:6-16:19. Without this clarification, even the primary compression chamber of a damper could be referred to as a “bottom out cup” because damper chambers are typically “cup-shaped” and are configured for providing dampening. Ex. 2010, ¶37. The clarification that a “bottom out cup” provides dampening only near the end of compression stroke provides the necessary distinction between a “bottom out cup” and a conventional damper chamber.

Petitioner’s plain meaning interpretation of “bottom out cup” as simply “a cup-shaped feature” is neither helpful to the resolution of the prior-art disputes between the parties, nor is it technically correct because it eliminates the dampening functionality of the bottom out cup and demotes it to any cup-shaped component regardless of any dampening function. Ex. 2010, ¶38. Patent Owner’s presently proposed construction (“cup-shaped feature configured for providing dampening only at the end portion of a compression stroke”) specifies that the “bottom out cup” provides dampening functionality only near the end of the compression stroke and clarifies that it is not just any cup-shaped feature. *Id.*

For purposes of this Patent Owner Response, Patent Owner has applied its proposed construction of “bottom out cup” to Ground V, which clarifies that the “bottom out cup” provides dampening only near the end of a compression stroke. As

mentioned above, the construction of “bottom out cup” is not relevant to the disputes related to Grounds I-IV.

B. “fluid communication from the cup to the compression portion of the chamber” (claim 1)

Petitioner asserts that neither claim 1 nor claim 11 recites directionality of fluid flow between the bottom out cup and the compression portion of the damper chamber. Pet., 16-17, 32 n2; Ex. 1002, ¶42; Ex. 1003, ¶40. While it is correct that claim 11, which recites “fluid communication between the cup and the primary compression chamber,” does not provide a direction of the fluid flow between the cup and the compression chamber, claim 1 requires “fluid communication from the cup to the compression portion of the chamber.” Ex. 1001, *compare* claim 1 *with* claim 11 (emphases added). A person skilled in the art would understand that fluid communication from the bottom out cup to the compression portion of the chamber requires some fluid to flow from the cup to the compression portion. Ex. 2010, ¶40. If there is fluid flow in only the opposite direction, i.e., from the compression portion of the chamber to the cup (and no fluid flow the other way around), then there is no “fluid communication from the cup to the compression portion of the chamber” as required by claim 1. *Id.* Petitioner’s interpretation of the limitation “fluid communication from the cup to the compression portion of the chamber” as having no directionality reads the words “from” and “to” out of the claims and improperly inserts the word “between”

there (as in claim 11). *Id.*

Thus, contrary to Petitioner’s assertion, a person skilled in the art would understand “fluid communication from the cup to the compression portion of the chamber” to mean that fluid flows from the cup to the compression portion during a compression stroke. Patent Owner’s interpretation is fully supported by the ’223 patent specification. *See* Ex. 1001, 3:62-4:2 (describing with reference to Figure 3B that fluid from the bottom out cup can flow through paths 301 or 302 to the compression chamber); *see also* Ex. 2010, ¶41.

IV. Overview of the Primary Petition Art

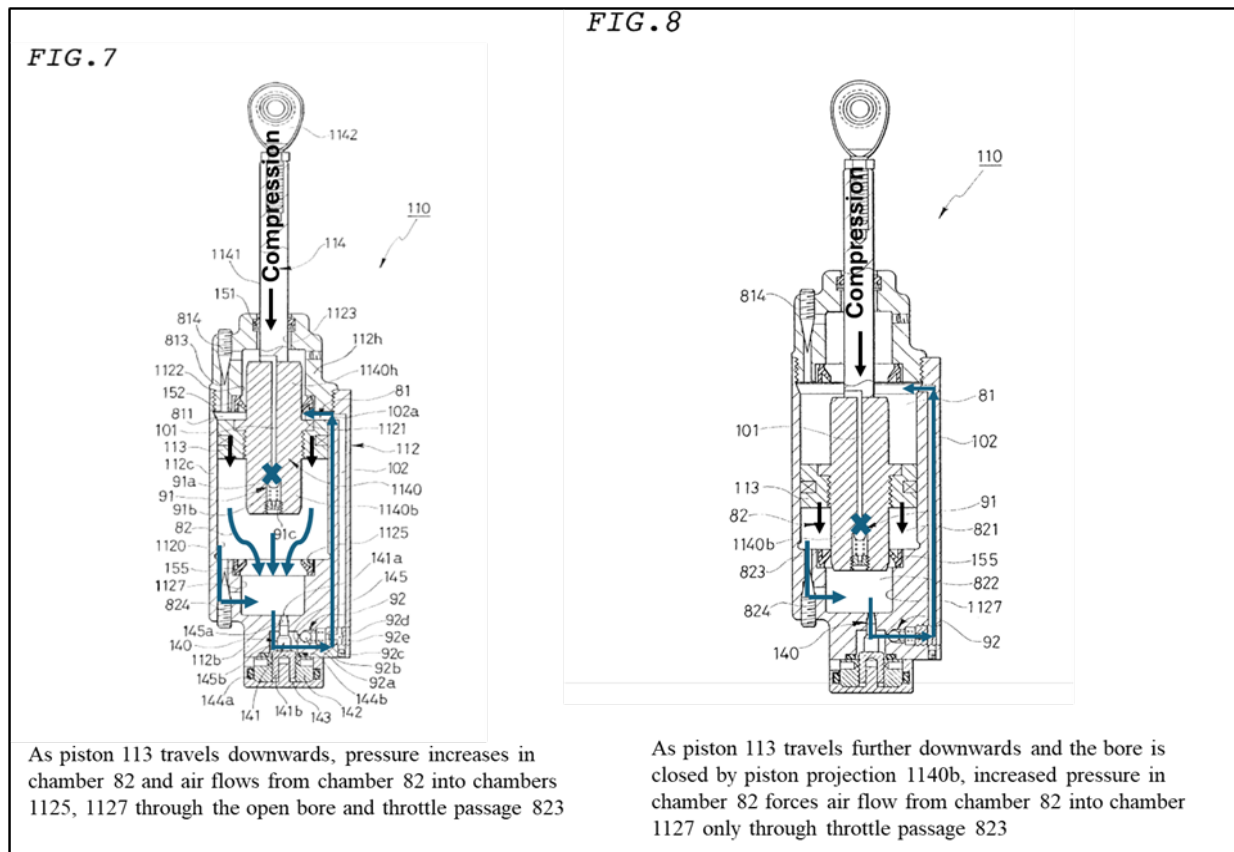
A. Nakaya

The ’223 patent claims are directed to a dampening mechanism in a shock absorber for a vehicle suspension system. Ex. 1001, 1:13-17, 2:39-43; Ex. 2010, ¶42. But Nakaya does not disclose a damper or a shock absorber. Ex. 2010, ¶42. Nakaya instead discloses an air-cylinder apparatus 110 that is designed to aid in the forward motion of a prosthetic limb, i.e., to propel walking. Ex. 1005, Title, abstract, 1:6-13; Ex. 2010, ¶¶42, 43. Nowhere does Nakaya disclose that air-cylinder body 112 (alleged “damper”) can dampen or absorb shock impulses. Ex. 2010, ¶43. Instead, Nakaya simply teaches an apparatus for adjusting pressure characteristics and generating appropriate resistive force in accordance with the bending and stretching motion of an amputee’s knee to attain a natural walking style over a wide range of walking speeds.

Ex. 1005, 1:6-13, 2:23-37; Ex. 2010, ¶43. Even if the pressure within chamber 82 (alleged “compression chamber” or “compression portion”) of air-cylinder body 112 increases due to bending motion of the knee, such increase in pressure is desired because it generates force to propel walking and is not intended to be dampened. Ex. 2010, ¶43. Nowhere does Nakaya disclose that its invention is for damping of the resistive force (or pressure increase) because doing so would hamper the forward motion of the knee/prosthetic limb. *Id.*; Ex. 1005, 9:24-36, Fig. 10 (showing increase in torque because of generated pressure as the bending angle of the knee increases). In other words, Nakaya’s apparatus is designed to store energy, not to dissipate energy as in a damper. Ex. 2010, ¶¶43, 59; Ex. 2011, 29:22-30:22 (Petitioner’s expert, Mr. Wesling, agreeing that a damper dissipates energy from an impact). While throttling of the air will inherently produce a slight amount damping, the intended function of Nakaya’s air-cylinder apparatus 110 is not to dampen, but to store the energy exerted to move the limb and recover it (deliver it back) for use later in the gait cycle. Ex. 2010, ¶43.

Accordingly, Nakaya’s air-cylinder apparatus 110 is not a “damper,” but rather an energy storage device. *Id.* at ¶44. To achieve this intended function of energy storage, Nakaya teaches a bi-directional, spring-like “bouncy” system, which includes a cylinder body 112 having a large diameter cylinder tube 112c and two smaller diameter chambers, 112h (head part) and 112b (bottom part), at each end of cylinder

tube 112c. Ex. 1005, 6:25-36; Ex. 2010, ¶57. The air-cylinder apparatus 110 includes a large diameter piston 113 (supported by piston rod 114). Ex. 1005, Fig. 7. Piston rod 114 has smaller diameter projections (1140b, 1140h) on each side. *See id.* As piston 113 moves downward in cylinder tube 112c (as shown in Figure 7, annotated below) during a compression stroke, air flows from chamber 82 to smaller diameter holes 1125, 1127 (alleged “bottom out cup”) through the bore connecting chamber 82 with holes 1125, 1127. Ex. 2010, ¶57. With continued downward travel of piston 113 due to increased bending angle of the knee, projection 1140b enters holes 1125, 1127 and seal member 155 seals off the opening with chamber 82 (as shown in Figure 8, annotated below). *Id.*; Ex. 1005, 8:49-56. Continued downward travel of piston 113 in chamber 82 increases pressure in chamber 82 and thus forces air from chamber 82 through an adjustable valve-controlled passage 823 into hole 1127. Ex. 2010, ¶57; Ex. 1005, 9:12-18. Air in hole 1127 flows out to rebound chamber 81 through passage 102 having throttle valve 140 and check valve 92. Ex. 2010, ¶57; Ex. 1005, 7:41-56, 8:27-31.



