

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SRAM, LLC,

Petitioner,

v.

FOX Factory, Inc.,

Patent Owner.

U.S. Patent No. 8,550,223 B2

Filing Date: May 11, 2009

Issue Date: October 8, 2013

Title: METHODS AND APPARATUS FOR POSITION SENSITIVE
SUSPENSION DAMPENING

Case No. IPR2024-00216

PETITION FOR *INTER PARTES* REVIEW

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APPENDIX OF EXHIBITS

Exhibit	Description
Ex. 1001	U.S. Patent No. 8,550,223 B2 to Becker (“the ‘223 patent”)
Ex. 1002	Declaration of Eric Wang, Ph.D.
Ex. 1003	Declaration of Kevin Wesling
Ex. 1004	File History of the ‘223 patent
Ex. 1005	U.S. Patent No. 6,558,430 B1 to Nakaya et al. (“ <i>Nakaya</i> ”)
Ex. 1006	U.S. Patent No. 5,405,407 to Kodama et al. (“ <i>Kodama</i> ”)
Ex. 1007	UK Patent Application No. GB2377254A to Chen (“ <i>Chen</i> ”)
Ex. 1008	U.S. Patent Application Publication No. 2006/0283676 A1 to Deferme (“ <i>Deferme</i> ”)
Ex. 1009	U.S. Patent No. 6,604,751 B2 to Fox (“ <i>Fox ‘751</i> ”)
Ex. 1010	U.S. Patent No. 8,162,112 B2 to Gartner (“ <i>Gartner</i> ”)
Ex. 1011	U.S. Provisional Patent Application No. 60/889,050 to Gartner
Ex. 1012	Fox Factory, Inc.’s Disclosure of Asserted Claims and Infringement Contentions Related to U.S. Patent Nos. 9,739,331 and 8,550,223, dated Dec. 23, 2022 (including Attachment C), <i>Fox Factory, Inc. v. SRAM, LLC</i> , Case No. 1:23-cv-00313-RM-KLM
Ex. 1013	Fox Factory, Inc.’s Amended Disclosure of Asserted Claims and Infringement Contentions Related to U.S. Patent Nos. 9,739,331 and 8,550,223, dated Mar. 16, 2023 (including Attachment C), <i>Fox Factory, Inc. v. SRAM, LLC</i> , Case No. 1:23-cv-00313-RM-KLM
Ex. 1014	Notice of Filing of Joint Disputed Claim Terms Chart, dated Aug. 3, 2023, <i>Fox Factory, Inc. v. SRAM, LLC</i> , Case No. 1:23-cv-00313-RM-KLM

Exhibit	Description
Ex. 1015	Declaration of Michael J. Hickey

CLAIM LISTING

Claim Element	Claim Language
1[pre]	A damper for a shock absorber comprising:
1[a]	a damper chamber divided by a piston and shaft into a compression and rebound portions;
1[b]	a bottom out cup formed at an end of the compression portion; and
1[c]	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;
1[d]	wherein the capacity of the fluid flow path is adjustable.
2	The damper of claim 1, wherein the capacity of the flow path is adjustable with an adjustable valve, the valve restricting the fluid flow.
3	The damper of claim 2, wherein the adjustable valve is manually adjustable and accessible externally of the damper.
4	The damper of claim 3, wherein the adjustable valve can be adjusted between a closed position and a plurality of open positions.
5	The damper of claim 1, further including a fluid path between the cup and the rebound portion of the chamber, the path formed in the shaft.
6	The damper of claim 5, wherein the path between the cup and rebound portion is adjustable with a check valve to permit flow of fluid in a single direction between the cup and the rebound portion.
7	The damper of claim 6, wherein the check valve is arranged in the path to permit fluid communication between the rebound portion and the cup during a rebound stroke of the shaft.

Claim Element	Claim Language
8	The damper of claim 7, wherein the volume of fluid traveling through the fluid path is user-adjustable.
9	The damper of claim 1, further including a second fluid flow path within the bottom out cup.
11[pre]	A fluid damper comprising:
11[a]	a damper chamber divided by a piston mounted on a movable rod, into a primary compression and a primary rebound chamber;
11[b]	a bottom out cup in fluid communication with the damper chamber;
11[c]	a bottom out piston formed on the movable rod for sealingly engaging an interior of the bottom out cup,
11[d]	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
11[e]	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.
12	The damper of claim 11, wherein in the second position the bottom out piston is sealingly engaged within the bottom out cup.
13	The damper of claim 12, further including a fluid flow path formed between the cup and the primary compression chamber; wherein the capacity of the fluid flow path is adjustable.
14	The damper of claim 13, further including an externally accessible adjuster connected to a valve disposed in the flow path.
15	The damper of claim 14, wherein the externally accessible adjuster is manually adjustable.
19[pre]	A damper for a shock absorber comprising:

Claim Element	Claim Language
19[a]	a fluid;
19[b]	a compression chamber;
19[c]	a bottom out cup;
19[d]	a valve wherein;
19[e]	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.

Petitioner SRAM, LLC (“Petitioner” or “SRAM”) requests IPR of Claims 1-9, 11-15, and 19 (the “Challenged Claims”) of U.S. Patent No. 8,550,223 B2 to Becker (“the ‘223 patent”) (Ex. 1001), assigned on its face to Patent Owner Fox Factory, Inc. (“Patent Owner” or “Fox”).

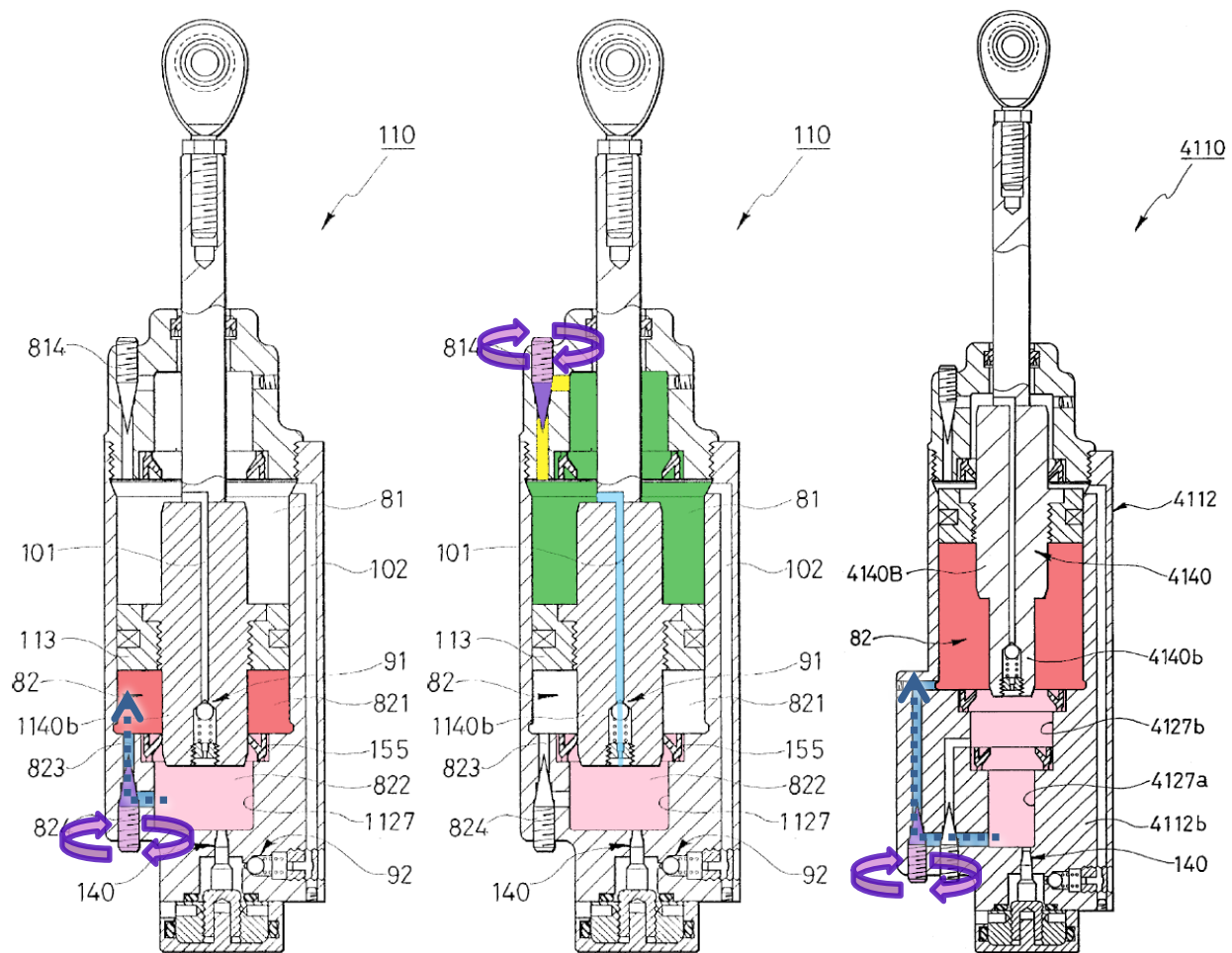
I. PRELIMINARY STATEMENT

The ‘223 patent does not disclose any novel, nonobvious invention. Instead, Fox claims the combination of so-called “improvements” to the damper of a common shock absorber, presenting these already well-known, anticipated, and obvious combinations as a purported “invention.” Specifically, the ‘223 patent only claims already known components of dampers, such as: (1) an additional compression chamber, referred to as a “bottom out cup,” formed at the end of a typical damper compression chamber, this added chamber being coupled with a projection extending from a typical piston that serves as a “bottom out piston,” and (2) one or more fluid flow paths connecting this “bottom out cup” with either the damper’s compression or rebound portion. *See, e.g.*, Ex. 1001, 2:21-34, 7:39-9:5; Ex. 1002, ¶¶23-36; Ex. 1003, ¶¶21-34. Such “bottom out cups” and adjustable flow paths in dampers have been used together over and over again, as is clearly shown in prior art shock absorber dampers.

The IPR process was created to get rid of patents that should never have been issued. Here, the prior art relied upon in this IPR were not disclosed or considered

during the '223 patent prosecution. This undisclosed prior art includes anticipatory references like U.S. Patent No. 6,558,430 B1 to *Nakaya* ("*Nakaya*"), which discloses all elements of the Challenged Claims on its own:

***Nakaya*, Figs. 8 and 17 (annotated)**



In view of this undisclosed prior art, the Board should therefore institute IPR to cancel the unpatentable Challenged Claims of the '223 patent.

II. STATEMENT OF PRECISE RELIEF REQUESTED FOR EACH CLAIM CHALLENGED

Claims 1-9, 11-15, and 19 are unpatentable under 35 U.S.C. §§ 102 and/or 103. Accordingly, SRAM requests review and cancellation of these Claims.

Grounds	Claims	Prior Art
Ground I	Claims 1-9, 11-15, & 19	Anticipated or Rendered Obvious by <i>Nakaya</i> Alone or in View of <i>Kodama</i>
	a. Claims 1-9, 11-15, 19	Anticipated by <i>Nakaya</i>
	b. Claim 4	Rendered Obvious by <i>Nakaya</i> Alone or in View of <i>Kodama</i>
Ground II	Claims 1-5, 9, 11-15, and 19	Anticipated by <i>Chen</i> or Rendered Obvious by <i>Chen</i> Alone or in View of <i>Deferme</i> .
	a. Claims 1-5, 9, 11-15, 19	Anticipated by <i>Chen</i>
	b. Claims 1-5, 9, 11-15, 19	Rendered Obvious by <i>Chen</i> Alone or in View of <i>Deferme</i>
Ground III	Claims 1-5, 9, 11-15, and 19	Rendered Obvious by <i>Fox '751</i> in view of <i>Chen</i> .
Ground IV	Claims 5-9	Rendered Obvious by <i>Fox '751</i> in View of <i>Chen</i> and Further in View of <i>Nakaya</i> and/or <i>Kodama</i> .
Ground V	Claims 1-5, 9, and 19	Anticipated by <i>Gartner</i> or Rendered Obvious by <i>Gartner</i> in View of <i>Kodama</i>
	a. Claims 1-5, 9, 19	Anticipated by <i>Gartner</i>

Grounds	Claims	Prior Art
	b. Claim 4	Rendered Obvious by <i>Gartner</i> in View of <i>Kodama</i>

III. TECHNICAL OVERVIEW AND BACKGROUND

A. Shock Absorbers With Springs and Dampers

Shock absorbers, which absorb shock and vibration energy created by external forces, have existed for many, many years. Shock absorbers have a myriad of uses including for vehicle suspensions, equipment isolation, building/structure isolation, artificial limbs, and door closing mechanisms, to name a few. The ‘223 patent discusses potential improvements in vehicle suspensions (such as those intended for bicycles, motorcycles, and similarly wheeled vehicles), but the ‘223 patent claims are not limited to any specific application. Ex. 1001, 7:39-9:5; Ex. 1002, ¶¶18, 23; Ex. 1003, ¶¶15-16, 21.

Typical shock absorbers compress to absorb energy from vibrations or other sources (like an impact) dissipate some of the stored energy through a damper while temporarily storing the remainder in a spring, and then release the stored energy by extending the shock absorber (and possibly dissipating additional energy through a damper during extension). The spring and damper work together to store and dissipate energy from the shock absorber so that the compression and extension of

the shock absorber occurs in a controlled manner – as opposed to the unmanaged springiness of a pogo stick. Ex. 1002, ¶19; Ex. 1003, ¶17.

Shock absorbers have two main components to meet the above purposes: (1) a spring for energy storage and (2) a damper for energy dissipation. The shock absorber's spring spreads out and stores the energy intended to be softened or absorbed, such as the forces received by a shock absorber from an impact or an earthquake. The compressed spring also provides the energy needed to extend the shock absorber after compressing. The damper, on the other hand, dissipates energy from the shock absorber system. This dissipation of energy allows for more controlled compression and extension processes. How the damper dissipates the energy varies between different damper designs. Ex. 1002, ¶20; Ex. 1003, ¶18.

Persons of ordinary skill in the art (“POSITAs”)¹ would recognize the following green-highlighted damper shown in U.S. Patent No. 6,604,751 B2 to Fox (“*Fox ‘751*”) to be a typical, common damper style often used in prior art dampers:

¹ A POSITA within the field of the ‘223 patent in May of 2008 (the earliest filing date 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

Fox '751

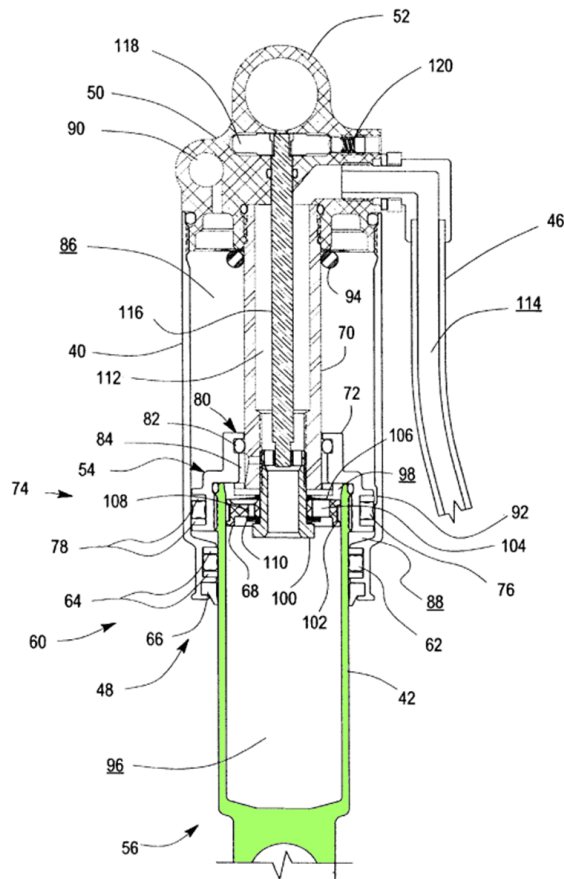


FIG. 3A

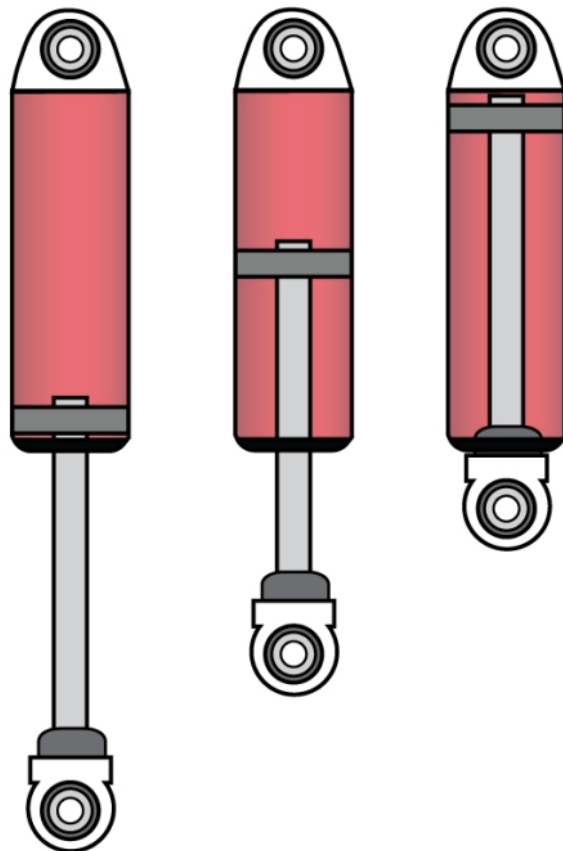
degree in Mechanical Engineering with a concentration in design of vehicle suspension technology and/or shock absorbers. Petitioner's experts, Dr. Wang and Mr. Wesling, met this definition as of May of 2008. Ex. 1002, ¶¶2-7, 37-38; Ex. 1003, ¶¶3-5, 35-36.

Ex. 1009, FIG. 3A; Ex. 1002, ¶21; Ex. 1003, ¶19.

POSITAs have, of course, improved traditional dampers like the damper disclosed in *Fox '751* by altering portions of the damper and the connections therebetween. Yet these known, simple, and minor variations are what the '223 patent attempts to create an unfounded monopoly around. As shown herein, the claimed invention is anticipated by previously undisclosed prior art and/or would have been obvious to a POSITA long before the '223 patent provisional application was filed in 2008. Ex. 1002, ¶22; Ex. 1003, ¶20.

B. Bottom Out Conditions

A shock absorber typically has two main goals: (1) to spread out the forces of impacts on the shock absorber over time to lessen the perceived impact of the forces, and (2) dissipate energy from the system while operating to prevent unwanted, uncontrolled reactions. A shock absorber typically has a first position where the shock absorber is fully extended (left), and a second position



where the shock absorber is fully compressed (far right) (spring not shown). Ex. 1002, ¶24; Ex. 1003, ¶22.

The shock absorber is able to compress (from the extended position on the left to the fully-compressed position on the right). This ability to compress while the internal piston travels through a damping fluid is how the damper is able to absorb and soften impacts incident on a typical shock absorber (other damping mechanisms exist, but a piston moving through a damping fluid is very common). The shock absorber operates between these two extreme positions so the shock absorber may constantly provide its absorption/softening purpose. Ex. 1002, ¶25; Ex. 1003, ¶23.

The rightmost image illustrates a “bottom out” condition, wherein the shock absorber has no more ability to compress. This may be undesirable, at least because any additional force transferred to the shock absorber while in this fully-compressed, bottom out condition will not be cushioned or softened. This may result in the forces that would typically be softened by the shock absorber to be directly communicated to whatever is being protected by the shock absorber, which typically results in harsh consequences. POSITAs in the suspension arts have found many ways to increase the shock absorber’s resistance to fully compressing, allowing for the harshest of bottom out conditions to be avoided. Ex. 1002, ¶26; Ex. 1003, ¶24.

A typical means for adding bottom out resistance to a shock absorber is increasing the shock absorber’s resistance to compression when the shock absorber

is almost completely compressed. For example, the right-most shock absorber above shows a bottom out bumper preventing the shock absorber from fully compressing. Such a bumper may resist full compression when the shock absorber has almost reached a bottom out (fully compressed) condition. Ex. 1002, ¶¶26-27; Ex. 1003, ¶¶24-25.

Prior art like *Chen* (Ex. 1007) similarly includes common methods designed to greatly increase the force required to further compress the damper. Fluid can be used to make it more difficult to compress the piston and the prior art shows that fluid may be channeled in fluid flow paths between various parts of the shock absorber to restrict and adjust damping. *Chen's* damper as the damper nears full compression: a bottom out piston, a bottom out cup, and related fluid flow paths. *Chen's* Figures 4 and 5 show its damper during a compression stroke. The bottom out piston **821** (light orange) is mounted onto the front of *Chen's* typical piston **81**, and the bottom out piston **821** is sized and shaped to enter into the bottom out cup

84 (pink) near the end of the compression stroke. Once this occurs, the force required to compress will increase, thus providing bottom out resistance.

Chen (Figs. 4-5)

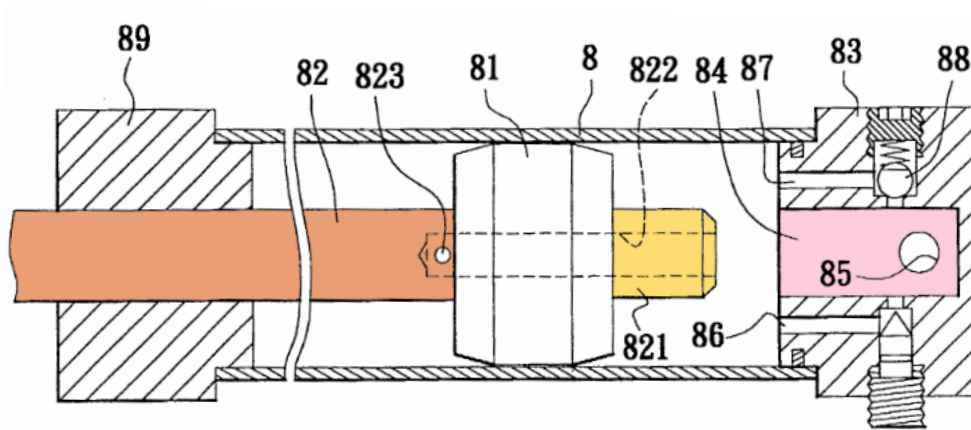


FIG. 4

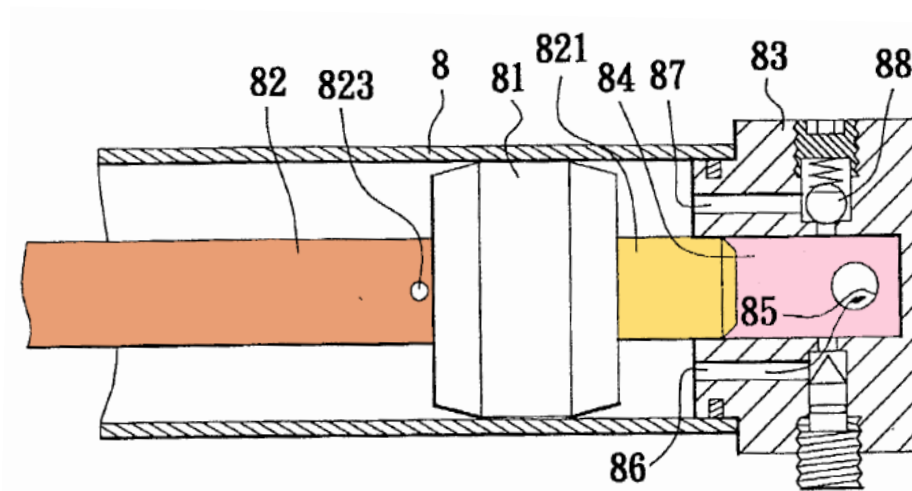


FIG. 5

Ex. 1007, FIGS. 4, 5; Ex. 1002, ¶27; Ex. 1003, ¶25.

In this type of bottom out resistance design, additional pistons within the shock absorber's damper may be used. These well-known prior art "bottom out pistons" may be used to create additional hydraulic resistance during the last portion of the shock absorber's compression. In *Chen*, this additional resistance is referred to as "a buffer effect" and is stated to reduce "noise and damage" potentially caused by a bottom out event. Ex. 1007, p. 6, lines 1-8. Such bottom out pistons are disclosed in numerous prior art publications and prior art uses, including not only *Chen* but also *Gartner* (Ex. 1010) and *Nakaya* (Ex. 1005). In each case, the bottom out pistons interact with a "bottom out cup" at the end of the shock absorber's compression, thereby altering the forces required to compress the shock absorber. This increased effort translates directly to increased bottom out resistance. and is commonplace in the suspension arts, as shown below. Ex. 1002, ¶28; Ex. 1003, ¶26.

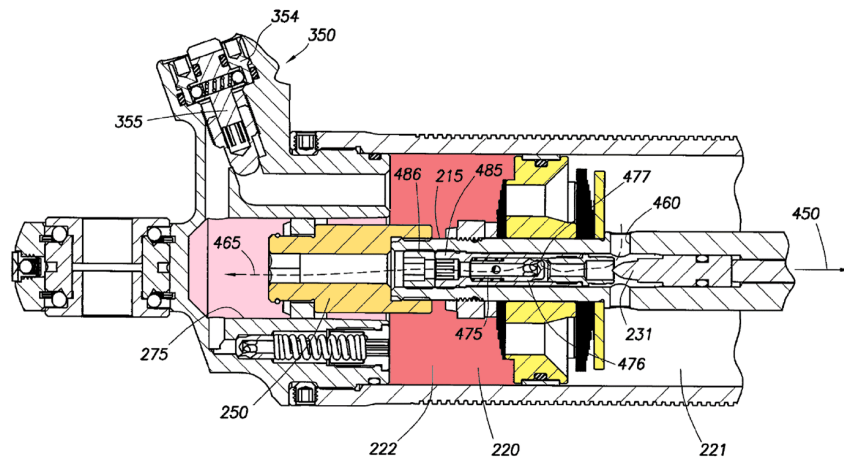
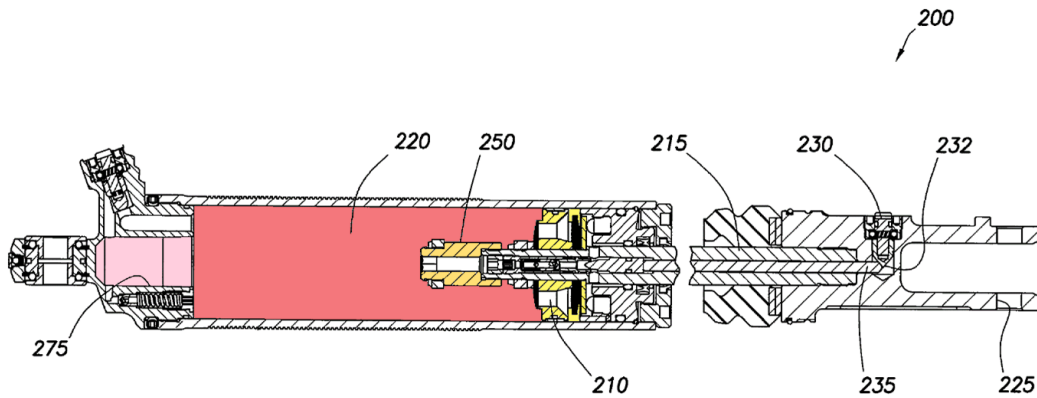
C. The '223 Patent Disclosure

The disclosure of the '223 patent is short, and its concurrent disclosure only includes four figures and less than seven full columns of text, with nearly two of the seven columns devoted to the background and prior art. Although the '223 patent incorporates some material by reference, the '223 patent's disclosure about its purported invention is still quite limited. In fact, it only shows a single embodiment of its alleged invention as set forth in the written description and the figures. Ex. 1002, ¶29; Ex. 1003, ¶27.

Critically, the ‘223 patent’s limited disclosure readily admits that the use of a bottom out piston and related bottom out compression volume was well-known in the art. *E.g.*, Ex. 1001, 2:21-34. The ‘223 patent even explains that such a bottom out piston was known by POSITAs to provide “additional damping[] as the shock nears the end of its stroke[,]” with such additional damping provided to “avoid bottom out” of the shock absorber. *Id.*, 1:65-2:9. Such pure bottom out conditions (where the compression abruptly stops) are undesirable because they transmit the impact force directly without softening, (*e.g.*, in the bicycle context, directly to the vehicle rider/occupant/suspended object). The ‘223 patent alleges that it overcomes what it admits as prior art by providing “bottom out damping features [that] can be readily adjusted during a ride or ‘on the fly’ so to state.” *Id.*, 2:25-27. It is this claimed “adjustability,” in combination with the known bottom out protection, that the ‘223 patent purports to have invented. Ex. 1002, ¶¶30; Ex. 1003, ¶¶27-28.

Turning to the figures, the ‘223 patent shows a known bottom out chamber **275** (pink) with a related bottom out piston **250** (light orange) in addition to the typical compression portion **222** (light red) of damper chamber **220** and piston **210**

(yellow). These admittedly-known structures (Ex. 1001, 2:21-34) are shown in Figures 2 and 4 of the '223 patent:



Ex. 1002, ¶31; Ex. 1003, ¶29.

For the “claimed” adjustability, the ‘223 patent merely scrapes together known and obvious means for adding adjustability in a shock absorber, namely, the use of various fluid flow paths between the various pressure chambers of the shock absorber with a means of adjustment or pressure relief interposed between the chambers. For example, FIG. 3B (colorized) shows two flow paths connecting

bottom out cup **275** (pink) and compression portion **222** (light red) of damper chamber **220**, a first flow path **301** (dark red) and a second flow path **302** (dark blue).

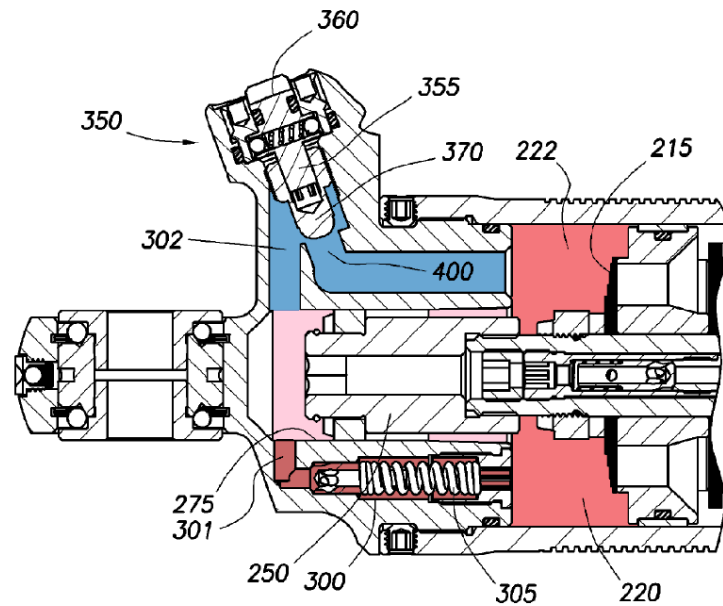


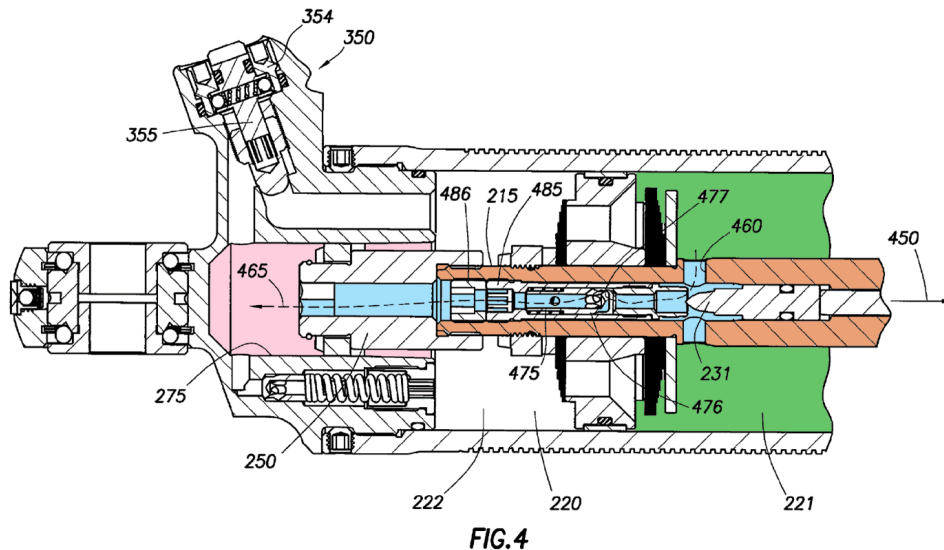
FIG. 3B

Ex. 1002, ¶32; Ex. 1003, ¶30.

