

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GARMIN INTERNATIONAL, INC.,

Petitioner,

v.

SARIS EQUIPMENT, LLC,

Patent Owner.

IPR2024-01294

U.S. Patent No. 10,434,394

**DECLARATION OF ALAN COTÉ
UNDER 37 C.F.R. § 1.68 IN SUPPORT OF PETITION FOR
INTER PARTES REVIEW**

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I, Alan Coté, do hereby declare as follows:

I. INTRODUCTION

1. I am making this declaration at the request of Petitioner Garmin International, Inc. in the matter of this *Inter Partes* Review of U.S. Patent No. 10,434,394 (“the ’394 patent”).

2. I am being compensated for my work on this matter and for reasonable and customary expenses associated with my work and testimony in this investigation. My compensation is not contingent on the outcome of this matter or the specifics of my testimony, and I have no other interest in this case or the parties thereto.

3. I have been asked to provide my opinions regarding whether claims 1, 12, and 25-26 (“the challenged claims”) of the ’394 patent are unpatentable insofar as they would have been anticipated and/or obvious to a person having ordinary skill in the art (“POSITA”) at the time of the alleged invention, in light of the prior art.

4. It is my opinion that every element of the challenged claims is found in the prior art references.

5. It is also my opinion that all of the challenged claims are unpatentable in that they would have been anticipated and/or obvious to a POSITA.

6. In the preparation of this declaration, I have studied:

- The '394 patent, Ex.1001;
- The prosecution history of the '394 patent (“'394 File History”), Ex.1002;
- U.S. Patent App. Pub. No. 2011/0136630 to Zwinkels (“Zwinkels”), Ex.1004;
- WO Pub. No. 2018/027216 to Papadopoulos (“Papadopoulos”), Ex. 1005;
- U.S. Provisional Application No. 62/371,658, filed August 5, 2016 (“Papadopoulos Provisional”), Ex.1006;
- U.S. Provisional Application No. 62/546,768, filed August 17, 2017, Ex.1007;
- U.S. Provisional Application No. 62/637,003, filed Mar. 1, 2018, Ex.1008;
- Claim Chart Mapping Papadopoulos Provisional To Claim 1 Of Papadopoulos, Ex.1009;
- U.S. Patent App. Pub. No. 2013/0130798 to Nir et al. (“Nir”), Ex.1010;
- U.S. Patent No. 7,604,575 to Papadopoulos (“Papadopoulos '575”), Ex.1011; and
- U.S. Patent No. 6,322,480 to Lim (“Lim”), Ex.1012.

7. In forming the opinions expressed below, I have considered: the documents listed above, the relevant legal standards, including the standards for anticipation and obviousness; any additional authoritative documents as cited in the

body of this declaration; and my own knowledge and experience based upon my work in the bicycle industry.

8. Unless otherwise noted, all emphasis in any quoted material has been added.

II. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

9. My complete qualifications and professional experience are described in my *Curriculum Vitae*, a current copy of which can be found in **Exhibit 1013**. The following is a brief summary of my relevant qualifications and professional experience.

10. I received a B.S. in mechanical engineering from the University of Buffalo in 2001.

11. I am a named inventor on four U.S. patents relating to bicycles, three of which are focused specifically on measuring force and power applied by a cyclist to a bicycle.

12. Since receiving my degree, much of my career has focused on the field of bicycles and bicycling, including but not limited to: analysis and design of bicycles, bicycle components, and related mechanical systems, bicycle performance monitoring, and intellectual property matters. I have more than thirty (30) years of experience in the bicycle industry.

13. I am currently a Registered Patent Agent and Business Principal at Green Mountain Innovations, LLC, where I have worked since 2001.

14. As part of my work at Green Mountain Innovations I have conducted, among other things, patentability and commercialization assessments, prior art searches, and market analyses. I have prepared patent applications and prosecuted patents both in the United States and internationally for technologies such as bicycles, snowsports, injection molding systems, sporting goods, automotive equipment, medical devices, tools, and more.

15. From 1997-2013, I served as the President of CC Kinetics Inc., a partnership of three entrepreneurs that developed, patented, and licensed technology relating to bicycle performance.

16. In addition to my work experience, I have many years of practical experience in the field of bicycles and bicycling. I have served as the Race Director for the Longsjo Classic, the Sprague Brook Park Cyclocross, and the Great Lakes Cycling Classic. I was also an elite-level competitive cyclist for more than 10 years and have more than 150,000 lifetime miles pedaled as a cyclist.

17. I spent twenty years as a contributing writer to the leading consumer publications relating to bicycles, including more than ten years writing for *Bicycling*

Magazine, the world's largest circulation bicycle-related publication. I have authored or co-authored hundreds of articles for various bicycle-related publications.

18. I write a periodic column, "Industry Patent Watch" that reviews new bicycle technologies and designs with an emphasis on intellectual property for *Bicycle Retailer and Industry News*.

19. I have been retained as an expert witness in approximately forty bicycle-related cases over the past 15 years.

III. LEVEL OF ORDINARY SKILL IN THE ART

20. I understand there are multiple factors relevant to determining the level of ordinary skill in the pertinent art, including: (1) the levels of education and experience of persons working in the field at the time of the invention; (2) the sophistication of the technology; (3) the types of problems encountered in the field; and (4) the prior art solutions to those problems.

21. It is my understanding that the earliest possible priority date for the '394 patent is August 17, 2017. I have been instructed to simply assume this is the correct priority date for the '394 patent. A POSITA in the field of the '394 patent, as of August 17, 2017, would have had a bachelor's degree in mechanical engineering, or equivalent training, and approximately 1-2 years of experience working with

exercise equipment, such as bicycles and/or bicycle trainers. Lack of work experience can be remedied by additional education, and vice versa.

22. I note that I met at least these minimum qualifications to be considered a POSITA as of the earliest possible priority date for the '394 patent of August 17, 2017.

23. For purposes of this Declaration, in general, and unless otherwise noted, my statement and opinions, such as those regarding my experience and the understanding of a POSITA generally (and specifically related to the references I consulted herein), reflect the knowledge that existed in the field as of the alleged priority date of the '394 patent (*i.e.*, August 17, 2017). Unless otherwise stated, when I provide my understanding and analysis below, it is consistent with the skill level of a POSITA as of the alleged priority date of the '394 patent.

IV. RELEVANT LEGAL STANDARDS

24. I am not an attorney. In preparing and expressing my opinions and considering the subject matter of the '394 patent, I am relying on certain basic legal principles that counsel have explained to me. These principles are discussed below.

25. I understand that prior art to the '394 patent includes patents and printed publications in the relevant art that predate the priority date of the alleged invention

recited in the '394 patent. As noted, here, I have been instructed to assume August 17, 2017 is the priority date of the '394 patent.

26. I have been informed and understand that a patent claim is unpatentable as “anticipated” under 35 U.S.C. § 102 if each element of that claim is disclosed either explicitly or inherently in a single prior art reference. I understand that the question of anticipation is whether a POSITA would have reasonably understood or inferred from the prior art reference’s teachings that every claim element was disclosed in that single reference. I further understand that a disclosure is “inherent” if the missing element is necessarily present in view of the explicit disclosure. The fact that the reference might possibly practice or contain a claimed limitation is insufficient to establish that the reference inherently teaches the limitation. For anticipation by a prior art patent or printed publication, I further understand that the reference’s description must enable a POSITA to practice the claimed invention without undue experimentation.

27. I have been informed that a patent claim is unpatentable as “obvious” under 35 U.S.C. § 103 if the differences between the claimed invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. I have also been informed by counsel that the obviousness

analysis takes into account factual inquiries including the level of ordinary skill in the art, the scope and content of the prior art, and the differences between the prior art and the claimed subject matter.

28. I understand that for a claim to be unpatentable as obvious, the party asserting unpatentability must identify prior art references that alone or in combination with one or more other prior art references would have rendered the claim obvious to one of ordinary skill in the art at the time of the invention.

29. I understand that a single prior art reference can render a claim obvious if it would have been obvious to modify that reference to arrive at the patented invention. I understand that it is appropriate to look to the knowledge of a POSITA in assessing whether it would have been obvious to modify a single prior art reference to produce the claimed invention.

30. I understand that a conclusion of obviousness may be based on a combination of prior art references, particularly if the combination of elements does no more than yield predictable results. I understand that it may be helpful to identify a reason that would have prompted a POSITA in the relevant field to combine the elements in a way the claimed invention does. I understand that an invention would have been obvious where a POSITA pursues known options from a finite number of identified, predictable solutions. I understand that if trying a limited number of

solutions leads to expected success, it is likely the product is not one of innovation but of ordinary skill and common sense.

31. I understand that in order for a reference to be proper for use in an obviousness combination, the reference must be analogous art to the claimed invention. I understand a reference is analogous art to the claimed invention if: (1) the reference is from the same field of endeavor as the claimed invention (even if it addresses a different problem); or (2) the reference is reasonably pertinent to the problem faced by the inventor (even if it is not in the same field of endeavor as the claimed invention). I understand that the “same field of endeavor” and “reasonably pertinent” tests are two separate tests for establishing analogous art and it is not necessary for a reference to fulfill both tests in order to qualify as analogous art.

32. I have been informed by counsel that the Supreme Court has recognized several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include the following: (a) combining prior art elements according to known methods to yield predictable results; (b) simple substitution of one known element for another to obtain predictable results; (c) use of a known technique to improve a similar device (method, or product) in the same way; (d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (e)

choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (f) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

33. I understand that in evaluating whether patent claims are obvious, secondary considerations of nonobviousness are considered. I understand that the secondary considerations of nonobviousness include commercial success, long-felt but unsolved needs, copying, praise, teaching away from the claimed invention by the prior art, unexpected results, industry acceptance, failure of others, and skepticism by experts. I understand that the secondary considerations are considered with the balance of obviousness evidence in the record to act as a check against impermissible hindsight bias. I further understand that the burden of presenting evidence of secondary considerations is on the patent owner, and the patent owner must establish a nexus between the merits of the claimed invention and the evidence of secondary considerations.

V. BACKGROUND

34. The '394 patent relates to a movable support for exercise equipment that aims to “enable a user to more realistically experience movement that occurs in an outdoor environment when using an item of exercise equipment in an indoor

environment.” ’394 patent at 1:38-41. The background of the ’394 patent explains that using indoor exercise equipment, such as treadmills, stationary cycles, or bicycle trainers (which allow cyclists to use traditional bicycles indoors), to simulate exercise activities typically done outdoors was known in the art as of the ’394 patent’s filing date. *See* ’394 patent at 1:16-18, 20-25. It was also specifically known in the art that indoor exercise equipment could simulate outdoor conditions by, for example, adjusting incline on a treadmill or tilting side-to-side on a bicycle trainer. *See* ’394 patent at 1:31-37.

35. Bicycle trainers, including specifically so-called bicycle roller trainers, have “been available for over one hundred years.” Papadopoulos ’575, at 1:10-11. Such trainers were known to typically use two relatively closely spaced rollers to support the rear wheel of a bicycle and a third roller to support the front bicycle wheel. Papadopoulos ’575, at 1:11-15. It was also known in the prior art that it was undesirable for such trainers to rigidly constrain movement of the bicycle as this would discourage the natural movement of the rider and make for an uncomfortable ride. Papadopoulos ’575, at 1:17-23. As such, it was known that it was desirable to provide additional motion to more closely duplicate the natural feel of outdoor cycling. Papadopoulos ’575, at 1:23-25.

36. For example, it was known to provide such additional motion in the horizontal motion with a bicycle trainer. Papadopoulos '575, at 2:17-36. It was also known to provide for tilting side-to-side motion on a bicycle trainer. Zwinkels at [0023]. It was also known to provide such tilting side-to-side motion at the same time as allowing for horizontal motion on a bicycle trainer. Papadopoulos at 3:19-4:7, Fig. 3. Further, it was also known to provide upward and downward motion at the same time as allowing for horizontal motion on a bicycle trainer. Zwinkels at Abstract, [0020], [0034], Fig. 5. Thus, it was well known in the art to allow for motion in multiple directions at the same time on bicycle trainers to provide for a more realistic riding experience that more closely simulates outdoor cycling.