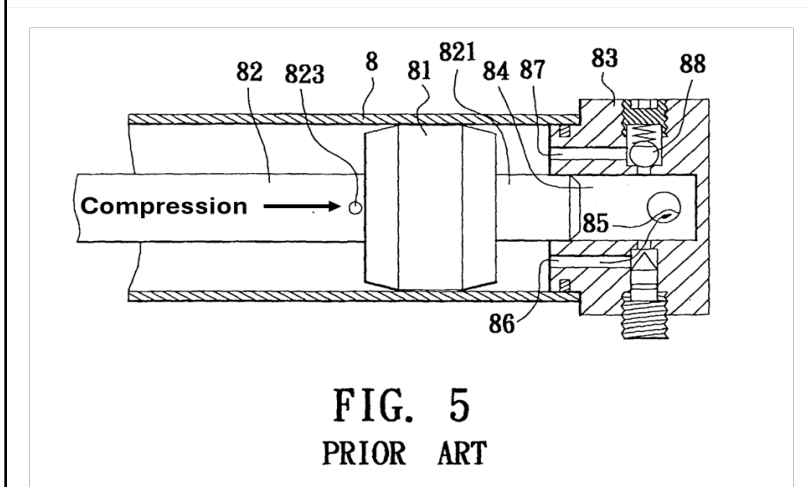
Ex. 2010, ¶57 (annotated Figures 7 and 8 of Nakaya).

The downward and upward motion of the piston assembly is mostly symmetric (the difference being that the during upward/rebound motion, the small diameter projection 1140h extends into head part 112h). Ex. 2010, ¶58. During upward motion, air in rebound chamber 81 flows to chamber 82 through passage 101 that passes through piston rod 114 and includes a check valve 91. *Id.*; Ex. 1005, 7:24-34. Nakaya's system is thus "double acting" with equal active energy storage in both downward and upward directions, which is achieved through air compression and only a minimal amount of damping due to the use of metered orifices for air flow. Ex. 2010, ¶58.

B. Chen

Chen discloses a “buffer structure for the rear end” of a hydraulic cylinder, but fails to disclose the purpose or application of the hydraulic cylinder. Ex. 1007, 1:2-4. A POSITA would understand that a “hydraulic cylinder” is an actuator that is used, for example, in construction equipment to move arms, buckets, etc. Ex. 2010, ¶46. The purpose of Chen is to buffer the movement of the piston (and associated tool) near the end of travel. *Id.* To move the piston in the opposite direction, a valve needs to be activated, e.g., by the equipment operator, to reverse fluid flow and to push the piston in the opposite direction. *Id.*

Referring to prior-art Figures 4 and 5, Chen describes the front end of a hydraulic cylinder 8, which includes a piston 81 connected to a rod/shaft 82. Ex. 1007, 1:5-9, 1:18-20. Piston 81 has a projecting post 821 extending towards the front end of hydraulic cylinder 8. *Id.* at 1:5-8. A cap 83 at the front end of the hydraulic cylinder includes an accommodating cavity 84 (alleged “bottom out cup”), which is configured to cooperate with projecting post 821. *Id.* at 1:7-9.



Ex. 1007, Figs. 4 and 5.

When piston 81 moves towards cap 83, oil in hydraulic cylinder 8 flows out through accommodating cavity 84 via an oil outlet 85 and thus encounters little resistance. Ex. 2010, ¶48. But when projecting post 821 fits into accommodating cavity 84, “the oil in the hydraulic cylinder 8 can only flow through the small diameter flow way 86 into the accommodating cavity 84 and then flow out from the oil outlet 85. The flow way 86 has a small cross-sectional area so that little oil flow is drained out from the hydraulic cylinder 8 and the back pressure is increased to buffer the

moving speed of the piston 81.” Ex. 1007, 1:18-26 (emphases added). That is, projecting post 821 is configured to “fit[] into the accommodating cavity 84 to block” the flow of oil from hydraulic chamber 8 through the opening of accommodating cavity 84. *Id.* at 1:18-22. This allows back pressure to increase in hydraulic chamber 8 to buffer/cushion the moving speed of piston 81. Ex. 2010, ¶48. And dampening is provided by driving fluid through a restriction flow path 86 directly connected to hydraulic cylinder 8. *Id.*; Ex. 1007, 1:22-26. Although the function of oil outlet 85 is not described in Chen, a POSITA would understand that it provides an unrestricted flow path out of hydraulic cylinder 8 and accommodating cavity 84 (the alleged “bottom out cup”) to a reservoir during a compression stroke, and back into the cylinder during rebound to supply fluid to break the piston free and push it in the opposite direction. Ex. 2010, ¶48.

A POSITA would also understand that during rebound, if the pressure in accommodation cavity 84 (the alleged “bottom out cup”) increases beyond a certain threshold because of the unrestricted flow of fluid from the reservoir through outlet 85 into accommodating cavity 84, then the fluid pressure may push open check valve 88 and fluid from accommodating cavity 84 may flow into the compression portion of hydraulic cylinder 8 through flow way 87. *Id.* at ¶49.

C. Fox '751

Petitioner acknowledges that Fox '751 discloses a “typical” or “conventional” damper for a shock absorber and does not disclose the recited “bottom out cup.” Pet. 76, 78. Petitioner instead relies on Chen as allegedly disclosing an adjustable dampening mechanism based on a “bottom out cup” technology. *Id.* at 79-80.

Referring to Figure 3A of Fox '751, Petitioner explains that the “damper (volume within the shock body 42 []) of Fox '751's shock absorber 38 includes a piston 68 that divides an interior volume into a compression portion 96 and a rebound portion 98. Fluid is able to travel between the compression portion 96 and the rebound portion 98 using passages 104, 108 through the piston 68. The passages 104, 108 include a means for restricting the flow of fluid between the compression portion 96 and the rebound portion 98, the degree of restriction being adjustable by changing the shim stacks 106, 110.” Pet., 77. While passages 104, 108 enable fluid to flow between compression chamber 96 and rebound chamber 98, nowhere does Fox '751 disclose or suggest that the fluid flow paths between the compression and rebound chambers may be adjusted by changing shim stacks 106, 110. Ex. 2010, ¶50. Nor does Fox '751 disclose a “bottom out cup,” or a user-adjustable dampening mechanism based on a “bottom out cup” technology as disclosed and claimed in the '223 patent. *Id.* at ¶51.

D. Gartner

Gartner discloses a shock absorber for a vehicle, but does not disclose or suggest a “bottom out cup” or a bottom out piston to provide user-adjustable dampening options in a shock absorber. Ex. 2010, ¶52.

Petitioner relies on the embodiment of Gartner shown in Figures 12A, 12B, 12C to argue that Gartner’s shock absorber 420 includes a “bottom out cup” defined by the compression volume 460.4. Pet. 105-106 (describing volume 460.4 as the claimed “bottom out cup”). But Gartner instead discloses a second internal shock absorber 400 placed within shock absorber 420. Ex. 1010, Abstract, 9:25-27, Fig. 12A. Internal shock absorber 400 includes a damper chamber divided by a piston into a compression chamber (460.4) and a rebound chamber. Ex. 2010, ¶53. Compression chamber 460.4 of shock absorber 400 is thus not a “bottom out cup,” rather it is the compression portion/chamber of the damper chamber of shock absorber 400. *Id.*

Nowhere does Gartner disclose a user-adjustable dampening mechanism based on a “bottom out cup” technology as disclosed and claimed in the ’223 patent. *Id.* at ¶54.

V. Grounds I-V Asserted Against Claims 1-9, 11-15, and 19 are Technically Deficient

The '223 patent has three independent claims—claims 1, 11, and 19. Petitioner asserts that claims 1, 11, and 19 are anticipated by Nakaya (Ground I)⁴; anticipated by Chen or rendered obvious by Chen alone or in view of Deferme (Ground II); and rendered obvious by Fox '751 in view of Chen (Ground III). Pet., 3. Additionally, Petitioner asserts that claims 1 and 19 are anticipated by Gartner (Ground V)⁵. As discussed below, claims 1, 11, and 19 are not anticipated by Nakaya, Chen, or Gartner, nor are they rendered obvious by Chen alone or in view of Deferme, or by Fox '751 in view of Chen. Accordingly, claims 2-9 and 12-15, which depend from claim 1 and claim 11, respectively, are also not anticipated or rendered obvious by the asserted prior-art grounds.

⁴ The Petition does not assert obviousness of claims 1-9, 11-15, and 19 based on Nakaya; the Petition only asserts obviousness of claim 4 based on Nakaya alone or Nakaya in view of Kodama. Pet., 3.

⁵The Petition does not assert obviousness of claims 1-5, 9, and 19 based on Gartner; the Petition only asserts obviousness of claim 4 based on Gartner in view of Kodama. Pet., 4.

Moreover, dependent claim 13 is not anticipated or rendered obvious under Grounds I, II, or III because neither Nakaya nor Chen discloses a second fluid flow path between the alleged “compression chamber” and alleged “bottom out cup” as required by claim 13.

Dependent claims 5-9 are also not rendered obvious under Ground IV by Fox ’751 in view of Chen and further in view of Nakaya and/or Kodama because 1) Fox ’751 in view of Chen does not disclose or suggest the limitations of independent claim 1 from which claims 5-9 depend, and 2) Petitioner has not provided sufficient motivation to combination and a reasonable expectation of success for the combination of Fox ’751 in view of Chen with Nakaya or Kodama.

A. Ground I: Challenged Claims 1-9, 11-15, and 19 Are Not Anticipated by Nakaya, Rendered Obvious by Nakaya, or Rendered Obvious by Nakaya in View of Kodama

1. Independent claims 1, 11, and 19 are not anticipated by Nakaya because Nakaya does not disclose a “damper”

Each of the independent claims 1, 11, and 19 recites a “damper” having, among other things, a “bottom out cup” and a compression portion/chamber of the “damper.” The Nakaya apparatus is not a “damper,” nor can it be used as such, because nowhere does Nakaya disclose dissipation of energy, which is an essential characteristic of a “damper.” Ex. 2010, ¶55. Instead, Nakaya is an air-based system for a prosthetic limb to attain energy storage and recovery during walking in order to minimize energy

expended by the amputee. *Id.* Accordingly, Nakaya fails to disclose the “damper,” as required by independent claims 1, 11, and 19.

Specifically, the claimed invention of the ’223 patent is directed to a “damper.” This is because the preamble of each independent claim 1, 11, and 19 recites a “damper for a shock absorber” or a “fluid damper,” and the body of each independent claim further recites a “compression stroke of the damper.” Ex. 1001, claims 1, 11, 19. The bodies of independent claims 1 and 11 further recite a “damper chamber.” *See id.* The recitation of “damper” in the preambles is therefore limiting because it serves as an antecedent basis for the claim terms “a compression stroke of the damper” and “damper chamber” appearing in the body of the claims. *In re Fought*, 941 F.3d 1175, 1178 (Fed. Cir. 2019) (“We have repeatedly held a preamble limiting when it serves as antecedent basis for a term appearing in the body of a claim.”); *Bio-Rad Labs., Inc. v. 10X Genomics Inc.*, 967 F.3d 1353, 1371 (Fed. Cir. 2020) (when the body of the claim relies on the preamble for antecedent basis, it “is a strong indication that the preamble acts as a necessary component of the claimed invention.”) (citation and quotation marks omitted). Moreover, without the preambles’ recitation of a “damper,” claims 1, 11, and 19 would not be structurally complete, and thus the preambles are “necessary to give life, meaning, and vitality” to claims 1, 11, and 19. *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305-06 (Fed. Cir. 1999). Accordingly, the recitation of “damper” in the preambles is not merely a statement of intended use;

rather, the recitation of “damper” in the preambles is “intimately meshed with the ensuing language in the claim[s],” and thus should be treated as a structural limitation of claims 1, 11, and 19. *See id.*

The specification of the '223 patent further supports limiting the claims to a “damper.” The specification clearly states: “FIG. 2 is a section view showing a dampening assembly 200 of a shock absorber shown in an axially extended position.” Ex. 1001, 3:23-24; *see also id.* at Title (“Methods and Apparatus for Position Sensitive Suspension Dampening”); 1:13-17 (“Particular embodiments of the invention relate to methods and apparatus useful for variable and position sensitive dampening rate in vehicle shock absorbers”); 2:40-43. Because “dampening” is underscored as important by the specification, the preambles’ recitation of “damper” operates as a claim limitation. *See Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002).