On one hand, the claimed first flow path **301** would be regulated by a blow-off valve or piston **300** (although this valve is not claimed). On the other hand, the second flow path **302** is regulated by an adjustable valve **350**. As was known to POSITAs before the '223 patent, such an adjustable valve **350** “is operable to provide an easily and readily adjustable damping feature operable with the bottom out chamber **275** and piston **250**.” *Id.*, 4:33-35. This valve **350** may be moved within the path **302** between a fully-open and non-obstructing position and a fully-closed and obstructing position. Ex. 1001, 4:66-5:5, FIGS. 3A (at least partially

open), 3C (closed). Thus, by adjusting the positioning of valve **350** within the flow path **302**, the ability of fluid to flow through path **302** may be adjusted in a manner already known to POSITAs. Ex. 1002, ¶33; Ex. 1003, ¶31.

The '223 patent discloses a third, also-known path **465** (light blue) between bottom out cup **275** (pink) and rebound portion **221** (dark green) of pressure vessel chamber **220** through piston shaft **215** (dark orange):



Ex. 1001, FIG. 4; Ex. 1002, ¶34; Ex. 1003, ¶32. This shown path **465** (light blue) is also adjustable, which may allow for adjustment of the damping characteristics of the shock, as would have been known to a POSITA before the unsubstantiated “invention” of the '223 patent. Ex. 1002, ¶35; Ex. 1003, ¶33.

The '223 patent claims an adjustable bottom out resistance long known in the art and not novel for patenting. The known prior art shows the use of bottom out cups and pistons, flow paths connecting different pressure regions within the shock

absorber, and associated mechanisms to adjust the flow of fluid therebetween. The claimed '223 patent inventions are either directly anticipated by the prior art or obvious changes to something already invented – routine optimizations of a given shock absorber, involving nothing more than basic common sense and rudimentary mechanical skill. The '223 patent is much like the basic design of many prior art shock absorbers, which have bottom out resistance and user-adjustable dampers. Ex. 1002, ¶36; Ex. 1003, ¶34.

IV. CLAIM CONSTRUCTION

SRAM does not believe that any '223 patent claim terms require any special definition different than their ordinary and customary meaning to a POSITA.

However, Fox has asserted certain claim construction positions in its pending lawsuit in the District Court of Colorado. Ex. 1014, 13-23. For example, Fox has asserted that structures meeting Claim element 1[d] also read on Claims 2 and 13, even though the Claims are worded differently. Ex. 1012, 22, 7, 6; Ex. 1013, 22, 7, 6; Ex. 1002, ¶41; Ex. 1003, ¶39. Solely for purposes of this IPR, SRAM has applied the same interpretation to the prior art here as Fox has applied for infringement purposes. *Peters v. Active Mfg. Co.*, 129 U.S. 530, 537 (1889) (“That which infringes, if later, would anticipate, if earlier.”).

Likewise, Fox appears to be arguing in the district court litigation that Claims 1, 11, and 19 all require fluid flow from the bottom out cup to the

compression portion of the damper, even though not all Claims have this directional requirement. Ex. 1014, 20-21. Even though it disagrees that such a directional limitation should be engrafted onto all Claims, SRAM has identified how the prior art (such as *Nakaya* and *Gartner* as well as one-way valves like *Deferme*) meets this further requirement Fox seeks to impose. Ex. 1002, ¶¶42-44; Ex. 1003, ¶¶40-45.

Finally, even though Claims 11 and 12 of the ‘223 patent expressly require the bottom piston to be configured for “sealingly engaging” an interior of the bottom out cup, Fox has contended that this limitation is met by products that do not form a seal with the bottom out cup and that “seal” only means “slide”. Ex. 1012, 30-33; Ex. 1013, 31-34; Ex. 1014, 22-23. SRAM disagrees with Fox’s incorrect construction but has applied it for its invalidity analysis of *Chen* only, where a bottom out piston enters a bottom out cup without forming a seal (as opposed to *Nakaya*’s and *Gartner*’s use of traditional seals). Ex. 1002, ¶45; Ex. 1003, ¶46.

V. THE APPROPRIATENESS OF *INTER PARTES* REVIEW

A. The Petition’s Reasonable Likelihood of Success

This petition easily meets the threshold of “a reasonable likelihood that the Petitioner would prevail with respect to at least one of the claims challenged in the petition.” 35 U.S.C. § 314(a). All elements of the Challenged Claims are disclosed in the prior art and, where necessary, reasons to combine are established for each

proposed ground under pre-AIA 35 U.S.C. § 103, applicable here (along with pre-AIA 35 U.S.C. § 102) based on the ‘223 provisional patent application’s filing date.

B. The *Fintiv* Factors Weigh in Favor of Institution

The factors of *Apple Inc. v. Fintiv Inc.*, No. IPR2020-00019, 2020 WL 2126495 (PTAB Mar. 20, 2020) (“*Fintiv*”) weigh strongly in favor of the Board instituting review in accordance with 35 U.S.C. § 314(a). The merits of the Grounds presented herein are compelling, clear evidence of unpatentability. Where the Board “determines that the information presented at the institution stage presents a compelling unpatentability challenge, that determination alone demonstrates that the PTAB should not discretionarily deny institution under *Fintiv*.” USPTO Memorandum, Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (June 21, 2022).

There is a parallel District Court proceeding involving the ‘223 patent and the same parties, but no trial date has been set in the underlying case. Moreover, the claim construction process is ongoing, the District Court has not provided any analysis of prior art invalidity issues, and the parties are only in the preliminary stages of discovery. Ex. 1015, ¶15.

Because the *Fintiv* factors clearly favor instituting review of the ‘223 patent, the Board should exercise its discretion to institute under 35 U.S.C. § 314(a).

C. Institution Is Warranted Because the Prior Art Relied Upon by Petitioner Was Neither Considered Nor Used During Prosecution of the ‘223 Patent

The prior art references relied upon here did not form the basis for any rejections of the ‘223 patent and were not cited during prosecution, which also favors institution.

The Board has consistently “held that a reference that ‘was neither applied against the claims nor discussed by the Examiner’ does not weigh in favor of exercising [] discretion under §325(d).” *Fasteners for Retail, Inc. v. RTC Indus., Inc.*, IPR2019-00994, Paper 9 at 7-11 (PTAB Nov. 5, 2019). Here, the prior art references were not considered or used during prosecution, and the arguments presented herein are neither the same nor substantially the same as those considered during prosecution. The six factors set forth in *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8, at 17-18, 23 (PTAB Dec. 15, 2017), collectively favor institution, in accordance with 35 U.S.C. § 325(d).

Regarding *Nakaya*, *Kodama*, *Chen*, *Deferme*, *Fox ‘751*, and *Gartner* (collectively the “IPR Prior Art”), factors 1 and 2 of *Becton Dickinson* clearly favor institution because the IPR Prior Art’s disclosures are unlike those considered during prosecution. *Nakaya*, *Chen*, and *Gartner* each discloses a conventional hydraulic cylinder serving as a damper and having one or more passages extending from a bottom out cup to either a compression portion or a rebound portion of the damper.

Ex. 1005 (*Nakaya*), Abstract, 2:38-3:7, FIGS. 7-9, 17-19; Ex. 1007 (*Chen*), p. 5, lines 5-13, FIGS. 4-6; Ex. 1010 (*Gartner*), Abstract, 1:37-2:12, FIGS. 12A-12C. *Fox '751* discloses a conventional shock absorber ready for improvement. Ex. 1009, Abstract, FIGS. 1-6. *Kodama* discloses a conventional shock absorber having a passage through the piston shaft with a one-way check valve that only flows from the rebound chamber to the bottom out cup. Ex. 1006, 3:24-49, FIGS. 1-3. *Deferme* discloses an improved piston for a conventional shock absorber. Ex. 1008, Abstract, 1:13-19, 2:8-21, FIGS. 1-3. None of these specific issues or technologies disclosed in the IPR Prior Art were addressed during prosecution, such that factors 1 and 2 of *Becton Dickinson* favor institution. Ex. 1002, ¶¶49-50; Ex. 1003, ¶¶49-50.

Factors 3 and 4 also favor institution. Because the IPR Prior Art was not cited at all during prosecution, the Examiner did not consider any of the references, nor did Fox attempt to distinguish over any. Factors 5 and 6 simply do not apply because the Examiner did not previously consider any of the IPR Prior Art. Therefore, the Board should institute review here of the '223 patent.

VI. CLAIM-BY-CLAIM EXPLANATION OF GROUNDS FOR UNPATENTABILITY

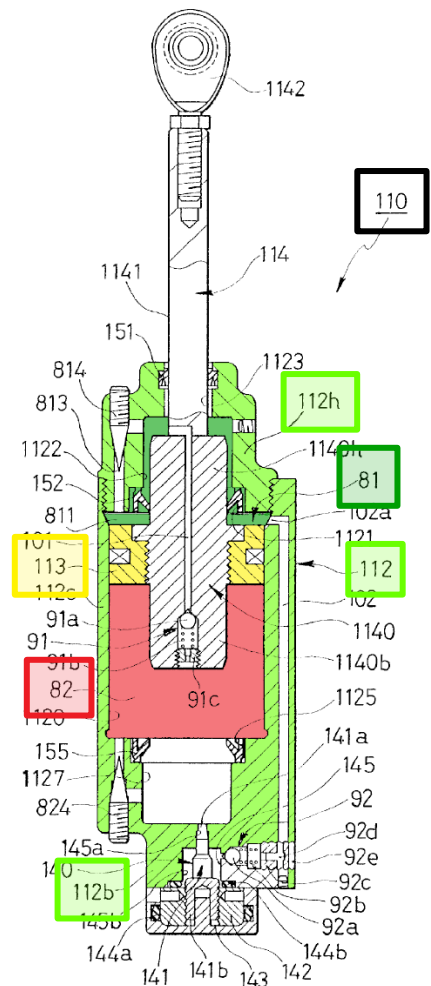
A. Ground I: Claims 1-9, 11-15, and 19 Are Anticipated Under 35 U.S.C. § 102 by *Nakaya* or Rendered Obvious Under 35 U.S.C. § 103 by *Nakaya* Alone or in View of *Kodama*

1. *Nakaya* discloses a damper having a bottom out cup and the recited flow paths

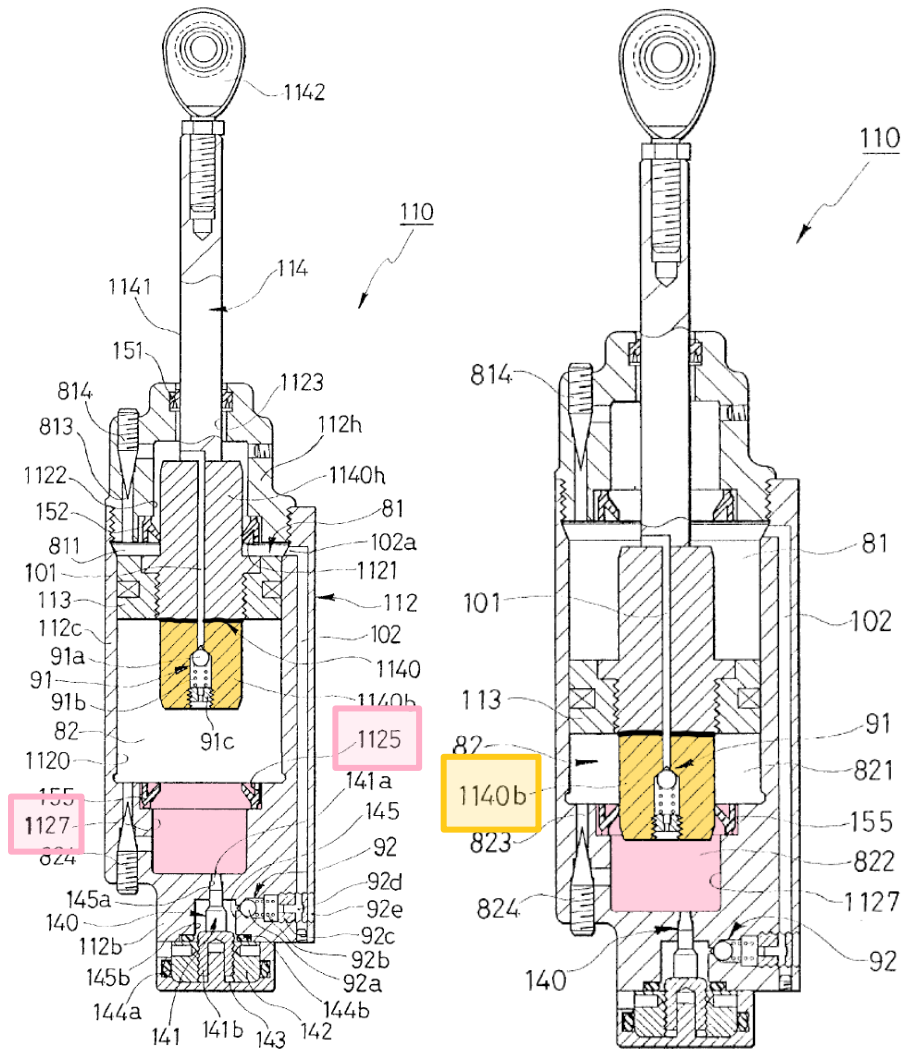
U.S. Patent No. 6,558,430 B1 to Nakaya et al. (“*Nakaya*”), filed on November 6, 2000, and issued on May 6, 2003, is undisclosed prior art under pre-AIA 35 U.S.C. § 102(b). Ex. 1005.

Nakaya discloses a fluid-based (air being the fluid) damper of a shock absorber **110** for a suspension system. Ex. 1005, Abstract, FIGS. 7-9, 17-19. The 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). Ex. 1005, FIG. 7; Ex. 1002, ¶52; Ex. 1003, ¶52.

Nakaya includes an enlarged-diameter hole **1125** (pink) and a middle sized-diameter hole **1127** (pink), together the same as the claimed bottom out cup, and an



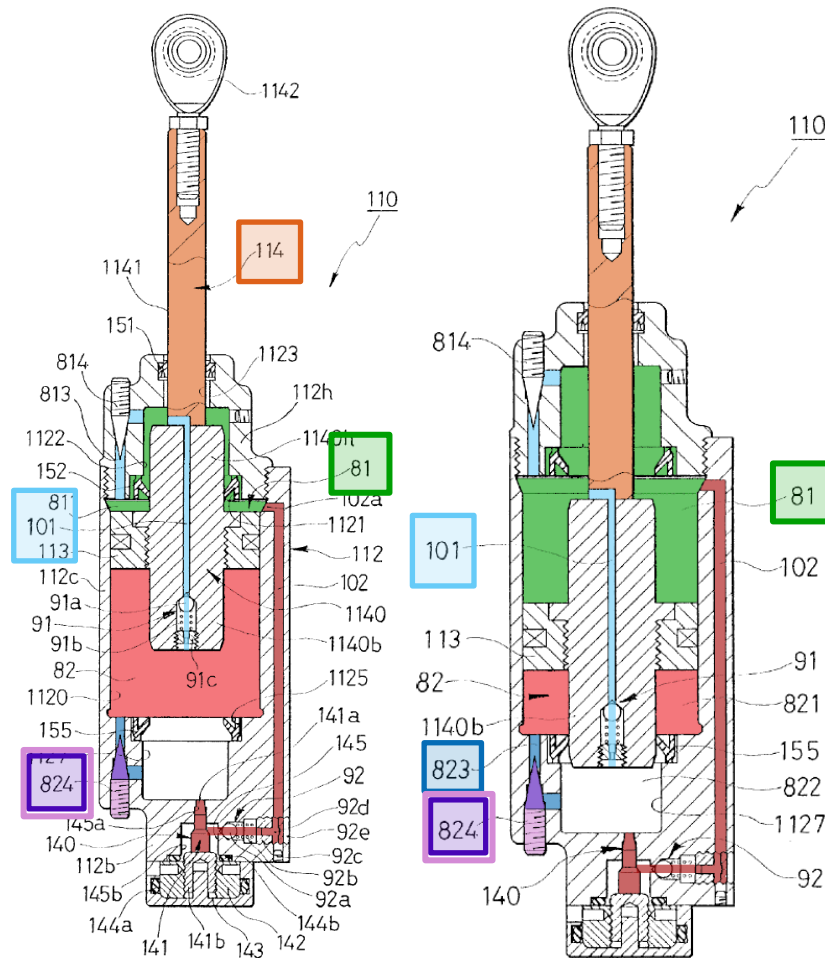
enlarged-diameter projection **1140b** (light orange), the same as the claimed bottom out piston. As seen in *Nakaya*'s Figures 7 and 8, the enlarged-diameter projection **1140b** is configured to sealingly engage with the enlarged-diameter hole **1125** and the middle sized-diameter hole **1127** during a compression stroke.



Ex. 1005, FIGS. 7-8; Ex. 1002, ¶53; Ex. 1003, ¶53.

Nakaya discloses the use of at least three different fluid channels from the bottom out cup, with two extending into the compression portion (light red) and one

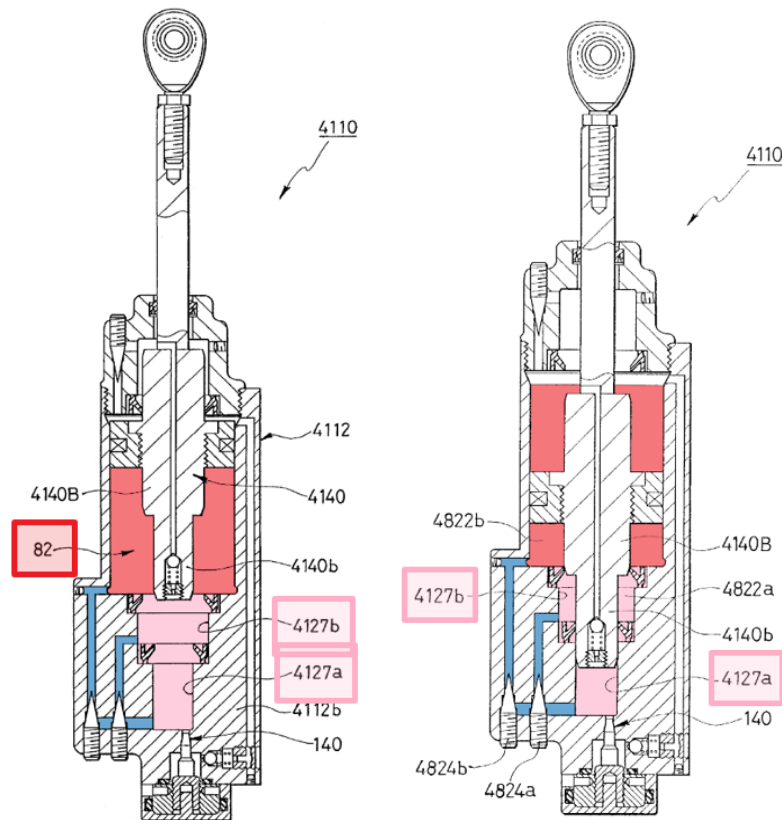
into the rebound portion **81** (dark green). Of the first two, one **823** (dark blue) is adjustable via a needle valve **824** (dark purple) that is externally actuated by an adjuster (light purple), and the other **87** (dark red) is regulated by a check ball valve **92**. The final channel **101** (light blue) penetrates through the piston rod **114** (dark orange), and interacts with the passage **813**.



Ex. 1005, FIGS. 7-8; Ex. 1002, ¶54; Ex. 1003, ¶54.

Nakaya discloses a number of embodiments, wherein the first embodiment (Figures 7-9) and the fourth embodiment (Figures 17-19) share all features except

for those only described with reference to the fourth embodiment. The fourth embodiment (shown in Figs. 17 and 19 below) discloses a bottom out cup with both a reduced-diameter recess **4127a** (pink) and an enlarged-diameter recess **4127b** (pink). This bottom out cup is connected to the compression portion **82** (light red) via a set of flow paths (dark blue) having a plurality of manually adjustable needle valves **4824a**, **4824b** having a plurality of open positions and a closed position. Ex. 1005, FIGS. 17, 19; Ex. 1002, ¶55; Ex. 1003, ¶55.



2. *Kodama* discloses an adjustable fluid path through a piston shaft

U.S. Patent No. 5,405,407 to Kodama et al. (“*Kodama*”) is undisclosed prior art under pre-AIA 35 U.S.C. § 102(b). Ex. 1006 (filed January 14, 1993; issued April 11, 1995).

Kodama discloses a fluid-based (air as the fluid) damper of a shock absorber for a suspension system. Ex. 1006, 1:1-3:21, FIGS. 1-3. The damper is formed by a cylinder **4** (light green) closed on either end by a head cover **12** and a rod cover **14** (light green). The volume formed in the damper is divided by a piston **16** (yellow) into a compression portion **24** (light red) and a rebound portion **26** (dark green). Ex. 1006, FIGS. 2, 3; Ex. 1002, ¶59; Ex. 1003, ¶59.

Kodama includes an adjustable path (throttle valve **30**) (light blue) through a piston shaft/rod **18** (dark orange). Ex. 1006, FIGS. 2, 3. The path is adjustable via

the needle valve **32** (dark purple) that may be adjusted using the adjusting screw **34** (light purple). Ex. 1006, 2:48-56, FIGS 2, 3; Ex. 1002, ¶60; Ex. 1003, ¶60.

Kodama (Figs. 2-3)

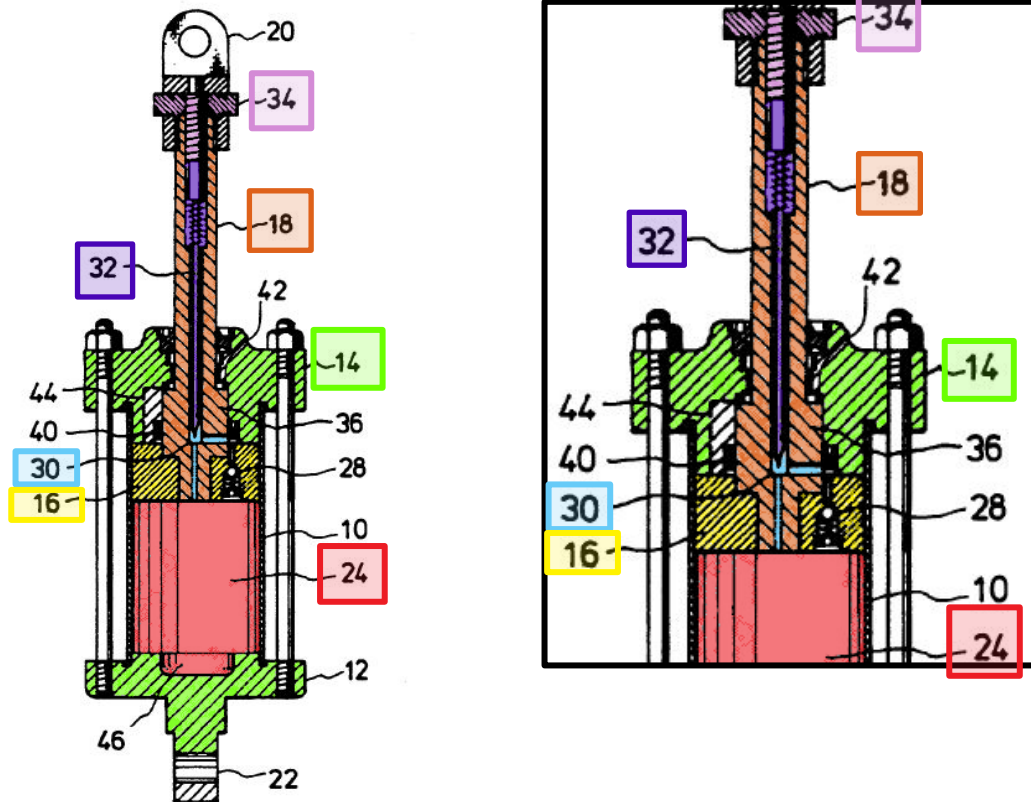


FIG. 2

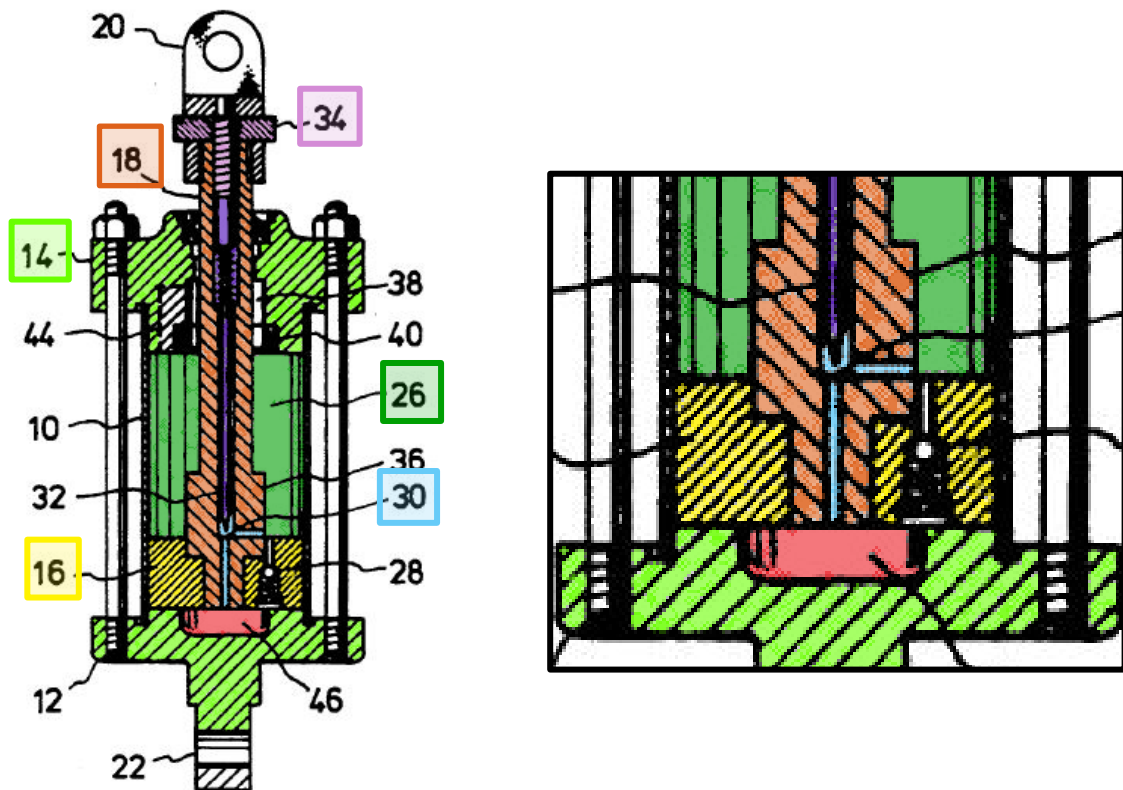


FIG. 3

3. It would have been obvious to a POSITA to modify *Nakaya* with *Kodama*, thereby yielding the subject matter of the Challenged Claims

In the unlikely event the Board does not find that *Nakaya* anticipates or alone renders obvious each of the Challenged Claims, combining *Nakaya* and *Kodama* is straightforward: a POSITA would modify *Nakaya*'s piston shaft/rod 114 and

passage **101** to incorporate *Kodama*'s adjustable path system (*i.e.*, *Kodama*'s throttle valve **30**, needle valve **32**, and adjusting screw **34**). Ex. 1002, ¶77; Ex. 1003, ¶77.

A POSITA would have been motivated to modify *Nakaya* to have a means for adjusting the flow of fluid through *Nakaya*'s piston at least because such 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 *Nakaya* would have been simple to a POSITA, and the combined *Nakaya/Kodama* device would be reasonably expected to function to provide an adjustable fluid flow through *Nakaya*'s piston shaft/rod **114**. Indeed, *Nakaya* itself includes a similar structure to adjust such fluid flow. Ex. 1002, ¶78; Ex. 1003, ¶78.

A POSITA would have understood this simple substitution would have been predicted to work as intended, with predictable results for this modification. Further, this modification would have merely been the application of a known technique (the use of a piston shaft flow path) to a known device (*Nakaya*'s damper) ready for improvement, with predictable results. *Kodama* would be used in the same way in the combination of *Nakaya/Kodama* as it is used in *Kodama*, and a POSITA would expect success from adding *Kodama*'s adjustable path system (*i.e.*, *Kodama*'s throttle valve **30**, needle valve **32**, and adjusting screw **34**) within *Nakaya*'s piston shaft/rod **114**. *Id.* Mechanical arts like those discussed in *Nakaya* and *Kodama* have

previously been found to be predictable. *See, e.g., Cedarapids, Inc. v. Nordberg, Inc.*, 121 F.3d 727, *2 (Fed. Cir. 1997).

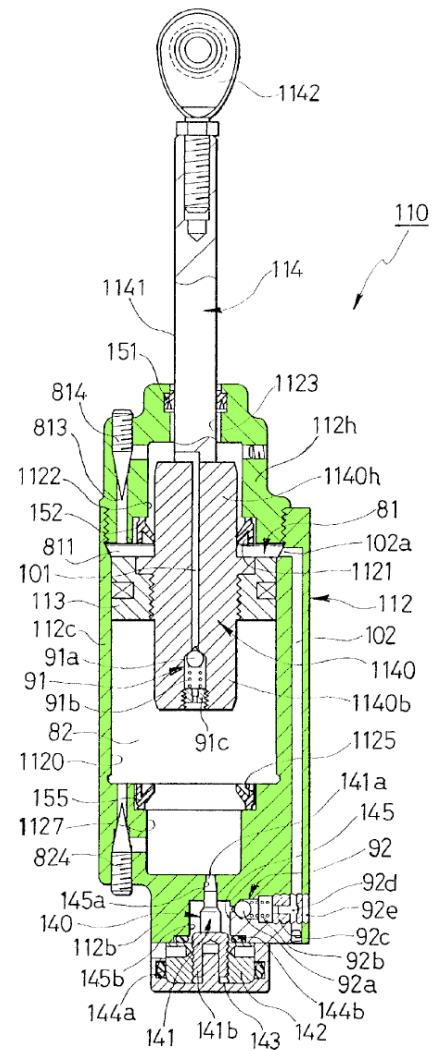
4. Independent Claim 1

(a) Claim 1[pre]

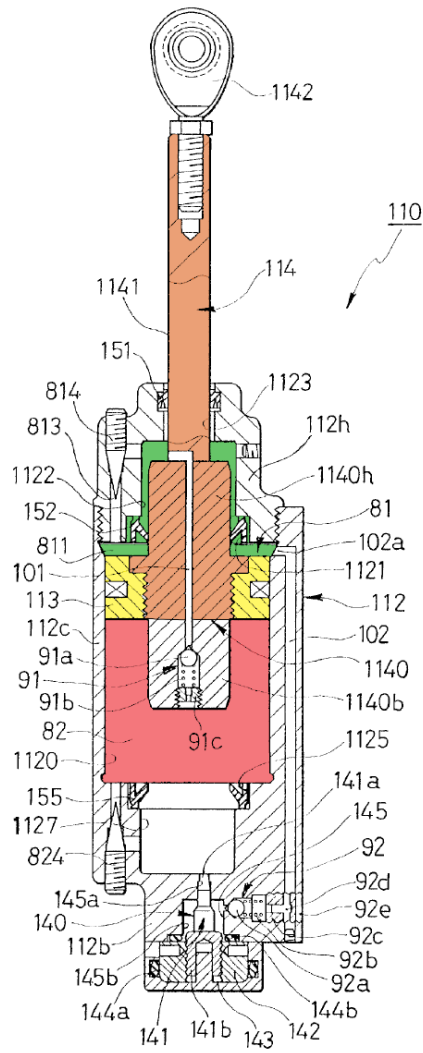
Nakaya discloses “[a] damper for a shock absorber comprising,” wherein *Nakaya* discloses a damper (the volume within cylindrical body **112**, head part **112h**, and bottom part **112b** (light green)) for a shock absorber **110**. Ex. 1005, FIG. 7; Ex. 1002, ¶89; Ex. 1003, ¶89.

