

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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LIFECORE FITNESS, INC. d/b/a  
ASSAULT FITNESS,

Petitioner,

v.

WOODWAY USA, INC.

Patent Owner.

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IPR2023-00836  
U.S. Patent No. 9,039,580

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**DECLARATION OF KIM B. BLAIR, Ph.D.**

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I, Kim B. Blair, declare as follows:

1. I am over twenty-one (21) years of age and have personal knowledge of the facts stated herein. I have been retained by Foley & Lardner LLP on behalf of Woodway USA, Inc. (“Patent Owner”) to provide my opinion on the issues raised by LifeCORE Fitness, Inc., d/b/a Assault Fitness (“Petitioner”) in a petition for *inter partes* review (“Petition”) of Claims 1-12, 14, 15, 18, and 25 of U.S. Patent No. 9,039,580 (“the ’580 Patent”) and the accompanying declaration of Robert Giachetti (EX1003).

**I. QUALIFICATIONS AND EXPERIENCE**

2. Enabling innovation at the intersection of technology and sports, I have extensive experience utilizing advanced technologies to enhance all aspects of the sporting experience. As the Founder of Sport Technology Innovation & Engineering (STI&E Consulting) and previously as Partnering Lead at Cooper Perkins, Inc., as a Senior Manager at Exponent, Inc., as the Vice President of Business Development and Operations and the Manager of the Sports Engineering Practice at Cooper Perkins, Inc., and as the Founding Director of the Sports Innovation Program at MIT (now MIT Sports Tech), I led the development of new products as well as technologies for sport performance analyses from early formulation of product concepts to final prototype design and testing.

3. Many of my projects have won awards, including MIT departmental awards, conference best paper awards, and international ispo Academic Challenge design awards.

4. My work has enjoyed extensive media coverage, including features in Forbes, The Boston Globe, Outside Magazine, and GQ, and programs by CNN, The NewsHour, The Discovery Channel, NPR, and local network affiliates.

5. I provide a wide variety of consulting services to the sports industry, including leading product development projects, conducting performance testing of existing and prototype products, and creating innovative concepts aimed at enhancing the experience for sports spectators.

6. In addition, as a member of the board of advisors for emerging companies, I provided expertise on business and strategic planning, technology assessment and development, strategic alliances, and raising capital.

7. A recognized expert in innovation and sport technology, I have spoken at the Lemelson Foundation, the Boston Museum of Science, IDEAS Boston 2004, the International Congress on Technological and Social Innovation in Sport (Spain), the University of Nebraska, Purdue University, the University of Illinois, Rutgers University, Rensselaer Polytechnic Institute, the University of London, Loughborough University (UK), the SGMA International Business Intelligence,

Tufts University, the MIT Center for Innovation and Product Development, and the Massachusetts Defense Lawyer's Association.

8. I have served as a technical advisor for the United States Olympic Committee, on the advisory board for the SGMA Sport + Technology Convergence Conference, and as a member of the Golf Digest Academic Advisory Panel.

9. Prior to my work at Exponent, founding STI&E, and my work with Cooper Perkins, I was the President and Founder of Sports Innovation Group LLC, and a lecturer in the MIT Aeronautics and Astronautics Department, serving as the lead instructor for a capstone experimental projects course, co-developer of a junior level advanced dynamics course, and instructor in a graduate structural dynamics and vibrations course.

10. Previously, I was a senior scientist and management team member at Moldyn, Inc., an organization applying aerospace analysis techniques to the fields of biomechanics and computational chemistry. I also served as an aerospace engineer at the NASA Johnson Space Center.

11. My professional affiliations include previously serving as Secretary, President, and Past-President and Senior Advisor of the International Sports Engineering Association. I received an Outstanding Service Award for recognition of my contributions to the society while serving as President from 2010-2014. In 2022, I was elected as a Fellow of the ISEA, in recognition for exemplary career

achievements in academia and industry. I have served as a member of the editorial board for the Journal of Sports Engineering and Technology and am currently a reviewer for the Journal of Sports Engineering.

12. I have served on the scientific committees for several editions of The Engineering of Sport Conference and the Asia Pacific Conference on Sports Technology. In addition, I have served as a Session Chair for the 11th International Conference on Engineering of Sport. I was the co-chair of the 2022 ISEA Engineering of Sport Conference.

13. I am also a lead user of sports and fitness products having trained for and competed in more than 100 endurance events, including the US National Triathlon Championships, World Triathlon Championship Qualifier, the Hawaii Ironman World Championships, and Ironman Austria. I am the past president and board member of Team Psycho, a New England-based elite triathlon team. I currently train and occasionally race with The Rippers and K.I.T, two Boston based cycling clubs.

14. Born and raised in Nebraska, I earned a BA in Psychology and a BS in Mechanical Engineering at the University of Nebraska. At Purdue University, I earned a MS in Mechanical Engineering and a PhD in Aeronautics and Astronautics. In 2005, the University of Nebraska awarded me an Alumni Achievement Award.

15. Since April 2021, I have been employed by Re:Build Manufacturing as Vice President of Business Development. Re:Build leverages a deep expertise in engineering, operations management, and technology to supercharge performance of its companies by implementing core technologies across industrial platforms in diversified growth markets. While Re:Build serves multiple industry sectors, we innovate new manufacturing processes for the re-shoring of sports products manufacturing.

16. In addition, I continue to provide consulting services as STI&E Consulting, including new product development, performance testing of existing and prototype products, and expert witness services on patent litigation cases.

17. Of particular relevance to this case, I have contributed to the design and development of fitness equipment such as the KoKo Smartrainer, I am a co-inventor of a wearable device for assessing running form (U.S. Patent No. 9,642,415), and I have served as an expert witness on a number of patent litigation cases related to sports equipment, most recently four cases involving treadmills. Over the years, I have attended a number of trade shows that feature fitness equipment including the SGMA Super Show, Club Industry East, Interbike, and ispo.

18. I am generally familiar with patents and review patent disclosures regularly.



19. I understand that my curriculum vitae is being submitted in this matter as Exhibit 2019. It includes a listing of all publications I have authored or co-authored during my career.

## **II. MATERIALS CONSIDERED**

20. All of the opinions contained in this declaration are based on the documents I have reviewed and my professional judgment, as well as my education, experience, and professional knowledge. I am not an attorney, and I am not offering any legal opinions in this declaration.

21. In forming the opinions expressed in this declaration, I relied upon my education, knowledge, and experience in the relevant field of the art, and have considered the viewpoint of a person having ordinary skill in the relevant art (“POSA”). I have considered the materials referenced herein, including the ’580 Patent (EX1001), the file history of the ’580 Patent (EX1002), and the prior art references and other documents listed in the table below. Each of these documents is a type of document that an expert in my field would have reasonably relied upon when forming his/her opinion.