Nowhere does Nakaya disclose a “damper,” “a compression stroke of the damper,” or a “damper chamber.” Instead, the Nakaya apparatus is a spring-like bidirectional system meant to assist the bending and stretching motion of an amputee’s knee and to aid in the forward motion of a prosthetic limb, i.e., to propel walking. Ex. 1005, 1:6-13, Title, Abstract; Ex. 2010, ¶56. In contrast to Nakaya’s apparatus, which is configured to store energy and propel walking, a “damper” is intended to cushion hard landings and bumps by dissipating energy. Ex. 2010, ¶¶55, 56; Ex. 2011, 29:22-

30:22 (Petitioner’s expert, Mr. Wesling, agreeing that a damper dissipates energy from an impact).

Indeed, Nakaya teaches that its system is designed to help “the wearer of the prosthetic limb [to] walk with a feeling of natural walking without a sense of incompatibility.” Ex. 1005, 3:60-62. If Nakaya’s apparatus was a “damper,” then the user would strain to walk and would feel like they were walking or running in loose sand, which is not the intended function of a prosthetic limb. Ex. 2010, ¶59. This is because “dampers” generally use oil and a special arrangement of chambers and metered passages to dissipate large amounts of energy generated and are not configured to store energy to help propel the user forward. *Id.* Therefore, Nakaya’s air-spring apparatus, which is configured to store and not dissipate energy, is not a “damper.” *Id.* Indeed, a POSITA would understand Nakaya’s air-cylinder to be an energy storage and recovery system to emulate how the body works when walking, and not a “damper” as taught by the ’223 patent. *Id.* at ¶60.

More specifically, nowhere does Nakaya disclose that its air-cylinder body 112 (the alleged “damper”) dampens or absorbs shock impulses. Ex. 2010, ¶61. Instead, Nakaya teaches how to attain a natural walking style over a wide range of walking speeds by facilitating energy exchange (pressure and flow) between two chambers 81 and 82 separated by a piston 113, where air flow between the two chambers is regulated by flow through check valves 91 and 92. *Id.* Even if the pressure within

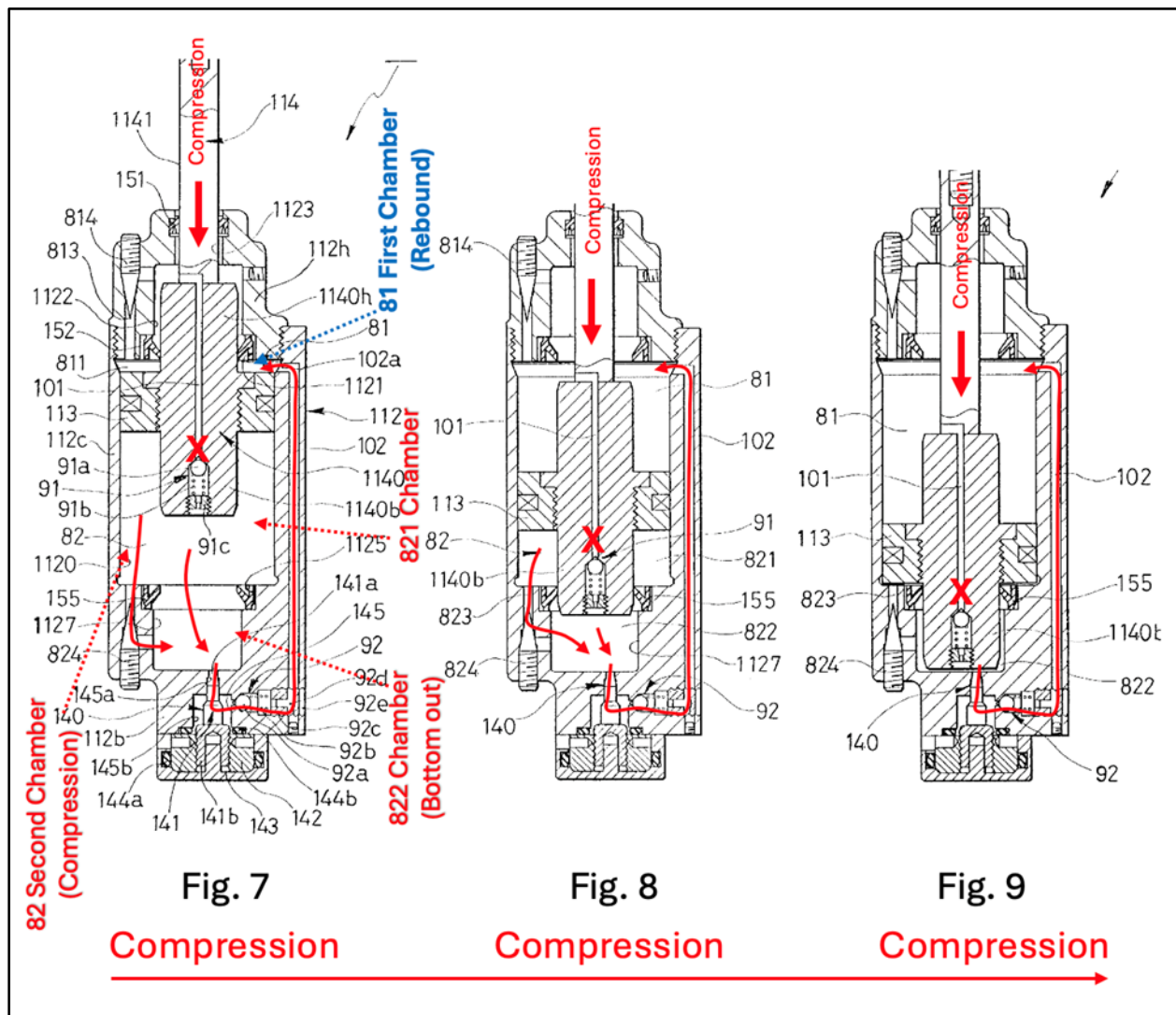
chamber 82 (the alleged “compression chamber”) of air-cylinder body 112 increases due to bending motion of the knee, such increase in pressure is desired because it applies the necessary energy to help propel walking. *Id.* Nakaya does not disclose dampening of the resistive force (or pressure increase) because doing so would hamper the forward motion of the knee/prosthetic limb. *Id.*; *see also* Ex. 1005, 9:24-36, Fig. 10 (showing increase in torque because of generated pressure as the bending angle of the knee increases). Therefore, a POSITA would not recognize the Nakaya system as a “damper.” Ex. 2010, ¶61.

Because Nakaya does not disclose a “damper,” independent claims 1, 11, and 19, and claims 2-9 and 12-15 which depend from claim 1 or claim 11, are not anticipated by Nakaya. The Petition does not assert obviousness of claims 1-3, 5-9, 11-15, and 19 based on Nakaya alone, nor does Nakaya render those claims obvious. Ex. 2010, ¶¶61, 62; Pet., 3. Claim 4 is also not rendered obvious by Nakaya at least because of its dependence from claim 1. Kodama, which the Petition cites only with regard to claim 4, does not overcome the above-identified deficiency of Nakaya because Kodama also discloses a prosthetic energy storage device (and not a “damper”). Ex. 2010, ¶¶45, 62. Therefore, neither claim 4, nor any of claims 1-3, 5-9, 11-15, and 19, is rendered obvious by Nakaya in view of Kodama.

2. Independent claims 1 and 19 are not anticipated by Nakaya because Nakaya does not disclose fluid communication or fluid flow from the “bottom out cup” to the compression chamber during a compression stroke of the damper

Independent claim 1 recites a fluid flow path that provides “fluid communication from the cup to the compression portion of the chamber during a compression stroke of the damper.” A POSITA would understand that fluid communication from the bottom out cup to the compression portion of the chamber requires fluid flow from the cup to the compression portion. Ex. 2010, ¶63. Likewise, claim 19 recites that “during a compression stroke of the damper, the fluid flows from the bottom out cup to the compression chamber[.]” Nakaya does not disclose fluid flow from the alleged “bottom out cup” to the “compression chamber”/“compression portion” during a compression stroke of the damper. *Id.* Instead, air (fluid) flows from Nakaya’s compression chamber 82 to the alleged “bottom out cup” during a compression/downward stroke in Nakaya’s air cylinder apparatus 110 (the reverse of the flow recited in the claim). *Id.*

Annotated Figures 7, 8, 9 of Nakaya illustrate the flow of air in Nakaya’s apparatus during a compression cycle:



Ex. 2010, ¶64 (annotated Figures 7, 8, and 9 of Nakaya).

In Figure 7 as compression starts, piston rod 114 and piston 113 travel downwards, which forces air to flow out of the second chamber 82 (alleged “compression chamber” or “compression portion” of the damper chamber) and into the first chamber 81 (rebound chamber). Ex. 2010, ¶65. Chamber 82 is divided into an upper part 821 and a lower part 822 defined by holes 1125, 1127 (alleged “bottom out cup”). *Id.* The air pushed downwards by piston 113 takes two paths from upper

compression chamber 821: the first path of least resistance is directly into chamber 822 (defined by holes 1125, 1127), and the second path of higher resistance is through throttle passage 823 (although at this stage the flow through passage 823 will be effectively nil because most of the air will take the path of least resistance). *Id.* Air in chamber 822 exits through throttle valve 140 and check valve 92 and flows through passage 102 to rebound chamber 81. *Id.*

Figure 8 shows the state where continued travel of piston rod 114 causes the outer periphery of the projection 1140b of piston rod 114 to engage seal member 155. Ex. 2010, ¶66. The flow from chamber 821 must now all effectively go through throttle passage 823 in order to flow into chamber 822, and that flow through throttle passage 823 combines with some flow being pushed forward by the end of projection 1140b. *Id.* The combined flow is throttled by valve 140, which increases pressure in chamber 822 and hence also in chamber 821 to resist motion of piston rod 114. *Id.* This pressure increase causes check valve 92 to open and air to flow up through passage 102 to the first (rebound) chamber 81. *Id.* The buildup of air pressure in chambers 821 and 822 compresses air and operates as an energy storing spring. *Id.* Nakaya's throttle valve 140 provides some fluid resistance (damping) for flow between the compression and rebound chambers, but the flow is always from the upper compression chamber 821 to the lower compression chamber 822 (the alleged "bottom out cup") and from there to rebound chamber 81. *Id.* There is no air flow from lower compression chamber 822

(the alleged “bottom out cup”) to the upper compression chamber 821 during the compression cycle. *Id.*

Figure 9 shows the very end of the downward travel of piston rod 114 where the piston has just made contact with the end of upper compression chamber 821, there is very little air remaining in chamber 821 to flow down through throttle passage 823, and the last of the air in chamber 822 has just flowed through throttle valve 140 and check valve 92 and up through passage 102 into rebound chamber 81. Ex. 2010, ¶¶67.

