

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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FOX Factory, Inc.,

Petitioner,

v.

SRAM, LLC,

Patent Owner.

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U.S. Patent No. 10,328,993 B2

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Case No. IPR2024-00491

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**PATENT OWNER SUR-REPLY**

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## **I. INTRODUCTION**

The Petition (Paper 1) fails to show that the prior art included any bicycle steerer tube having a wall thickness in the lower section being at a maximum in the bicycle's plane of travel. Petitioner argues in its Reply (Paper 18, "Reply") that "[t]he crux of the claimed invention of the '993 patent is that the wall thickness in the lower section of the steerer tube varies along the tube's cross-section, with the maximum wall thickness aligned with the bicycle's plane of travel." Reply, 1. The prior art teaches the opposite. Amongst the additional failings of the Petition, all of the stated motivations to combine or modify the prior art to include these recited features are legally and technically deficient. Patent Owner's Response (Paper 16) ("POR"), 27-30, 45-50.

Recognizing the Petition's shortcomings, Petitioner conjectures new evidence and arguments on reply in a misguided attempt to salvage its IPR. For example, Petitioner now abandons its motivations to combine based on Denk's discussion of vertical forces for newly speculated, inaccurate motivations for what the inventors of the '993 Patent discovered first: that the forces incident on the critical bicycle component steerer tube in the fore-aft direction are more "critical" than those in the side-to-side, lateral direction. '993 Patent, 1:33-2:9. Even more desperate, Petitioner now argues new motivations to combine/modify the prior art based on

what it labels “common knowledge” and “common sense” without support or explanation, or and without any basis in the Petition.

## **II. DR. SLOCUM IS NOT QUALIFIED AS A POSITA**

In its Institution Decision (Paper 11), the Board did “not agree that Petitioner’s declarant has experience so ‘generalist’ that it would affect the weight we give to his opinion[,]” basing its decision, at least in part, on Petitioner’s expert being “familiar with bicycle design and maintenance.” Institution Decision, 13-14. However, when pressed on his experience during his deposition, Petitioner’s expert had no “paid consulting or design work with any bicycle interest” and had only worked on a wind tunnel (irrelevant to the ’993 Patent). Ex. 2019 (Slocum Depo.), 13:2-14:4. Further, when asked about bicycle/vehicle related work when reviewing his CV, Petitioner’s expert cited no relevant experience. *See, generally, id.*, 228:21-280:6.

Instead, Petitioner’s expert listed the following exemplary experiences, claiming them to be relevant to vehicle and bicycle design, or steerer tubes: a “ShieldBeam Contactor” for testing semiconductor chips (245:5-247:13); a “combined offshore wind wave storage power system” (248:9-249:13); tubular “water jet cutters” (252:4-253:19); and machines for making wind turbine towers (260:23-262:24). But these experiences are unrelated to bicycles, vehicles, and bicycle steerer tubes. *See also* Ex. 1003 (Slocum), 160-204 (Slocum CV). Even when confronted with these deficiencies, Petitioner’s expert’s second declaration

fails to list any relevant experience. *See* Ex. 1024 (Slocum Supp.), ¶15. Thus, while Petitioner’s expert may be an experienced engineer, he lacks experience relevant to the ‘993 Patent.

In contrast, Dr. Parnell has much experience with vehicles, including consulting and inspections “on various types of vehicles[,]” “projects for...crashworthiness” of vehicles, and the “ruggedization of vehicles[.]” Ex. 2021 (Parnell), ¶12. Dr. Parnell explains in his deposition that he has worked on numerous vehicle-related projects. *See, generally*, Ex. 1026 (Parnell Depo.), 13-22. Accordingly, Dr. Parnell has the requisite experience as a POSITA in this matter, while Petitioner’s expert was unable to name any.

### **III. THE PRIOR ART DOES NOT RECOGNIZE WHAT THE ‘993 PATENT’S INVENTORS FIRST DISCOVERED – THAT A STEERER TUBE SHOULD HAVE ITS MAXIMUM WALL THICKNESS/STRENGTH IN THE PLANE OF TRAVEL**

Having realized that its reliance on Denk’s (Ex. 1006) discussion of vertical forces was an unreasonable and ineffective attempt to provide a motivation to orient Denk’s tubular frame component to have the claimed “wall thickness being at a maximum in the plane of travel of the bicycle[,]” Petitioner now suggests a new motivation to combine in an unworkable attempt to salvage its Petition. Reply, 1, 5-6, 9-10, 12-16. Regardless of Petitioner’s new arguments, Moechnig remains the only evidence on record somewhat relevant to non-cylindrical steerer tubes. All

other purported evidence from Petitioner is either directed to other, different tubing or irrelevant, and, in each case, entitled to no weight.

**A. Moechnig, the Only Non-Cylindrical Steerer Tube Evidence, Makes Clear That a POSITA Would Not Reinforce a Steerer Tube Wall in the Bicycle's Plane of Travel**

Moechnig teaches the opposite of what is required in the '993 Patent – that increasing strength in the fore-aft direction is undesirable due to an increase in fore-aft stiffness, which uncomfortably communicates forces from the fork to the rider's hands. *See* Moechnig, ¶¶[0006]-[0010], [0049]-[0050]. In fact, before the '993 Patent explained to POSITAs the benefits of reinforcing steerer tubes in a perpendicular direction – in the bicycle's plane of travel – POSITAs were concerned with: (1) flexibility in the fore-aft direction to provide shock absorption and compliance thereby improving rider comfort, and (2) stiffness in the side-to-side direction to provide increased responsiveness of the fork to torque inputs by the rider at the handlebar, resulting in improved steering ability for the rider. POR, 12; Moechnig, ¶¶[0009], [0049], [0050]; Ex. 2021 (Parnell), ¶53.