<b>Exhibit</b>	<b>Description</b>
1003	Declaration of Robert Giachetti
1004	Curriculum vitae of Robert Giachetti
1008	U.S. Patent No. 641,424 to Ziebell (“Ziebell”)
1009	U.S. Patent No. 1,211,765 to Schmidt (“Schmidt”)
1010	U.S. Patent No. 4,614,337 to Schonenberger (“Schoenenberger”)

<b>Exhibit</b>	<b>Description</b>
1011	U.S. Patent No. 5,897,461 to Socwell (“Socwell”)
1012	U.S. Patent No. 5,538,489 to Magid (“Magid”)
1013	U.S. Patent No. 3,637,206 to Chickering (“Chickering”)
1014	U.S. Patent No. 3,642,279 to Cutter (“Cutter”)
1015	U.S. Patent No. 6,042,514 to Abelbeck (“Abelbeck”)
1016	Power Transmission Handbook, (Power Transmission Distributors Association 1993) (“PT Handbook”)
1017	Petitioner’s Excerpts from Neil Sclater and Nicholas P. Chironis, Mechanisms & Mechanical Devices Sourcebook, Third Ed., (McGraw-Hill 2001) (“Sclater”)
1018	Mechanical Clutches and Torque Overload Devices, (Emerson Industrial Automation, 2001) (“Emerson”)
1019	Standard Specification for Motorized Treadmills, (ASTM, 2005) (“ASTM Standard”)
1020	Stationary Training Equipment – Part 6: Treadmills, additional specific safety requirements and test methods. (ISO, 2005) (“ISO Standard”)
1033	Claim Construction Order Woodway USA, Inc., v. LifeCORE Fitness, Inc. d/b/a Assault Fitness No. 3:22-cv-00492-JO-BLM, Dkt. No. 59, Southern District of California, November 14, 2023
2020	Declaration of Eric A. Weber
2021	Additional Excerpts from Neil Sclater and Nicholas P. Chironis, Mechanisms & Mechanical Devices Sourcebook, Third Ed., (McGraw-Hill 2001) (“Sclater”)
2022	January 10, 2024 Deposition Transcript of Robert Giachetti (IPR2023-00836, U.S. Patent No. 9,039,580)
2023	January 10, 2024 Deposition Transcript of Robert Giachetti (IPR2023-00849, U.S. Patent No. 10,799,745)
2024	January 9, 2024 Deposition Transcript of Robert Giachetti (IPR2023-00843, U.S. Patent No. 10,561,884)
2028	Woodway Non-Motorized Treadmills User Manual

<b>Exhibit</b>	<b>Description</b>
2029	Altra Industrial Motion Product Brochure

22. My opinions are additionally guided by my appreciation and understanding of how a POSA would have understood the claims of the '580 Patent at the time of the alleged invention of the patent, March 17, 2009.

### **III. UNDERSTANDING OF LEGAL STANDARDS**

23. I am not an attorney. Counsel for Patent Owner has provided the following legal standards, which I have considered in the analysis presented in this declaration.

#### **A. Burden of Proof**

24. I understand that Petitioner has the burden of proving the unpatentability of the challenged patent claim by a preponderance of the evidence.

#### **B. Claim Construction**

25. I understand that a claim must be construed under the *Phillips* standard. Under that standard, words of a claim are given their plain and ordinary meaning as understood by a POSA at the time of the earliest effective filing date of the application, in light of the specification and prosecution history, as well as pertinent evidence extrinsic to the patent. I understand that the United States District Court for the Southern District of California issued a Claim Construction Order relating to the '580 Patent (EX1033), and I apply such constructions as appropriate. Otherwise, for purposes of this declaration, I applied the plain and ordinary meaning of each

term as would have been understood by a POSA at the time of the alleged invention unless explicitly stated otherwise.

### **C. Obviousness**

26. I understand that a patent claim is unpatentable as obvious if it would have been obvious to a POSA at the time the application was filed. This means that, even if all of the elements of a claim are not found in a single prior art reference, the claim is not patentable if the differences between the subject matter in the prior art and the subject matter in the claim are such that the claimed invention as a whole would have been obvious to a POSA at the time the application was filed. When determining whether a claim is obvious, I understand that it is important to consider a prior reference as a whole, including portions that teach away from the claimed invention. For a claim to be obvious, there must be a clearly articulated reason why a POSA would have understood the claimed invention to have been obvious in view of the cited reference(s).

27. I further understand that a determination of whether a claim would have been obvious must consider several factors, including, among others:

- the level of ordinary skill in the art at the time the application was filed;
- the scope and content of the prior art; and

- what differences, if any, existed between the claimed invention and the prior art.

28. I understand that the teachings of two or more references may be combined to render a claim unpatentable, if such a combination would have been obvious to a POSA. In determining whether a combination based on either a single reference or multiple references would have been obvious, it is appropriate to consider at least the following factors:

- whether the teachings of the prior art references disclose known concepts combined in familiar ways, which, when combined, would yield predictable results;
- whether a POSA could have implemented a predictable variation, and would have seen the benefit of doing so;
- whether the claimed elements represent one of a limited number of known design choices, and he would have a reasonable expectation of success of implementing such design choices by a POSA;
- whether a POSA would have recognized a reason to combine known elements in the manner described in the claim;

- whether there is some teaching or suggestion in the prior art to make the modification or combination of elements recited in the claim; and
- whether the claimed invention applies a known technique that had been used to improve a similar device or method in a similar way.

29. I understand that a POSA has ordinary creativity and is not an automaton.

30. I understand that in considering obviousness, it is important not to determine obviousness using the benefit of hindsight derived from the patent being considered, and I have not done that in regards to my opinions expressed herein.

31. I understand that certain factors—often called “secondary considerations”—may support or rebut an assertion of obviousness of a claim. I understand that such secondary considerations include, among other things, commercial success of the alleged invention, skepticism of those having ordinary skill in the art at the time of the alleged invention, unexpected results of the alleged invention, any long-felt but unsolved need in the art that was satisfied by the alleged invention, the failure of others to make the alleged invention, praise of the alleged invention by those having ordinary skill in the art, and copying of the alleged invention by others in the field. I further understand that there must be a nexus—a

connection—between any such secondary considerations and the alleged invention. I also understand that contemporaneous and independent invention by others is a secondary consideration tending to show obviousness.

#### **IV. BACKGROUND AND OVERVIEW OF THE '580 PATENT**

32. While the concept of a manual treadmill has been in the public domain for centuries,<sup>1</sup> one of the problems that had never been solved was how to handle the unpredictable movement of the running belt, particularly when the running surface is curved.

33. A critical challenge with a curved, motorless treadmill is to ensure the safety of the user. When a curved, motorless treadmill is being used as intended, it requires free rolling of the running belt. However, when a user is trying to mount or dismount, the running belt can move in the forward and backward direction. Because it is common for a user to enter the treadmill from the rear, when a user steps on the rear of the treadmill, the user's weight may cause the belt to unexpectedly rotate forward (the reverse of the normal operating direction of the running belt).