(b) Claim 1[a]

Nakaya discloses “a damper chamber divided by a piston and shaft into a compression and rebound portions,” specifically a damper chamber **81**, **82** divided by a piston **113** (yellow) and a piston shaft/rod **114**

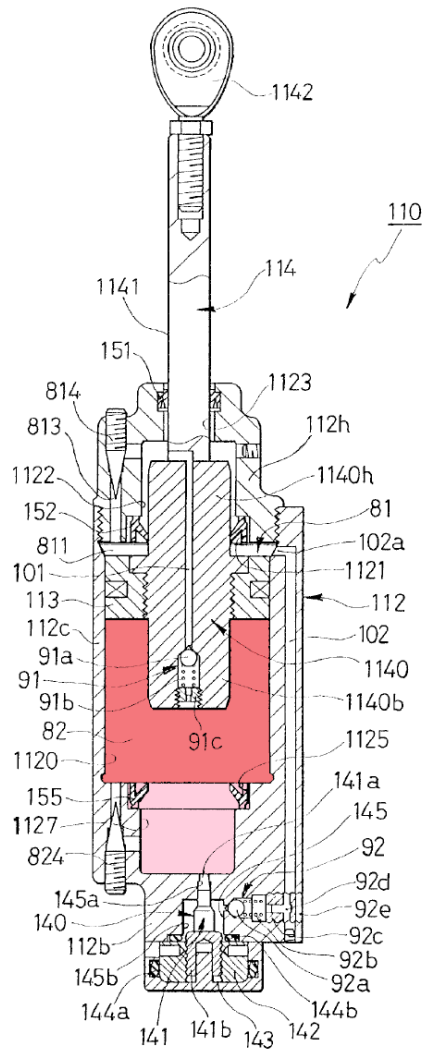


(dark orange) into a compression portion **82** (light red) and a rebound portion **81** (dark green). Ex. 1005, FIG. 7; Ex. 1002, ¶90; Ex. 1003, ¶90.



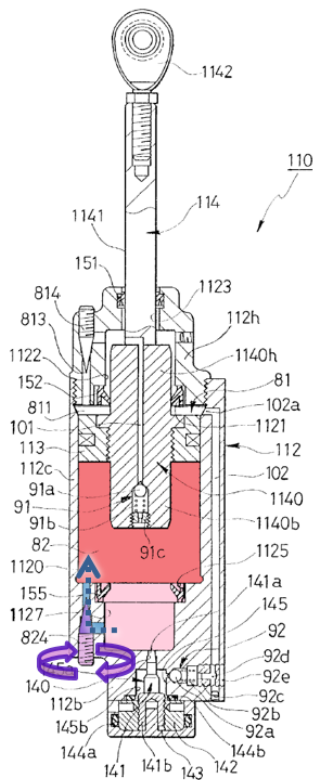
(c) Claim 1[b]

Nakaya discloses “a bottom out cup formed at an end of the compression portion,” specifically a bottom out cup **1125, 1127** (pink) formed at the end of compression portion **82** (light red). Ex. 1005, FIG. 7; Ex. 1002, ¶91; Ex. 1003, ¶91.



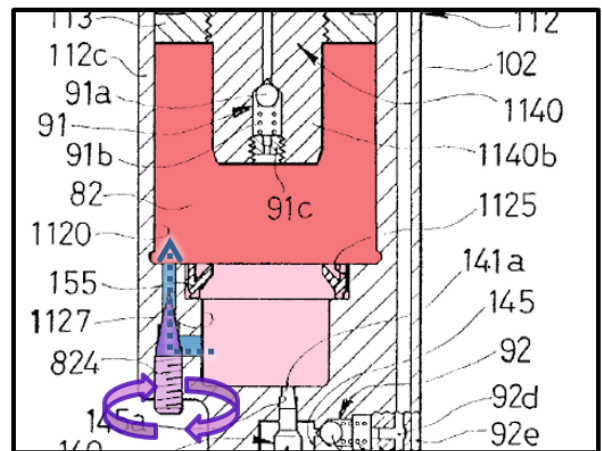
(d) Claim 1[c]

Nakaya 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,” wherein *Nakaya* shows a fluid flow path **823** (dark blue) formed in bottom out cup **1125**, **1127** (pink) for providing fluid communication from the cup to the compression portion **82** (light red) of chamber **81**, **82** during the damper’s compression stroke.² Ex. 1005, 9:22-30 (explaining fluid flows from bottom out cup to compression portion), FIGS.

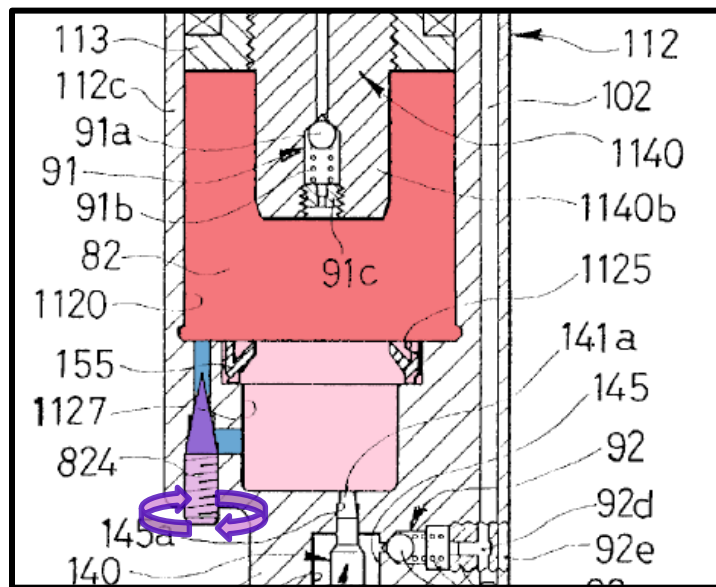
7-9; Ex. 1002,
¶¶92; Ex. 1003,
¶¶92.



² As explained in Section III, the plain language of Claims 1 and 11 only requires a “fluid flow path” and not specific directionality of actual fluid flow (like Claim 19). Even if such a directional requirement were engrafted onto these claims, *Nakaya* would still anticipate. Ex. 1002, ¶¶42-44; Ex. 1003, ¶¶40-45.

(e) Claim 1[d]

Nakaya discloses “wherein the capacity of the fluid flow path is adjustable,” in that the capacity of the fluid flow path **823** (dark blue) is adjustable via the screw type needle valve **824** (needle (dark purple), screw (light purple)). Ex. 1005, FIG. 7; Ex. 1002, ¶¶94; Ex. 1003, ¶¶93.



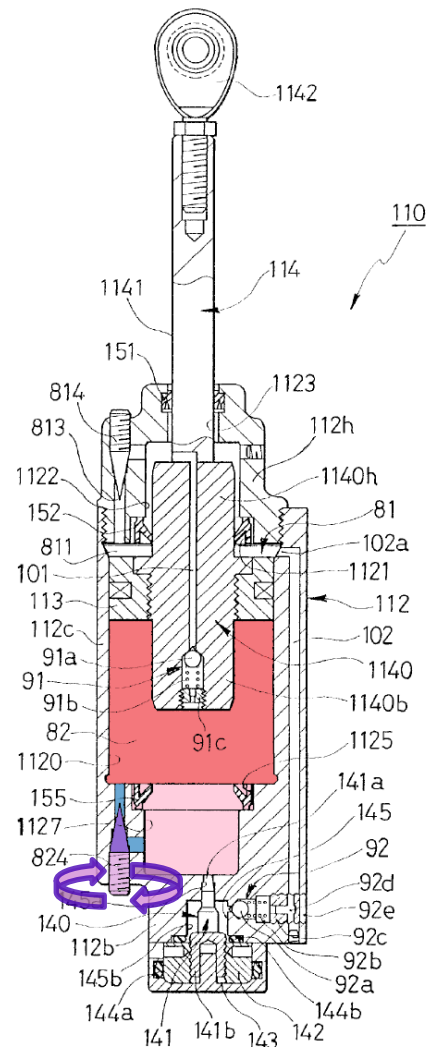
5. Dependent Claims 2-3

Nakaya discloses “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). *Nakaya*’s valve **824** (needle (dark purple), screw (light purple)) is manually adjustable and externally accessible, and restricts the fluid flow when present in fluid flow path **823** (dark blue). Ex. 1005, FIG. 7; Ex. 1002, ¶¶94-95; Ex. 1003, ¶¶93-94.

6. Dependent Claim 4

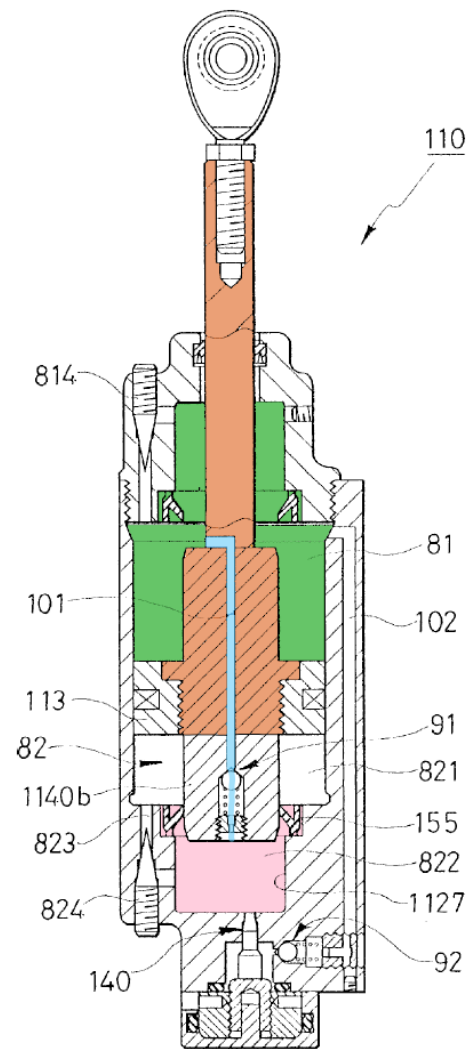
Nakaya discloses “the adjustable valve can be adjusted between a closed position and a plurality of open positions” (Claim 4). *Nakaya* discloses that the screw type needle valve **824** (needle (dark purple), screw (light purple)) may be adjusted between a closed position (shown in Figures 7-9) and a plurality of open positions (the screw may be adjusted to an effectively infinite number of positions between open and closed).

Even 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. Ex. 1005, FIG. 4; Ex. 1006, 4:58-5:2; Ex. 1002, ¶94; Ex. 1003, ¶93.



7. Dependent Claim 5

Nakaya discloses “a fluid path between the cup and the rebound portion of the chamber, the path formed in the shaft”, wherein *Nakaya* discloses fluid path **101** (light blue) between cup **1125**, **1127** (pink) and rebound portion **81** (dark green) of chamber **81**, **82**. Path **101** is formed in piston shaft/rod **114** (dark orange). Ex. 1005, FIG. 8; Ex. 1002, ¶96; Ex. 1003, ¶95.

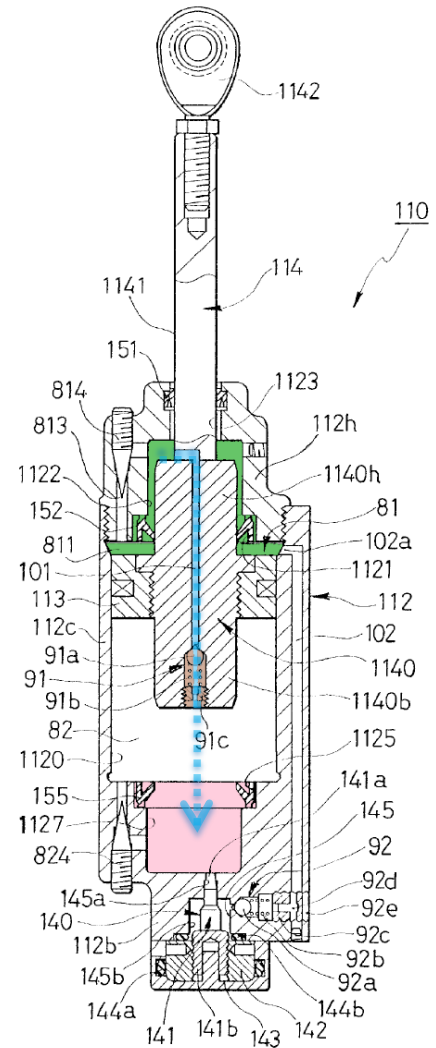


8. Dependent Claim 6

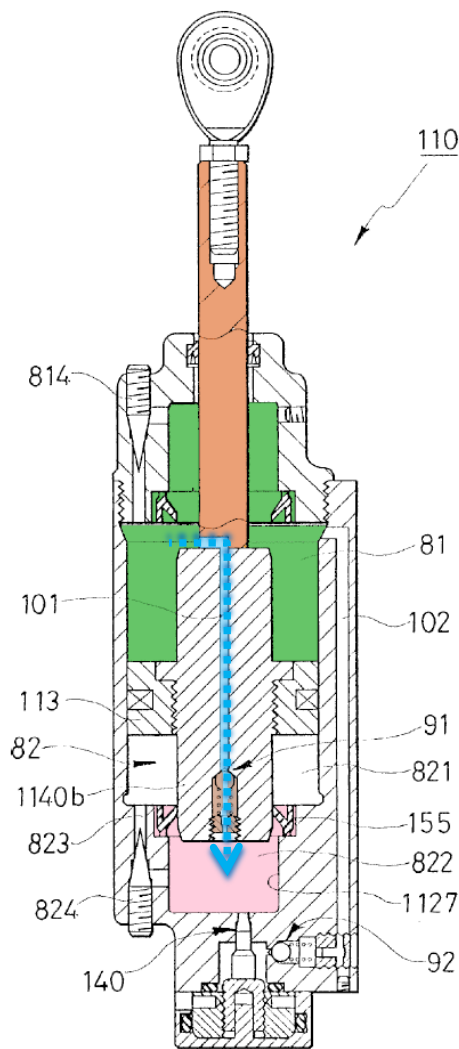
Nakaya discloses “the path between the cup and rebound portion is adjustable with a check valve to permit flow of fluid in a single direction between the cup and the rebound portion.” Specifically, *Nakaya* discloses that fluid path **101** (light blue) between cup **1125**, **1127** (pink) and rebound portion **81** (dark green) is adjustable with a check valve **91** (light brown) to permit the flow of fluid in a single direction between the cup and the rebound portion. Ex. 1005, FIG. 7; Ex. 1002, ¶97; Ex. 1003, ¶96.

9. Dependent Claim 7

Nakaya discloses “the check valve is arranged in the path to permit fluid communication between the rebound portion and the cup during a rebound stroke of the shaft.” *Nakaya* discloses that check valve **91** (light brown) is arranged in fluid path **101** (light blue) between cup **1125**, **1127** (pink) and rebound portion **81** (dark green) to permit fluid communication between the cup and



rebound portion **81** during a rebound stroke of shaft **114** (dark orange). Ex. 1005, FIG. 8; Ex. 1002, ¶98; Ex. 1003, ¶97.

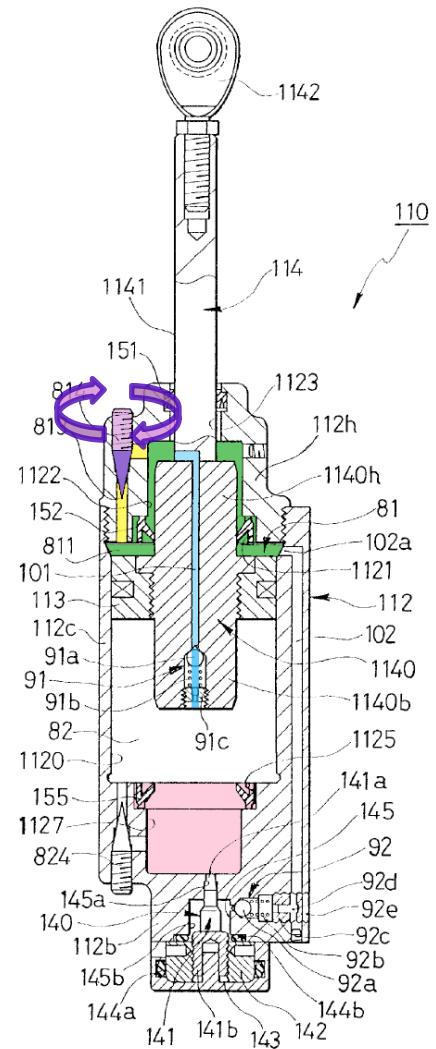


10. Dependent Claim 8

Nakaya discloses “the volume of fluid traveling through the fluid path is user-adjustable”, namely the quantity of fluid traveling through the fluid path is adjustable via screw type needle valve **814** (needle (dark purple), screw (light purple)). There

are two outlets for pressurized fluid within rebound portion **81** (dark green) and the top out cup **1121**, **1122** during a rebound stroke: the throttle passage **813** (yellow) and the first passage **101** (light blue). The resistance to fluid flowing through throttle passage **813** may be adjusted via screw type needle valve **814**. Thus, the quantity of fluid being sent through first passage **101** is adjustable by varying the size of throttle passage **813** using screw type needle valve **814**, at least while top out piston **1140h** is engaged with seal **152**. Ex. 1005, FIG. 7; Ex. 1002, ¶¶99-100; Ex. 1003, ¶98.

Alternatively, it would have been obvious to a POSITA to modify *Nakaya* to include *Kodama*'s adjustable flow path including *Kodama*'s throttle valve **30** (light blue), needle valve **32** (dark purple), and adjusting



screw **34** (light purple), as discussed above. Ex. 1006, 1:22-56, FIGS. 2, 3; Ex. 1002, ¶101; Ex. 1003, ¶99.

Kodama's Figures 2 and 3

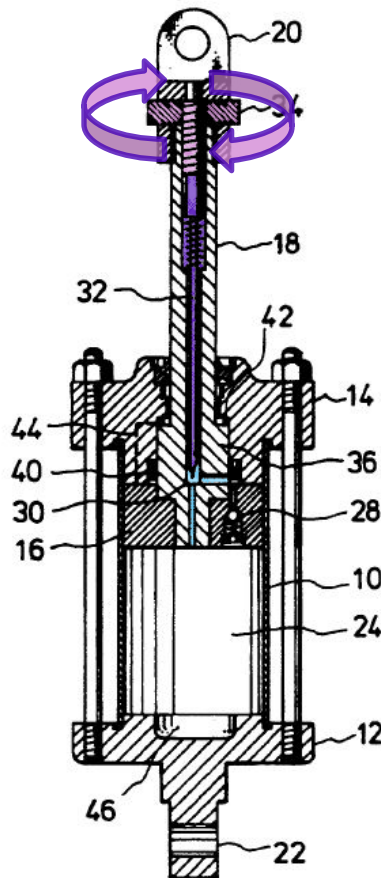


FIG. 2

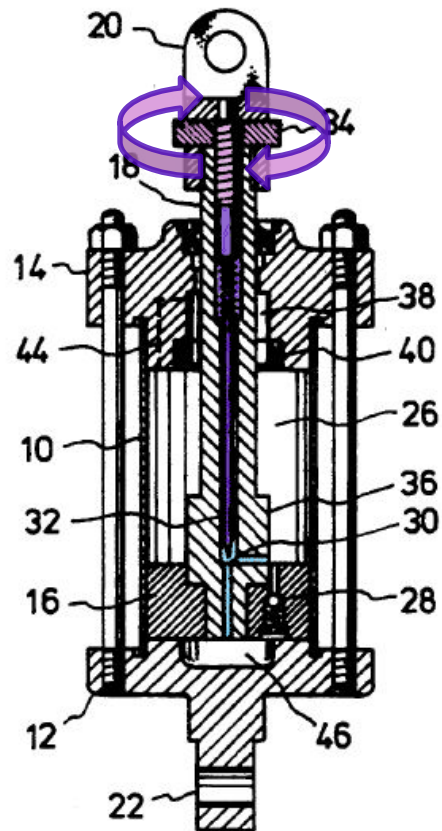
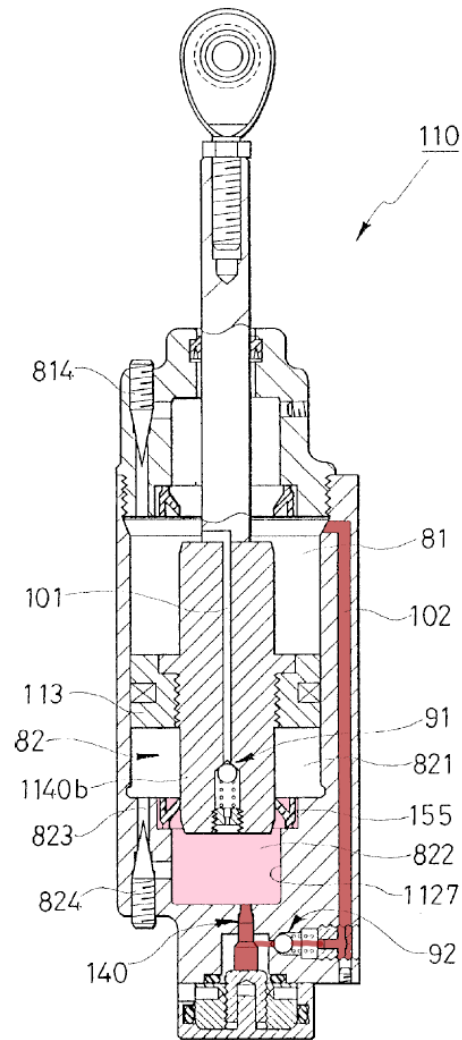


FIG. 3

11. Dependent Claim 9

Nakaya discloses “a second fluid flow path within the bottom out cup”, specifically a second fluid path **140, 102** (dark red) “within the bottom out cup” **1125, 1127** (pink). Ex. 1005, FIG. 8; Ex. 1002, ¶102; Ex. 1003, ¶100.



12. Independent Claim 11

(a) Claim 11 ``` [pre] ```

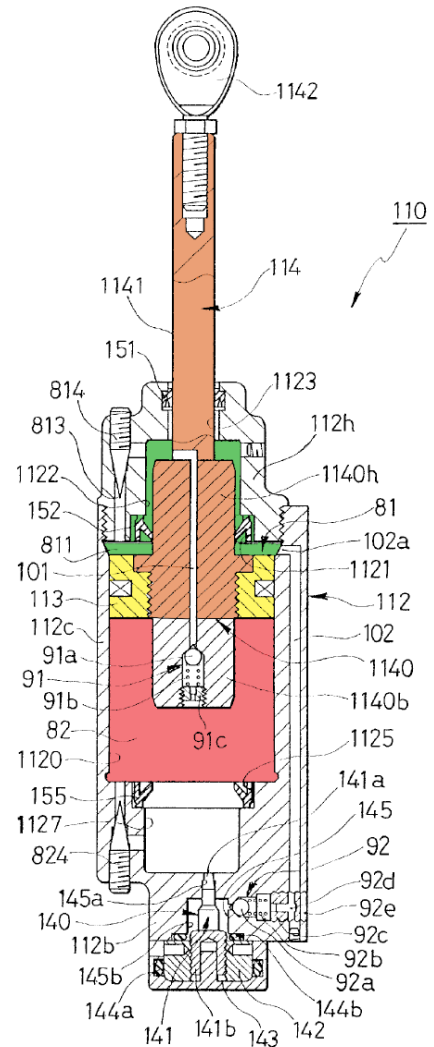
As stated above, *Nakaya* discloses “[a] fluid damper comprising”.

(b) Claim 11[a]

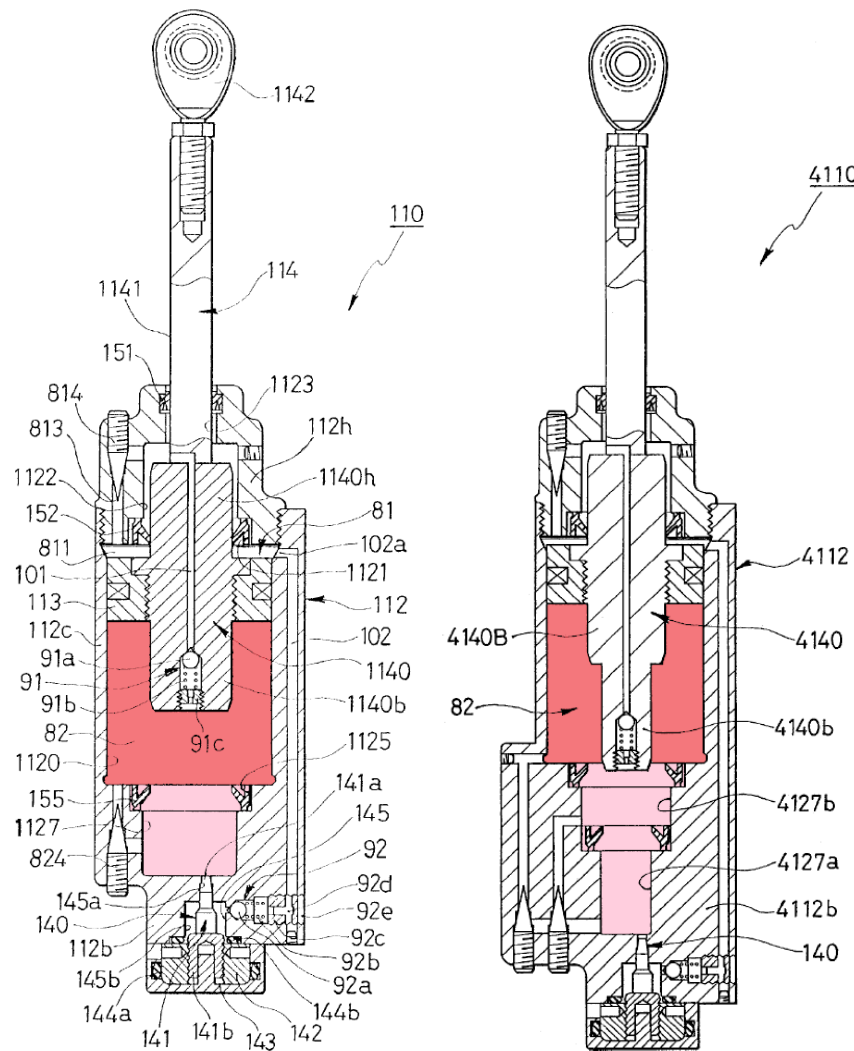
Nakaya discloses “a damper chamber divided by a piston mounted on a movable rod, into a primary compression and a primary rebound chamber”, namely damper chamber **81, 82** divided by piston **113** (yellow) mounted on moveable piston shaft/rod **114** (dark orange). The division results in primary compression chamber **82** (light red) and primary rebound chamber **81** (dark green). Ex. 1005, FIG. 7; Ex. 1002, ¶104; Ex. 1003, ¶102.

(c) Claim 11[b]

Nakaya discloses “a bottom out cup in fluid communication with the damper chamber”, namely bottom out cup **1125, 1127** (pink) formed to be in fluid communication with primary compression chamber **82** (light red) of damper chamber **81, 82**. *Nakaya*’s fourth embodiment also discloses bottom out cup **4127a, 4127b** (pink) formed to be in fluid



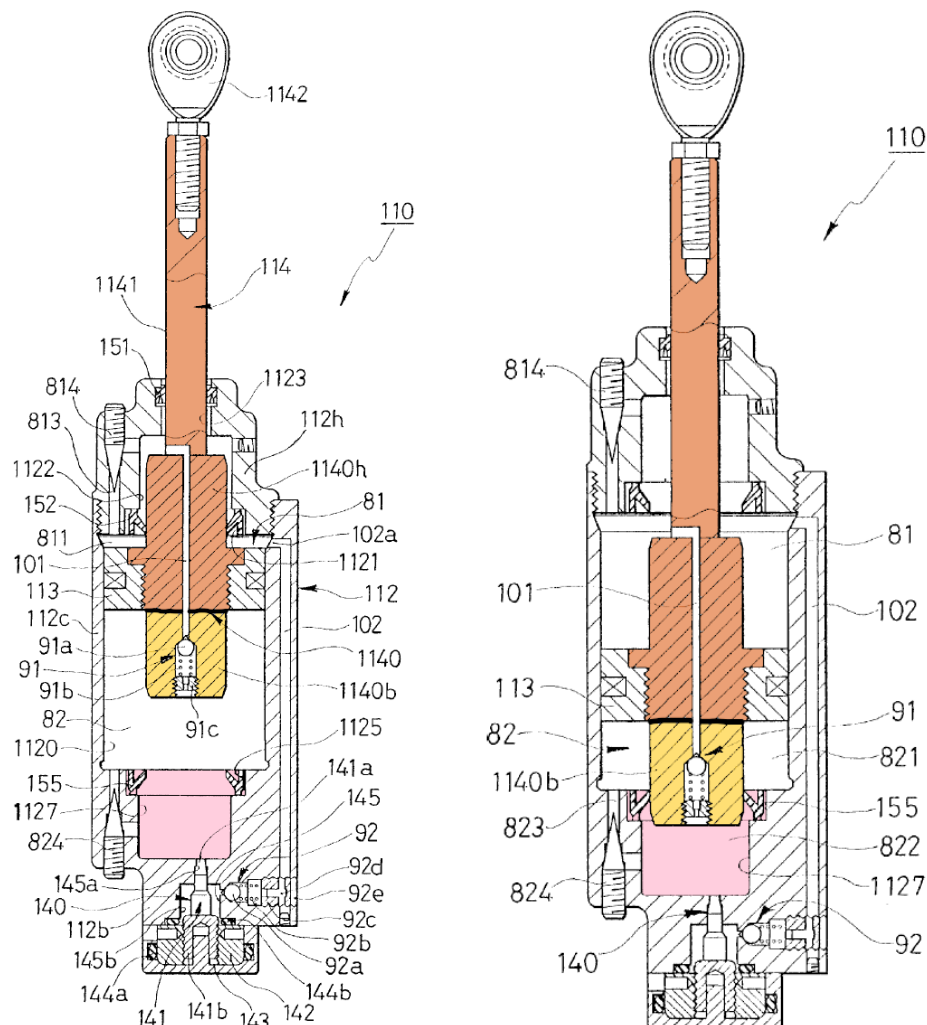
communication with primary compression chamber **82** (light red) of damper chamber **81**, **82**. Ex. 1005, FIGS. 7, 17; Ex. 1002, ¶105; Ex. 1003, ¶103.



(d) Claim 11[c]-11[d]

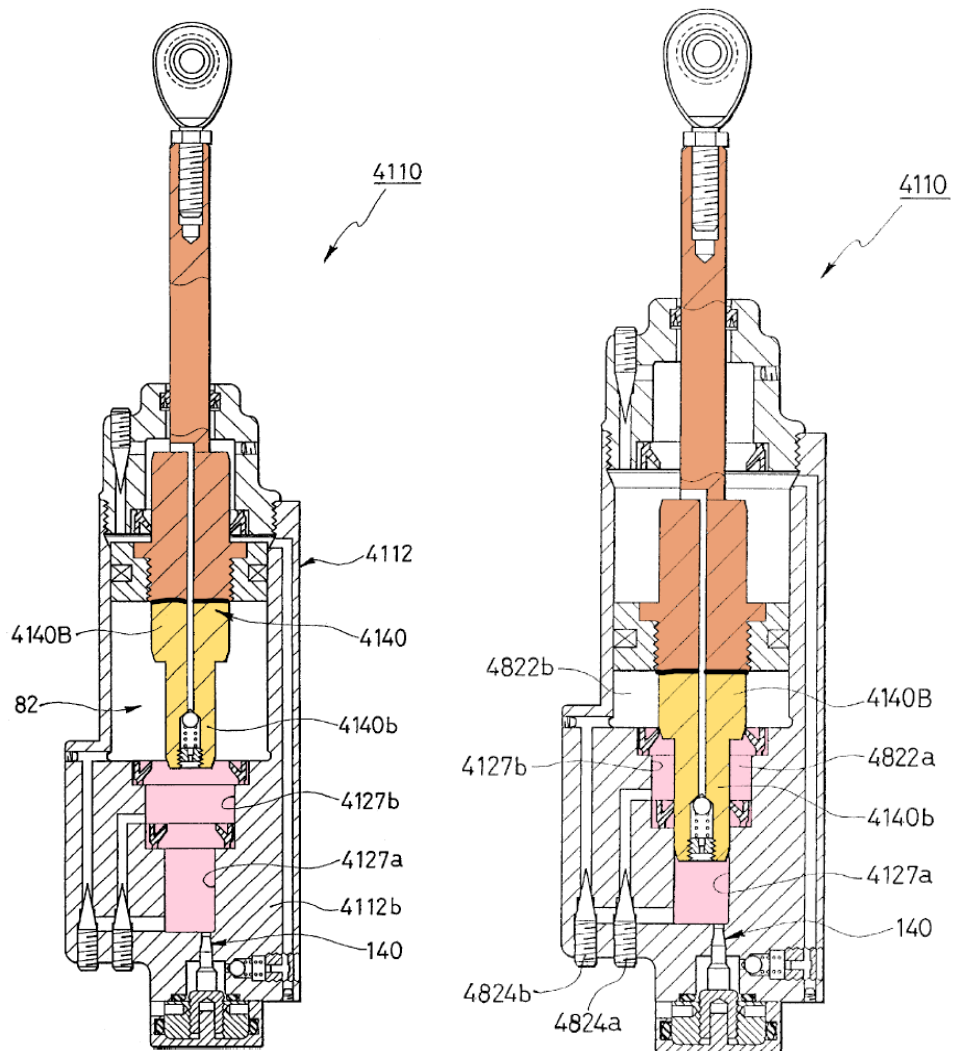
Nakaya discloses the limitations of 11[c], “a bottom out piston formed on the movable rod for sealingly engaging an interior of the bottom out cup,” and 11[d], “the damper including a first position in which the bottom out piston is not housed in the bottom out cup and a second position in which the bottom out piston is housed

therein.” *Nakaya* discloses bottom out piston **1140b** (light orange) formed on movable piston shaft/rod **114** (dark orange) for sealingly engaging an interior of bottom out cup **1125**, **1127** (pink) via seal member **155**. *Nakaya*’s Figure 8 (right) shows bottom out piston **1140b** (light orange) engaged with seal member **155** of the bottom out cup. *Nakaya*’s Figure 7 (left) discloses a first position in which bottom out piston **1140b** is not housed in bottom out cup **1125**, **1127**; Figure 8 discloses (right) a second position in which bottom out piston **1140b** is housed therein. Ex. 1005, FIGS. 7, 8; Ex. 1002, ¶106; Ex. 1003, ¶104.



