

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. 9,739,331 B2

Filing Date: August 10, 2015

Issue Date: August 22, 2017

Title: METHOD AND APPARATUS FOR AN ADJUSTABLE DAMPER

Case No. IPR2023-01301

DECLARATION OF ERIC WANG, PH.D.

INTRODUCTION AND QUALIFICATIONS

1. My name is Eric Wang. I make this Declaration in support of Petitioner SRAM, LLC's ("SRAM") Petition for *Inter Partes* Review of U.S. Patent No. 9,739,331 B2 ("the '331 patent"). I have personal knowledge of the facts set forth below, and, if called upon as a witness, I could and would testify to such facts under oath.

2. I am a tenured Associate Professor of Mechanical Engineering at the University of Nevada, Reno.

3. I earned a B.S. degree in mechanical engineering from the University of California at Berkeley in 1989. I earned an M.S. degree in mechanical engineering from the Massachusetts Institute of Technology in 1991. Lastly, I earned a Ph.D. in mechanical engineering from the University of California at Davis in 1995.

4. I have published over 20 publications on the science of cycling and/or shock absorbers. As part of my Ph.D. dissertation, I personally measured suspension fork stiffness and damping parameters using a servo-hydraulic test machine. For over 20 years, I have been researching the science of cycling. Research topics have included: energy efficiency of suspension systems, loading quantification, tire performance, thermal performance of bicycle helmets, computer simulation of off-road cycling, and ultra-efficient human powered vehicles. I have also conducted

research in the design and development of semi-active shock absorbers for automotive and earthquake isolation systems. These devices include electro-rheological and magneto-rheological dampers.

5. I have owned a variety several mountain, road, touring, and tandem bicycles, as well as unicycles. I have serviced all of the bicycles I've owned, including assembly/disassembly of suspension forks and rear shocks. I have hand-built 2 mountain and 3 road bicycle frames.

6. I have been an avid cyclist for over 35 years. I have ridden several long distance (greater than 1000 miles) bicycle tours. I am a former holder of a United States Cycling Federation (USCF) category 3 racing license.

7. Based on my education and experience, I am qualified to provide analysis on the subjects set forth in this Declaration. Based on my understanding of who would be considered a person of ordinary skill in the art at the time of the invention (a "POSITA"), I meet those qualifications. In particular, I held a Ph.D. in mechanical engineering at the time of the earliest filing date of the '331 patent (that is, May 9, 2012) and had worked designing and testing bicycle and other vehicle suspensions for more than two decades prior.

8. In reaching the conclusions set forth herein, I examined and analyzed: the '331 patent (Ex. 1001); the '331 patent's prosecution file history (Ex. 1004);

Fox's Initial and Amended Infringement Contentions in a parallel district court case (*see* Exhibits 1011 and 1012); all of the unsealed documents in the parallel district court case; and all of the relevant exhibits to this Petition (Exhibits 1001 to 1015), as well as publicly available articles and documents describing the products accused by Fox as infringing the claims of the '331 patent, including SRAM's website descriptions of those accused products. I additionally relied on my experience, education, and expertise.

RELEVANT LEGAL PRINCIPLES AND BACKGROUND

9. I am not a lawyer, therefore nothing in my Declaration should be interpreted as offering an opinion on the law. However, as a technical expert assisting the Board in evaluating issue of patent invalidity, I have applied legal principles as I understand them.

10. I understand that the claims of a patent set forth the metes and bounds of the claimed invention. I also understand that the meanings of the terms of the claims are presumed to be the meanings that the terms would have had to a POSITA at the time of the invention, that is, as of the May 9, 2012 filing date of the initial patent application for the '331 patent. I also understand that the meaning of a claim term may be understood by reference to intrinsic evidence, to include the claims themselves, the specification of the patent (including its figures), and the prosecution

file history as the communications between the patent applicant and the Patent Office, and, if necessary, extrinsic evidence, such as dictionaries or witness testimony.

11. I further understand that the Board has not yet construed any of the claims of the '331 patent, but that the Board may establish the meaning of certain terms during this proceeding. I also understand that SRAM and Fox have submitted competing interpretations of certain claim terms from the '331 patent in the district court proceeding. Ex. 1014. Although I believe that all of SRAM's proposed constructions are correct and consistent with the perspective of a POSITA reading those claims in view of the patent claims, the patent specification, the patent prosecution file history, and relevant extrinsic evidence, I have applied Fox's proposed constructions for purposes of evaluating validity in the manner set forth below, with one exception.¹ However, even under either party's constructions, I still

¹ As discussed further herein, I do not consider that the "valve activator" in claim 3 is required to be physically separate from the "manually operable valve" because, during prosecution, the Examiner expressly contemplated that the valve

believe that the claims of the '331 patent are invalid as anticipated or obvious, including as set forth below. I have applied these understandings below and reserve the right to modify my analysis to the extent the Board adopts any claim constructions that differ from my understanding as a person of ordinary skill in the art.

12. With respect to the question of patent validity, I understand that a patent is only valid when the invention claimed in the patent is new, useful, and nonobvious in light of the prior art, such that the invention as defined by the patent claims is not anticipated or rendered obvious by the prior art. I further understand that a patent's claims must meet other statutory requirements, such as written description, enablement, and definiteness.

13. With respect to the term "prior art", I understand that this term generally refers to the state of technology in the relevant field at the time of the invention and includes such printed materials as patents and publications, as well as evidence of actual uses or sales of a technology within the United States. I also understand that

activator could be part of the manually operable valve, which Fox did not contest at the time. *See, e.g.*, Ex. 1004, 88.

categories of prior art can include, among other things, anything that was patented or described in a printed publication anywhere in the world more than one year before the inventor filed the application for the patent, as well as sales, offers for sale, and uses of the claimed invention prior to the date of that invention.

14. I understand that, under 35 U.S.C. § 102, a claim is “anticipated” by the prior art if each and every limitation of the claim is disclosed and arranged as claimed, expressly or inherently, in a single item of prior art, from which a POSITA could practice the invention without undue experimentation.

15. I also understand that, under 35 U.S.C. § 103, a person cannot obtain a patent on an invention if his invention would have been obvious to a person of ordinary skill in the art at the time the invention was made. A conclusion of obviousness may be founded upon one or more items of prior art. In determining whether prior art references render a claim obvious, courts consider the following factors: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of skill in the pertinent art, and (4) objective evidence of nonobviousness.

16. As stated above, I am not a lawyer. In the context of my expert testimony on behalf of SRAM at the May 26, 2023, preliminary injunction hearing in the related District Court case in the District Court of Colorado, I was asked by

counsel for Fox if certain prior art references “teach” pressure equalization between the air inside of the suspension fork and the ambient air outside the fork. I understood these questions by Fox’s counsel to ask whether these prior art references *expressly* use the words “pressure equalization.” Accordingly, because the prior art references in question do not expressly use that specific terminology, I answered “no” to those questions.

17. At the same time, I had also testified at that same hearing that the structures disclosed in these prior art references clearly disclose to a POSITA apparatuses that achieve pressure equalization through manipulation of their respective related valves that open a hole or passage between the interior and exterior of the relevant suspension forks. Therefore, to the extent that the word “teach” has a broader legal meaning to include any disclosure, whether express, implicit, or inherent, my opinion is that all of the prior art references discussed herein “teach” pressure equalization as claimed in the ‘331 patent, as I discuss further below in greater detail. Indeed, when two differently pressurized bodies of gas are thereafter placed in fluid communication with each other, the two bodies of gases will equalize in pressure, in accordance with fundamental laws of physics, including the second law of thermodynamics.

TECHNICAL OVERVIEW

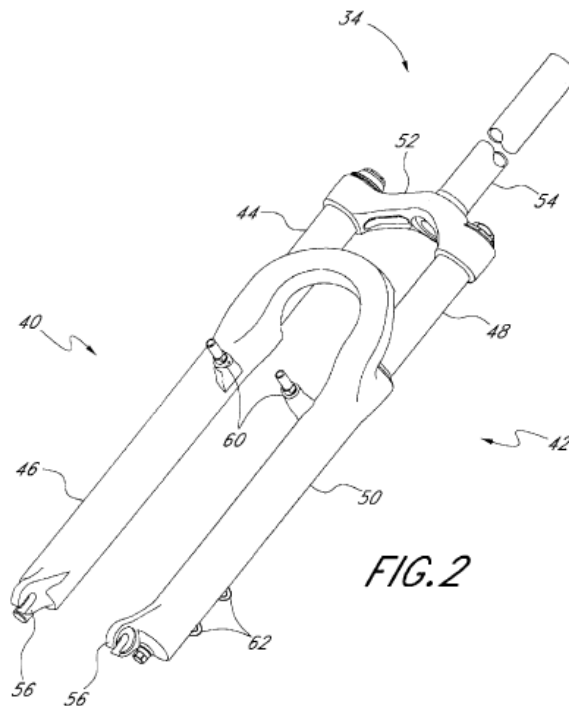
A. General Overview of Suspension Fork Arrangements

18. Bicycles and motorcycles can be classified as “single-track” vehicles because they generally leave a single ground track as they move forward. A number of different forces can act on a single-track vehicle during use, which is especially true in the area of mountain bikes and motorcycles intended to be ridden over rough terrain. The forces associated with the front wheel of a single-track vehicle running into and over rough terrain may have a number of undesirable consequences, including: increased stress on the vehicle and its components; forces being transferred to the rider; decreased control of the single-track vehicle for the rider; and other potential problems.

19. U.S. Patent No. 6,592,136 B2 to Becker (*Becker*) is directed to a partial solution to these issues: a front suspension fork. *See* Ex. 1008 (*Becker*). *Becker* explains that “[s]uspension fork assemblies are often utilized on off-road bicycles, or mountain bikes, to absorb energy imparted to the front wheel by the terrain on which the bicycle is being ridden.” Ex. 1008, 1:12-15. Further, “[t]he use of a suspension fork allows a rider to traverse rougher terrain, at a greater speed and with less fatigue in comparison to riding a bicycle equipped with a rigid fork.” Ex. 1008, 1:15-18. *Becker* explains that these suspension forks are not limited to bicycles, and

“may be configured for use with other vehicles, such as a road bicycle or motorcycle.” Ex. 1008, 21:28-29.

20. For example, Figure 2 of *Becker* shows a typical single-track vehicle suspension fork.



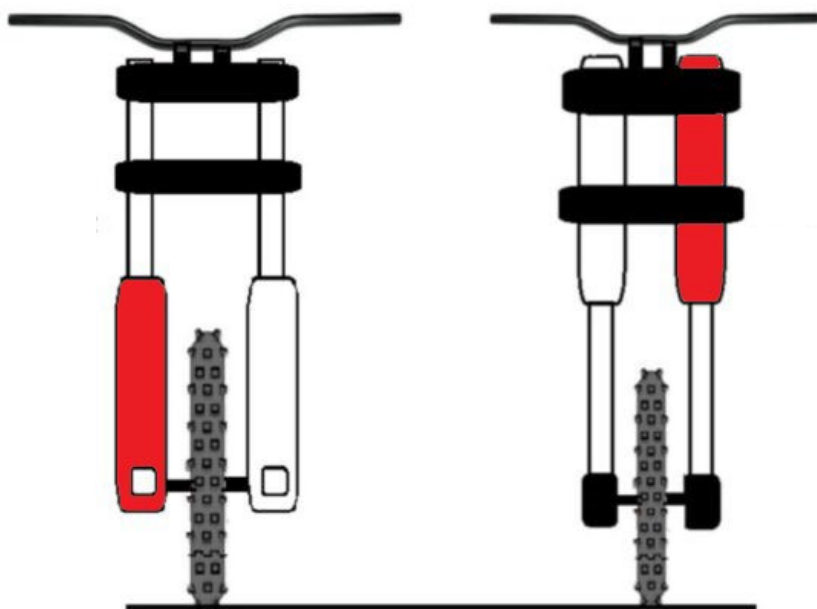
Ex. 1008, FIG. 2.

21. As can be seen in Figure 2, above, the suspension fork 34 includes two lower tubes 46, 50 and two upper tubes 44, 48. Further, each of the lower tubes 46, 50 are “Outer Tubes” having an internal diameter that is greater than the external diameter of each of the two upper tubes 44, 48, which tubes may be considered to be “Inner Tubes.” This “Outer” and “Inner” nomenclature may be used to help

explain the moving parts of a suspension fork, as nearly all suspension forks have this arrangement of Outer and Inner tubes that move telescopically relative to each other. *See* Ex. 1008, 5:42-55, 6:5-21. In any case, Outer Tubes are tubes that have a greater internal diameter than the external diameter of related Inner Tubes, which relationship allows for the telescopic movement of the Inner Tubes *within* the Outer Tubes.

22. Although nearly all suspension forks for single-track vehicles include both Outer Tubes and Inner Tubes, there is one principal difference between typical suspension forks for bicycles and typical suspension forks for motorcycles: the telescoping legs (having one portion or tube that moves within the other portion or tube) are typically oriented in opposite configurations.

23. In particular, suspension forks intended for use with motorcycles tend to arrange the Outer Tubes *above* the Inner Tubes, while suspension forks intended for use with bicycles tend to arrange the Outer Tubes *under* the Inner tubes. The following image shows these two arrangements:



24. As can be seen in the image above, the suspension fork on the left arranges the Outer Tubes of the telescoping suspension below the Inner Tubes. This left image therefore shows the arrangement of a typical suspension fork for a bicycle. On the other hand, the suspension fork on the right arranges the Outer Tubes of the telescoping suspension above the Inner Tubes, which is the arrangement typically used in conjunction with a motorcycle. These rules for arrangement are not absolute, but are at least typical.

25. In other words, in some forks, the Outer Tube is on top whereas in other cases the Outer Tube is on the bottom. Both motorcycles and bicycles have multiple examples of doing it both ways. The point is that the problem to solve is the same, namely to remove air from the space between the Outer and Inner Tubes. And since

the Inner Tube slides into the Outer Tube, it is usually more practical to release air from the surface of the Outer Tube.

26. For example, *Bruckbauer's* damper **12** is shown to be at the very top of the suspension fork, with the cap **30** being one end of the Outer Tube.

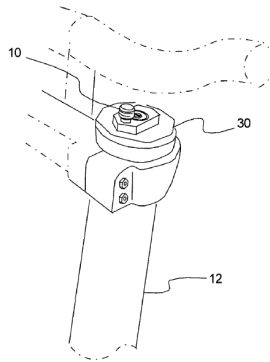


Fig. 1

27. Because of these arrangements, motorcycle suspension forks, like *Bruckbauer*, typically position the Outer Tube on top, while bicycle suspension forks typically locate the Outer Tube on the bottom.

B. Known Problems with Air Pressure Building Around Damper

28. It is well-known that suspensions forks tend to be pressure vessels, with internal pressures that typically need to be managed to allow a given suspension fork to perform its intended tasks. During assembly, gases are trapped within a suspension fork. These gases may exert forces on portions of the suspension fork as the pressures of the gases internal or external to the suspension fork change. For example, *Bruckbauer* states that “[e]xcess trapped gas stiffens the assembly.”

Ex. 1009 (*Bruckbauer*), 1:33. Said another way, when there is a difference in pressure between gas inside the suspension fork and gas external to the suspension fork, there will be forces created by the pressure imbalance. *See, e.g., id.*

29. Solutions like those disclosed in *Bruckbauer* provide “a valve system for purging gases that become trapped within the fork tubes or suspension of a [single-track vehicle’s] fork.” Ex. 1009, 1:10-12. More particularly, solutions like those provided in *Bruckbauer* place the gas within the suspension fork in fluid communication with the external gas (typically ambient air). This communication allows the internal gas pressures within the fork to equalize with the external gas pressure. Sufficient equalizing eliminates internal forces due to a pressure imbalance. Additionally, the process is easy: a rider need only press on *Bruckbauer*’s valve cap **36** to provide this fluid communication.

30. Said another way, the art found a solution to the problem of gas being trapped within a suspension fork long ago—place a closeable hole into the suspension fork where the trapped gas is, and allow it to equalize with ambient air pressure, when needed. Indeed, even before *Bruckbauer* and similar pressure relief valves with biased buttons, the art used screwed in parts or parts with built-in gaps that could or would be opened up to create the needed fluid communication. *See,*

e.g., Bruckbauer, 1:14-48. In fact, motorcycles had air holes in the outer/larger tubes of suspension forks for many years.

31. In the end, the solutions are as simple as the problems: when you have an issue created by a pressure vessel, allow the pressure vessel to open when needed.

C. Person of Ordinary Skill in the Art

32. I understand that a person of ordinary skill in the art is a hypothetical person presumed to know the relevant prior art.

33. In the context of the ‘331 patent, a POSITA within the field of the ‘331 patent around or prior to May of 2012 (when the initial patent application for the ‘331 patent was filed) would appropriately be described as a person with a degree in Mechanical Engineering and at least three-years’ experience in vehicle suspension technology, or a Master’s degree in Mechanical Engineering with a concentration in design of vehicle suspension technology and/or shock absorbers.

D. The ‘331 Patent and Its Purported “Invention”

34. The ‘331 patent is directed to purported improvements in suspension forks for vehicles (including bicycles, motorcycles, and the like). Specifically, the ‘331 patent discloses a system where a known suspension fork is modified with a known air valve-based pressure relief system, wherein the pressure relief system

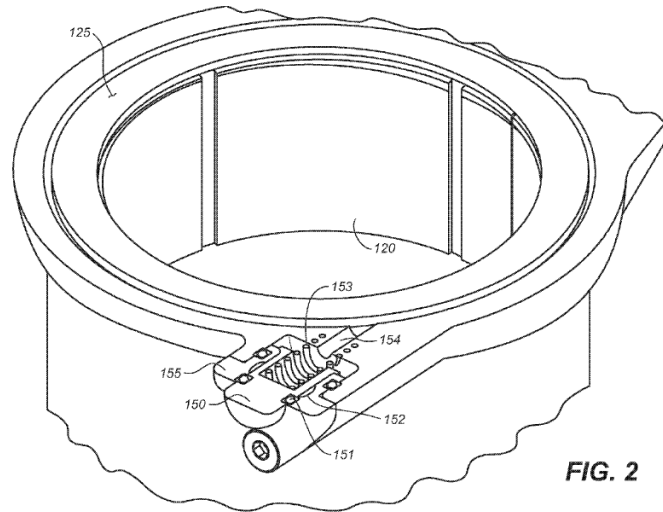
may be as simple as placing a hole that may be opened and closed into the suspension fork. *See, e.g.*, Ex. 1001, 1:26-30, 4:39-5:13 (claim 1).

35. On its face, the disclosure of the ‘331 patent appears brief, in that its written description contains four figures and less than four full columns of text, with nearly two of the four columns devoted to the background and prior art. However, the ‘331 patent incorporates by reference twenty-eight (28) different prior art patents and publications, making its total length nearly 1300 pages. Even with that voluminous disclosure, the scope of the ‘331 patent’s disclosure regarding its purported invention is relatively narrow in my opinion. Only a single embodiment of that alleged invention is discussed in the written description and shown in the figures.

36. The ‘331 patent states what a POSITA already knew at that time of the ‘331 patent’s filing, namely that “[a]mbient air pressure at the time of building a suspension fork is sealed inside the fork legs,” and that, as discussed above, these sealed pockets of air may cause issues for the suspension fork, such as increased friction of operation. Ex. 1001, 1:47-54. The ‘331 patent further states what is known to a POSITA, that a pressure imbalance can form within the fork when a fork “built” at a lower elevation is taken to a higher elevation where it is to be ridden. *See, e.g.*, Ex. 1001, 3:36-64.

37. To address this known problem, the ‘331 patent creates a hole in the fork in a manner similar to what had been done previously in the art. Specifically, the ‘331 patent positions a hole or opening, along with a mechanism to open/close that hole (referred to in the ‘331 patent as an “air bleed assembly **300**[.]” somewhere on an Outer Tube (which is the ‘331 patent’s lower fork tube **104**, **118**). Ex. 1001, 4:3-27, FIGS. 2-4. If one were to ignore applicant Fox’s statements of disclaimer in the prosecution history (discussed further below), claim 1 would simply place the air bleed assembly *anywhere* along the length of the Outer Tube—anywhere between the seal at one end and the terminus of the other end, subject to being placed above the internal oil level of the fork so that oil does not leak out. *See* Ex. 1001, 4:39-5:13 (claim 1). The air bleed assembly **300** is connected to a vent hole **154** that extends through the Outer Tube, which vent hole **154** may allow trapped “air pressure [to] by-pass into or out of the fork leg[.]” Ex. 1001, 4:22.

38. The ‘331 patent’s air bleed assembly **300** may include a button **150**, a sealing O-ring **151**, a spring **153**, and a seal bore **155**, arranged as shown in Figure 2, below. Ex. 1001, 4:17-27, FIG. 2.



39. As can be seen in Figure 2, the O-ring **151** is arranged on the button **150**, positioned between the button **150** and a seat of the seal bore **155**. Ex. 1001, FIG. 2. The seal bore **155** serves as a connection point for the air bleed assembly **300** to the suspension fork. The button **150** protrudes from the air bleed assembly **300** to allow a person to depress the button **150**. See Ex. 1001, 4:13-16. The spring **153** “biases the button/valve **150** [and o-ring **151**] toward a closed position[,]” as depicted in Figure 2. Ex. 1001, 4:25-26, FIG. 2. In this position, air may not flow into nor out of the suspension fork. See Ex. 1001, 4:19-24. When the button **150** is depressed, the O-ring **151** is moved into a diametrical recess **152** formed within the seat **155**. Ex. 1001, 4:19-24. In this position, air may flow around, or by-pass, the O-ring **151**, either into or out of the suspension fork. In this way, the air bleed assembly **300** may “allow[] a rider to push a button and let the pressure in the lower leg equalize to ambient pressure[.]” Ex. 1001, 3:65-67.

40. In my opinion, what the ‘331 patent discloses as its “air bleed assembly” invention is substantively no different than what preceded it in the art and is not an invention worthy of patenting. Rather, the ‘331 patent describes an apparatus long known in the art: a hole or opening in a suspension fork that can be opened or closed, with the hole placed above the internal oil level of the fork so that oil does not leak out. As shown in the prior art discussed further herein, locating such a hole and valve (or in the ‘331 patent’s words, an “air bleed assembly”) anywhere along the length of a vehicle fork above an internal oil level is an obvious, routine optimization involving nothing more than basic common sense and rudimentary mechanical skill. In any event, although Fox tried to use this location (and an even narrower location) to distinguish cited prior art, this new prior art cited here anticipates and renders obvious this purported “invention” of the ‘331 patent.

41. My opinion is that these prior art references clearly evidence the unpatentable nature of the claims of the ‘331 patent and provide compelling grounds for initiating this request for *inter partes* review.

42. I note that the prior art references I discuss below, whether alone or in combination, did not form the basis for any rejections of the ‘331 patent during its prosecution. Said another way, the prior art references were not considered or used by the Examiner during prosecution of the ‘331 patent, and the positions I present

herein are not the same nor substantially the same as those considered during prosecution.

43. Regarding *Kojima*, *Bruckbauer*, *Becker*, *Danter*, and *Huang* (the “IPR Prior Art”), the IPR Prior Art’s disclosures are unlike those considered during prosecution. *Kojima* discloses a suspension system that has on-the-fly user-adjustable characteristics. Ex. 1005, [0024]-[0025]. Similarly, *Bruckbauer* discloses an air bleed system that allows air to pass through the fork. Ex. 1009, Abstract. *Becker* discloses a suspension fork having a specialized damper valve. Ex. 1008, 1:7–10, 48–67. *Danter* discloses a suspension fork having integrated features for accommodating brake actuating systems, wherein the fork may be cast of metal materials. Ex. 1010, 4:18–20; Abstract. *Huang* discloses an improved air “inflation valve that automatically releases surplus high-pressure air when an object is excessively inflated via the inflation valve.” Ex. 1007, 1:6–8. None of the issues or technologies disclosed in the IPR Prior Art were addressed during prosecution.

E. Construction of Terms Used in the Claims and Relevant Prosecution History

44. As indicated above, for purposes of assessing validity, I have applied Fox’s proposed constructions, including as set forth in Ex. 1014 and its Initial and Amended Infringement Contentions (Exs. 1012 and 1013). However, it is my opinion that, for purposes of properly understanding the ‘331 patent and its scope,

the Board should construe the claim term “air bleed assembly” to include the clear and unmistakable disclaimer requiring its location to be “between the fork’s lower leg seal and upper bushing,” a positional limitation adopted by Patent Owner Fox to distinguish the *Galasso* prior art (Exhibit 1011) after six (6) rejections by the Examiner. Although this location of the “air bleed assembly” is crystal clear from the prosecution of the ‘331 patent, it is my further opinion that, whether or not such a construction is adopted, the claims of the ‘331 patent are invalid in view of the prior art irrespective of this positional limitation added in a prosecution history disclaimer.

45. In my view, Fox was only granted the ‘331 patent because it made a specific, clear, and unmistakable disclaimer during prosecution regarding the location of the air bleed assembly, precluding Fox from now trying to recapture a broader scope. During prosecution, Fox specifically narrowed the scope of claim 1 to argue around prior art, having been rejected six times by the Examiner in view of the *Galasso* reference, which clearly showed that an air bleed system in a suspension fork existed well before 2012.

46. The public record of the ‘331 patent shows this clear disclaimer of claim scope. As background, the Examiner repeatedly rejected Fox’s claims for an air bleed system associated with a vehicle fork or suspension system, citing the

Galasso reference either alone or in combination with other prior art. *See* Ex. 1004, 40-44, 83-97, 125-136, 152-153, 176-191, 224-225. Fox argued over and over against the Examiner's six-fold reliance on *Galasso*, but could not convince the Examiner that Fox's structure was patentable. *See id.*, 55-69, 105-116, 157-171.

47. For example, in a final rejection from December 2016, the Examiner rejected prosecution claims 1, 3-6, 8-15, and 18-22 under 35 U.S.C. § 103(a) as being unpatentable over *Galasso et al.* in view of U.S. Patent No. 6,311,961 B1 to *Julia*. Ex. 1004, 179-181. The Examiner extensively analyzed why this prior art rendered Fox's asserted invention obvious, including the fact that the prior art expressly disclosed that a manually operable air bleed valve could be located in the lower fork "without compromising the oil bath in the lower fork." *Id.*, 189.