In each of Figures 7, 8 and 9, air cannot flow from compression chamber 82 through piston rod 114 to rebound chamber 81 because check valve 91 only allows flow down from chamber 81 on the rebound stroke of the piston. Ex. 2010, ¶¶68. Although not directly relevant to the claims, Patent Owner’s expert, Dr. Slocum, has provided a detailed explanation of the flow of air through Nakaya’s device during rebound. Ex. 2010, ¶¶68-71. Significantly, air flows from lower compression chamber 822 (alleged “bottom out cup”) to upper compression chamber 821 through throttle passage 823 only during rebound motion to help piston 113 move upwards towards rebound chamber 81. *Id.* at ¶¶69-71.

Thus, Petitioner and its experts, Dr. Wang and Mr. Wesling, are incorrect in stating that air flows from lower compression chamber 822 defined by holes 1125, 1127 (alleged “bottom out cup”) to upper compression chamber 821 during a compression stroke. Ex. 2010, ¶¶72, 73. Contrary to Petitioner’s assertion, air flows

from upper compression chamber 821 to lower compression chamber 822 (alleged “bottom out cup”) during a compression stroke. *Id.*

It would be incorrect to say that air (fluid) flows from chamber 822 into chamber 821 “to increase pressure.” DI, 15. This is because air does not flow into chamber 821 to increase pressure therein; rather, air flows from chamber 821 to lower chamber 822 if pressure in chamber 821 is greater than chamber 822. Ex. 2010, ¶74. That is, pressure determines the direction of flow (from high pressure to low pressure) and pressure is the product of the flow rate (Q) and resistance to flow (R) (i.e., $P=QR$). *Id.* at ¶¶74, 76. In fact, even Petitioner’s expert, Dr. Wang, agrees that to say air flows from chamber 822 to chamber 821 to increase pressure in chamber 821 puts “the cart before the horse in same ways” because “the direction of flow depends on the pressure differential” and “flow doesn’t increase pressure”; rather, “[p]ressure creates the flow.” Ex. 2012, 123:5-124:9.

In the case of the Nakaya apparatus, pressure in upper compression chamber 821 increases because of the downward motion of piston 113 during a compression stroke and the resistance to air flow provided by throttle valve 824 in passage 823. Ex. 2010, ¶75. Similarly, pressure in lower compression chamber 822 (defined by holes 1125, 1127) increases because of the downward motion of projection 1140b into the holes and the resistance to air flow out of chamber 822 provided by throttle valve 140. *Id.* But pressure in chamber 821 will still be higher than pressure in chamber 822

because of the larger pressure area covered by piston 113 compared to projection 1140b, and so air will flow from chamber 821 to chamber 822. *Id.* In fact, Nakaya notes that as the bending degree of the knee increases, i.e., the piston 113 compresses, throttle valve 140 “increases the pressure in chamber 822,” and this causes air to flow out of chamber 822 through throttle valve 140 and check valve 92 to rebound chamber 81. *See* Ex. 1005, 7:41-56, 8:27-33, 9:22-30; Ex. 2010, ¶76. This disclosure of Nakaya shows that air does not flow into rebound chamber 81 to increase pressure therein; rather, the pressure in chamber 822 increases because of the downward motion of the piston and the resistance to air flow provided by throttle valve 140, and this increase in pressure causes air to flow from chamber 822 to chamber 81. Ex. 2010, ¶76. Similarly, air flows out of chamber 821 into chamber 822 (alleged “bottom out cup”) because of the increased pressure in chamber 821, and not the other way around, as required by claims 1 and 19. *Id.*

This is further illustrated by Nakaya’s Figure 10, which shows that as the bending degree increases, i.e., during a compression stroke, the pressure generated in chamber 82 increases. Ex. 1005, 9:30-37. Simply put, due to the downward motion of piston 113 during a compression stroke, there will be increased pressure in chamber 821, and air in chamber 821 has nowhere else to go except through throttle passage 823 into chamber 822 alleged (“bottom out cup”). Ex. 2010, ¶77. That is, during a

compression stroke, air flows from chamber 821 into the alleged “bottom out cup” 822, and not the other way around as alleged by Petitioner and its experts. *Id.*

Accordingly, the limitation “fluid communication from the cup to the compression portion of the chamber during a compression stroke of the damper” of claim 1 and the limitation “during a compression stroke of the damper, the fluid flows from the bottom out cup to the compression chamber” of claim 19 are not disclosed by Nakaya. Kodama does not overcome this deficiency of Nakaya because Kodama does not even disclose a “bottom out cup,” nor does the Petition rely on Kodama for claims 1 and 19. *See id.* at ¶78. Therefore, claims 1 and 19, and claims 2-9 which depend from claim 1, are not anticipated by Nakaya, or rendered obvious by Nakaya alone or in view of Kodama.

3. Dependent claim 13 is not anticipated by Nakaya because Nakaya does not disclose a second “a fluid flow path formed between the cup and the primary compression chamber” as required by claim 13

Independent claim 11 of the '223 patent requires a “fluid damper” comprising *inter alia* a “damper chamber,” “a bottom out cup,” and “an adjustable fluid flow path formed in the cup, the flow path providing fluid communication between the cup and the primary compression chamber [of the damper chamber] in a compression stroke of the damper.” Ex. 1001, 8:8-23. Claim 13, which depends from claim 11 and incorporates all elements of claim 11, further recites “a fluid flow path formed between

the cup and the primary compression chamber, wherein the capacity of the fluid flow path is adjustable.” *Id.* at 8:27-30. There can be no dispute that the fluid flow path recited in claim 13 is separate and distinct from the fluid flow path recited in claim 11.⁶ Ex. 2010, ¶79. In fact, Petitioner’s expert Dr. Wang admitted in his non-infringement report for the district court litigation that claim 13 recites a second fluid flow path. Ex. 2013, ¶168. That is, claim 13 requires two separate fluid flow paths: “an adjustable fluid flow path formed in the cup” (recited in claim 11) and a separate “fluid flow path formed between the cup and the primary compression chamber” (recited in claim 13). *Id.*

Petitioner’s experts, however, map the same flow path in Nakaya to both the “adjustable fluid flow path formed in the cup” of claim 11 and the “fluid flow path formed between the cup and the primary compression chamber” of claim 13. Ex. 1002, ¶¶108, 111 (referring to either throttle passage 823, or throttle passage having valves

⁶ Contrary to Petitioner’s assertion, Patent Owner’s infringement positions do not map the same or overlapping fluid flow paths for claims 11 and 13. Pet. 16. While claims 1, 2, and 13 refer to a fluid flow path wherein “the capacity of the fluid flow is adjustable” (e.g., path 302 of the ’223 patent), claim 11 simply refers to an “adjustable fluid flow path” (e.g., path 301 of the ’223 patent). *See* Ex. 2010, ¶80. The flow paths of claims 11 and 13 are thus not the same. *Id.*

4824a, 4824b, as the flow paths of claims 11 and 13); Ex. 1003, ¶¶106, 108, 109 (same). But as discussed below, two separately recited claim elements (as here) are legally presumed to be distinct components of the patented invention, and thus cannot be properly mapped to the same feature of a prior art device. *Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010). Because Petitioner’s unpatentability positions with respect to claim 13 are legally impermissible, Petitioner has not met its burden to prove obviousness or anticipation of claim 13.

a. The Federal Circuit’s Precedent is Clear that Separate and Distinct Claim Elements Cannot be Met by the Same Prior Art Feature

As the Federal Circuit described in its seminal *Becton, Dickinson* decision, when “a claim lists elements separately, ‘the clear implication of the claim language’ is that those elements are ‘distinct component[s]’ of the patented invention,” and thus cannot be mapped to the same structure of a device. 616 F.3d at 1254 (quoting *Gaus v. Conair Corp.*, 363 F.3d 1284, 1288 (Fed. Cir. 2004)). In *Becton, Dickinson*, the Federal Circuit rejected patentee’s attempt to map the separately recited “hinged arm” and “spring means” elements to portions of the accused product’s hinged arm. 616 F.3d at 1254-55. Specifically, the *Becton, Dickinson* Court found that because the accused product’s hinged arm was mapped to the claimed “hinged arm” element, the hinges of the accused product’s hinged arm cannot also be mapped to the separately

recited “spring means” claim element. *Id.* Instead, the “spring means” must be mapped to “a separate structural element from the hinged arm and its hinges.” *Id.* at 1255-56 (emphasis added). The same reasoning applies here and demonstrates the error of Petitioner’s unpatentability positions.

Gaus, which is cited in the *Becton, Dickinson* decision, also shows that it is legally impermissible to map separately recited claim elements to the same feature in an asserted prior art reference. In *Gaus*, the claim-at-issue separately listed a “pair of spaced-apart electrically exposed conductive probe networks” and an “electrical operating unit.” 363 F.3d at 1288. The *Gaus* Court found that the accused Conair device “does not have a pair of probe networks that is separate from the electrical operating unit, ... Rather, the Conair device employs a single probe acting in concert with the electrical operating system.” *Id.* at 1290. In rejecting the attempt to map the recited “pair ...of probe networks” and “electrical operating unit” to the same feature of the alleged infringing device, the Federal Circuit ruled that the recited “pair ... of probe networks” cannot consist “in part of a portion of” the separately listed “electrical operating unit.” *Id.* at 1288.