Further, *Nakaya*'s fourth embodiment discloses bottom out piston **4140** (light orange) formed on the movable piston shaft/rod (dark orange) for sealingly engaging an interior of bottom out cup **4127a**, **4127b** (pink) via two seal members. *Nakaya*'s Figure 19 (right) shows bottom out piston **4140** (light orange) engaged with the seal members of the bottom out cup (pink). *Nakaya*'s Figure 17 (left) discloses a first position in which bottom out piston **4140** is not housed in bottom out cup **4127a**, **4127b** and Figure 19 (right) discloses a second position in which bottom out piston **4140** is housed

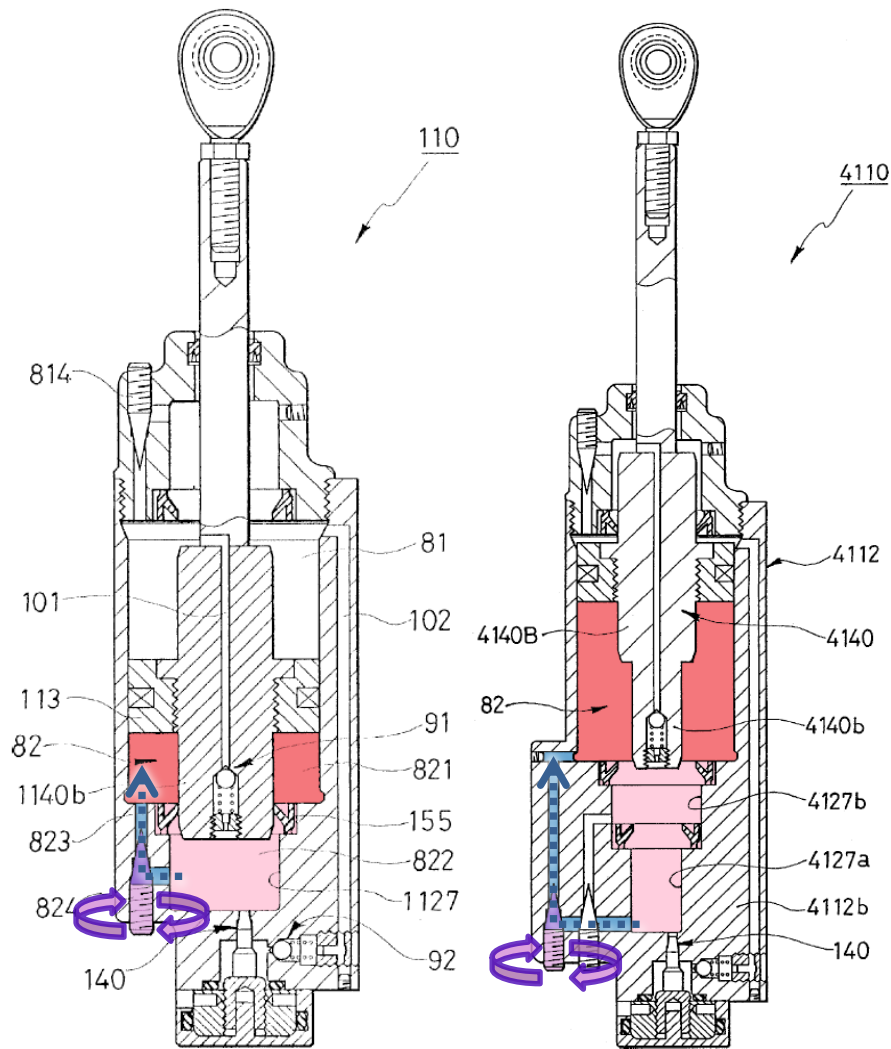
therein. Ex. 1005, FIGS. 17, 19; Ex. 1002, ¶107; Ex. 1003, ¶105.



(e) **Claim 11[e]**

Nakaya discloses “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.” *Nakaya* discloses (left) a fluid flow path **823** (dark blue) formed in bottom out cup **1125, 1127** (pink) for providing fluid communication between cup **1125, 1127** and primary compression chamber **82** (light red) during a compression stroke of the damper. Ex. 1005, 9:22-30 (explaining that the fluid flows from the bottom out cup to the compression portion), FIGS. 7, 8. The path is adjustable via screw type needle valve **824** (needle (dark purple), screw (light purple)). *Nakaya*’s fourth embodiment also discloses (right) a fluid flow path (dark blue) formed in bottom out cup **4127a, 4127b** (pink) for providing fluid communication from the cup to primary compression chamber **82** (light red) during the damper’s compression stroke. The path is adjustable via screw type needle

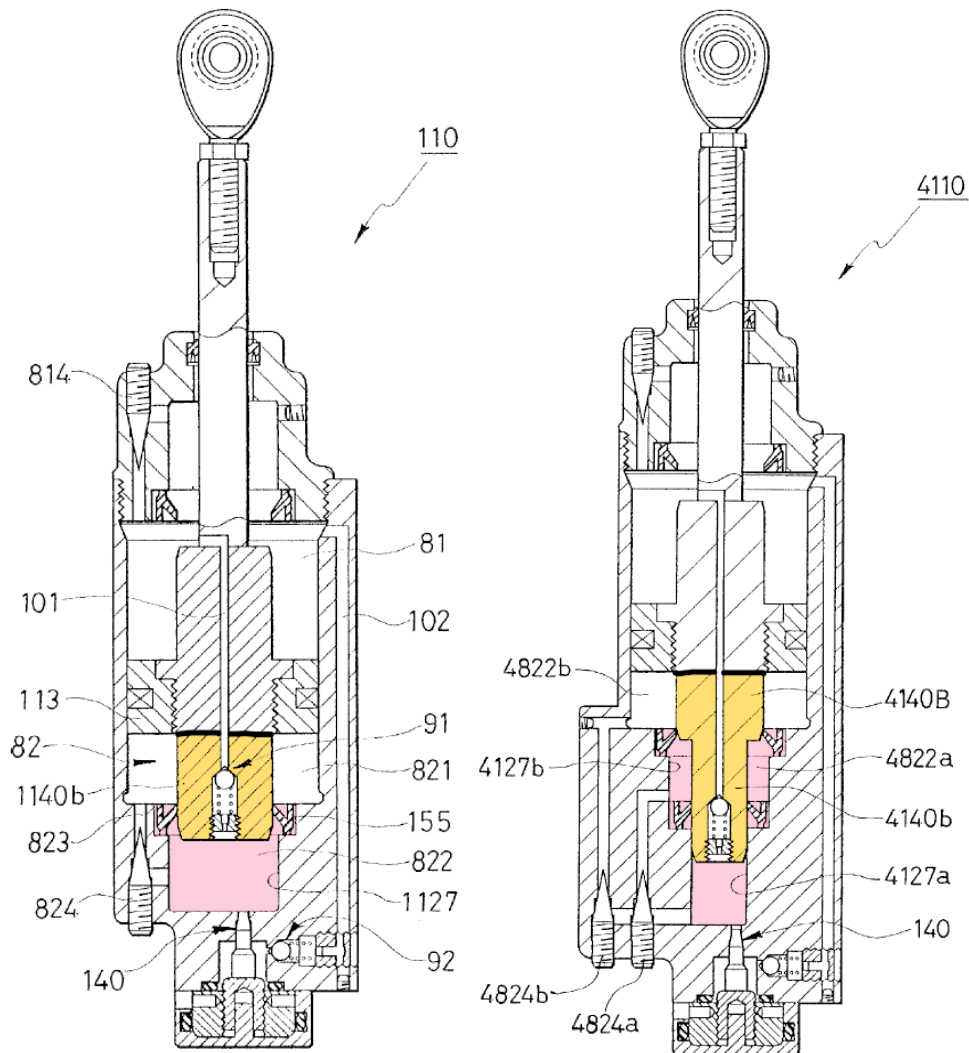
valves **4824a**, **4824b** (needle (dark purple), screw (light purple)). Ex. 1005, FIGS. 8, 17; Ex. 1002, ¶108; Ex. 1003, ¶106.



13. Dependent Claim 12

Nakaya discloses that “in the second position the bottom out piston is sealingly engaged within the bottom out cup.” *Nakaya* discloses (right) the damper of Claim 11. *Nakaya* discloses (right) that bottom out piston **1140b** (light orange) engages with seal member **155** of bottom out cup **1125**, **1127** (pink) in the second

position. *Nakaya's* fourth embodiment further discloses (left) that bottom out piston **4140** (light orange) engages with seal member **155** of bottom out cup **4127a**, **4127b** (pink) in the second position. Ex. 1005, FIGS. 8, 19; Ex. 1002, ¶110; Ex. 1003, ¶107.



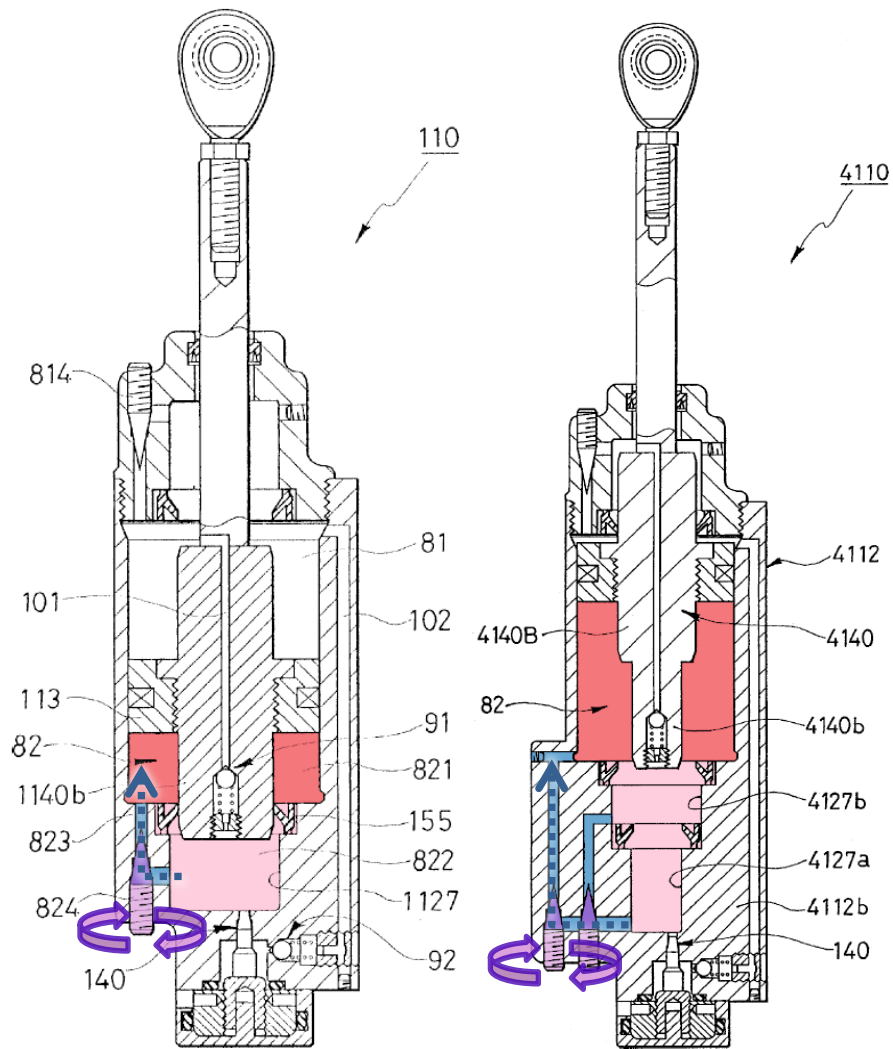
14. Dependent Claims 13-15

Nakaya discloses “a fluid flow path formed between the cup and the primary compression chamber; wherein the capacity of the fluid flow path is adjustable”

(Claim 13), “an externally accessible adjuster connected to a valve disposed in the flow path” (Claim 14), and “the externally accessible adjuster is manually adjustable” (Claim 15). *Nakaya* includes fluid flow path **823** (dark blue) formed between bottom out cup **1125, 1127** (pink) and primary compression chamber **82** (light red) during a compression stroke of the damper. The path is adjustable via the screw type needle valve (needle (dark purple), screw (light purple)). *Nakaya*’s screw type needle valve is disposed in the flow path and actuated by a manually adjustable and externally accessible adjuster (screw (light purple)). Ex. 1002, ¶111; Ex. 1003, ¶108.

Nakaya’s fourth embodiment further discloses a second fluid flow path (dark blue) formed between bottom out cup **4127a, 4127b** (pink) and primary compression chamber **82** (light red) during the damper’s compression stroke. The path is adjustable via screw type needle valves **4824a, 4824b** (needle (dark purple), screw (light purple)). *Nakaya*’s fourth embodiment’s screw type needle valves are disposed in the flow path and actuated by a manually adjustable and externally

accessible adjusters (screw (light purple)). Ex. 1005, FIGS. 8, 17; Ex. 1002, ¶112; Ex. 1003, ¶109.



15. Independent Claim 19

(a) Claim 19 ``` [pre] ```

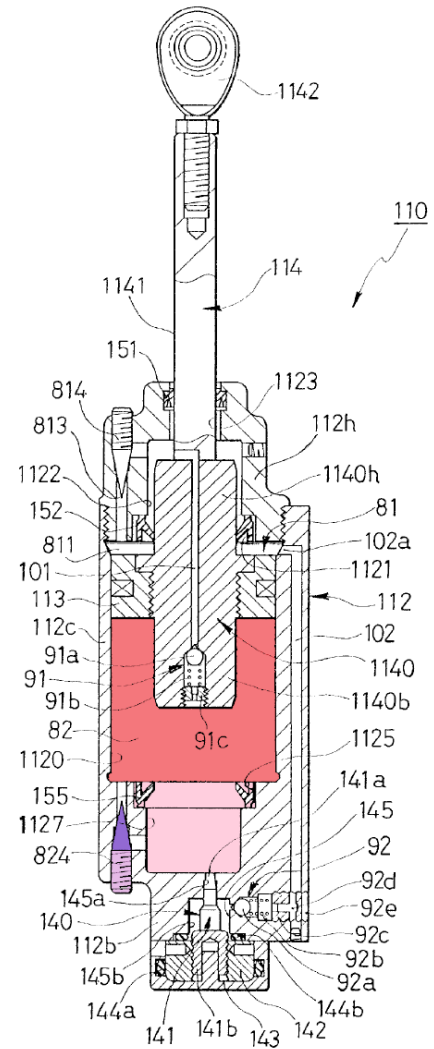
Nakaya discloses “[a] damper for a shock absorber comprising,” as shown above.

(b) Claim 19[a]

Nakaya discloses “a fluid”, namely air. Ex. 1005, 1:14-30, 6:15-23; Ex. 1002, ¶114; Ex. 1003, ¶111.

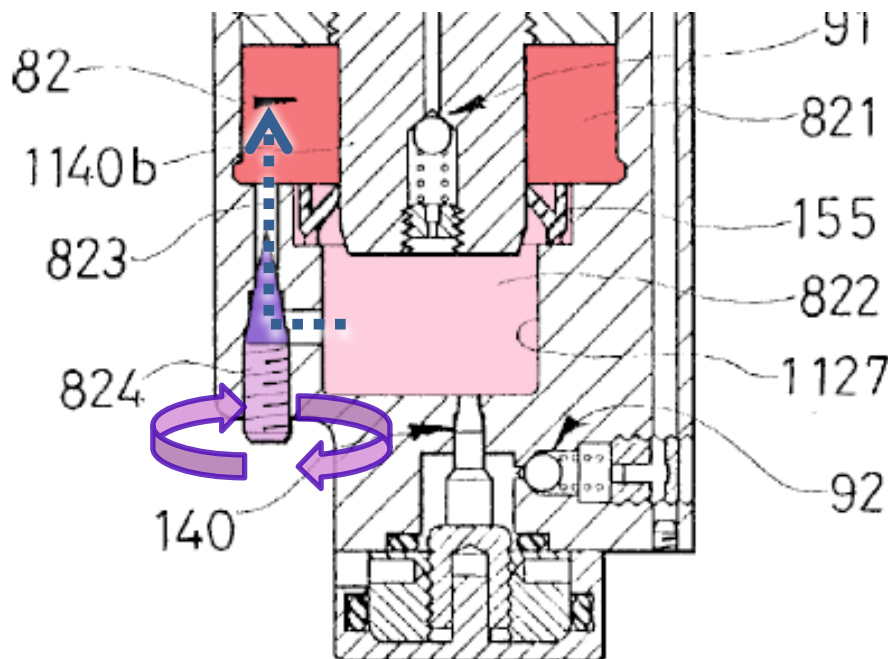
(c) Claim 19[b]-19[d]

Nakaya discloses the limitations of 19[b]-19[d], namely “a compression chamber,” “a bottom out cup,” and “a valve.” *Nakaya* discloses a compression chamber **82** (light red), a bottom out cup **1125**, **1127** (pink), and a screw type needle valve (needle (dark purple), screw (light purple)). Ex. 1005, FIG. 7; Ex. 1002, ¶115; Ex. 1003, ¶112.



(d) Claim 19[e]

Nakaya discloses that “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.” This claim term is just a facially complicated way for Fox to claim a simple adjustment of the valve. *Nakaya* discloses that, during a compression stroke, the fluid flows from bottom out cup **1125**, **1127** (pink) to compression chamber **82** (light red) at a first rate with screw type needle valve **824** in a first position and at a second rate with the screw type needle valve in a second position. Ex. 1005, 9:22-30 (explaining that the fluid flows from the bottom out cup to the compression portion), FIGS. 7, 8. The first rate is greater than the second rate.



Further, *Nakaya* discloses that screw type needle valve **824** (needle (dark purple)) includes an adjuster (screw (light purple)) that is accessible from the

exterior of shock absorber **110**. Ex. 1005, FIG. 8; Ex. 1002, ¶¶116-118; Ex. 1003, ¶¶113, 56-57.

B. Ground II: Claims 1-9, 11-15, and 19 Are Anticipated Under 35 U.S.C. § 102 by *Chen* or Rendered Obvious Under 35 U.S.C. § 103 by *Chen* Alone or in View of *Deferme*

1. *Chen* discloses a damper having two passages between a bottom out cup and a compression portion

UK Patent Application No. GB2377254A to Chen (“*Chen*”) is undisclosed prior art under pre-AIA 35 U.S.C. § 102(b), having published on January 8, 2003. Ex. 1007, p. 1.

Chen discloses a conventional suspension damper. Ex. 1007, p. 5, lines 1-6, FIGS. 4-6. The damper is formed by a hydraulic cylinder **8** (light green) closed on either end by caps **83**, **89** (light green). The volume formed in the damper is divided by a piston **81** (yellow) into a compression portion (light red) and a rebound portion (dark green):

***Chen* (Fig. 4)**

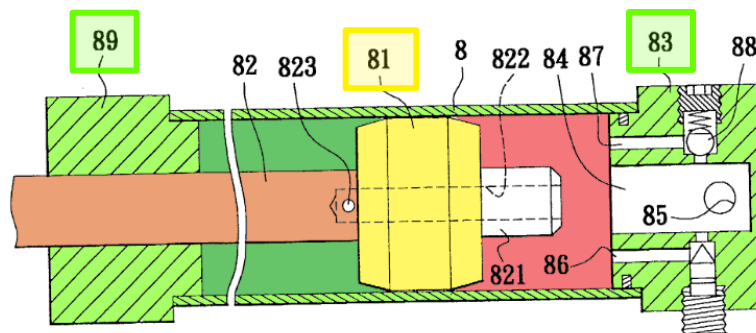


FIG. 4

Ex. 1007, FIG. 4; Ex. 1002, ¶62; Ex. 1003, ¶62.

Chen includes an accommodating cavity **84** (pink), which is the same as the claimed bottom out cup, and a projecting post **821** (light orange), which is the same as the claimed bottom out piston. As seen in *Chen's* Figures 4 and 5 below, projecting post **821** (located on one end of the piston shaft/rod **82**) is configured to sealingly engage with the accommodating cavity **84** during a compression stroke.

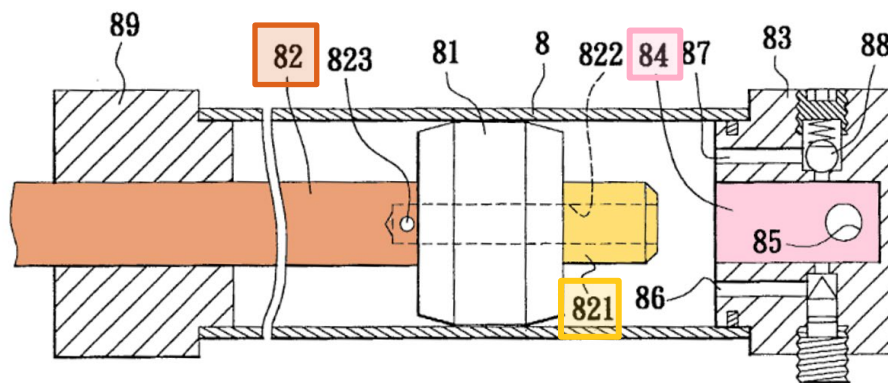


FIG. 4

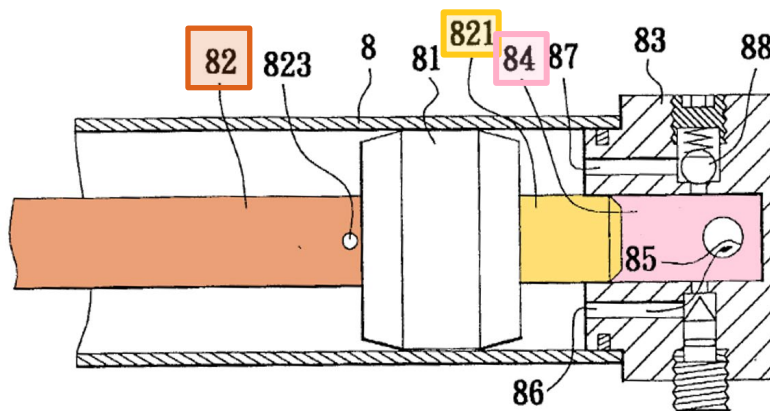


FIG. 5

Ex. 1007, FIGS. 4, 5; Ex. 1002, ¶63; Ex. 1003, ¶63.

Chen discloses the use of three different fluid channels from the bottom out cup, with two extending into the compression portion (light red) and one into the rebound portion (dark green). Of the first two, one **86** (dark blue) is adjustable via a needle valve (dark purple) externally actuated by an adjuster (light purple), and the other **87** (dark red) is regulated by a check ball valve **88**. A third channel **822**, **823** (light blue) penetrates through piston shaft **82** (dark orange).

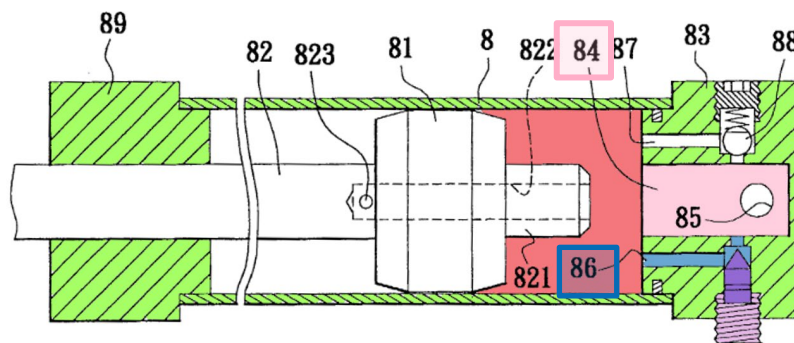


FIG. 4

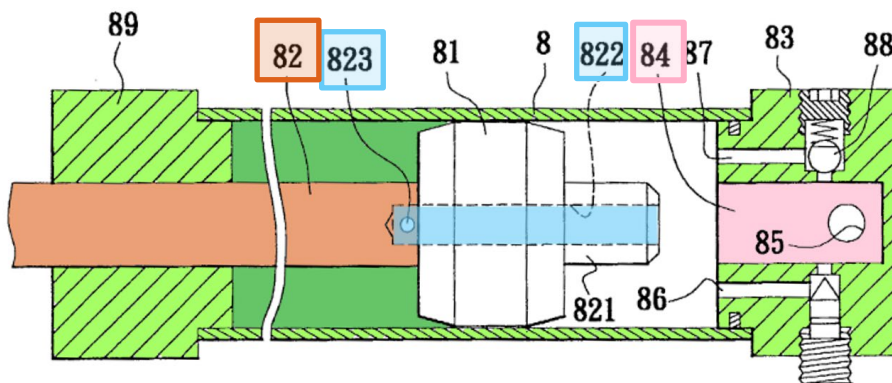


FIG. 4

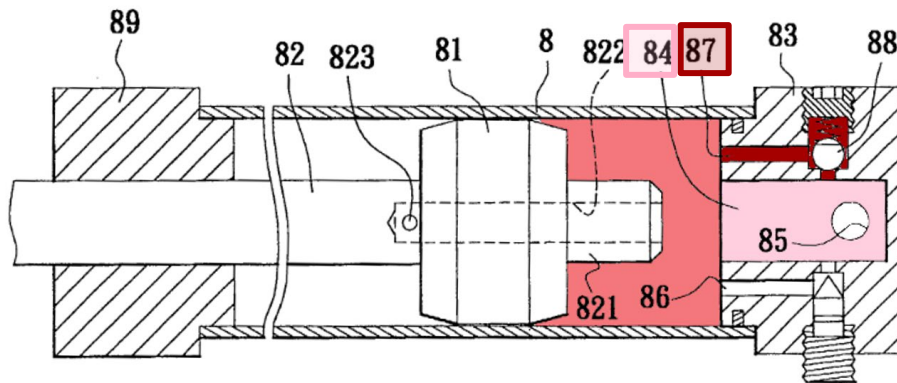


FIG. 4

Ex. 1007, FIG. 4; Ex. 1002, ¶64; Ex. 1003, ¶64.

2. *Deferme* discloses a piston for a damper that allows fluid to pass therethrough

U.S. Patent Application Publication No. 2006/0283676 A1 to *Deferme* (“*Deferme*”) is undisclosed prior art under pre-AIA 35 U.S.C. § 102(b), having been filed on June 21, 2006, and published on December 21, 2006. Ex. 1008.

Deferme discloses the use of an adjustable piston **32** (yellow) that allows fluid to flow therethrough in both the compression and rebound directions of travel. Ex. 1008, Abstract, ¶[0016], ¶¶[0020]-[0021], FIGS. 1-3. The adjustment may be made by altering either of two one-way valves **72**, **102** extending through the piston, one operating during a compression and the other during rebound. *Id.* The valves **72**, **102** operate by having shims that are flexible in only one direction, such that fluid is only allowed to pass therethrough in that one direction when sufficient pressure is exerted on the valve to cause the bending, which then opens a fluid flow

path. Valve 72 allows fluid to bypass the piston during compression of the related damper. The amount of pressure required to bend the shims may be adjusted by swapping out the shims with others having different stiffness values. This ability to adjust provides tunability for the compression and rebound characteristics. *Id.*; Ex. 1002, ¶¶66; Ex. 1003, ¶¶66.

Deferme (Fig. 3)

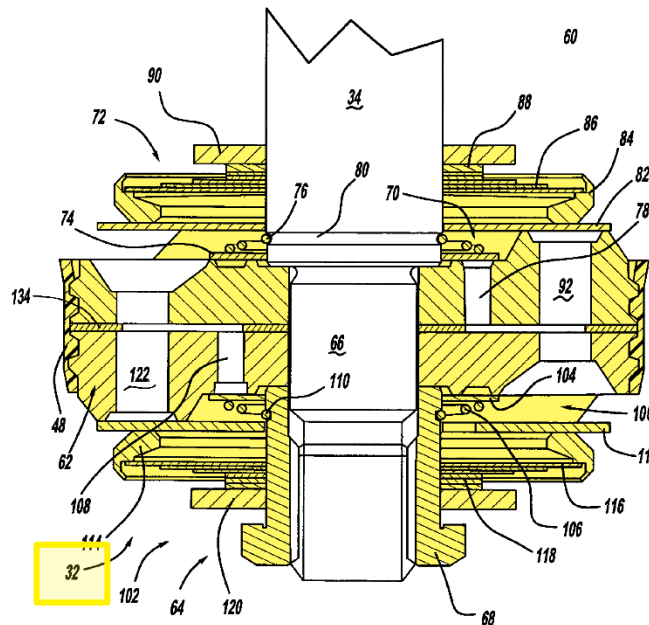


FIG - 3

3. It would have been obvious to a POSITA to modify *Chen* with *Deferme*, thereby yielding the subject matter of Claims 1-5, 9, 11-15, and 19

While *Chen* anticipates or alone renders obvious each of Claims 1-5, 9, 11-15, and 19, these claims are alternatively invalid as obvious because a POSITA also would readily modify *Chen*'s piston 81 to incorporate *Deferme*'s adjustable piston

system or substitute *Chen*'s piston **81** for *Deferme*'s piston **32**. Ex. 1002, ¶¶79-80; Ex. 1003, ¶¶79-80.

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**. Such adjustable pistons are commonplace

in dampers. Ex. 1007, FIG. 4; Ex. 1008, FIG. 3; Ex. 1002, ¶80; Ex. 1003, ¶80.

A POSITA would have understood that this simple substitution would have been predicted to work as intended and that the results of the modification/substitution would have

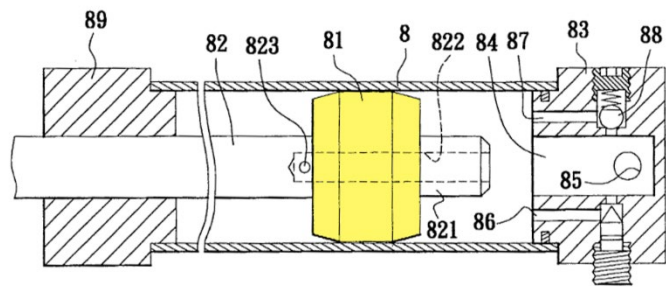


FIG. 4

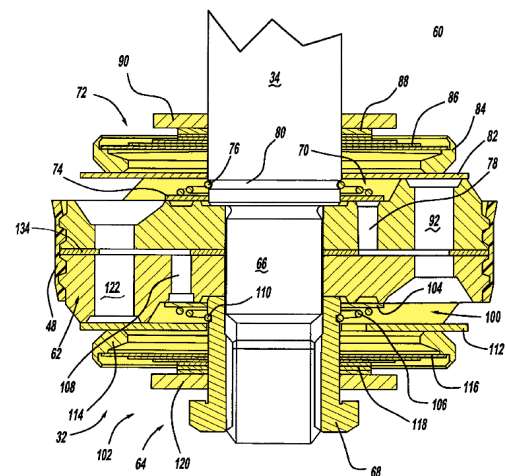


FIG. 3

been predictable. Further, this modification would have merely been the application of a known technique (the use of an adjustable piston like *Deferme*'s piston **32**) to a known device (*Chen*'s piston **81**) ready for improvement, and the result would have been predictable. *Deferme* would be used in the same way in the combination of *Chen/Deferme* as it is used in *Deferme*, and a POSITA would expect success from adding *Deferme*'s adjustable piston system to *Chen*'s piston **81**. Ex. 1002, ¶80; Ex. 1003, ¶80. In addition, mechanical arts like those discussed in *Chen* and *Deferme* have previously been found to be predictable. *See, e.g., Cedarapids*, 121 F.3d 727 at *2.