37. The '394 patent seeks to allow a user, while using indoor exercise equipment, to experience movement that more realistically mirrors the movement occurring in an outdoor environment. *See* '394 patent at 1:38-41. Specifically, the '394 patent includes a "platform 104" that "is secured to a frame 106 that is movably mounted to a base 102 and that is movable relative to the base 102 in response to input forces applied by the user to the pedals of [a] bicycle B during use." '394 patent at 9:31-36. The platform "move[s] in an axial or fore-aft direction relative to the base 102 in response to input forces applied by the user to the pedals of bicycle B." '394 patent at 10:26-34. "The rear and front engagement areas 136a, 136b are identically

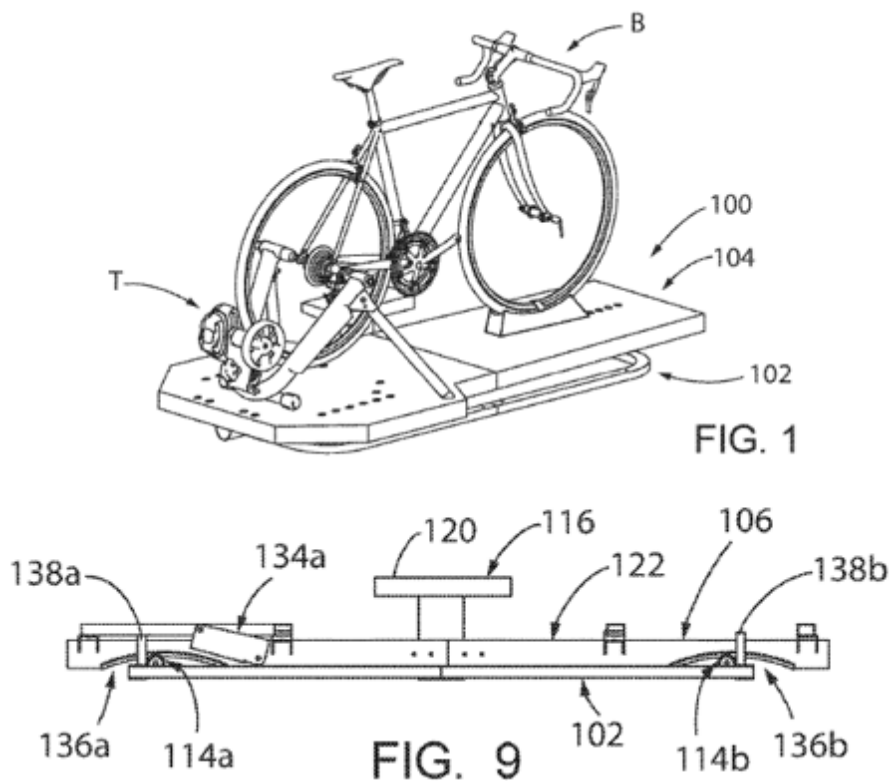
constructed, and have an arcuate configuration that provides movement of the frame 106 upwardly and downwardly as the frame 106 is moved in the axial or fore-aft direction relative to the base 102.” ’394 patent at 10:34-38.

38. As explained in further detail below, this purported benefits of the ’394 patent, including allowing for upward and downward movement during fore-aft movement of a support for an item of exercise equipment, was not novel. Each of the limitations in the challenged claims is found in prior art references before the earliest priority date of the ’394 patent.

VI. OVERVIEW OF THE ’394 PATENT

39. As discussed, the ’394 patent seeks to allow a user, while using indoor exercise equipment, to experience movement that more realistically mirrors the movement occurring in an outdoor environment. *See* ’394 patent at 1:38-41. Specifically, the ’394 patent includes a “platform 104” that “is secured to a frame 106 that is movably mounted to a base 102 and that is movable relative to the base 102 in response to input forces applied by the user to the pedals of [a] bicycle B during use.” ’394 patent at 9:31-36. The platform “move[s] in an axial or fore-aft direction relative to the base 102 in response to input forces applied by the user to the pedals of bicycle B.” ’394 patent at 10:26-34. “The rear and front engagement areas 136a, 136b are identically constructed, and have an arcuate configuration that

provides movement of the frame 106 upwardly and downwardly as the frame 106 is moved in the axial or fore-aft direction relative to the base 102.” ’394 patent at 10:34-38. Figures 1 and 9 demonstrate one embodiment of the ’394 patent:



'394 patent, Figs. 1, 9.

VII. CLAIM CONSTRUCTION

40. It is my understanding that in order to properly evaluate the '394 patent, the terms of the claims must first be construed. It is my understanding that for the purposes of this *inter partes* review, the claims are to be construed under the so-called *Phillips* standard, under which claim terms are given their ordinary and

customary meaning as would be understood by one of ordinary skill in the art in light of the specification and prosecution history, unless the inventor has set forth a special meaning for a term. For purposes of my analysis below, I do not believe any claim terms require explicit construction.

VIII. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE

41. I have been asked to provide my opinions as to whether the challenged claims of the '394 patent would have been anticipated and/or obvious in view of the prior art. The discussion below provides a detailed analysis of how the prior art references identified below teach the limitations of the challenged claims of the '394 patent.

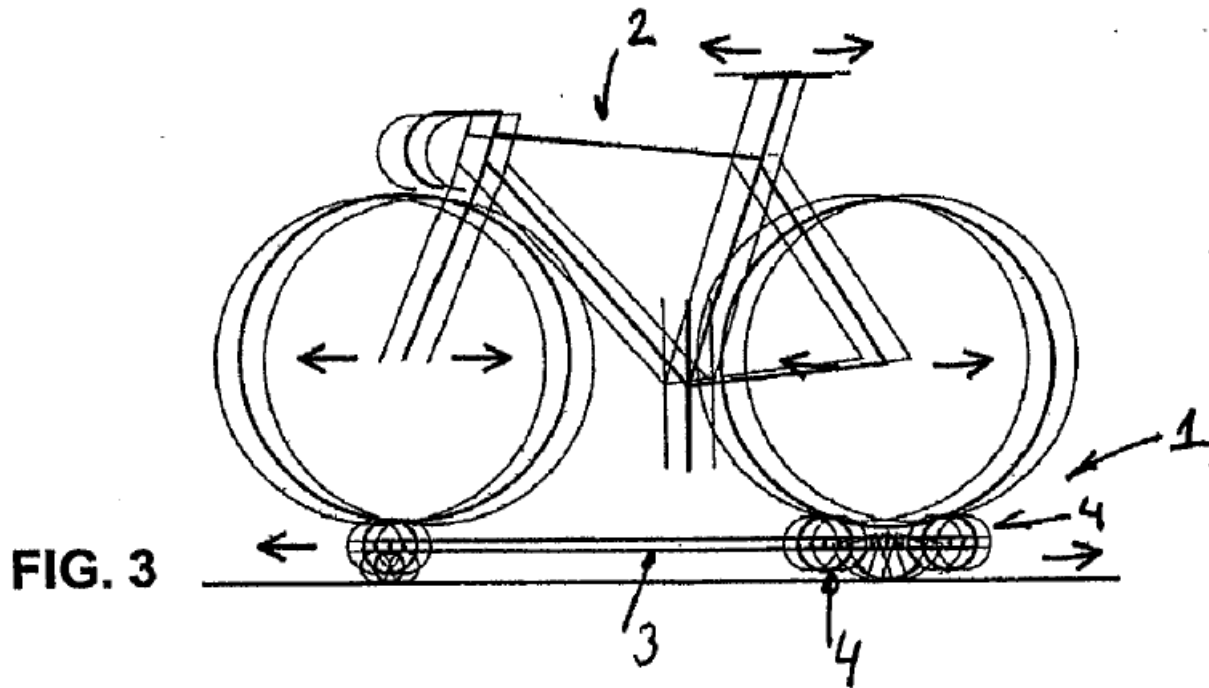
42. As part of my analysis, I have considered the scope and content of the prior art and any differences between the alleged invention and the prior art. For each challenged claim of the '394 patent, I provide an element-by-element analysis of the scope and content of the prior art and any differences between the alleged invention and the prior art.

43. As described in detail below, the alleged invention of the challenged claims would have been anticipated and/or obvious in view of the teachings of the identified prior art references as well as the knowledge of a POSITA as of the time of the assumed priority date of the '394 patent.

A. Summary of Prior Art References**a. Summary of Zwinkels**

44. Zwinkels teaches a training apparatus for supporting a bicycle.

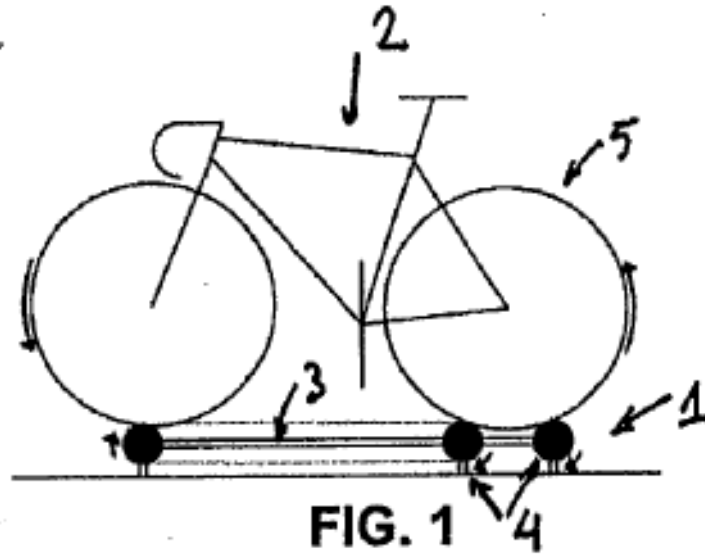
Zwinkels at Abstract, [0006], [0020], [0031], Fig. 3.



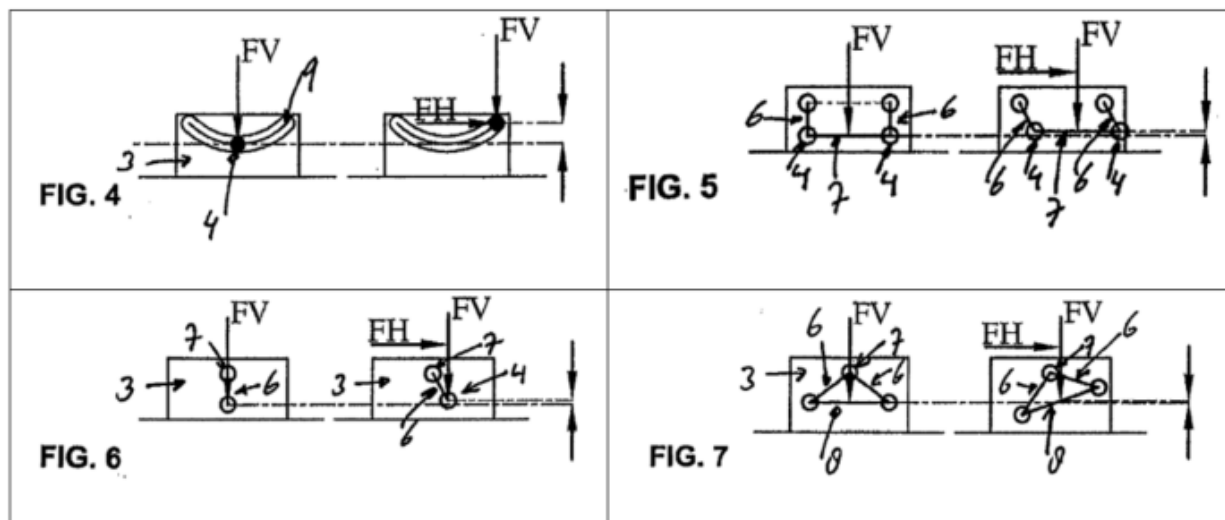
Zwinkels at Fig. 3.

45. Zwinkels includes a “roll or rollers for the bicycle back wheel” that “are movably suspended in the frame in vertical direction, wherein the suspension of said roll or rollers is arranged to convert relative horizontal movements of the roll or rollers into vertical movements....” Zwinkels at [0020]. Zwinkels discloses embodiments wherein legs support the frame above the ground as well as

embodiments wherein the frame rests directly on the ground. Zwinkels at [0032]-[0036], Figs. 1, 4-7.

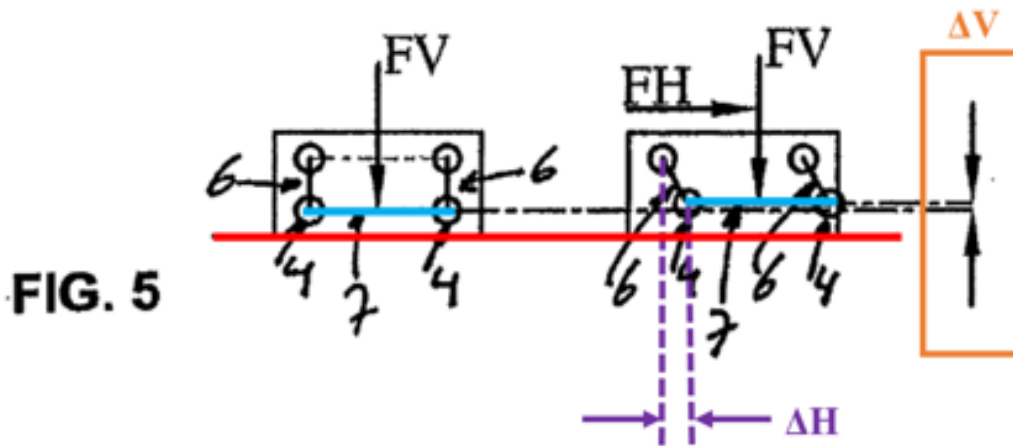


Zwinkels at Fig. 1.



Zwinkels at Figs. 4-7.