Many Federal Circuit decisions since *Gaus* and *Becton, Dickinson* have reinforced that the separate recitation of two elements in a claim “strongly implies that the named entities are not one and the same structure.” *HTC Corp. v. Cellular Commc’ns Equip., LLC*, 701 F. App’x 978, 982 (Fed. Cir. 2017) (citing *Becton,*

Dickinson); see also *Kyocera Senco Indus. Tools Inc. v. ITC*, 22 F.4th 1369, 1382 (Fed. Cir. 2022) (when asserted claims list elements separately, there is “a presumption that those components are distinct”) (citing *Becton, Dickinson*). To overcome the presumption that separately recited claim elements are separate components, there must be something in the claim language or the specification that plainly permits mapping of the same feature to separately recited claim elements. *Becton, Dickinson*, 616 F.3d at 1254; *Kyocera*, 22 F.4th at 1382 (finding that the “exit end of the [fastener driving] mechanism cannot be the exit end of the [separately-listed] safety contact element” because the presumption of distinctness is not overcome). Here, the claims and the specification of the ’223 patent do not disclose or suggest that the “adjustable fluid flow path formed in the cup” of claim 11 and the “fluid flow path formed between the cup and the primary compression chamber” of claim 13 may be the same flow path, as explained further below.

b. The ’223 Patent Does Not Support Petitioner’s Mapping of the Same Flow Path of the Prior-Art Devices to the Separately Recited Flow Paths of Claim 13

As discussed above, when a claim lists elements separately, there is a presumption that those components are distinct. *Kyocera*, 22 F.4th at 1382. To overcome that presumption, there must be something in the claim language or the specification that permits the same structure to be mapped to the separately listed claim elements. *Id.*; *Becton, Dickinson*, 616 F.3d at 1254. Here, nothing in the claim

language suggests that the “adjustable fluid flow path formed in the cup” (claim 11) and the “fluid flow path formed between the cup and the primary compression chamber” (claim 13) may be the same flow path. In fact, the language “further including a flow path ...” in claim 13 strongly indicates that the recited flow paths of claims 11 and 13 are separate and distinct. Ex. 1001, 8:27-30 (emphasis added). Indeed, Petitioner’s expert Dr. Wang admitted in the district court litigation that claim 13 requires two fluid flow paths. Ex. 2013, ¶168 (SRAM’s expert: “Claim 13 requires a second fluid flow path ... in addition to ‘an adjustable fluid flow path formed in the cup’”) (emphases added).

The specification supports the interpretation that the recited flow paths in claims 11 and 13 are separate. Ex. 2010, ¶80. The specification, for example, discusses an adjustable fluid flow path 301 and another (separate) fluid flow path 302, whose capacity of flow fluid is adjustable. Ex. 1001, 3:62-4:35 (discussing two separate flow paths 301 and 302 having “adjustable dampening mechanisms that work in conjunction with the bottom out cup and piston”); *see also* Ex. 1004, PDF p. 14 (original claims 1-7 of the ’223 patent (filed on May 11, 2009) discussing two separate fluid flow paths, one having a user-adjustable valve and another having a blow-off valve). More specifically, flow path 301, which includes a pressure relief or “blow off” valve 300, is adjusted by changing the “predetermined (e.g. preset) threshold” at which valve 300 opens to allow fluid from the bottom out cup to flow to the

compression portion of damper chamber 200. Ex. 1001, 4:3-30. Path 302, which is separate and distinct from path 301, serves as the “fluid flow path formed between the cup and the primary compression chamber,” and the capacity of fluid flow path 302 is user-adjusted by metering valve 350. *Id.* at 4:31-35. Nowhere does the specification disclose or suggest that the same flow path may serve as the two separate flow paths recited in claims 11 and 13.

c. Petitioner Has Erroneously Mapped the Same Fluid Flow Path of Nakaya to the Separate Flow Paths of Claims 11 and 13

Petitioner’s experts have incorrectly mapped the same flow path of Nakaya (i.e., a throttle passage 823 in one embodiment and a passage having valves 4824a, 4824b in another embodiment) as the separate flow paths of claims 11 and 13. Ex. 2010, ¶81. In fact, it is clear from the disclosure of Nakaya that Nakaya’s air cylinder apparatus has a single flow path between the lower compression chamber 822 (alleged “bottom out cup”) and the upper compression chamber 821. *Id.* This is not permitted by *Becton, Dickinson* and similar cases.

With respect to Nakaya’s “fourth embodiment,” Petitioner’s experts have colored a connector between the upper and lower portions of the alleged “bottom out cup” (volume within 4127b and 4127a). *See* Ex. 1002, ¶112; Ex. 1003, ¶109. But it is clear from Nakaya’s disclosure that Figure 17 merely shows a two-stage “bottom out cup” that enables tuning of the spring curve (as shown in Figure 20) to better emulate

different swing phases of a wider range of walking speed. Ex. 1005, 10:24-58; Ex. 2010, ¶81. Figure 17 further shows that the connector connects the two sections of the alleged “bottom out cup” and does not provide connection between the alleged “bottom out cup” and upper compression chamber 821. *Id.* Nakaya itself confirms there is a single path connecting upper portion of compression chamber (82) and “bottom out cup” (4127a, 4127b). *See* Ex. 1005, Fig. 17 (showing a single flow path having valves 4824a, 4824b connecting compression chamber 82 and alleged “bottom out cup” (volume 4127a, 4127b)).

Because Nakaya does not disclose two separate and distinct fluid flow paths between compression chamber 82 and the alleged “bottom out cup,” claim 13 is neither anticipated nor rendered obvious by Nakaya. Ex. 2010, ¶82. Kodama does not overcome this deficiency of Nakaya because Kodama does not include a “bottom out cup.” *Id.* Accordingly, claim 13, and claims 14 and 15 which depend from claim 13, are neither anticipated by Nakaya, nor rendered obvious by Nakaya alone or in view of Kodama.

At least for the reasons explained in Section V. A.1-3, Petitioner has not shown that claims 1-9, 11-15, and 19 are anticipated by Nakaya, or that claim 4 is rendered obvious by Nakaya alone or in view of Kodama. Accordingly, Ground I of the Petition fails to show that the challenged claims are unpatentable.

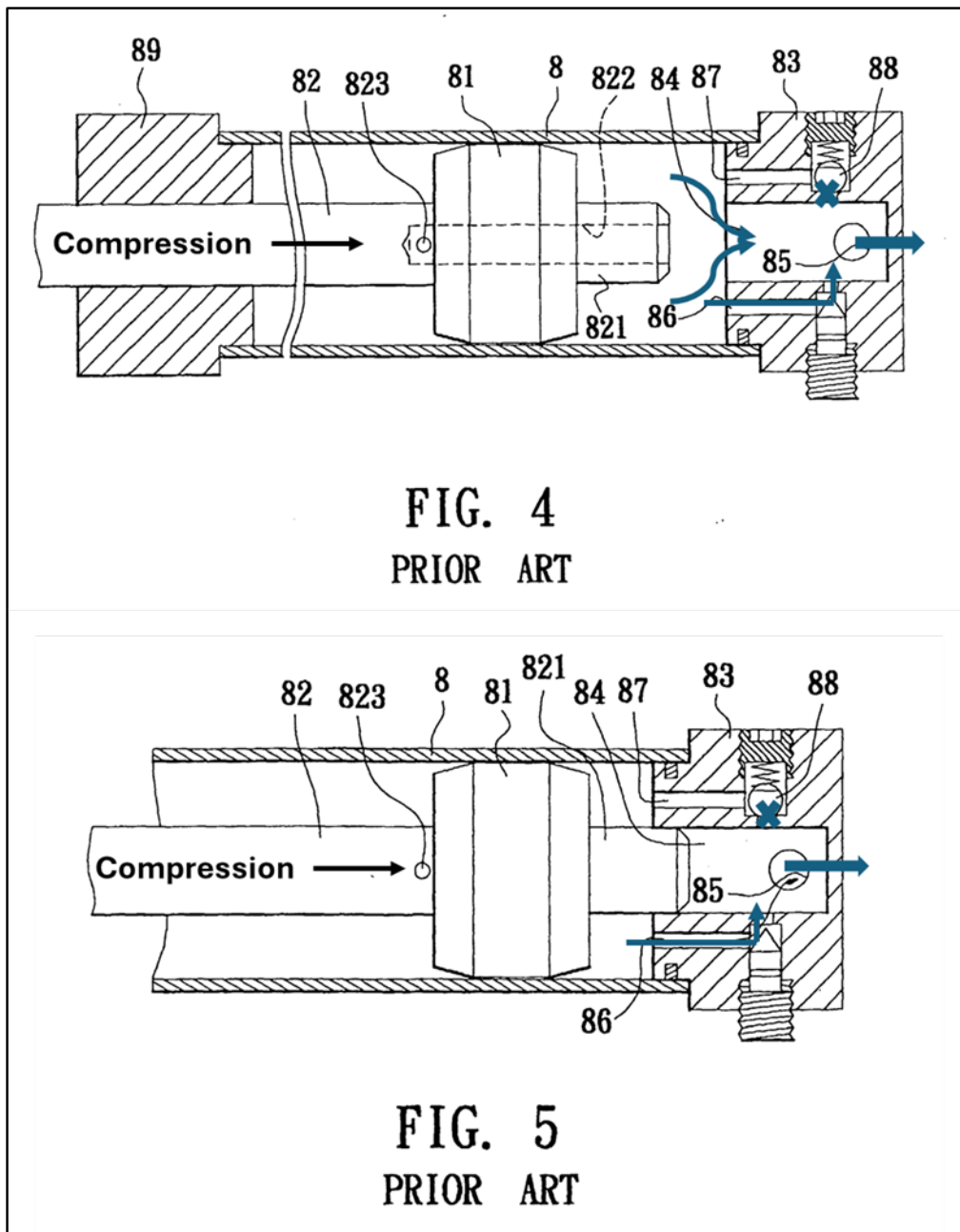
B. Ground II: Claims 1-5, 11-15, and 19 are not anticipated by Chen or rendered obvious by Chen alone or in view of Deferme

- 1. Independent claims 1 and 19 are not anticipated by Chen, or rendered obvious by Chen alone or in view of Deferme, because neither Chen nor Deferme discloses fluid communication or fluid flow from the bottom out cup to the compression chamber during a compression stroke of the damper**

Independent claim 1 recites a fluid flow path that provides “fluid communication from the cup to the compression portion of the chamber during a compression stroke of the damper.” As discussed above, a POSITA would understand that fluid communication from the “bottom out cup” to the compression portion of the chamber requires fluid flow from the cup to the compression portion. Ex. 2010, ¶83. Likewise, claim 19 recites that “during a compression stroke of the damper, the fluid flows from the bottom out cup to the compression chamber[.]” Chen does not disclose or suggest fluid flow from the alleged “bottom out cup” to the “compression chamber”/“compression portion” during a compression stroke of the damper. Instead, fluid (oil) flows from Chen’s hydraulic cylinder 8 to accommodating cavity 84 (alleged “bottom out cup”) through flow way 86 during a compression stroke. *See* Ex. 1007, Fig. 5.