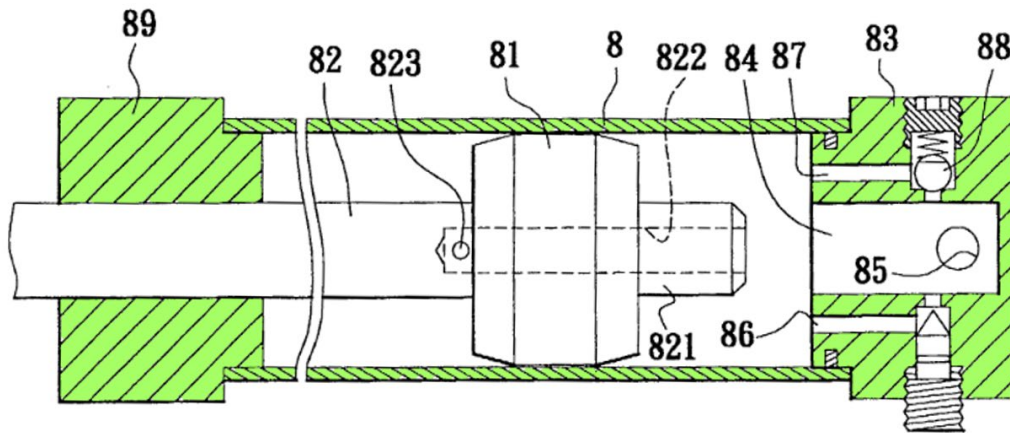
4. Independent Claim 1

(a) Claim 1[pre]

Chen discloses “[a] damper for a shock absorber comprising.” In particular, *Chen* shows a damper (volume within hydraulic cylinder **8**, and related caps **83**, **89**

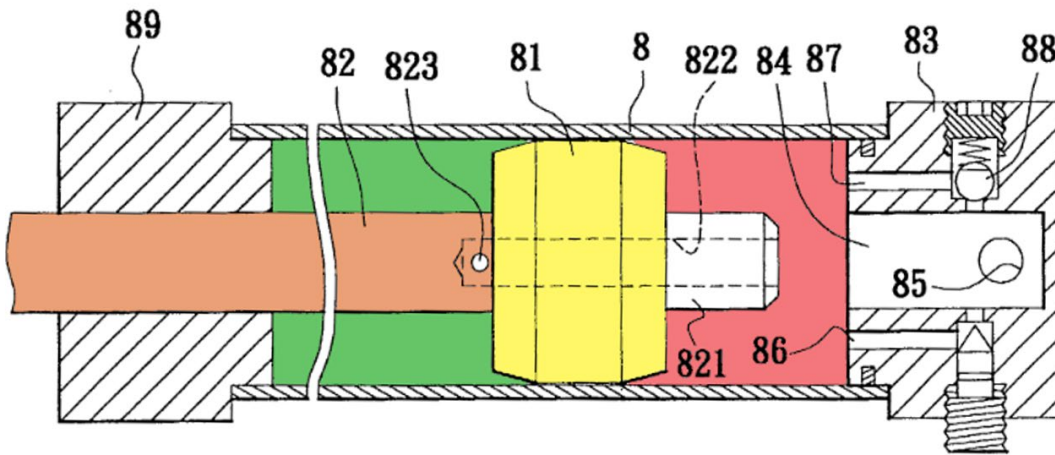
(light green)) for a shock absorber. Ex. 1007, p. 5, lines 2-26, FIG. 4; Ex. 1002, ¶119; Ex. 1003, ¶114.

Chen (Fig. 4)



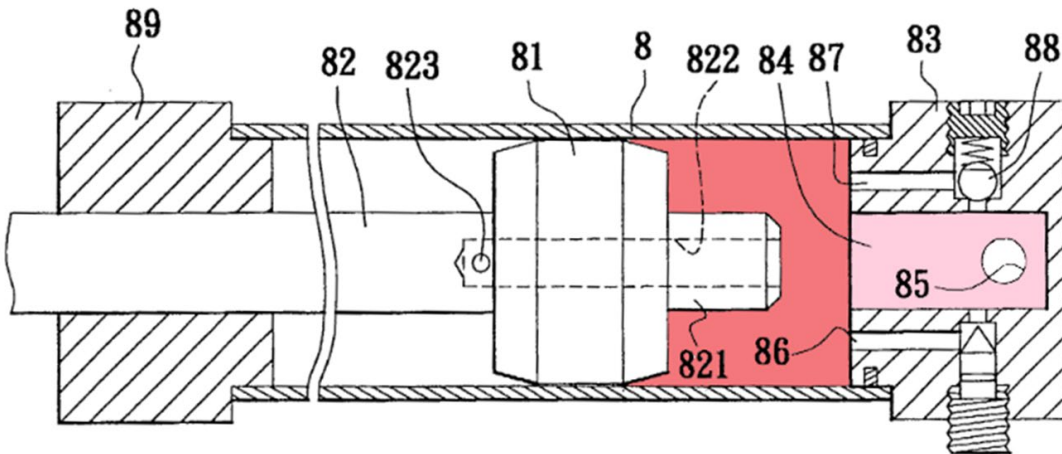
(b) Claim 1[a]

Chen discloses “a damper chamber divided by a piston and shaft into a compression and rebound portions.” *Chen* discloses a damper chamber **8**, **83**, **89** that is divided by a piston **81** (yellow) and a piston shaft/rod **82** (dark orange) into a compression portion (light red) and a rebound portion (dark green). Ex. 1007, p. 5, lines 5-13, FIG. 4; Ex. 1002, ¶120; Ex. 1003, ¶115.



(c) Claim 1[b]

Chen discloses “a bottom out cup formed at an end of the compression portion”, namely a bottom out cup **84** (pink) formed at the end of the compression portion (light red). Ex. 1007, p. 5, lines 5-13, FIG. 4; Ex. 1002, ¶121; Ex. 1003, ¶116.



(d) Claim 1[c]

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.” *Chen* discloses a fluid flow path **86** (dark blue) from the bottom out cup **84** (pink) for providing fluid communication from the cup to the compression portion (light red) of chamber **8**, **83**, **89** during the damper’s compression stroke. *Id.* This fluid communication is made regardless of the direction of the fluid flow. Ex. 1007, FIG. 4; Ex. 1002, ¶122; Ex. 1003, ¶117.

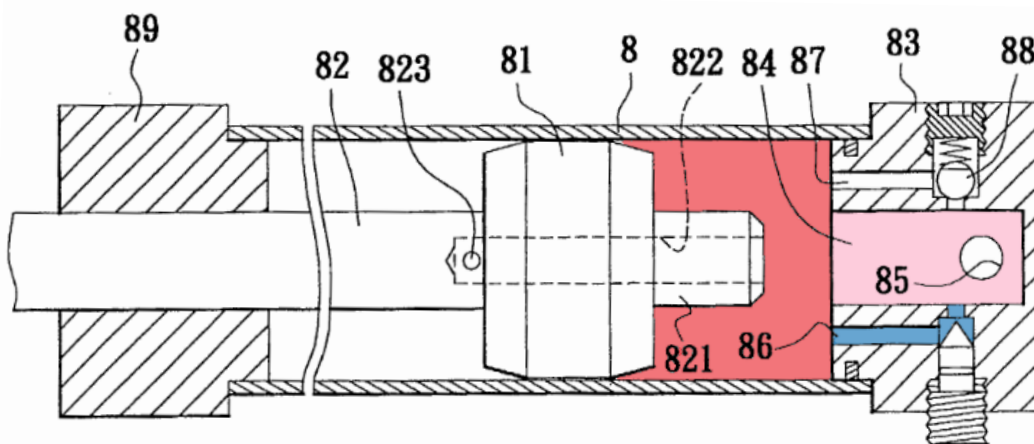
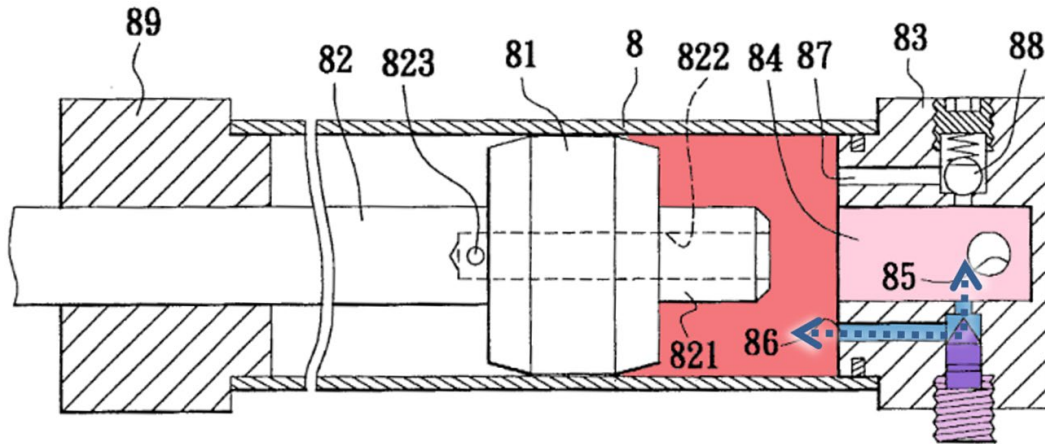


FIG. 4

Alternatively, it would have been obvious to a POSITA to substitute *Chen*’s simple piston **81** with *Deferme*’s adjustable piston to provide additional means of adjusting the damping characteristics of *Chen*’s damper. The resulting combination

would also allow for fluid to travel in any direction through fluid flow path **86** during a compression stroke. Ex. 1002, ¶124; Ex. 1003, ¶118.



(e) Claim 1[d]

Chen discloses “wherein the capacity of the fluid flow path is adjustable,” in that the capacity of the fluid flow path **86** (dark blue) is adjustable via the adjustable

screw type needle valve (needle (dark purple), screw (light purple)). Ex. 1007, FIG. 4; Ex. 1002, ¶125; Ex. 1003, ¶119.

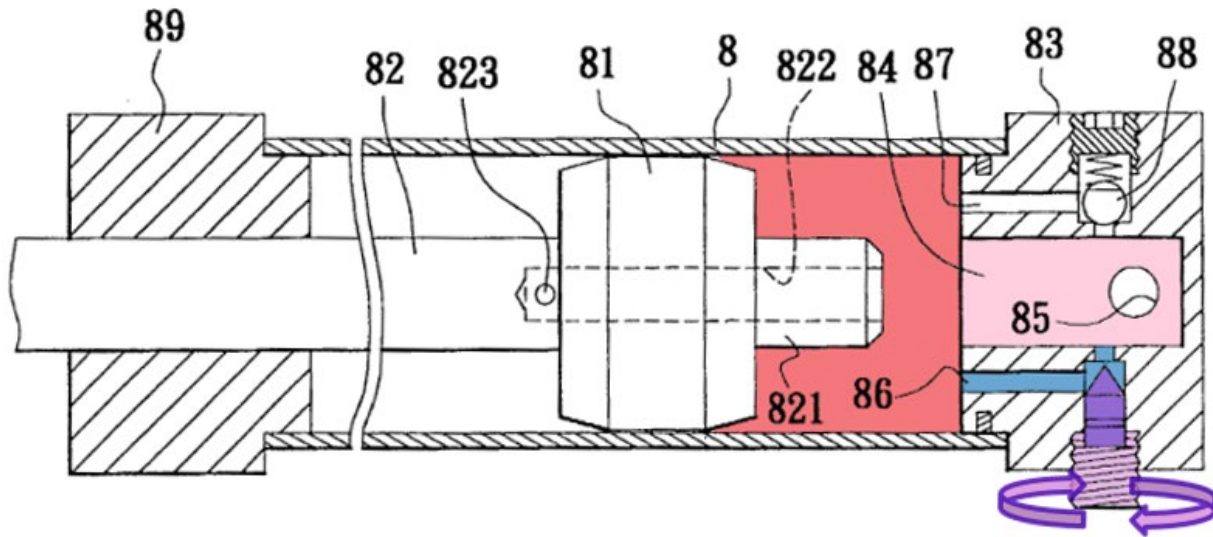


FIG. 4

5. Dependent Claims 2-3

Chen 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). *Chen*’s screw type needle valve (needle (dark purple), screw (light purple)) is manually adjustable and externally accessible, and restricts the fluid flow when present in fluid flow path **86**. Ex. 1007, FIG. 4; Ex. 1002, ¶¶125-126; Ex. 1003, ¶¶119-120.

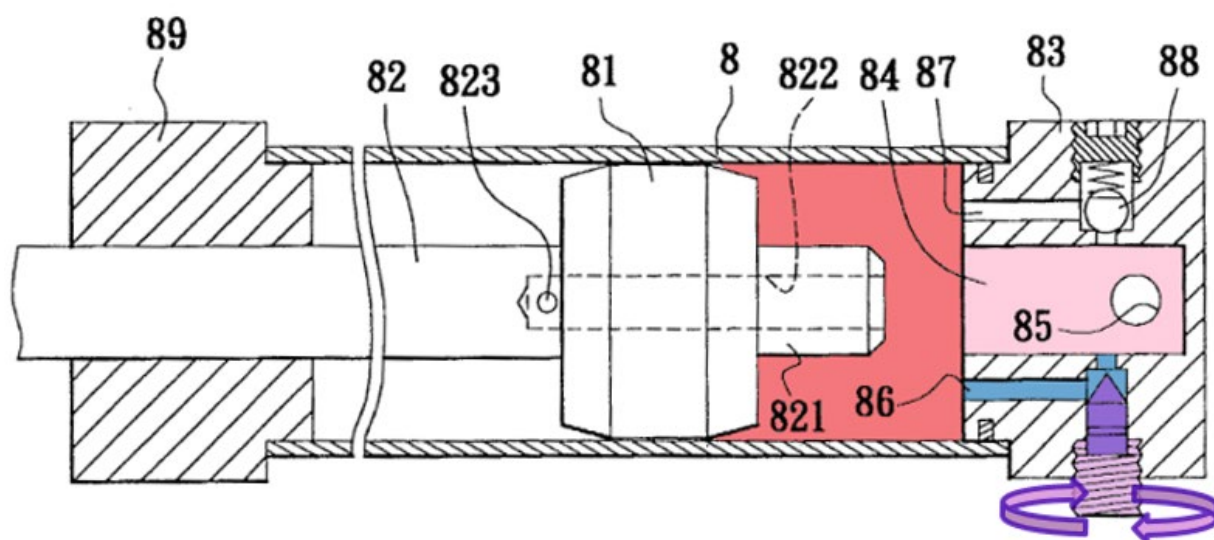


FIG. 4

6. Dependent Claim 4

Chen discloses that “the adjustable valve can be adjusted between a closed position and a plurality of open positions”. *Chen* discloses that the screw type needle valve (needle (dark purple), screw (light purple)) may be adjusted between a closed position and a plurality of open positions (the screw may be adjusted to an effectively infinite number of positions between open and closed). Ex. 1007, FIG. 4; Ex. 1002, ¶¶125-126; Ex. 1003, ¶¶119-120.

Even if *Chen* did not explicitly disclose a closed position (which it does), such a feature would have been obvious to a POSITA using the same equipment featured in *Chen*. A POSITA would have been motivated to provide a closed position to allow for a greater range of damping characteristic for the damper.

Moreover, *Kodama* discloses a needle valve (*Kodama's* throttle valve **130**) that includes a closed position. Ex. 1007, FIG. 4; Ex. 1006, 4:58-5:2; Ex. 1002, ¶125; Ex. 1003, ¶119.

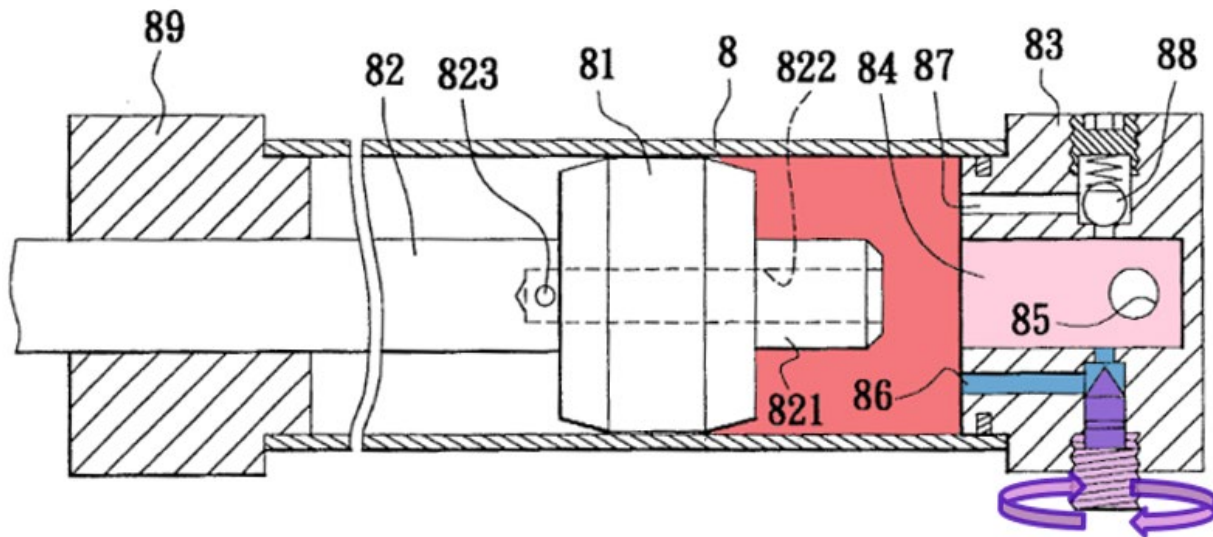


FIG. 4

7. Dependent Claim 5

Chen discloses “a fluid path between the cup and the rebound portion of the chamber, the path formed in the shaft.” *Chen* discloses a fluid path **822, 823** (light blue) between the cup **84** (pink) and the rebound portion (dark green) of chamber **8**,

83, 89 (light green). The path is formed in piston shaft/rod **82** (dark orange).

Ex. 1007, p. 5, lines 5-13, FIGS. 4, 6; Ex. 1002, ¶127; Ex. 1003, ¶121.

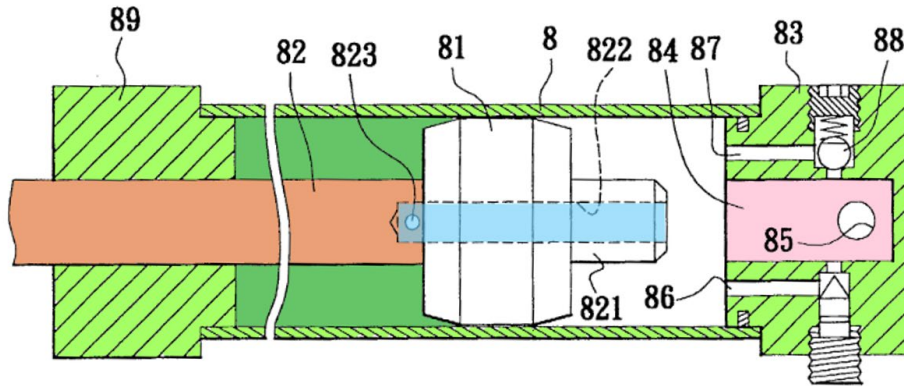


FIG. 4

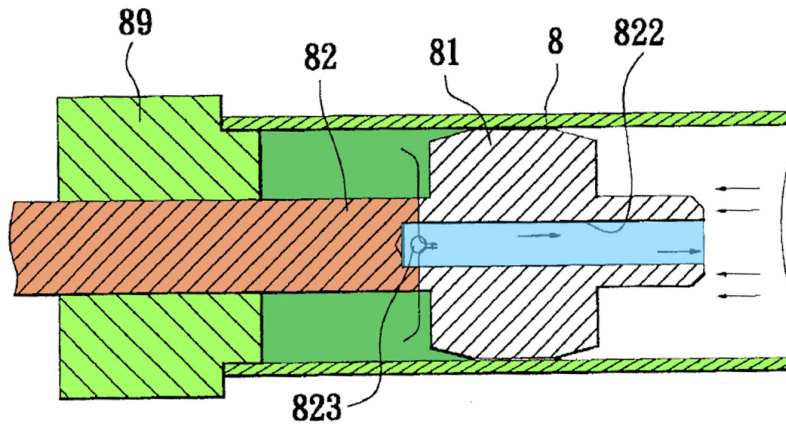
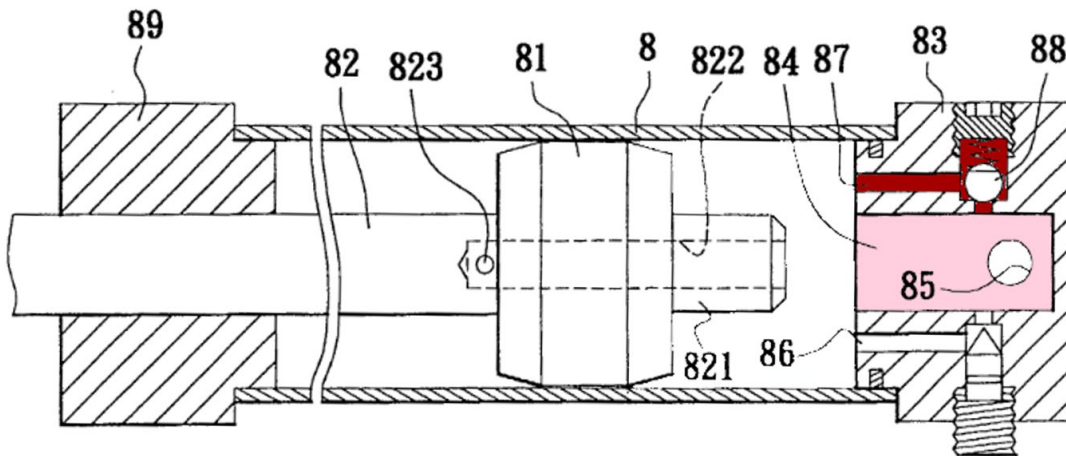


FIG. 6

8. Dependent Claim 9

Chen discloses “a second fluid flow path within the bottom out cup”, namely a second fluid path **87** (dark red) within bottom out cup **84** (pink). Ex. 1007, p. 5, lines 1-26, FIG. 4; Ex. 1002, ¶128; Ex. 1003, ¶122.



9. Independent Claim 11

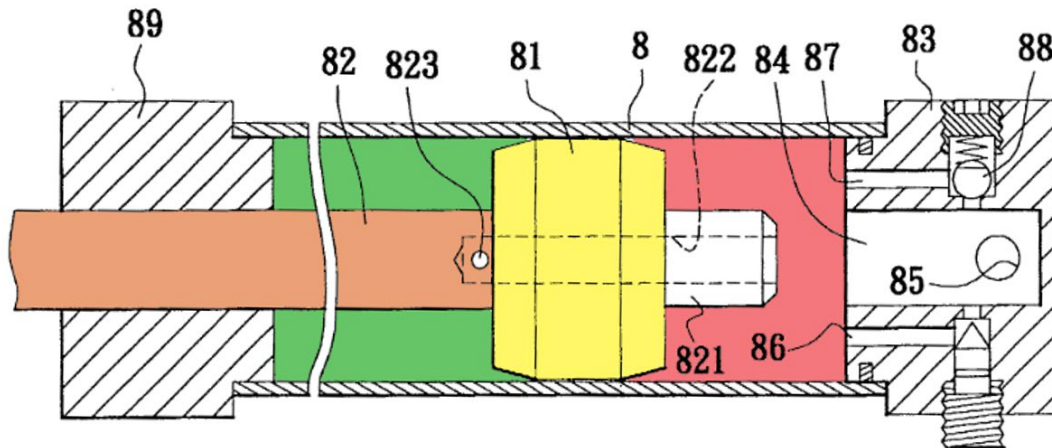
(a) Claim 11[pre]

Chen discloses “[a] fluid damper comprising,” as shown above.

(b) Claim 11[a]

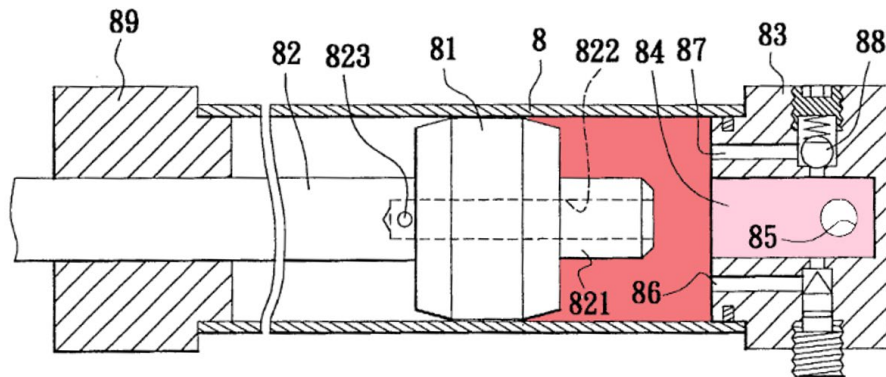
Chen discloses “a damper chamber divided by a piston mounted on a movable rod, into a primary compression and a primary rebound chamber.” *Chen* discloses a damper chamber **8, 83, 89** divided by piston **81** (yellow) mounted on moveable piston shaft/rod **82** (dark orange). The division results in a primary compression

chamber (light red) and a primary rebound chamber (dark green). Ex. 1007, p. 5, lines 1-26, FIG. 4; Ex. 1002, ¶130; Ex. 1003, ¶124.



(c) Claim 11[b]

Chen discloses “a bottom out cup in fluid communication with the damper chamber”, specifically bottom out cup **84** (pink) formed to be in fluid communication with the primary compression chamber (light red) of damper chamber **8**, **83**, **89**. Ex. 1007, p. 5, lines 1-26, FIG. 4; Ex. 1002, ¶131; Ex. 1003, ¶125.



(d) Claim 11[c]-11[d]

Chen discloses the limitations of 11[c] and 11[d], namely “a bottom out piston formed on the movable rod for sealingly engaging an interior of the bottom out cup,” and “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.” *Chen* discloses bottom out piston **821** (light orange) formed on movable piston shaft/rod **82** (dark orange) for sealingly engaging an interior of bottom out cup **84** (pink). *Chen* also shows bottom out piston **821** sealingly engaging with an interior of bottom out cup **84**. *Chen* includes a first position (shown in *Chen*’s Figure 4) in which bottom out piston **821** is not housed in bottom out cup **84** and a second position (shown in *Chen*’s Figure 5) in which bottom out piston **821** is housed therein. Ex. 1007, p. 5, lines 1-26, FIGS. 4, 5; Ex. 1002, ¶132; Ex. 1003, ¶126.

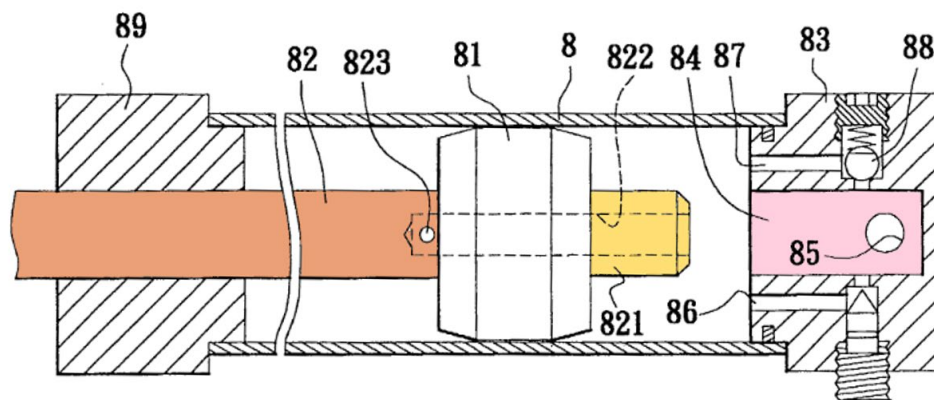


FIG. 4

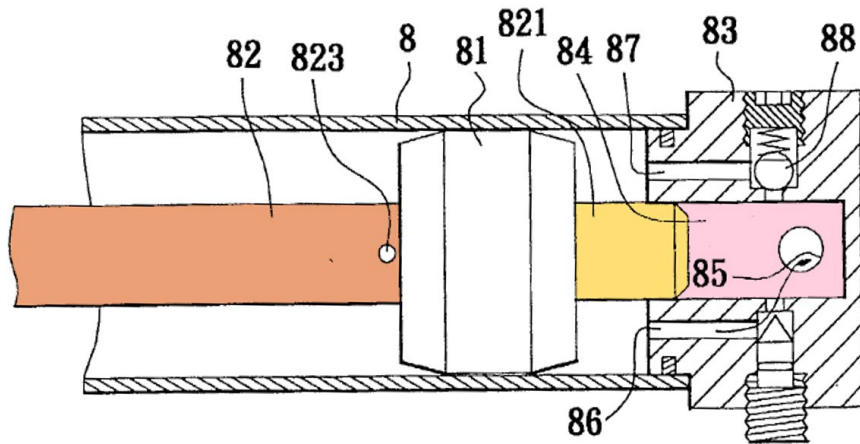
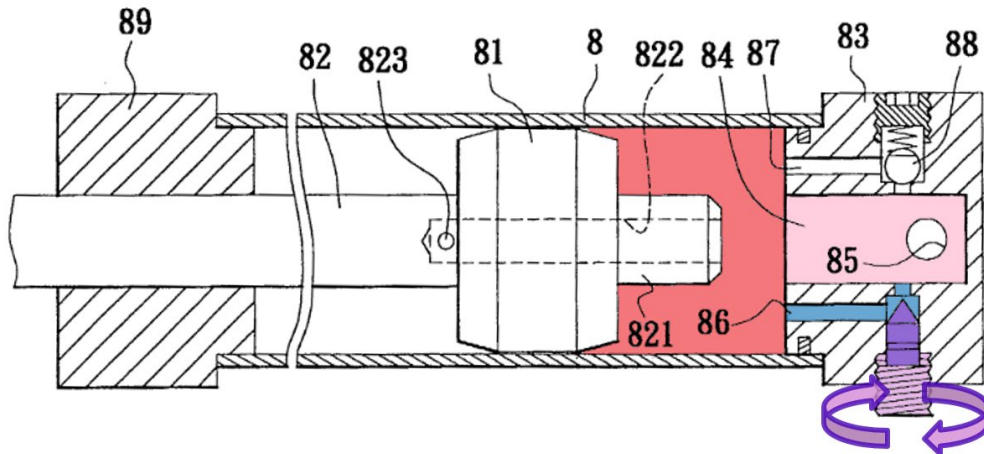


FIG. 5

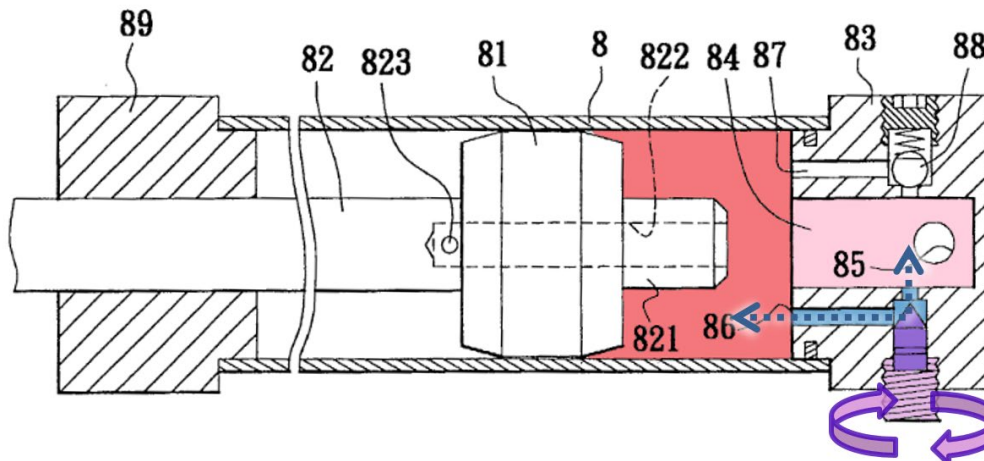
(e) Claim 11[e]

Chen discloses “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.” *Chen* discloses a fluid flow path **86** (dark blue) formed from bottom out cup **84** (pink) for providing fluid communication between cup **84** and the primary compression chamber (light red) during the damper’s compression stroke. The path is adjustable via the screw type needle valve (needle (dark purple), screw (light purple)). This fluid communication

is made regardless of the direction of the fluid flow. Ex. 1007, p. 5, lines 1-26, FIG. 4; Ex. 1002, ¶133; Ex. 1003, ¶127.