46. The one or more “pendulum arms” of Zwinkels, which in some embodiments form the interconnection between the frame and rollers, “has a fixed pivoting point on the frame” and “provides an easy and effective solution for absorbing and attenuating horizontal movements by converting these horizontal movements to vertical movements.” Zwinkels at [0024]. Figure 5 of Zwinkels (excerpted and annotated below) exemplifies this simultaneous horizontal movement (annotated “ ΔH ” in purple) and vertical movement (annotated “ ΔV ” in orange):



Zwinkels at Fig. 5 (annotated).

47. Specifically, Figure 5 shows an embodiment in which there are two rollers 4 for the bicycle back wheel. Zwinkels at [0034]. These rollers are “directly or indirectly suspended by double pendulum arms 6 arranged in the form of a parallelogram construction,” and connected to each other via “a connecting link 7.”

Zwinkels at [0034]. While at rest, the pendulum arms, rollers, and connecting link remain in the configuration shown at the left of Figure 5. Zwinkels at [0034]. Once a user exerts a force on the rollers by, for example, using a bicycle, the pendulum arms, rollers, and connecting link move concertedly to the right due to “a force FH, causing that the roll 4 has moved [sic] vertically upwards” as shown to the right of Figure 5. Zwinkels at [0034].

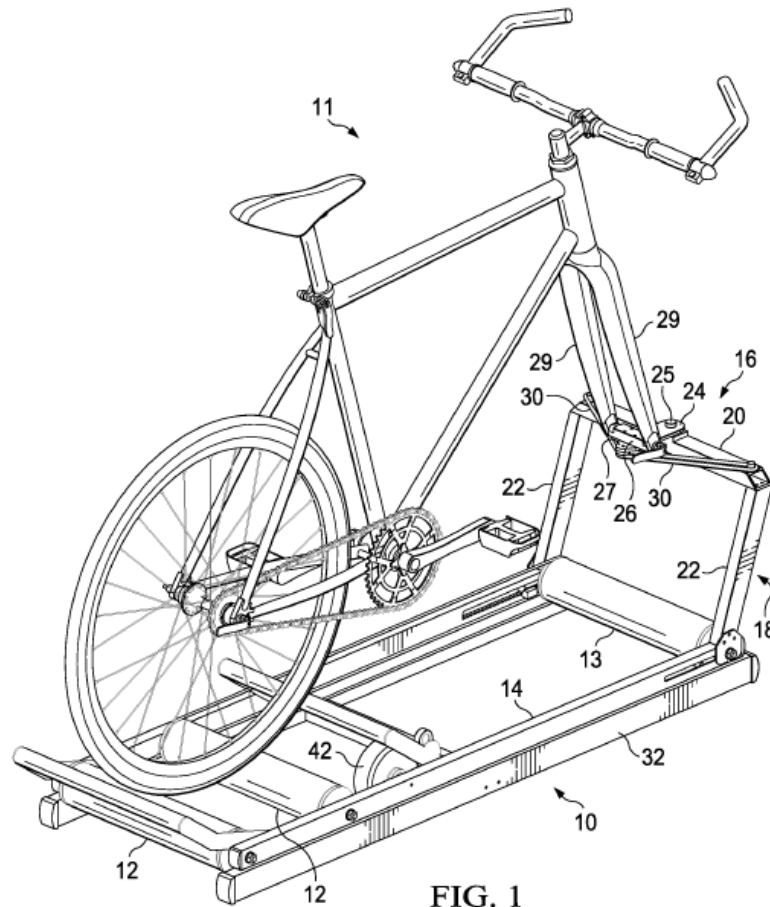
48. Due to the configuration of the pendulum arms, rollers, and connecting link shown in Figure 5, the plane formed by the rollers and connecting link remains parallel to the ground during use, including throughout horizontal and vertical movement. This is depicted in Figure 5 as annotated above, with the plane formed by the connecting link and rollers in blue, and the support plane formed by the ground in red.

b. Summary of Papadopoulos

49. Papadopoulos relates to indoor exercise equipment, specifically “the field of bicycle trainers that accept a bicycle.” Papadopoulos at 1:4-5. The apparatus of Papadopoulos is able to generate an off-vertical tilt (from side-to-side) in response to a cyclist applying forces like steering or pedaling. Papadopoulos at 3:19-25. This serves to better simulate the natural motion of a bicycle. Papadopoulos at 3:19-25. In at least one embodiment, when “fork support 26 and the attached fork [of the

bicycle] rotate off of center, the rotated bicycle fork generates an off-vertical tilt to the bicycle frame.” Papadopoulos at 3:19-25. Moreover, forces generated by a rider pedaling the bicycle frame will also “create a tilt to the bike frame that will result in a steering action.” Papadopoulos at 3:19-25.

50. Papadopoulos teaches that it may retrofit an existing bicycle roller (such as that disclosed by Zwinkels) by attaching its “retrofit assembly” “to the bicycle rollers assembly, directly above the front roller” Papadopoulos at 2:8-9, 7:15-16 (claim 12)). The rollers of Papadopoulos are supported via a frame that lies flush with the ground. Papadopoulos at 3:9-12, Fig. 1.



Papadopoulos at Fig. 1.

51. Papadopoulos also allows for horizontal (forward and backward) movement during use. Papadopoulos at 3:29-4:2. “[A]n inner frame” may be “set into an outer or bottom frame 32 in a manner that permits resisted movement between frame 14 and frame 32, to more effectively mimic the feel of actual bicycling.” Papadopoulos at 3:29-4:2. This assembly “can be set into an outer frame, so that it can move slightly forward and backward,” and the frames 14 and 32 may

be “separated by wheels or rollers to permit movement of the top frame 14.” Papadopoulos at 4:5-7, 22-24.

52. The “natural side-to-side motion” of Papadopoulos provides “a more realistic feel to the rider,” contrary to prior devices that “lack [] sideways motion” and “provide an unsatisfactory feel for the rider” in comparison to an actual bicycle. Papadopoulos at 1:14-17.

B. Reasons to Combine

a. Zwinkels and Papadopoulos are Analogous to Each Other and to the '394 Patent

53. In my opinion, Zwinkels and Papadopoulos are analogous art to the '394 patent. Both prior art references relate to supports for an item of exercise equipment, specifically a bicycle, like the '394 patent, and each of the three relate to bicycle trainers. *See* Zwinkels at Abstract (“Training apparatus arranged for supporting a bicycle”); *id.* at [0006], [0020], [0031]; *see also* Papadopoulos at 1:4-5 (“The present invention is in the field of bicycle trainers that accept a bicycle and wherein a user rides the bicycle on the bicycle trainer and can move the handlebars.”); '394 patent, at 9:7-11 (“In this embodiment, the movable exercise equipment support 100 is separate from but adapted to support, an item of exercise equipment. In the illustrated embodiment, the item of exercise equipment is in the

form of a bicycle B engaged with a bicycle trainer T.”). Thus, in my opinion, each of Zwinkels and Papadopoulos is from the same field of endeavor as the ‘394 patent. Further, Zwinkels and Papadopoulos are both directed to providing more realistic movement that mimics an outdoor environment when using an item of exercise equipment in an indoor environment, like the ‘394 patent. Zwinkels at [0008] (“With this construction it is possible that a training cyclist is encouraged to execute a natural movement during his training exercises, and to adopt a comfortable ride which better duplicates the natural feel of outdoor cycling.”); Papadopoulos at 4:17-18 (“Assemblies 10 and 110, each has a more realistic feel to the rider, as the natural side-to-side motion of the handlebars, imparted by peddling, is resisted by the rider.”); ‘394 patent, at 1:38-41 (“It is an object of the present invention to enable a user to more realistically experience movement that occurs in an outdoor environment when using an item of exercise equipment in an indoor environment.”). Thus, Zwinkels and Papadopoulos are also each reasonably pertinent to the problem faced by the inventors of the ‘394 patent. Therefore, in my opinion, Zwinkels and Papadopoulos are analogous art to the ‘394 patent.

- b. A POSITA would have been Motivated to Combine Zwinkels and Papadopoulos and would have had a Reasonable Expectation of Success in doing so.**

54. A POSITA would have found it obvious to combine the teachings of Papadopoulos with those of Zwinkels to achieve obvious and predictable benefits to the apparatus described in Zwinkels.

55. Papadopoulos allows for side-to-side/tilting movement during use of the bicycle trainer. Papadopoulos at 3:19-25. Papadopoulos expressly discloses that its invention is designed to be combined with or retrofit a roller bicycle trainer, such as that of Zwinkels, which has one front roller and two rear rollers. Papadopoulos at 3:26-28. A POSITA would have been motivated by this disclosure to combine Papadopoulos with Zwinkels, to grant the roller bicycle trainer of Zwinkels the capability of side-to-side tilting movement.

56. Both Zwinkels and Papadopoulos describe a bicycle trainer that uses rollers and allows for horizontal movement. *See* Zwinkels at [0020]; *see also* Papadopoulos at 3:9-12, 3:29-4:2. A POSITA would have understood that this makes the apparatus of Papadopoulos fully compatible with that of Zwinkels.

57. Zwinkels also states the goal of simulating “natural movement” and providing “a comfortable ride which better duplicates the natural feel of outdoor cycling.” Zwinkels at ¶[0008]. Papadopoulos also aims to provide “a more realistic feel to the rider” via “natural side-to-side motion.” Papadopoulos at 1:14-17, 4:17-21. Accordingly, both Zwinkels and Papadopoulos aim to achieve the same goal—

an indoor bicycle trainer that better replicates the experience of riding a bicycle outdoors. A POSITA would have understood that combining the capability for “side-to-side motion” of Papadopoulos with the forward-backward and upward-downward movement of Zwinkels would have aided Zwinkels in achieving its goal of providing natural movement that better duplicates outdoor cycle and would have enhanced Zwinkels’ ability to provide a more realistic bicycling experience to the rider. Thus, a POSITA would have been motivated to combine Papadopoulos with Zwinkels to improve the capability of Zwinkels to replicate the outdoor cycling experience.

58. Further, Zwinkels discloses that bicycle trainers providing side-to-side/tilting motion were known in the art. Zwinkels at [0023]. Zwinkels critiques one such trainer for a lack of forward-backward motion (which Zwinkels itself teaches), but Zwinkels never disparages the concept of including side-to-side/tilting motion in a bicycle trainer. *See* Zwinkels at [0023]. In which case, Zwinkels contemplates bicycle trainers incorporating side-to-side/tilting motion so long as they include forward-backward motion in addition to side-to-side motion. A POSITA would have understood the combined Zwinkels-Papadopoulos bicycle trainer to include both forward-backward and side-to-side/tilting motion. Thus, a POSITA would have appreciated that Zwinkels’ contemplates bicycle trainers

having side-to-side motion, like Papadopoulos, so long as they also provide for forward-backward motion like Zwinkels.

59. A POSITA would have appreciated that retrofitting Papadopoulos's apparatus onto Zwinkels' roller bike assembly trainer could be achieved such that it would not negatively impact the simultaneous fore-aft movement and upward-downward movement provided by Zwinkels. Papadopoulos teaches that its apparatus can be retrofit to a roller bike assembly (like Zwinkels) by attaching its apparatus "directly above the front roller." Papadopoulos at 2:8-9, 7:15-16 (claim 12)). This teaching would have motivated a POSITA to attach Papadopoulos's fork support 16 to a location on Zwinkels' roller bicycle trainer such that the fork support would be directly above Zwinkels' front roller. When considering the combined teachings of Zwinkels and Papadopoulos, a POSITA would have been motivated to accomplish this placement above Zwinkels' front roller by attaching the side supports 22 of Papadopoulos's fork support 16 to Zwinkels' pendulum arms 6 at the point where those arms connect to the sides of Zwinkels' front roller. A POSITA would have been motivated by Zwinkels and Papadopoulos to connect Papadopoulos's fork support 16 to Zwinkels' trainer in this manner because a POSITA would have appreciated that doing so would have accomplished Papadopoulos' goal of allowing the fork support 16 to be supported by Zwinkels'

frame at a location directly above the front roller while at the same time accomplishing Zwinkels' goal of allowing the front of the bicycle and support 16 to move forward and backward and upward and downward with Zwinkels' front roller, thereby preserving Zwinkels' combined forward-backward and upward-downward motion. A POSITA would have appreciated that such movement would be preserved because Zwinkels teaches that its front roller may be designed to provide the same forward-backward and upward-downward motion as that described for its back wheel rollers using the same suspension design as that used for the back wheel rollers. Zwinkels at [0037] ("The suspension of the roll 4 that supports the frontwheel 10 is accordingly implemented in the manner as explained with reference to FIGS. 4-7."), Fig. 8. Thus, a POSITA would have appreciated that this combination would not have negatively affected Zwinkels' simultaneous horizontal and vertical movement.

60. A POSITA would have had a reasonable expectation of success in combining Papadopoulos's apparatus with Zwinkels because Papadopoulos is specifically designed to retrofit a roller-based bicycle trainer, like that of Zwinkels, and because, as such, it would have been a minor modification. This combination would have only required removing the front wheel of a bicycle, attaching the bicycle fork to Papadopoulos's fork supporting assembly, and attaching the fork

supporting assembly onto Zwinkels's trainer such that it is positioned directly above the front roller. Such a combination would have been well within the level of ordinary skill in the art. As such, a POSITA would have naturally expected success.