More specifically, as illustrated by annotated Figures 4 and 5 below, oil flows from the compression portion of hydraulic cylinder 8 to accommodating cavity 84 during a compression/downward stroke because of the increased pressure in hydraulic

cylinder 8 generated by piston 81. Ex. 2010, ¶84. That is, as piston 81 moves towards cap 83 (as shown in Figure 4) during a compression stroke, oil from hydraulic cylinder 8 flows through the main opening of accommodating cavity 84 and out through outlet 85. Ex. 1007, 1:18-20 (“when the piston 81 moves towards the cap 83 at the front end, the oil in the hydraulic cylinder 8 flows out through the accommodating cavity 84 from the oil outlet 85.”). Due to continued motion of piston 81 towards cap 83, projecting post 821 “fits into the accommodating cavity 84 to block the same,” and thereafter oil in hydraulic chamber 8 is “can only flow through the small diameter flow way 86 into the accommodating cavity 84 and then out from the oil outlet 85.” Ex. 1007, 1:18-22. This allows back pressure to increase in hydraulic chamber 8 to buffer/cushion the moving speed of piston 81. Ex. 1007, 1:22-26. The increased back pressure in hydraulic chamber 8 forces fluid to flow through the restricted flow way 86 into accommodating cavity 84, and not the other way around. Ex. 2010, ¶84.



Ex. 2010, ¶84 (annotated Figures 4 and 5 of Chen).

Petitioner's experts, Dr. Wang and Mr. Wesling, are incorrect that oil flows from accommodating cavity 84 to hydraulic cylinder 8 through flow way 86 during a compression stroke. Ex. 1002, ¶122, 141; Ex. 1003, ¶¶ 117, 135. As disclosed by Chen,

pressure increases in hydraulic cylinder 8 due to the movement of piston 81 towards cap 83 and the blocking of the opening of accommodating cavity 84 by projecting post 821, which forces oil to flow through the restricted flow way 86 into accommodating cavity 84 and to flow out through outlet 85. Ex. 1007, 1:18-26, Figure 5; Ex. 2010, ¶85. Although Chen does not explicitly mention it, a POSITA would understand that oil exiting through outlet 85 will flow to a reservoir and that the oil will be returned to hydraulic cylinder 8 via outlet 85 during a rebound stroke (i.e., when the piston moves towards cap 89). Ex. 2010, ¶85.

During a compression stroke, pressure in accommodating cavity 84 will be low compared to hydraulic cylinder 8 because oil in cavity 84 can flow out without restriction through outlet 85. Ex. 2010, ¶86. That is, during a compression stroke, pressure in the compression portion of hydraulic cylinder 8 will be higher than pressure in accommodating cavity 84, and therefore oil will flow from the compression portion of hydraulic cylinder 8 to accommodating cavity 84 (alleged “bottom out cup”) and not the other way around. *Id.* In fact, Chen explicitly discloses that as piston 81 moves towards cap 83 and projecting post 821 “fits into the accommodating cavity 84 to block the same,” oil in hydraulic chamber 8 “can only flow through the small diameter flow way 86 into the accommodating cavity 84 and then out from the oil outlet 85.” Ex. 1007, 1:18-24. Petitioner’s experts’ position directly contradicts the express teaching of Chen that fluid flows from the compression chamber to the alleged “bottom out

cup,” not the other way around as recited by claims 1 and 19, and thus cannot be correct.

Deferme, which Petitioner and its experts cite only with regard to a piston with two one-way valves allowing fluid flow between the compression and rebound portions of the damper, does not overcome Chen’s deficiency. Ex. 2010, ¶87. Specifically, Petitioner’s experts refer to Deferme to argue that it would have been obvious to a POSITA to “substitute Chen’s simple piston 81 with Deferme’s adjustable piston in order to provide additional means of adjustment to the damping characteristics of Chen’s damper. The resulting combination would also allow for fluid to travel in any direction through Chen’s fluid flow path 86 during a compression stroke.” Ex. 1002, ¶¶124, 142; Ex. 1003, ¶¶118, 136. But the flow path through Chen’s piston (modified in view of Deferme) cannot be equated to a fluid flow path from Chen’s accommodating cavity 84 (alleged “bottom out cup”) to the compression portion of Chen’s hydraulic cylinder 8. Ex. 2010, ¶87.

First, nowhere does Deferme disclose flow of fluid or fluid communication between a “bottom out cup” and a compression chamber; rather, Deferme simply teaches flow of fluid between the compression and rebound chambers and provides no motivation to do otherwise. Ex. 1008, ¶¶[0030]-[0033]; Ex. 2010, ¶88. Even if Chen’s piston 81 was replaced by or modified in view of Deferme’s piston, the Petition does not explain how oil from Chen’s accommodating cavity 84 (alleged “bottom out cup”)

would flow through Chen's projecting post 821 and piston 81 (modified in view of Deferme) into the compression portion of cylinder 8. Ex. 2010, ¶88. Petitioner's experts simply say that there would be a period of time when the fluid (oil) will flow from the bottom out cup 84 to the compression portion, but provide no explanation of how that would happen. Ex. 1002, ¶143; Ex. 1003, ¶138. Contrary to Petitioner's experts' allegations, even if Chen's piston 81 was replaced by or modified in view of Deferme's piston, oil would flow from accommodating cavity 84 to the rebound portion of hydraulic cylinder 8 (not to the compression portion). Ex. 2010, ¶88. In other words, the alleged flow path through Chen's piston 81 (modified in view of Deferme) does not provide fluid communication or fluid flow from accommodating cavity 84 to the compression portion; rather, any communication or fluid flow through the piston will be between cavity 84 and the rebound portion as taught by Deferme. *Id.*

Second, the flow path through Deferme's piston is not adjustable by the user during operation. Deferme simply teaches that by varying the design of tuning disc 134 in piston body 62, the compression and rebound damping characteristics may be tuned individually. *See* Ex. 1008, Abstract, ¶¶[0002], [0007], [0024], [0033]. But selection of the design of the tuning disc, which is a component of the piston, is a manufacturing/production floor step or a maintenance step when the shock absorber is opened up, the piston assembly exposed, and the disc element 134 is rotated and then

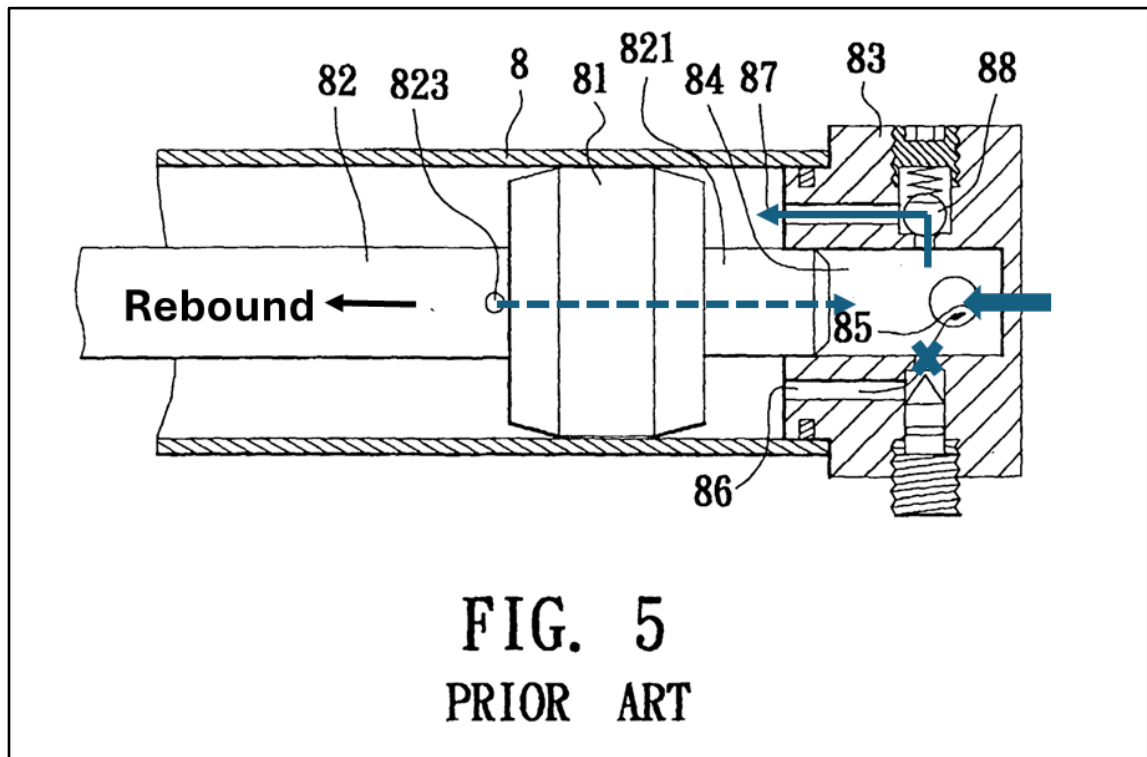
locked in place, which results in the damping being fixed, not adjustable, during the device's operation. Ex. 1008, ¶[0033]; Ex. 2010, ¶89. In other words, the damping characteristics of the piston cannot be adjusted by a user during operation. Ex. 2010, ¶89. Nowhere does Deferme disclose or suggest tuning or adjustments of tuning disc 134 by a user to adjust to different terrains, temperatures, or other ride conditions, as required by the '223 patent. Ex. 1001, 2:22-35, 4:31-59. That is, Deferme does not disclose or suggest an adjustable fluid flow path through its piston. Ex. 2010, ¶89. Accordingly, the alleged flow path through Chen's piston (modified in view of Deferme) cannot be equated to an adjustable fluid flow path as required by claims 1 and 19. *Id.*

During Dr. Wang's deposition, he opined that Chen has another flow path 87, but his Declaration only refers to flow way 86 as the fluid flow path of claims 1 and 19. Ex. 2012, 77:14-21, 82:12-83:16. Petitioner and its experts should not be allowed to belatedly introduce a new unpatentability theory that flow path 87 (and not flow path 86 as described in the Petition) provides fluid flow from the "bottom out cup" to the compression chamber of Chen during a compression stroke. This is because the shifting of arguments, or introduction of new theories and evidence in a reply is not permitted. *Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1286 (Fed. Cir. 2017); PTAB Consolidated Trial Practice Guide (Nov. 2019) (hereinafter "PTAB Practice Guide"), 73 ("Petitioner may not submit new evidence or argument in reply

that it could have presented earlier, e.g. to make out a prima facie case of unpatentability.”); *Dynaenergetics Eur. Gmbh & Dynaenergetics US, Inc. v. Swm Int’l, LLC*, No. IPR2022-01372, Paper 27, at 36-37 (P.T.A.B. Feb. 5, 2024) (excluding new unpatentability theory introduced in reply).