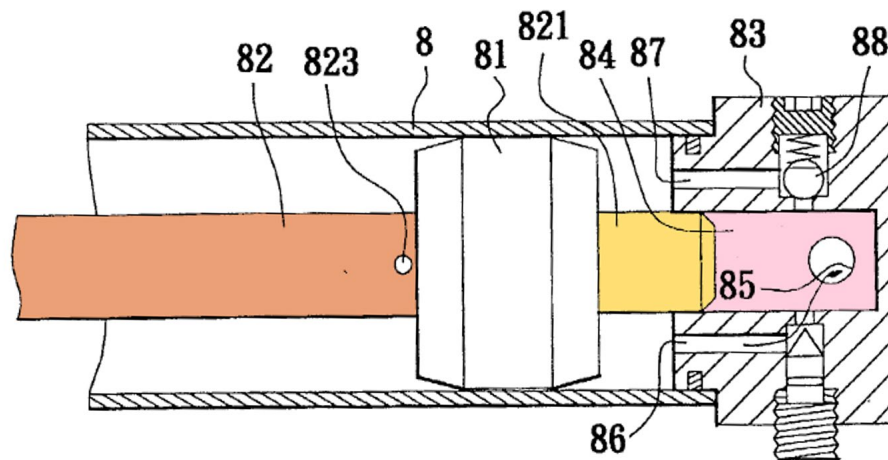


Alternatively, it would have been obvious to a POSITA to substitute *Chen's* simple piston **81** with *Deferme's* adjustable piston in order to provide additional means of adjustment to the damping characteristics of *Chen's* damper. The resulting combination would also allow for fluid to travel in any direction through *Chen's* fluid flow path **86** during a compression stroke. Ex. 1002, ¶135; Ex. 1003, ¶129.



10. Dependent Claim 12

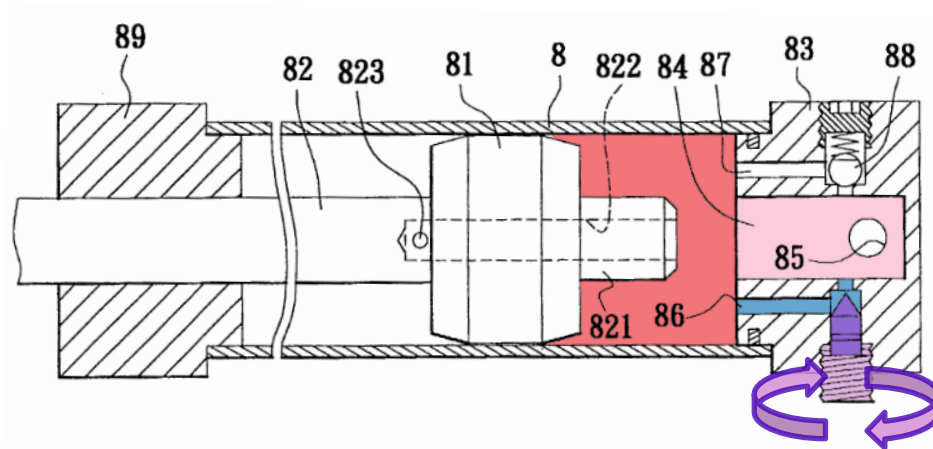
Chen discloses that “in the second position the bottom out piston is sealingly engaged within the bottom out cup.” *Chen*’s bottom out piston **821** (light orange) sealingly engages with bottom out cup **84** (pink) in the second position. Ex. 1007, p. 5, lines 1-26, FIG. 5; Ex. 1002, ¶136; Ex. 1003, ¶130.



11. Dependent Claims 13-15

Chen discloses the limitations of “a fluid flow path formed between the cup and the primary compression chamber; wherein the capacity of the fluid flow path is adjustable” (Claim 13), “an externally accessible adjuster connected to a valve disposed in the flow path” (Claim 14), and “the externally accessible adjuster is manually adjustable” (Claim 15). *Chen* discloses a fluid flow path **86** (dark blue) formed between bottom out cup **84** (pink) and the primary compression chamber (light red) during the damper’s compression stroke. The path is adjustable via the screw type needle valve (needle (dark purple), screw (light purple)). *Chen*’s screw

type needle valve is disposed in the flow path **86** and actuated by a manually adjustable and externally accessible adjuster (screw (light purple)). Ex. 1007, p. 5, lines 1-26, FIG. 4; Ex. 1002, ¶137; Ex. 1003, ¶131.



12. Independent Claim 19

(a) Claim 19[pre]

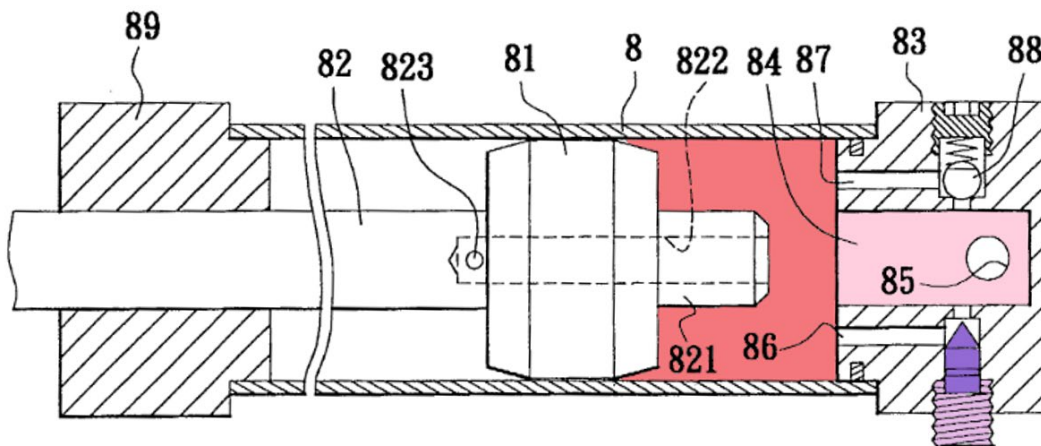
Chen discloses “[a] damper for a shock absorber comprising,” as shown above.

(b) Claim 19[a]

Chen discloses “a fluid”, such as oil. Ex. 1007, p. 5, lines 2-13; Ex. 1002, ¶139; Ex. 1003, ¶133.

(c) Claim 19[b]-19[d]

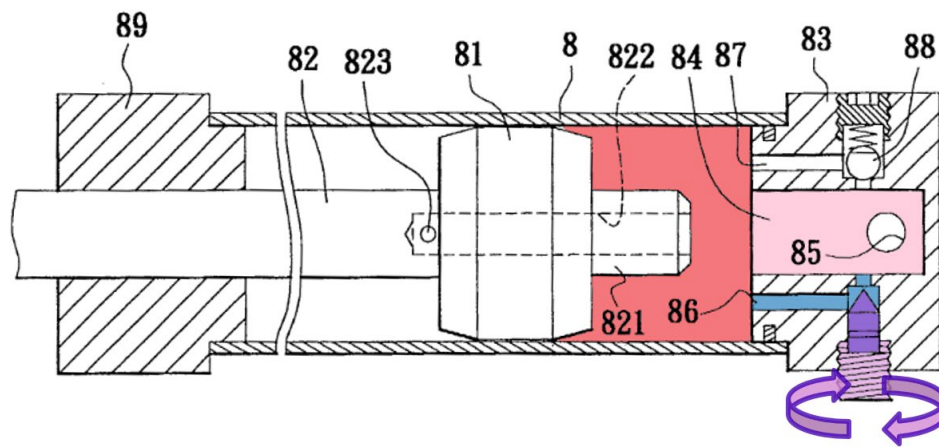
Chen discloses the limitations of 19[b]-19[d], namely “a compression chamber,” “a bottom out cup,” and “a valve.” *Chen* discloses a compression chamber (light red), a bottom out cup **84** (pink), and a screw type needle valve (needle (dark purple), screw (light purple)). Ex. 1007, p. 5, lines 2-13, FIG. 4; Ex. 1002, ¶140; Ex. 1003, ¶134.



(d) Claim 19[e]

Chen discloses that “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.” *Chen* discloses that, during a compression stroke of the damper, the fluid flows from the compression chamber (light red) to bottom out cup **84** (pink) at a first rate with the screw type needle valve (dark purple) in a

first position and at a second rate with the screw type needle valve in a second position. The first rate is greater than the second rate. Further, *Chen's* screw type needle valve (dark purple) includes an adjuster (light purple) that is accessible from the exterior of the shock absorber. Ex. 1007, p. 5, lines 2-13, FIG. 4; Ex. 1002, ¶141; Ex. 1003, ¶135.



Alternatively, 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 the fluid flow path **86** during a compression stroke. Ex. 1002, ¶¶142-144; Ex. 1003, ¶¶136-139. Specifically, *Deferme's* valve **72** would allow fluid to flow from the compression portion (light red) to the rebound portion, and, in this context, there

would be a period of time when the fluid (oil) will flow from bottom out cup **84** to the compression portion.

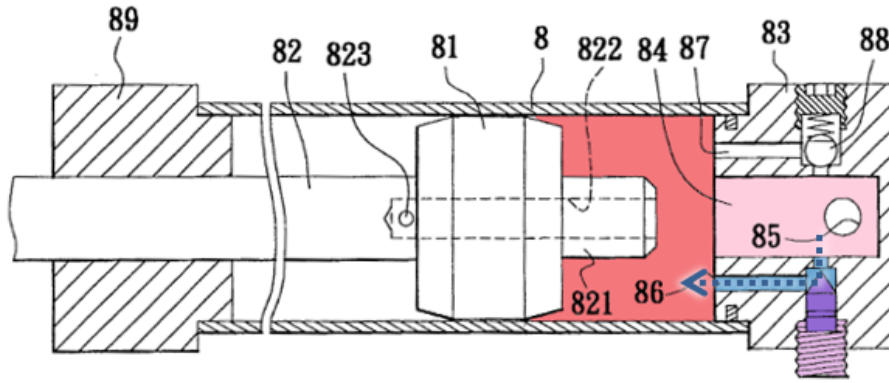


FIG. 4

C. Ground III: Claims 1 through 5, 9, 11 through 15, and 19 are Rendered Obvious Under 35 U.S.C. § 103 by *Fox ‘751* in view of *Chen*

1. *Fox ‘751* discloses a typical damper for a shock absorber

U.S. Patent No. 6,360,751 B2 to Fox (*“Fox ‘751”*) is undisclosed prior art under pre-AIA 35 U.S.C. § 102(b), having filed on January 9, 2002, and issued on August 12, 2003. Ex. 1009, p. 1.

Fox ‘751 discloses a conventional suspension damper for a shock absorber **38** having an overall structure similar to that recited in the Challenged Claims. *Fox ‘751* discloses “[a] dampener [sic] including a valve movable between an open position and a closed position to selectively alter the compression damping rate of the shock absorber.” Ex. 1009, Abstract. Further, *Fox ‘751* discloses “acceleration

sensitive damping arrangements suitable for use in vehicle dampeners [sic] (e.g., shock absorbers, struts, front forks). The damper (volume within the shock body **42**, light green) 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 shim stacks **106**, **110** for restricting the flow of fluid between the compression portion **96** and the rebound portion **98**. The degree of restriction may be adjusted by changing the shim stacks **106**, **110**. Ex. 1009, Abstract, 6:34-7:15; Ex. 1002, ¶68; Ex. 1003, ¶68.

Fox '751's shock absorber **38** is otherwise ripe for improvement, having no specialized bottom out resistance beyond the simple bottom out bumper **94**.

Fox '751 (Fig. 3A)

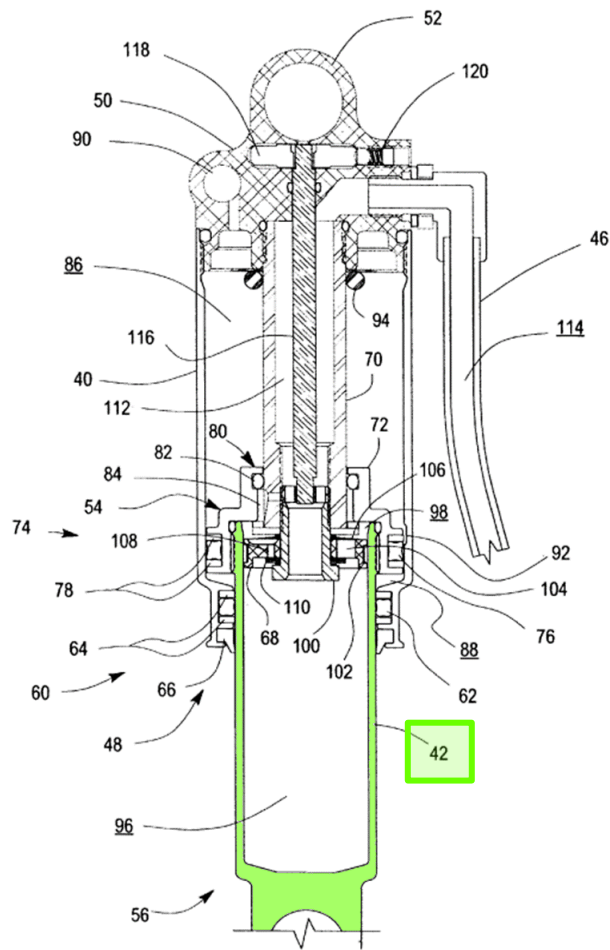


FIG. 3A

Ex. 1009, FIG. 3A; Ex. 1002, ¶69; Ex. 1003, ¶69.

2. It would have been obvious to a POSITA to modify *Fox '751* with *Chen*, thereby yielding the subject matter of Claims 1-5, 9, 11-15, and 19

Combining *Fox '751* and *Chen* is straightforward: 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**.

Fox '751 discloses a simple shock absorber **38** including a damper (volume within the shock body **42**, light green) that is ripe for improvement:

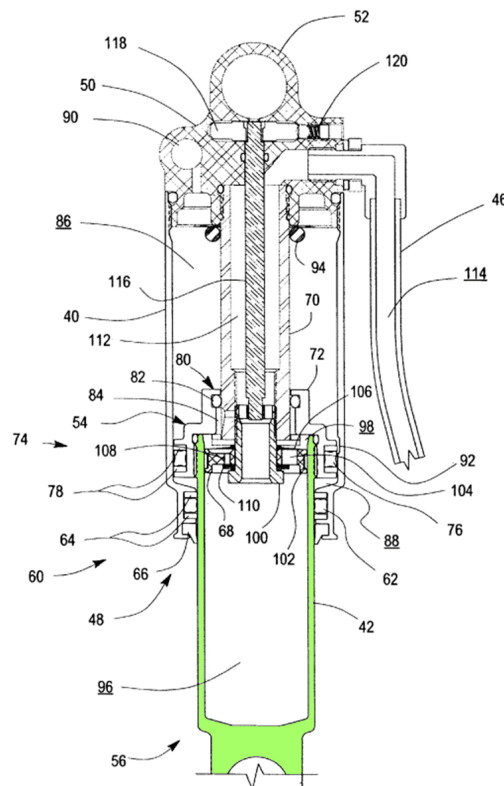


FIG. 3A

Ex. 1009, FIG. 3A. *Fox* '751's damper does not include any form of specialized bottom out resistance beyond the simple bottom out bumper **94**. Ex. 1002, ¶¶82-83; Ex. 1003, ¶¶82-83.

Such bottom out resistance may be provided by *Chen*'s bottom out cup system. Specifically, *Chen*'s bottom out cup **84** may be directly added into *Fox* '751's damper. In addition, to get the most out of the bottom out system, *Chen* may be modified to include *Chen*'s three passageways from the bottom out cup: two passageways **86**, **87** from the bottom out cup **84** to the compression portion of the damper and one passageway **822**, **823** from the bottom out cup **84** to the rebound portion. Ex. 1002, ¶84; Ex. 1003, ¶84.

The combination of *Fox* '751 and *Chen* 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 (*Chen*'s bottom out cup system may be directly integrated into *Fox* '751's damper). The combination of *Fox* '751 and *Chen* 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). A POSITA would expect the combination to yield and obtain easily predictable results (that *Chen*'s bottom out cup system would allow for adjustable bottom out resistance in *Fox* '751's damper), at least because each element in the combination is being incorporated and used as intended. In addition,

mechanical arts like those discussed in *Chen* and *Fox '751* have previously been found to be predictable. *See, e.g., Cedarapids*, 121 F.3d 727 at *2. Ex. 1002, ¶85; Ex. 1003, ¶85.

3. Independent Claim 1

(a) Claim 1 ``` [pre] ```

Fox '751 discloses “[a] damper for a shock absorber comprising.” *Fox '751* discloses a damper (volume within shock body **42**, light green) for a shock absorber **38**. Ex. 1009, FIG. 3A; Ex. 1002, ¶145; Ex. 1003, ¶140.

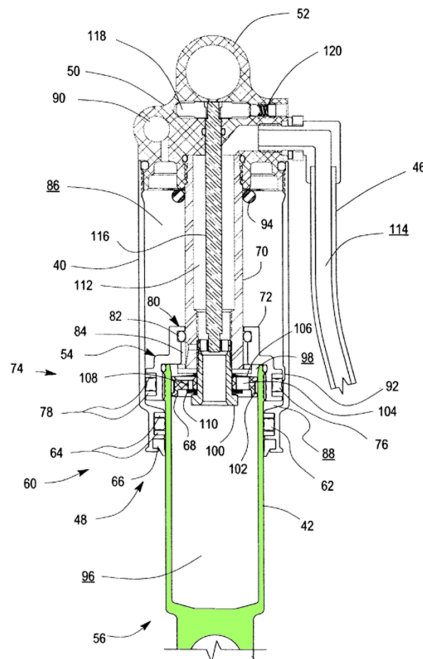


FIG. 3A

(b) Claim 1[a]

Fox '751 discloses “a damper chamber divided by a piston and shaft into a compression and rebound portions.” *Fox '751* discloses a damper chamber **42** (light

green) that is divided by a piston **68** (yellow) and a piston shaft/rod **70** (dark orange) into a compression portion **96** (light red) and a rebound portion **98** (dark green). Ex. 1009, FIG. 3A; Ex. 1002, ¶146; Ex. 1003, ¶141.

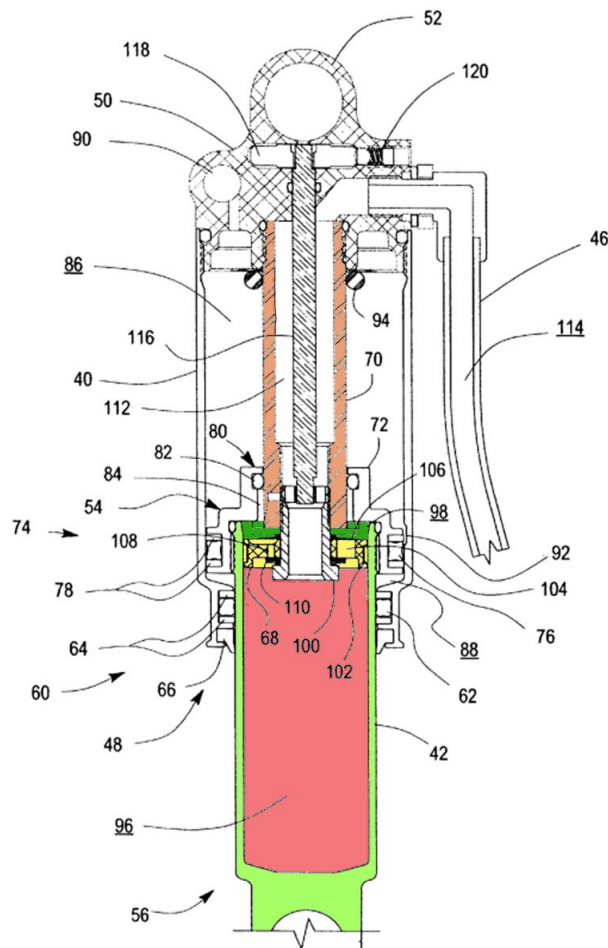
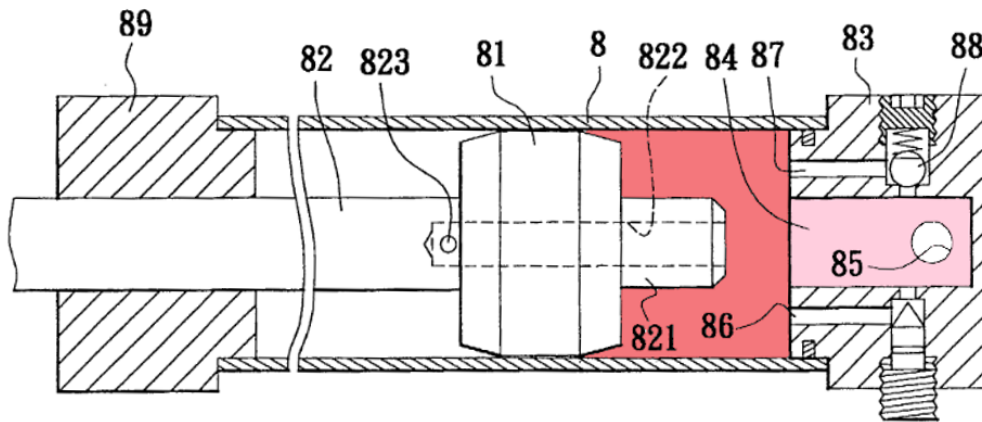


FIG. 3A

(c) Claim 1[b]

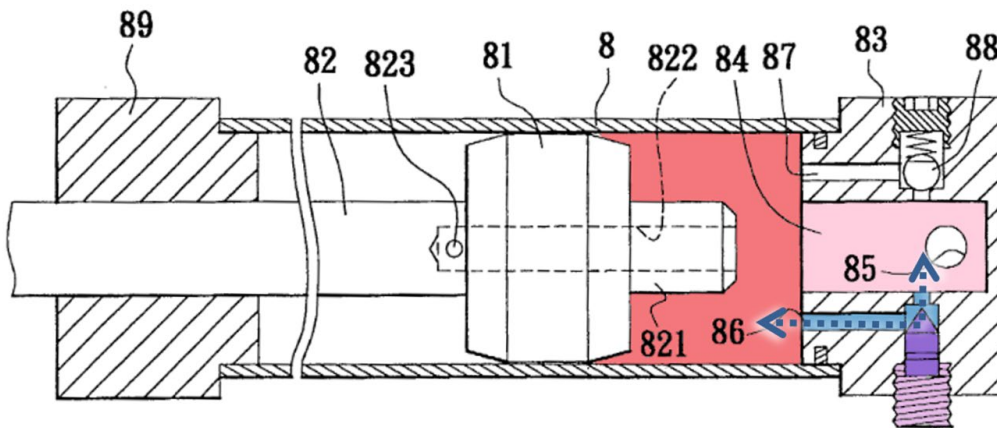
Fox '751 in view of *Chen* (“*Fox '751/Chen*”) discloses “a bottom out cup formed at an end of the compression portion.” *Chen* discloses a bottom out cup **84** (pink) formed at the end of *Chen*’s compression portion (light red). Ex. 1007, p. 5,

lines 5-13, FIG. 4. It would have been obvious to incorporate the bottom out protection elements from *Chen* into *Fox '751* for at least the reasons discussed above. Ex. 1002, ¶147; Ex. 1003, ¶142.



(d) Claim 1[c]

Fox '751/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,” as shown in *Chen’s* Claim element 1[c], above.



(e) Claim 1[d]

Fox '751/Chen discloses “wherein the capacity of the fluid flow path is adjustable,” as shown in *Chen's* Claim element 1[d], above.

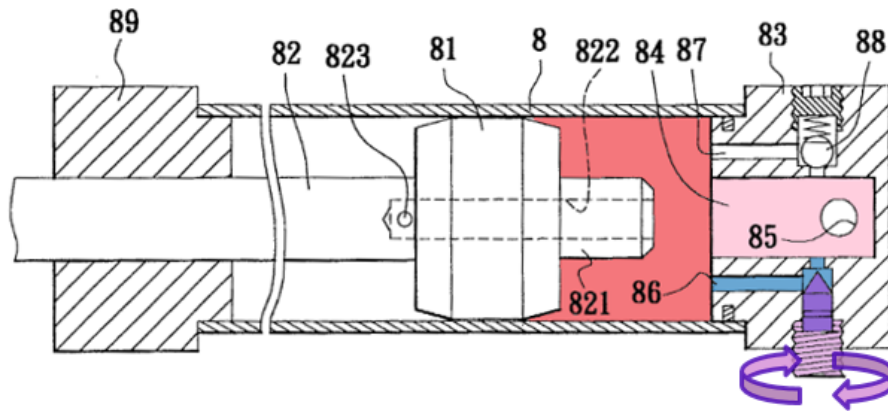


FIG. 4

4. Dependent Claims 2-3

Fox '751/Chen 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), as shown in the discussion of *Chen's* Claims 2-3 above.

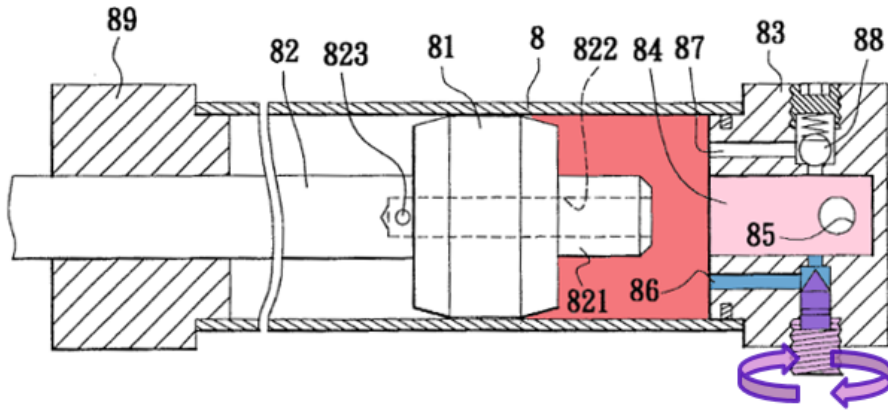


FIG. 4

5. Dependent Claim 4

Fox ‘751/*Chen* in view of *Kodama*, disclose that “the adjustable valve can be adjusted between a closed position and a plurality of open positions” (Claim 4), as shown in the discussion of *Chen*’s Claim 4 above.

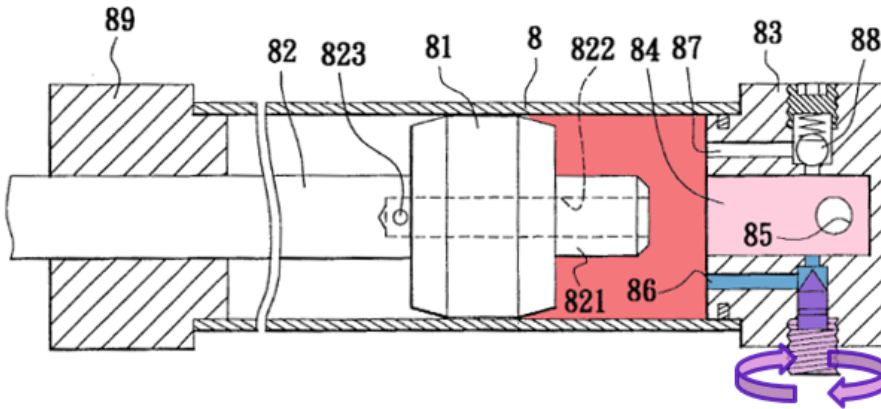
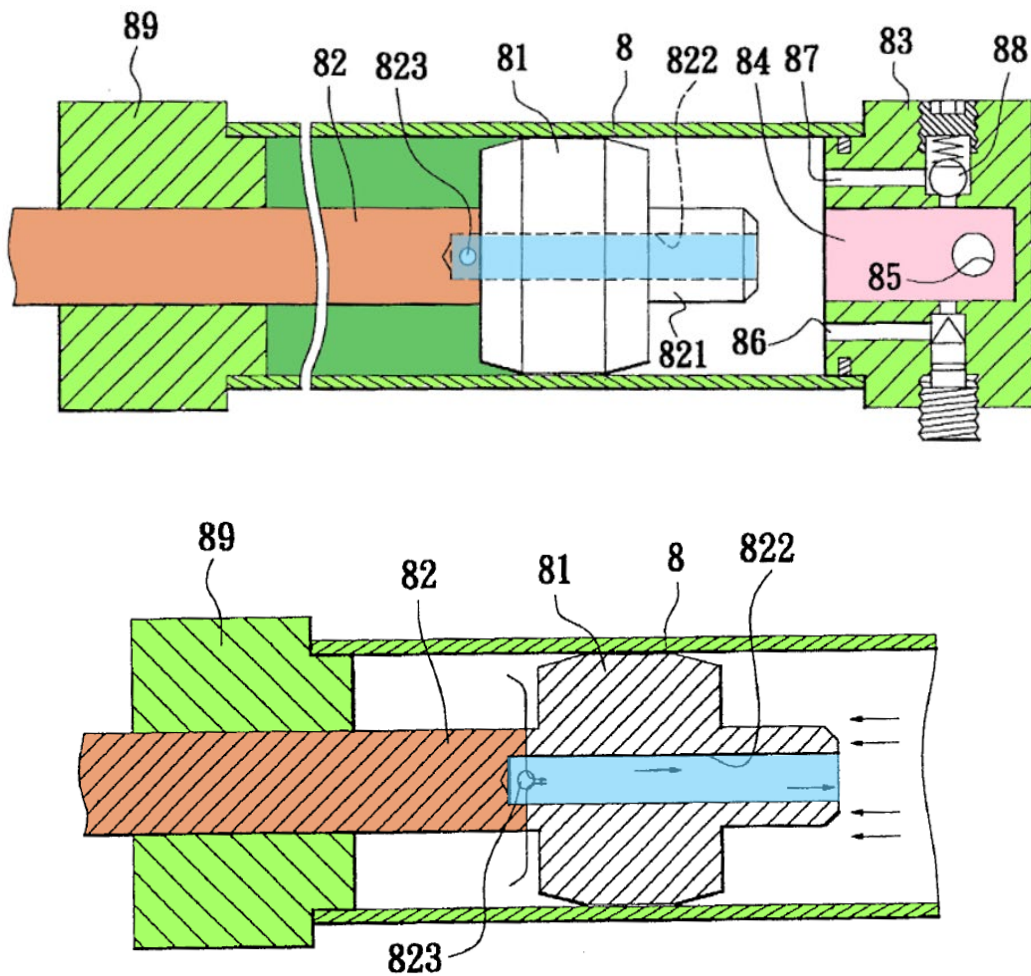


FIG. 4

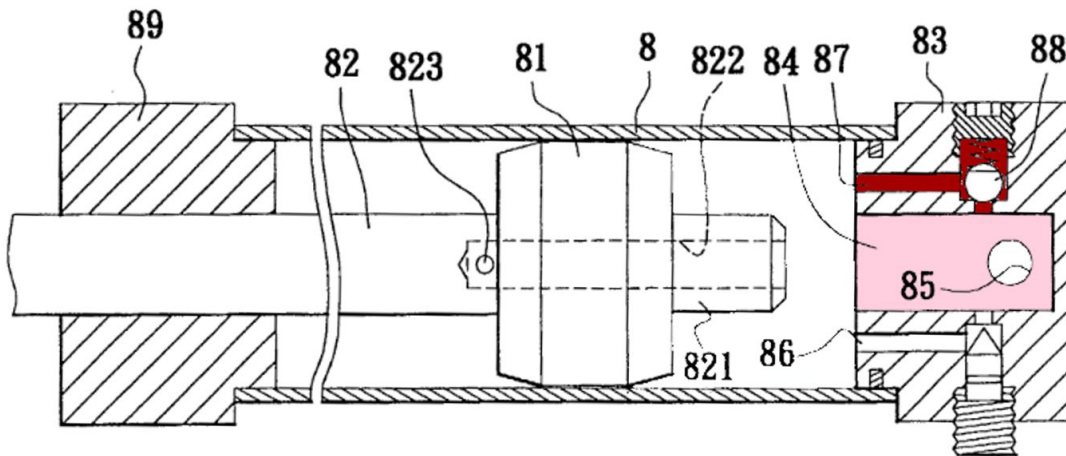
6. Dependent Claim 5

Fox '751/Chen discloses “a fluid path between the cup and the rebound portion of the chamber, the path formed in the shaft,” as shown in *Chen's* Claim element 5 above and Figures 4 and 6 below.



7. Dependent Claim 9

Fox '751/Chen discloses “a second fluid flow path within the bottom out cup”, namely a second fluid path **87** (dark red) within the bottom out cup **84** (pink). Ex. 1007, p. 5, lines 1-26, FIG. 4; Ex. 1002, ¶152; Ex. 1003, ¶147.



8. Independent Claim 11

(a) Claim 11[pre]

Fox '751 discloses "[a] fluid damper comprising," as shown above.

(b) Claim 11[a]

Fox '751 discloses “a damper chamber divided by a piston mounted on a movable rod, into a primary compression and a primary rebound chamber.” *Fox '751* discloses a damper chamber **42** (light green) that is divided by a piston **68** (yellow) mounted on a piston shaft/rod **70** (dark orange) into a primary compression

chamber **96** (light red) and a primary rebound chamber **98** (dark green). Ex. 1009, FIG. 3A; Ex. 1002, ¶154; Ex. 1003, ¶149.