61. Accordingly, the combination of Zwinkels and Papadopoulos represents applying known techniques to a known device ready for improvement to yield predictable results.

C. Ground 1 and Ground 2: Claims 1, 12, and 25 are anticipated under 35 U.S.C. § 102 by Zwinkels and rendered obvious under 35 U.S.C. § 103 over Zwinkels.

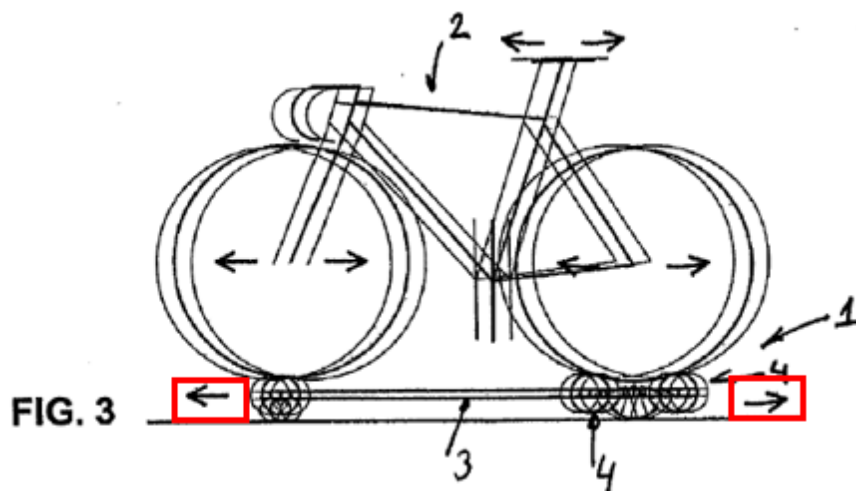
i. Claim 1

[1(pre)] A support for an item of exercise equipment that experiences forces in a fore-aft direction during use, comprising:

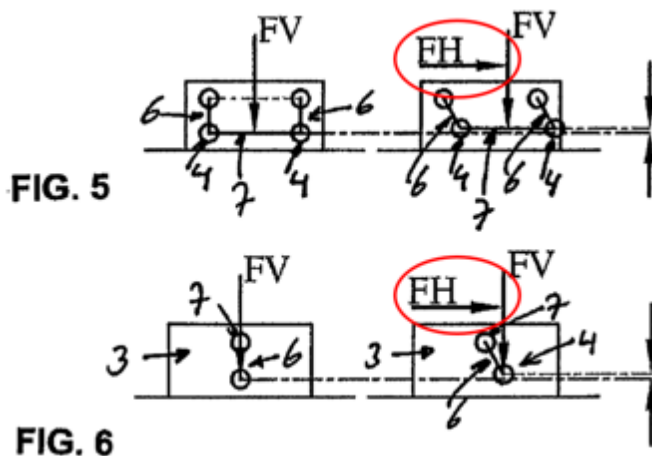
62. First, Zwinkels discloses a “support for an item of exercise equipment.” Zwinkels teaches “a training apparatus arranged for supporting a bicycle.” Zwinkels at Abstract. A POSITA would have understood that the training apparatus disclosed by Zwinkels constitutes “a support for an item of exercise equipment,” because it is an apparatus for supporting a bicycle, which is an item of exercise equipment.

63. Second, Zwinkels discloses a “support for an item of exercise equipment that experiences forces in a fore-aft direction during use.” As Zwinkels explains, “the training apparatus of the invention has the features that at least the

supporting roll or rollers for the bicycle back wheel are movably suspended in the frame in vertical direction, wherein the suspension of said roll or rollers is arranged to convert relative horizontal movements of the roll or rollers into vertical movements....” Zwinkels at [0020]. These horizontal movements are “induced by the accelerations and decelerations of the training cyclist.” Zwinkels at [0027], [0031]. Zwinkels depicts such horizontal forces (annotated in red) in at least Figures 3 and 5-6:



Zwinkels at Fig. 3 (annotated).



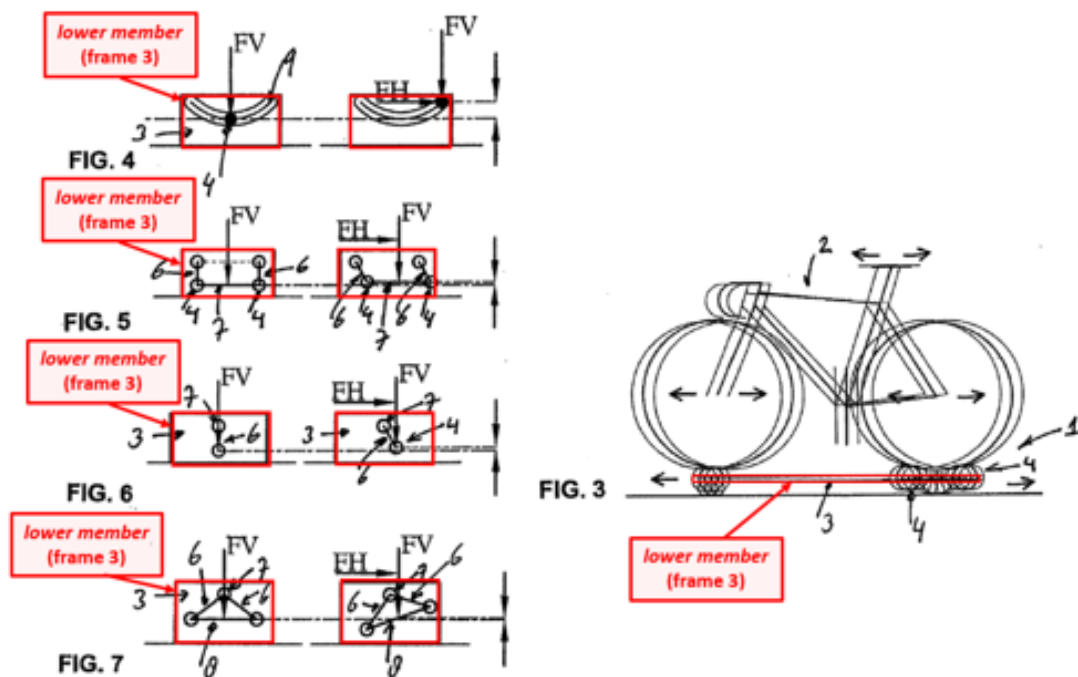
Zwinkels at Figs. 5-6 (annotated).

Zwinkels discloses that horizontal “force[s]” labeled “FH” cause its rollers (and the bicycle supported thereon) “to move horizontally in the fore-aft direction.” Zwinkels at [0033]-[0034], Figs. 5-6. A POSITA would have understood that horizontal movements caused by acceleration and deceleration of a cyclist are caused by “forces in a fore-aft direction during use,” because such forces are required to cause such horizontal acceleration or deceleration. This is demonstrated by the well-known relationship between force and acceleration set forth in Newton’s second law of motion: force equals mass times acceleration. Thus, Zwinkels discloses “[a] support for an item of exercise equipment that experiences forces in a fore-aft direction during use” as claimed.

[1(a)] a lower member adapted for placement on a support surface that lies in a support surface plane;

64. Because Zwinkels teaches a frame adapted for placement on the ground, Zwinkels discloses and also renders obvious “a lower member adapted for placement on a support surface that lies in a support surface plane” as claimed.

65. The frame of Zwinkels constitutes “a lower member.” Zwinkels explains that the training apparatus includes “a ground-supported or –supportable frame 3 that is at least provided with supporting roll or rollers 4 for a bicycle back wheel 5.” Zwinkels at [0028]. The roll or rollers are suspended by the frame, as shown in several figures, annotated below. Zwinkels at [0026], [0035]-[0036], Figs. 3-7.

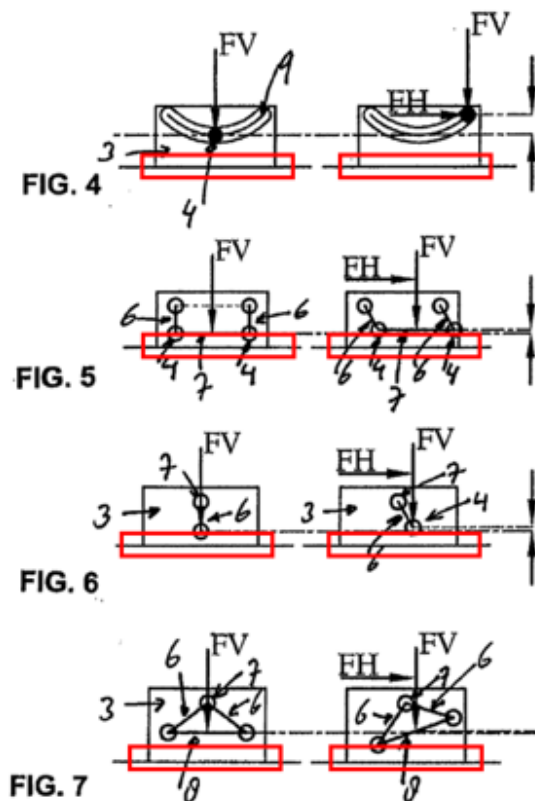


Zwinkels at Figs. 3-7 (annotated).

66. As shown above, Zwinkels teaches a frame that rests on the ground and supports rollers above the ground. Zwinkels at [0026], [0035]-[0036], Figs. 3-7. Thus, a POSITA would have understood that the frame taught by Zwinkels constitutes “a lower member” as claimed.

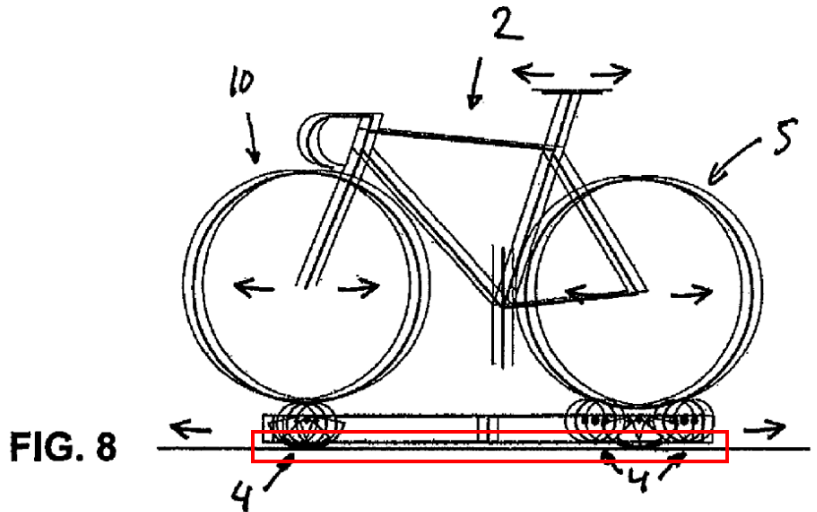
67. Zwinkels also teaches that the frame is meant to be placed on the ground, so Zwinkels teaches “a lower member adapted for placement on a support surface that lies in a support surface plane.” Specifically, Zwinkels discloses a “ground-supported or –supportable frame 3.” Zwinkels at Abstract, [0006], [0028]. The ’394 patent expressly contemplates that the ground/floor is a support surface, stating that “base 102” is “adapted to be positioned on a supporting surface such as a floor.” ’394 patent at 9:26-30. A POSITA would have understood that the ground is a “support surface that lies in a support surface plane” because the ground is a planar surface and Zwinkels teaches that its apparatus rests on a planar surface. Zwinkels at Figs. 1-9.

68. To the extent this limitation is interpreted to require that the lower member itself—rather than just the support surface—must lie “in a support surface plane,” Zwinkels discloses this limitation because it teaches that the frame (lower member) may lie flush with the ground, thus resting in the support surface plane as annotated below in red in Figures 4-7. Zwinkels at [0028], Figs. 4-7.



Zwinkels at Figs. 4-7 (annotated).

69. In addition, to the extent this limitation is interpreted to require that the lower member itself must lie “in a support surface plane” and to the extent it is found that Zwinkels does not expressly disclose such, then a POSITA would have found it obvious to modify Zwinkels’s frame to lie flush with the ground. Zwinkels discloses certain embodiments in which the frame is already almost flush with the ground, such as shown in Figure 8 below:



Zwinkels at Fig. 8 (annotated)

70. In my opinion, it would have required only a minor modification well within the level of ordinary skill in the art to slightly lower the frame (by the amount shown by the red arrows above) by removing any feet suspending the frame above the ground and ensuring that the rollers are still suspended above the ground to allow for vertical and horizontal movement of the rollers unimpeded by the ground. A POSITA would have been motivated to make such a modification due to the ease with which they would have been implemented and by their anticipated improvement to the stability of the bicycle trainer by placing a larger area of the frame in contact with the ground such that any possibility of tipping is minimized. This modification would not have altered the operation of the bicycle trainer, and a POSITA would have had a reasonable expectation of success in making these

modifications because of the minimal modification involved. Thus, in my opinion, Zwinkels also renders obvious this limitation.