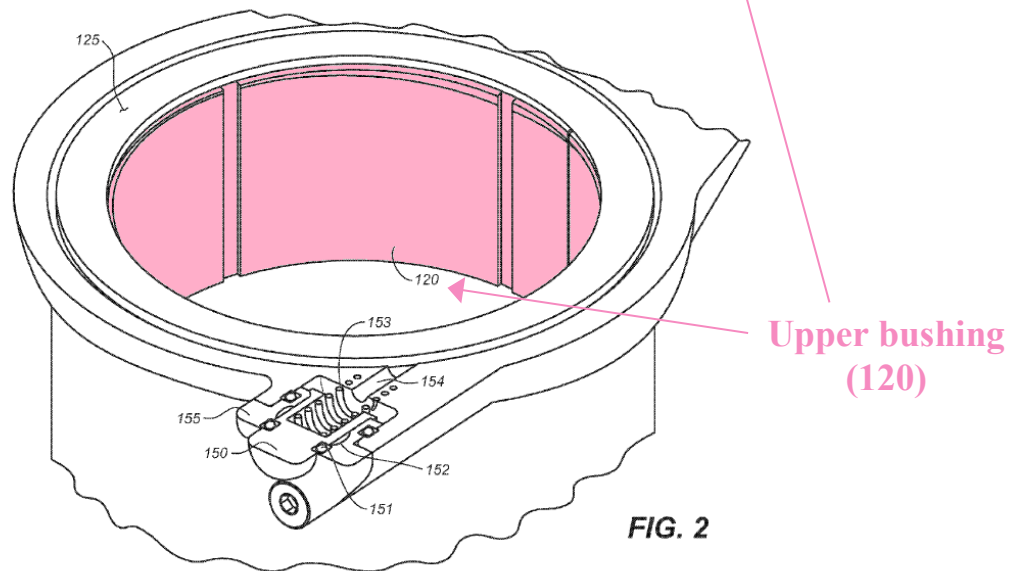
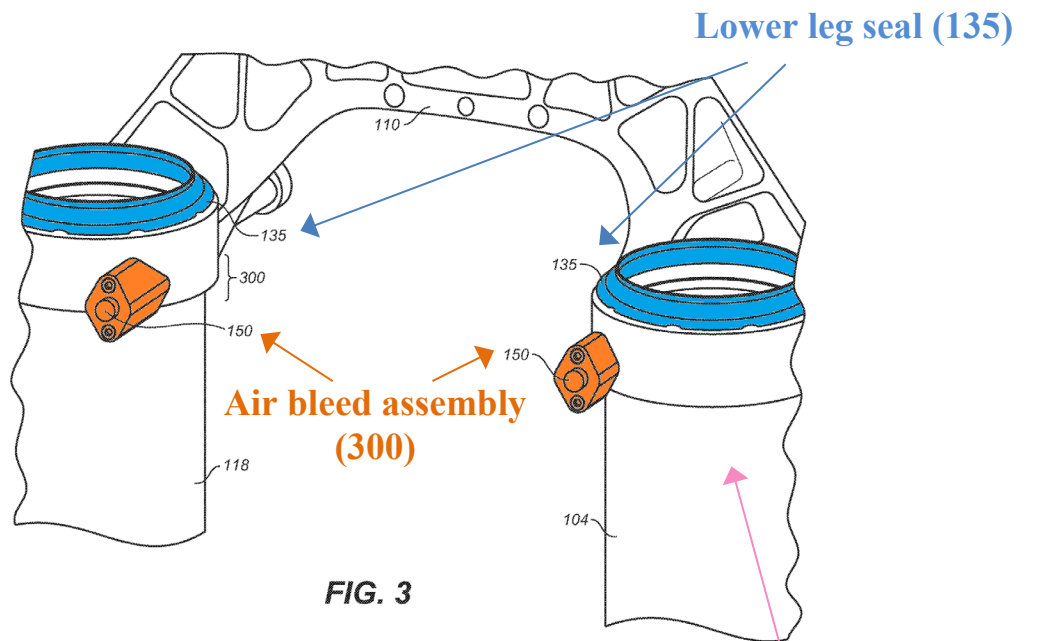
48. In response to this sixth rejection of its air bleed claims, Fox not only amended claim 1 to add further structure but specifically called out the difference between the prior art and the claimed invention: "In contrast to *Galasso*, Applicant's features, as recited in newly amended Claim 1, located its air bleed system in a lower fork, wherein the vent hole is **located between the lower leg seal and the bushing that is attached thereto.**" Ex. 1004, 214 (underlining in original, bold emphasis added). Fox's disclaimer is fully set forth below:

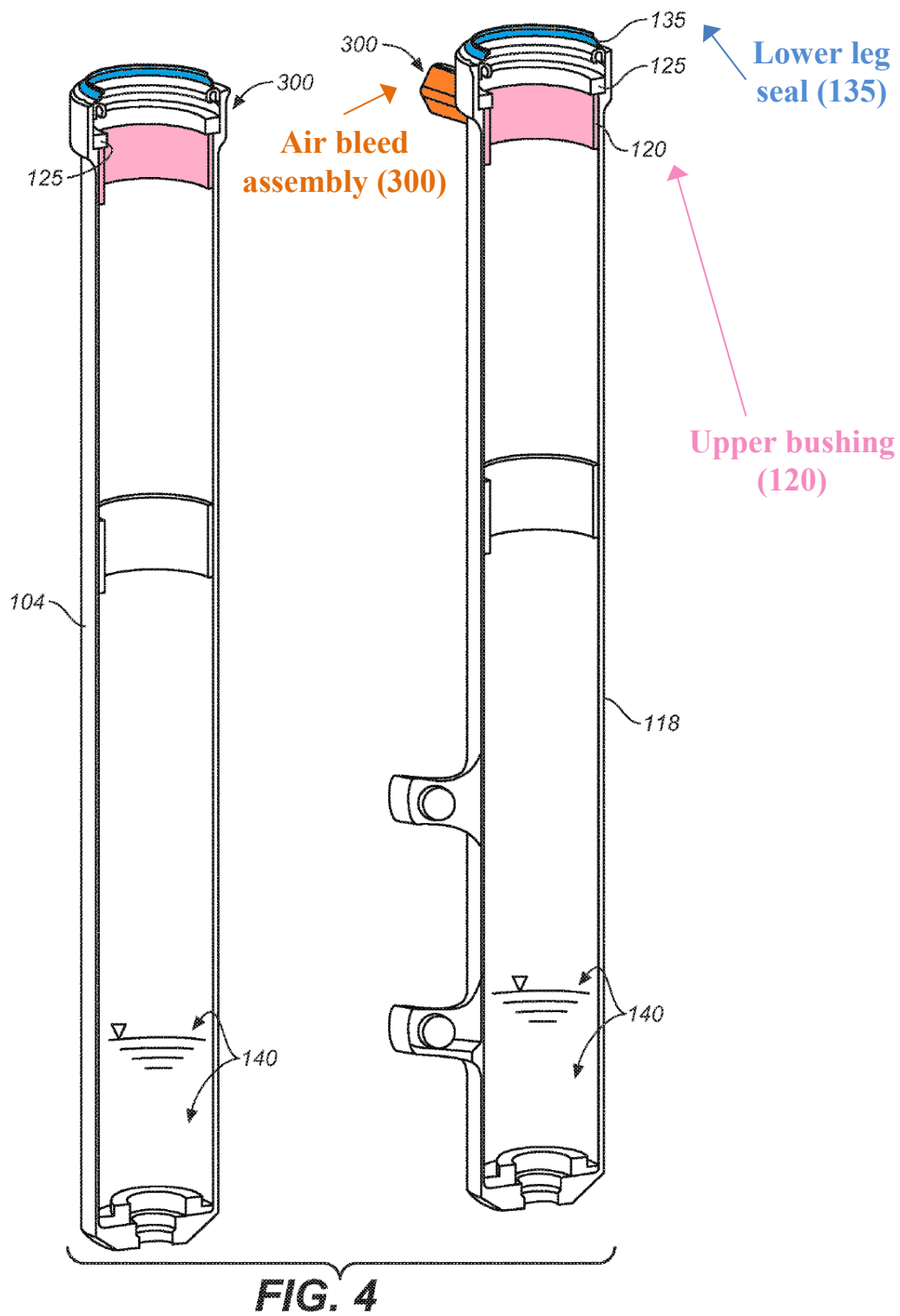
In contrast to Galasso, Applicant's features, as recited in newly amended Claim 1, locate its air bleed system in a lower fork, wherein the vent hole is located between the lower leg seal and the bushing that is attached thereto. The manually operable valve is also positioned between the lower leg seal and the first end of said lower fork (first end is configured to be coupled to a vehicle wheel). Thus, the air bleed system, including the manually operable valve, is located below the lower leg seal that is attached to the outmost edge of a second end of the lower fork tube, wherein the second end of the lower fork is configured to receive an upper fork telescopically therein. Of note, an oil bath lubrication is located within and at the first end of the lower fork tube, the oil lubrication remaining in such a position, via gravity. Applicant's specification describes the necessity of such a positioning (Applicant's specification, paragraph [0021]):

49. Notably, Fox not only used this particular location of the air bleed assembly to distinguish the prior art but to tout the purported advantages of its design, stating that “**due to the positioning of Applicant's air bleed system being located directly below the lower leg seal, ... Applicant's features enable[s] the release of excessive air pressure from the lower fork tube . . . while enabling the oil bath lubrication to remain fairly leveled at the bottom of the lower fork tube, without spraying/leaking out through the open vent hole.**” Ex. 1004, 215. Again, the full statement of Fox's clear disclaimer with respect to the positioning of its claimed air bleed assembly is recited below:

This pressure and load added to the lower oil control lip of the seal, sealing the gap between the lower fork tube and a telescopically positioned upper fork tube, serves to compromise the seal, and possibly enable the oil lubrication within the lower fork tube to leak/spray out of the damper assembly. However, due to the positioning of Applicant's air bleed system being located directly below the lower leg seal, within the lower fork tube, wherein the lower fork tube is positioned further away from the frame of the vehicle than the upper fork tube, Applicant's features enable the release of excessive air pressure from the lower fork tube, thereby reducing the pressure and load being applied to the lower oil control lip of the lower leg seal, while enabling the oil bath lubrication to remain fairly leveled at the bottom of the lower fork tube, without spraying/leaking out through the open vent hole. Applicant's features allow for the pressure in the lower leg

50. This is consistent with the only embodiment of the “air bleed assembly” shown in the ‘331 patent, as shown in Figures 2-4, wherein the air bleed assembly **300** (highlighted in orange) is located between the lower leg seal **135** (highlighted in blue) and the upper bushing **120** (highlighted in pink):





Ex. 1001, FIGS. 2-4.

51. Thus, through its arguments during prosecution of what ultimately issued as the ‘331 patent, Fox expressly required that its claimed air bleed assembly be placed in a particular region directly below the lower leg seal and above the upper bushing. *See* Ex. 1004, 214-215. In other words, Fox made clear, public, and binding disclaimers that claim 1 of the ‘331 patent was distinguished from and had advantages over the prior art by locating the air bleed assembly between the fork’s lower leg seal and upper bushing. Accordingly, it is my opinion that the Board should thus construe the “air bleed assembly” of claim 1 to be located “between the fork’s lower leg seal and upper bushing.”

52. That said, irrespective of whether the Board adopts SRAM’s proposed construction, the prior art references cited herein and combinations thereof would have either anticipated or rendered the claims obvious if the claims are broad enough to cover the products Fox accuses of infringement, as set forth in Exs. 1012 and 1013, and the claims as construed by Fox. I disagree with Fox’s charting of its claims compared to SRAM’s products, but adopt them for purposes of this Declaration, irrespective of the Board’s construction of “air bleed assembly.”

53. I reserve the right to respond to any other constructions that Patent Owner Fox submits.

NEW PRIOR ART NOT CONSIDERED IN THE ‘331 PATENT

54. This Petition relies solely on prior art published more than one year before the earliest possible priority date for the ‘331 patent, May 9, 2012.

Japanese Patent App. Pub. No. JP2004345366A (“Kojima”)

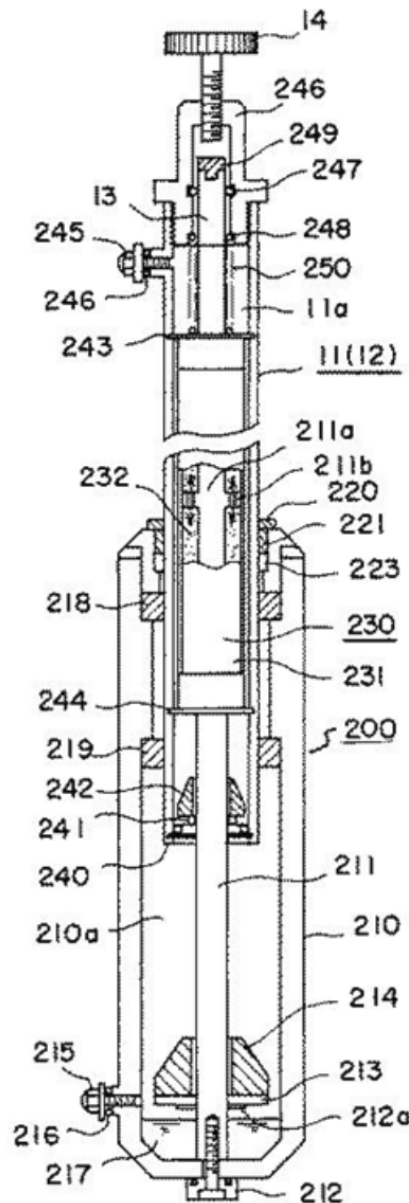
55. *Kojima* was filed as Japanese Patent Application No. JP2003141129A on May 19, 2003 and published on December 9, 2004. Ex. 1005. It is therefore pre-AIA 35 U.S.C. § 102(b) prior art to the ‘331 patent.

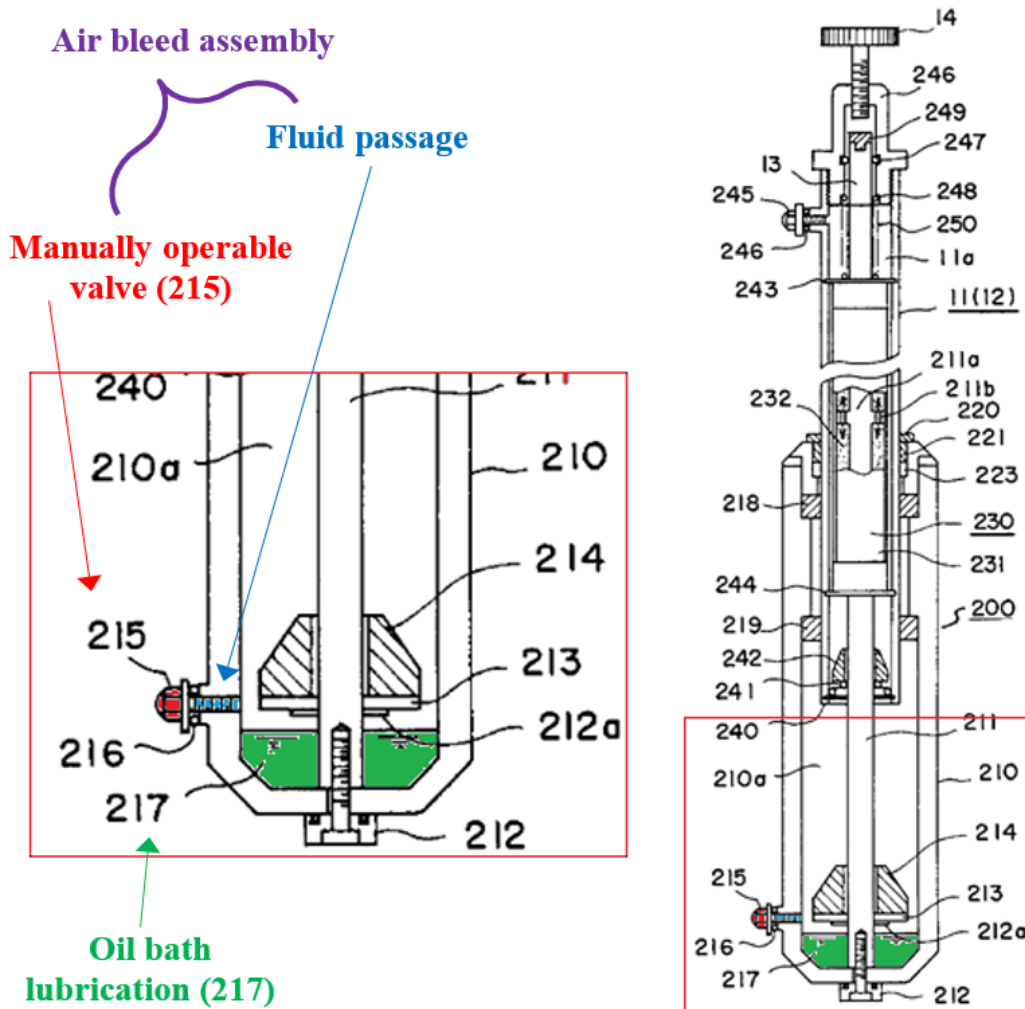
56. *Kojima* discloses an adjustable suspension system including a front suspension fork **200** having “an air spring-plus-oil damper structure ... mounted on both sides of the front axle **2a**” around the “lower part of [the] bottom case **210**[.]” Ex. 1005, Abstract, [0075]-[0076]. *Kojima* explains:

An air valve **215** is screwed into the lower side wall of the bottom case **210** via an o-ring **216** serving as an air seal. The bottom portion inside the bottom case **210** forms an oil bath, and lubricating oil **217** is enclosed in this portion (at, for example, enclosure viscosity of **10** wt to **15** wt) to reduce the sliding resistance and smooth operations between the inner shaft **11** and the slide bushes **218**, **219** and the various seals **220**, **221**, **223**, and to improve the airtightness of the air chamber **210a**.

Ex. 1005, [0077].

57. Further, *Kojima's* Figure 9 shows that top-most portion of the lubricating oil bath **217** is below the air valve **215**. This arrangement allows for the air within *Kojima's* bottom case **210** to pass through the air valve **215** without materially disturbing the lubricating oil bath **217**.





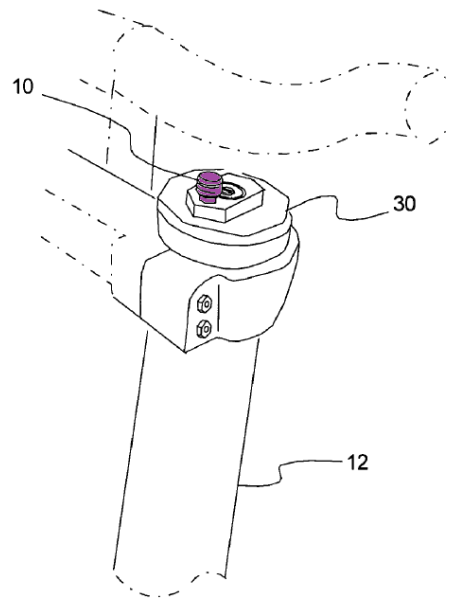
Ex. 1005, FIG. 9.

United States Patent No. 7,231,939 (“Bruckbauer”)

58. *Bruckbauer* was filed as United States Patent Application No. 11/076,676 on March 9, 2005 and issued on June 19, 2007. Ex. 1009. It is therefore pre-AIA 35 U.S.C. § 102(b) prior art to the ‘331 patent.

59. *Bruckbauer* discloses an “air bleed assembly” like that recited in the claims of the ‘331 patent. In particular, *Bruckbauer* “relates to a valve system for

purging gases that become trapped within the fork tubes or suspension of a motorcycle's fork.” Ex. 1009, 1:10-12. *Bruckbauer* discloses that “[e]xcessive trapped gas stiffens [a given fork] assembly.” Ex. 1009, 1:33. To alleviate this issue, *Bruckbauer* provides “a bleed button, or pressure relief valve” extending through the body of an outer fork leg, as shown below in purple:



Ex. 1009, 2:24-34, FIG. 1.

60. The functions of pressure relief valve **10** and associated button (*Bruckbauer's* valve cap 36) (together shown in red) “include opening or closing access to an air escape passage through the air passage inside the valve body” using, in part, an O-ring **28** carried by a connecting shaft **54**. Ex. 1009, 2:38-40. This opening and closing may “allow[] any buildup of excess pressure to be relieved by the user ... in order to restore the dampener's design characteristics.” Ex. 1009,

4:25-28. A spring **70** biases the pressure relief valve **10** toward the closed position. The overall structure of *Bruckbauer's* pressure relief valve **10** is the same as the '331 patent's air bleed assembly **300**:

Figure 3 of *Bruckbauer*

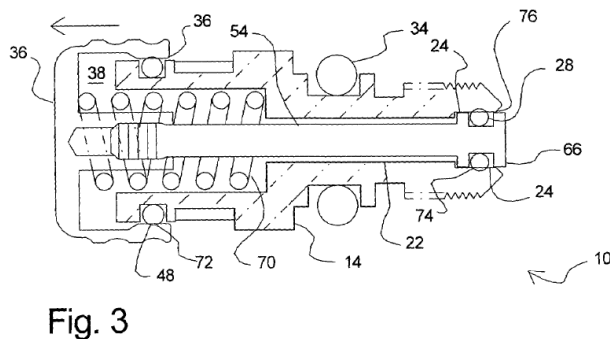
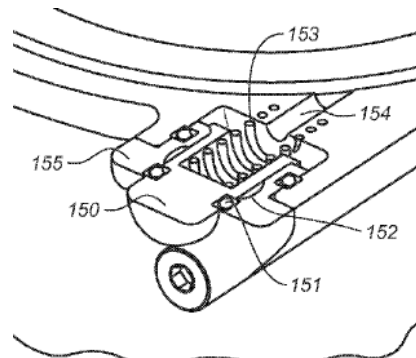


Fig. 3

Figure 2 of '331 patent



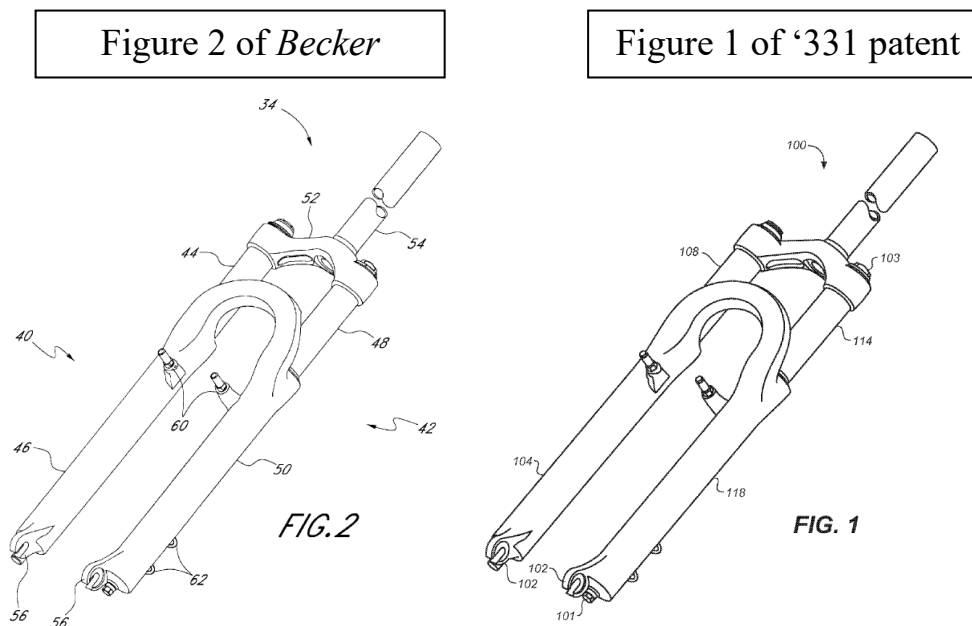
Compare Ex. 1009, FIG. 3, with Ex. 1001, FIG. 2.

United States Patent No. 6,592,136 (“Becker”)

61. *Becker* was filed as United States Patent Application No. 09/897,706 on July 2, 2001 and issued on July 15, 2003. Ex. 1008. It is therefore pre-AIA 35 U.S.C. § 102(b) prior art to the '331 patent.

62. *Becker* discloses the fork recited in the claims of the '331 patent. In particular, *Becker* relates to “[a]n off-road bicycle suspension fork includ[ing] a pair of fork leg assemblies, each of the leg assemblies having an upper [Inner] leg telescopingly engaged with a lower [Outer] leg.” Ex. 1008, Abstract. *Becker* shows

a suspension fork **34** in use on a bicycle **20**, wherein the suspension fork **34** includes each and every limitation of Claim 1 of the '331 patent but for the air bleed assembly. *See* Ex. 1008, FIG. 1. In fact, *Becker* includes nearly the same figure of a fork as is used in the '331 patent:



Compare Ex. 1008, FIG. 2, with Ex. 1001, FIG. 1.

63. *Becker's* Figure 3, depicted below, provides details of the identical internal components of *Becker's* suspension fork **34**, which include: a main seal **68**; an upper bushing **64**; an upper (Inner) tube **44**; a lower (Outer) tube **46**; and oil. Ex. 1001, 1:60-67; Ex. 1008, 5:43-56, 6:22-39. *Becker's* damper assembly **76** is formed within the Outer Tube of the leg on the left of Figure 3, depicted below:

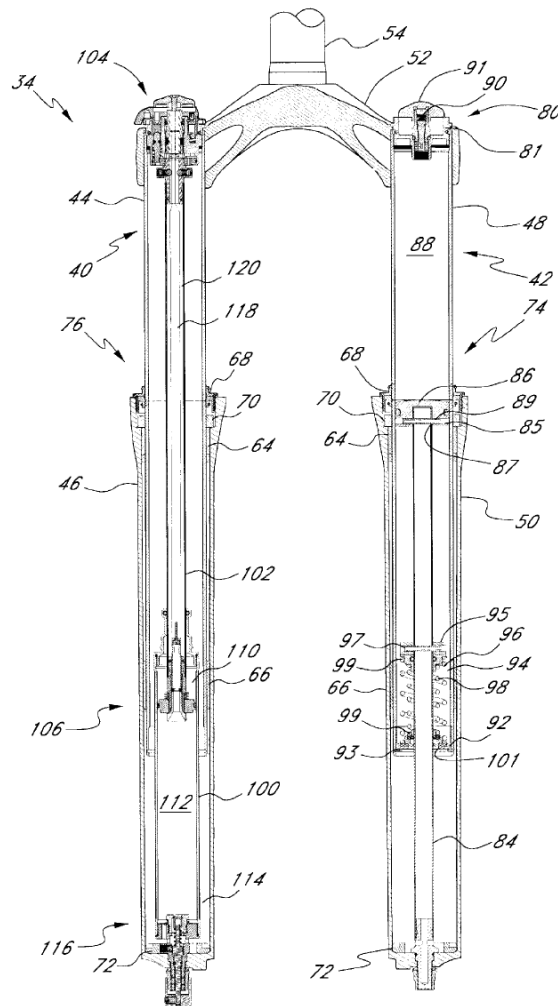


FIG. 3

European Patent App. Pub. No. EP0979772A2 (“Danter”)

64. *Danter* was filed as European Patent Application No. 99102394.6 on February 8, 1999 and published on February 16, 2000. Ex. 1010. It is therefore pre-AIA 35 U.S.C. § 102(b) prior art to the ‘331 patent.

65. *Danter* discloses the use of an aluminum casting process for making portions of a fork tube. *See, e.g.*, Ex. 1010, [0011], [0018]. *Danter* states that

POSITAs preferred such a casting process. Ex. 1010, [0011], [0018]. Further, *Danter* discloses that the casting process may include the formation of features formed on and attached to the cast fork tubes. *See, e.g.*, Ex. 1010, FIGS. 8–14; [0013], [0015], [0017]. Casting using a die is very well-known and widely utilized in manufacturing bicycle and motorcycle forks, including suspension forks.

United States Patent No. 1,174,168 (“Kraft”)

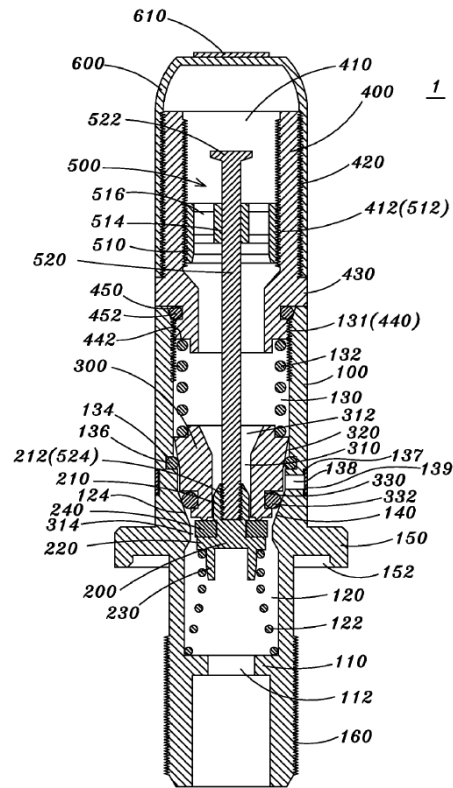
66. *Kraft* was filed as United States Patent Application No. 548,725 on March 11, 1910 and issued on March 7, 1916. Ex. 1006. It is therefore pre-AIA 35 U.S.C. § 102(b) prior art to the ‘331 patent.

67. *Kraft* discloses an air valve having components that are “easily accessible” while simultaneously being “protected from accidental injury” when in use. Ex. 1006, 1:12–19. The valve includes a valve proper **J** that seals against a conical seat **K** formed within a bore of the valve casing **C**. Ex. 1006, 1:59–69; FIG. 3.

United States Patent No. 7,624,752 (“Huang”)

68. *Huang* was filed as United States Patent Application No. 11/562,969 on November 22, 2006 and issued on December 1, 2009. Ex. 1007. It is therefore pre-AIA 35 U.S.C. § 102(b) prior art to the ‘331 patent.