Valat is the only other steerer tube in this IPR, but Valat does not disclose a steerer tube wherein the “wall thickness [is] at a maximum in the plane of travel of the bicycle,” as discussed below and in the POR. POR, 31-37. Petitioner cannot, and does not, allege that Valat discloses this claim element in the Petition or Reply. *See* Petition, 49-50, 61-66; Reply, 17-23. The other references Petitioner touts in

this matter (Denk, Galasso, Klein, and Campagnolo) each fail to teach, disclose, or suggest what Petitioner admits is the “crux” of the ‘993 Patent – a steerer tube having a “wall thickness [] at a maximum in the plane of travel of the bicycle.” Reply, 1; ‘993 Patent, Claim 1.

**B. Petitioner’s New Arguments and Evidence**

For the first time on reply, Petitioner attempts to introduce new arguments and has relied upon new evidence to salvage the weak and incorrect motivation to combine provided in the Petition. Specifically, Petition has shifted from its limited reliance on the discussion of vertical forces in Denk to various statements taken out of context from different references and various statements from patent examiners. *See* Reply, 1, 5-6, 9-10, 12-16. In contrast, however, the Petition limited its motivation to combine to Denk’s disclosure of vertical forces on the bicycle frame. Petition, 25-26 (Denk), 52-53 (Valat). *See also* Ex. 1003 (Slocum), ¶¶89-92, 157; Institution Decision, 19-20. The Board should reject such new speculated motivations offered in support of Petitioner’s proposed combinations and modifications under 37 C.F.R. § 42.23(b). *See, Dynaenergetics Europe GMBH et al. v. SWN Int’l, LLC*, Case IPR2022-01372, Paper 27, at 36-41 (PTAB Feb. 5, 2024) (“Petitioner’s attempt to rewrite the Petition undermines its credibility and reinforces [a] finding that Petitioner’s reasoning is biased by hindsight”).

The POR rebutted Petitioner’s misunderstanding of Denk, explaining that Denk’s disclosure (Col. 2) is related to forces incident on a bicycle frame from the weight of a rider. POR, 20-24; Denk, Col. 2; Ex. 2021 (Parnell), ¶¶60-68. Such vertical forces are relevant to a bicycle frame, but not to a steering tube because “the velocity of the bicycle and its related momentum are the main factors at issue for a bicycle steerer tube and fork (which forces act in the fore-aft direction), along with torque forces around the steering axis for steering inputs and wheel deflections.” Ex. 2021 (Parnell), ¶52.

In its Reply, Petitioner now attempts to argue that “it would have been obvious to a POSITA to align the maximum wall thickness with the plane of travel to increase the strength/rigidity of the steerer tube in the areas of highest load.” Reply, 1; *see also id.*, 5-10, 13-15, 21. But nowhere in the Petition does Petitioner mention this motivation to combine. Instead, Petitioner’s sole motivation to orient Denk as recited in the ‘993 Patent’s claims relied on Denk: “***Denk further discloses*** that high loads occur ***in the vertical plane of a bicycle frame***, which is the same as the bicycle’s plane of travel, and so force absorption capability of bicycle components should be greater in vertical plane 6.” Petition, 25. *See also* Ex. 1003 (Slocum), ¶46 (relying on the same vertical loads in Denk); Petition, 52-53 (same). In the Petition, ***Petitioner relies solely upon Denk’s discussion of vertical forces.***

Now Petitioner has abandoned its sole Denk-based motivation argument for a *new, speculated, more generalized motivation* that a POSITA would have known that the loading on a steerer tube is greatest in the fore-aft direction. Reply, 1, 5-10. This new argument is much more than mere clarification or expounding on its previous position, rising to the level of an improper new argument on reply. *See, e.g., Dynaenergetics Europe GMBH et al.*, Case IPR2022-01372, Paper 27, at 36-41. Further, *Petitioner relies on supposed new evidence* in support of this argued new, generalized motivation, such as newly-introduced Klein (Ex. 1023) and new theories regarding Galasso (Ex. 1013), which was not cited in the Petition. As a result, the Board should ignore this new argument for a speculated motivation to combine and new references, as well as the sections of the Reply that rely upon these statements.

In addition to improper new arguments, Petitioner is simply incorrect that a POSITA would have known that a steerer tube bears the highest loads in the bicycle's particular plane of travel as claimed in Claims 1, 61, and 64 of the '993 Patent.

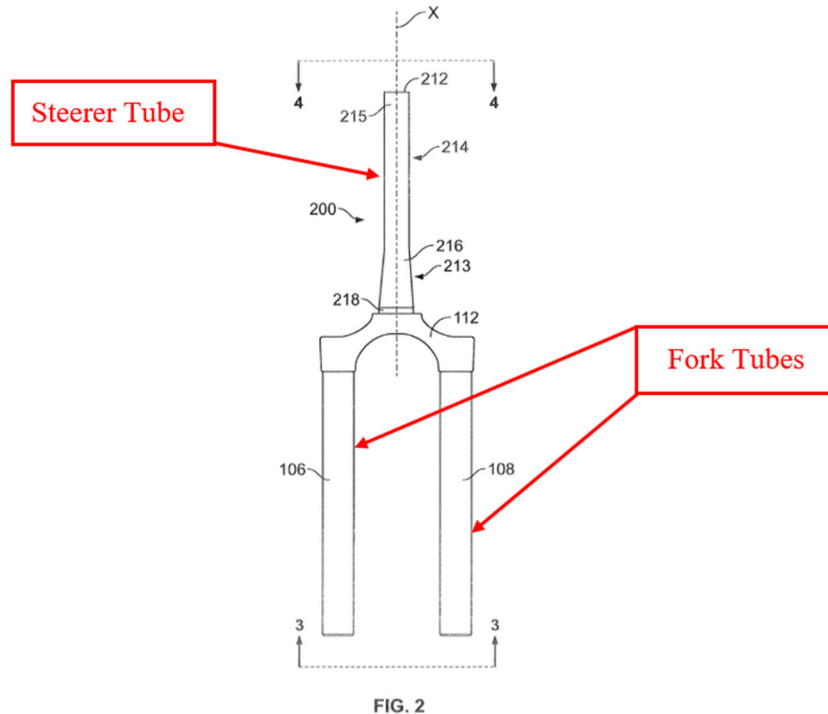
**C. Denk, Galasso, Klein, and Campagnolo Do Not Disclose a Bicycle Steerer Tube Having a Wall Thickness Being at a Maximum in the Plane of Travel of the Bicycle**