71. Therefore, Zwinkels discloses and also renders obvious “a lower member adapted for placement on a support surface that lies in a support surface plane” as claimed.

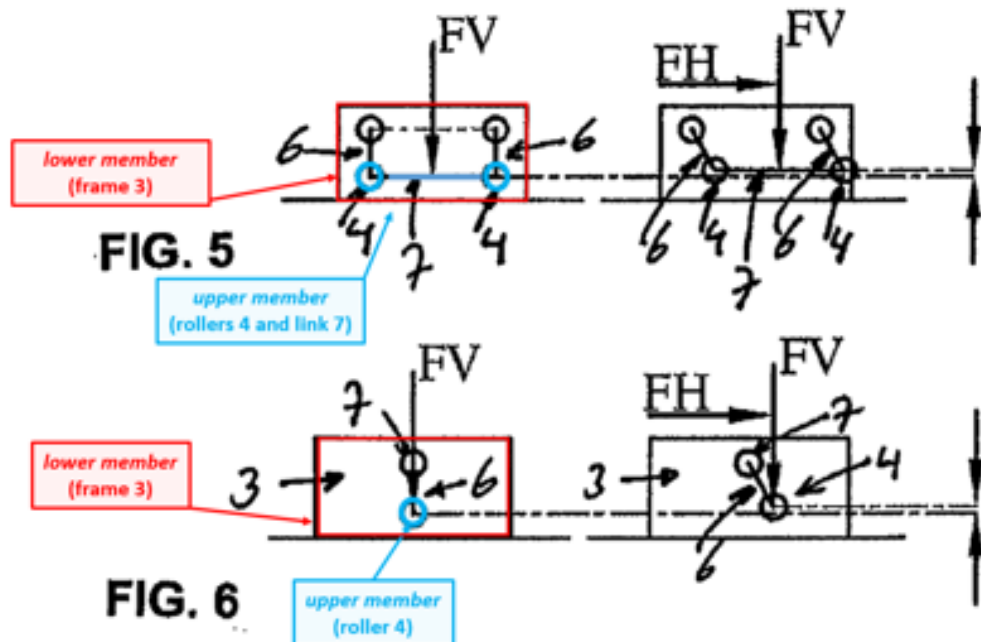
[1(b)] an upper member interconnected with the lower member via a movable interconnection, wherein the upper member is configured to support the item of exercise equipment above the support surface, and wherein the movable interconnection of the upper member with the lower member is configured to enable the upper member to move forwardly and rearwardly in the fore-aft direction relative to the lower member in response to fore-aft forces that are transferred to the upper member from the item of exercise equipment in response to use of the item of exercise equipment;

72. Because Zwinkels teaches rollers connected via a connecting link that support a bicycle above the ground and are connected to a frame with a pivoting connection enabling horizontal movement, Zwinkels discloses this limitation as claimed.

[1(b)(i)] an upper member

73. Zwinkels explains that “[i]n an advantageous embodiment of the training apparatus of the invention, the roll or rollers for the bicycle back wheel are at their extremities directly or indirectly supported by at least one pendulum arm that has a fixed pivoting point on the frame.” Ex.1004 ¶[0024]. As discussed above at

paragraphs 64-66, a POSITA would have understood the frame of Zwinkels to constitute a “lower member.” This frame directly or indirectly supports a roll or rollers through use of “pendulum arms.” Zwinkels at [0034]. Moreover, Zwinkels teaches at least one “embodiment in which there are two rollers 4 for the bicycle back wheel, and that at their extremities the rollers 4 are directly or indirectly suspended by double pendulum arms arranged in the form of a parallelogram construction, wherein said pendulum arms 6 are provided with a connecting link 7.” Zwinkels at [0034]. A POSITA would have understood the rollers and connecting link disclosed by Zwinkels to constitute “an upper member” as shown below with reference to Figures 5 and 6.



Zwinkels at Figs. 5-6 (annotated).

74. The '394 patent contemplates that multiple components may come together to constitute an “upper member.” '394 patent at 2:34-39 (“In one embodiment, the platform may include a front platform section and a rear platform section that are secured together via a pivot connection, which enables the front and rear platform sections to be positioned in an operative use position and folded together about a transverse pivot axis to a folded storage position.”); *see also id.* at 5:10-15; 15:21-36; 16:48-17:26. Like the '394 patent, Zwinkels discloses an “upper member” comprised of multiple components (two rollers and a connecting link).

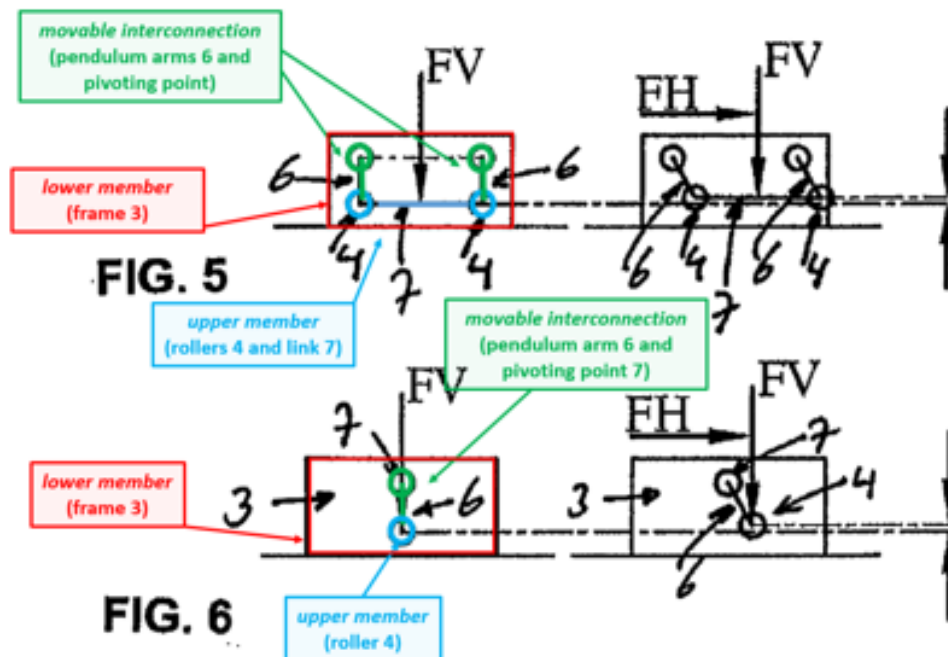
75. Thus, Zwinkels discloses “an upper member” as claimed.

[1(b)(ii)] an upper member interconnected with the lower member via a movable interconnection

76. Because Zwinkels teaches a roll or rollers connected by a connecting link (“upper member”) that are supported by one or more pendulum arms having a pivot point (collectively, “a movable interconnection”) on a frame (“lower member”), Zwinkels discloses “an upper member interconnected with the lower member via a movable interconnection” as claimed.

77. Zwinkels explains that “the roll or rollers for the bicycle back wheel are at their extremities directly or indirectly supported by at least one pendulum arm that has a fixed pivoting point on the frame.” Zwinkels at [0024], [0033]. With respect

to Figure 5, Zwinkels teaches that the “rollers 4 are directly or indirectly suspended by double pendulum arms 6 so as to perform a concerted swinging back and forth.” Zwinkels at [0034]. A POSITA would have understood that the swinging pendulum arms connecting rollers to a frame constitutes an interconnection between an “upper member” and a “lower member.” A POSITA would have further understood that “swinging back and forth” constitutes motion, so the pendulum arms and pivot points collectively constitute a “movable interconnection between the “upper member” and “lower member.” The annotated version of Figures 5-6 below depict the lower member in red, the upper member in blue, and the movable interconnection in green.



Zwinkels at Figs. 5-6 (annotated).

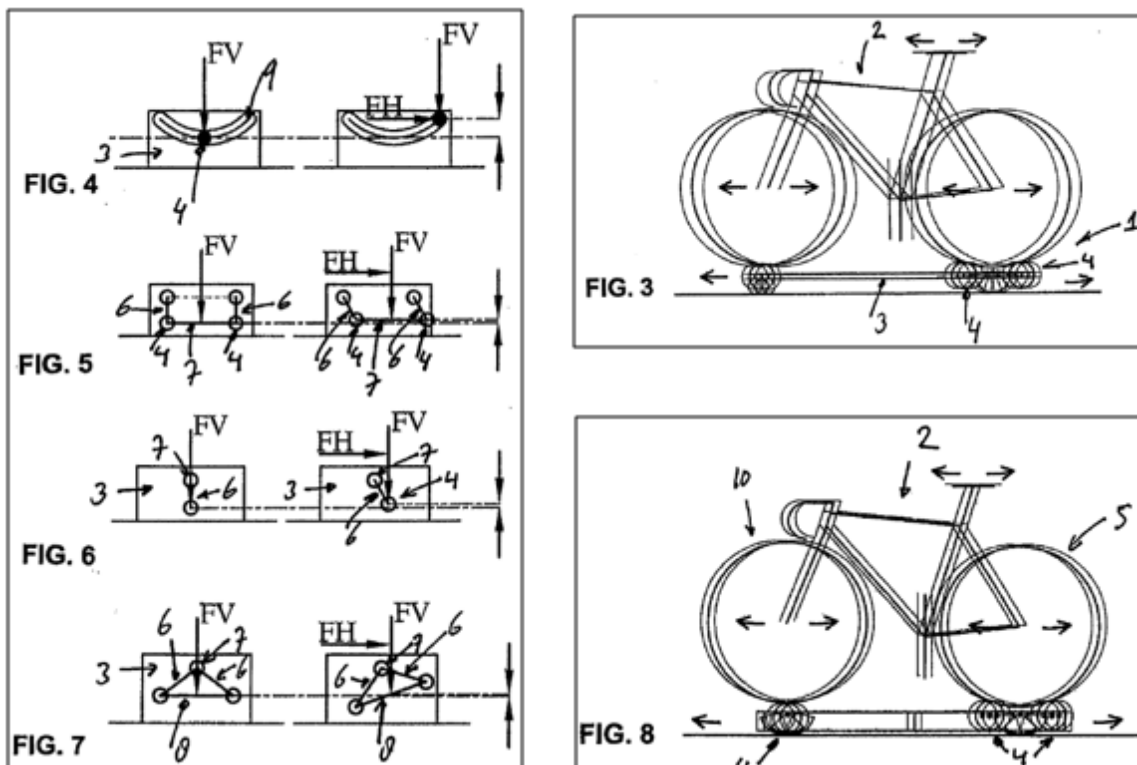
78. The '394 patent recognizes that the word “connected” includes “connection or attachment to other elements,” so the '394 patent does not require the upper member to be attached directly to the lower member. '394 patent at 8:57-62.

79. Thus, Zwinkels discloses “an upper member interconnected with the lower member via a movable interconnection” as claimed.

[1(b)(iii)] wherein the upper member is configured to support the item of exercise equipment above the support surface

80. Because Zwinkels teaches a roll or rollers for supporting a bicycle above the ground, Zwinkels discloses “wherein the upper member is configured to support the item of exercise equipment above the support surface” as claimed.

81. Zwinkels explains that its training apparatus is “at least provided with a supporting roll or rollers for a bicycle back wheel.” Zwinkels at Abstract. Every embodiment depicted in Zwinkels shows that a bicycle rests on top of rollers that are suspended above the ground by a frame. Zwinkels at Figs. 1-9.



Zwinkels at Figs. 3-8.

82. A POSITA would understand that rollers supporting a bicycle above the ground constitute “an upper member [] configured to support the item of exercise equipment above the support surface.” Thus, Zwinkels discloses “wherein the upper member is configured to support the item of exercise equipment above the support surface” as claimed.

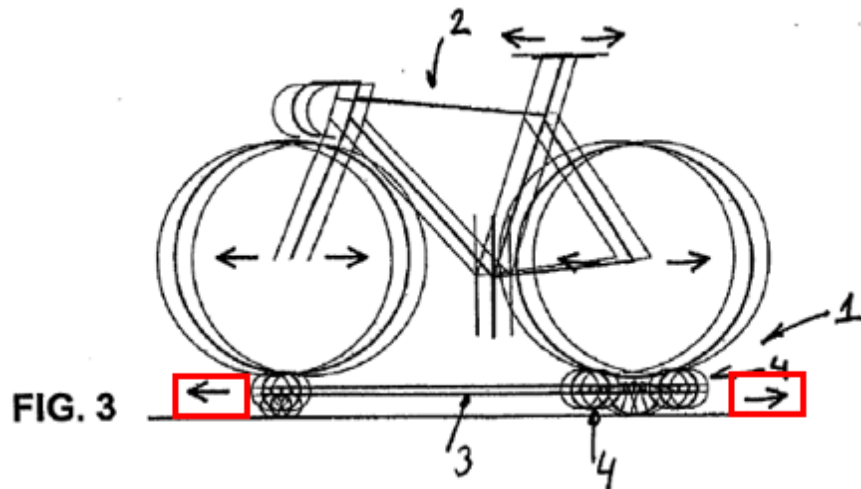
[1(b)(iv)] wherein the movable interconnection of the upper member with the lower member is configured to enable the upper member to move forwardly and rearwardly in the fore-aft direction relative to the lower member in response to fore-aft forces that are transferred to the upper member from the item of exercise equipment in response to use of the item of exercise equipment;

83. Because Zwinkels teaches pendulum arms connecting a roller or rollers to a frame so as to allow the rollers to move in both the forward-backward and upward-downward directions in response to the cyclist's use of the bicycle, Zwinkels discloses this limitation as claimed.