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<sup>1</sup><http://www.attendly.com/the-ancient-and-surprising-history-of-the-treadmill>

(noting that manual treadmills have been in existence since at least the 1st century AD, when Roman engineers fitted the Polyspastos Crane with a human powered tread wheel).

Depending on how quickly and where the user mounts the treadmill, the running belt may move in the forward or backward direction, creating an extreme safety hazard. The unpredictable belt movement may startle the user, create a temporary feeling of loss of control, or even cause a user to fall.

34. The '580 Patent describes design improvements and novel safety enhancements to a curved, manually operated treadmill.

35. The '580 Patent, titled "Manual treadmill and methods of operating the same," issued from Application No. 14/656,942, filed on March 13, 2015. The '580 Patent claims priority to Provisional Application No. 61/161,027, filed on March 17, 2009, which is the earliest potential filing date.

36. The '580 Patent is directed to a "manually operated treadmill." EX1001 at Abstract. Structurally, the treadmill described in the '580 Patent includes:

a treadmill frame, a front shaft rotatably coupled to the treadmill frame, a rear shaft rotatably coupled to the treadmill frame, a running belt including a contoured running surface upon which a user of the treadmill may run, wherein the running belt is disposed about the front and rear shafts such that force generated by the user causes rotation of the front shaft and the rear shaft and also causes the running belt to rotate about the front shaft and the rear shaft without the rotation of the running belt being generated by a motor, and a one-way bearing assembly configured to prevent rotation of the running surface of the running belt in one direction.

*Id.*



37. The '580 Patent has four independent claims, only three of which are challenged in the Petition—Claims 1, 11, and 25. Independent Claim 1 recites as follows:

1. A manually powered treadmill comprising:

a frame having a front end and a rear end positioned opposite the front end;

a front shaft rotatably coupled to the frame at the front end;

a rear shaft rotatably coupled to the frame at the rear end;

a first bearing rail having a plurality of bearings, the first bearing rail attached to a left side of the frame;

a second bearing rail having a plurality of bearings, the second bearing rail attached to a right side of the frame;

a running belt supported by the first bearing rail and the second bearing rail and disposed about the front shaft and the rear shaft, wherein the running belt follows a curved running surface; and

a safety device coupled to at least one of the front shaft and the rear shaft, wherein the safety device is structured to substantially prevent rotation of at least one of the front shaft and the rear shaft in a first rotational direction while permitting rotation of the at least one of the front shaft and the rear shaft in a second rotational direction opposite the first rotational direction.

38. Independent Claim 11 recites as follows:

11. A manually powered treadmill, comprising:

a frame having a front end and a rear end positioned opposite the front end;

a front shaft attached to the frame adjacent the front end;

a rear shaft attached to the frame adjacent the rear end;

a first bearing rail having a plurality of bearings, the first bearing rail attached to a left side of the frame;

a second bearing rail having a plurality of bearings, the second bearing rail attached to a right side of the frame;

a running belt at least partially disposed about the front shaft and the rear shaft and at least partially supported by the first bearing rail and the second bearing rail, wherein the running belt includes a front belt portion proximate the front end, a rear belt portion proximate the rear end, and a central belt portion intermediate the front and rear belt portions, wherein the central belt portion is positioned vertically closer to a ground surface supporting the frame than the front and rear belt portions such that the running belt follows a curved running surface; and

a safety device for substantially preventing rotation of at least one of the front shaft and the rear shaft in a first rotational direction while permitting rotation of the at least one of the front shaft and the rear shaft in a second rotational direction opposite the first rotational direction.

39. Independent Claim 25 recites as follows:

25. A method, comprising:

providing a manually powered treadmill, the manually powered treadmill having a frame with a front end and rear end;

providing a first bearing rail and a second bearing rail, the first and second bearing rails each comprising a plurality of bearings and extending longitudinally on the frame, wherein the first and second bearing rails define a curved top profile;

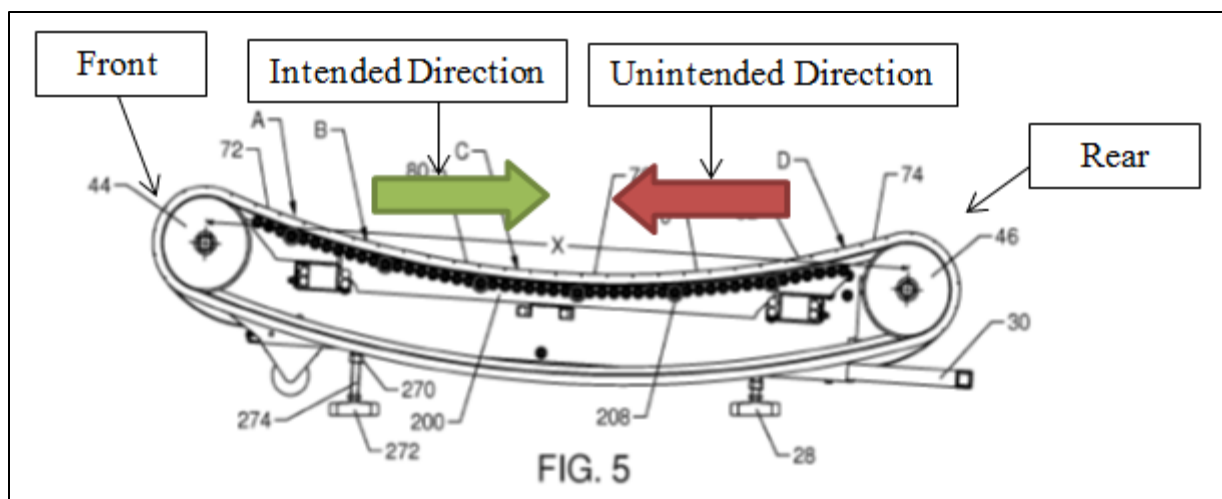
disposing a running belt on the plurality of bearings of the first bearing rail and the second bearing rail such that the running belt follows a top curved running surface corresponding to the curved top profile of the first and second bearing rails;

permitting movement of the running belt in a first direction; and

substantially preventing movement of the running belt in a second direction opposite the first direction.

40. As indicated, the '580 Patent claims a curved, manual treadmill that, among other things, requires “a safety device” that is coupled to at least one of the front shaft or the rear shaft and prevents the running belt from moving in unintended directions.

41. The phrases “intended direction” and “unintended direction” are used throughout this report to refer to a directional movement of the running surface of the treadmill belt, where “intended direction” means an expected directional movement of the running surface of the treadmill belt and “unintended direction” means an unexpected directional movement of the running surface of the treadmill belt. This is illustrated in more detail with respect to annotated Figure 5 of the '580 Patent. The red and green arrows indicate the direction of movement of the upper surface, defined as the “running surface”, of the treadmill belt.