**1. Denk (Ex. 1006)**

As discussed in detail in the POR, Denk does not disclose a bicycle steerer tube. POR, 15-16, 20-24. Instead, Denk is concerned with bicycle frame tubes. Ex.

2021 (Parnell), ¶¶50-55, 60-69. Bicycle frame tubes are very different than bicycle steerer tubes. *Id.*, ¶¶60-62. Denk fails to teach, disclose, or suggest the specialized considerations for a steerer tube that a POSITA would consider when designing a steerer tube. *Id.*, ¶¶63-68. Denk focuses on bicycle frames, to the extent that it has any particular focus. *Id.*

Petitioner’s misplaced, stubborn reliance on Denk’s statement that it is applicable to “fork tubes” is unavailing because “fork tubes” are not bicycle steerer tubes, especially in light of Petitioner’s expert’s admission that the fork legs are “fork tubes” separate from the “steerer tube[.]” *See* POR, 21, n.6; Ex. 2021 (Parnell), ¶68; Ex. 2019 (Slocum Depo.), 66:21-68:12, 122:17-123:5. Moreover, Petitioner’s position is simply contrary to the ‘993 Patent showing in Figure 1 and related description in the specification “a steerer tube **200**” separate from “left and right fork tubes **106, 108**”:



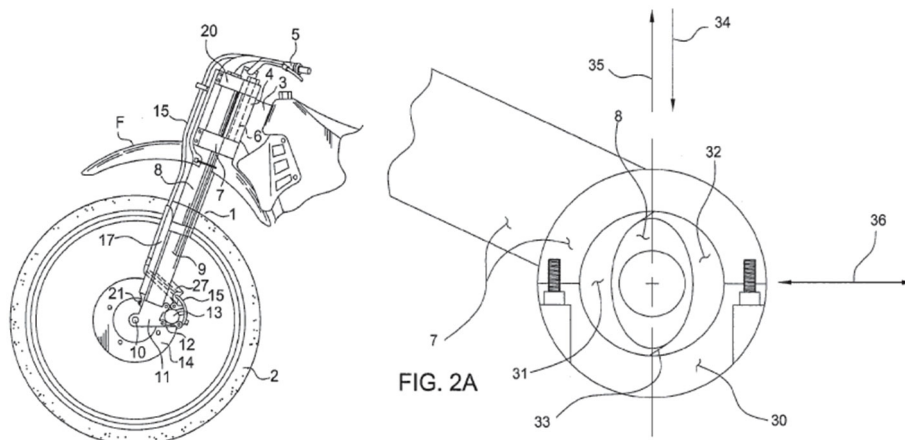
‘993 Patent, 1:12-21, FIG. 2.

Further, a steerer tube is not a component of a bike frame. Ex. 2021, ¶166. Dr. Parnell explained that although there may be some surface, superficial similarities between a steerer tube and a seat tube or other frame tube, “steerer tubes experience stresses not just at the end of the tubing, but also at the points where the steerer tube interacts with the headtube of the relevant bicycle frame” and “[s]ignificant twisting torques ... also occur about the rotational axis of the steerer tube[,]” thereby differentiating the requirements for steerer tubes from mere seat tubes. Ex. 2021 (Parnell), ¶62. Thus, a POSITA would not understand Denk’s statement that its tubing “is suitable for all tubular components *of a bicycle frame*, including *fork tubes*” to include steerer tubes. Ex. 2019 (Slocum Depo.), 57:10-16;

Reply, 11. Accordingly, Denk's discussion of seat/frame tubes is inapplicable to steerer tubes, and nothing in Denk teaches, discloses, or suggests a steerer tube, nonetheless one having a maximum wall thickness in the bicycle's plane of travel.

## 2. Galasso (Ex. 1013)

Similarly, Galasso (Ex. 1013) focuses on fork tubes, also known as fork legs, not a steerer tube. *E.g.*, Ex. 1013 (Galasso), Abstract, FIG. 1, 2A. Petitioner argues that Galasso "discloses increasing the stiffness of a stanchion tube in the fore-and-aft direction[,]" but a stanchion is not a steerer tube. Reply, 6. Galasso's stanchion tubes 8 are fork legs, also known as fork tubes<sup>1</sup>, separate from Galasso's steerer tube 4, as shown in the figure below:



Galasso at FIGS. 1, 2A. Galasso's fork tubes are struts, which comprise a stanchion 8 and a slider 17. *See, e.g.*, Galasso, Abstract, 1:64-2:8, 4:10-19

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<sup>1</sup> Section III(C)(1).

(discussing struts), 8:47-62 (invention applicable to other linkages but no mention of steerer tubes), FIGS. 1, 2A. Galasso omits *any mention* of steerer tubes when describing the applicability of its invention. For example, Galasso’s “SUMMARY OF THE INVENTION” Section only mentions stanchions and sliders. Galasso, 1:64-2:8. Instead, Galasso does mention a steerer tube, but only in passing when describing the related art. *See* Galasso, 2:45-3:65.