69. *Huang* discloses an air valve **1** having components that “automatically releases surplus high-pressure air when an object is excessively inflated via the inflation valve.” Ex. 1007, 1:6-8. The valve **1** includes a first valve body **200** holding an airtight washer **240** that seals against a seat of a second valve body **300**. Ex. 1007, 4:38-53, FIGS. 2, 3A. A central pin **520** is connected at one end to the second valve body **300** and at the other end to a diametrically expanded head portion **522**, which portion is a button that may actuate the valve **1**. Ex. 1007, 6:10-17; FIGS. 2, 3A.

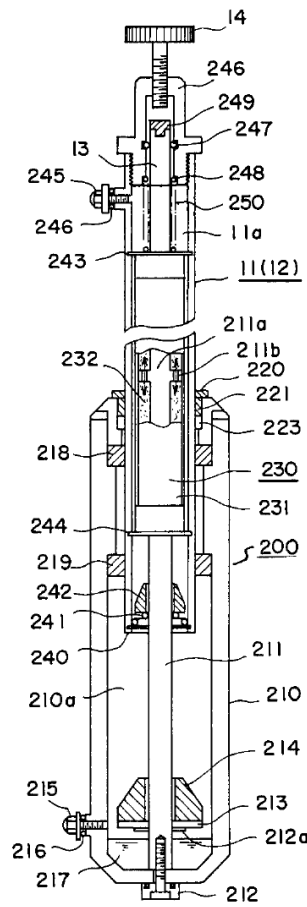


Motivation to Combine

1. *Kojima and Bruckbauer*

70. The combination of *Kojima* and *Bruckbauer* is straightforward: a POSITA would modify *Kojima*'s typical suspension fork to substitute *Bruckbauer*'s pressure relief system for *Kojima*'s air valve **215** and O-ring **216**.

71. As discussed above, *Kojima* discloses a typical suspension fork embodiment shown in Figure 9, wherein *Kojima*'s suspension fork includes lower tubes **210** and upper tubes **11**:



Ex. 1005, FIG. 9.

72. *Kojima*'s bottom case **210** may be filled with a pressurized gas to form an air spring **210a**. Ex. 1005, ¶¶[0077]-[0078]. As a result, a user may have need of tuning, and eventually will need to release, the air pressure built up in the air spring **210a**. In particular, a POSITA would know that a user may overinflate the air spring **210a** during setup, or the air pressure may increase as a result of an altitude change or temperature increase and, as a result, have a need for venting some of the air pressure within the air spring **210a**. Such altitude changes and temperature increases (especially those due heating during heavy use) are common when riding over mountainous terrain. Further, a user will eventually need to equalize the pressure within the air spring **210a** with that of ambient air to safely disassemble the suspension fork for maintenance. Disassembling a suspension fork with an air spring without first equalizing the pressure of the gas within the air spring may cause portions of the air spring to eject at high speeds, potentially causing serious injuries to anyone in the proximity of the suspension fork. Accordingly, a POSITA would have been motivated to improve *Kojima* and its air spring **210a** by providing a means for equalizing the gas pressures therein with the ambient air pressure.

73. A POSITA would also understand that this functionality may be provided by *Bruckbauer*'s pressure relief valve **10**. In fact, *Bruckbauer*'s pressure

relief valve **10** may be directly screwed into *Kojima's* threaded hole that accommodates the air valve **215**, as *Bruckbauer* is intended to replace prior art screws that were previously used for purging fluids through holes in suspension forks. Ex. 1009, 1:38-47, 2:14-20. *Bruckbauer* is a device for safely equalizing pressure.

74. The advantages of such an improvement extend beyond providing safe equalization of pressures. *Bruckbauer's* solution additionally provides the convenience of a push-button device that requires no tools, as well as an ability to remain free of contamination during use. *Id.*

75. When substituted into *Kojima's* threaded hole, *Bruckbauer's* pressure relief valve **10** allows the user to equalize any pressure built up between the lower fork **210** and the upper fork **11** during assembly or maintenance by merely pressing *Bruckbauer's* cap **36**.

76. Accordingly, the combination of *Kojima* and *Bruckbauer* would merely be the combination of known prior art elements (*Kojima's* typical vehicle suspension fork and *Bruckbauer's* known pressure relief valve) according to known methods (*Bruckbauer's* known pressure relief valve **10** may directly screw into *Kojima's* threaded hole). Further, the combination of *Kojima* and *Bruckbauer* would merely be a simple substitution of one known element (*Bruckbauer's* known pressure relief

valve **10**) for another (*Kojima's* air valve **215** and O-ring **216**). In each of these two cases, a POSITA would expect the combination to yield and obtain easily predictable results (that *Bruckbauer's* pressure relief valve **10** would allow for push-button opening and closing of *Kojima's* threaded hole), at least because each element in the combination is being incorporated and used as intended. Ex. 1005, FIG. 9; Ex. 1009, FIGS. 1-4.

2. *Becker and Bruckbauer*

77. The combination of *Becker* and *Bruckbauer* is straightforward: a POSITA would modify *Becker's* typical suspension fork to incorporate *Bruckbauer's* pressure relief system at a point along the length of the lower (Outer) tube of *Becker's* suspension fork.

78. *Becker* (Ex. 1008) discloses a typical suspension fork embodiment shown in Figures 2 and 3, wherein the suspension fork **34** includes right and left lower tubes **46**, **50** and right and left upper tubes **44**, **48**:

Figure 2 of *Becker*

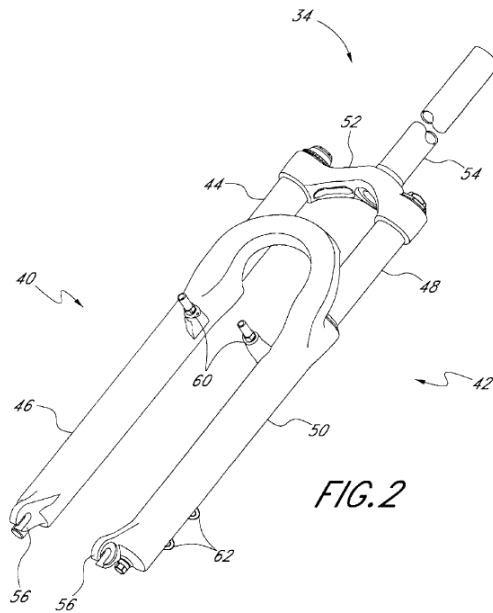
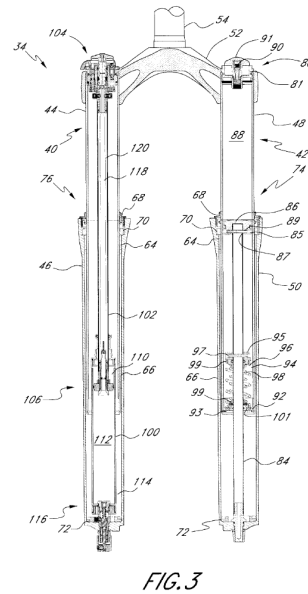


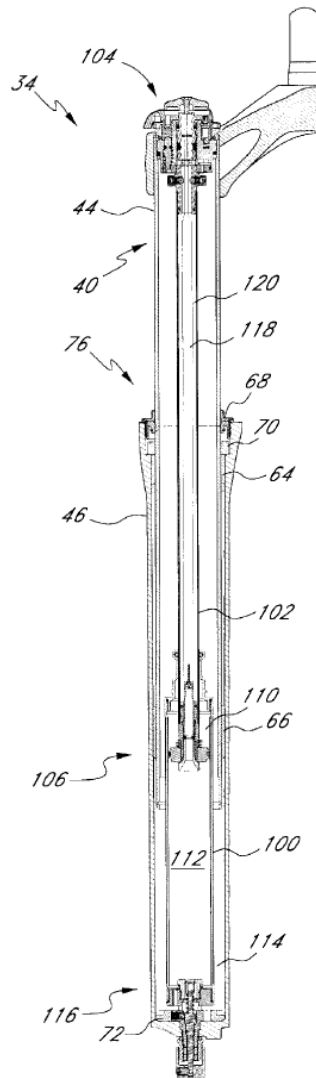
Figure 3 of *Becker*



Ex. 1008, FIGS. 2, 3.

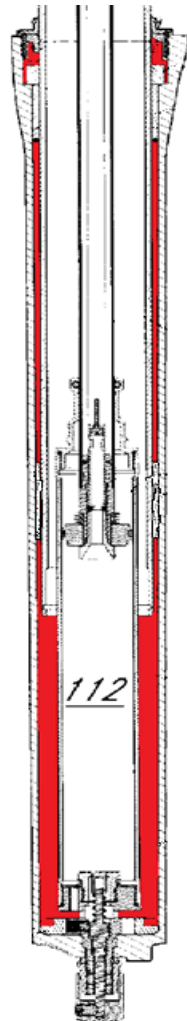
79. As can be seen in *Becker's* figures, *Becker's* suspension fork construction sets the lower tubes **46**, **50** as the Outer Tubes and the upper tubes **44**, **48** as the Inner Tubes of the telescoping suspension fork. *See, e.g.*, Ex. 1008, 5:42-55; 6:7-12; FIGS. 2, 3.

80. As shown in the truncated image of *Becker's* Figure 3, below, *Becker's* damper assembly **76** is formed in the right lower tube **46** of the suspension fork **34**, which tube is an Outer Tube. *See, e.g.*, Ex. 1008, 7:51-56. The damper assembly **76** includes a cartridge tube **100** that houses most of the damping components. Ex. 1008, 7:56-8:21.



Ex. 1008, FIG. 3.

81. *Becker* explains that there is a reservoir **114** formed around the cartridge tube **100** of the damper. Ex. 1008, 8:4-12. This reservoir **114** is highlighted in red in the truncated version of *Becker's* Figure 3 shown below:



Ex. 1008, FIG. 3 (red coloring added). This reservoir **114** is continuous, as oil and gas are able to move past and around *Becker's* bushings **64**, **66**.

82. A POSITA would have been motivated to add *Bruckbauer's* pressure relief system to a portion of *Becker's* right Outer Tube **46** at a point in contact with *Becker's* reservoir **114**, in order to allow the pressure of any gas trapped within the reservoir **114** to equalize with the pressure of ambient air around the suspension fork **34**. See Ex. 1009 (*Bruckbauer*), 4:21–28. *Bruckbauer* explains that such equalization

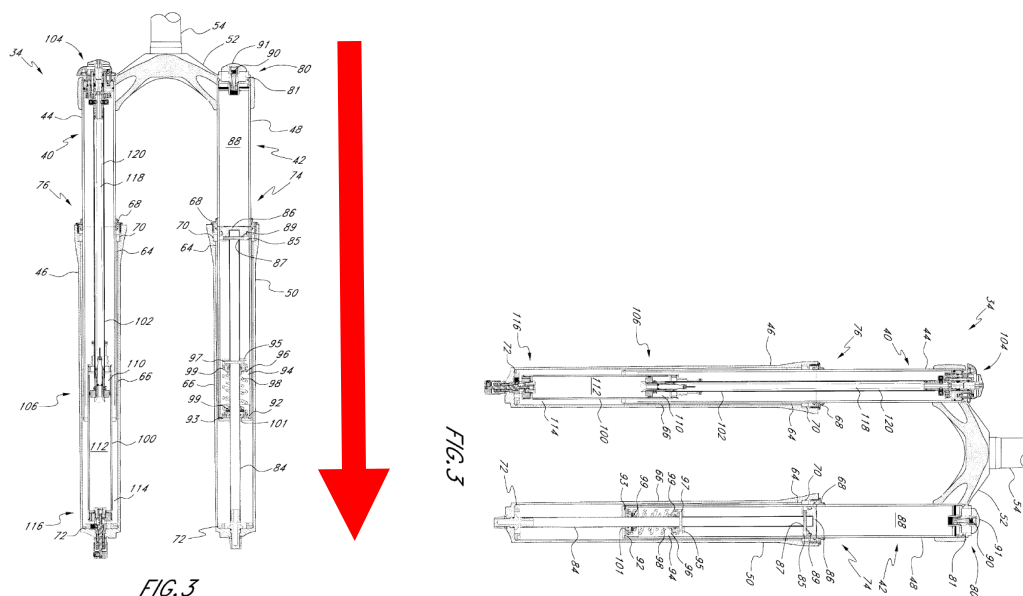
can “restore the [damper’s] design characteristics” and unstiffen the suspension fork

34. Ex. 1009, 4:27–28; 1:33–37. These benefits would have motivated a POSITA to make the simple combination.

83. Further, a POSITA would have been motivated to try different locations for placing *Bruckbauer’s* pressure relief valve **10** along the extent of *Becker’s* reservoir **114**. First, a POSITA would be motivated to improve *Becker* with *Bruckbauer’s* pressure relief valve **10**, as discussed above. Second, a POSITA would have been motivated to provide pressure relief to *Becker’s* damper assembly **76** and the area therearound, at least because *Bruckbauer* recognizes and provides a specific solution to issues with trapped air that may build up in this region of the suspension fork. *See* Ex. 1009 (*Bruckbauer*), 1:7-12 (“a valve system for purging gases that become trapped within the fork tubes or suspension”); 2:10-13 (“there remains a need for a simple device that can be used for rapid, reliable release of excess air or gas trapped in the dampeners or struts of the fork”). In *Becker*, the area around and in fluid communication with the damper is *Becker’s* reservoir **114**. Thus, a POSITA would have been motivated to place this reservoir **114** in fluid communication with *Bruckbauer’s* pressure relief valve **10**. Third, it would have been obvious to try different locations for placement of *Bruckbauer’s* pressure relief valve **10** along the length of *Becker’s* Outer Tube **46**, as there are only a finite

number of positions along the length to try. Fourth, such a modification would have been predictable at least because the process of modifying *Becker* would have been simple to a POSITA, and the combined *Becker/Bruckbauer* device would be reasonably expected to function to fluidly connect the reservoir **114** with the ambient air, allowing gas to pass between the two regions and the pressures within the reservoir **114** and external to the suspension fork **34** to become equal. After all, *Bruckbauer* is intended to release air from the damper of a suspension fork, like that in *Becker*.

84. I note that the fork may be oriented such that any air within the reservoir **114** is easily vented from the pressure relief valve **10**. For example, the images below depict *Becker*'s fork oriented in different positions relative to the direction of gravity (red arrow).



Ex. 1008, FIG. 3.

85. In the image on the left, the oil within *Becker's* damper and reservoir **114** would be expected to pool at the bottom of the Outer Tube **46**. On the other hand, the oil within *Becker's* damper and reservoir **114** would be expected to pool along the length of the reservoir **114** on the side of the Outer Tube **46**.

86. Thus, for a pressure relief valve **10** (*Bruckbauer*) placed along the reservoir **114** (*Becker*), the fork may need to be oriented so that gravity carries the oil away from the vent hole of the pressure relief valve **10**. This would have been clear to a person of ordinary skill in the art. Moreover, this placement is made even more predictable by the fact that *Bruckbauer* explains that the pressure relief valve **10** is placed onto the cap portion for the sake of convenience, and not for a specific need. *See, generally*, Ex. 1009. A POSITA would have known that *Bruckbauer's* pressure relief valve **10** works by creating a fluid passage between the damper and the external air, and that this may work regardless of which portion of the damper is proximate to the pressure relief valve **10**.

87. Further, the addition of *Bruckbauer's* pressure relief valve **10**, which itself is already designed as a suspension fork improvement, to *Becker's* suspension fork **34** would have merely been the application of a known technique to a known device that was ready for improvement, and the result would have been predictable.

Again, *Bruckbauer's* pressure relief valve **10** is intended to improve suspension forks by allowing the area around and within the damper to be in fluid communication with the ambient air around the suspension fork. *See* Ex. 1009, 1:7–12; 2:10–13. Further, *Becker's* suspension fork **34** is a known and common suspension fork design that is ready for improvement with a means for equalizing the air around the damper with the air around the suspension fork **34**. Finally, as discussed above, the combination of *Bruckbauer's* pressure relief valve **10** with *Becker's* suspension fork would have been predictable. *Bruckbauer* is being used in the same way in the combination of *Becker/Bruckbauer* as it is used in *Bruckbauer*, and a POSITA would expect success from adding *Bruckbauer's* pressure relief valve **10** at any point along the length of *Becker's* reservoir **114**.

3. *Becker/Bruckbauer* in view of *Danter*

88. The combination of *Becker*, *Bruckbauer*, and *Danter* is also straightforward: a POSITA would modify *Becker's* typical lower (Outer) tubes **46**, **50** to incorporate *Danter's* method of forming “leg portions of the front suspension fork member” using a “cast[ing process] from a suitable metal such as steel or aluminum alloy[.]” Ex. 1010, 4:18-20. A POSITA would have been motivated to improve *Becker* by using *Danter's* casting process at least because casting was a common and known technique; forks were known devices; and it was predictable

that fork legs/tubes could be made via casting. Further, it would have been obvious to try casting *Becker's* lower (Outer) fork **46, 50**. Finally, a POSITA would have been motivated to use die-casting to benefit from the reliability and low costs associated with such methods.

4. *Kojima* or *Kojima/Bruckbauer* in view of *Danter*

89. The combination of *Kojima*, or *Kojima* in view of *Bruckbauer*, and *Danter* is again straightforward: a POSITA would modify *Kojima's* typical lower fork **210** to incorporate *Danter's* method of forming “leg portions of the front suspension fork member” using a “cast[ing process] from a suitable metal such as steel or aluminum alloy[.]” Ex. 1010, 4:18-20. A POSITA would have been motivated to improve *Kojima* by using *Danter's* casting process at least because casting was a common and known technique; forks were known devices; and it was predictable that fork legs/tubes could be made via casting. Further, it would have been obvious to try casting *Kojima's* lower fork **210**. Finally, a POSITA would have been motivated to use die-casting to benefit from the reliability and low costs associated with such methods.

5. *Kojima* in view of *Huang*

90. The combination of *Kojima* and *Huang* is likewise straightforward: a POSITA would modify *Kojima* to substitute and improve *Kojima's* air valve **215**

with *Huang's* air valve **1**. Ex. 1005, FIG. 9; Ex. 1007, FIGS. 2, 3A. A POSITA would have been motivated to make this simple substitution at least because *Huang's* valve **1** is well-known, relatively inexpensive, and easily operated with manual inputs. Ex. 1005; Ex. 1007. And the simple substitution of known elements would have been predictable, as it would have only required screwing in the body of *Huang* into the die-cast feature of *Kojima*.

91. Further, a POSITA would have been motivated to improve *Kojima* by using *Huang's* valve at least because *Huang's* air valve **1** would allow for more convenient air insertion into *Kojima*, when needed.

CLAIM-BY-CLAIM EXPLANATION OF WHY THE CLAIMS OF THE ‘331 PATENT ARE INVALID IN VIEW OF NEWLY CITED PRIOR ART REFERENCES

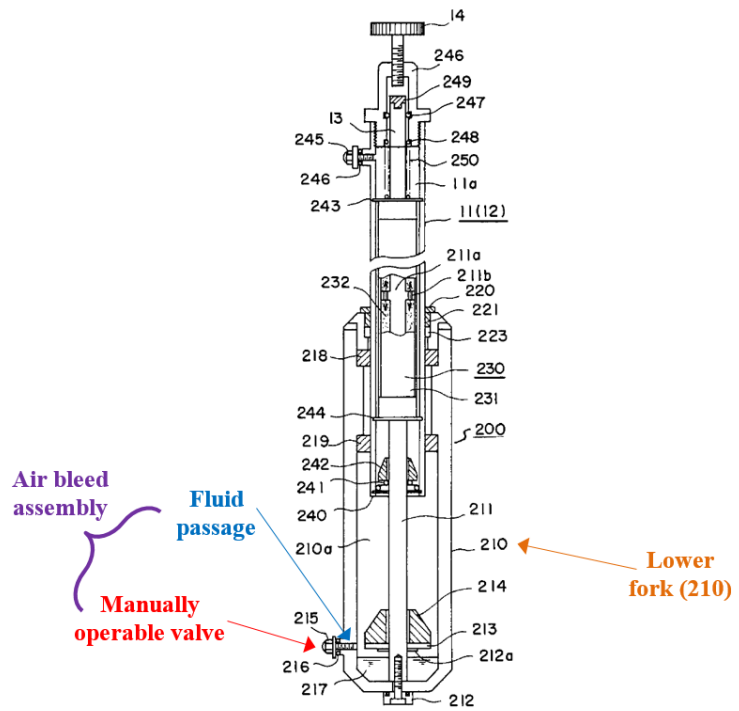
Ground I: Claims 1 Through 3 and 5 of the ‘331 Patent Are Anticipated Under 35 U.S.C. § 102 by *Kojima*

Invalidity of Independent Claim 1

• **Claim 1[pre]**

Claim Element	Claim Language
1[pre]	A lower fork and air bleed assembly combination comprising:

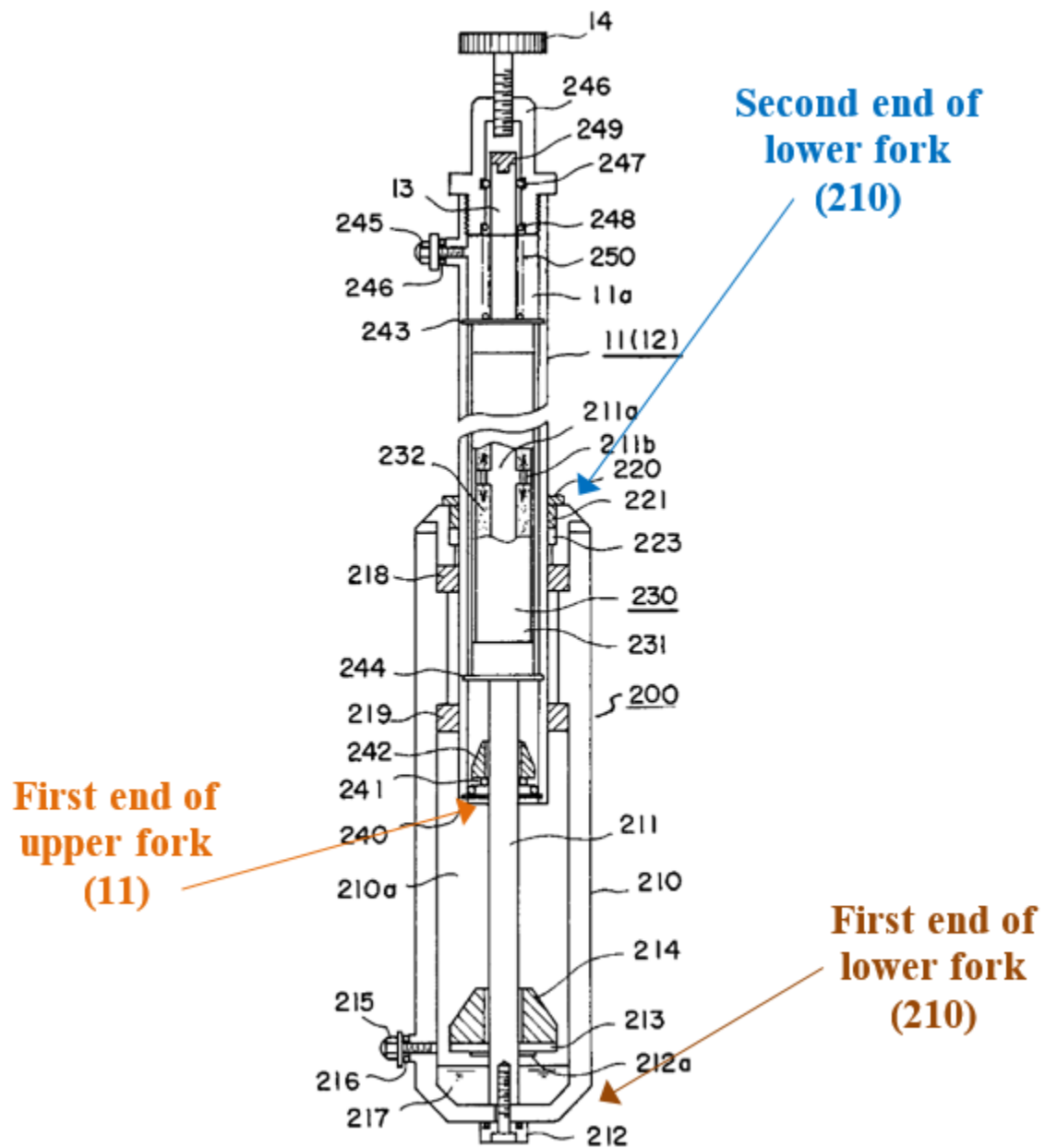
92. *Kojima* discloses each and every element of claim 1. *Kojima* includes a lower fork **210** (orange arrow) including an air bleed assembly **215, 216** (purple). In particular, *Kojima*’s Figure 1 shows a “mountain bike” that includes a “front suspension” having a “bottom case **210**” and an “air valve **215**” with “an O-ring **216**” serving as a seal. Ex. 1005, ¶¶[0004], [0077], FIGS. 1, 2, 9.



- **Claim 1[a]**

Claim Element	Claim Language
1[a]	a lower fork, said lower fork configured to have a first end coupled to a vehicle wheel, and a second end configured to be telescopically engaged with a first end of an upper fork, said lower fork further comprising:

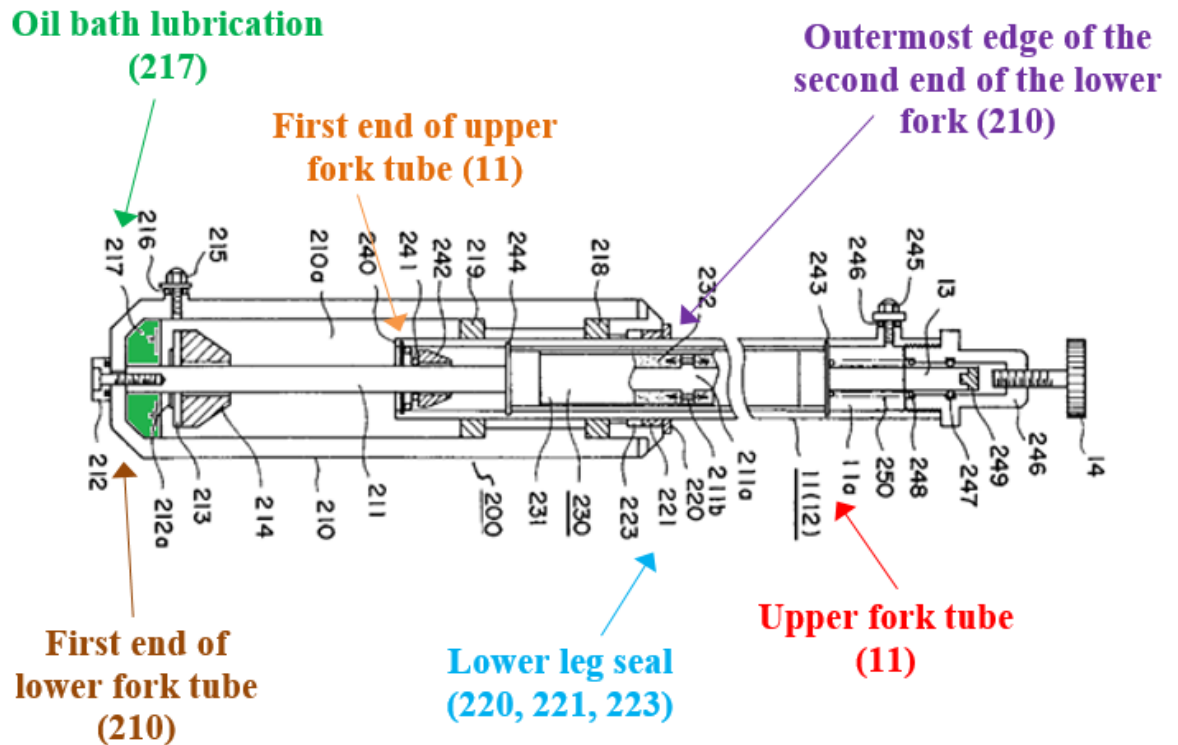
93. *Kojima* discloses each and every element of this limitation. *Kojima* includes a lower fork **210** configured to have a first end (brown arrow) coupled to a vehicle wheel, and a second end (blue arrow) configured to be telescopically engaged with a first end (orange arrow) of an upper fork **11**. In particular, *Kojima* shows a mountain bike having a bottom case (identified as being **18, 19** in Figure 1 and **210** in Figure 9), a front wheel **2**, and inner shafts **11, 12**. In particular, “[t]he lower portion of each bottom case **18, 19** is attached to the front axle **2a** at the central portion of the front wheel **2**. The lower ends of the inner shafts **11** and **12** are slidably inserted into bottom cases **18, 19**[.]” Ex. 1005, ¶¶[0023]-[0024]; FIGS. 1, 2, 9. Accordingly, *Kojima*’s bottom case **18, 19, 210** may be the recited lower fork and *Kojima*’s inner shafts **11, 12** may be the recited upper fork.