EX1001, Fig. 5 (annotations added).




42. With reference to this annotated Figure 5, the “Front” refers to the portion of the treadmill that the user faces when walking or running, in the conventional, forward motion, or otherwise using the treadmill. The “Front” may include a display device that depicts information relating to usage of the treadmill. When a user is utilizing the treadmill in a normal operating mode, the treadmill belt rotates in an “intended direction,” which is clockwise as seen in Figure 5, and which correlates to movement of the running surface in the direction of the green arrow as annotated in Figure 5 above.

43. As I previously discussed, curved, manual treadmills create a unique safety hazard for a user. Because it is common for a user to enter or mount the treadmill from the rear of the unit, when a user steps on the rear of the treadmill, the user’s weight may cause the running surface of the running belt to unexpectedly move toward the front of the unit (which is the reverse of the normal operating

direction of the running surface). This is shown above in Figure 5, as and referred to herein as the “unintended direction.” Depending on how quickly and where a user mounts the treadmill, the running surface may move in the unintended direction and create a potential safety hazard. The unpredictable and unexpected running surface movement may startle the user, create a temporary feeling of loss of control, or even cause the user to fall.

44. Woodway has been manufacturing and selling its non-motorized line of CURVE treadmills, which, as I discuss in more detail below, embody certain of the claimed inventions of the '580 Patent, since 2009.

45. Since the 2009 launch, Woodway has introduced various models and sizes in this product line, including the following:

<b>Woodway's Innovative CURVE Treadmills</b>		
		
<b>CURVE Treadmill</b>	<b>CURVE Trainer Treadmill</b>	<b>CURVE XL Treadmill</b>

**V. OVERVIEW OF PRIMARY PRIOR ART REFERENCES RELIED ON BY THE PETITIONER**

46. Before providing a detailed analysis of how the prior art fails to render the Challenged Claims unpatentable, I provide a brief summary of Petitioner's asserted prior art references.

**A. Overview of Chickering (EX1013)**

47. U.S. Patent No. 3,637,206 to Chickering ("Chickering") is titled "Endless belt exerciser with accelerating and decelerating tread surfaces" and issued on January 25, 1972, from Application No. 19,792, which was filed on March 16, 1970. EX1013 at 1. Chickering is directed to a "treadmill exercising device, and more particularly to an exercising device on which the user can simulate the acts of walking, jogging and running without relying on handles, belts or other external supports for maintaining his balance." *Id.* at 1:3-7.

48. The actual description of Chickering's disclosed treadmill, however, is very short. Excluding the claims themselves, the written text of the specification spans less than three columns. *See id.* at 1:1-3:47.

49. Chickering's limited description describes the treadmill as having a "tread surface [that] inclines upward toward each end to provide a forward accelerating area and a rear decelerating area." *Id.* at Abstract. This is accomplished in one of two ways. Primarily, Chickering describes using two separate series of transverse parallel rollers, each having a separate endless belt to provide two

separate tread surfaces. *Id.* at 2:13-21. The first series of transverse rollers are inclined downwardly from the front of the treadmill to form an accelerating area, while the second series of transverse rollers are inclined upwardly towards the rear of the treadmill to form a decelerating area, which “offers enough resistance to the user’s foot to enable him to maintain his balance and position on the exercising device.” *Id.* at 2:31-39.

50. Chickering also discloses an alternative device having a single endless belt, as described below:

An alternate form of the exercising device of the present invention is shown in FIG. 3, wherein a single endless belt 28 forms both the accelerating and decelerating areas. In the device shown in FIG. 3, a single series of rollers 29 are provided journaled in the sidewalls 22 of base 10. However, **the rollers are so disposed that the forward rollers lie approximately in a plane slanting downwardly from the front of the base, while the rear rollers lie approximately in a plane slanting upward toward the rear of the base 10.** Thus, when the endless belt 28 is placed about the rollers, it follows their contour and provides a forward accelerating area and a rear decelerating area which are inclined from the horizontal with each being lowest at their point of nearest proximity.

*Id.* at 2:73-3:10 (emphasis added).

51. Thus, a POSA would understand both embodiments of Chickering to disclose a treadmill with a dual-plane or multi-planar running surface. That is, Chickering discloses a treadmill with two flat running surfaces – one inclining

downward from the front of the treadmill and one inclining upward toward the rear of the device.

**B. Overview of Socwell (EX1011)**

52. U.S. Patent No. 5,897,461 to Socwell (“Socwell”) is titled “Exercise treadmill” and issued on April 27, 1999, from Application No. 09/009,582, which was filed on January 20, 1998. EX1011 at 1. Socwell is directed to a “curved deck treadmill...comprising a support frame (12) having a first side (20) and a second opposing side (22) for supporting a deck (56) therebetween,” as well as various other features. *Id.* at Abstract.

53. When discussing the prior art, Socwell states as follows:

Additionally, exercise treadmills of the prior art may furnish a user with an upright handle to grasp while exercising. While somewhat useful in retaining the user's balance on the rotating endless belt, having to grasp a fixed handle may impede the natural body motion of a user attempting to exercise. Such an encumbrance may be feasible when a user is attempting to walk, but when a user begins to jog or run on prior art exercise treadmills, having to grasp a handle to keep centered on the treadmill may severely interfere with one's natural body motion and further abdicate the inherent physical advantages of the exercise routine.

*Id.* at 2:56-67.