Galasso discloses reinforcing the stanchions or sliders in the fore-aft direction of the relevant fork tube. However, these stanchions and sliders are not in the bicycle’s plane of travel. Instead, the fore-aft direction of the fork tubes is outside of the plane of travel because the fork tubes are arranged beside the steerer tube, outside of the plane. For example, the ‘993 Patent shows fork tubes **106**, **108** outside of the plane of travel P (red), which extends through axis X (blue):

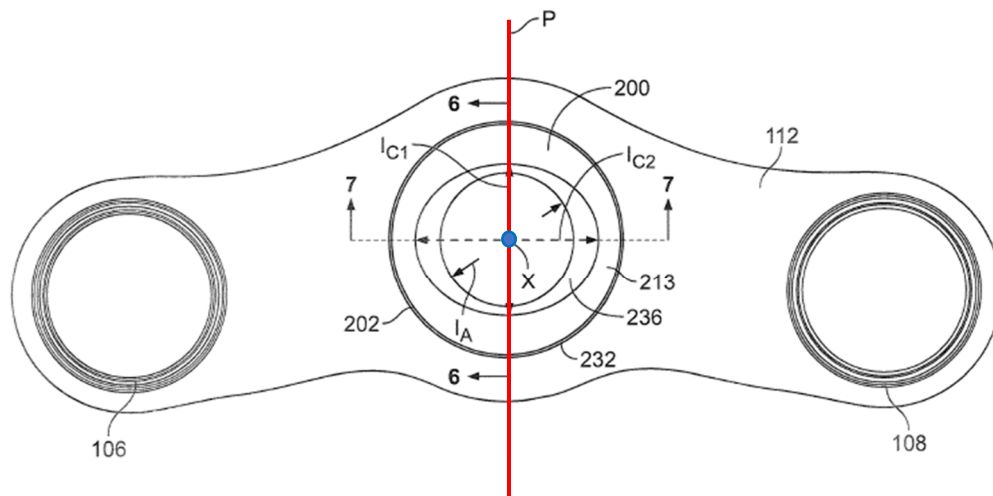


FIG. 3

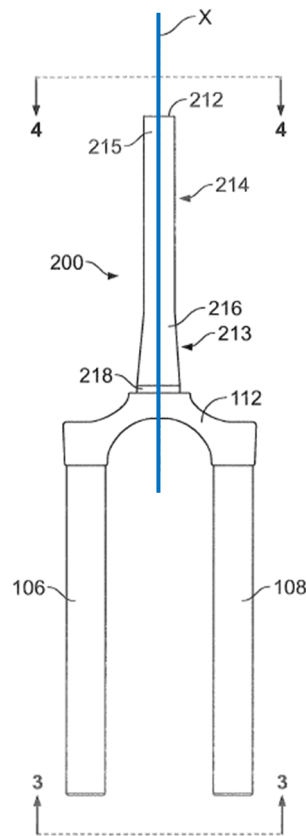


FIG. 2

‘993 Patent, FIGS. 2, 3 (annotated).

Additionally, Petitioner overstates Galasso’s disclosure when arguing that Galasso is applicable to all “tubes.” Reply, 8. Instead, immediately after the section cited by Petitioner (Galasso, 2:45-59), Galasso explains that “the main structural element defining the front to back stiffness in the above described motocross front fork is the stanchion tube set[,],” and does not mention adjusting a standard steerer tube in any way.

Nowhere does Galasso teach, disclose, or suggest reinforcing *a steerer tube* (or any tube) *in the plane of travel of a bicycle*.

### 3. Klein (Ex. 1023)

Klein discloses some improvements made to a steerer tube, but none are related to a steerer tube, or any tubing reinforced in the bicycle's plane of travel: (1) "machining the outside diameter of the steering tube for direct fit and adhesive bonding of the headset bearings to the external surfaces of the steering tube[,]" (2) the use of "very large diameter aluminum tubing," and (3) "the internal lower end of the steering tube is machined to have a slight taper, and the outer diameter of the upper portion of the steerer tube is completely machined." Klein, 2:8-11, 2:23-24, 5:49-6:7. In fact, Klein's steerer tube is completely round. *Id.*, FIGS. 1a, 1b, 11. Thus, a POSITA following Klein would use a similar round steerer tube to benefit from Klein's "light weight" and increases in "torsional stiffness, fore and aft stiffness and side-to-side stiffness" while having "a higher overall rigidity than prior art forks." Klein, Abstract.

Petitioner misrepresents Klein's disclosure via deceptive quotation (Klein, 4:21-29) when arguing that Klein suggests that the greatest forces incident on a steerer tube are in the fore-aft directions. Reply, 5-6. However, in the text immediately following Petitioner's deceptive quotation, Klein states that its "simple analysis" is *incorrect*:

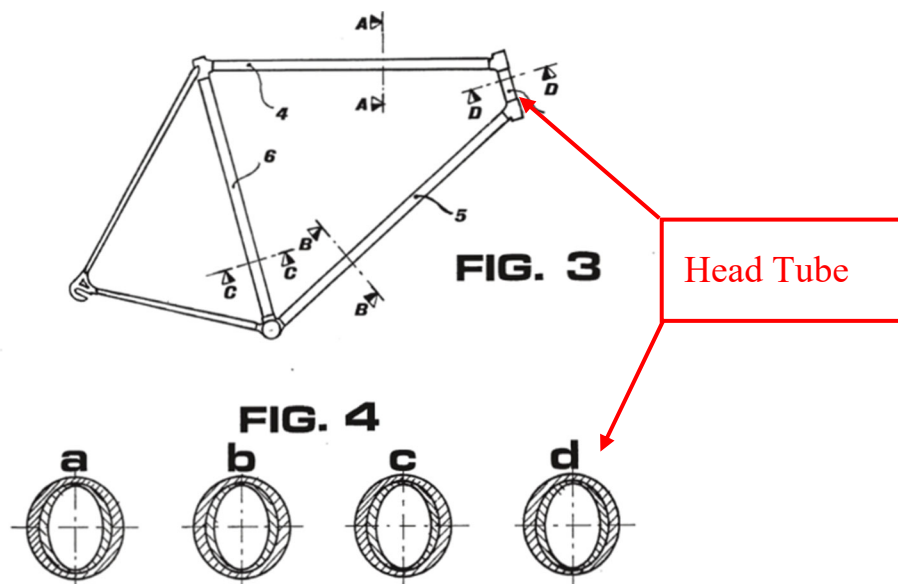
***However, it has been discovered through actual testing and detailed analysis*** that forces in the fork blades are displaced to the side where the steerer attaches, or the