- **Claim 1[b]**

Claim Element	Claim Language
1[b]	a lower leg seal located at an outermost edge of said second end of said lower fork tube, said lower leg seal configured for sealing closed a gap disposed between said upper fork tube and said lower fork tube when said lower fork is telescopically engaged with said first end of said upper fork, thereby preventing an oil bath lubrication occupying an area within said lower fork tube at a first end of said lower fork tube from leaking from said lower fork; and

94. *Kojima* discloses each and every element of this limitation. *Kojima* includes three upper seals **220, 221, 223** that comprise a lower leg seal (light blue arrow) located at an outermost edge of the second end (purple arrow) of the lower fork tube **210**, the lower leg seal **220, 221, 223** configured for sealing closed a gap disposed between the upper fork tube **11** (red arrow) and the lower fork tube **210** when the lower fork **210** is telescopically engaged with the first end (orange arrow) of the upper fork **11**, thereby preventing an oil bath lubrication **217** (green arrow) occupying an area **210a** within the lower fork tube **210** at a first end (brown arrow) of the lower fork tube **210** from leaking from the lower fork **210**.

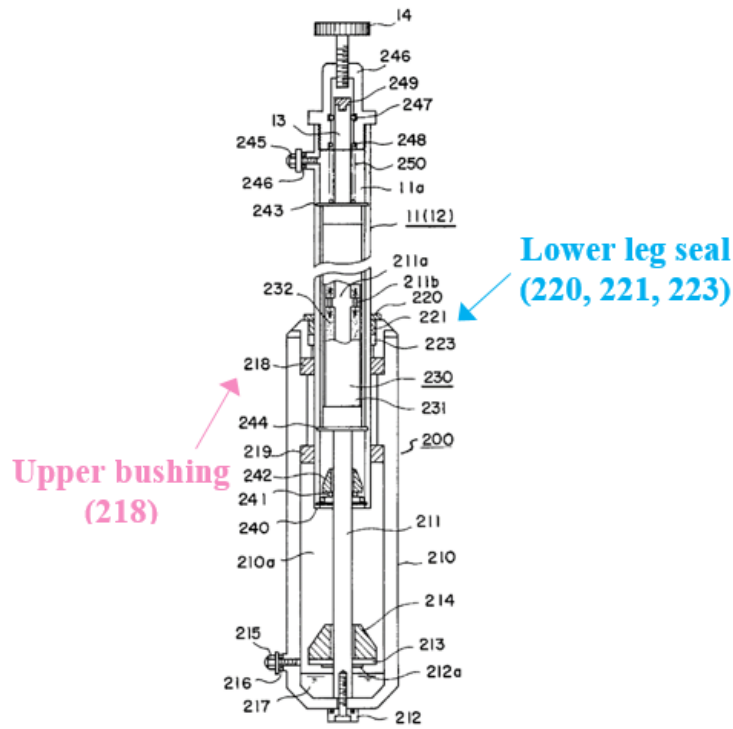


95. In particular, *Kojima* shows dust seal **220**, air seal **221**, and oil seal **223** all being located at the upper end opening of the bottom case **210** to prevent lubricating oil **217** within the bottom case **210** from leaking therethrough. Ex. 1005, ¶[0077], FIG. 9.

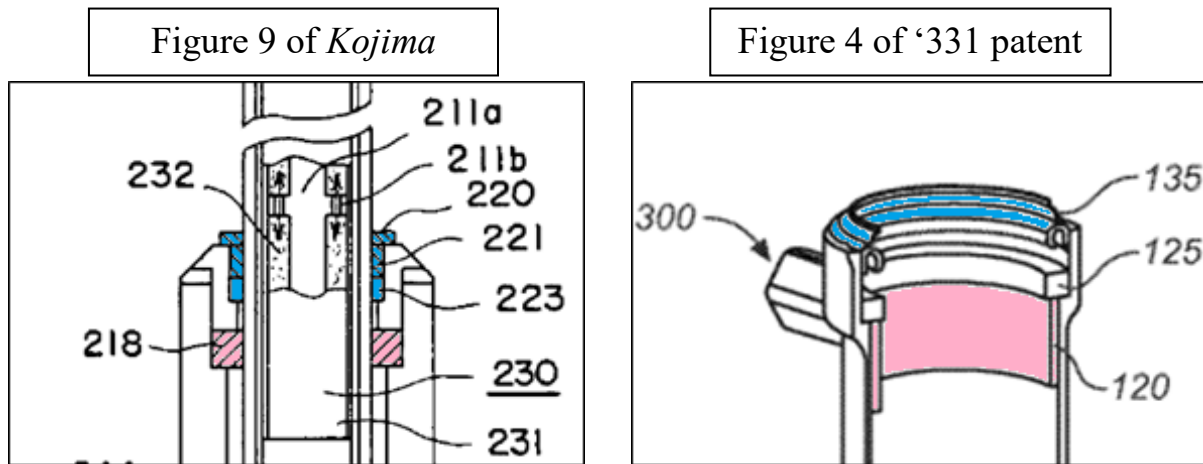
• Claim 1[c]

Claim Element	Claim Language
1[c]	an upper bushing attached to and positioned adjacent to said lower leg seal; and

96. *Kojima* discloses each and every element of this limitation. *Kojima* includes an upper bushing **218** (pink arrow) attached to and positioned adjacent to the lower leg seal **220, 221, 223** (light blue arrow). In particular, *Kojima* discloses a slide bush **218** attached to and positioned adjacent to the dust **220**, air **221**, and oil **223** seals. Ex. 1005, FIG. 9.

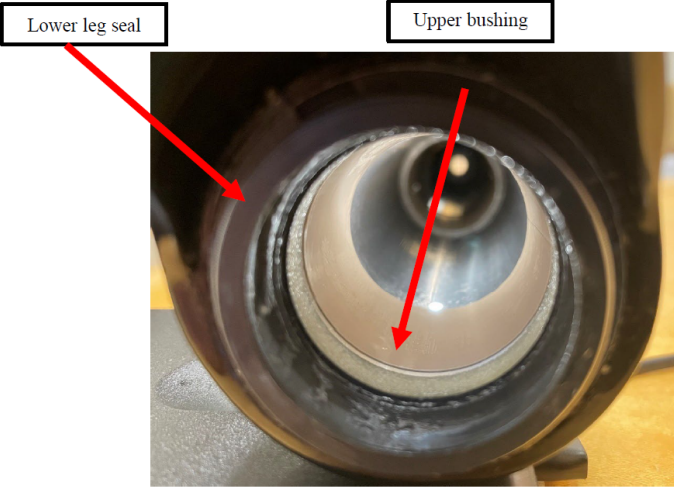


97. *Kojima's* configuration of the seals (blue) and bushing (pink) is the same as the only configuration disclosed in the '331 patent, as can be seen in a comparison between Figure 9 of *Kojima* (below left) and Figure 4 of the '331 patent (below right).



Ex. 1005, FIG. 9; Ex. 1001, FIG. 4.

98. Furthermore, Patent Owner Fox already admitted that *Kojima's* configuration of the various seals **220**, **221**, **223** and slide bush **218** meets this limitation. In particular, Fox accused a lower leg seal that is positioned apart from the bushing as meeting this limitation in its Initial Infringement Contentions against SRAM in the District Court. Ex. 1012, at 19.

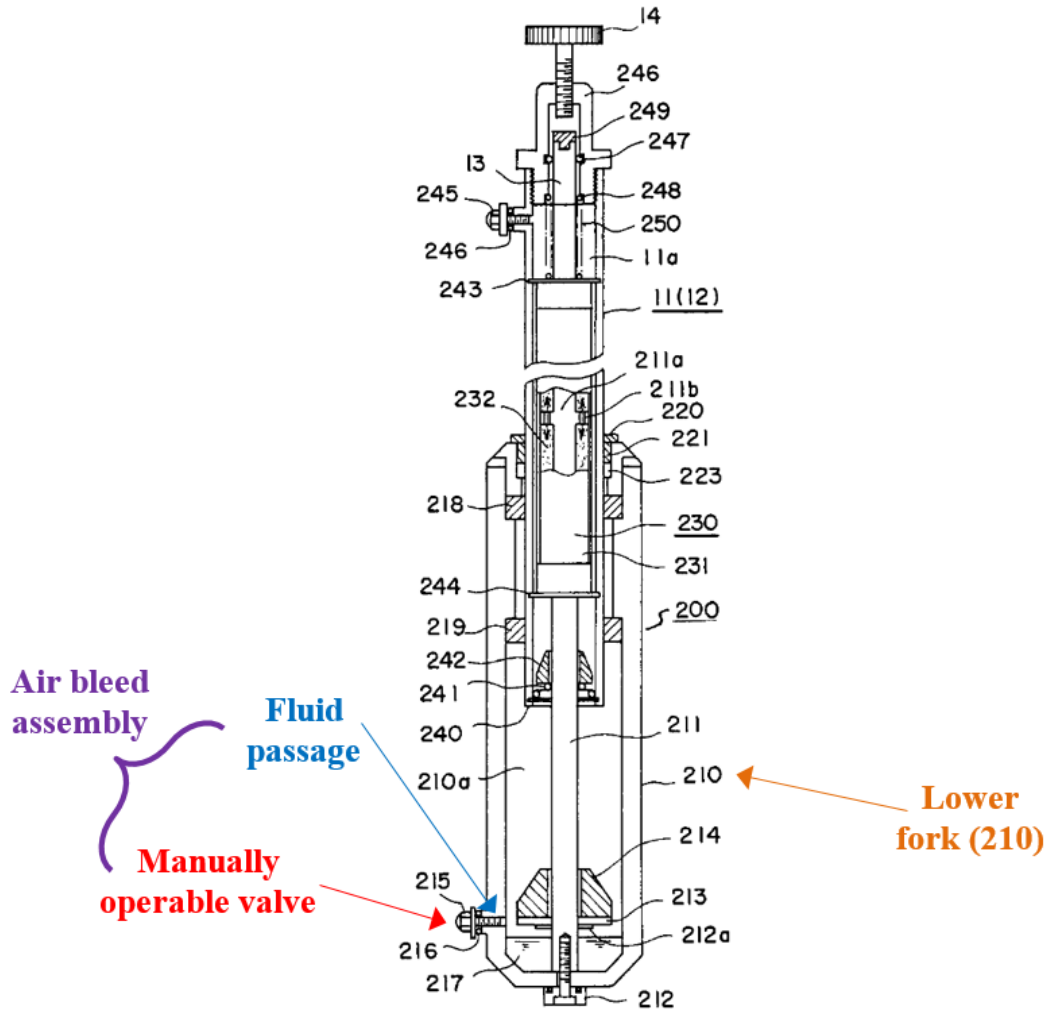
Claim	U.S. Patent No. 9,739,331	Rockshox Lyrik Ultimate
1[c]	an upper bushing attached to and positioned adjacent to said lower leg seal; and	The Rockshox Lyrik Ultimate has an upper bushing attached to and positioned adjacent to said lower leg seal. 

• **Claim 1[d]**

Claim Element	Claim Language
1[d]	an air bleed assembly disposed on said lower fork tube, said air bleed assembly configured for equalizing ambient pressure within said lower fork, said air bleed assembly comprising:

99. *Kojima* discloses each and every element of this limitation. *Kojima* includes an air bleed assembly **215, 216** (purple) (in addition to *Kojima*’s related fluid passage) disposed on the lower fork tube **210** that is configured for equalizing internal pressure within the lower fork **210** with ambient pressure. Further, when *Kojima*’s air valve **215** is open, the air pressure with the fork equalizes with the ambient air pressure. In particular, *Kojima* discloses “[a]n air valve **215** [] screwed

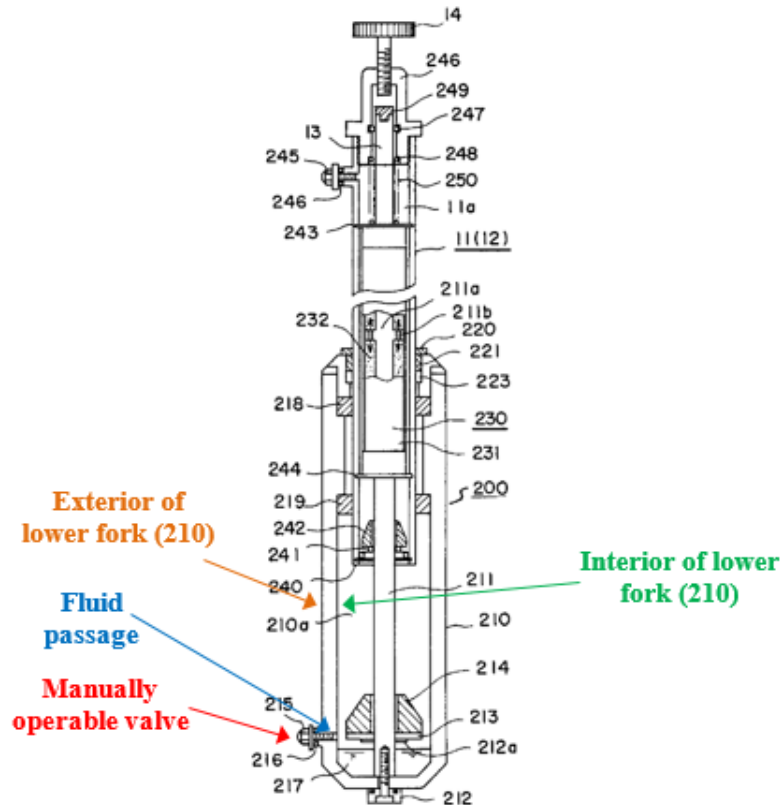
into the lower side wall of the bottom case **210** [with] an O-ring **216** serving as an air seal.” Ex. 1005, ¶[0077].



- Claim 1[e]

Claim Element	Claim Language
1[e]	a fluid passage disposed between an interior of said lower fork and an exterior of said lower fork; and

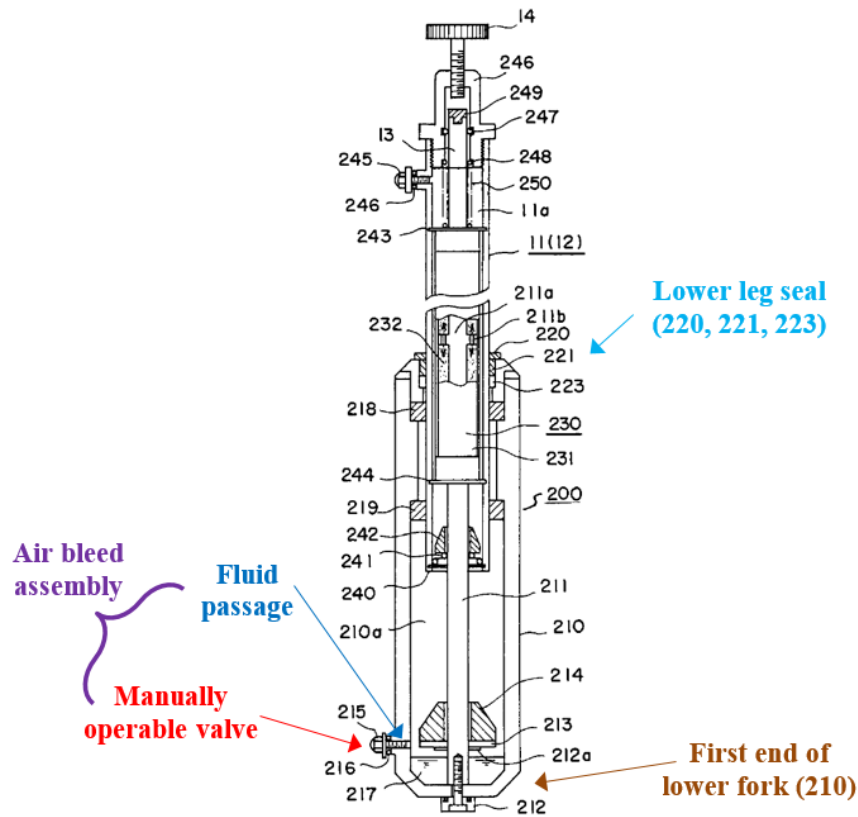
100. *Kojima* discloses each and every element of this limitation. *Kojima* includes a fluid passage (blue arrow) disposed between an interior (green arrow) of the lower fork **210** and an exterior (orange arrow) of the lower fork **210**. *Kojima*'s fluid passage is the passage for accommodating the illustrated manually operable valve **215** (red arrow). For example, *Kojima* discloses an air valve **215** screwed into the lower side wall of the bottom case **210** with an O-ring **216** serving as an air seal. Further, *Kojima*'s O-ring **216** includes a fluid passage disposed between the interior and exterior of the bottom case **210**. *Kojima*'s fluid passage is the passage for accommodating the illustrated air valve **215**. Ex. 1005, FIG. 9.



• **Claim 1[f]**

Claim Element	Claim Language
1[f]	a manually operable valve located in said lower fork and coupled to said fluid passage, said manually operable valve having a first position substantially closing said fluid passage and a second position allowing a fluid to flow between said interior and said exterior, said manually operable valve disposed between said lower leg seal and said first end of said lower fork, and

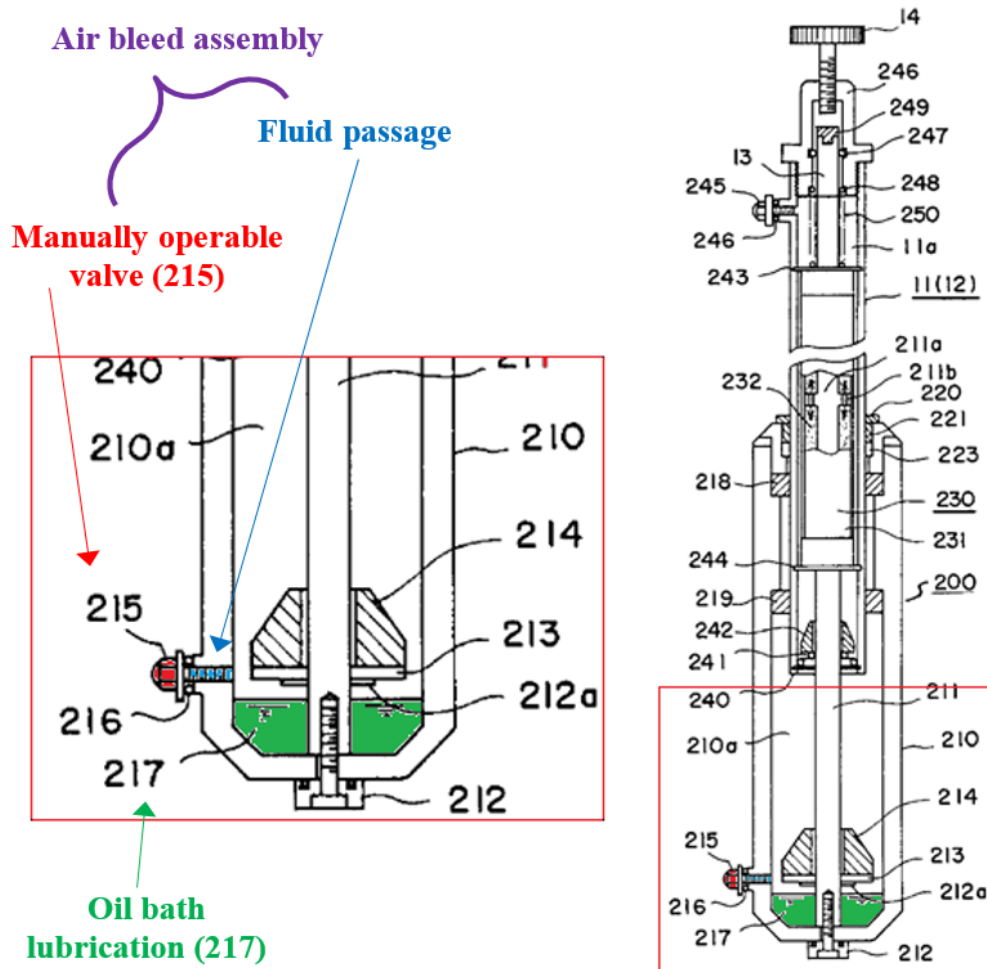
101. *Kojima* discloses each and every element of this limitation. *Kojima* includes a manually operable valve (red arrow) located in the lower fork **210** and coupled to the fluid passage (blue arrow). The manually operable valve is the portions of *Kojima*'s air valve **215** that engage with the threads in *Kojima*'s bottom case **210** and *Kojima*'s O-ring **216** that engage with the bottom case **210**. *Kojima*'s manually operable valve (defined above) has a first position substantially closing the fluid passage (when the screw threads for the air valve **215** are sufficiently engaged or the O-ring **216** is sufficiently seated) and a second position allowing a fluid to flow between the interior and the exterior of the lower fork **210** (when the air valve **215** is removed or sufficiently loosened, or the O-ring **216** is unseated). Further, *Kojima*'s manually operable valve (defined above) is disposed within a passage (blue arrow) between the lower leg seal **220, 221, 223** (light blue arrow) and the first end (brown arrow) of the lower fork **210**. Ex. 1005, ¶[0024], FIG. 9.



- Claim 1[g]

Claim Element	Claim Language
1[g]	wherein said fluid passage and said manually operable valve are located at a distance from an oil bath lubrication within said lower fork, such that when said manually operable valve is in said second position, most, if not all of said oil bath lubrication remains within said lower fork and such that when trapped air pressure inside said lower fork, that is higher than a local ambient air pressure outside of said suspension fork or shock absorber, is relieved most, of said oil bath lubrication that is within said lower fork remains within said lower fork.

102. *Kojima* includes each and every element of this limitation. *Kojima's* fluid passage (blue arrow) and manually operable valve (red arrow, defined in Claim element 1[f]) are located at a distance from an oil bath lubrication **217** (green arrow) within the lower fork **210**. This positioning of *Kojima's* valve **215** results in a configuration wherein when the manually operable valve (defined in Claim element 1[f]) is in the second position (open position), most, if not all of the oil bath lubrication **217** remains within the lower fork **210** because the air valve **215** is above the top of the illustrated oil bath **217**. Further, the air valve **215** can be closed were oil to begin leaking. Any air within the lower fork **210** will be equalized with ambient pressure when the air valve **215** is opened for a sufficient duration, while the oil **217** will remain in the oil bath lubrication space **210a** within the lower fork **210**. *Kojima's* Figure 9 clearly illustrates that the top surface of the oil bath **217** is well below the fluid passage of the air valve **215** screw within the bottom case **210**. Thus, when the air valve **215** screw is removed, little oil **217** would be vented for the illustrated, vertical orientation of the suspension fork. In addition, when the air valve **215** screw is opened, the pressure of the gas within the bottom case **210** will be equalized with the exterior air pressure, while the lubricating oil **217** will remain in the bottom case **210**. Ex. 1005, ¶[0077], FIG. 9.



Invalidity of Dependent Claim 2

Claim Element	Claim Language
2	The lower fork and air bleed assembly combination of claim 1, wherein said fluid comprises: a gas.

103. *Kojima* includes each and every element of this limitation. *Kojima* further includes air flowing through the fluid passage, at least when air is allowed to bypass *Kojima*'s air valve **215**. In particular, *Kojima* discloses that the screw is an

air valve **215** and that the O-ring **216** serves as an air seal. Further, *Kojima* explains that the interior of the bottom case **210** is filled with air. Ex. 1005, ¶[0078].

Invalidity of Dependent Claim 3

• **Claim 3[pre]**

Claim Element	Claim Language
3[pre]	The lower fork and air bleed assembly combination of claim 1, said air bleed assembly further comprising:

104. My opinions with respect to this claim element 3[pre] are the same as set forth for claim element 1[pre] above.

• **Claim 3[a]**

Claim Element	Claim Language
3[a]	a valve activator coupled with said manually operable valve, said valve activator comprising:

105. *Kojima* discloses each and every element of this limitation. *Kojima* has a valve activator coupled with the manually operable valve (defined in claim element 1[f]). The valve activator includes the portions of air valve **215** that may be used for communicating force from a manual input to the threads of the air valve **215**. In particular, *Kojima* includes facets on portions of the air valve **215** screw, which

facets may be used for communicating force from a manual input to the threaded portions of the air valve **215** screw and thereby causing the seat portion of the air valve screw **215** to press into the O-ring **216**. Ex. 1005, FIG. 9. Alternatively, the threads of the air valve **215** can be considered the valve activator, as identified by the Examiner during the prosecution of the '331 patent. Ex. 1004, at 88 (identifying *Galasso's* threads of 214, 314, 414, or pin of Schrader-type 470 as the valve activator). In this sense, Fox's proposed construction that the valve activator need be completely separate from the manually operable valve is incorrect and I do not adopt that construction which is contrary to the plain meaning of the claim.

- **Claim 3[b]**

Claim Element	Claim Language
3[b]	an activation position placing said manually operable valve into said first position; and

106. *Kojima* includes each and every element of this limitation. *Kojima's* valve activator (defined in Claim element 3[a]) includes an activation position where

the manually operable valve (defined in Claim element 1[f]) is in an open position.² In particular, *Kojima's* air valve **215** includes an activation position that is in an open position when the air valve **215** is removed or sufficiently loosened, or the O-ring **216** is unseated. Fluid may pass the air valve **215** when in the open position. Ex. 1005, ¶[0077], FIG. 9.

- **Claim 3[c]**

Claim Element	Claim Language
3[c]	a deactivation position placing said manually operable valve into said second position, and whereupon when in said activation position, the trapped air pressure in said lower fork is equalized with the local ambient air pressure.

107. *Kojima* includes each and every element of this limitation. *Kojima's* valve activator (defined in Claim element 3[a]) includes a deactivation position where the manually operable valve (defined in Claim element 1[f]) is in a closed

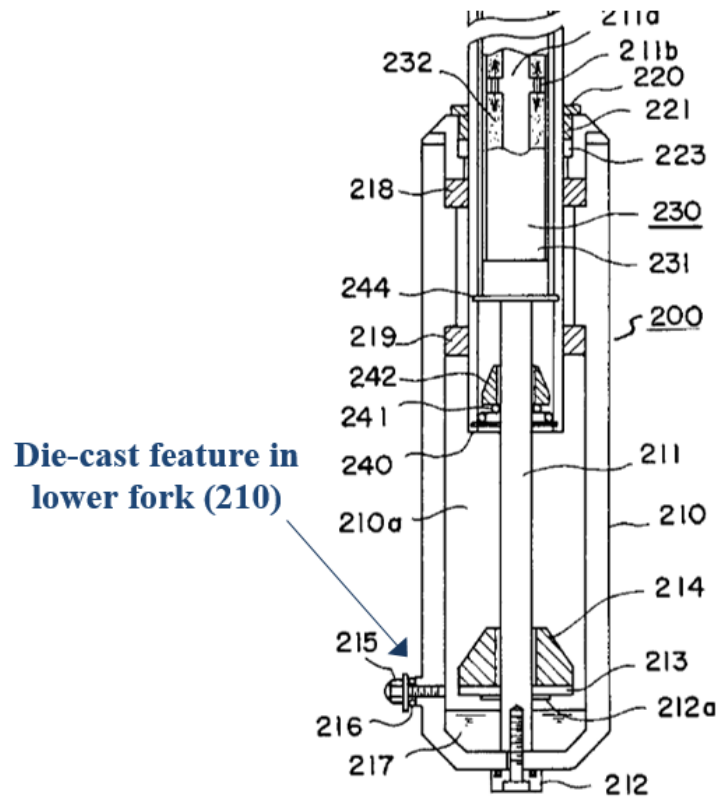
² I note that the term “activation position” conflates the first and second positions between claims 1 and 3 of the ‘331 patent and is therefore indefinite. However, for purposes of this analysis, I have adopted Fox’s construction, which rewrites the claim term.

position, as seen in *Kojima*'s Figure 9. In particular, when *Kojima*'s air valve **215** is opened, trapped air pressure in the lower fork **210** is equalized with the local ambient air pressure if open for a sufficient duration. When *Kojima*'s air valve **215** is opened, trapped air pressure in the bottom case **210** may be equalized with the exterior air pressure. Ex. 1005, ¶[0077], FIG. 9.