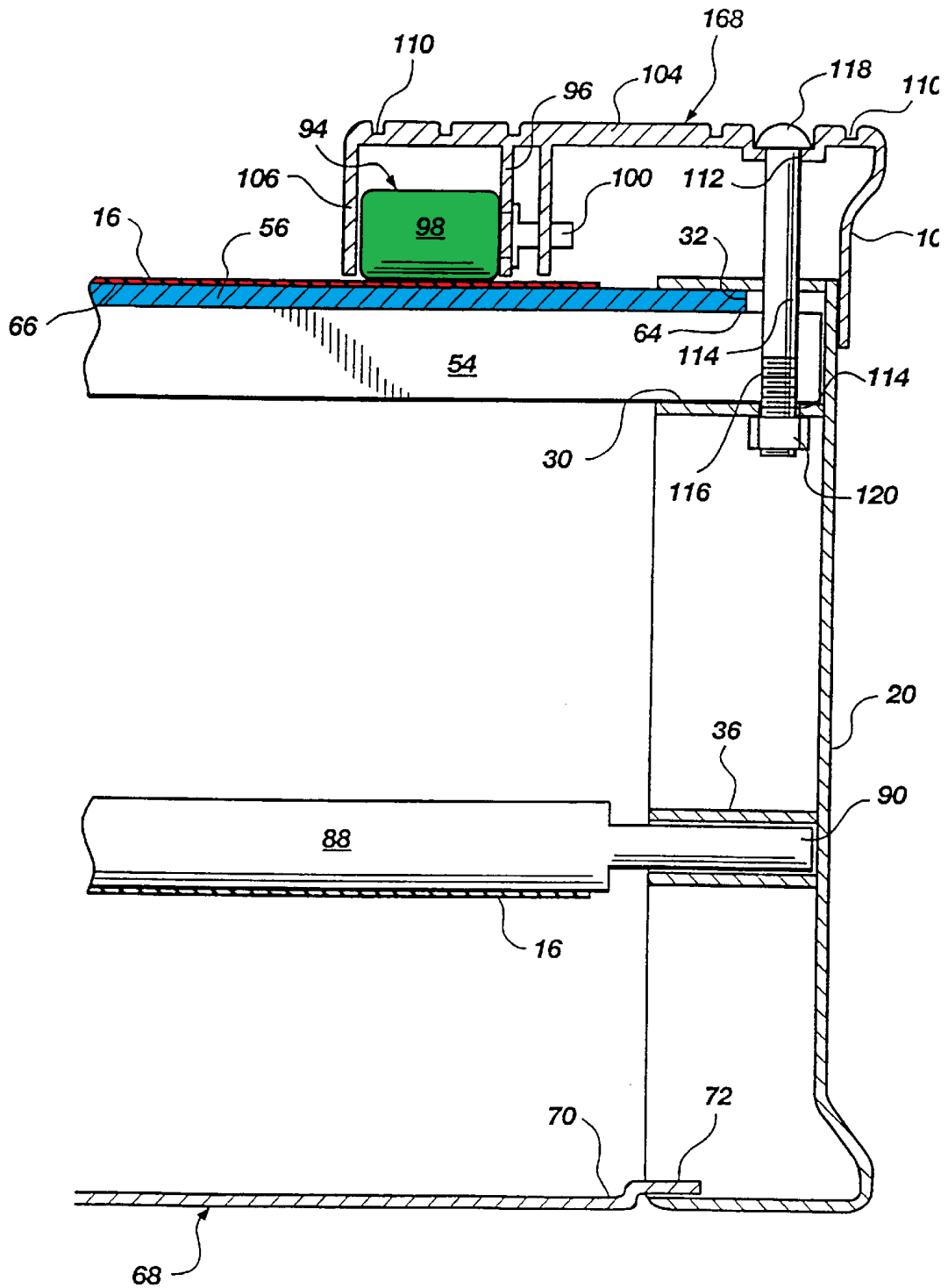
54. Socwell therefore teaches that, among other things, certain objects to the claimed invention is to provide a “curved deck treadmill which provides a structurally supported arcuate shaped, movable surface on which a user may



exercise” and “which substantially prevents a user from falling off the back of the treadmill and whereby serving to keep the user centered on the upper surface of the treadmill without encumbering the natural body motion of the user exercising thereon.” *Id.* at 3:26-29.

55. Socwell teaches that the safety features of its treadmill derive from the curved shape of its running surface, which “substantially prevents a user from falling off the back of the treadmill and...serves to keep the user centered on the upper surface of the rotating belt without encumbering the natural body motion of the user exercising thereon.” *Id.* at 13:20-31.

56. Socwell teaches that the curved shape of its running belt is maintained through the use of “one or more belt securing assemblies 94 which provide a means for retaining the endless belt 16 in a curvilinear configuration being substantially flush with the upper surface 66 of the deck 56.” *Id.* at 10:5-9. Each belt securing assembly 94 “comprises a roller 98 having an axle 100 which rotatably engages a mounting bracket 96. The mounting bracket 96 is preferably disposed in relation to the roller 98 such that the roller 98 may engage the belt 16, thereby substantially retaining a side portion of the belt 16 substantially flush with the deck 56. that include rollers 98 positioned above the running belt.” *Id.* at 10:17-23. As seen in Socwell’s Figure 5, below, this configuration places the rollers 98 (green) above the belt 16 (red) and the deck 56 (blue):



*Fig. 5*

*Id.* at Fig. 5 (annotations added).

### **C. Overview of Magid (EX1012)**

57. U.S. Patent No. 5,538,489 to Magid (“Magid”) is titled “Walker apparatus with left and right foot belts” and issued on July 23, 1996, from Application No. 276,996, which was filed on July 19, 1994. EX1012 at 1. Magid is directed to a “walker apparatus compris[ing] a base, a pair of front rollers, a pair of rear rollers, endless left and right foot belts, and a support means.” *Id.* at 1:65-67.

58. Magid discloses that, unlike the prior art, its design is intended to be used “by people with uncoordinated feet movements, such as small children, physically handicapped people and old people.” *Id.* at 1:30-34 (distinguishing prior art). Thus, Magid also teaches that each of its embodiments is to be used either “in hospitals or retirement homes” or as a “baby stroller” or “baby chair.” *Id.* at 5:56-62, 6:9-11, 6:17-19, Figs. 5-7.

59. To accomplish this goal, Magid teaches “a walker apparatus with left and right foot belts that move independently and that are to be treaded respectively by the left and right feet of the user, thereby preventing the action of the user's left foot from influencing the action of his right foot and vice-versa when the walker apparatus is in use.” *Id.* at 1:46-52.

60. To prevent the left and right foot belts from moving in opposite directions while the device is in use, Magid teaches that “[a] unidirectional control means 6, 6' is installed to permit only unidirectional movement of the left and right

foot belts 4, 4',” with the control means including “a pair of ratchet gears 61 attached to outer ends of the front rollers 41 and mounted rotatably on the first shaft 411, and a pair of pawls 62 secured to the base 11 and engaging one of the ratchet gears 61 to permit only unidirectional rotation of the front rollers 41, thereby preventing bidirectional movement of the foot belts 4, 4'.” *Id.* at 4:46-55.

61. Magid also teaches that the walker apparatus “may be used with the functional supporting frame of an exercise walker, the latter having an adjustable hand bar for use by small children, physically handicapped people, old people and by those who feel more confident holding onto something while exercising.”