84. Zwinkels explains that “at least the supporting roll or rollers for the bicycle back wheel are movably suspended in the frame in vertical direction [sic], wherein the suspension of said roll or rollers is arranged to convert relative horizontal movements of the roll or rollers into vertical movements thereby compensating and/or attenuating said horizontal movements by gravity.” Zwinkels at [0020]. A POSITA would have understood that “convert[ing] relative horizontal movements” first requires horizontal movement. In Zwinkels, horizontal movement is fore-aft (or forward-backward) movement.

85. The figures of Zwinkels further demonstrate this limitation. For example, “In FIG. 3 the training apparatus 1 of the invention is shown, wherein at least the supporting roll or rollers 4 for a bicycle back wheel 5 are movable in the frame 3 so as to allow for their movement in [a] vertical direction. The construction is arranged such that the suspension of said roll or rollers enables relative horizontal movements of said roll or rollers 4 induced by acceleration or deceleration of the

bicycle 2 (as indicated with the arrows) to convert into vertical movements, thereby compensating and/or attenuating said horizontal movements by gravity.” Zwinkels at [0031], Fig. 3.

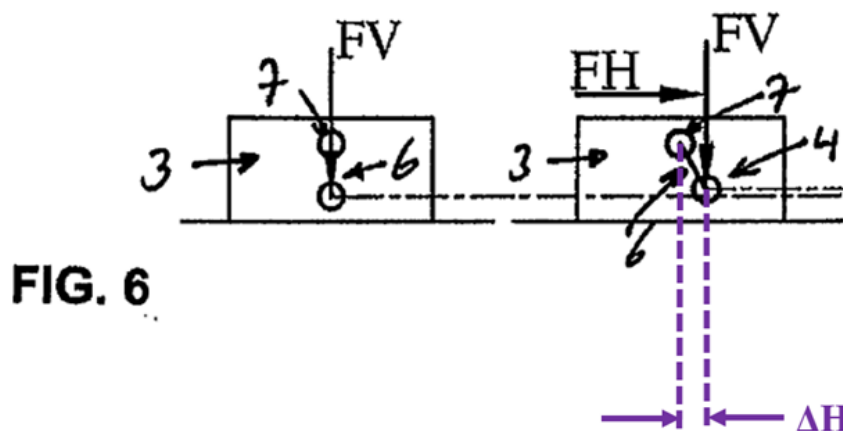
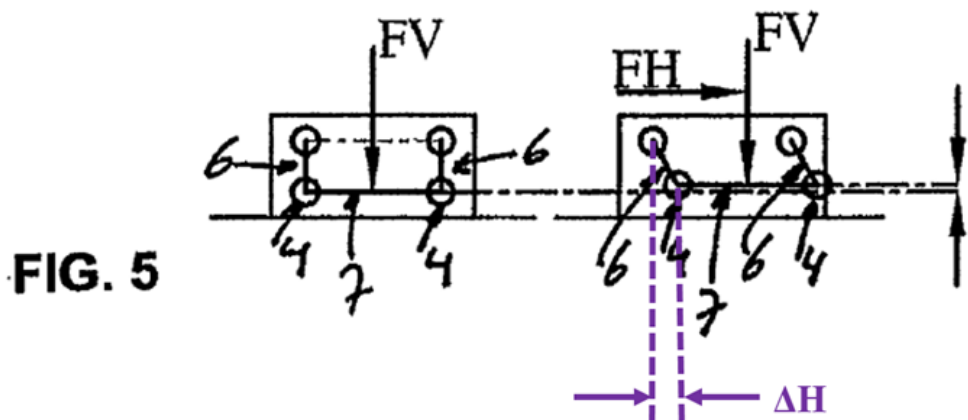


Zwinkels at Fig. 3 (annotated)

86. Figures 5 and 6 also demonstrate horizontal movement in response to horizontal forces (labeled “FH”). In Figure 5, “rollers 4 are directly or indirectly suspended by double pendulum arms 6 arranged in the form of a parallelogram construction, wherein the said pendulum arms 6 are provided with a connecting link 7 to secure said arms 6 to perform a concerted swinging back and forth.” Zwinkels at [0034], Fig. 5. In Figure 6, “the figure on the right shows the pendulum arm 6 after it has moved to the right due to a force FH, causing that the roll 4 has moved vertically upwards. At this position the roll 4 undergoes the force of gravity FV

which counteracts the force FH due to which the roll 4 has moved to the right.”

Zwinkels at [0033], Fig. 6. Both Figures 5 and 6 are reproduced below with horizontal movement annotated as ΔH in purple.



Zwinkels at Figs. 5-6 (annotated).

87. A POSITA would have understood Zwinkels’s disclosure of pendulum arms that permit a roll or rollers to move horizontally relative to the frame in response to forces applied by a bicycle from the cyclist’s use of the bicycle to

constitute a “movable interconnection of the upper member with the lower member [that] is configured to enable the upper member to move forwardly and rearwardly in the fore-aft direction relative to the lower member in response to fore-aft forces that are transferred to the upper member from the item of exercise equipment in response to use of the item of exercise equipment.”

88. Thus, Zwinkels discloses this limitation as claimed.

89. Accordingly, Zwinkels discloses limitation [1(b)] as claimed.

[1(c)] wherein the movable interconnection of the upper member with the lower member is further configured to provide upward and downward movement of the upper member relative to the support surface during movement of the upper member forwardly and rearwardly in the fore-aft direction relative to the lower member, and wherein the upper member is oriented parallel to the support surface plane during movement of the upper member relative to the lower member in the fore-aft direction and during upward and downward movement of the upper member relative to the support surface.

90. Because Zwinkels teaches swinging pendulum arms having pivot points that work to convert horizontal movement of a roll or rollers into vertical movements, and because Zwinkels teaches rollers connected via a connecting link that remains parallel to the ground during horizontal and vertical movement, Zwinkels discloses this limitation as claimed.

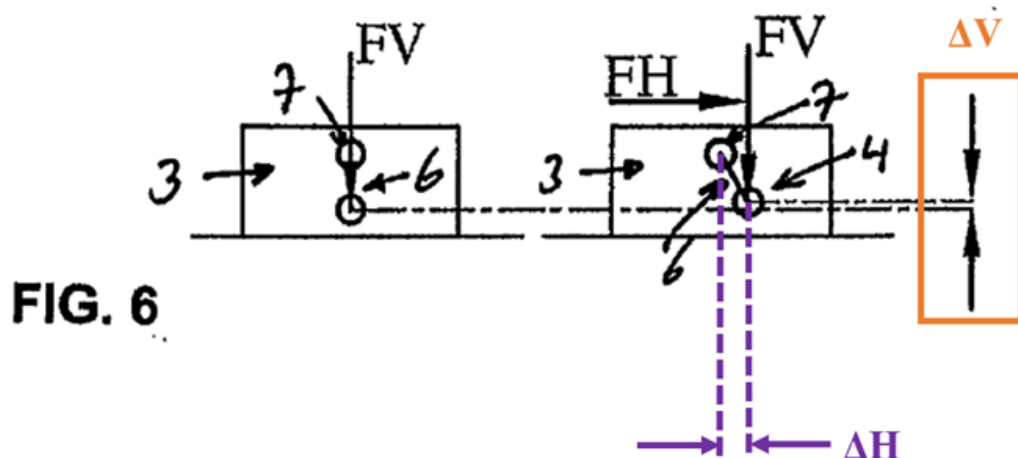
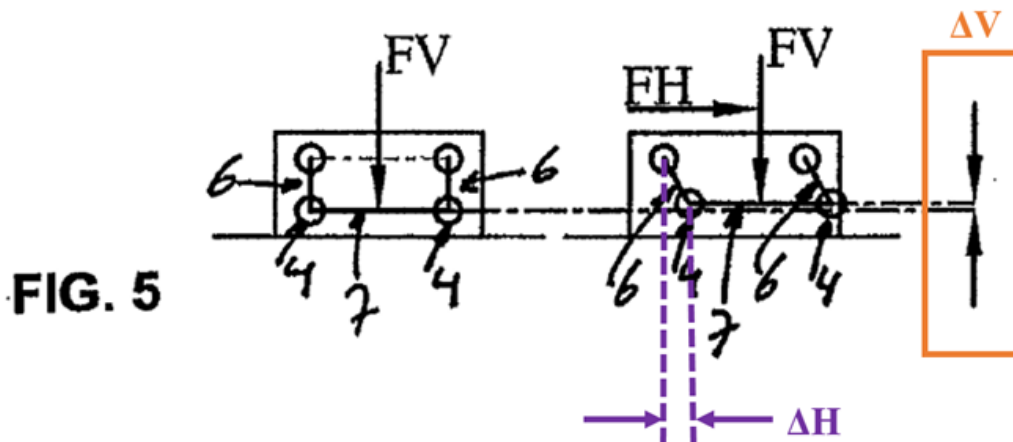
[1(c)(i)] wherein the movable interconnection of the upper member with the lower member is further configured to provide upward and downward movement of the upper member relative to the support surface during

movement of the upper member forwardly and rearwardly in the fore-aft direction relative to the lower member

91. Because Zwinkels teaches partially converting horizontal motion of a roller or rollers into vertical movements, Zwinkels discloses this limitation as claimed.

92. As discussed above in relation to claim limitations [1(a)] and [1(b)], Zwinkels teaches a frame (“lower member”), a roller or rollers connected by a connecting link (collectively, an “upper member”) and pendulum arms having pivot points (collectively, a “moveable interconnection”) that interconnect the roll or rollers to the frame.

93. Zwinkels also teaches that said pendulum arms “provide[] an easy and effective solution for absorbing and attenuating horizontal movements by converting these horizontal movements to vertical movements.” Zwinkels at [0024]. Figures 5 and 6 illustrate the roller or rollers of Zwinkels simultaneously moving horizontally to the right (i.e., in the fore-aft direction) and vertically in an upward direction. Zwinkels at Figs. 5-6. Horizontal movement is labelled “ ΔH ” in purple and vertical movement is labeled “ ΔV ” in orange below.



Zwinkels at Figs. 5-6 (annotated).

94. With regard to Figure 5, Zwinkels further clarifies that “the figure at the left of FIG. 5 shows the pendulum arms 6 in a resting position, whereas the figure on the right shows the pendulum arms 6 after they have [moved] due to the connecting link 7 concerted[ly] mov[ing] to the right due to a force FH, causing that the rollers 4 have moved vertically upwards.” Zwinkels at [0034].

95. With regard to Figure 6, Zwinkels states, “The figure at the left of FIG. 6 shows the pendulum arm 6 in a resting position, whereas the figure on the right shows the pendulum arm 6 after it has moved to the right due to a force FH, causing that the roll 4 has moved vertically upwards. At this position the roll 4 undergoes the force of gravity FV which counteracts the force FH due to which the roll 4 has moved to the right.” Zwinkels at [0033].

96. Further, while Figures 5 and 6 depict horizontal movement to the right and vertical movement upward, a POSITA would have understood that the roller or rollers would also move horizontally back to the left and vertically in a downward motion as the roller or rollers swing back towards the center/resting position. This is because Zwinkels teaches that the rollers “swing back and forth.” Zwinkels at [0025] (“said pendulum arms are provided with a connecting link to secure their concerted swinging back and forth”), [0034] (“said arms 6 perform a concerted swinging back and forth”), [0037] (“a roll 4 that allows for back-and-forth movement in the horizontal direction”), claim 3 (“said pendulum arms are provided with a connecting link to secure their concerted swinging back and forth”).

97. A POSITA would have understood that the simultaneous horizontal and vertical movement of Zwinkels constitutes “wherein the movable interconnection of the upper member with the lower member is further configured to provide upward

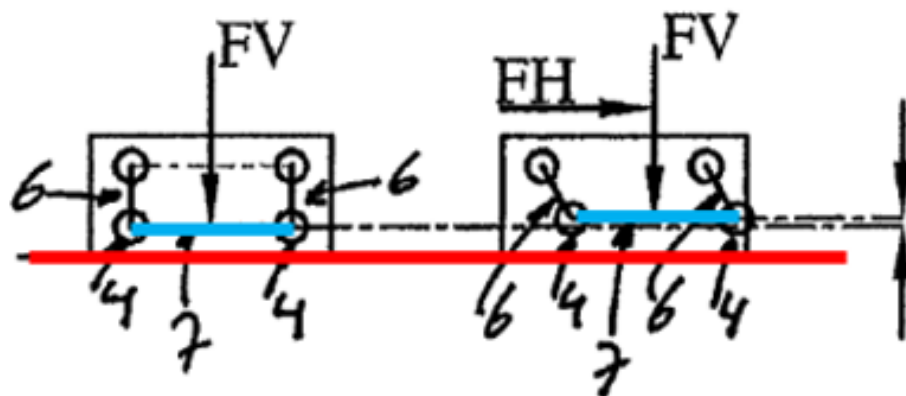
and downward movement of the upper member relative to the support surface during movement of the upper member forwardly and rearwardly in the fore-aft direction relative to the lower member” as claimed.