Invalidity of Dependent Claim 5

Claim Element	Claim Language
5	The lower fork and air bleed assembly combination of claim 3, wherein said valve activator is located on a die-cast feature of said lower fork.

108. *Kojima* includes each and every element of this limitation. *Kojima* includes a manually operable valve (defined in Claim element 1[f]) fixed into a passage through the body of the lower fork **210**, and *Kojima* discloses that the valve activator (defined in Claim element 3[a]) is located on a diecast feature (blue arrow) of the lower fork **210**. In particular, the die-cast feature is a portion of the bottom case **210** that protrudes slightly from the overall cylinder shape of the bottom case **210**, which portion further includes threads. *Kojima* explains that the bottom case **210** and its feature may be cast aluminum or magnesium. Ex. 1005, ¶[0076], FIG. 9; Ex. 1009, 5:3-28.



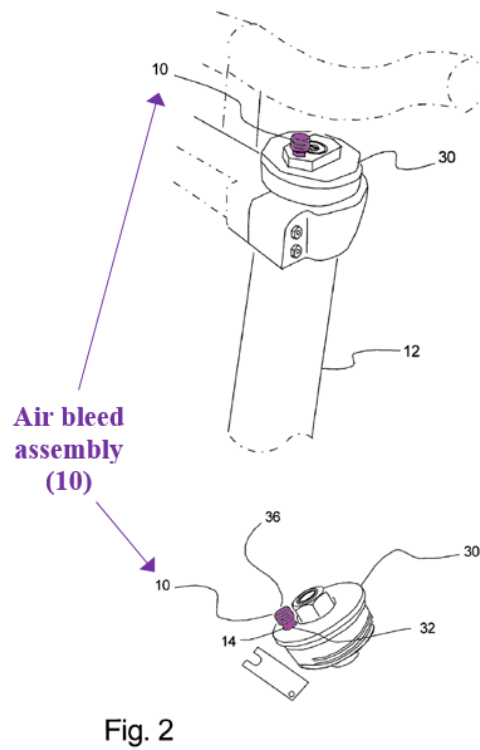
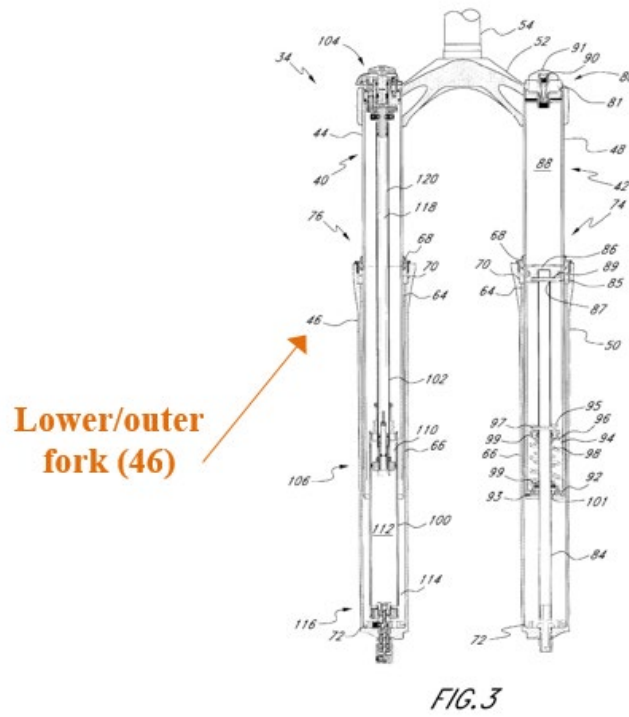
**Ground II: Claims 1 through 8 are Rendered Obvious under 35 U.S.C. § 103
by *Becker* in view of *Bruckbauer***

Invalidity of Independent Claim 1

• **Claim 1[pre]**

Claim Element	Claim Language
1[pre]	A lower fork and air bleed assembly combination comprising:

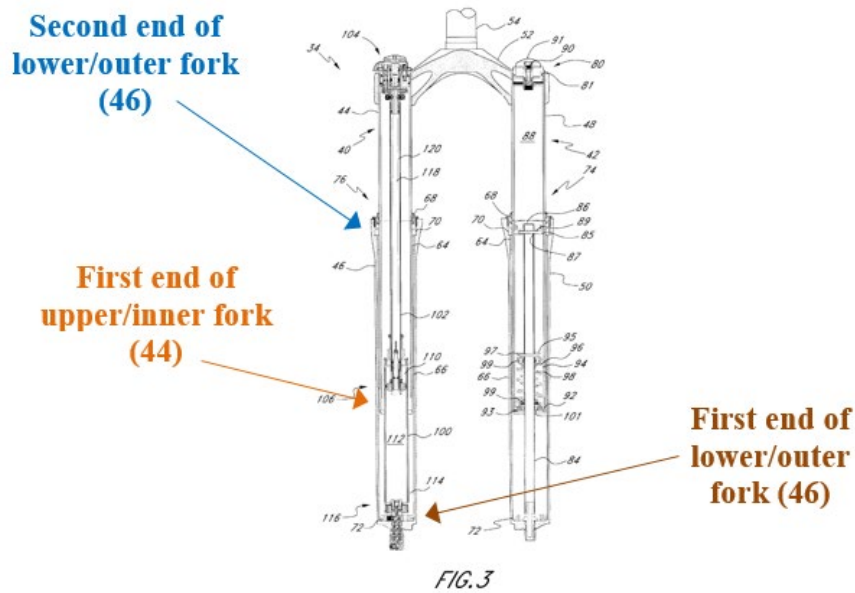
109. *Becker* in view of *Bruckbauer* discloses each and every element of claim 1. *Becker* includes a lower fork **46, 50** (orange arrows), and *Bruckbauer* includes an air bleed assembly **10** (in addition to *Becker/Bruckbauer's* related fluid passage). Specifically, *Becker* discloses a suspension fork **34** as discussed above. The suspension fork **34** includes a lower (Outer) tube **46** with a lower end (proximate to the bottom-out bumper **72**) and an upper end (proximate to the main seal **68**), the lower tube **46** being an Outer Tube. Ex. 1008, 6:22-23, FIG. 3. *Bruckbauer* discloses a pressure relief valve **10** (purple arrows). Ex. 1009, 4:8-12, FIGS. 1, 2. Further, it would have been obvious to combine *Bruckbauer's* pressure relief valve **10** with *Becker's* lower (Outer) tube **46** in order to benefit from the ability to “relieve the pressure from excess air or gas buildup” around the damper within the Outer Tube, as discussed in detail above.



- **Claim 1[a]**

Claim Element	Claim Language
1[a]	a lower fork, said lower fork configured to have a first end coupled to a vehicle wheel, and a second end configured to be telescopically engaged with a first end of an upper fork, said lower fork further comprising:

110. *Becker* discloses each and every element of this limitation. *Becker* includes a lower fork **46, 50** configured to have a first end (green arrow) coupled to a vehicle wheel, and a second end (blue arrow) configured to be telescopically engaged with a first end (orange arrow) of an upper (Inner) fork **44, 48**. In particular, *Becker's* Figures 1 and 2 show a lower (Outer) tube **46** of the suspension fork **34** configured to have a lower end of the lower (Outer) tube **46** coupled to a vehicle wheel **28**, and an upper end thereof configured to be telescopically engaged with a lower end of an upper (Inner) tube **44**. Ex. 1008, 5:48-49, FIGS. 1-3.

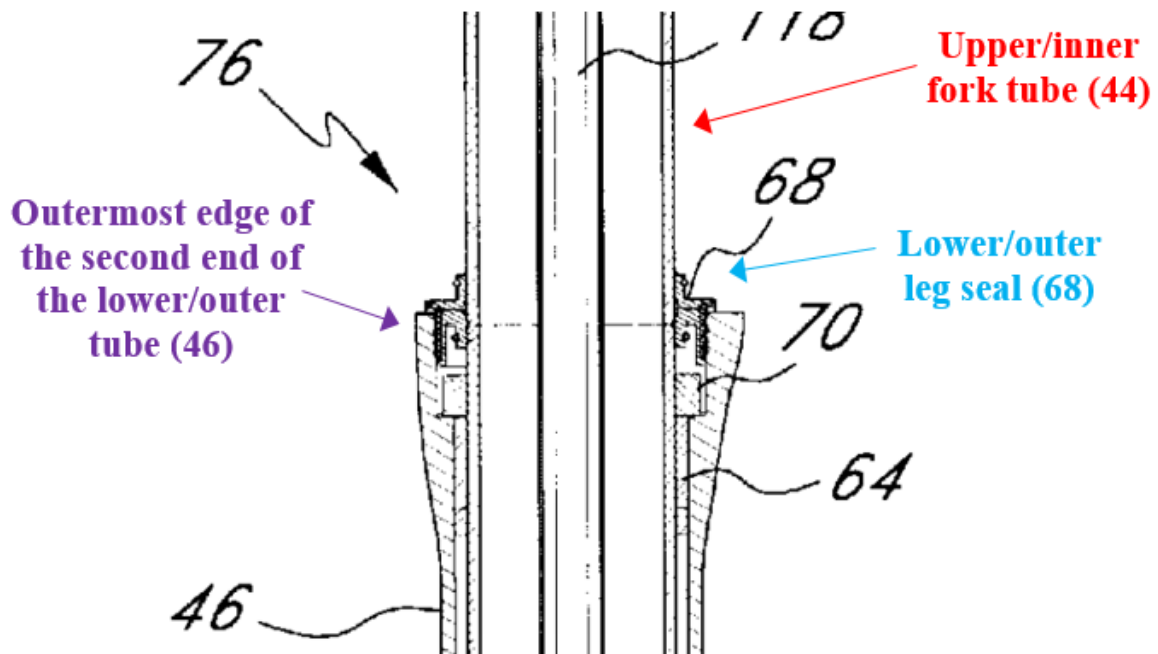


- Claim 1[b]

Claim Element	Claim Language
1[b]	a lower leg seal located at an outermost edge of said second end of said lower fork tube, said lower leg seal configured for sealing closed a gap disposed between said upper fork tube and said lower fork tube when said lower fork is telescopically engaged with said first end of said upper fork, thereby preventing an oil bath lubrication occupying an area within said lower fork tube at a first end of said lower fork tube from leaking from said lower fork; and

111. *Becker* discloses each and every element of this limitation. *Becker* includes a lower leg seal **68** (light blu arrow) located at an outermost edge of the second end (purple arrow) of the lower fork tube **46**, the lower leg seal **68** configured for sealing closed a gap disposed between the upper fork tube **44** (red arrow) and the

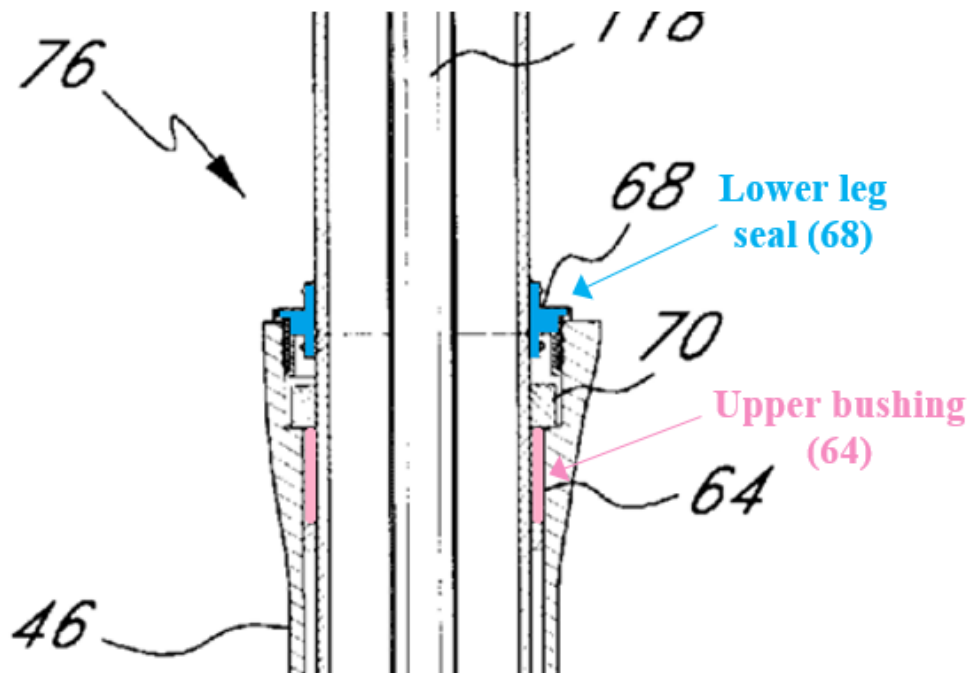
lower fork tube **46** when the lower fork **46** is telescopically engaged with the first end (orange arrow) of the upper fork **44**, thereby preventing an oil bath lubrication occupying an area **114** within the lower fork tube **46** at a first end (green arrow) of the lower fork tube **46** from leaking from the lower fork **46**. In particular, *Becker* includes a main seal **68** supported by the lower (Outer) tube **46** in a sealing engagement with the upper (Inner) tube **44** to substantially prevent oil from exiting, or foreign material from entering, the fork tubes. Ex. 1008, 6:25-39, FIG. 3. Further, *Becker's* damper design is “preferably an open-bath, cartridge-type damper having a cartridge tube **100** fixed to the closed lower end of the right lower (Outer) tube **46** and extending vertically upward.” *Id.*, 7:53-56. This oil bath within the damper is also “able to move throughout the reservoir **114** and, advantageously, provides lubrication for the bushings **64**, **66** and various seals within the damper assembly **76**.” *Id.*, 14:2-6. This oil bath is positioned at all times within the lower (Outer) tube **46**. *Id.*, 7:51-56; 13:66-14:6, FIG. 3.



• Claim 1[c]

Claim Element	Claim Language
1[c]	an upper bushing attached to and positioned adjacent to said lower leg seal; and

112. *Becker* includes each and every element of this limitation. *Becker* includes an upper bushing **64** (pink arrow) attached to and positioned adjacent to the lower leg seal **68** (light blue arrow). In fact, the upper bushing **64** is in contact with the foam ring **70**. Ex. 1008, 6:10-39, FIG. 3.



113. *Becker* discloses the same configuration disclosed in the '331 patent, as can be seen in a comparison below:

Figure 2 of *Becker*

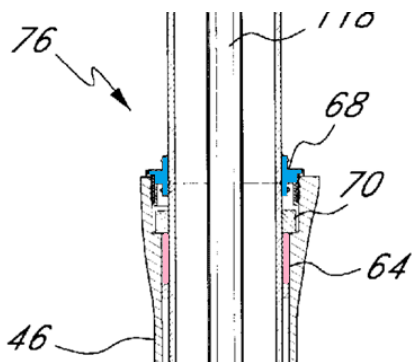
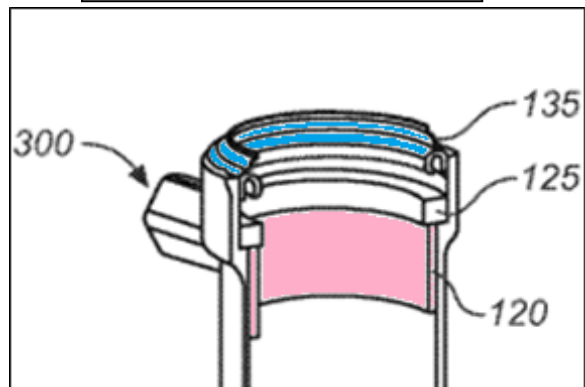


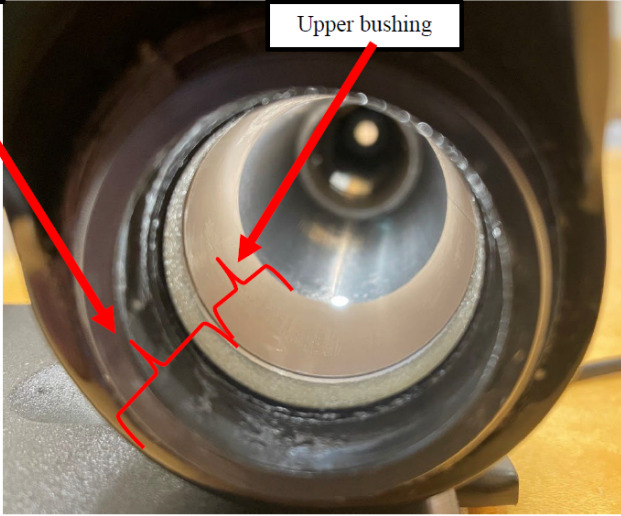
Figure 4 of '331 patent



Ex. 1008, FIG. 2; Ex. 1001, FIG. 4.

114. Furthermore, Fox already admitted that this specific configuration of the seal, foam ring, and bushing in *Becker* meets this limitation. In particular, Fox has accused the following structure of meeting this limitation in its Amended Infringement Contentions against Petitioner in District Court, as shown below:

Claim	U.S. Patent No. 9,739,331	Rockshox Lyrik Ultimate
1[c]	an upper bushing attached to and positioned adjacent to said lower leg seal; and	The Rockshox Lyrik Ultimate has an upper bushing affixed to the lower fork tube. The upper bushing is further engaged with the foam ring (of the seal), and thus the upper bushing is positioned adjacent to and is attached to said lower leg seal. Specifically, the upper bushing and the foam ring are fitted into the lower fork tube as shown below, and thus the seal (including the foam ring) is adjacent to and indirectly attached to the upper bushing via the lower fork tube. Moreover, the foam ring is held in place by the upper bushing and prevented from slipping into the tube during operation, and thereby the upper bushing maintains the

Claim	U.S. Patent No. 9,739,331	Rockshox Lyrik Ultimate
		coaxial alignment and symmetry of the foam ring during operation. Therefore, the seal (including the foam ring) is also directly attached to the upper bushing. Lower Leg Seal  Upper bushing

Ex. 1013, 7, 8. As can be seen, the same seal/foam ring/bushing configuration from *Becker* is found in SRAM’s products that Fox has accused of infringing the ‘331 patent claims. Fox’s infringement charge is an admission that this configuration meets this limitation.

- **Claim 1[d]**

Claim Element	Claim Language
1[d]	an air bleed assembly disposed on said lower fork tube, said air bleed assembly configured for equalizing ambient pressure within said lower fork, said air bleed assembly comprising:

115. *Becker* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer* includes an air bleed assembly **10** (purple arrows) (in addition to *Becker/Bruckbauer's* related fluid passage), which in the combination of *Becker* and *Bruckbauer* is disposed on *Becker's* lower fork tube **46**. Further, *Bruckbauer's* pressure relief valve **10** is configured for equalizing ambient pressure and the gas pressure within the lower (Outer) fork **46**. When *Bruckbauer's* pressure relief valve **10** is open, the air pressure with the suspension fork **34** may equalize with the ambient air pressure. Ex. 1008, 6:22-23; Ex. 1009, 5:6-9, FIGS. 1, 2.

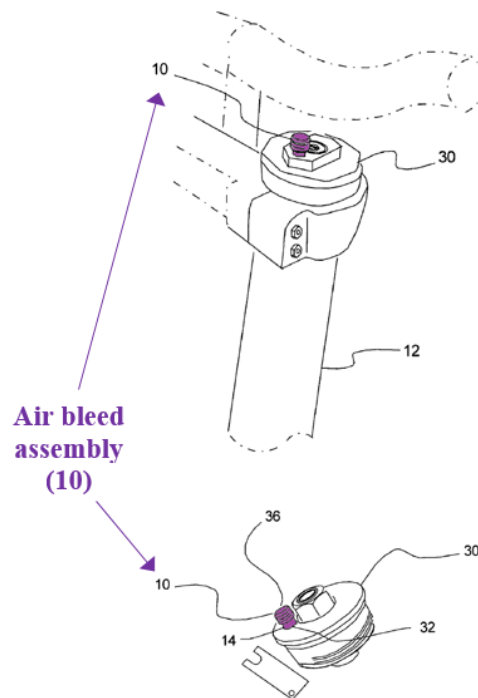
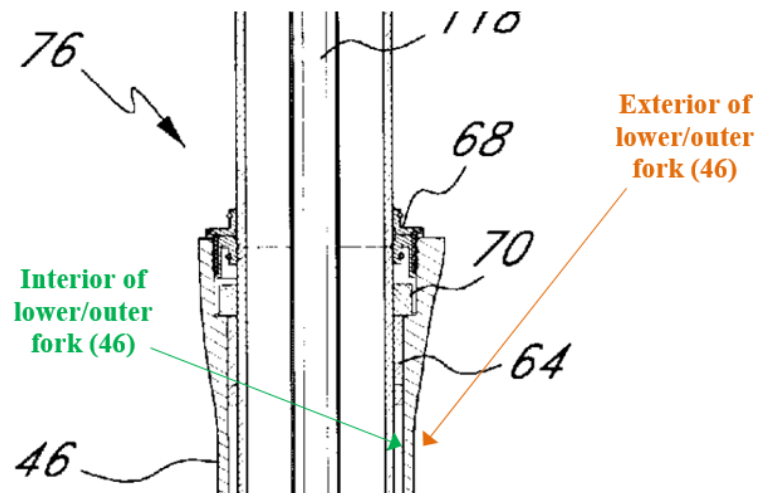


Fig. 2

• **Claim 1[e]**

Claim Element	Claim Language
1[e]	a fluid passage disposed between an interior of said lower fork and an exterior of said lower fork; and

116. *Becker* in view of *Bruckbauer* discloses each and every element of this limitation. The combination of *Becker* and *Bruckbauer* includes a fluid passage disposed between an interior (green arrow) and an exterior (orange arrow) of the lower fork **46**. *Becker/Bruckbauer's* fluid passage is the passage for accommodating portions of *Bruckbauer's* pressure relief valve **10**, and it is formed towards the upper end of *Becker's* lower (Outer) fork **46**. In particular, *Becker* in view of *Bruckbauer* includes a passage that allows a flow of air or gases into or out of a lower (Outer) tube **46**. Ex. 1008, 6:19-21, FIG. 3; Ex. 1009, 5:6-9; FIGS. 1, 2.



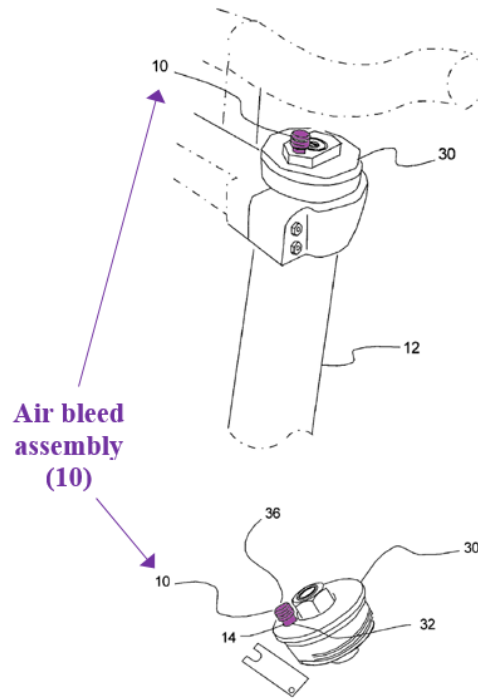


Fig. 2

- **Claim 1[f]**

Claim Element	Claim Language
1[f]	a manually operable valve located in said lower fork and coupled to said fluid passage, said manually operable valve having a first position substantially closing said fluid passage and a second position allowing a fluid to flow between said interior and said exterior, said manually operable valve disposed between said lower leg seal and said first end of said lower fork, and

117. *Becker* in combination with *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer* includes a manually operable valve **54, 36, 14, 70** (red arrows) located in *Becker*'s lower (Outer) fork **46** and coupled to a fluid

passage that extends through *Becker's* lower (Outer) fork **46**. *Bruckbauer's* manually operable valve **54, 36, 14, 70** has a first position substantially closing the fluid passage and a second position allowing a fluid to flow between the interior and the exterior. Further, at least portions of *Bruckbauer's* manually operable valve **54, 36, 14, 70**, in the combination of *Becker* in view of *Bruckbauer*, is disposed within a passage between the lower leg seal **68** (light blue arrow) and the first end (brown arrow) of *Becker's* lower (Outer) fork **46**. In particular, *Bruckbauer's* pressure relief valve **10** would be formed in *Becker's* lower (Outer) tube **46**, as discussed above in the context of a motivation to combine *Becker* and *Bruckbauer*. Ex. 1008, 6:22-39, FIG. 3; Ex. 1009, 4:36-5:28, FIGS. 3, 4.

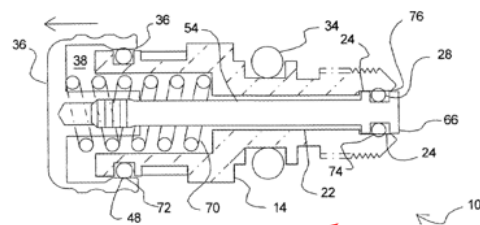


Fig. 3

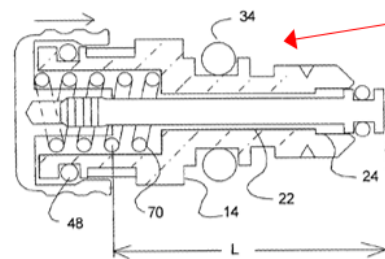
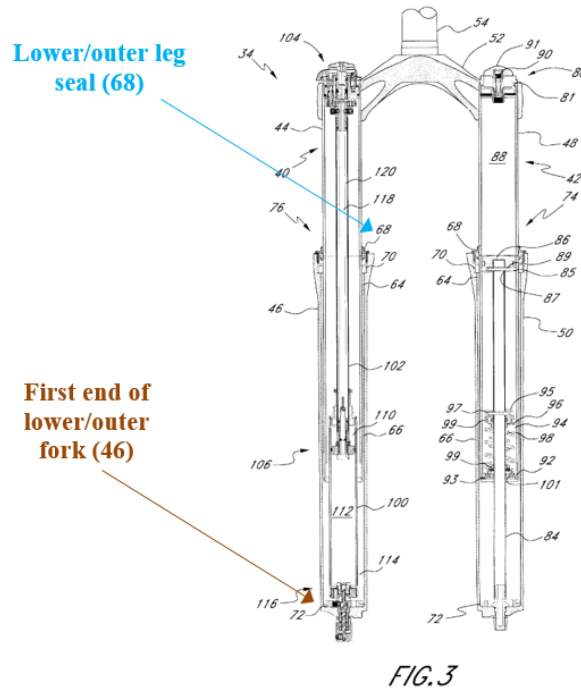


Fig. 4

**Manually
operable valve
(54, 36, 14, 70)**



- Claim 1[g]

Claim Element	Claim Language
1[g]	wherein said fluid passage and said manually operable valve are located at a distance from an oil bath lubrication within said lower fork, such that when said manually operable valve is in said second position, most, if not all of said oil bath lubrication remains within said lower fork and such that when trapped air pressure inside said lower fork, that is higher than a local ambient air pressure outside of said suspension fork or shock absorber, is relieved most, of said oil bath lubrication that is within said lower fork remains within said lower fork.