62. Collectively, the various embodiments of Magid’s claimed invention can be observed in Figures 2 and 5-7, provided below:

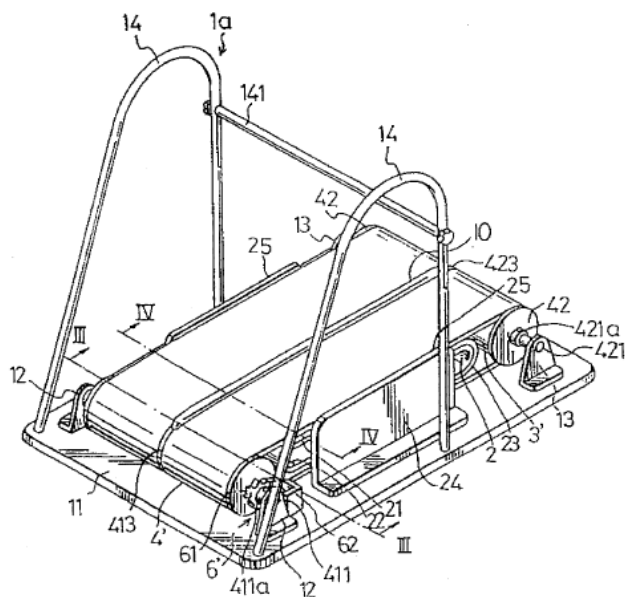


FIG. 2

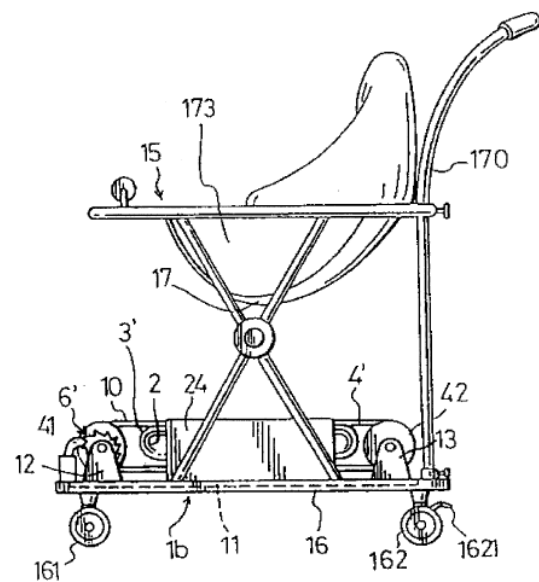


FIG. 5

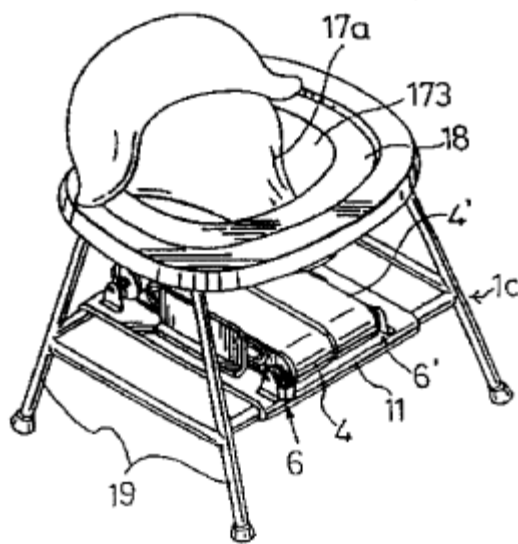


FIG. 6

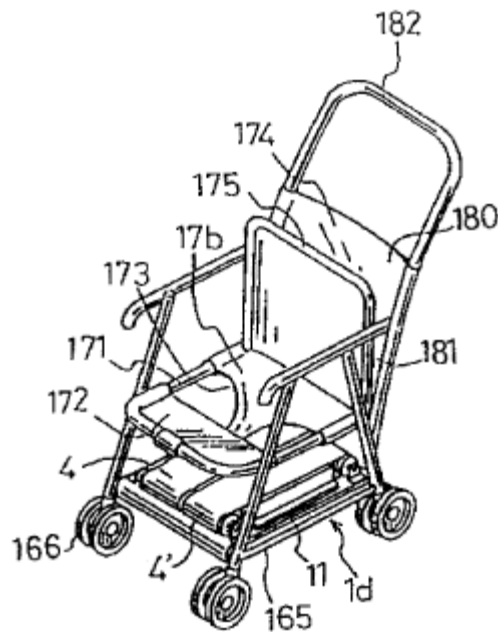


FIG. 7

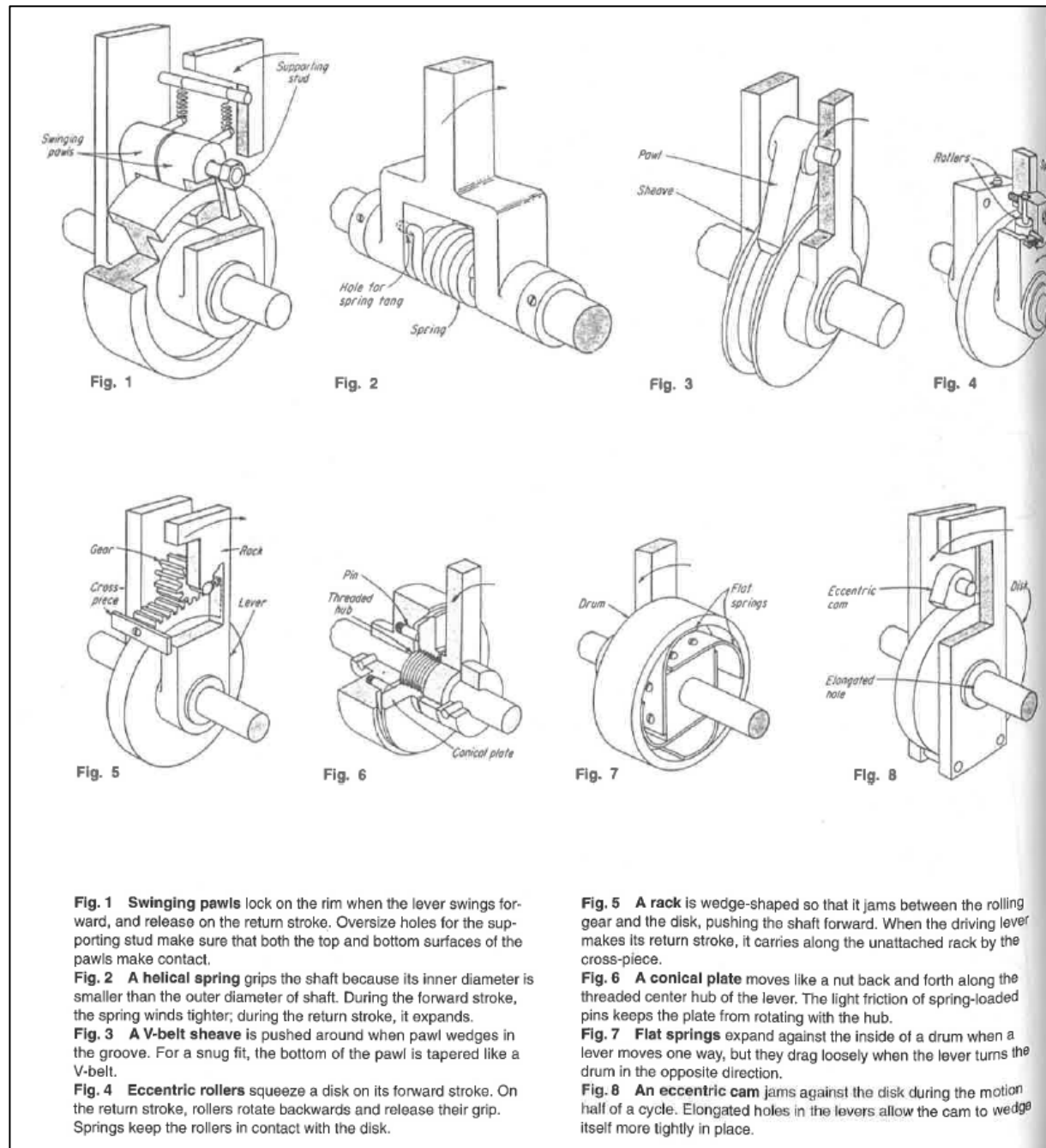
Id. at Figs. 2, 5-7.