wheel or inside of the fork, a small amount. Thus, the *optimum here, according to the invention, is not a direct fore and aft reinforcement*, but two reinforcements (e.g. thicker wall) are shifted slightly to the inside of the fork as can be seen in the drawings attached hereto. Another factor is that there is a high degree of compressive stress resulting from the vertical bump loading. Thus, in the preferred embodiment, *the front of the blades is reinforced a little bit more (e.g., thicker wall and more metal) than the rear* because of the straight compressive stress and the cantilevered compressive stresses are cumulative in the front of the blade and oppose each other in the rear. Thus, there is a slight differential in the thicknesses in these areas.

Klein, 4:29-45 (the fork “blades” above refer to the fork tubes/legs, not the steerer tube). Klein simply does not include or suggest a maximum wall thickness in the bicycle’s plane of travel for its steerer tube and makes clear that the “simple analysis” relied upon by Petitioner is incorrect. Further, Klein suggests reinforcing the front side of the fork blades/tubes/legs more than the rear. *Id.* Accordingly, Klein fails to show that a POSITA would have been motivated to include a maximum wall thickness of a steerer tube in the plane of travel of a bicycle.

#### 4. Campagnolo (Ex. 1009)

Campagnolo only discloses improvements made to a typical bicycle frame and does not even mention a steerer tube. For example, Campagnolo states that its invention “relates to a frame for bicycles, especially competition bicycles, or for motorcycles...and more specifically to a frame wherein the tubes having said structures are all positioned so that their cross sections are arranged with their minimum thickness in correspondence of the plane of the frame...” The opposite of the ‘993 Patent. Campagnolo, 3:26-31. The word “steer” does not appear anywhere in Campagnolo. Further, the figures in Campagnolo only show a bicycle frame:



Ex. 1009 (Campagnolo), FIGS. 3-4. Accordingly, as stated by Campagnolo itself and reproduced above, Campagnolo’s disclosure is solely related to bicycle frame tubing. And as thoroughly explained in the POR (15-16, 20-24), as well in Dr. Parnell’s Declaration (Ex. 2021, ¶¶60-69) and Petitioner’s expert’s

deposition (Ex. 2019, 57:10-16), a bicycle frame and bicycle frame tubes are not steerer tubes. Campagnolo never discloses, teaches, or suggests substituting its proposed tube structure for a bicycle's steerer tube or that a bicycle steerer tube should have its maximum thickness in the bicycle's plane of travel.

Further, Campagnolo makes clear that it reinforces its tubing in the lateral, side-to-side direction. *E.g.*, Ex. 1009, 2:23-31, 3:26-31 (tubing “arranged with their minimum thickness in correspondence of the plane of the frame”), 4:24-28 (tubing having increased side-to-side strength), 5:25-6:10 (“thickest areas arranged at the sides of the frame[,]” increasing side-to-side strength). Further, the headtube, which accepts the steerer tube and has its cross-sectional shape shown in Figure 4d, has its maximum wall thickness perpendicular to the plane of the bicycle frame, “at the sides of the [bicycle] frame[.]” Campagnolo, 5:31-32; *see also id.*, 4:14-19, 5:25-6:1. Thus, if a POSITA were to attempt to adapt what is disclosed in Campagnolo (the motivations for which Petitioner does not discuss) to a steerer tube, the POSITA would conclude that, like the headtube in Campagnolo's Figure 4d, the maximum wall thickness of the steerer tube should be in a plane perpendicular to the plane of travel of the bicycle, exactly opposite of what is claimed in the '993 Patent.

**D. Petitioner's Reliance on Statements From the Prosecution History and Exhibit 1004 Is Misguided and Should Be Ignored**

In response to the final office action (Ex. 1002, 40-44) during prosecution of the '993 Patent, Applicant chose to accept the Examiner's indicated allowable subject matter. *See* Ex. 1002, 26 (amended claim 1), 28-29 (allowed claim 14), 29-30 (allowed claim 18), 40 (indicating that claims 2, 14, and 18 are allowable), 43 (same). A patent applicant's acceptance of allowable subject matter has no bearing on whether a specific claim term amongst many is "unique or novel[.]" Reply, 9. *See, e.g., TorPharm, Inc. v. Ranbaxy Pharms., Inc.*, 336 F.3d 1322, 1330 (Fed. Cir. 2003) (accepting allowed subject matter does not indicate that a specific limitation was unpatentable). Nor does acceptance have any bearing on the knowledge of a POSITA.

Exhibit 1004 purports to be a document from the Chinese Patent Office, and is, at a minimum, hearsay in this IPR proceeding. Further, Petitioner has not provided any evidence that the unnamed author of Exhibit 1004 is a POSITA. Moreover, the statements in the cited portion of Exhibit 1004 are made without any support or evidence of the opinions of a POSITA. Nowhere does Exhibit 1004 state its basis for this "common knowledge." Accordingly, the Board should ignore Petitioner's reliance on the prosecution history and Exhibit 1004. *See, e.g.,* Reply, 9-10.