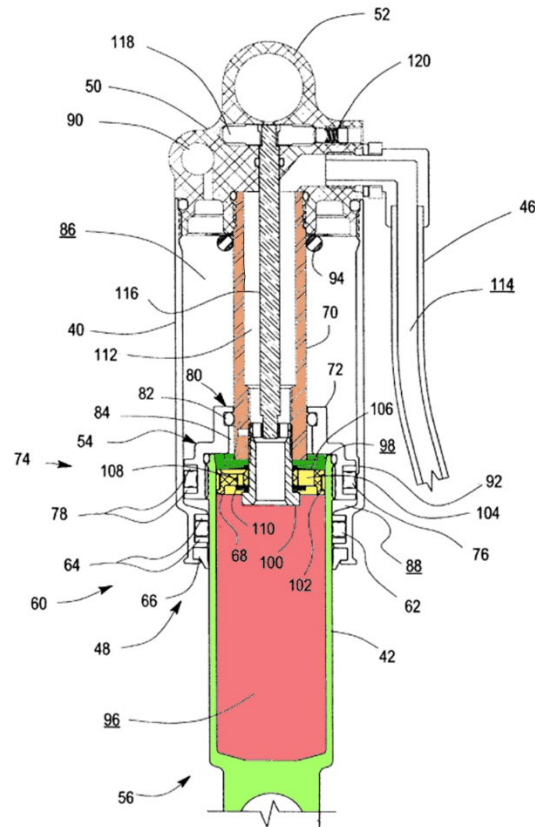
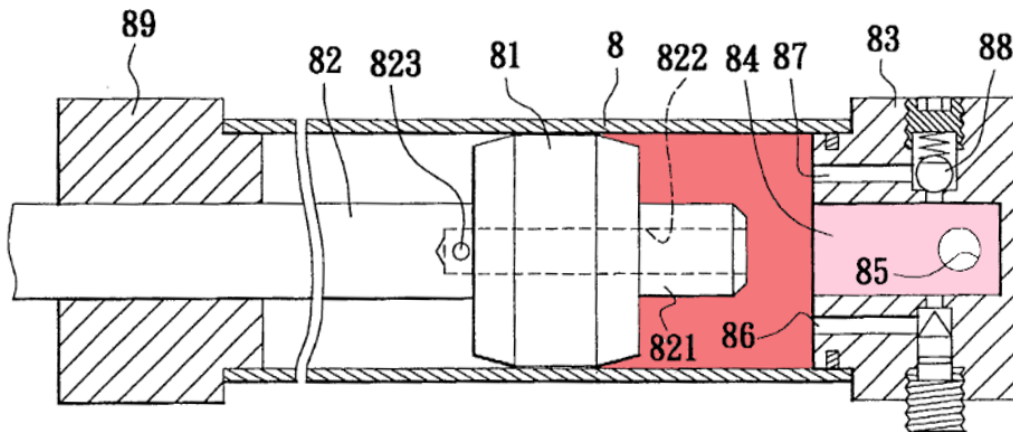


FIG. 3A

(c) Claim 11[b]

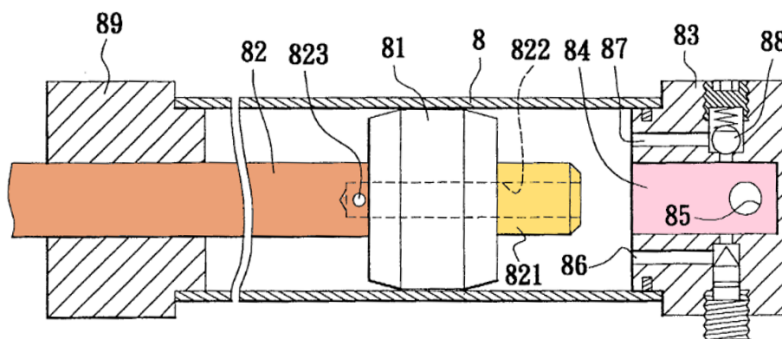
Fox '751/Chen discloses “a bottom out cup in fluid communication with the damper chamber,” as shown in *Chen's* Claim element 11[b], above. It would have

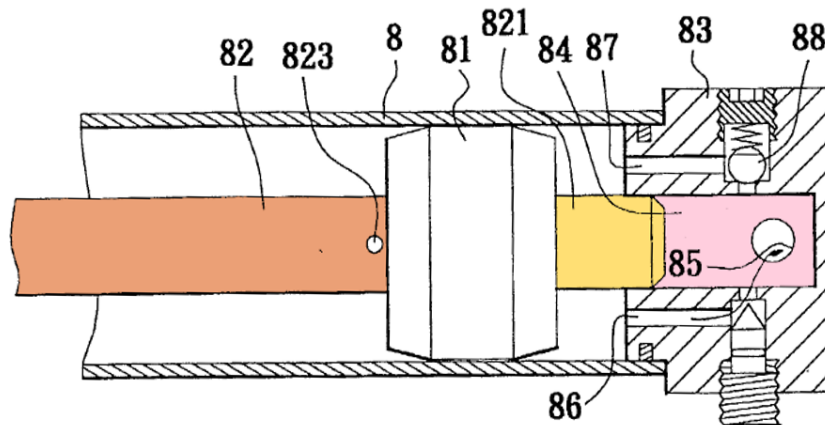
been obvious to incorporate the bottom out protection elements from *Chen* into *Fox* '751 for at least the reasons discussed above.



(d) Claims 11[c]-11[d]

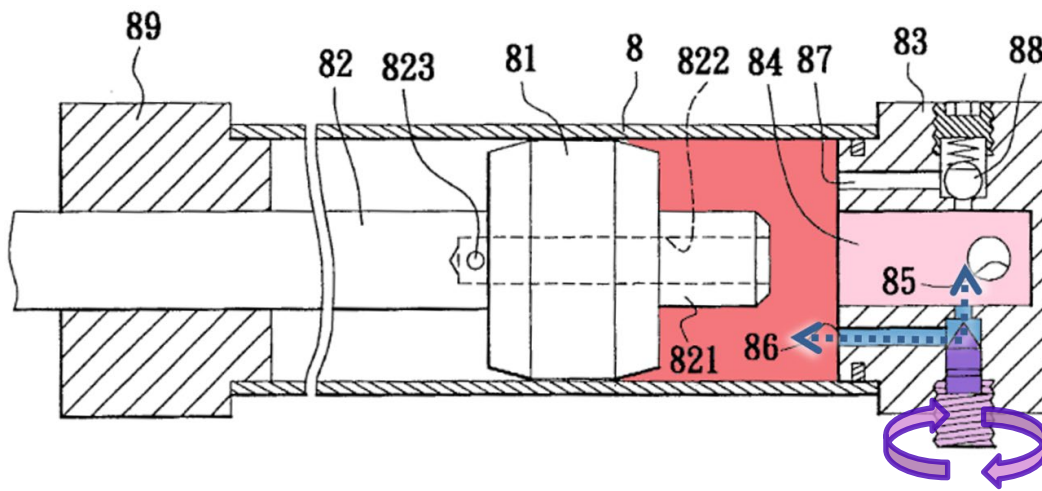
Fox '751/*Chen* discloses the limitations of 11[c]-11[d], namely, “a bottom out piston formed on the movable rod for sealingly engaging an interior of the bottom out cup,” and “the damper including a first position in which the bottom out piston is not housed in the bottom out cup and a second position in which the bottom out piston is housed therein,” as shown in *Chen*’s Claim elements 11[c]-11[d], above.





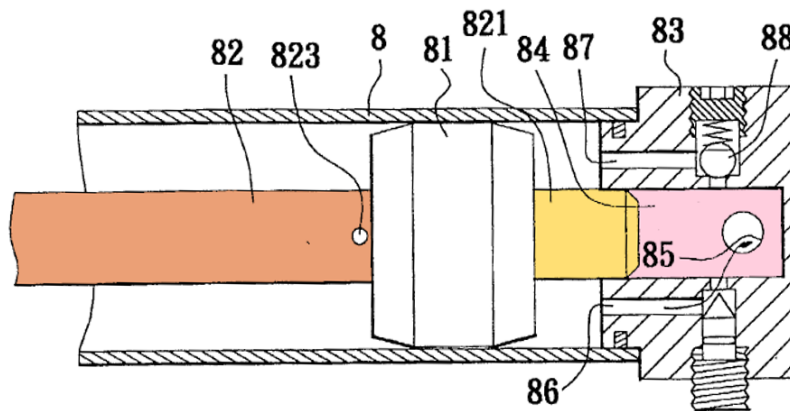
(e) Claim 11[e]

Fox '751/Chen discloses “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,” as shown in *Chen's* Claim element 11[e], above. *Fox '751/Chen* would allow for fluid to travel in any direction through *Chen's* fluid flow path **86** during compression due to *Fox '751's* fluid passages **104**.



9. Dependent Claim 12

Fox '751/Chen discloses that “in the second position the bottom out piston is sealingly engaged within the bottom out cup,” as shown in *Chen's* Claim element 12.



10. Dependent Claims 13-15

Fox '751/Chen discloses “a fluid flow path formed between the cup and the primary compression chamber; wherein the capacity of the fluid flow path is adjustable” (Claim 13), “an externally accessible adjuster connected to a valve disposed in the flow path” (Claim 14), and “the externally accessible adjuster is manually adjustable” (Claim 15), as shown in *Chen's* Claim elements 13-15 above.

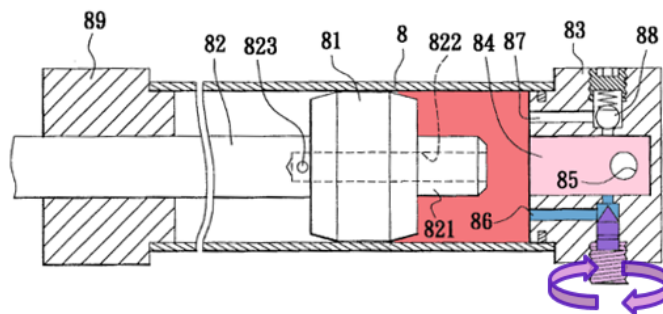


FIG. 4

11. Independent Claim 19

(a) Claim 19[pre]

Fox '751 discloses “[a] damper for a shock absorber comprising,” as shown above.

(b) Claim 19[a]

Fox '751 discloses “a fluid”, such as oil. Ex. 1009, 6:26-34, 11:42-53, 16:25-32; Ex. 1002, ¶161; Ex. 1003, ¶156.

(c) Claims 19[b]-19[d]

Fox '751/Chen shows the limitations of 19[b]-19[d], namely “a compression chamber,” “a bottom out cup,” and “a valve.” *Fox '751* includes a compression chamber 96 (light red). Ex. 1009, FIG. 3A; Ex. 1002, ¶162; Ex. 1003, ¶157.

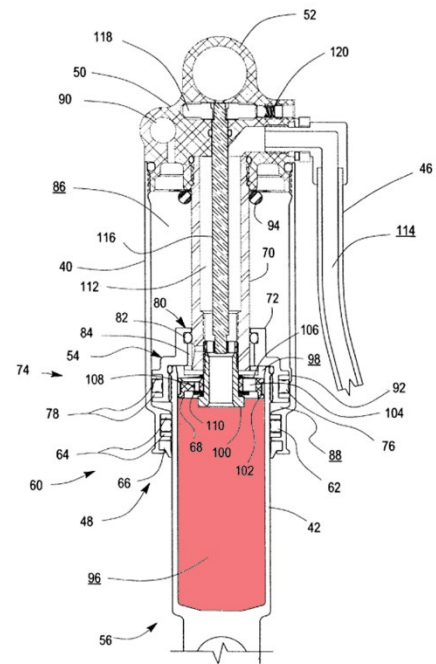
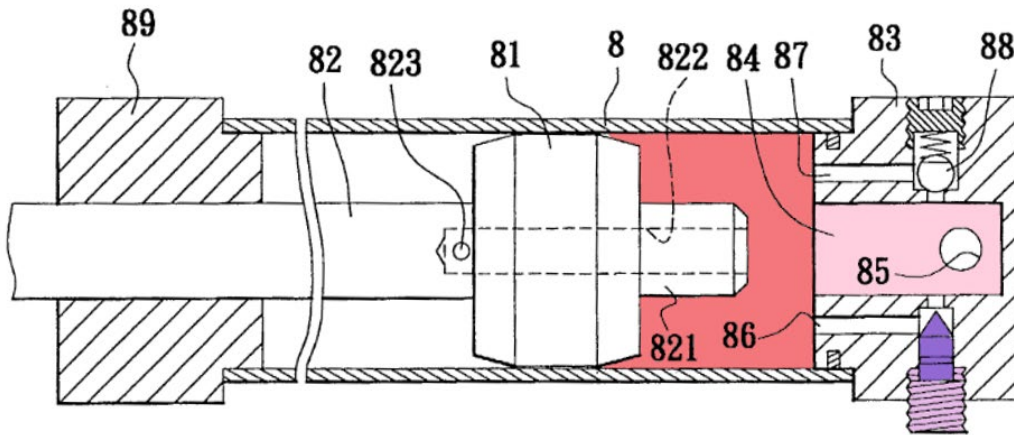


FIG. 3A

Further, *Fox '751/Chen* includes a compression chamber (light red), bottom out cup **84** (pink), and a screw type needle valve (needle (dark purple), screw (light purple)). Ex. 1007, p. 5, lines 2-13, FIG. 4.

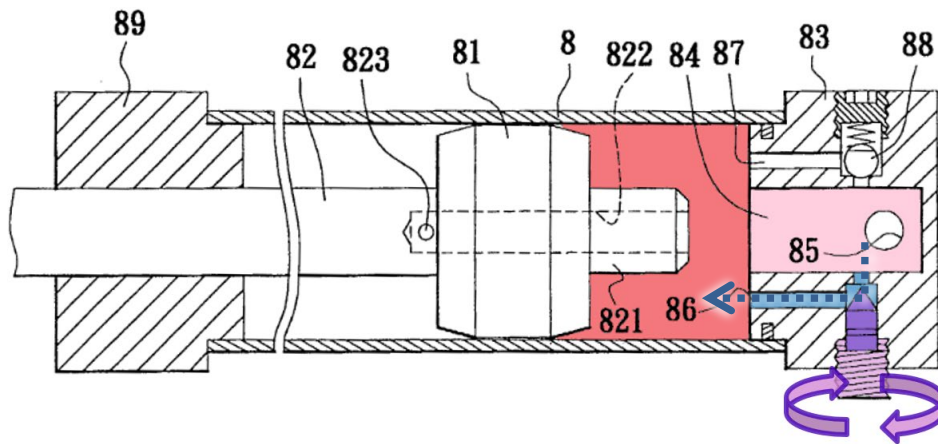


It would have been obvious to incorporate the bottom out protection elements from *Chen* into *Fox '751* for at least the reasons discussed above. Ex. 1002, ¶¶163, 81-85; Ex. 1003, ¶¶158, 81-85.

(d) Claim 19[e]

Fox '751/Chen discloses that “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.” *Fox '751/Chen* would provide that, during a compression stroke of the damper, the fluid flows from the bottom out cup **84** (pink) to the compression chamber (light red) at a first rate with the screw

type needle valve (needle (dark purple), screw (light purple)) in a first position and at a second rate with the screw type needle valve (needle (dark purple), screw (light purple)) in a second position. The first rate is greater than the second rate. Further, *Chen's* screw type needle valve (needle (dark purple), screw (light purple)) includes an adjuster (light purple) that is accessible from the exterior of the shock absorber (the hydraulic cylinder **8**). When the bottom out piston **821** and the bottom out cup **84** are together and the device continues to compress, the pressure within the bottom out cup **84** will rise, along with the pressure in the compression portion. *Fox 751's* fluid passages **104** will allow fluid to flow from the compression portion **96** to the rebound portion **98**, and, in this context, there would be a period of time when the fluid (oil) will flow from the bottom out cup **84** to the compression portion. Ex. 1007, p. 5, lines 2-13, FIG. 4; Ex. 1002, ¶¶164-167; Ex. 1003, ¶¶159-162.



D. Ground IV: Claims 5-9 Are Rendered Obvious by *Fox* ‘751 in View of *Chen* and Further in View of *Nakaya* and/or *Kodama*

- 1. It would have been obvious to a POSITA to modify *Fox* ‘751 in view of *Chen* and further in view of *Nakaya* and/or *Kodama*, thereby yielding the subject matter of Claims 5-9**

Combining *Nakaya* and/or *Kodama* with *Fox* ‘751 in view of *Chen* (“*Fox* ‘751/*Chen*”) is straightforward: 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**). Ex. 1002, ¶86; Ex. 1003, ¶86.

A POSITA would have been motivated to modify *Fox* ‘751/*Chen* to have this means for adjusting the flow of fluid through the relevant reference’s piston at least because such adjustment would allow for a more versatile device having a range of damping and spring values. Moreover, such a modification would have been predictable at least because the process of modifying *Fox* ‘751/*Chen* would have been simple to a POSITA, and the combined device with *Nakaya* and/or *Kodama* would be reasonably expected to function to allow an adjustable fluid flow through

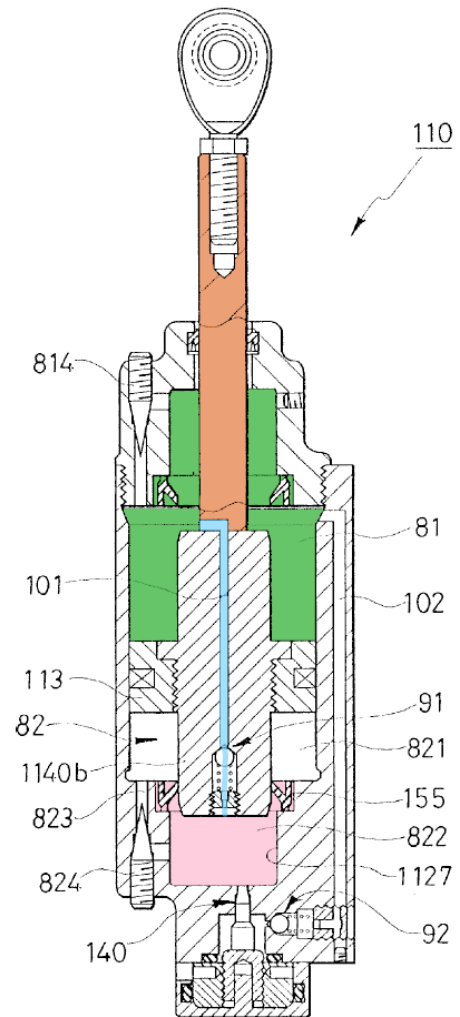
the relevant reference's piston shaft/rod. After all, *Fox '751/Chen* each include a similar structure to allow such a fluid flow. Ex. 1002, ¶87; Ex. 1003, ¶87.

A POSITA would have understood that this simple substitution would have been predicted to work as intended and that the results of the modification/substitution would have been predictable. Further, this modification would have merely been the application of a known technique (the use of a flow path through a piston shaft) to a known device (*Fox '751/Chen*'s damper) that was ready for improvement, and the results would have been predictable, as discussed above. *Nakaya* and/or *Kodama* would be used in the same way in the combination of *Fox '751/Chen* with *Nakaya* and/or *Kodama* as it is used in *Nakaya* or *Kodama*, respectively. A POSITA would expect success from adding *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**) within *Fox '751/Chen*'s piston shaft/rod. Ex. 1002, ¶88; Ex. 1003, ¶88. In addition, mechanical arts like those discussed in these references have previously

been found to be predictable. *See, e.g., Cedarapids*, 121 F.3d 727 at *2. Ex. 1002, ¶85; Ex. 1003, ¶85.

2. Dependent Claim 5

In addition to meeting the limitations of claim 1 as set forth above, *Fox '751/Chen* in view of *Nakaya* discloses “a fluid path between the cup and the rebound portion of the chamber, the path formed in the shaft.” As discussed above, *Nakaya* discloses a fluid path **101** (light blue) between a bottom out cup **1125**, **1127** (pink) and a rebound portion **81** (dark green) that is formed in the piston shaft/rod **114** (dark orange). It would have been obvious to incorporate the additional fluid path elements from *Nakaya* into *Fox '751/Chen* for at least the reasons discussed above Ex. 1005, FIG. 8; Ex. 1002, ¶168; Ex. 1003, ¶163.



Alternatively, *Fox '751/Chen* in view of *Kodama* discloses each and every element of this limitation. As discussed above, *Kodama* discloses an adjustable flow path including *Kodama's* throttle valve **30** (light blue), needle valve **32** (dark purple), and adjusting screw **34** (light purple). It would have been obvious to incorporate the

additional fluid path elements from *Kodama* into *Fox '751/Chen* for at least the reasons discussed above.

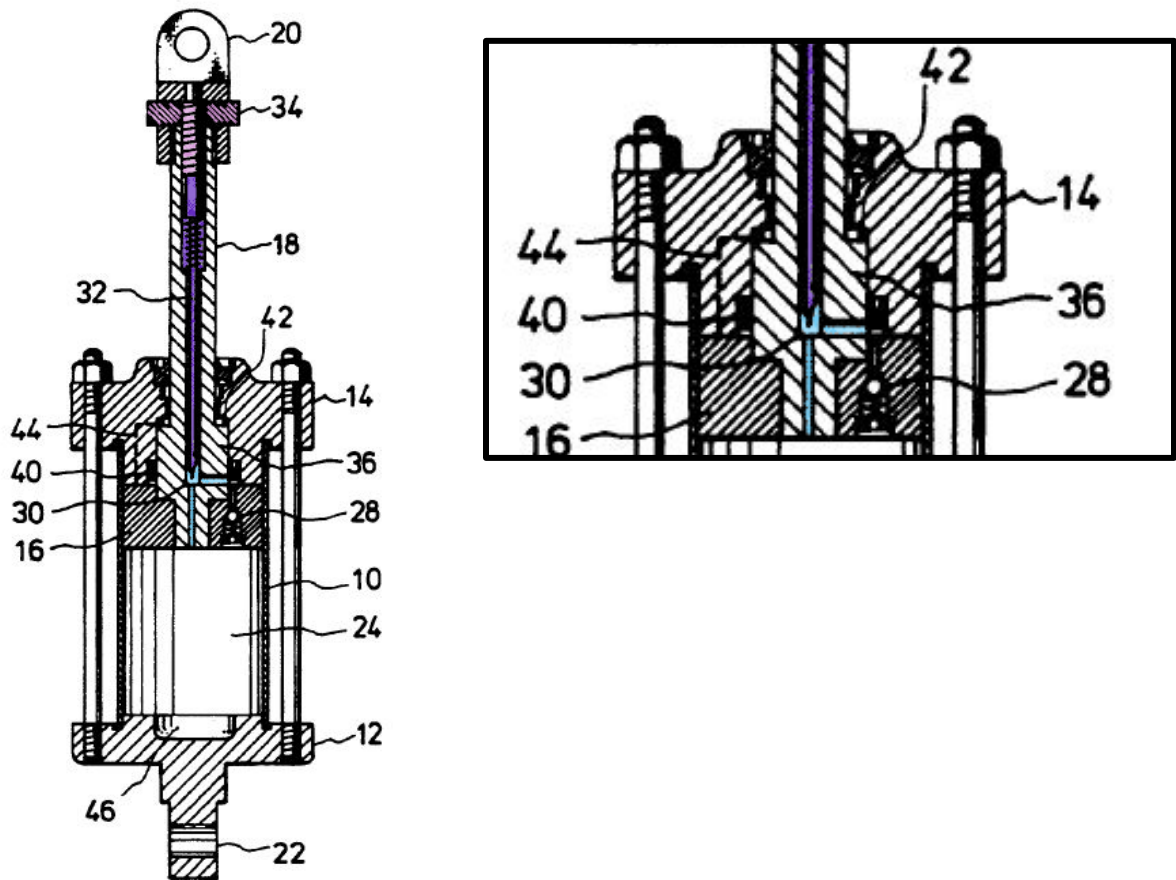


FIG. 2

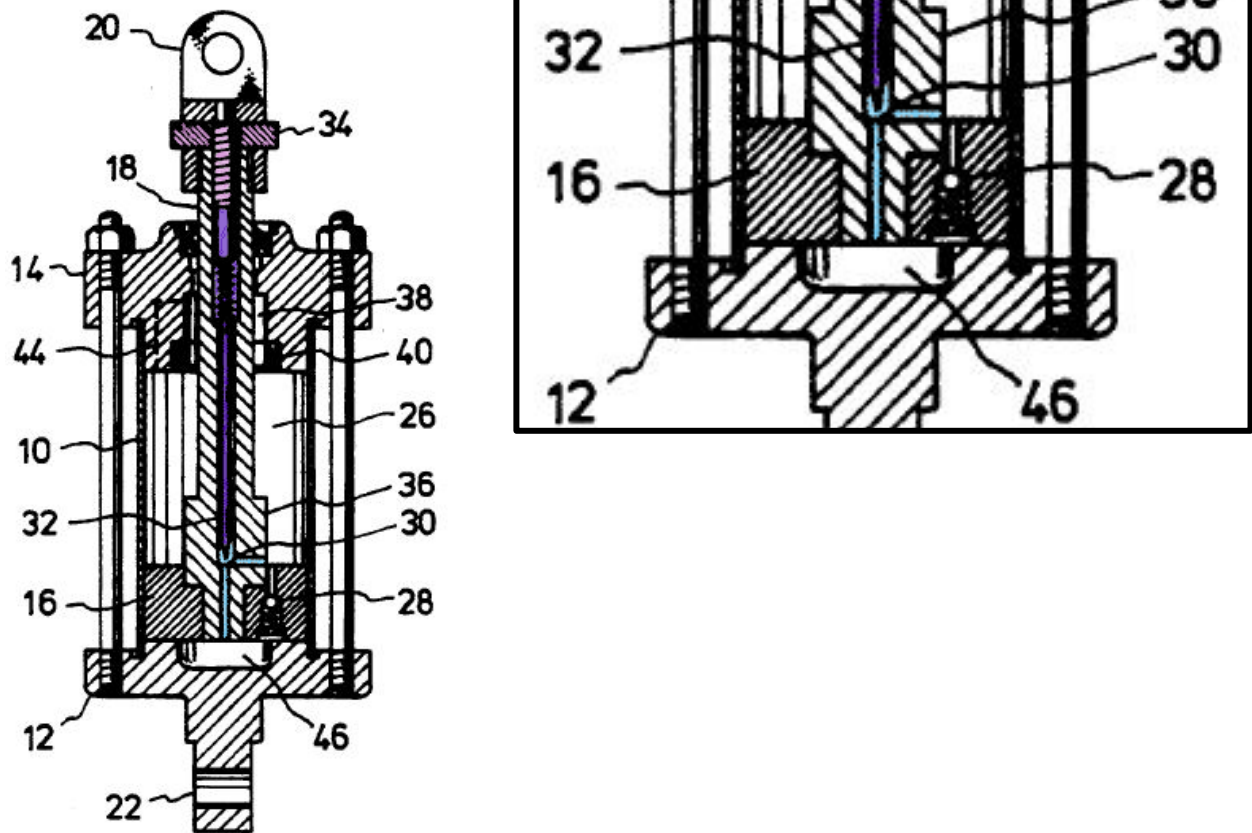


FIG. 3

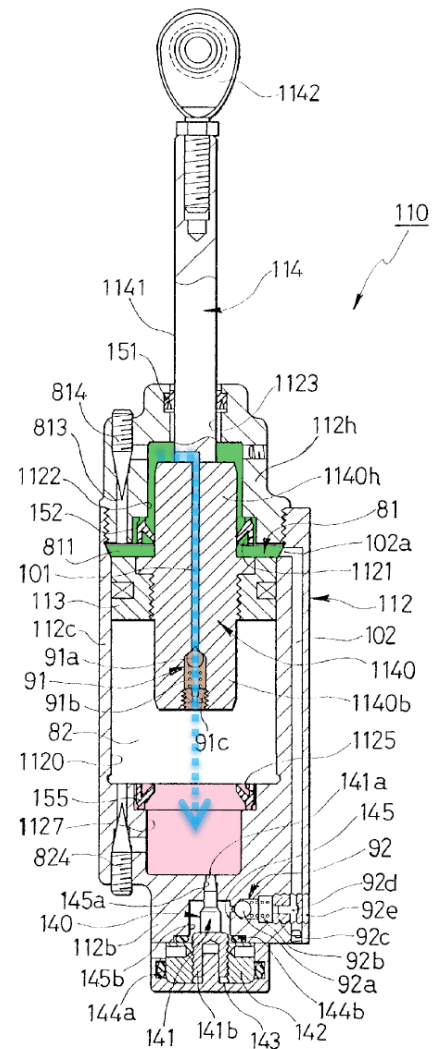
Ex. 1006, FIGS. 2, 3; Ex. 1002, ¶169; Ex. 1003, ¶164.

3. Dependent Claim 6

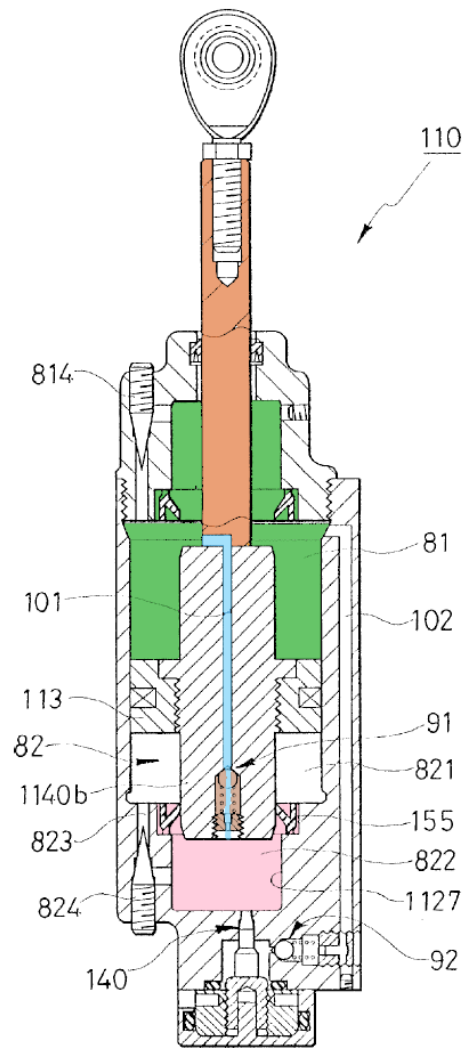
Fox '751/Chen in view of *Nakaya* discloses “the path between the cup and rebound portion is adjustable with a check valve to permit flow of fluid in a single direction between the cup and the rebound portion.” As discussed above, *Nakaya* discloses that the fluid path (the first passage **101**) (light blue) between cup **1125**, **1127** (pink) and rebound portion **81** (dark green) is adjustable with a check valve **91** (light brown) to permit flow of fluid in a single direction between the cup and the rebound portion. Ex. 1005, FIG. 7; Ex. 1002, ¶170; Ex. 1003, ¶165.

4. Dependent Claim 7

Fox '751/Chen in view of *Nakaya* discloses “the check valve is arranged in the path to permit fluid communication between the rebound portion and the cup during a rebound stroke of the shaft.” As discussed above, *Nakaya* discloses that check valve **91** (light brown) is arranged in fluid path **101** (light blue) between cup **1125**, **1127** (pink) and rebound portion **81** (dark green)



to permit fluid communication between the cup and the rebound portion **81** (dark green) during a rebound stroke of the shaft **114** (dark orange).

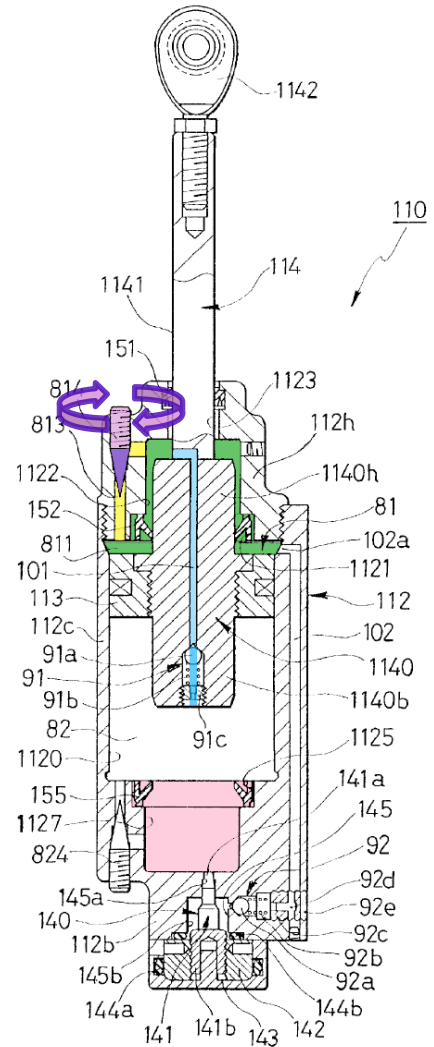


Ex. 1005, FIG. 8; Ex. 1002, ¶171; Ex. 1003, ¶166.