Nevertheless, flow way 87 is not a flow path that allows oil (fluid) flow from accommodating cavity 84 (alleged “bottom out cup”) into the compression portion of hydraulic cylinder 8 during a compression stroke, as required by claims 1 and 19. Ex. 2010, ¶90. This is because flow way 87 includes a check valve 88, which permits fluid flow therethrough only when the pressure in accommodating cavity 84 increases above a preset threshold. *See* Ex. 1007, Figures 4 and 5; Ex. 2010, ¶90. During a compression stroke, however, fluid flows out of accommodating cavity 84 without restriction through outlet 85, and therefore a POSITA would understand that pressure in accommodating cavity 84 would not be high enough to open check valve 88. Ex. 2010, ¶90. However, during a rebound stroke (i.e., when the piston moves in the opposite direction), oil enters accommodating cavity 84 from the (unnamed) reservoir through outlet 85 and from the rebound portion through vent 823 and hole 822, as illustrated below in Figure 5 of Chen. *Id.* This may cause pressure in accommodating cavity 84 to exceed the preset threshold of check valve 88 and fluid may flow through flow way 87 into the compression portion of hydraulic cylinder 8, as shown below. In fact, Dr.

Wang agrees that during rebound stroke, oil flowing in through outlet 85 will exit through flow way 87. *See* Ex. 2012, 87:11-12, 88:2-89:3.



Ex. 2010, ¶90 (annotated Figure 5 of Chen).

But during a compression stroke when projecting post 821 fits into accommodating cavity 84, fluid flows from the compression portion of hydraulic cylinder 8 to accommodating cavity 84 through flow way 86 because pressure in the compression portion is higher than pressure in accommodating cavity 84 due to motion of piston 81 (and fluids flows from high pressure to low pressure). *Id.* at ¶91. Therefore, during the compression cycle, fluid will not flow from the low-pressure accommodating cavity 84 to the high-pressure compression portion of cylinder 8

through flow way 87. *Id.* Instead, fluid in accommodating cavity 84 will flow out of outlet 85 during the compression stroke, as described by Chen. *Id.*

Contrary to Dr. Wang's assertion during his IPR deposition, there is no disclosure in Chen of oil flow from accommodating cavity 84 (the alleged "bottom out cup") to the compression portion of hydraulic cylinder 8 through flow way 87 during a compression stroke. Ex. 2010, ¶93; *see also id.* at ¶92. And a POSITA would clearly understand that such a flow (i.e., from cavity 84 to compression portion of hydraulic cylinder 8) would be highly unlikely because of the presence of outlet 85 in accommodating cavity 84 through which oil can flow out freely. *Id.* at ¶93. More specifically, during a compression stroke, the pressure in the compression portion of hydraulic cylinder 8 will be higher than pressure in accommodating cavity 84 because the only way for fluid to flow out of the compression portion is through the restricted flow way 86; whereas, fluid can flow out freely from cavity 84 through outlet 85. *Id.*

In fact, during Dr. Wang's deposition in the related district court litigation, he admitted that if incompressible fluid (e.g., oil) is used in Chen's device (which it does), fluid is more likely to flow from accommodating cavity 84 to the compression portion of hydraulic cylinder 8 during rebound:

Q. Which way does fluid flow through the flow path 87 in
Chen?

A. Because of the check ball valve, the majority of the flow will go from the bottom out cup to the compression portion of the damper.

Q. And would that be during a compression stroke or a rebound stroke?

A. That would depend on the compressibility of the fluid and the exact geometries, if you go either direction depending on the combination. If the fluid is incompressible, then that would primarily happen in a rebound stroke. But, again, it kind of depends on the compressibility of the fluid and the ratio of the geometries of the bottom out piston to the main piston.

Ex. 2014, 47:25-48:13 (emphasis added).

Thus, it is clear from the disclosure of Chen and the testimony of both Petitioner's and Patent Owner's experts that fluid (oil) flows from the compression portion of hydraulic cylinder 8 to accommodating cavity 84 through flow way 86 during compression (and that during rebound, fluid flows through flow way 87 from cavity 84 to the compression portion of cylinder 8).

Accordingly, the limitation "fluid communication from the cup to the compression portion of the chamber during a compression stroke of the damper" of claim 1 and the limitation "during a compression stroke of the damper, the fluid flows from the bottom out cup to the compression chamber" of claim 19 are not disclosed

by Chen. Deferme does not overcome this deficiency of Chen because Deferme does not disclose flow of fluid from a “bottom out cup” to a compression portion; rather, Deferme simply discloses flow of fluid through its piston from the compression side to the rebound side of the piston. Ex. 2010, ¶94. Therefore, claims 1 and 19, and claims 2-5 and 9, which depend from claim 1, are not anticipated by Chen, or rendered obvious by Chen alone or in view of Deferme.

2. Independent claim 11 is not anticipated by Chen, or rendered obvious by Chen alone or in view Deferme, because neither Chen nor Deferme discloses “a bottom out piston formed on the movable rod,” as required by claim 11

Chen discloses a hydraulic cylinder 8 having a piston 81 connected to a movable rod 82. Ex. 1007, 1:5-9, 1:18-20. Piston 81 has a projecting post 821 extending towards the front end of hydraulic cylinder 8. Ex. 1007, 1:5-8 (“One end of the piston 81 of the hydraulic cylinder 8 opposite to the piston or rod 82 has a projection post 821.”). Petitioner’s experts incorrectly refer to projecting post 821 as a “bottom out piston formed on the movable rod.” Ex. 2010, ¶95. Post 821 is an extension of main piston 81; it is not formed on movable rod 82. *Id.* In fact, post 821 has no connection to rod 82 and instead extends from piston 81. *Id.* Accordingly, Chen does not disclose or suggest a “bottom out piston formed on the movable rod [on which the main piston is mounted],” as required by claim 11. Deferme does not disclose or suggest a “bottom out piston” and therefore does not overcome this deficiency of

Chen. *Id.* Nor have Petitioner’s experts relied on Deferme for such a teaching. *Id.* Accordingly, claims 11-15 are neither anticipated by Chen, nor rendered obvious by Chen alone or in view of Deferme.

3. Dependent claim 13 is not anticipated by Chen, or rendered obvious by Chen alone or in view Deferme, because neither Chen nor Deferme discloses a second “a fluid flow path formed between the cup and the primary compression chamber” as required by claim 13

As discussed in Section V.A.3, above, claim 13 requires two separate fluid flow paths: “an adjustable fluid flow path formed in the cup” (recited in claim 11) and a separate “fluid flow path formed between the cup and the primary compression chamber” (recited in claim 13). Petitioner’s experts, however, map the same flow path in Chen, i.e., flow way 86, to both the “adjustable fluid flow path formed in the cup” of claim 11 and the “fluid flow path formed between the cup and the primary compression chamber” of claim 13. Ex. 1002, ¶¶133, 137 (referring to flow way 86 as both flow paths of claims 11 and 13); Ex. 1003, ¶¶127, 131 (same). This is erroneous under *Becton*, *Dickinson*, *Kyocera* and other cases. Nothing in the claim language suggests that the “adjustable fluid flow path formed in the cup” (claim 11) and the “fluid flow path formed between the cup and the primary compression chamber” (claim 13) may be the same flow path. And as discussed above, the specification supports the interpretation that the recited flow paths in claims 11 and 13 are separate.

Mapping of the same flow path of Chen (flow way 86) as the separate flow paths of claims 11 and 13 is therefore incorrect. Ex. 2010, ¶¶97, 98. In fact, it is clear from the disclosure of Chen that there is a single adjustable flow path between the alleged “bottom out cup” 84 and the compression portion of hydraulic cylinder 8 during a compression stroke. *Id.* at ¶98. Although Petitioner’s experts refer to Deferme with respect to claim 11 to argue that it would have been obvious to a POSITA to “substitute Chen’s simple piston 81 with Deferme’s adjustable piston in order to provide additional means of adjustment to the damping characteristics of Chen’s damper,” Petitioner’s experts do not explain how Deferme (or Chen modified in view of Deferme) provides an adjustable flow path between alleged “bottom out cup” 84 and the compression portion of hydraulic cylinder 8 that is separate and distinct from Chen’s flow way 86. Ex. 1002, ¶¶135; Ex. 1003, ¶¶129; Ex. 2010, ¶98. Even if a flow path through Chen’s piston (modified in view of Deferme) exists during a compression stroke, such a flow path cannot be equated to a fluid flow path between Chen’s accommodating cavity 84 (alleged “bottom out cup”) and the compression portion of Chen’s hydraulic cylinder 8. Ex. 2010, ¶98. This is because Chen’s piston (modified in view of Deferme) only provides fluid communication between the compression and rebound portions of Chen’s hydraulic cylinder 8 (and not between accommodating cavity 84 and the compression portion of cylinder 8). *Id.* And as discussed above, Chen’s flow way 87 provides fluid communication between Chen’s accommodating

cavity 84 and the compression portion of Chen's hydraulic cylinder 8 during a rebound stroke. *Id.*; *see also id.* at ¶¶90-92.

Because Chen does not disclose two separate and distinct fluid flow paths between Chen's compression chamber and the alleged "bottom out cup" during a compression stroke, claim 13 is neither anticipated nor rendered obvious by Chen. Ex. 2010, ¶99. Deferme, which only provides a flow path through Deferme's piston between the compression and rebound chambers, does not overcome this deficiency of Chen. *Id.* Accordingly, claim 13, and claims 14 and 15 which depend from claim 13, are neither anticipated by Chen, nor rendered obvious by Chen alone or in view of Deferme.

C. Ground III: Claims 1-5, 9, 11-15, and 19 Are Not Rendered Obvious by Fox '751 in View of Chen

The Petition acknowledges that Fox '751 teaches a "typical damper for a shock absorber" that does not include a "bottom out cup." Pet., 76-78. Petitioner's experts, however, argue that a person skilled in the art would have been motivated to modify Fox '751 with Chen to have a "bottom out cup" in order to improve the damper of Fox '751. Ex. 1002, ¶¶81-85; Ex. 1003, ¶¶81-85.

The Petition relies entirely on Chen for its alleged disclosure of a "bottom out cup" and related flow configurations. But as discussed in Section V.B, above, Chen does not disclose or suggest an adjustable fluid flow path from Chen's accommodating

cavity 84 (the alleged “bottom out cup”) to the compression portion of Chen’s hydraulic chamber 8, as required by claims 1 and 19. Ex. 2010, ¶101. Nor does Chen disclose “a bottom out piston formed on the movable rod,” as required by independent claim 11. *Id.* Chen also does not disclose two separate and distinct fluid flow paths between Chen’s compression chamber and the alleged “bottom out cup” during a compression stroke, as required by claim 13. *Id.*

Fox ’751 does not disclose or suggest these features that are missing in Chen, primarily because Fox ’751 does not include a “bottom out cup.” Ex. 2010, ¶101. Therefore, Fox ’751 in view of Chen does not disclose, teach, or suggest every limitation of independent claims 1, 11, and 19, and dependent claim 13. *Id.* Accordingly, claims 1-5, 9, 11-15, and 19 are not rendered obvious by Fox ’751 in view of Chen.