**E. The New Argument of Petitioner and Petitioner’s Tendered Expert That a POSITA Would Have Known That the Highest Forces for a Steerer Tube Are in the Bicycle’s Plane of Travel Is Without Support and Unsupportable**

Again, Moechnig is the only evidence on the record of a bicycle steerer tube that has any form of asymmetric reinforcement or wall thickness. Moechnig’s disclosure makes clear that a POSITA would have reinforced the sides of a steerer tube, and not in the plane of travel of the bicycle. Even with Petitioner’s shifting sands approach to its argued speculated motivation to orient Denk as claimed in the ‘993 Patent, Petitioner fails to show that a POSITA would do so. For at least these reasons, the Petition must fail and the Challenged Claims of the ‘993 Patent are valid and patentable in view of each of the Grounds in the Petition.

**IV. PETITIONER’S DENK-BASED GROUNDS MUST FAIL**

**A. A POSITA Would Not Have Been Motivated to Combine Denk and Moechnig for the Baseless “Advantages of Improved Mechanical Strength and Reduced Weight” and Petitioner Has Not Shown the Opposite**

Petitioner argued in its Petition that a motivation to combine Denk and Moechnig is to have weight and strength advantages. Petition, 13-14, 16. However, the Petition provided no evidence of these purported advantages. POR, 24-27. Petitioner attempts to fix this failure on reply are unavailing, and the Board should not allow Petitioner to argue a new alleged motivation to combine based on purported “ordinary creativity” or suitability basis. Reply, 12-13.

**B. Moechnig, the Only Bicycle Steerer Tube Evidence in This Matter That Considers an Asymmetrically Reinforced Steerer Tube, Controls**

As discussed above in Section III(A), Moechnig is clear that a POSITA would reinforce the sides of a steerer tube to increased strength in the lateral, side-to-side direction to improve rider comfort and steering performance, the opposite of the ‘993 Patent. Further, Campagnolo suggests the same. Section III(C)(4). This is more than a “particular use case.” Reply, 14-15. Further, as shown above, Denk, Galasso, Klein, and Campagnolo each fail to discuss any improvements to a standard, round steerer tube. Moreover, not only does Moechnig not teach that the “highest loads” on a steerer tube are in the fore-aft direction, but *no reference on record teaches this*. Petitioner’s REPLY grasps at straws. Reply, 14-16.

Instead, Moechnig is the only evidence on record of how a POSITA would choose to design a steerer tube that has asymmetric reinforcement. In this same vein, Petitioner and Petitioner’s tendered expert wrongly argue that it is “common knowledge that a steerer tube bears the highest loads in the plane of travel.” Reply, 15 (citing Ex. 1024 (Slocum Supp.), ¶44). The Board must ignore this new argument, which is wrong and unsupported.

As a result, the Petition has neither a legitimate motivation to combine Denk and Moechnig, nor any motivation to twist Denk to fit into the claims of the ‘993 Patent. As a result, all Denk-based Grounds (Grounds I and II) must fail.

## **V. PETITION’S VALAT-BASED GROUNDS MUST FAIL**

### **A. Valat’s Figure 1 Is Not a Steerer Tube**

“Valat’s disclosure clearly states that Figure 1 is an example of a tube before a swaging process is performed, and Figure 2 is an example of the resultant tube after swaging.” Ex. 2021 (Parnell), ¶85 (citing Ex. 1007 (Valat), 1:58-63, 1:96-2:4). Petitioner’s arguments to the contrary are unreasonable and wrong. A POSITA would not consider the tube in Figure 1 to be “suitable” as a steerer tube because it is not yet “finished[.]” Valat, 1:58-63; Reply, 17; *see also* Valat, 1:96-2:4. This is equivalent to stating that a flat sheet of metal is a bicycle frame tube simply because it will eventually be rolled and welded into a bicycle frame tube, or that a collection of tubes is a bicycle frame because they will eventually be welded into a bicycle frame. Nothing stated in the Reply changes this.