118. *Becker* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer's* manually operable valve **54, 36, 14, 70** and related fluid

passage are located at a distance from an oil bath lubrication (*see* Claim element 1[b] in this Section, above) within *Becker's* lower (Outer) fork **46**. This positioning of *Bruckbauer's* pressure relief valve **10** results in a configuration wherein when the manually operable valve **54, 36, 14, 70** is in the second (open) position, most, if not all of the oil bath lubrication remains within *Becker's* lower (Outer) fork **46** because *Bruckbauer's* valve **54, 36, 14, 70** and related passage are located sufficiently high on *Becker's* lower fork **46** and can be closed were oil to begin leaking. Further, any air within *Becker's* lower fork **46** will be equalized with ambient pressure when *Bruckbauer's* pressure relief valve **10** is opened, while the oil will remain in *Becker's* oil bath lubrication space **114** within the lower fork **46**. Moreover, a POSITA would design the combination of *Becker* in view of *Bruckbauer* so that a majority of the oil within the lower tube remains therein at least because the venting of oil needed to lubricate the lower (Outer) fork **46** would be unwanted. As discussed above, it would have been obvious to a POSITA to try to fit *Bruckbauer's* pressure relief valve **10** at a position sufficiently high on *Becker's* lower (Outer) tube **46, 50** that this limitation would be met. Further, it would have been obvious to modify *Becker* in this known way to achieve the predictable and expected results of an effective pressure relief system for *Becker's* lower (Outer) tube **46, 50**. Ex. 1008, 6:22-39; Ex. 1009, 4:36-5:28, FIG. 4.

Invalidity of Dependent Claim 2

Claim Element	Claim Language
2	The lower fork and air bleed assembly combination of claim 1, wherein said fluid comprises: a gas.

119. *Becker* in view of *Bruckbauer* discloses each and every element of this Claim. *Becker* includes a lower (Outer) fork **46**, and *Bruckbauer* includes an air bleed assembly **10**. Further, *Bruckbauer* includes a gas flowing through the fluid passage, at least when gas is allowed to flow through *Bruckbauer's* pressure relief valve **10**. Ex. 1008, 6:5-39; Ex. 1009, 5:3-9.

Invalidity of Dependent Claim 3

- **Claim 3[pre]**

Claim Element	Claim Language
3[pre]	The lower fork and air bleed assembly combination of claim 1, said air bleed assembly further comprising:

120. My opinions with respect to this claim element 3[pre] are the same as for claim element 1[pre], above.

• **Claim 3[a]**

Claim Element	Claim Language
3[a]	a valve activator coupled with said manually operable valve, said valve activator comprising:

121. *Becker* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer* includes a valve activator **54, 36** (pink arrow) coupled with *Bruckbauer*'s manually operable valve **54, 36, 14, 70**. For example, *Becker* in view of *Bruckbauer* includes a valve cap **36** and connecting shaft **54** coupled with *Bruckbauer*'s manually operable valve **54, 36, 14, 70**. Ex. 1009, 5:3-15, FIG. 3.

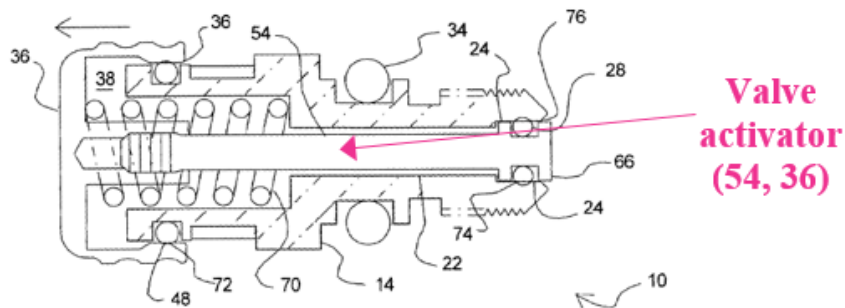


Fig. 3

This is consistent with the Examiner's identification of the valve activator during the prosecution of the '331 patent. Ex. 1004, at 88 (identifying *Galasso*'s threads of 214, 314, 414, or pin of Schrader-type 470 as the valve activator). In this sense, Fox's proposed construction that the valve activator need be completely separate

from the manually operable valve is incorrect and I do not adopt that construction which is contrary to the plain meaning of the claim.

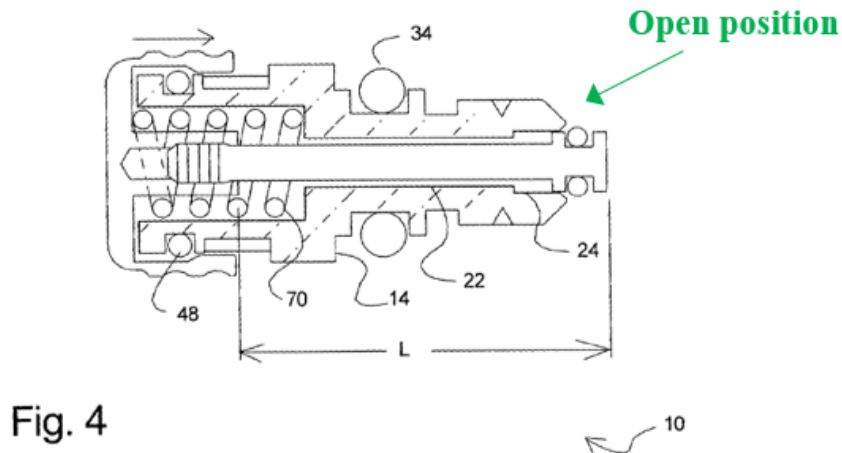
- **Claim 3[b]**

Claim Element	Claim Language
3[b]	an activation position placing said manually operable valve into said first position; and

122. *Becker* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer*'s valve activator **54, 36** includes an activation position where the manually operable valve **54, 36, 14, 70** is in an open³ position (green arrow). For example, *Becker* in view of *Bruckbauer*'s valve cap **36**, connecting shaft **56**, and

³ I note that the term "activation position" conflates the first and second positions between claims 1 and 3 of the '331 patent, in that claim 1 requires the first position to be the closed position whereas claim 3 requires that the activation position be both the first (closed) position and an open position where fluid may flow around the valve. As a result, this claim is *irreconcilably indefinite*. However, for purposes of this analysis, I have adopted Fox's construction which rewrites this claim term.

hollow body **14** include a spaced-apart relationship where a gas may travel through the air bleed assembly **10**. Ex. 1009, 5:3-9, FIG. 4.



- **Claim 3[c]**

Claim Element	Claim Language
3[c]	a deactivation position placing said manually operable valve into said second position, and whereupon when in said activation position, the trapped air pressure in said lower fork is equalized with the local ambient air pressure.

123. *Becker* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer's* valve activator **54, 36** includes a deactivation position where the manually operable valve **54, 36, 14, 70** is in a closed position (red arrow). For example, *Becker* in view of *Bruckbauer's* valve cap **36**, connecting shaft **54**, and hollow body **14** include a biased position where a gas may not travel through the air

bleed assembly **10**. Ex. 1009, 5:23-28, FIG. 3.

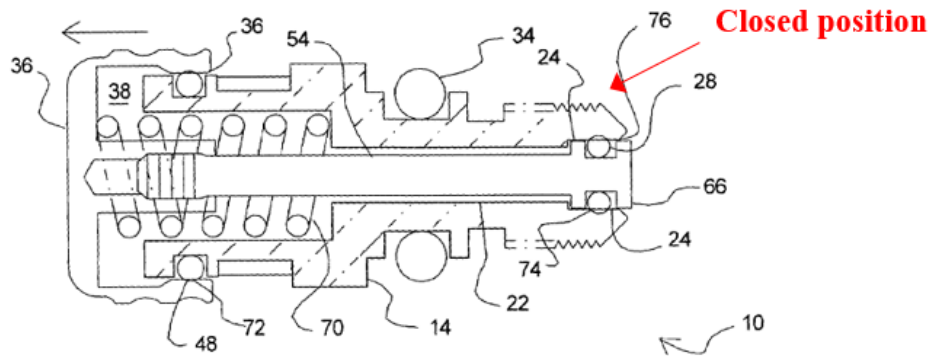


Fig. 3

Invalidity of Dependent Claim 4

Claim Element	Claim Language
4	The lower fork and air bleed assembly combination of claim 3, wherein said valve activator comprises: a button to select said activation position and said deactivation position.

124. *Becker* in view of *Bruckbauer* discloses each and every element of this claim. *Bruckbauer's* valve activator **54, 36** includes a button **36** (blue arrow) to select the activation position and the deactivation position. Ex. 1009, 5:3-28, FIG. 3.

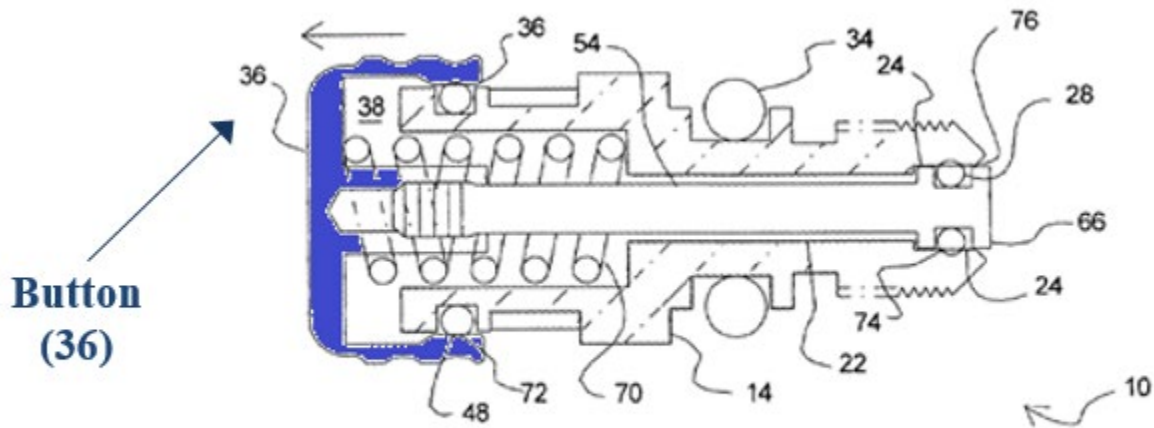


Fig. 3

Invalidity of Dependent Claim 5

Claim Element	Claim Language
5	The lower fork and air bleed assembly combination of claim 3, wherein said valve activator is located on a die-cast feature of said lower fork.

125. *Becker* in view of *Bruckbauer* discloses each and every element of this claim. *Bruckbauer* includes a manually operable valve **54, 36, 14, 70** fixed into a passage through the body of *Becker's* lower (Outer) fork **46**, which passage would be formed on a die-cast feature of *Becker's* lower (Outer) fork **46**. Ex. 1009, 5:3-28; Ex. 1008, 6:22-39, FIG. 3. In any event, the structures of *Becker's* lower (Outer) tube **46** do not differ from those made by die-casting, which does not distinguish

itself from the structure imparted by other prior art manufacturing techniques (and, therefore, should be given no patentable weight), this limitation regarding die-casting cannot distinguish Claim 5 from *Becker* in view of *Bruckbauer*.

Invalidity of Dependent Claim 6

- **Claim 6[pre]**

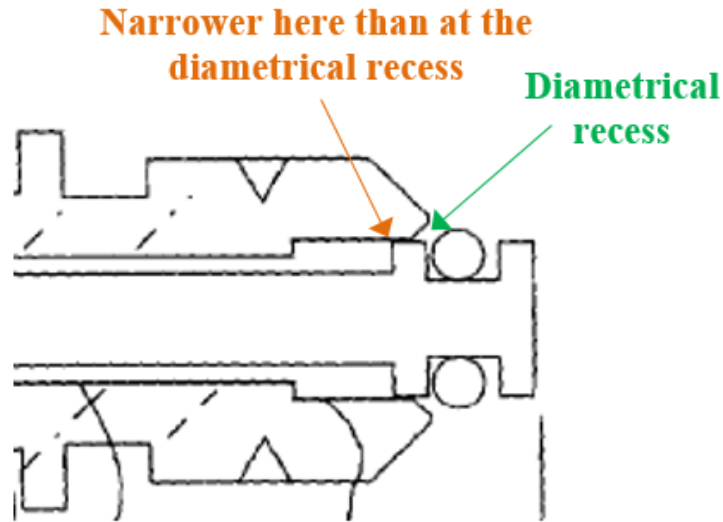
Claim Element	Claim Language
6[pre]	The lower fork and air bleed assembly combination of claim 5, further comprising:

126. *Becker* in view of *Bruckbauer* discloses each and every element of this preamble. *Becker* includes a lower (Outer) fork **46**, and *Bruckbauer* includes an air bleed assembly **10** (in addition to *Becker/Bruckbauer*'s related fluid passage).

- **Claim 6[a]**

Claim Element	Claim Language
6[a]	a diametrical recess; and

127. *Becker* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer* includes a diametrical recess (green arrow), in that the inner bore diameter is larger at the green arrow than at the orange arrow. Ex. 1009, FIG. 4.



- **Claim 6[b]**

Claim Element	Claim Language
6[b]	a sealing o-ring comprising:

128. *Becker* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer* includes a sealing O-ring **28** (red arrow). Ex. 1009, FIG. 3.

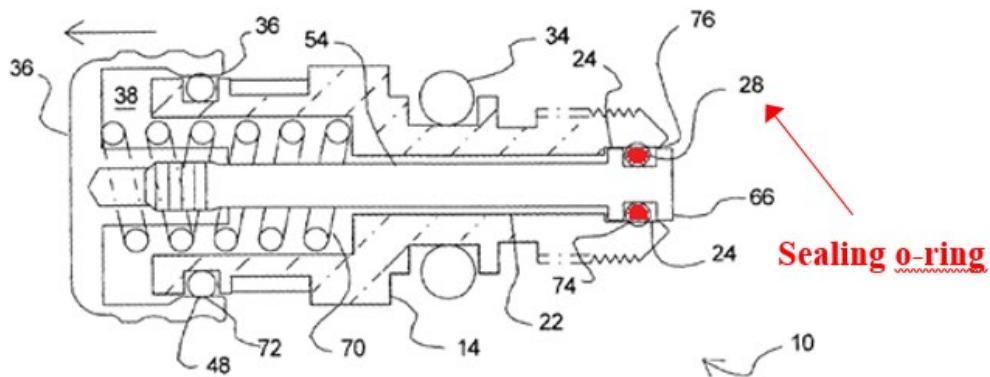


Fig. 3

- **Claim 6[c]**

Claim Element	Claim Language
6[c]	a sealed position; and

129. *Becker* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer* includes a sealing O-ring **28** (red arrow) having a sealed position. Ex. 1009, FIG. 3.

- **Claim 6[d]**

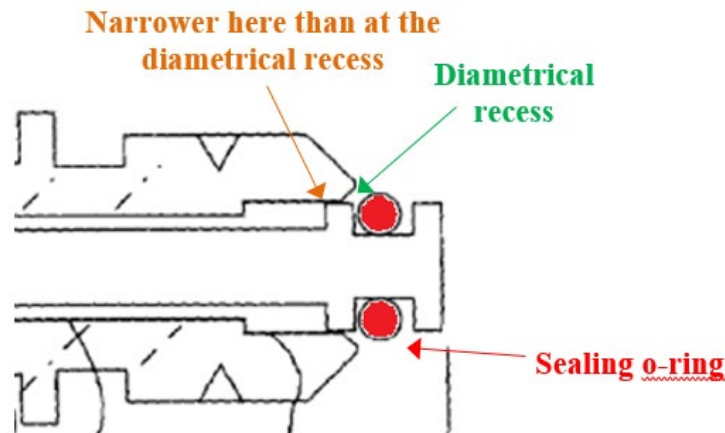
Claim Element	Claim Language
6[d]	an unsealed position,

130. *Becker* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer* includes a sealing O-ring **28** (red arrow, above) having an unsealed position. Ex. 1009, FIG. 4.

- **Claim 6[e]**

Claim Element	Claim Language
6[e]	wherein said sealed position seals between said die-cast feature and said lower fork, whereupon when said valve activator is moved from said activation position to said deactivation position, said sealing o-ring moves into said diametrical recess, thereby attaining said unsealed position and letting air pressure by-pass into or out of said lower fork via a vent hole.

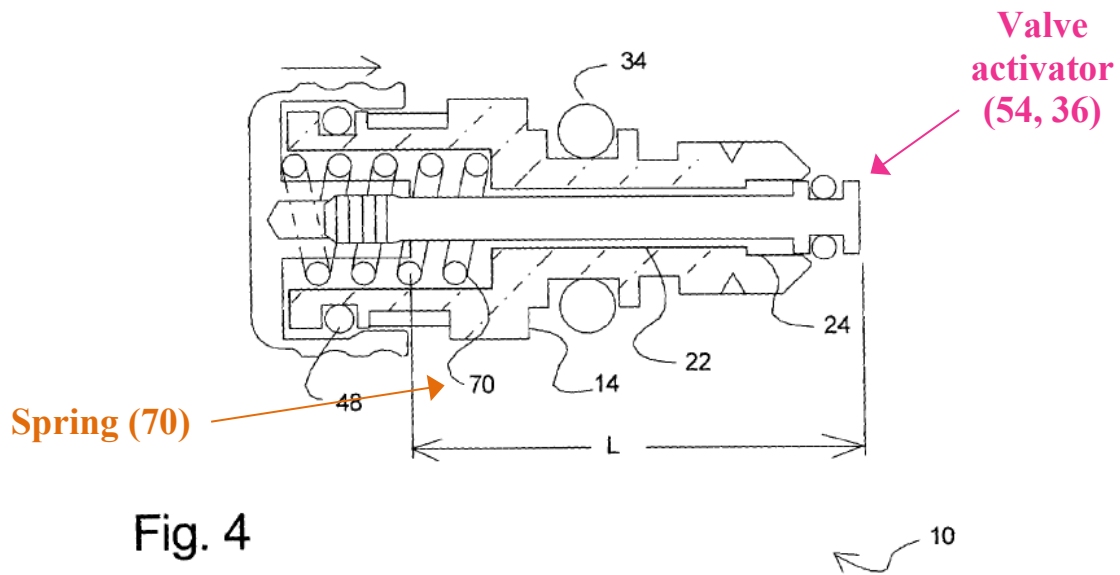
131. *Becker* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer* includes a sealing O-ring **28** (red arrow) having a sealed position and an unsealed position wherein the sealed position seals against air leaks from *Becker's* lower (Outer) fork **46** through the die-cast feature, whereupon when *Bruckbauer's* valve activator **54, 36** is moved from the activation position to the deactivation position, the sealing O-ring **28** moves further into the diametrical recess (green arrow), thereby attaining the unsealed position and letting air pressure by-pass into or out of *Becker's* lower (Outer) fork **46** via a vent hole. Ex. 1009, FIGS. 3, 4.



Invalidity of Dependent Claim 7

Claim Element	Claim Language
7	The lower fork and air bleed assembly combination of claim 3, wherein said manually operable valve comprises: a spring coupled with said valve activator, whereupon when said valve activator is moved into said deactivation position, said spring biases said valve activator toward said first position.

132. *Becker* in view of *Bruckbauer* discloses each and every element of this claim. *Bruckbauer's* manually operable valve **54, 36, 14, 70** includes a spring **70** (orange arrow) coupled to the valve activator **54, 36** (pink arrow), which spring **70** biases the valve activator **54, 36** toward the first (closed) position. Ex. 1009, 5:23-46, FIG. 4.

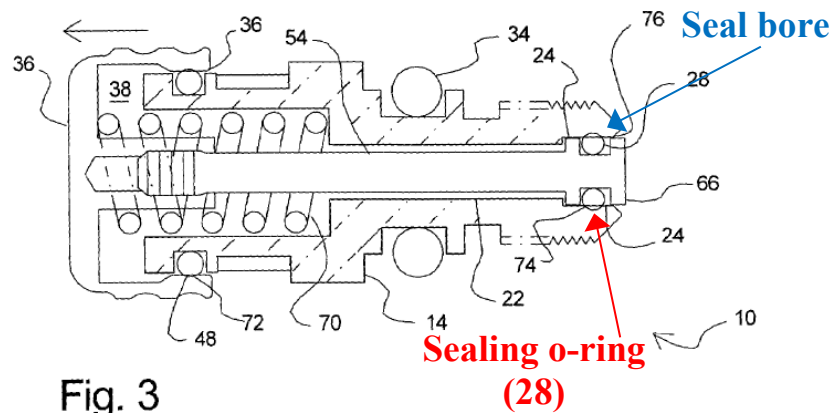


Invalidity of Dependent Claim 8

Claim Element	Claim Language
8	The lower fork and air bleed assembly combination of claim 7, wherein said second position comprises: a sealing engagement between said sealing o-ring and a seal bore, wherein when in said sealing engagement, said trapped air pressure does not by-pass into or out of said lower fork.

133. *Becker* in view of *Bruckbauer* discloses each and every element of this claim. *Bruckbauer's* manually operable valve **54, 36, 14, 70** has a second position having a sealing engagement between the sealing O-ring **28** (red arrow) and a seal bore (blue arrow), wherein when in the sealing engagement, trapped air pressure does not bypass into or out of *Becker's* lower (Outer) fork **46**. In particular, air flow

through the manually operable valve **54, 36, 14, 70** may be sealed by squeezing the internal O-ring **28** into the entrance of the aperture at the end of the hollow body **14** when the valve cap is moved into the closed position, thereby preventing entry of dirt, water, or other foreign substances from entering the lower tube. Ex. 1009, 5:23-46, FIG. 3; Ex. 1008, 6:22-39.



Ground III: Claims 5 and 6 Are Obvious under 35 U.S.C. § 103 by *Becker* in View of *Bruckbauer*, and Further in View of *Danter*

Invalidity of Dependent Claim 5

Claim Element	Claim Language
5	The lower fork and air bleed assembly combination of claim 3, wherein said valve activator is located on a die-cast feature of said lower fork.

134. *Becker* in view of *Bruckbauer* discloses each and every element of claim 3, from which this claim depends, as discussed above. Further, it would have been obvious to a POSITA to modify *Becker* in view of *Bruckbauer* to form *Becker's* lower (Outer) tubes **46, 50** using a die-cast procedure, as discussed above.

Dependent Claim 6

Claim Element	Claim Language
6[pre]	The lower fork and air bleed assembly combination of claim 5, further comprising:
6[a]	a diametrical recess; and
6[b]	a sealing o-ring comprising:
6[c]	a sealed position; and
6[d]	an unsealed position,

Claim Element	Claim Language
6[e]	wherein said sealed position seals between said die-cast feature and said lower fork, whereupon when said valve activator is moved from said activation position to said deactivation position, said sealing o-ring moves into said diametrical recess, thereby attaining said unsealed position and letting air pressure by-pass into or out of said lower fork via a vent hole.

135. My opinions with respect to claim 6 are the same as discussed above with respect to the combination of *Becker* and *Bruckbauer* as disclosing all of the elements of claim 6.

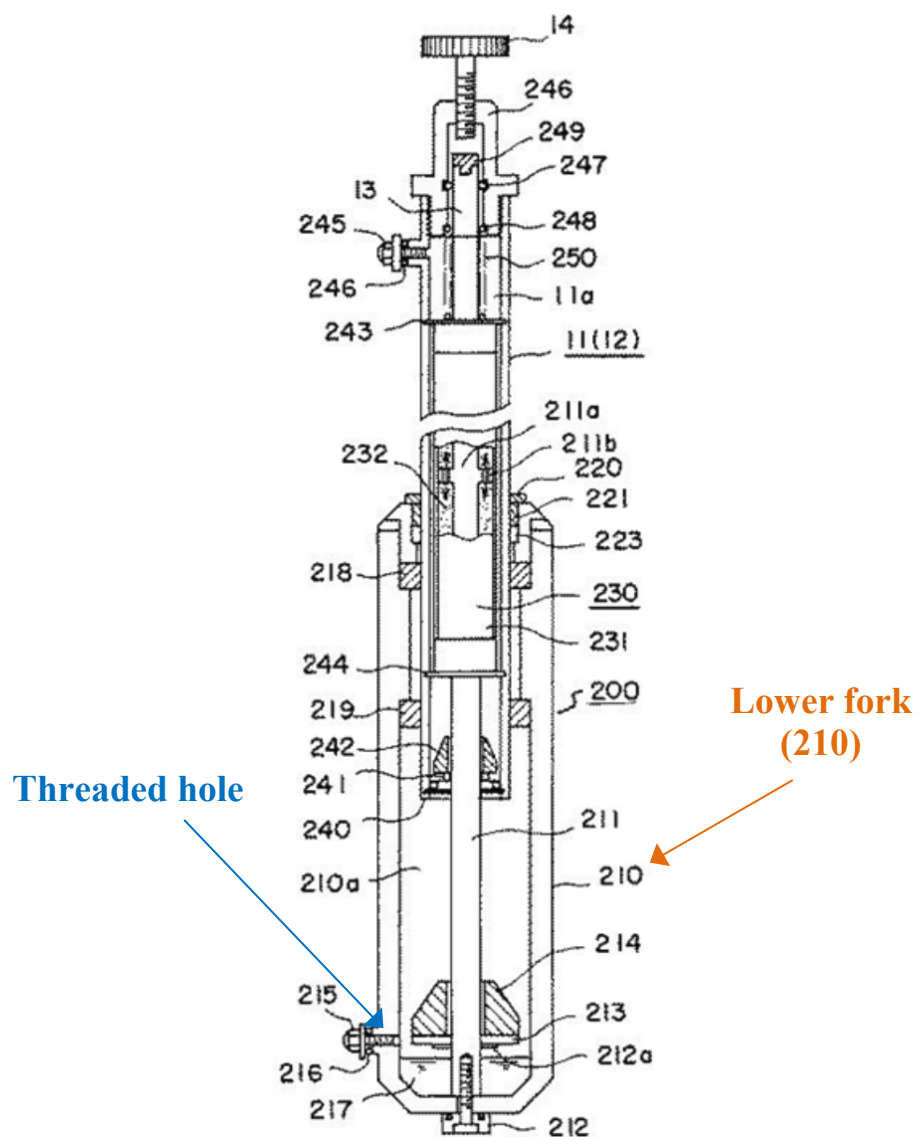
Ground IV: Claims 1-8 Are Obvious Under 35 U.S.C. § 103 by *Kojima* in View of *Bruckbauer*, and further in view of *Danter*

Invalidity of Independent Claim 1

• **Claim 1[pre]**

Claim Element	Claim Language
1[pre]	A lower fork and air bleed assembly combination comprising:

136. *Kojima* in view of *Bruckbauer* discloses each and every element of claim 1. *Kojima* discloses a lower fork **210**, and *Bruckbauer* discloses an air bleed assembly **10** (with *Kojima* 's threaded hole). Ex. 1005, FIG. 9; Ex. 1009, FIGS. 1-4.



Ex. 1005, FIG. 9.

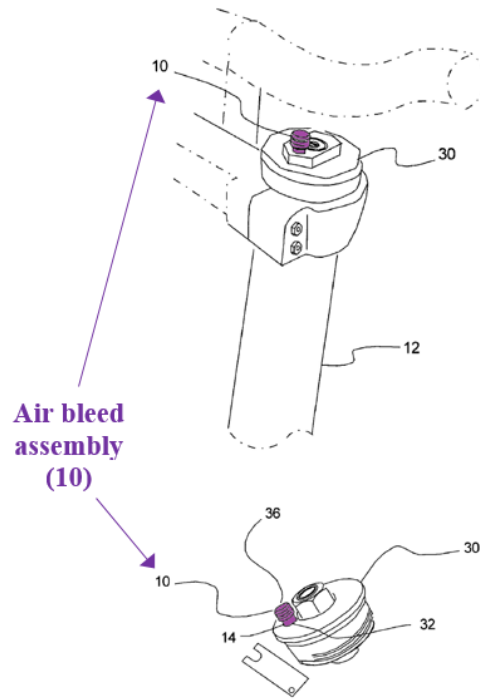


Fig. 2

Ex. 1009, FIGS. 1, 2.

- **Claim 1[a]**

Claim Element	Claim Language
1[a]	a lower fork, said lower fork configured to have a first end coupled to a vehicle wheel, and a second end configured to be telescopically engaged with a first end of an upper fork, said lower fork further comprising:

137. *Kojima* discloses each and every element of this limitation, as discussed above.

- **Claim 1[b]**

Claim Element	Claim Language
1[b]	a lower leg seal located at an outermost edge of said second end of said lower fork tube, said lower leg seal configured for sealing closed a gap disposed between said upper fork tube and said lower fork tube when said lower fork is telescopically engaged with said first end of said upper fork, thereby preventing an oil bath lubrication occupying an area within said lower fork tube at a first end of said lower fork tube from leaking from said lower fork; and

138. *Kojima* discloses each and every element of this limitation, as discussed above.