5. Dependent Claim 8

Fox '751/Chen in view of *Nakaya* discloses “the volume of fluid traveling through the fluid path is user-adjustable.” *Nakaya* discloses that the quantity of fluid traveling through the fluid path is adjustable via the screw type needle valve **814**

(needle (dark purple), screw (light purple)). This is because there are two outlets for pressurized fluid within the rebound portion **81** (dark green) and the top out cup **1121**, **1122** during a rebound stroke: the throttle passage **813** (yellow) and the first passage **101** (light blue). The resistance to fluid flowing through the throttle passage **813** may be adjusted via the screw type needle valve **814**. Thus, although the volume of first passage **101** is not explicitly adjustable, the quantity of fluid being sent through first passage **101** is adjustable by varying the size of throttle passage **813** using screw type needle valve **814**, at least while top out piston **1140h** is engaged with seal **152**. Ex. 1005, FIG. 7; Ex. 1002, ¶¶172-174; Ex. 1003, ¶¶167-169.



Alternatively, it would have been obvious to a POSITA to modify *Nakaya* to include *Kodama*'s adjustable flow path including *Kodama*'s throttle valve **30** (light blue), needle valve **32** (dark purple), and adjusting screw **34** (light purple), for the

reasons discussed above. Ex. 1006, 1:22-56, FIGS. 2, 3; Ex. 1002, ¶175; Ex. 1003, ¶170.

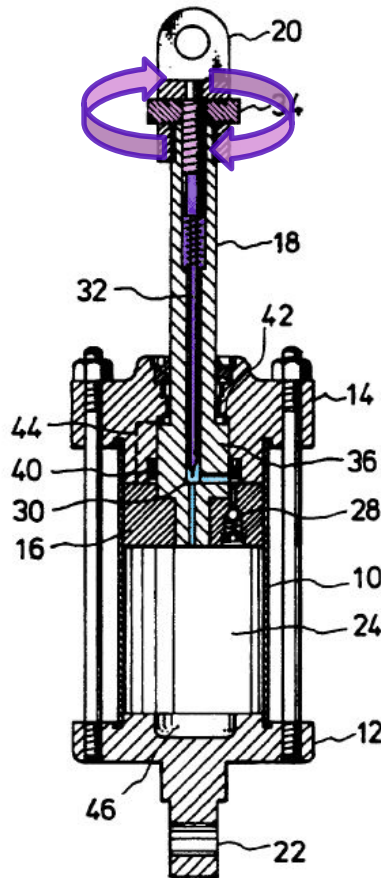


FIG. 2

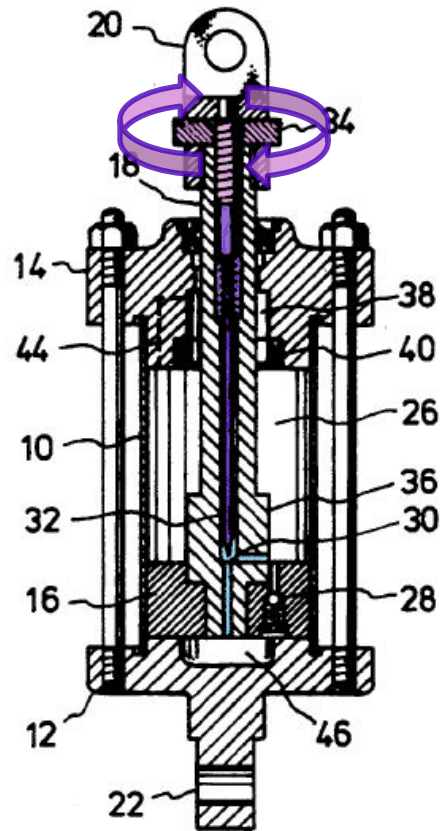
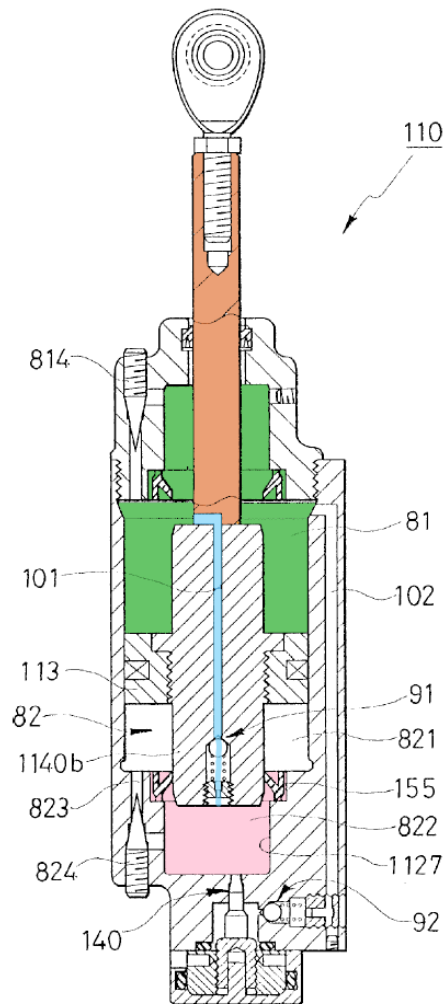


FIG. 3

6. Dependent Claim 9

Fox '751/Chen in view of *Nakaya* discloses “a second fluid flow path within the bottom out cup.” *Nakaya* discloses a second flow path **101** (light blue) through

the piston shaft/rod (dark orange). Ex. 1005, FIG. 8; Ex. 1002, ¶176; Ex. 1003, ¶171.



E. Ground V: Claims 1-5, 9, and 19 Are Anticipated Under 35 U.S.C. § 102 by *Gartner*

1. *Gartner* discloses a damper having a passage between a bottom out cup and a compression portion

U.S. Patent No. 8,162,112 B2 to Gartner et al. (“*Gartner*”) is prior art under pre-AIA 35 U.S.C. § 102(e), having been filed on February 11, 2008, and related to U.S. Provisional Patent Application No. 60/889,050, filed on February 9, 2007.

Ex. 1010, p. 1. The disclosure of *Gartner*’s provisional application supports the earlier February 9, 2007 filing date. Ex. 1002, ¶70; Ex. 1003, ¶70. In any case, *Gartner* is 102(e) prior art based on its utility application’s February 11, 2008 filing date.

Gartner discloses a damper to be used in a shock absorber **420**, the damper having both bottom out resistance facilitated by “multiple fluid flowpaths during compression[.]” Ex. 1010, Abstract. The damper is formed within the volume of the cylinder **26** (light green) that is capped on one end by an end cap **26.2** (light green). A piston **22** (yellow) divided this volume into a compression

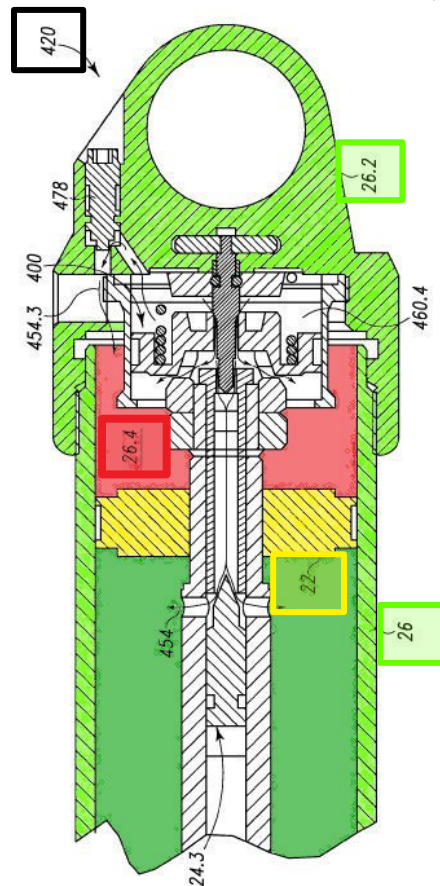


Fig. 12A

portion **26.5** (dark green) and a rebound portion **26.4** (light red). *See* Ex. 1010, 3:54-4:4, 9:33-48, FIGS. 1, 7, 12A-12C; Ex. 1002, ¶71; Ex. 1003, ¶71.

Gartner includes an additional compression volume **460.4** (pink), which is the same as the claimed bottom out cup. As can be seen in Figure 12A below, *Gartner* discloses the use of an auxiliary path **454.3** (dark blue with black arrows) from the bottom out cup **460.4**, extending into the compression portion (light red). The auxiliary path **454.3** is adjustable via a screw type needle valve **478** (needle (dark purple), screw (light purple)) that is externally actuated.

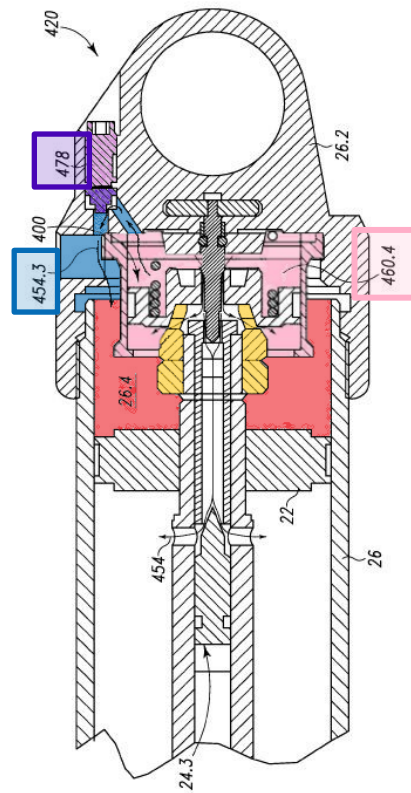


Fig. 12A

Ex. 1010, FIG. 12A; Ex. 1002, ¶72; Ex. 1003, ¶72.

2. Independent Claim 1

(a) Claim 1[pre]

Gartner discloses “[a] damper for a shock absorber comprising.” *Gartner* discloses a damper (light green) for a shock absorber **420**. Ex. 1010, 9:40-48, FIG. 12A.; Ex. 1002, ¶177; Ex. 1003, ¶172.

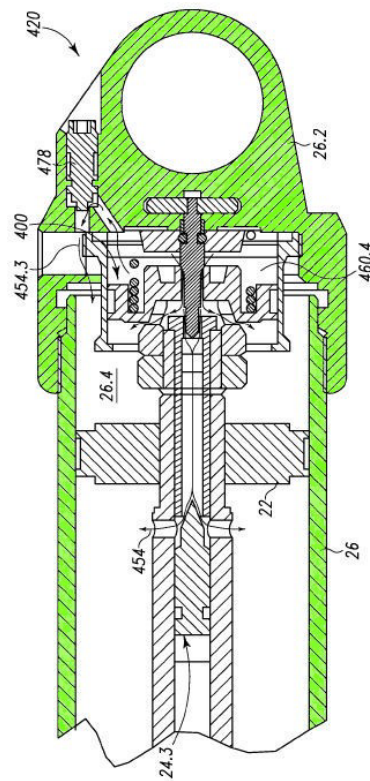


Fig. 12A

(b) Claim 1[a]

Gartner discloses “a damper chamber divided by a piston and shaft into a compression and rebound portions.” *Gartner* discloses a damper chamber (the volume enclosed by the main cylinder **26**, light green) that is divided by a piston **22** (yellow) and a piston shaft/rod **24** (dark orange) into a compression portion **26.4**

(light red) and a rebound portion (dark green). Ex. 1010, FIG. 12A; Ex. 1002, ¶178; Ex. 1003, ¶173.

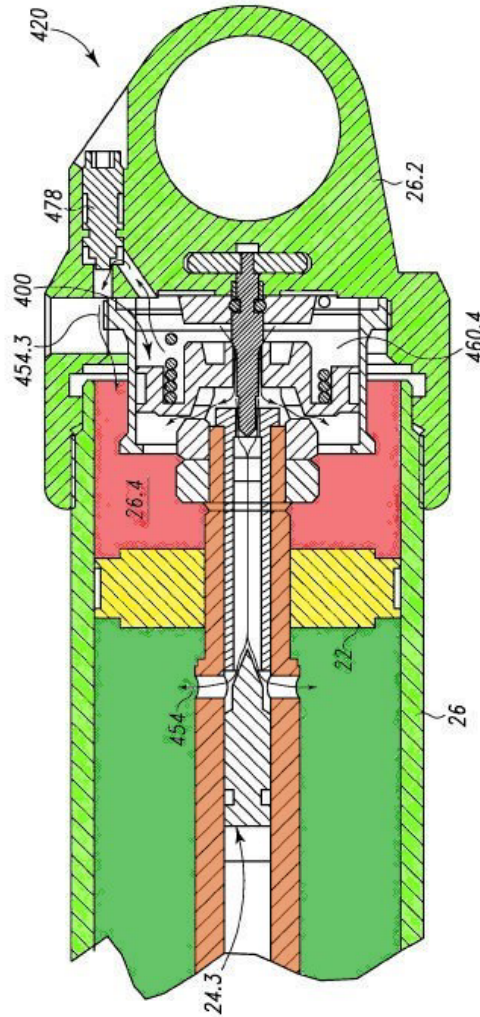


Fig. 12A

(c) Claim 1[b]

Gartner discloses “a bottom out cup formed at an end of the compression portion.” *Gartner* discloses a bottom out cup **260**, **460** (pink) formed at the end of

compression portion **26.4** (light red). Ex. 1010, FIG. 12A; Ex. 1002, ¶179; Ex. 1003, ¶174.

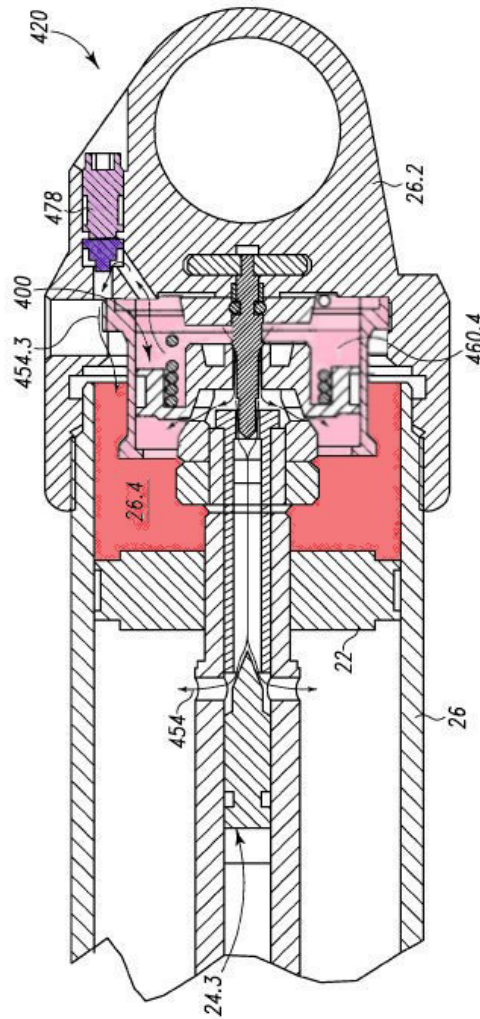


Fig. 12A

(d) Claim 1[c]

Gartner 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.” *Gartner* discloses a fluid flow

path **454.3** (dark blue with black arrows) from bottom out cup **260, 460** (pink) for providing fluid communication from the cup to the compression portion (light red) of the chamber during a compression stroke of the damper. Ex. 1010, 9:18-48. The black arrows illustrating fluid flow path **454.3** show that fluid will flow from the bottom out cup **260, 460** to the compression portion (light red) during a compression stroke. *Id.*, FIG. 12A; Ex. 1002, ¶180; Ex. 1003, ¶175.

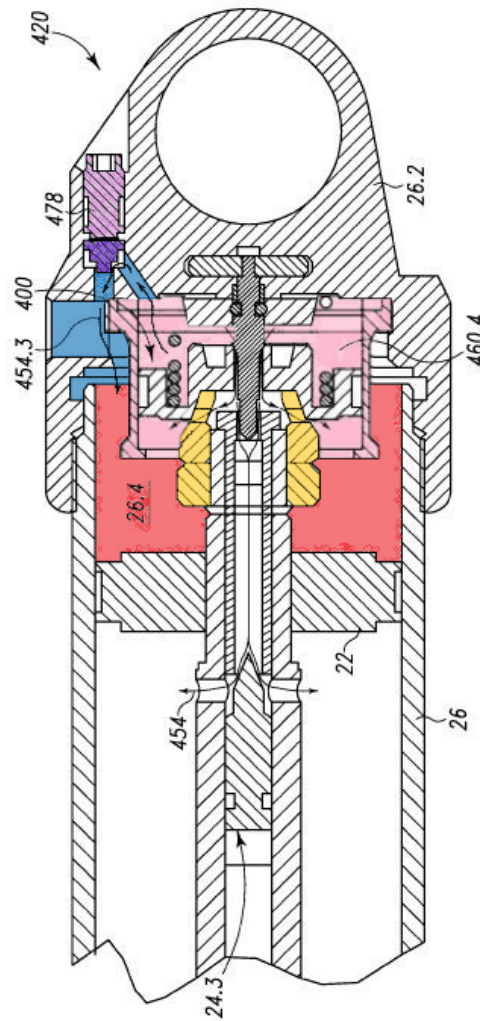


Fig. 12A

(e) Claim 1[d]

Gartner discloses “wherein the capacity of the fluid flow path is adjustable,” in that the capacity of the fluid flow path **454.3** (dark blue with black arrows) is adjustable via adjustable screw type needle valve **478** (needle (dark purple), screw (light purple)). Ex. 1010, 9:33-48; Ex. 1002, ¶181; Ex. 1003, ¶176.

3. Dependent Claims 2-3

Gartner discloses “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). *Gartner’s* valve (dark purple) is manually adjustable and externally accessible via an external screw (light purple), and restricts the fluid flow when present in the fluid flow path **454.3** (dark blue). Ex. 1010, 9:33-48; Ex. 1002, ¶181; Ex. 1003, ¶176.

4. Dependent Claim 4

Gartner discloses “the adjustable valve can be adjusted between a closed position and a plurality of open positions.” *Gartner* discloses that the screw type needle valve **478** (needle (dark purple), screw (light purple)) may be adjusted between a plurality of open positions (the screw may be adjusted to an effectively

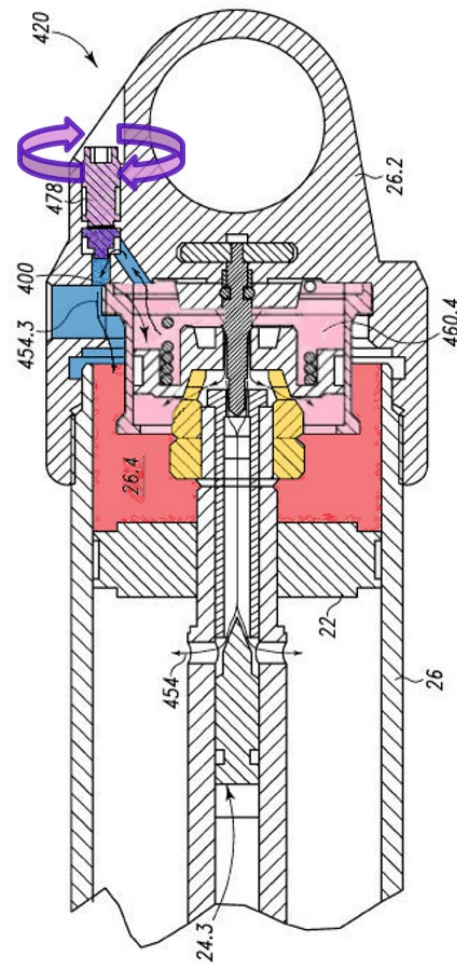


Fig. 12A

infinite number of positions between open and closed) and a closed position. Ex. 1010, 9:33-48; Ex. 1002, ¶¶181, 183; Ex. 1003, ¶¶176, 178.

Even if *Gartner* did not disclose a closed position, such a feature would have been obvious to a POSITA using the same equipment featured in *Gartner*, wherein a POSITA would have been motivated to provide a closed position to allow for a greater range of damping characteristics for the damper. Moreover, *Kodama* discloses a needle valve (*Kodama's* throttle valve **130**) that includes a closed position. Ex. 1006, 4:58-5:2; Ex. 1002, ¶182; Ex. 1003, ¶177.

5. Dependent Claim 5

Gartner discloses “a fluid path between the cup and the rebound portion of the chamber, the path formed in the shaft”, namely a fluid path **454** (light blue with black arrows) between cup **260**, **460** (pink) and rebound portion (dark green) of the chamber (the volume enclosed by the main cylinder **26** (light green)). Further, the path is formed in piston shaft/rod **82** (dark orange). Ex. 1010, FIG. 12A; Ex. 1002, ¶184; Ex. 1003, ¶179.

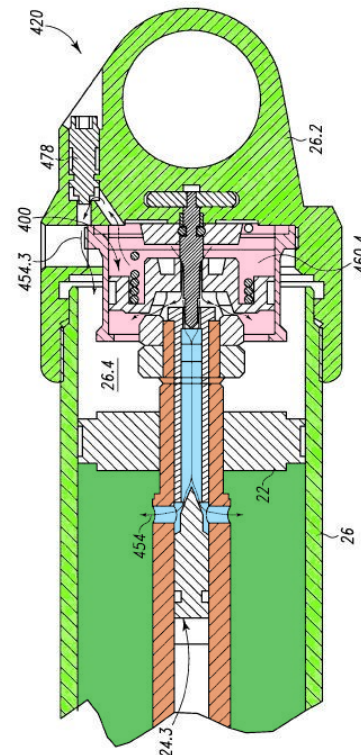


Fig. 12A

6. Dependent Claim 9

Gartner discloses “a second fluid flow path within the bottom out cup.”

Gartner discloses a second flow path **454** (light blue with black arrows) through the piston shaft/rod (dark orange). Ex. 1010, FIG. 12A; Ex. 1002, ¶185; Ex. 1003, ¶180.

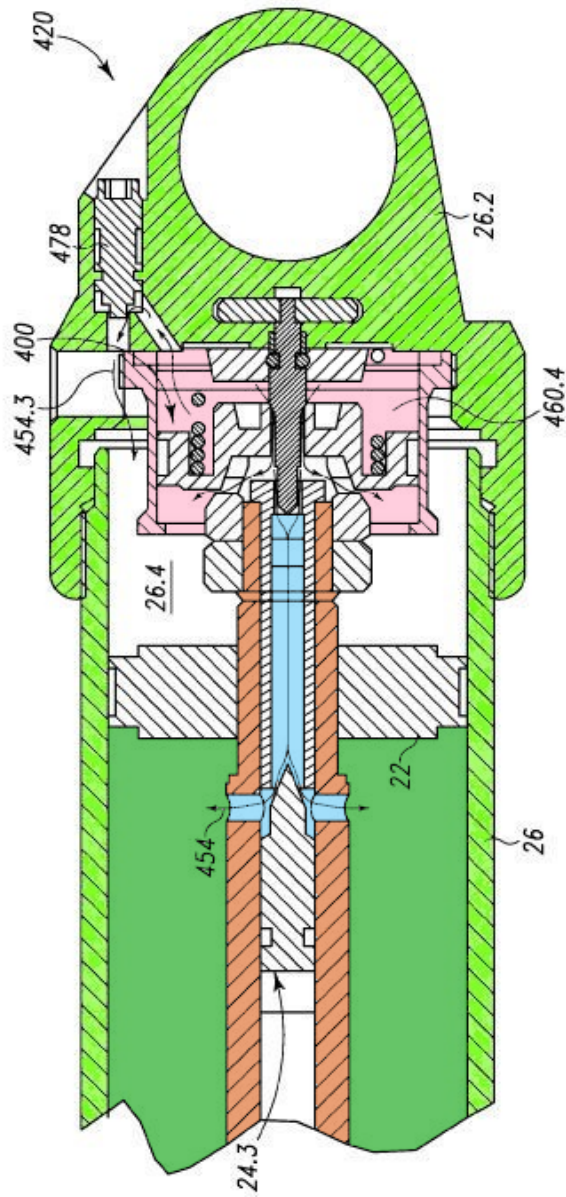


Fig. 12A

7. Independent Claim 19

(f) Claim 19[pre]

Gartner discloses “[a] damper for a shock absorber comprising”, as set forth above.

(g) Claim 19[a]

Gartner discloses “a fluid”, namely a hydraulic fluid. Ex 1010, 3:63-4:4; Ex. 1002, ¶187; Ex. 1003, ¶182.

**(h) Claim 19[b]-
19[d]**

Gartner discloses the limitations of 19[b]-19[d], namely “a compression chamber,” “a bottom out cup,” and “a valve.” *Gartner* discloses a compression chamber **26.4** (light red), a bottom out cup **260, 460** (pink), and a screw type needle

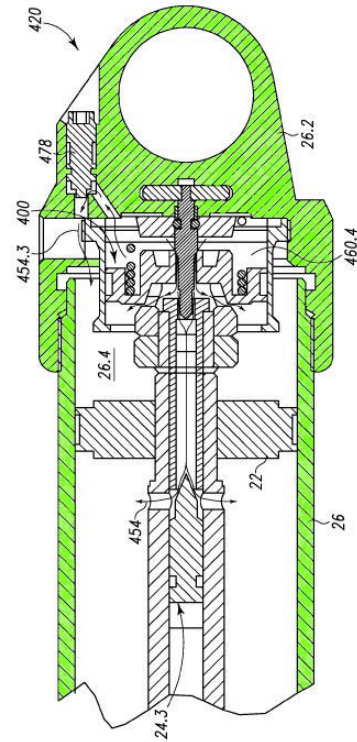


Fig. 12A

valve **478** (needle (dark purple), screw (light purple)). Ex. 1010, FIG. 12A;
Ex. 1002, ¶188; Ex. 1003, ¶183.

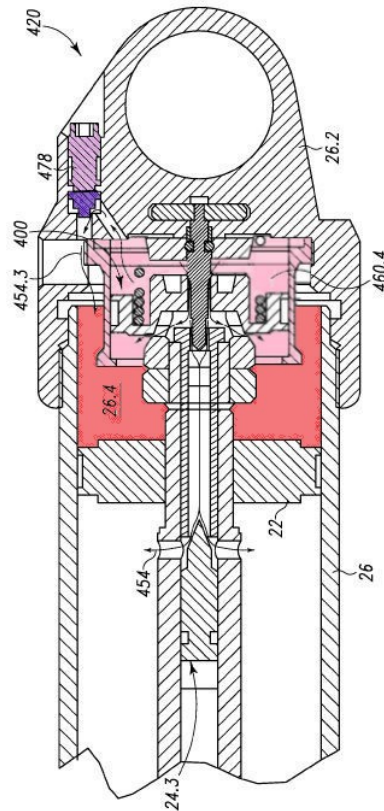


Fig. 12A

(i) Claim 19[e]

Gartner discloses that “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.” *Gartner* discloses that, during a compression stroke with the bottom out piston (light orange), the fluid flows from bottom out cup

260, 460 (pink) to compression chamber 26.4 (light red) at a first rate with the screw type valve 478 (needle (dark purple), screw (light purple)) in a first position and at a second rate with the screw type valve in a second position. The first rate is greater than the second rate. Ex. 1010, 9:33-48. Again, this claim term is just a facially

complicated way for Fox to claim a simple adjustment of the valve.

The black arrows illustrating fluid flow path 454.3 show that fluid will flow from bottom out cup 260, 460 to the compression portion (light red) during a compression stroke. *Id.*, FIG. 12A. Further,

Gartner provides that screw type valve 478 (needle (dark purple), screw (light purple)) is accessible from the exterior of the shock absorber. *Id.*; Ex. 1002, ¶¶189-190; Ex. 1003, ¶¶184-185.

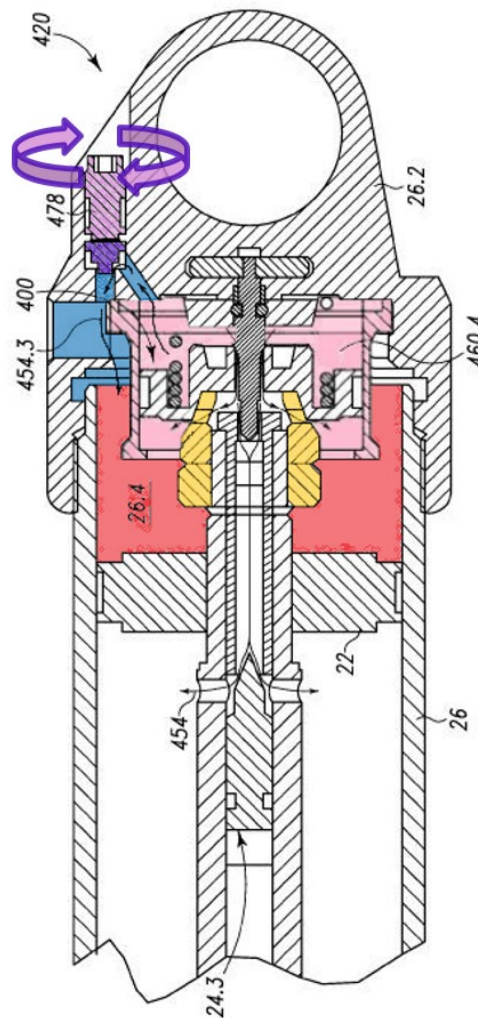


Fig. 12A

VII. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8

A. Real Party-in-Interest

The real party-in-interest for this petition is Petitioner SRAM, LLC.

B. Related Matters

Patent Owner Fox asserted the '223 patent against SRAM in a lawsuit captioned *Fox Factory, Inc. v. SRAM, LLC*, Case No. 1:23-cv-00313-RM-KAS (D. Colo.), in an Amended Complaint filed and served on November 30, 2022.

C. Lead and Backup Counsel and Service Information

Lead counsel and Backup counsel are identified in the following table:

LEAD COUNSEL	BACK-UP COUNSEL
Michael J. Hickey, Reg. No. 51,801 LEWIS RICE LLC 600 Washington Avenue Suite 2500 St. Louis, Missouri 63101 T: 314-444-7630 F: 314-612-7630 mhickey@lewisrice.com	Michael H. Durbin, Reg. No. 63,725 LEWIS RICE LLC 600 Washington Avenue Suite 2500 St. Louis, Missouri 63101 T: 314-444-7782 F: 314-612-7782 mdurbin@lewisrice.com Richard B. Walsh, Jr. (<i>pro hac vice</i> to be submitted) LEWIS RICE LLC 600 Washington Avenue Suite 2500 St. Louis, Missouri 63101 T: 314-444-7722 F: 314-612-7722 rwalsh@lewisrice.com

SRAM consents to e-mail service at these e-mail addresses.

VIII. GROUNDS FOR STANDING

SRAM certifies that the ‘223 patent is available for IPR and that SRAM is not barred or estopped from requesting IPR of the Challenged Claims on the grounds identified herein, wherein, *inter alia*, Fox filed its Amended Complaint asserting infringement of the ‘223 patent by SRAM on November 30, 2022, less than a year before this Petition’s filing.

IX. CERTIFICATION UNDER 37 C.F.R. § 42.24(d)

Petitioner certifies that this Petition complies with 37 C.F.R. § 42.24(d). As calculated by the “Word Count” feature of Microsoft Word 2016, the Petition contains 13,963 words, excluding the words contained in the following: Table of Contents, Table of Authorities, Mandatory Notices, Certificate of Service, Certificate Under 37 C.F.R. § 42.24(d), Appendix of Exhibits, and Claim Listing.

X. CONCLUSION

Claims 1-9, 11-15, and 19 are unpatentable, so the Board should institute IPR and cancel these Claims. Please charge any required fees to Deposit Account No. 50-0975.

Respectfully submitted,

Lewis Rice LLC

Dated: November 30, 2023

By: /s/ Michael J. Hickey

Michael J. Hickey, Reg. No. 51,801
Attorneys for Petitioner SRAM, LLC

CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the foregoing Petition for *Inter Partes* Review, the associated Power of Attorney, and Exhibits 1001-1015 were served by United States Postal Service Priority Mail Express on November 30, 2023, at the following address of record for the subject patent:

PATTERSON & SHERIDAN, L.L.P./Fox Factory, Inc.
24 Greenway Plaza, Suite 1600
Houston, TX 77046

With a courtesy copies of the same served by United States Postal Service Priority Mail Express on November 30, 2023, at the following address for Patent Owner Fox Factory, Inc.'s litigation counsel in the parallel district court proceeding relating to the subject patent:

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