### **B. The Combination of Denk and Valat Would Not Have the Benefits Argued in the Petition**

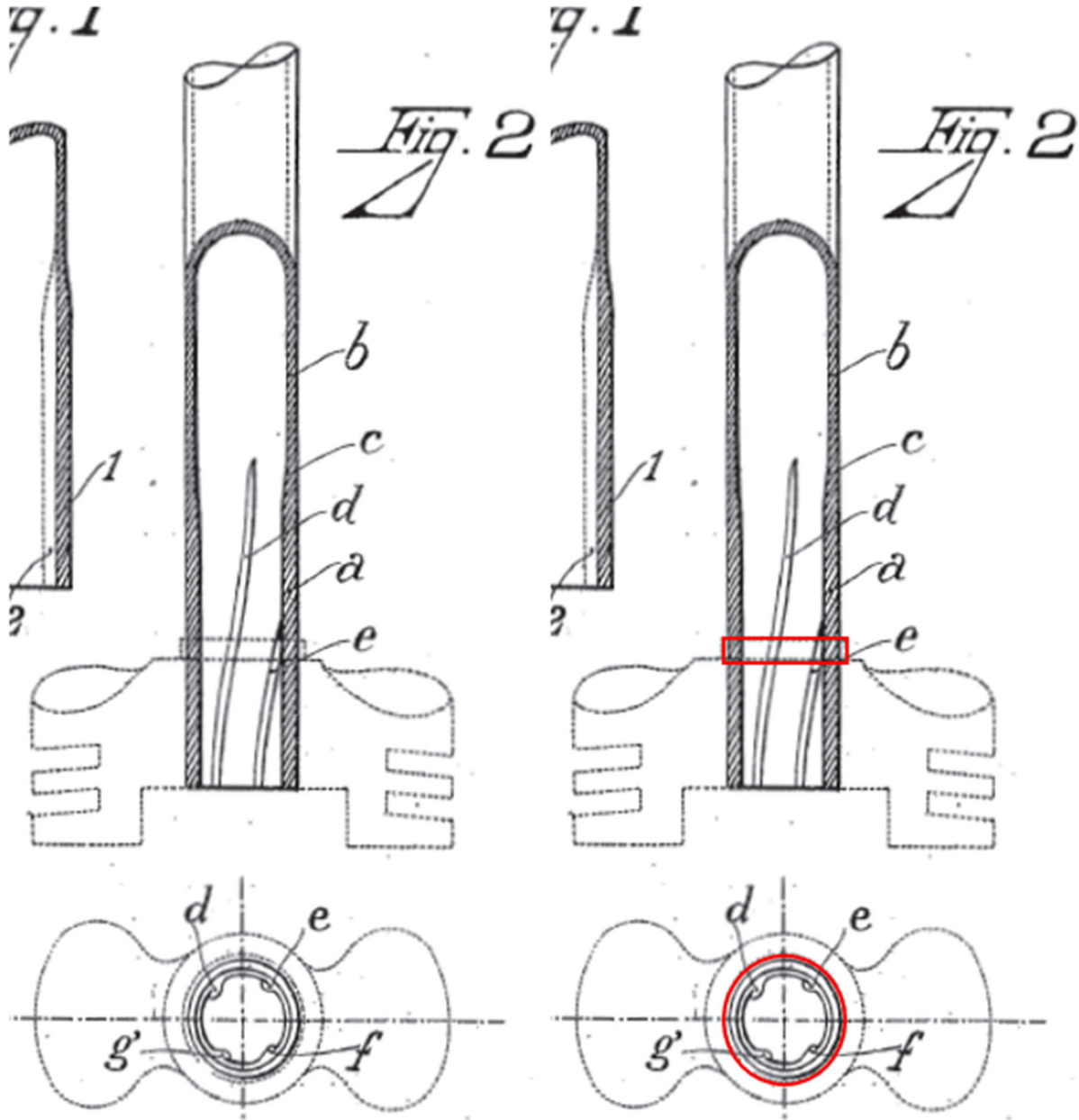
Dr. Parnell explained that Petitioner’s additional motivations to combine Valat and Denk, including (1) “improv[ing] the strength and rigidity properties ... while maintaining light weight[.]” (2) “the purportedly smooth interior of Denk [reducing] stress concentration[.]” and being “easier to manufacture” were not supported by evidence or the knowledge of a POSITA. Ex. 2021, ¶¶100-106. These are the *only* motivations that Petitioner relied upon in its Petition for combining Denk and Valat. Petition, 51-55, 67-68.

Whether or not “Denk’s elliptical shape is better than Valat’s internal ribs[,]” is not the issue; the question is whether Petitioner includes a legally cognizable motivation to modify Valat with Denk in the Petition. *See, e.g., Hulu, LLC v. Sound View Innovations, LLC*, Case IPR2018-00582, Paper 34 at 16-23 (PTAB August 5, 2019) (informative). Petitioner did not. POR, 37-47; Ex. 2021 (Parnell), ¶¶96-109.

A POSITA would have understood that Valat was concerned with reinforcing the “perimeter at entry to the fork bridge” and that such a perimeter would be “the entire exterior surface of the steerer tube[.]” Ex. 2021 (Parnell), ¶96. Valat’s helical reinforcements are clearly formed around the entire perimeter, which is further supported by the helical nature of the reinforcement. *See* Valat, FIGS 2-5. This 360° reinforcement belies Petitioner’s argument that “nowhere does Valat require reinforcements around the *entire* perimeter of the tube.” Reply, 22. Further, neither Petitioner nor Petitioner’s paid expert offers an explanation that would explain away Valat’s 360° reinforcement of the entire perimeter in Figures 2-5.

Tellingly, before this new declaration, Petitioner’s paid expert admitted in his deposition that the perimeter at the entry of the fork bridge, shown at the “dotted line for the crown[,]” is “where you’ll have the maximum stress ... sheer stress in this system.” Ex. 2019 (Slocum Depo.), 119:2-22. Petitioner’s paid expert goes on to argue that the sheer stress is caused by the discontinuity between the steerer tube and the crown, as well as by the lower bearing (which wraps around the entire steerer

tube). *Id.*, 119:23-120:25. This is shown below with the dotted line highlighted in red in the image on the right:



Ex. 1007 (Valat), FIG. 2 (clean and annotated).

**C. Petitioner’s New Motivations to Combine Should Be Ignored**

Petitioner abandoned its first argument that Denk’s discussion of vertical forces due to the weight of the rider would have motivated a POSITA to arrange the maximum wall thickness in the plane of travel of the bicycle. Petitioner now attempts to replace its original statement in its Petition with its new argument that a POSITA would have known that that “the plane of travel of the bicycle [is] where higher loads/stresses occur” based on new references are not supportable and should be ignored. Reply, 1, 19-23. As explained in Section III, Moechnig and Campagnolo suggest side or lateral reinforcement, while Denk, Galasso, Klein, and Campagnolo each fail to discuss any improvements to a standard, round steerer tube. Again, no reference on record discloses, teaches, or suggests that the “highest loads” on a steerer tube are in the fore-aft direction. Section III, *supra*.

**VI. THE PETITIONER FAILS TO SHOW A STEERER TUBE WITH GREATER OUTER DIAMETER IN THE LOWER SECTION THAN IN THE UPPER SECTION**

The Petition failed to provide any motivation to modify a steerer tube to have “an outer diameter of the lower section of the body [that] is greater than an outer diameter of the upper section of the body” for claims 2-4, 6-8, 16-20, 22, 27-29, 36-38, 40, 42, 47-49, and 61-63. POR, 56-63; Ex. 2021 (Parnell), ¶¶110-120.