- **Claim 1[c]**

Claim Element	Claim Language
1[c]	an upper bushing attached to and positioned adjacent to said lower leg seal; and

139. *Kojima* discloses each and every element of this limitation, as discussed above.

- **Claim 1[d]**

Claim Element	Claim Language
1[d]	an air bleed assembly disposed on said lower fork tube, said air bleed assembly configured for equalizing ambient pressure within said lower fork, said air bleed assembly comprising:

140. *Kojima* in view of *Bruckbauer* discloses each and every element of this limitation. *Kojima* in view of *Bruckbauer* includes *Bruckbauer*'s pressure relief valve **10** and *Kojima*'s threaded hole as an air bleed assembly (blue and purple arrows, above) disposed on *Kojima*'s lower fork tube **210** (orange arrow, above) at *Kojima*'s threaded hole. This air bleed assembly is configured for equalizing ambient pressure within *Kojima*'s lower fork **210**. When *Bruckbauer*'s valve cap **36** is depressed, gas may travel through *Bruckbauer*'s pressure relief valve **10** while it is in an open position (green arrow, below), as illustrated in Figure 4, and the air pressure within *Kojima*'s lower fork **210** will equalize with the ambient air pressure. Ex. 1005, FIG. 9; Ex. 1009, FIGS. 1-4.

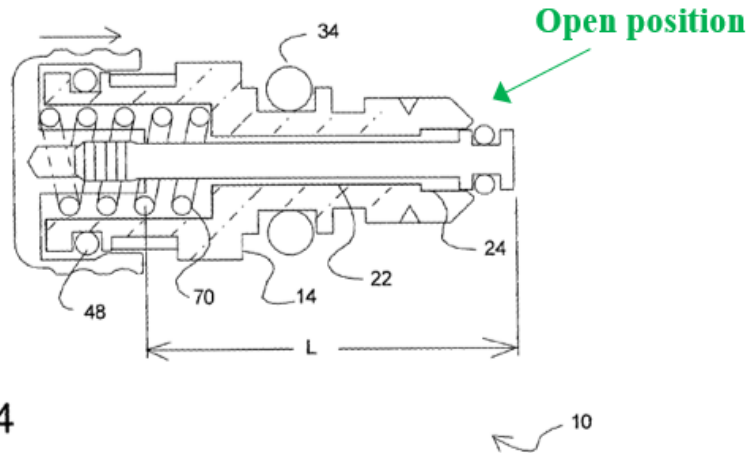


Fig. 4

- **Claim 1[e]**

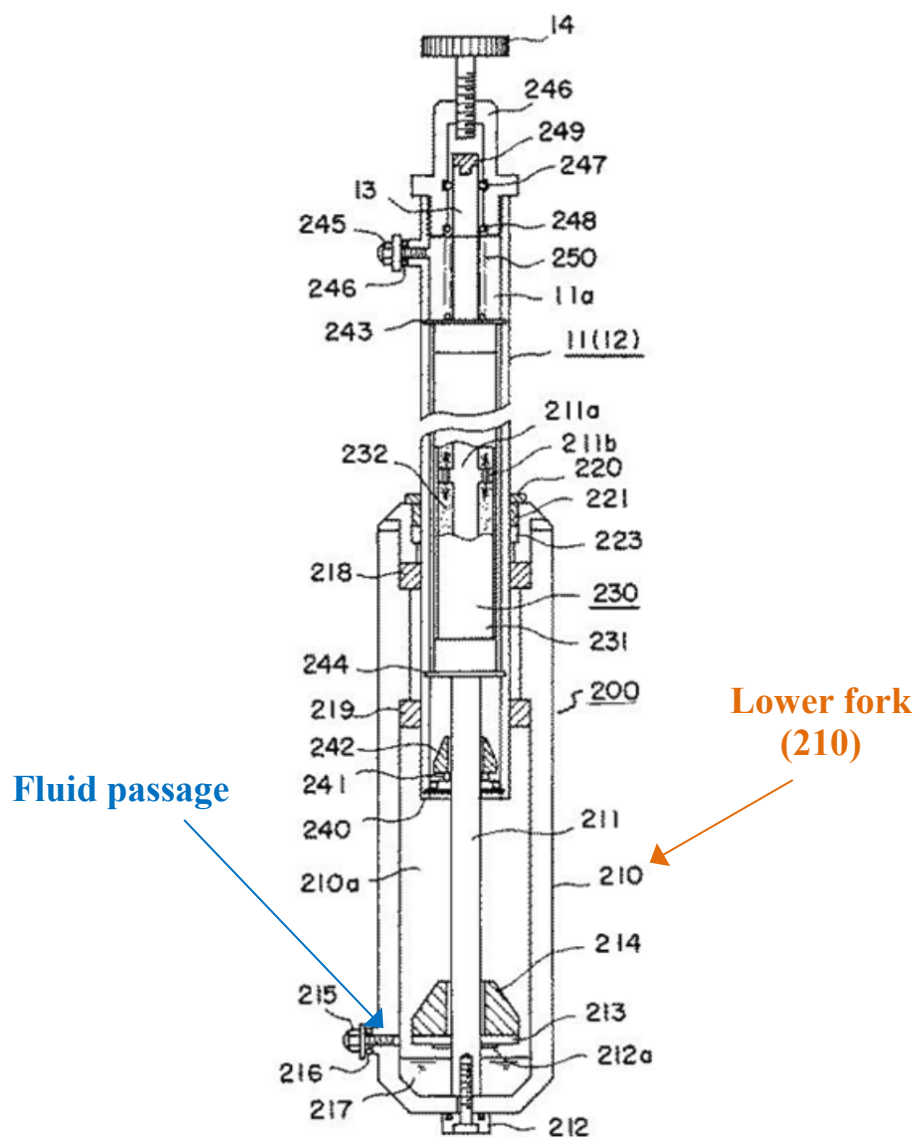
Claim Element	Claim Language
1[e]	a fluid passage disposed between an interior of said lower fork and an exterior of said lower fork; and

141. *Kojima* in view of *Bruckbauer* discloses each and every element of this limitation, as discussed above.

- **Claim 1[f]**

Claim Element	Claim Language
1[f]	a manually operable valve located in said lower fork and coupled to said fluid passage, said manually operable valve having a first position substantially closing said fluid passage and a second position allowing a fluid to flow between said interior and said exterior, said manually operable valve disposed between said lower leg seal and said first end of said lower fork, and

142. *Kojima* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer*'s manually operable valve **54, 36, 14, 70** (red arrow) located in *Kojima*'s lower fork **210** is coupled to *Kojima*'s fluid passage (blue arrow). *Bruckbauer*'s manually operable valve **54, 36, 14, 70** has a first position substantially closing the fluid passage (*Bruckbauer*'s Figure 3) and a second position (*Bruckbauer*'s Figure 4) allowing a fluid to flow between the interior and the exterior of *Kojima*'s lower fork **210**. Ex. 1005, FIG. 9; Ex. 1009, FIGS. 1-4.



Ex. 1005, FIG. 9.

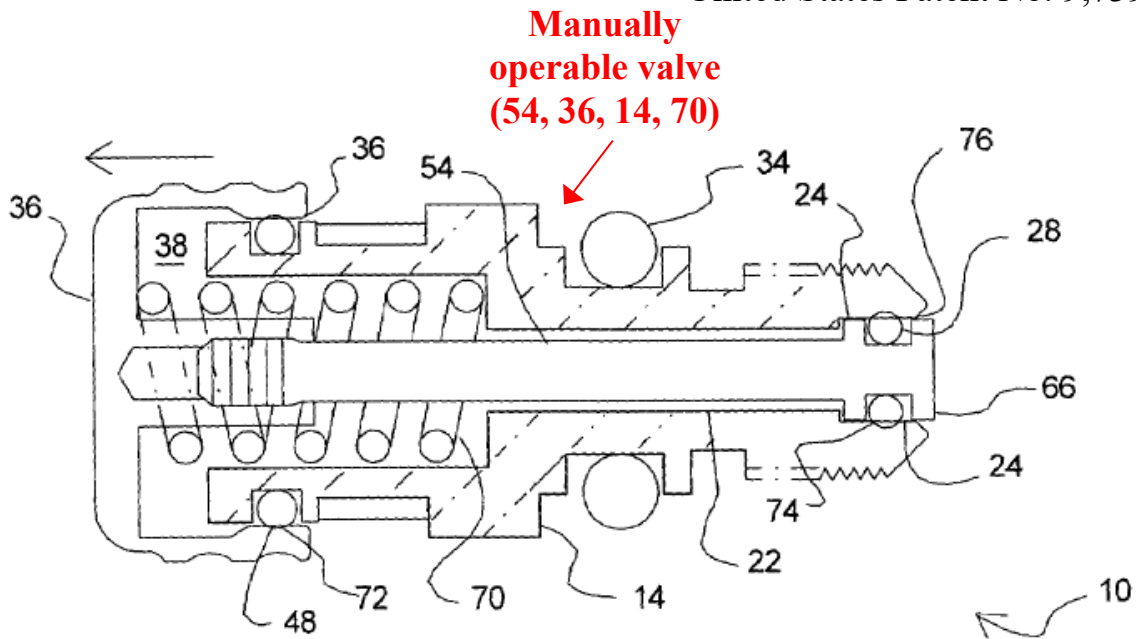


Fig. 3

Ex. 1009, FIG. 3.

• **Claim 1[g]**

Claim Element	Claim Language
1[g]	wherein said fluid passage and said manually operable valve are located at a distance from an oil bath lubrication within said lower fork, such that when said manually operable valve is in said second position, most, if not all of said oil bath lubrication remains within said lower fork and such that when trapped air pressure inside said lower fork, that is higher than a local ambient air pressure outside of said suspension fork or shock absorber, is relieved most, of said oil bath lubrication that is within said lower fork remains within said lower fork.

143. *Kojima* in view of *Bruckbauer* discloses each and every element of this

limitation. *Kojima's* fluid passage and *Bruckbauer's* manually operable valve **54**, **36**, **14**, **70** are located at a distance from an oil bath lubrication **217** within the lower fork **210**. This positioning of *Kojima's* valve **215** results in a configuration wherein when *Bruckbauer's* manually operable valve **54**, **36**, **14**, **70** is in the second position (open position), most, if not all of the oil bath lubrication **217** remains within the lower fork **210** because the air valve **215** is above the top of the illustrated oil bath **217**. Further, the air valve **215** can be closed were oil to begin leaking. Any air within the lower fork **210** will be equalized with ambient pressure when the air valve **215** is opened for a sufficient duration, while the oil **217** will remain in the oil bath lubrication space **210a** within the lower fork **210**. *Kojima's* Figure 9 clearly illustrates that the top surface of the oil bath **217** is well below the fluid passage of the air valve **215** screw within the bottom case **210**. Thus, when the air valve **215** screw is removed, little oil **217** would be vented for the illustrated, vertical orientation of the suspension fork. In addition, when the air valve **215** screw is opened, the pressure of the gas within the bottom case **210** will be equalized with the exterior air pressure, while the lubricating oil **217** will remain in the bottom case **210**. Ex. 1005, ¶ [0077], FIG. 9; Ex. 1009, FIGS. 3, 4.

Invalidity of Dependent Claim 2

Claim Element	Claim Language
2	The lower fork and air bleed assembly combination of claim 1, wherein said fluid comprises: a gas.

144. *Kojima* discloses each and every element of this claim, as discussed above.

Invalidity of Dependent Claim 3

- **Claim 3[pre]**

Claim Element	Claim Language
3[pre]	The lower fork and air bleed assembly combination of claim 1, said air bleed assembly further comprising:

145. *Kojima* discloses each and every element of this preamble, as discussed above.

- **Claim 3[a]**

Claim Element	Claim Language
3[a]	a valve activator coupled with said manually operable valve, said valve activator comprising:

146. *Kojima* in view of *Bruckbauer* discloses each and every element of this limitation. *Kojima* in view of *Bruckbauer* includes *Bruckbauer*'s valve activator **54, 36** (pink arrow) coupled with *Bruckbauer*'s manually operable valve **54, 36, 14, 70**. Ex. 1009, FIG. 3.

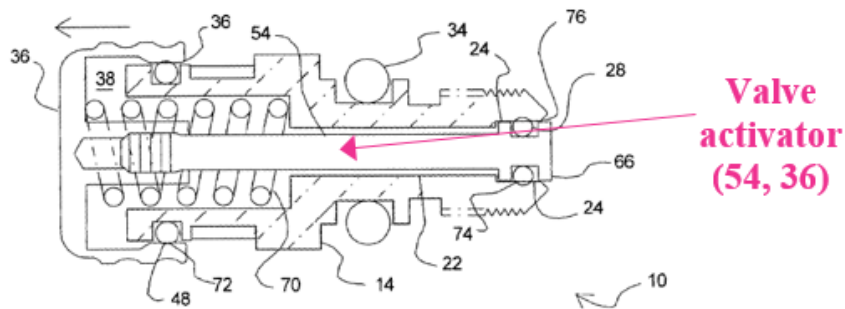


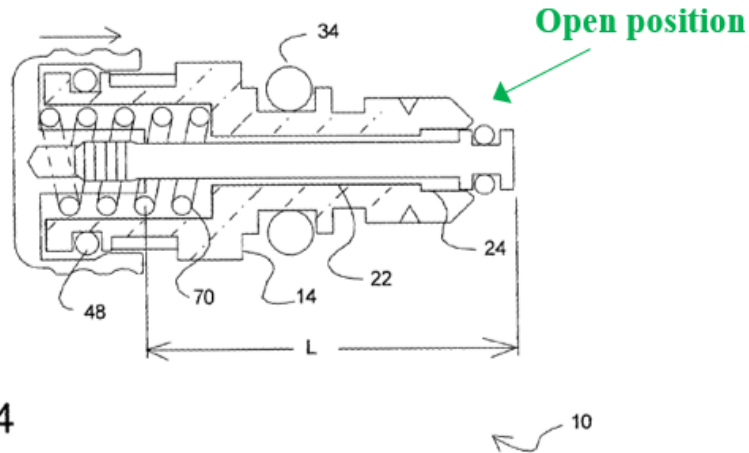
Fig. 3

- **Claim 3[b]**

Claim Element	Claim Language
3[b]	an activation position placing said manually operable valve into said first position; and

147. *Kojima* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer's* valve activator **54, 36** includes an activation position where the manually operable valve **54, 36, 14, 70** is in an open⁴ position (green arrow). For example, *Kojima* in view of *Bruckbauer's* valve cap **36**, connecting shaft **54**, and hollow body **14** include a spaced-apart relationship where a gas may travel through the manually operable valve. Ex. 1009, 5:3-9, FIG. 4.

⁴ See my comments above regarding how the term “activation position” conflates the first and second positions between claims 1 and 3 of the ‘331 patent, in that claim 1 requires the first position to be the closed position whereas claim 3 requires that the activation position be both the first (closed) position and an open position where fluid may flow around the valve. As a result, this claim is *irreconcilably indefinite*. However, I am applying Fox’s proposed redefinition of the claim which, if adopted, shows the claims are invalid.



- **Claim 3[c]**

Claim Element	Claim Language
3[c]	a deactivation position placing said manually operable valve into said second position, and whereupon when in said activation position, the trapped air pressure in said lower fork is equalized with the local ambient air pressure.

148. *Kojima* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer's* valve activator **54, 36** includes a deactivation position where the manually operable valve **54, 36, 14, 70** is in a closed position (red arrow). For example, *Kojima* in view of *Bruckbauer's* valve cap **36**, connecting shaft **54**, and hollow body **14** include a biased position where a gas may not travel through the manually operable valve. Ex. 1009, 5:23-28, FIG. 3.

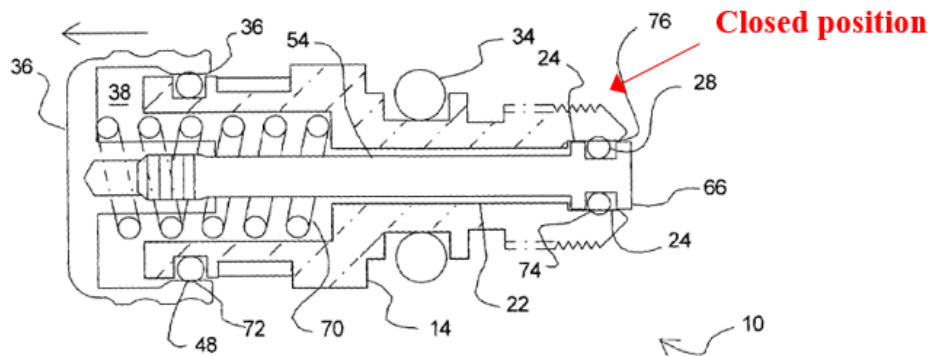
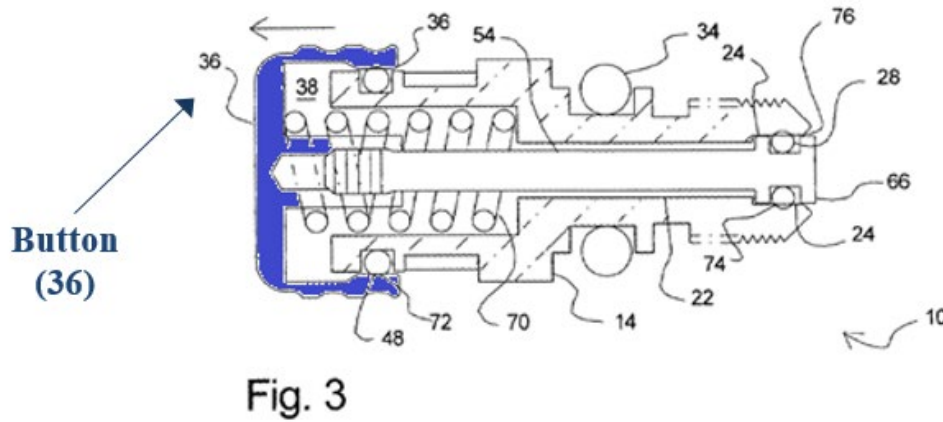


Fig. 3

Invalidity of Dependent Claim 4

Claim Element	Claim Language
4	The lower fork and air bleed assembly combination of claim 3, wherein said valve activator comprises: a button to select said activation position and said deactivation position.

149. *Kojima* in view of *Bruckbauer* discloses each and every element of this claim. *Bruckbauer*'s valve activator **54, 36** includes a button **36** (blue arrow) to select the activation position and the deactivation position. Ex. 1009, 5:3-28, FIG. 3.



Invalidity of Dependent Claim 5

Claim Element	Claim Language
5	The lower fork and air bleed assembly combination of claim 3, wherein said valve activator is located on a die-cast feature of said lower fork.

150. *Kojima* or *Kojima* in view of *Bruckbauer* discloses each and every element of this claim. *Bruckbauer* includes a manually operable valve **54**, **36**, **14**, **70** fixed into *Kojima*'s threaded hole through the body of *Kojima*'s lower fork **210**, which threaded hole would be formed on a die-cast feature of *Kojima*'s lower fork **210**. Ex. 1005, FIG. 9; Ex. 1009, 5:3-28. In any case, the structures of *Kojima*'s lower fork **210** do not differ from those made by die-casting, which does not distinguish itself from the structure imparted by other prior art manufacturing

techniques (and, therefore, should be given no patentable weight), this limitation regarding die-casting cannot distinguish Claim 5 from *Kojima* in view of *Bruckbauer*.

151. Further, it would have been obvious to a POSITA to modify *Kojima* or *Kojima* in view of *Bruckbauer* to form *Kojima*'s lower fork **210** using a die-cast procedure, as discussed above.

Invalidity of Dependent Claim 6

- **Claim 6[pre]**

Claim Element	Claim Language
6[pre]	The lower fork and air bleed assembly combination of claim 5, further comprising:

152. *Kojima* in view of *Bruckbauer* discloses each and every element of this preamble. *Kojima* includes a lower fork **210** and *Bruckbauer* includes an air bleed assembly **10** (in addition to *Kojima*'s related threaded hole). Ex. 1005, FIG. 9; Ex. 1009, FIGS. 3, 4.

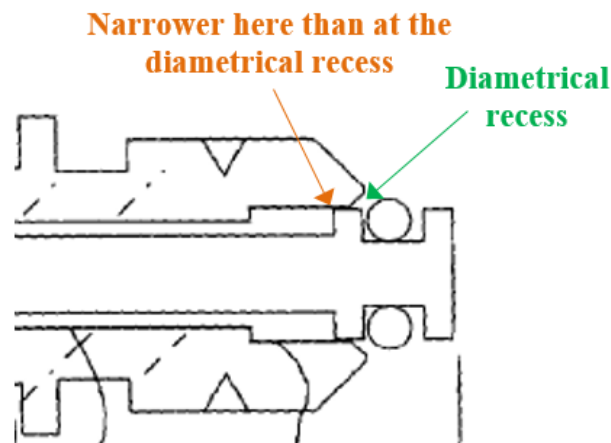
153. My opinions with respect to claim 6 for the combination of *Kojima* or *Kojima* in view of *Bruckbauer* are the same as discussed above with respect to *Kojima* alone or to the combination of *Kojima* and *Bruckbauer*, respectively, as

disclosing all of the elements of claim 6.

- **Claim 6[a]**

Claim Element	Claim Language
6[a]	a diametrical recess; and

154. *Kojima* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer* includes a diametrical recess (green arrow), in that the inner bore diameter is larger at the green arrow than at the orange arrow. Ex. 1009, FIG. 4.



- **Claim 6[b]**

Claim Element	Claim Language
6[b]	a sealing o-ring comprising:

155. *Kojima* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer* includes a sealing O-ring **28** (red arrow). Ex. 1009, FIG. 3.

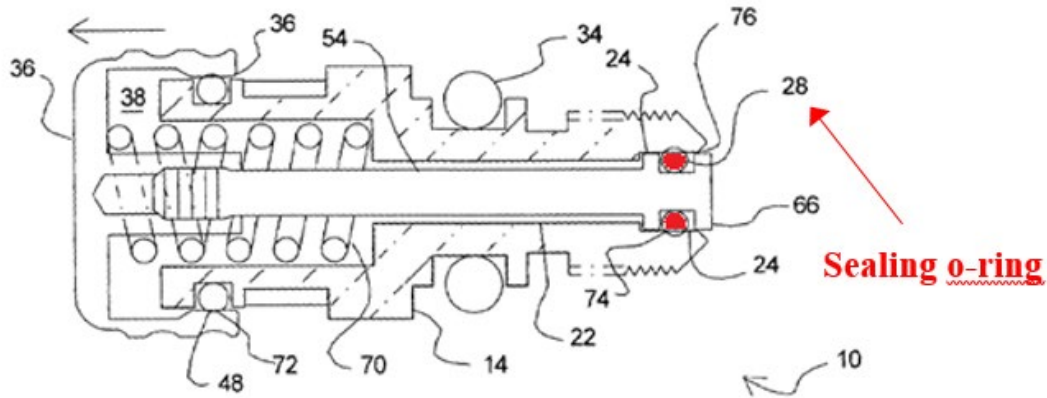


Fig. 3

- Claim 6[c]

Claim Element	Claim Language
6[c]	a sealed position; and

156. *Kojima* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer* includes a sealing o-ring **28** (red arrow) having a sealed position. Ex. 1009, FIG. 3.

- **Claim 6[d]**

Claim Element	Claim Language
6[d]	an unsealed position,

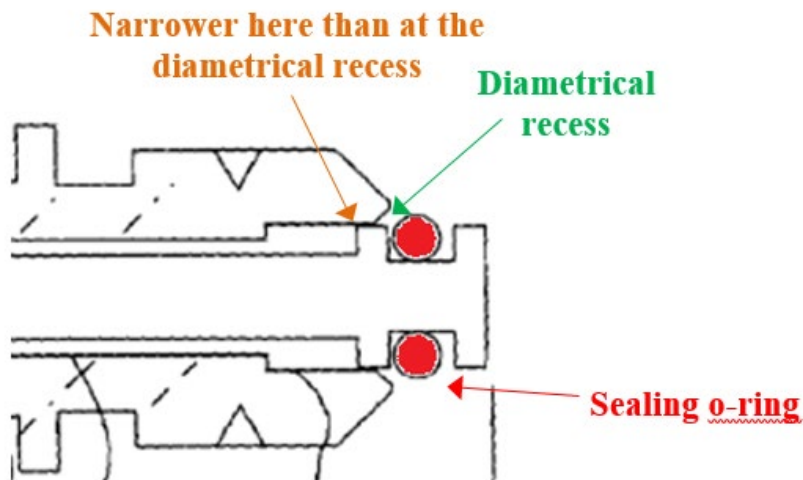
157. *Kojima* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer* includes a sealing O-ring **28** (red arrow, above) having an unsealed position. Ex. 1009, FIG. 4.

- **Claim 6[e]**

Claim Element	Claim Language
6[e]	wherein said sealed position seals between said die-cast feature and said lower fork, whereupon when said valve activator is moved from said activation position to said deactivation position, said sealing o-ring moves into said diametrical recess, thereby attaining said unsealed position and letting air pressure by-pass into or out of said lower fork via a vent hole.

158. *Kojima* in view of *Bruckbauer* discloses each and every element of this limitation. *Bruckbauer* includes a sealing O-ring **28** (red arrow) having a sealed position and an unsealed position wherein the sealed position seals against air leaks from *Kojima's* lower fork **210** through the die-cast feature, whereupon when

Bruckbauer's valve activator **54, 36** is moved from the activation position to the deactivation position, the sealing O-ring **28** moves further into the diametrical recess (green arrow), thereby attaining the unsealed position and letting air pressure by-pass into or out of *Kojima's* lower fork **1** via the vent hole **5**. Ex. 1005, FIG. 9; Ex. 1009, FIGS. 3, 4.

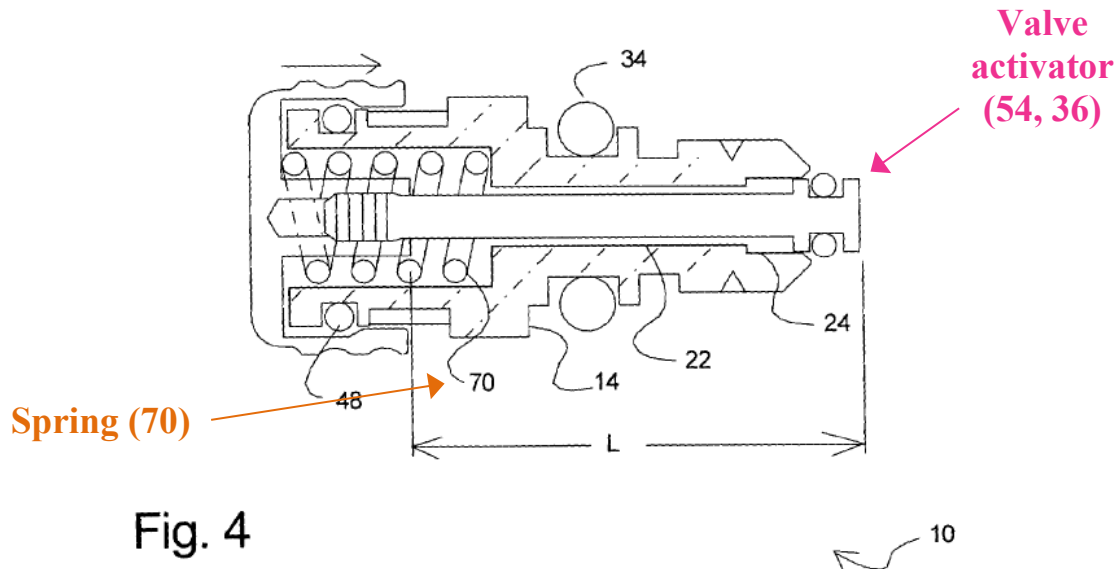


Ex. 1009, FIG. 4.

Invalidity of Dependent Claim 7

Claim Element	Claim Language
7	The lower fork and air bleed assembly combination of claim 3, wherein said manually operable valve comprises: a spring coupled with said valve activator, whereupon when said valve activator is moved into said deactivation position, said spring biases said valve activator toward said first position.