98. Thus, Zwinkels discloses this limitation as claimed.

[1(c)(ii)] wherein the upper member is oriented parallel to the support surface plane during movement of the upper member relative to the lower member in the fore-aft direction and during upward and downward movement of the upper member relative to the support surface.

99. Because Zwinkels teaches two rollers connected by a connecting link that is oriented parallel to the ground during movement of the rollers and connecting link in the horizontal and vertical directions, Zwinkels teaches this limitation as claimed.

100. Zwinkels explains that two rollers may be “suspended by double pendulum arms 6 arranged in the form of a parallelogram construction.” Zwinkels at [0034]. These rollers may also be connected by “connecting link 7” which allows for a “concerted swinging back and forth.” Zwinkels at [0034]. The figure depicting this embodiment, Figure 5, illustrates that the plane formed by two rollers and a connecting link (red, below) will remain parallel with the plane of the ground (blue, below) even throughout horizontal and vertical motion. Zwinkels at Fig. 5.



Zwinkels at Fig. 5 (annotated).

101. A POSITA would have understood that the plane formed by the rollers and connecting link remaining parallel to the plane of the ground during horizontal and vertical movement constitutes “wherein the upper member is oriented parallel to the support surface plane during movement of the upper member relative to the lower member in the fore-aft direction and during upward and downward movement of the upper member relative to the support surface” as claimed.

102. Thus, Zwinkels discloses this limitation as claimed.

103. Accordingly, Zwinkels discloses limitation [1(c)] as claimed.

ii. Claim 12

[12(pre)] An exercise arrangement, comprising:

104. Zwinkels teaches a “[t]raining apparatus arranged for supporting a bicycle” Zwinkels at Abstract. A POSITA would have understood that a training

apparatus supporting a bicycle constitutes an “exercise arrangement.” Thus, Zwinkels discloses this limitation as claimed.

[12(a)] a cycle device for enabling a user to apply input forces

105. Because Zwinkels teaches an apparatus for supporting a bicycle, and said apparatus responds to accelerations and decelerations of a training cyclist using the bicycle, Zwinkels discloses this limitation as claimed.

106. Zwinkels states that “[i]t is an objective of the invention to provide an alternative solution for allowing that relative horizontal movements caused by accelerations and decelerations of a training cyclist are possible.” Zwinkels at [0009]. Zwinkels also describes “horizontal movements induced by the accelerations and decelerations of the training cyclist” ([0027]), which are caused by horizontal forces “FH” applied by the cyclist. Zwinkels at [0033], [0034].

107. A POSITA would have understood that a bicycle is “a cycle device” and that a bicycle allows a user to “apply input forces,” such as from pedaling and/or leaning, among other actions and movements. Thus, Zwinkels discloses and also renders obvious “a cycle device for enabling a user to apply input forces” as claimed.

[12(b)] a support for the cycle device adapted to be positioned on a support surface that lies in a support surface plane, wherein the support comprises a lower member adapted for placement on the support surface, and an upper member interconnected with the lower member via a movable interconnection, wherein the upper member is configured to support the cycle device above the support surface,

and wherein the movable interconnection of the upper member with the lower member is configured to enable the upper member to move forwardly and rearwardly in the fore-aft direction relative to the lower member in response to fore-aft forces that are transferred to the upper member from the cycle device in response to operation of the cycle device;

108. Zwinkels discloses and also renders obvious this limitation for the reasons set forth above for limitations [1(pre)], [1(a)], and [1(b)]. As discussed above for limitation [1(pre)], Zwinkels' "training apparatus" that supports the bicycle constitutes a "support" for the cycle device.

[12(b)(i)] a support for the cycle device adapted to be positioned on a support surface that lies in a support surface plane, wherein the support comprises a lower member adapted for placement on the support surface

109. Zwinkels discloses and also renders obvious this limitation for the reasons set forth above for limitations [1(pre)] and [1(a)]. Further, to the extent this limitation is interpreted to require that the frame ("lower member") of Zwinkels' training apparatus ("support") must lie flush with the floor ("support surface"), then Zwinkels discloses and also renders obvious such a requirement for the reasons set forth above for limitation [1(a)].

[12(b)(ii)] an upper member interconnected with the lower member via a movable interconnection,

110. Zwinkels discloses this limitation for the reasons set forth above for limitations *[1(b)(i)]-[1(b)(ii)]*.

[12(b)(iii)] wherein the upper member is configured to support the cycle device above the support surface

111. Zwinkels discloses this limitation for the reasons set forth above for limitation [1(b)(iii)].

[12(b)(iv)] wherein the movable interconnection of the upper member with the lower member is configured to enable the upper member to move forwardly and rearwardly in the fore-aft direction relative to the lower member in response to fore-aft forces that are transferred to the upper member from the cycle device in response to operation of the cycle device

112. Zwinkels discloses this limitation for the reasons set forth above for limitation [1(b)(iv)].

[12(c)] wherein the movable interconnection of the upper member with the lower member is further configured to provide upward and downward movement of the upper member relative to the support surface during movement of the upper member forwardly and rearwardly in the fore-aft direction relative to the lower member, and wherein the upper member is oriented parallel to the support surface plane during movement of the upper member relative to the lower member in the fore-aft direction and during upward and downward movement of the upper member relative to the support surface.

113. Zwinkels discloses this limitation for the reasons set forth above for limitation [1(c)].

[12(c)(i)] wherein the movable interconnection of the upper member with the lower member is further configured to provide upward and downward movement of the upper member relative to the support surface during movement of the upper member forwardly and rearwardly in the fore-aft direction relative to the lower member

114. Zwinkels discloses this limitation for the reasons set forth above for limitation [1(c)(i)].

[12(c)(ii)] wherein the upper member is oriented parallel to the support surface plane during movement of the upper member relative to the lower member in the fore-aft direction and during upward and downward movement of the upper member relative to the support surface.

115. Zwinkels discloses this limitation for the reasons set forth above for limitation [1(c)(ii)].

iii. Claim 25

[25(pre)] A support for an item of exercise equipment that experiences forces in a fore-aft direction during use, comprising:

116. Zwinkels discloses this limitation for the reasons set forth above for limitation [1(pre)].

[25(a)] a lower member adapted for placement on a support surface;

117. Zwinkels discloses this limitation for the reasons set forth above for limitation [1(a)].

[25(b)] an upper member interconnected with the lower member, wherein the upper member is configured to support the item of exercise equipment above the support surface, and wherein the interconnection of the upper member with the lower member is configured to enable the upper member to move forwardly and rearwardly in the fore-aft direction relative to the lower member between a forward position and a rearward position, in response to fore-aft forces that are transferred to the upper member from the item of exercise equipment in response to use of the item of exercise equipment;

118. Zwinkels discloses this limitation for the reasons set forth above for limitation [1(b)], including the reasons set forth above for [1(b)(i)], [1(b)(ii)], [1(b)(iii)], and [1(b)(iv)].

[25(c)] wherein the movable interconnection of the upper member with the lower member is further configured to provide upward and downward movement of the upper member relative to the support surface during movement of the upper member forwardly and rearwardly in the fore-aft direction relative to the lower member, and wherein the forward and rearward positions of the upper member relative to the lower member are offset from each other in the fore-aft direction.

119. Zwinkels discloses this limitation for the reasons set forth above for limitation [1(c)(i)] and the reasons set forth below for limitation [25(c)(ii)].

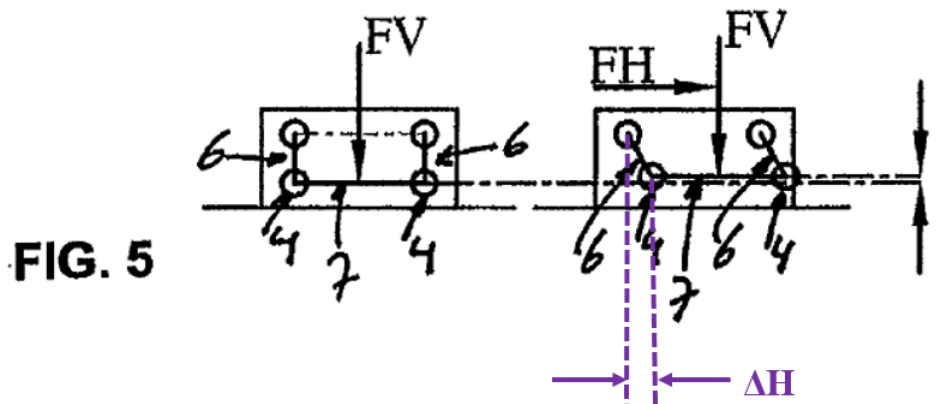
[25(c)(i)] wherein the movable interconnection of the upper member with the lower member is further configured to provide upward and downward movement of the upper member relative to the support surface during movement of the upper member forwardly and rearwardly in the fore-aft direction relative to the lower member

120. Zwinkels discloses this limitation for the reasons set forth above for limitation [1(c)(i)].

[25(c)(ii)] wherein the forward and rearward positions of the upper member relative to the lower member are offset from each other in the fore-aft direction.

121. Because Zwinkels teaches a roller or rollers that move horizontally back and forth, Zwinkels discloses and also renders obvious this limitation.

122. With respect to Figure 5, “the figure at the left of FIG. 5 shows the pendulum arms 6 in a resting position, whereas the figure on the right shows the pendulum arms 6 after they have [moved] due to the connecting link 7 concertedly moved to the right due to a force FH” Zwinkels at [0034], Fig. 5.



Zwinkels at Fig. 5.

123. Further, Zwinkels teaches that the rollers “swing back and forth.” Zwinkels at [0025] (“said pendulum arms are provided with a connecting link to secure their concerted swinging back and forth”), [0034] (“said arms 6 perform a concerted swinging back and forth”), [0037] (“a roll 4 that allows for back-and-forth movement in the horizontal direction”), claim 3 (“said pendulum arms are provided with a connecting link to secure their concerted swinging back and forth”).

124. A POSITA would have understood that the right side of Figure 5 (where the rollers have swung forward) depicts a “forward position of the upper member.”

And a POSITA would have understood the left side of Figure 5 (where the rollers have swung back to the left) depicts a center position that constitutes a “rearward position of the upper member” because it is rearward relative to the forward position shown on the right side of Figure 5. This “forward position” and “rearward position” are “offset from each other in the fore-aft direction” because they are separated by a horizontal distance, labeled “ ΔH ” in purple in Figure 5 above.

125. In addition, as discussed, Zwinkels explains that the pendulum arms shown in Figure 5 allow the rollers to “swing[] back and forth.” Zwinkels at [0034]. Thus, a POSITA would have understood that the pendulum arms and rollers of Zwinkels are also capable of swinging “back” to a further rearward position to the left of the center position like a pendulum, despite this not being depicted in Figure 5. A POSITA would have further understood that this additional rearward position would be horizontally offset from the forward position as a result of swinging “back.”

126. Thus, Zwinkels discloses this limitation as claimed.

D. Ground 3: Claims 1, 12, and 25-26 are obvious under 35 U.S.C. § 103 over Zwinkels in view of Papadopoulos.

i. Claims 1, 12, and 25

To the extent a disclaimer occurred during prosecution of the '394 patent requiring side-to-side or tilting movement, Zwinkels in view of Papadopoulos renders such a requirement obvious.

127. As disclosed above, Claims 1, 12, and 25 are both anticipated and rendered obvious by Zwinkels. I incorporate by reference my analysis set forth above regarding Zwinkels into this Ground.

128. Further, I understand that during prosecution of the '394 patent, Applicant stated, “[t]he equipment support of the present invention provides controlled fore-aft movement of the item of exercise equipment during use, as well as controlled side-to-side or tilting movement of the item of exercise equipment.” ’394 File History at 241. While I offer no opinions regarding whether this statement was sufficiently clear and unambiguous to constitute a disclaimer of claim scope, I have been asked to assume that this statement constituted such a disclaimer for purposes of this Ground. So while claims 1, 12, and 25 do not expressly recite any limitation requiring side-to-side or tilting movement, I have been asked to assume that they include such a requirement for purposes of this Ground. To the extent this statement is found to constitute a disclaimer of claim scope so as to require these claims to include the limitation of side-to-side or tilting movement, then it is my opinion that claims 1, 12, and 25 would have been obvious over Zwinkels in view of Papadopoulos.