D. Ground IV: Claims 5-9 Are Not Rendered Obvious by Fox ’751 in View of Chen and Further in View of Nakaya and/or Kodama

Petitioner’s experts Dr. Wang and Mr. Wesling opine that the limitations of claims 5-9 are separately taught by Nakaya and/or Kodama and that a POSITA would have combined Chen, or Fox ’751 in view of Chen, with Nakaya/Kodama to arrive at claims 5-9. Ex. 1002, ¶¶168-176; Ex. 1003, ¶¶163-171. But Petitioner’s experts fail to provide sufficient motivation and a reasonable expectation of success for the proposed combination. Ex. 2010, ¶102.

Fox '751 and Chen discuss a conventional damper for a shock absorber and a hydraulic cylinder, respectively, and they both use hydraulic fluid (oil), whereas Nakaya and Kodama are air-based prosthetic devices. Ex. 2010, ¶102. Neither Dr. Wang nor Mr. Wesling explains how the oil-based systems of Chen and Fox '751 may be combined with the air-based systems of Nakaya or Kodama. *Id.* A POSITA would have understood that such a combination would require substantial modifications of the Chen and Fox '751 devices, which neither Dr. Wang nor Mr. Wesling has explained how to do. *Id.*

Absent impermissible hindsight, there is no motivation to modify Chen (or Fox '751 in view of Chen) to have adjustable rebound flow through the piston rod/shaft of Chen because Chen already teaches a mechanism for adjusting rebound flow and achieving a buffer effect during rebound using an axial hole 121 through Chen's piston rod and vents 13, 14 extending radially through the piston rod. Ex. 1007, Abstract, 2:9-20, 3:4-26; Ex. 2010, ¶103. Petitioner's experts have provided no explanation how the elements of Nakaya/Kodama would work alongside or in conjunction with hole 121 and vents 13, 14 of Chen, nor have Petitioner's experts explained the benefits of combining Nakaya/Kodama with Chen (or Fox '751 in view of Chen) when Chen already discloses adjustment of rebound flow. Ex. 2010, ¶103. The combination of Nakaya/Kodama with Chen (or Fox '751 in view of Chen) will impede Chen's buffer mechanism for the rebound travel of the piston and render it inoperable and/or

impractical. *Id.* Accordingly, a POSITA would not have been motivated to combine Fox '751 in view of Chen with Nakaya/Kodama, nor would a POSITA have reasonably expected success in doing so. *Id.* Rather, a POSITA would have been satisfied with the rebound flow adjustment mechanism of Chen. Accordingly, claims 5-9 are not rendered obvious by Fox '751 in view of Chen and further in view of Nakaya or Kodama.

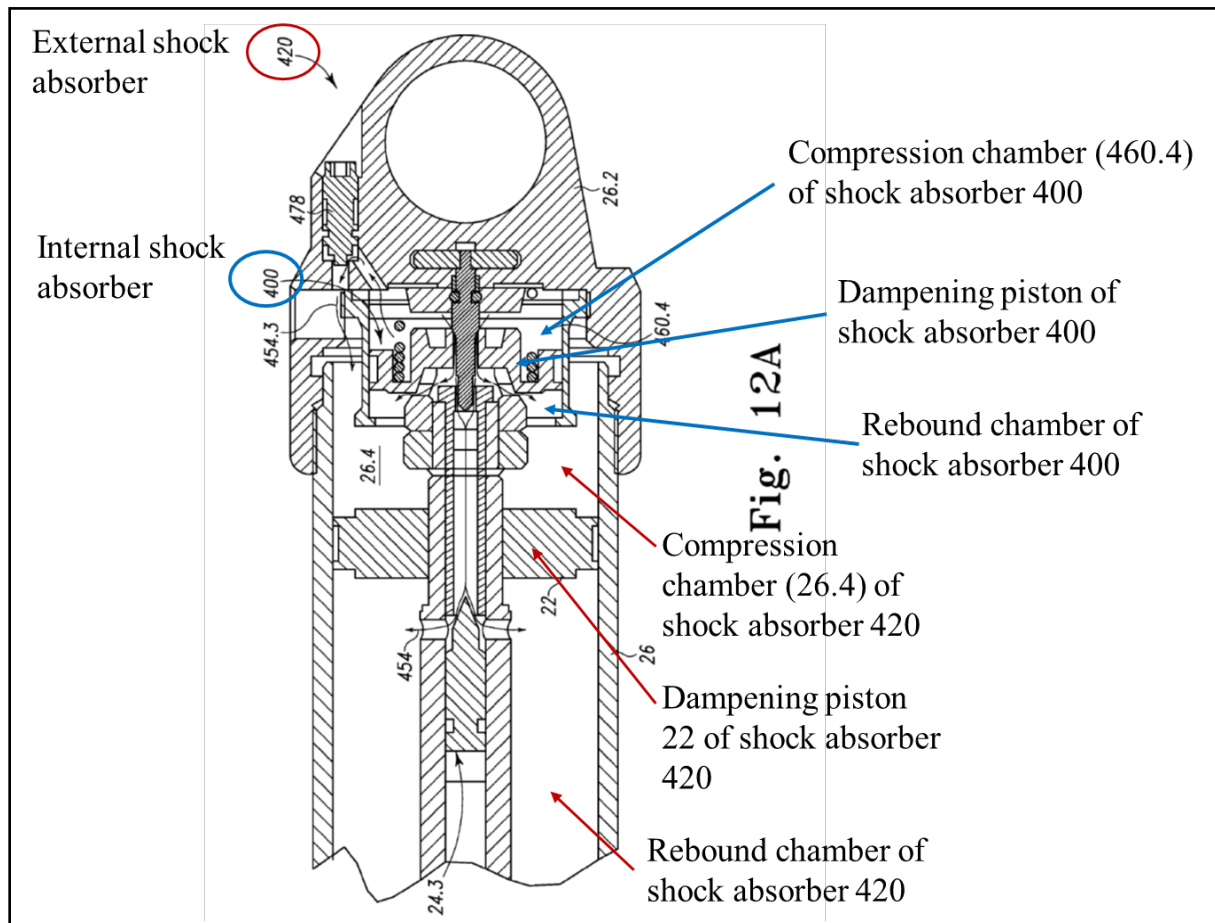
Moreover, as discussed above, neither Chen, nor Fox '751 in view of Chen, discloses the limitations of independent claim 1 from which claims 5-9 depend. This is an additional reason why claims 5-9 are not rendered obvious by Chen, or Fox '751 in view of Chen, and further in view of Nakaya or Kodama.

E. Ground V: Claim 1-5, 9, and 19 are Not Anticipated by Gartner or Rendered Obvious by Gartner in view of Kodama

The Petition alleges that independent claims 1 and 19 are anticipated by Gartner. This is incorrect because Gartner's shock absorber does not include a "bottom out cup," as required by independent claims 1 and 19. Ex. 2010, ¶104. Petitioner's experts rely on the embodiment of Gartner shown in Figures 12A, 12B, and 12C to argue that Gartner's shock absorber 420 includes a "bottom out cup" defined by the compression volume 460.4. Ex. 2010, ¶105. But Gartner does not disclose a "bottom out cup"; instead, Gartner's compression volume 460.4 is the compression chamber of second

internal shock absorber 400 placed within shock absorber 420. *Id.*; Ex. 1010, Abstract, 9:25-27, Fig. 12A.

Specifically, internal shock absorber 400 includes a damper chamber divided by a piston into a compression chamber (460.4) and a rebound chamber, as shown below. Ex. 2010, ¶105. Compression chamber 460.4 of shock absorber 400 is thus not a “bottom out cup” because a “bottom out cup” cannot be the same feature as the compression chamber of the damper. *Id.*



Ex. 1010, Fig. 12A (annotations added); Ex. 2010, ¶105.

More specifically, external (main) shock absorber 420 includes a damper chamber 26 that is divided by piston 22 into a compression chamber 26.4 and rebound chamber (unlabeled). Ex. 1010, Fig. 12A. Shock absorber 420 further includes an internal shock absorber 400. Ex. 1010, 9:25-27, Fig. 12A. Internal shock absorber 400 includes a damper chamber that is divided by a piston into a compression chamber (volume 460.4) and a rebound chamber. Ex. 2010, ¶106. Compression volume 460.4 is the primary compression chamber of the internal shock absorber 400, and is not a “bottom out cup.” *Id.*

Nowhere does Gartner refer to internal shock absorber 400 or the compression chamber 460.4 therein as a “bottom out cup.” Moreover, nowhere does Gartner disclose that internal shock absorber 400 (or a portion thereof) is activated at the end portion of a compression stroke to provide additional dampening, as required by the correct construction of a “bottom out cup.” *Id.* Because Gartner does not disclose an essential element of independent claims 1 and 19, i.e., a “bottom out cup” that provides dampening only near the end portion of a compression stroke, Gartner does not anticipate claims 1 and 19. *Id.* at ¶107. Kodama, which Petitioner cites only with regard to claim 4, does not disclose a “bottom out cup” and therefore does not overcome this deficiency of Gartner. *Id.* Accordingly, claims 1-5, 9 and 19 are not anticipated by Gartner, or rendered obvious by Gartner alone or in view of Kodama.

VI. Conclusion

In summary, the prior-art grounds presented in the Petition fail to disclose, or suggest key limitations of independent claims 1, 11, and 19. Accordingly, claims 1, 11, and 19 are not anticipated by Nakaya (Ground I), anticipated by Chen or rendered obvious by Chen alone or in view of Deferme (Ground II), or rendered obvious by Fox '751 in view of Chen (Ground III). Additionally, claims 1 and 19 are not anticipated by Gartner (Ground V). Accordingly, dependent claims 2-9 and 12-15 are also not anticipated or rendered obvious by the asserted prior-art grounds, including Ground IV asserted against claims 5-9. Moreover, dependent claim 13 is not anticipated or rendered obvious because Petitioner erroneously mapped the same flow path of the asserted prior art references to the two separate and distinct flow paths of claim 13 in violation of *Becton*, *Dickinson* and similar cases. Thus, Petitioner has not shown unpatentability of any of the challenged claims 1-9, 11-15, and 19 of the '223 patent by a preponderance of the evidence. The challenged claims should be found patentable.

Respectfully submitted,

Dated: August 30, 2024

By: /Arpita Bhattacharyya/
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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), I, Arpita Bhattacharyya, certify that **Patent Owner's Response** contains 13,615 words, excluding those portions identified in 37 C.F.R. § 42.24(b), as measured by the word-processing system used to prepare this paper.

Dated: August 30, 2024

/Arpita Bhattacharyya/

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Reg. No. 63,681

CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the foregoing **Patent Owner's Response** was served electronically via email on August 30, 2024, in its entirety on the following:

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