#### D. Overview of Sclater (EX1017)

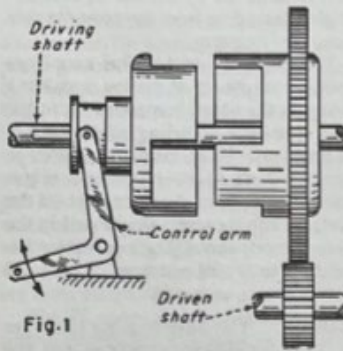
63. Neil Sclater and Nicholas P. Chironis, *Mechanisms & Mechanical Devices Sourcebook* (3d ed. 2001) (“Sclater”) is a generic engineering reference book, excerpts of which Petitioner has submitted as Exhibit 1017. I understand that additional excerpts of Sclater are being submitted by Patent Owner as Exhibit 2021.

64. Sclater “contains drawings and descriptions of more than 2000 different mechanisms and mechanical devices that have proven themselves in modern products, machines, and systems.” EX1017 at 24. Among these mechanisms and devices are a number of different mechanical clutches and components of

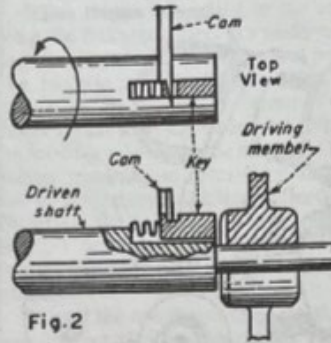
mechanical clutches, some of which are depicted in Petitioner's Exhibit 1017 and Patent Owner's Exhibit 2021. These include, for example, the following:



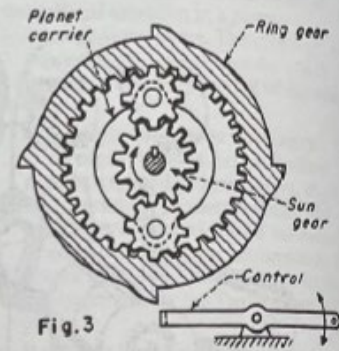
EX2021 at 124.



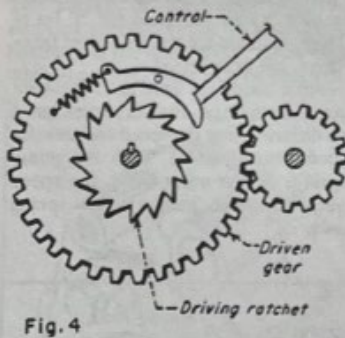
**Fig. 1 Jaw Clutch:** The left sliding half of this clutch is feathered to the driving shaft while the right half rotates freely. The control arm activates the sliding half to engage or disengage the drive. However, this simple, strong clutch is subject to high shock during engagement and the sliding half exhibits high inertia. Moreover, engagement requires long axial motion.



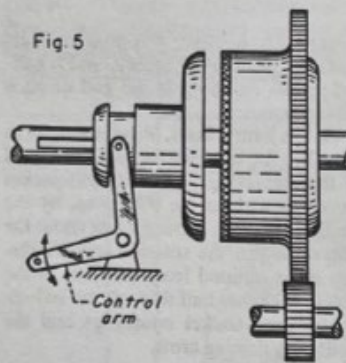
**Fig. 2 Sliding Key Clutch:** The driven shaft with a keyway carries the freely rotating member with radial slots along its hub. The sliding key is spring-loaded but is restrained from the engaging slots by the control cam. To engage the clutch, the control cam is raised and the



**Fig. 3 Planetary Transmission Clutch:** In the disengaged position shown, the driving sun gear causes the free-wheeling ring gear to idle counter-clockwise while the driven planet carrier remains motionless. If the control arm blocks ring gear motion, a positive clockwise drive to the driven planet carrier is established.



**Fig. 4 Pawl and Ratchet Clutch: (External Control)** The driving ratchet of this clutch is keyed to the driving shaft, and the pawl is pinned to the driven gear which can rotate freely on the driving shaft. When the control arm is raised, the spring pulls in the pawl to engage the ratchet and drive the gear. To disengage the clutch the control arm is lowered so that driven gear motion will disengage the pawl and stop the driven assembly against the control member.



**Fig. 5 Plate Clutch:** The plate clutch transmits power through the friction developed between the mating plate faces. The left sliding

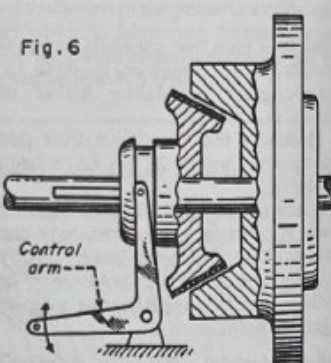
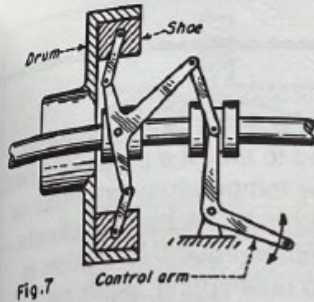


plate is fitted with a feather key, and the right plate member is free to rotate on the shaft. Clutch torque capacity depends on the axial force exerted by the control half when it engages the sliding half.

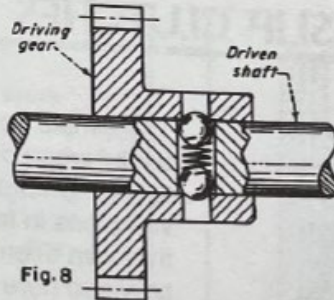
**Fig. 6 Cone Clutch:** The cone clutch, like the plate clutch, requires axial movement for engagement, but less axial force is required because of the increased friction between mating cones. Friction material is usually applied to only one of the mating conical surfaces. The free member is mounted to resist axial thrust.

EX1017 at 302.