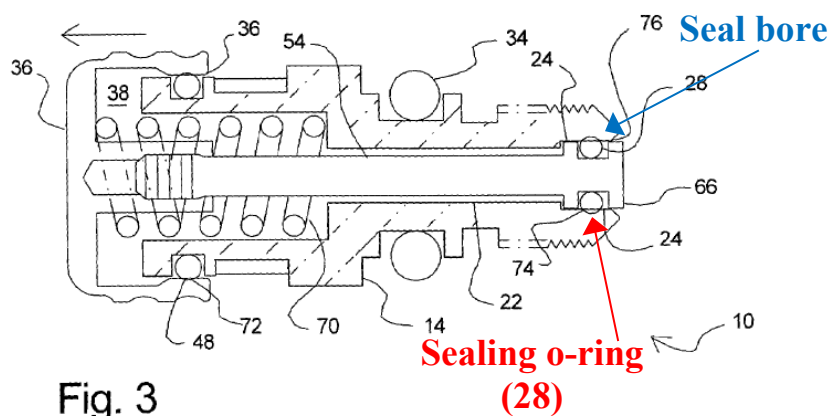
159. *Kojima* in view of *Bruckbauer* discloses each and every element of this claim. *Bruckbauer*'s manually operable valve **54, 36, 14, 70** includes a spring **70** (orange arrow) coupled to the valve activator **54, 36** (pink arrow), which spring **70** biases the valve activator **54, 36** toward the first (closed) position. Ex. 1009, 5:23-46, FIG. 4.



Invalidity of Dependent Claim 8

Claim Element	Claim Language
8	The lower fork and air bleed assembly combination of claim 7, wherein said second position comprises: a sealing engagement between said sealing o-ring and a seal bore, wherein when in said sealing engagement, said trapped air pressure does not by-pass into or out of said lower fork.

160. *Kojima* in view of *Bruckbauer* discloses each and every element of this claim. *Bruckbauer*'s manually operable valve **54, 36, 14, 70** has a second position having a sealing engagement between the sealing O-ring **28** (red arrow) and a seal bore (blue arrow), wherein when in the sealing engagement, trapped air pressure does not bypass into or out of *Kojima*'s lower fork **210**. In particular, air flow through the manually operable valve **54, 36, 14, 70** may be sealed by squeezing the internal O-ring **28** into the entrance of the aperture at the end of the hollow body **14** when the valve cap **36** is moved into the closed position, thereby preventing entry of dirt, water, or other foreign substances from entering *Kojima*'s lower fork **210**. Ex. 1009, 5:23-46, FIG. 3.



**Ground V: Claims 3 through 8 Are Rendered Obvious under 35 U.S.C. § 103
by *Kojima* in view of *Huang***

Invalidity of Dependent Claim 3

- **Claim 3[pre]**

Claim Element	Claim Language
3[pre]	The lower fork and air bleed assembly combination of claim 1, said air bleed assembly further comprising:

161. *Kojima* includes each and every limitation of claim 1, as discussed above. Further, a POSITA would have been motivated to modify and substitute *Kojima*'s air valve **215** with *Huang*'s air valve **1** at least for the reasons discussed above. Ex. 1005, FIG. 9; Ex. 1007, FIGS. 2, 3A.

- **Claim 3[a]**

Claim Element	Claim Language
3[a]	a valve activator coupled with said manually operable valve, said valve activator comprising:

162. Likewise, *Kojima* in view of *Huang* include each and every element of this limitation. *Kojima* in view of *Huang* includes a valve activator **520, 522** (pink arrows) coupled with the manually operable valve **1** (and the related fluid passage). Ex. 1007, FIGS. 2, 3A.

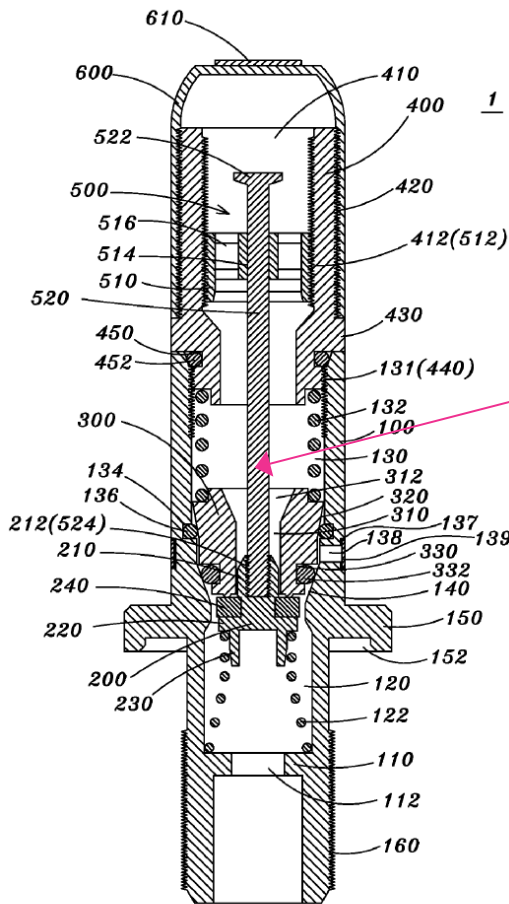


Fig. 2

Valve
activator
(520)

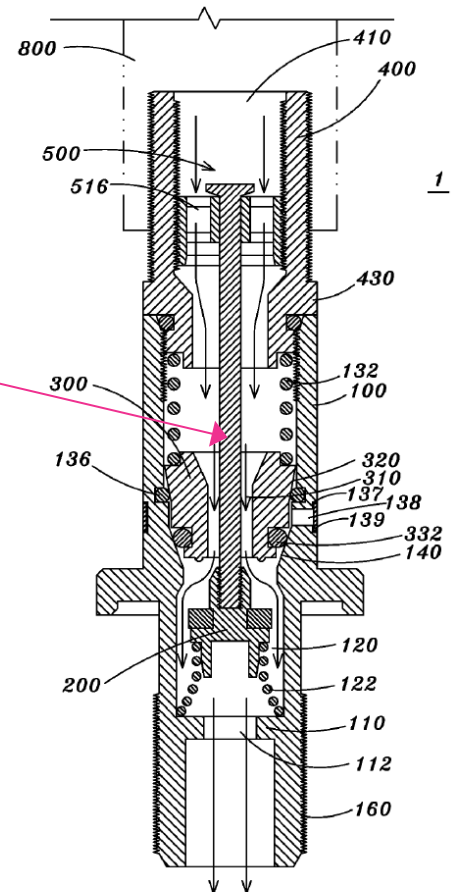


Fig. 3A

• Claim 3[b]

163. *Kojima* in view of *Huang* include each and every element of this limitation. *Kojima* in view of *Huang*'s valve activator 520, 522 includes an activation position where the manually operable valve 1 is in an open position. In particular, the central pin 520 may be pushed downward (as shown by the yellow

arrows), thereby allowing a gas to pass through the valve **1**. Ex. 1007, 6:37-47; FIG. 3A.

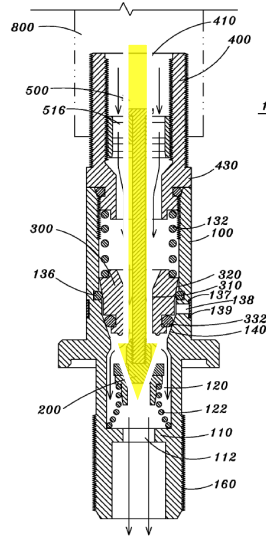


Fig. 3A

- **Claim 3[c]**

Claim Element	Claim Language
3[c]	a deactivation position placing said manually operable valve into said second position, and whereupon when in said activation position, the trapped air pressure in said lower fork is equalized with the local ambient air pressure.

164. *Kojima* in view of *Huang* include each and every element of this limitation. *Kojima* in view of *Huang*'s valve activator **520**, **522** includes a

deactivation position where the manually operable valve **1** is in a closed position, as shown in Figure 2, below. Ex. 1007, FIG. 2.

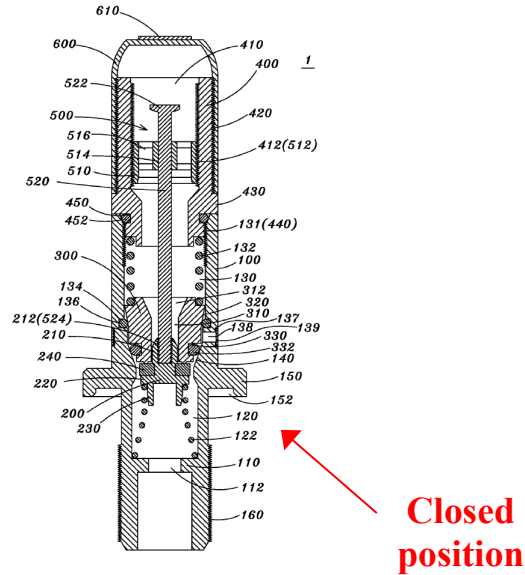


Fig. 2

Invalidity of Dependent Claim 4

Claim Element	Claim Language
4	The lower fork and air bleed assembly combination of claim 3, wherein said valve activator comprises: a button to select said activation position and said deactivation position.

165. *Kojima* in view of *Huang* include each and every element of this claim. *Huang* includes a button **522** (blue arrows) to select the activation position and the deactivation position. Ex. 1007, FIGS. 2, 3A.

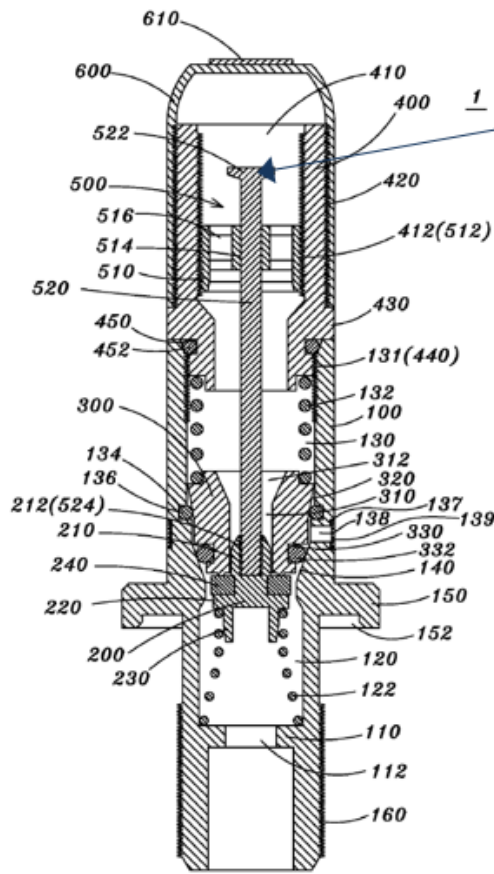


Fig. 2

Button
(522)

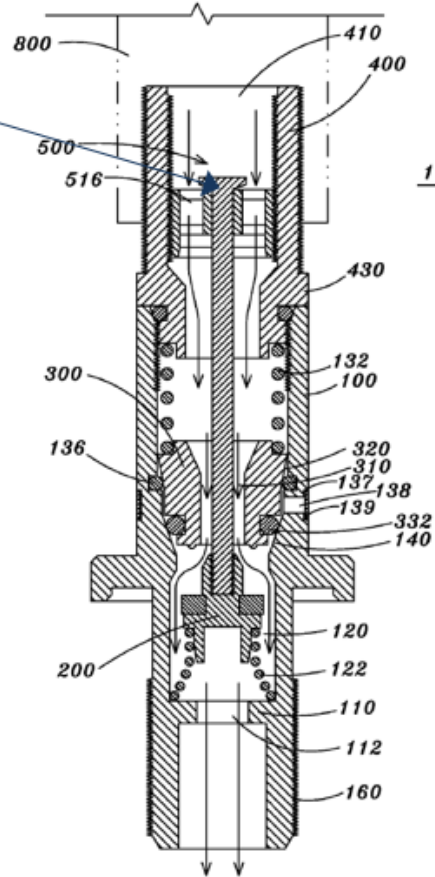


Fig. 3A

Invalidity of Dependent Claim 5

Claim Element	Claim Language
5	The lower fork and air bleed assembly combination of claim 3, wherein said valve activator is located on a die-cast feature of said lower fork.

166. *Kojima* includes each and every element of this claim, as described above.

Invalidity of Dependent Claim 6

- **Claim 6[pre]**

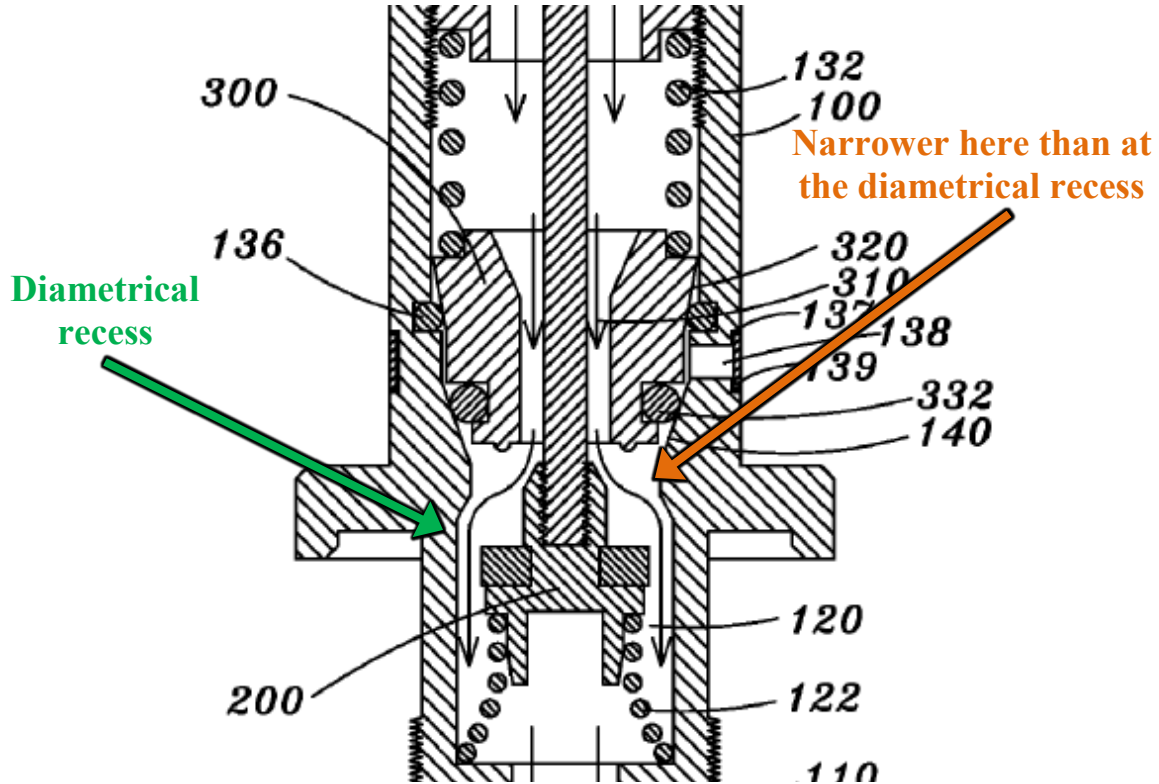
Claim Element	Claim Language
6[pre]	The lower fork and air bleed assembly combination of claim 5, further comprising:

167. *Kojima* in view of *Huang* discloses each and every element of this preamble. *Kojima* in view of *Huang* includes *Kojima*'s lower fork **210** and an air bleed assembly (*Huang*'s valve **1** with the fluid passage) combination of claim 5. Ex. 1005, FIG. 9; Ex. 1007, FIGS. 2, 3A.

- **Claim 6[a]**

Claim Element	Claim Language
6[a]	a diametrical recess; and

168. *Kojima* in view of *Huang* also discloses each and every element of this limitation. *Kojima* in view of *Huang* includes a diametrical recess (green arrow). In particular, *Huang* shows that the inner bore diameter is larger at the green arrow than at the orange arrow. Ex. 1007, FIG. 3A.



- Claim 6[b]

Claim Element	Claim Language
6[b]	a sealing o-ring comprising:

169. *Kojima* in view of *Huang* discloses each and every element of this limitation. *Kojima* in view of *Huang* includes an airtight washer **240** (red arrow) that is positioned around the first valve body **200** in the first chamber **120**. Ex. 1007, 4:38-48, FIG. 2.

170. To the extent that an airtight washer is not an O-ring, even though it is a circular sealing element, a POSITA would have been motivated to substitute a typical O-ring, such as *Bruckbauer's* O-ring **28**, for *Huang's* airtight washer **240** at least because O-rings and airtight washers are both circular sealing elements known to be substitutable for each other, each providing the same sealing function. In fact, a POSITA would be familiar with a wide array of circular sealing elements because such seals are used throughout vehicle suspensions, which tend to be pressure vessels in need of considerable sealing from gas and debris ingress/egress. A POSITA would have been motivated to provide this substitution at least because the substitution would have been expected to yield predictable results. Further, for at least the foregoing reasons, it would have been obvious to try this substitution. The resulting combination would be *Kojima's* lower fork **210** in combination with *Huang's* valve **1** having an O-ring replacing *Huang's* airtight washer **240**.

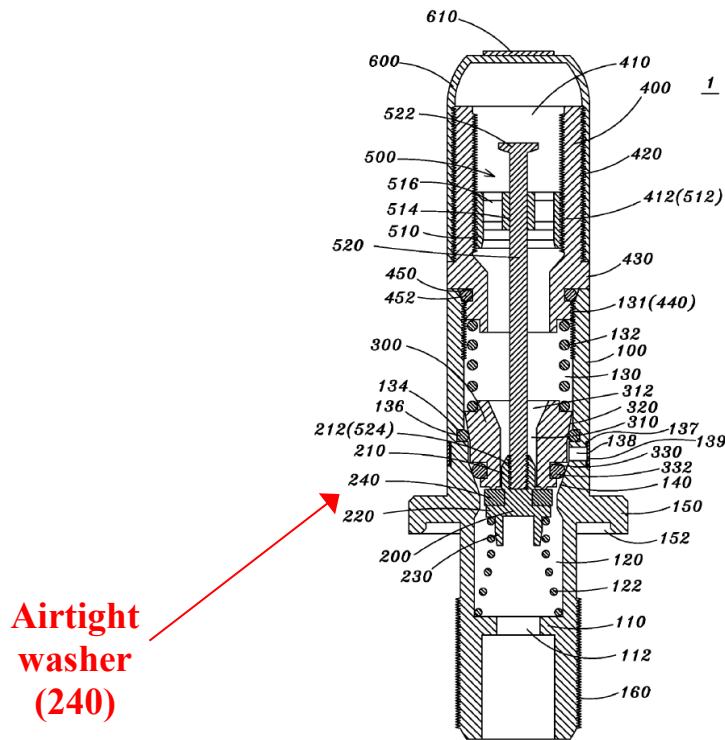


Fig. 2

- Claim 6[c]

Claim Element	Claim Language
6[c]	a sealed position; and

171. *Kojima* in view of *Huang* discloses each and every element of this limitation. *Kojima* in view of *Huang* includes an airtight washer **240** (red arrow) (or an O-ring, as discussed above) having a sealed position, as shown in *Huang*'s Figure 2. Ex. 1007, FIG. 2.

• Claim 6[d]

Claim Element	Claim Language
6[d]	an unsealed position,

172. *Kojima* in view of *Huang* discloses each and every element of this limitation. *Kojima* in view of *Huang* includes an airtight washer **240** (red arrow, above) (or an O-ring, as discussed above) having an unsealed position, as shown in *Huang's* Figure 3A, below. Ex. 1007, FIG. 3A.

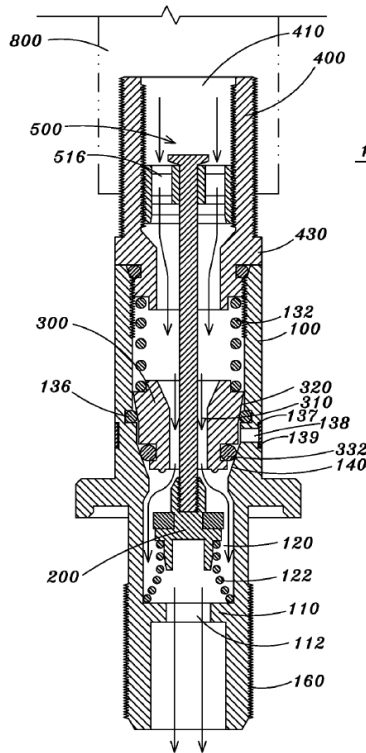


Fig. 3A

• **Claim 6[e]**

Claim Element	Claim Language
6[e]	wherein said sealed position seals between said die-cast feature and said lower fork, whereupon when said valve activator is moved from said activation position to said deactivation position, said sealing o-ring moves into said diametrical recess, thereby attaining said unsealed position and letting air pressure by-pass into or out of said lower fork via a vent hole.

173. *Kojima* in view of *Huang* discloses each and every element of this limitation. *Kojima* in view of *Huang* includes an airtight washer **240** (or an O-ring, as discussed above) having sealed and unsealed positions where the sealed position seals against air leaks from *Kojima*'s lower fork **210** through the die-cast feature. Further, when *Huang*'s valve activator **520** is moved from the activation position to the deactivation position, the airtight washer **240** moves further into the diametrical recess (green arrows), thereby attaining the unsealed position and letting air pressure by-pass into or out of *Kojima*'s lower fork **210** via a vent hole. Ex. 1005, FIG. 9; Ex. 1007, FIGS. 2, 3A.

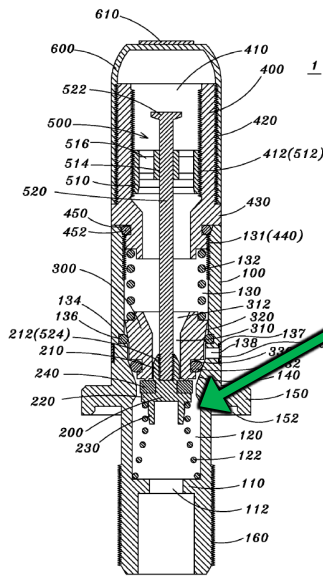


Fig. 2

**Diametrical
recess**

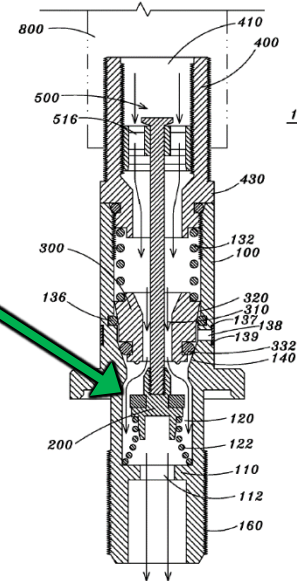


Fig. 3A

Invalidity of Dependent Claim 7

Claim Element	Claim Language
7	The lower fork and air bleed assembly combination of claim 3, wherein said manually operable valve comprises: a spring coupled with said valve activator, whereupon when said valve activator is moved into said deactivation position, said spring biases said valve activator toward said first position.

174. *Kojima* in view of *Huang* discloses each and every element of this claim. *Kojima* in view of *Huang*'s manually operable valve **1** (and the related fluid passage) includes a spring **122** (orange arrow) coupled to the valve activator **520**, **522** (pink arrow), whereupon when the valve activator **520**, **522** is moved into the

deactivation position, discussed above, the spring **122** biases the valve activator **520**, **522** toward the first (closed) position. Ex. 1007, FIG. 2.

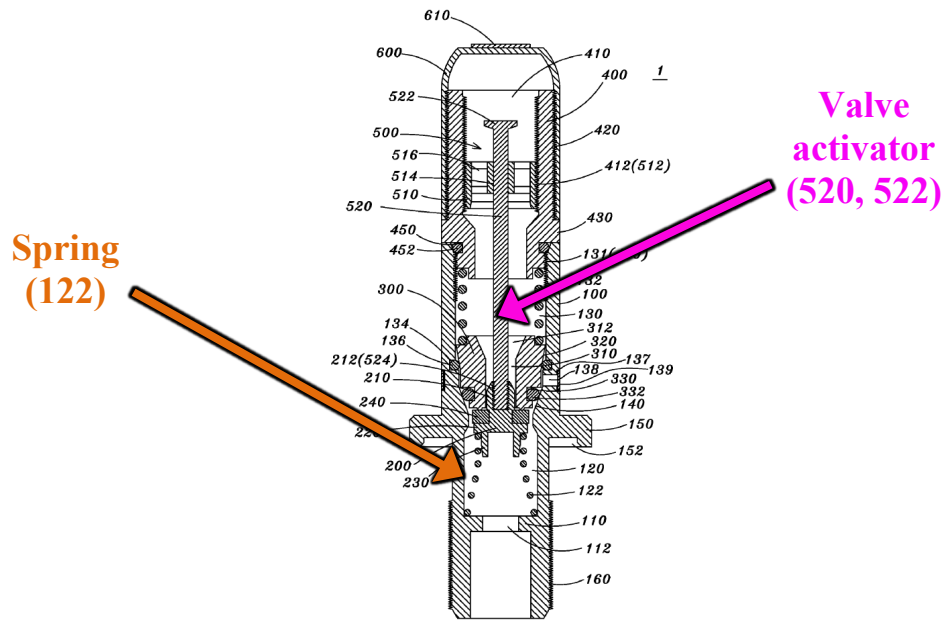


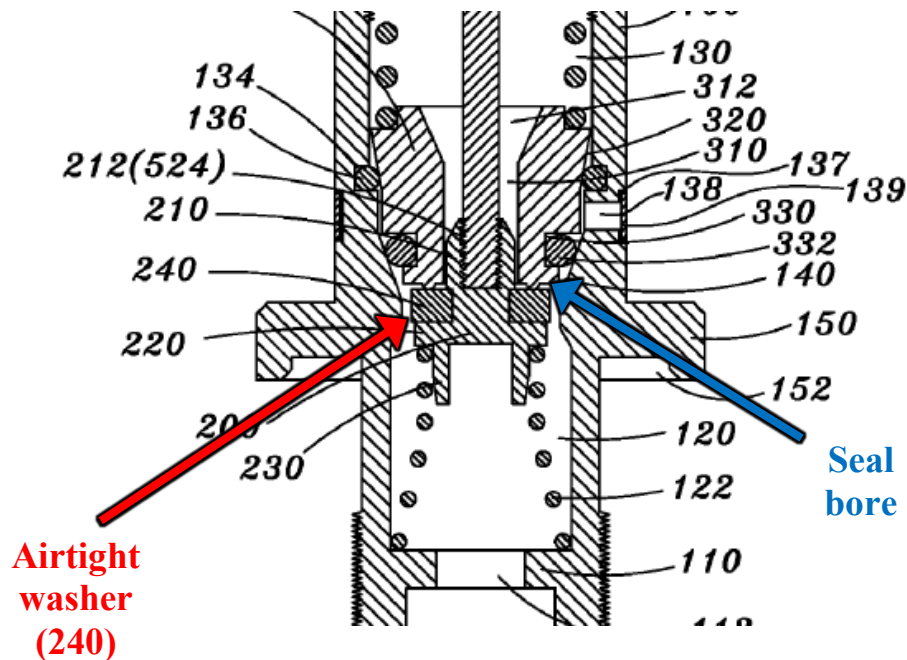
Fig. 2

Invalidity of Dependent Claim 8

Claim Element	Claim Language
8	The lower fork and air bleed assembly combination of claim 7, wherein said second position comprises: a sealing engagement between said sealing o-ring and a seal bore, wherein when in said sealing engagement, said trapped air pressure does not by-pass into or out of said lower fork.

175. *Kojima* in view of *Huang* discloses each and every element of this claim. Further, *Kojima* in view of *Huang*'s manually operable valve **1** has a second

position, discussed above, having a sealing engagement, as shown in Figure 2 below, wherein when in the sealing engagement, trapped air pressure does not bypass into or out of *Kojima*'s lower fork **210**. Ex. 1005, FIG. 9; Ex. 1007, FIG. 2.



CONCLUSION

176. For at least these reasons, it is my opinion that claims 1–8 of the '331 patent are unpatentable. Putting a hole in a suspension fork and having it open and close so that air can pass between the inside and outside of the fork without oil leaking out is not new and is certainly not worthy of patent protection.

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: August 10, 2023

A handwritten signature in black ink, appearing to read 'Eric Wang', is written over a horizontal line.

Eric Wang, Ph.D.