For Valat, nothing in the Reply changes that Valat does not disclose a “configuration” in Figure 1, and a POSITA would not believe that Figure 1 shows a

steerer tube. Ex. 2021 (Parnell), ¶¶85-89, 110. As a result, a POSITA would understand Valat to have not taper of its diameter. *Id.*

For Denk, the Petition fails to disclose any rationale or motivation to orient Denk's frame tube as claimed. POR, 57-63; Ex. 2021 (Parnell), ¶¶111-120. Specifically, the Petition provided no un rebutted reason to orient Denk's tubing shape in Figure 11 to have the large diameter near the crown. POR, 57-63; Ex. 2021 (Parnell), ¶¶114-120.

Denk's Figure 11 clearly shows a tube that includes a taper, but it is also clear that the shapes in Denk's Figures 1a through 1h are not tied to a single embodiment and really are examples of potential cross-sectional shapes that Denk suggests using in a large number of different, and separate, embodiments. As a result, a POSITA would understand that Denk's Figure 1a, Denk's Figure 11, and the discussion of changing interior shapes are not a single embodiment. POR, 48-50, 58-62; Ex. 2021 (Parnell), ¶¶132-137. Petitioner fails to provide a motivation to combine these different embodiments.

Further, Dr. Parnell explained that Petitioner's tendered expert's argument regarding "additional reinforcement" is technically deficient because either side of Denk could be reinforced to "have greater strength" than the other. Ex. 2021 (Parnell), ¶¶114-120. As a result, Dr. Slocum's purported motivations to orient Denk's tube as claimed is without merit.

Finally, Petitioner's attempts to inject a new argument of a new motivation to combine, that "POSITA would have known, based on common knowledge and the teachings of Moechnig, Valat, and Schroeder, to position the tapered tube such that the section with the larger diameter forms the lower section of the steerer tube when mounted on a bicycle." Reply, 24. This new argument is unsupported and should be ignored. Nowhere in the Petition is the word "common" even used.

## **VII. PETITIONER'S REPLY FAILS TO SHOW THAT ANY GROUND HAS A CIRCULAR INNER SURFACE OF THE UPPER SECTION**

Denk's general suggestion that another random frame component might have different interior shapes does not suggest that it would be obvious to form a bicycle steerer tube having a lower section with an elliptical interior shape and an upper section with a circular interior shape. Ex. 2021 (Parnell), ¶128. This mere possibility does not meet the bar of providing an obviousness rationale. *See, e.g., Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418-419 (2007). Petitioner failed to provide any motivation or rationale for Denk to have an upper portion that has a circular shape on the interior. POR, 50-56. The Reply does not alleviate this deficiency, instead, only arguing that "it is possible" for a tube to have a transition of interior shape. Reply, 26-27. From this alone Petitioner argues that "a POSITA would have understood Denk as disclosing a tube having an inner circular cross-section in the upper section of the tube and an inner elliptical cross-section in the lower section of the tube." Reply, 26.

Petitioner's conclusory argument simply does not follow its premise. Further, this is not a motivation to *make* the claimed limitation from thin air. Petitioner's argued motivation is insufficient.

For Valat, Petitioner relies upon Figure 2 to show something in Figure 1. Further, the portion of Figure 2 relied upon by Petitioner and its paid expert is a cross-sectional drawing, which would not show other portions of the steerer tube at cross-sections towards the top of the tube. Ex. 2021 (Parnell), ¶123. Nothing in Valat states that it includes a circular inner shape at the top of the tube, for either Figures 1 or 2. Petitioner and its paid expert speculate as to the properties of the upper portion – speculation is not support.

**VIII. PETITIONER'S REPLY FAILS TO SHOW THAT ANY GROUND HAS MAJOR AND MINOR DIAMETERS OF AN ELLIPTICAL INNER CROSS-SECTION DECREASING IN A TAPERING REGION**

Again, the Petition simply fails to provide a motivation to combine all of these different embodiments from Denk into one structure that would render Claims 56 and 59 of the '993 Patent obvious. Even if the interior cross-sectional shapes did transition for Denk's Figure 11, Petitioner does not explain why the ellipse would be at the larger diameter portion or why the transition would occur over the tapering region. These modifications are merely assumed in the Petition, but they are certainly not stated in Denk. That Moechnig has a transition over a taper is not

relevant to Petitioner's argued proposed modification of Denk's many conjectured possible embodiments into a bicycle steerer tube.

Petitioner again appeals to "common sense." Reply, 28. But Petitioner and its expert do not even explain why it would be "common sense" to transition during a taper of a tube. Why not taper in the smaller diameter region or in the larger diameter region? Neither the Petition nor the Reply gives *any* reason to have the purported change in shape occur over the tapered region of Denk's Figure 11. This is simply a glaring lack of proof and motivation to combine/modify.

## **IX. CONCLUSION**

Accordingly, for the reasons discussed herein and in the POR, the Claims of the '993 Patent are valid and patentable.

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Respectfully Submitted,

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**CERTIFICATE OF SERVICE**

The undersigned certifies that the foregoing Patent Owner's Sur-Reply was served on March 20, 2025, by email at the following address of record for Petitioner's counsel:

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**CERTIFICATE OF COMPLIANCE**

Under 37 C.F.R. § 42.24(d), the undersigned certifies that this Patent Owner Sur-Reply complies with the type-volume limitation of § 42.24(c) because Microsoft Word counts 5,575 words, excluding the parts of the Response exempted by § 42.24(c).

This paper also complies with the typeface requirements of 37 C.F.R. § 42.6(a)(2)(ii) and the type style requirements of 37 C.F.R. § 42.6(a)(2)(iii) and (iv).

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