129. Papadopoulos explains that “fork support 26 and the attached fork rotate off of center” to create “an off-vertical tilt to the bicycle frame.” Papadopoulos at 3:19-25. Similarly, “pedaling forces create a tilt to the bike frame that will result in a steering action,” while “the resistance of rubber bands 30 to the rotation of fork support 26 play a role in stabilizing the bicycle on assembly 10 and preventing excessive tilt, while also, to some degree, mimicking the resistance to steering encountered by friction between the bicycle wheel and the road surface.” Papadopoulos at 3:19-25. A POSITA would have understood that such “off vertical tilt” constituted “controlled side-to-side or tilting movement of the item of exercise equipment.” For example, Figure 3 of Papadopoulos depicts such “controlled side-to-side or tilting movement” when it depicts the bicycle tilting to the left side as the cyclist turns the handlebars to the right, rotating the bicycle fork 29 and attached fork support 26 to the right (and stretching the right rubber band 30 that provides resistance to the rotation):

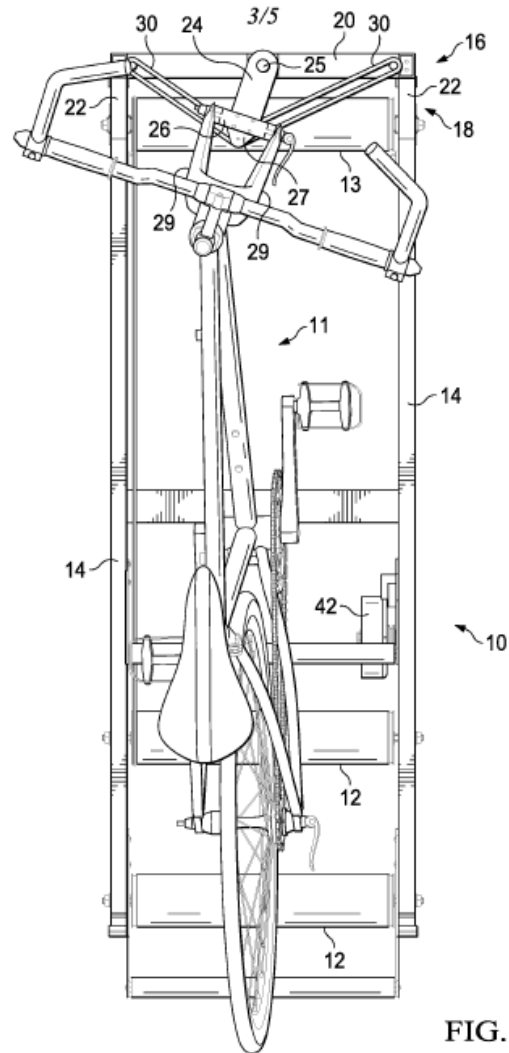


FIG. 3

Papadopoulos at Fig. 3.

130. Further, a POSITA would have been motivated to combine Papadopoulos with Zwinkels and would have had a reasonable expectation of success in doing so for the reasons discussed above in Section VIII.B above.

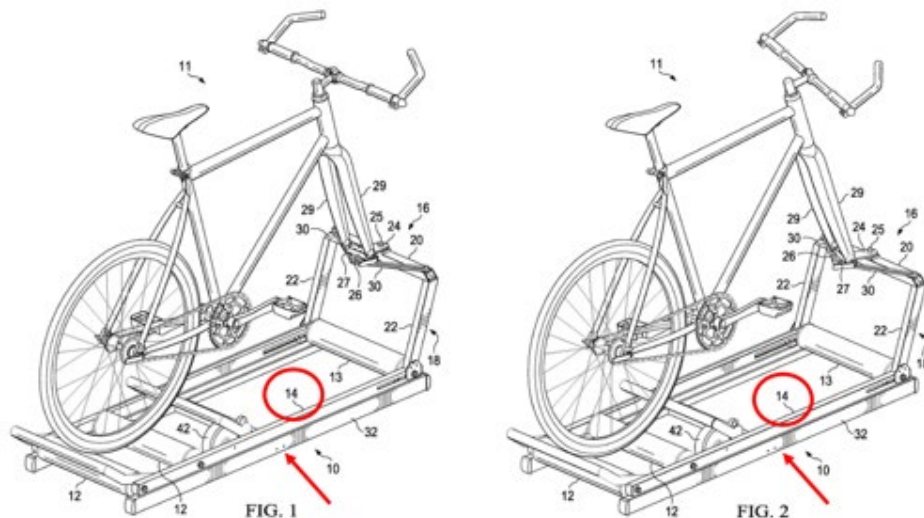
131. Thus, the combination of Zwinkels and Papadopoulos renders obvious this limitation requiring side-to-side or tiling movement, to the extent it is assumed to exist, of claims 1, 12, and 25 of the '394 patent.

To the extent the limitation of “a lower member adapted for placement on a support surface that lies in a support surface plane” of claim 1 or the limitation of “a support for the cycle device adapted to be positioned on a support surface that lies in a support surface plane” of claim 12 requires the lower member to lie in a support surface plane, Zwinkels in view of Papadopoulos renders such a requirement obvious.

132. As disclosed above, Claims 1, 12, and 25 are both anticipated and rendered obvious by Zwinkels. I incorporate by reference my analysis set forth above regarding Zwinkels into this Ground.

133. To the extent Zwinkels is found to be insufficient to anticipate or render obvious any requirement that the “lower member” must lie in the “support surface plane,” to the extent such a requirement is found to exist, then the combination of Zwinkels and Papadopoulos would have rendered obvious such a requirement.

134. Papadopoulos teaches rollers that are mounted to a supporting frame 14 that lies flush with the ground. Papadopoulos at Figs. 1-2.



Papadopoulos at Figs. 1-2 (annotated).

135. To the extent Zwinkels does not expressly disclose or render obvious a frame (“lower member”) that lies flush with the ground and to the extent the same is found to be required, a POSITA would have been motivated to combine Papadopoulos’s teaching of a bottom frame lying flush with the ground with the apparatus of Zwinkels such that any feet or supports suspending Zwinkels’ frame above the ground would be removed such that the frame would be placed flush with the ground.

136. A POSITA would have been motivated to make such a modification because it would have improved the stability of the bicycle trainer by placing more of the frame in contact with the ground and reducing the likelihood of tipping. A POSITA also would have been motivated to make such a combination because it

would have been easy and well within the level of ordinary skill in the art. Such a modification would have been easily made because Zwinkels already depicts embodiments where its frame is already nearly flush with the ground (e.g., Figure 8 of Zwinkels) and because such a modification would have only involved removal of any such feet and a slight lower performed while adjusting the placement of Zwinkels' rollers such that they would not come into contact with the ground during movement. This modification would not have altered the operation of Zwinkels' bicycle trainer, and a POSITA would have had a reasonable expectation of success in making this modification, because of its minimal nature. A POSITA would have naturally expected success.

137. Accordingly, the combination of Zwinkels and Papadopoulos represents applying known techniques to a known device ready for improvement to yield predictable results.

138. Thus, the combination of Zwinkels and Papadopoulos also renders obvious any requirement of claims 1 and 12 requiring the lower member to lie flush with the ground.

ii. Claim 26

[26] The support of claim 25, wherein the movable interconnection of the upper member comprises a roller and track arrangement interposed between the upper member and the lower member.

139. Zwinkels discloses “the support of claim 25” for the reasons set forth above for limitations [25(pre)]-[25(c)].

140. Papadopoulos discloses “wherein the movable interconnection of the upper member comprises a roller and track arrangement interposed between the upper and lower member” as claimed.

141. Papadopoulos explains that, “[i]n one preferred embodiment, frame 14 is an inner frame which is set into an outer or bottom frame 32 in a manner that permits resisted movement between frame 14 and frame 32, to more effectively mimic the feel of actually bicycling Frames 14 and 32 are made of aluminum and separated by wheels or rollers to permit movement of top frame 14. The motion is gently resisted by a bungee or other form of spring (not shown).” Papadopoulos at 3:29-4:7, 4:22-24. Moreover, “[t]he bicycle rollers assembly of claim 1, wherein said rear pair of rollers and said front bicycle fork support element are joined together in spaced relationship to form a top assembly, and wherein said top assembly is supported by a fore and aft movement permitting bottom assembly” and “[t]he bicycle rollers assembly of claim 1, wherein said fore and aft movement permitting bottom assembly includes a bottom frame, which supports a set of base rollers that permits said top assembly to move back and forth on said bottom frame.”

Papadopoulos at Claims 3-4. A POSITA would have understood or found obvious that the wheels and rollers of Papadopoulos that separate the top and bottom frames would be set into a “track arrangement” so as to prevent misalignment and alleviate the risk of the frames sliding apart. Without a track arrangement, the wheels or rollers of Papadopoulos would create an unsafe condition for the rider, so a POSITA would have understood or at least found obvious that the wheels or rollers of Papadopoulos would be aligned in a “track arrangement.”

142. A POSITA would have been motivated to combine Zwinkels’ rollers (*upper member*) and pendulum arms having a pivoting point (*movable interconnection*) by attaching them to Papadopoulos’s top frame 14 that can move relative to its bottom frame 32 via the “wheels or rollers” separating the two to arrive at a “movable interconnection of the upper member compris[ing] a roller and track arrangement interposed between the upper member and lower member.”

143. A POSITA would have been motivated to combine the wheel-and-track arrangement of Papadopoulos with Zwinkels to enhance the forward-backward motion of Zwinkels, and, as a result, further Zwinkels’ goal of better simulating an outdoor riding experience. Zwinkels’ desire to provide forward-backward movement would have motivated a POSITA to explore other possibilities for providing and/or enhancing such movement, such as the slide frames separated by

wheels or rollers taught by Papadopoulos. Moreover, a POSITA would have been motivated to combine Papadopoulos with Zwinkels based on the express teaching of Papadopoulos that it can be used to modify or retrofit an existing bicycle roller. As discussed in the preceding paragraph, a POSITA would have been motivated to use a “track arrangement” for the wheels or rollers in the Zwinkels-Papadopoulos combination to ensure smooth function and facilitate safe operation.

144. A POSITA would have had a reasonable expectation of success in making this combination of Zwinkels and Papadopoulos, because it would have involved a minor modification that would have only involved simply substituting Papadopoulos’s combined top frame 14 and bottom frame 32 (separated by wheels or rollers) in place of Zwinkels’ frame 3. This modification would have been well within the level of ordinary skill in the art.

145. Accordingly, the combination of Zwinkels and Papadopoulos represents applying known techniques to a known device ready for improvement to yield predictable results.

146. Finally, a POSITA would have understood the disclosure of Papadopoulos to apply regardless of whether the rollers are positioned in the upper member with the track positioned in the lower member or the track is positioned in the upper member with the rollers positioned in the lower member.

147. While claim 26 recites that it is the “movable interconnection of the upper member” that comprises “a roller and track arrangement” that is “interposed between the upper member and the lower member,” claim 26 does not specify whether the roller must be associated with the upper member or lower member (and correspondingly whether the track must be associated with the lower member or upper member). In addition, U.S. Provisional Application No. 62/546,768, filed August 17, 2017, to which the ’394 patent claims priority and which the ’394 patent incorporates by reference in its entirety (’394 patent at 1:7-12), discloses that the rollers may be positioned in the upper member with the track positioned in the lower member, or vice versa. See Exhibit 1007 at 17 (native page 8) (“While the previously-disclosed embodiments show the rollers associated with the trainer support, and the track/slot to be associated with the frame, the track and the rollers could be inverted. Stated differently, the track could be associated with the trainer support, and the rollers could be associated with the platform or platforms.”); See also Exhibit 1007 at 18-20 (native pages 9-11). Thus, while Papadopoulos’s disclosures with regard to its roller arrangement between the top frame 14 and bottom frame 32 is broad enough to encompass either configuration, Papadopoulos’s specific disclosure of an embodiment having “a bottom frame, which supports a set of base rollers that permits said top assembly to move back and forth on said bottom

frame” (Papadopoulos at claim 4; Papadopoulos Provisional at claim 3) discloses and renders obvious claim 26, because including the rollers in the bottom frame (and the track in the top frame) is within the scope of the claim.

148. In addition, even to the extent it were argued that attaching the rollers to the top frame and placing the track in the bottom frame is required by claim 26, this would have been obvious to a POSITA over Papadopoulos, because a POSITA would have appreciated that Papadopoulos’s horizontal movement would have been attainable under either arrangement interchangeably without harming this horizontal movement.

149. Thus, the combination of Zwinkels and Papadopoulos renders obvious “the support of claim 25, wherein the movable interconnection of the upper member comprises a roller and track arrangement interposed between the upper member and the lower member” as claimed.

E. Secondary Considerations of Non-obviousness.

150. I am not aware of any evidence of the existence of any secondary considerations of non-obviousness regarding the challenged claims. In the event patent owner asserts any such evidence, I reserve the right to address it.

IX. CONCLUSION

This declaration and my opinions herein are made to the best of my knowledge and understanding, and based on the material available to me, at the time of signing this declaration. I declare that all statements made herein on 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 or Title 18 of the United States Code.

Date: 08-26-2024

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Alan Coté