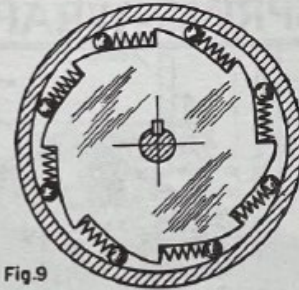




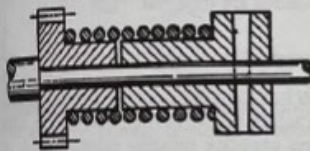
**Fig. 7 Expanding Shoe Clutch:** This clutch is engaged by the motion of the control arm. It operates linkages that force the friction shoes radially outwards so that they contact the inside surface of the drum.



**Fig. 8 Spring and Ball Radial Detent Clutch:** This clutch will hold the driving gear and driven gear in a set timing relationship until the torque becomes excessive. At that time the balls will be forced inward against their springs and out of engagement with the holes in the hub. As a result the driving gear will continue rotating while the drive shaft is stationary.

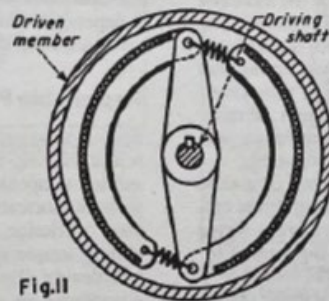


**Fig. 9 Cam and Roller Clutch:** This over-running clutch is better suited for higher-speed free-wheeling than a pawl-and-ratchet clutch. The inner driving member has cam surfaces on its outer rim that hold light springs that force the rollers to wedge between the cam surfaces and the inner cylindrical face of the driven member. While driving, friction rather than springs force the rollers to wedge tightly between the members to provide positive clockwise drive. The springs ensure fast clutching action. If the driven member should begin to run ahead of the driver, friction will force the rollers out of their tightly wedged positions and the clutch will slip.



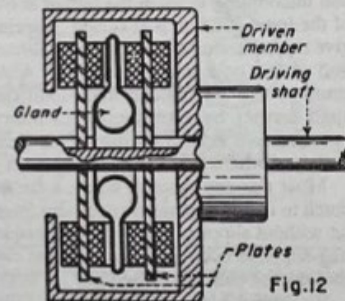
**Fig. 10**

**Fig. 10 Wrapped Spring Clutch:** This simple unidirectional clutch consists of two rotating hubs connected by a coil spring that is pre-tensioned over both hubs. In the driving direction the spring tightens around the hubs increasing the friction grip, but if driven in the opposite direction the spring unwinds causing the clutch to slip.



**Fig. 11**

**Fig. 11 Expanding Shoe Centrifugal Clutch:** This clutch performs in a similar manner to the clutch shown in Fig. 7 except that there is no external control. Two friction shoes, attached to the driving member, are held inward by springs until they reach the "clutch-in" speed.



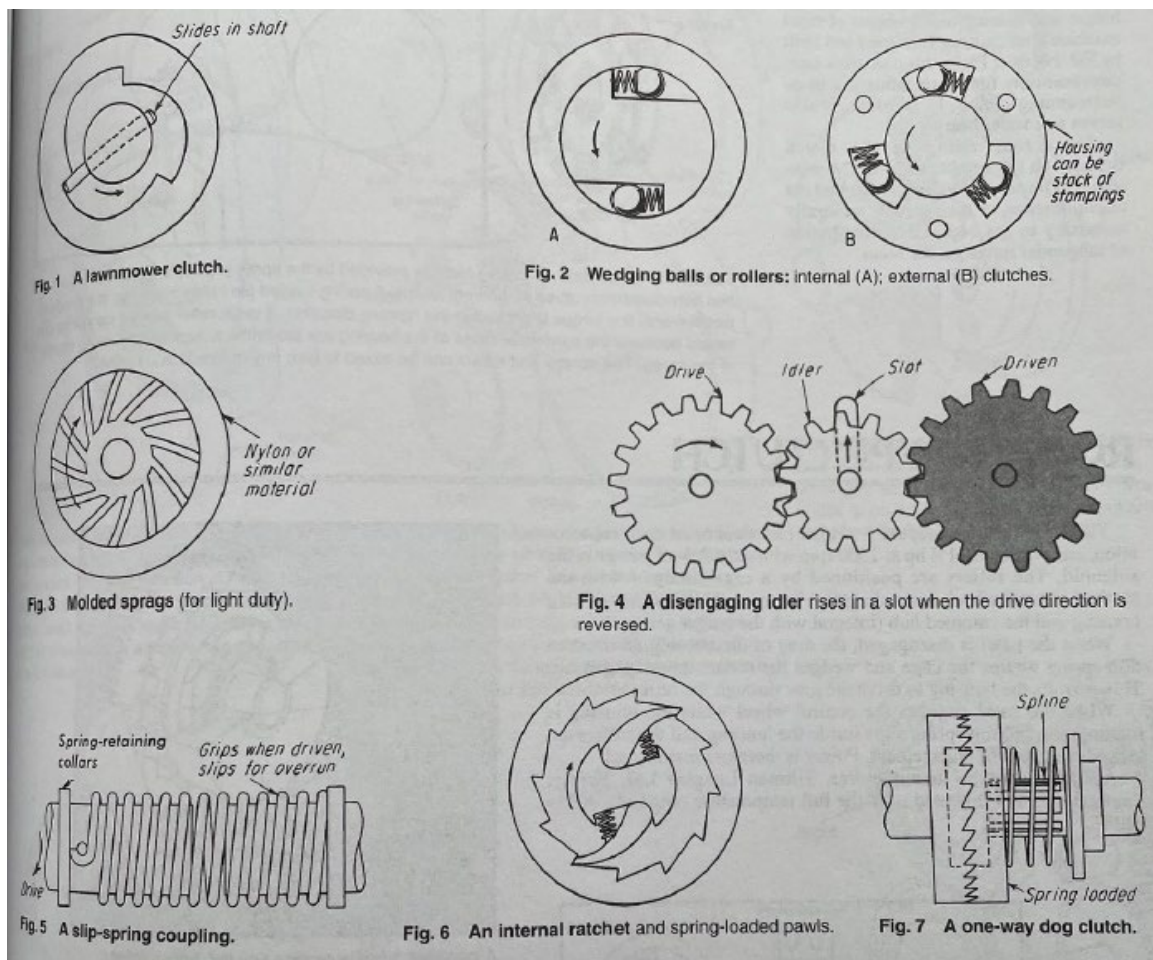
**Fig. 12**

At that speed centrifugal force drives the shoes outward into contact with the drum. As the drive shaft rotates faster, pressure between the shoes against the drum increases, thus increasing clutch torque.

**Fig. 12 Mercury Gland Clutch:** This clutch contains two friction plates and a mercury-filled rubber bladder. At rest, mercury fills a ring-shaped cavity around the shaft, but when rotated at a sufficiently high speed, the mercury is forced outward by centrifugal force. The mercury then spreads the rubber bladder axially, forcing the friction plates into contact with the opposing faces of the housing to drive it.

*Id.* at 303.





*Id.* at 311.

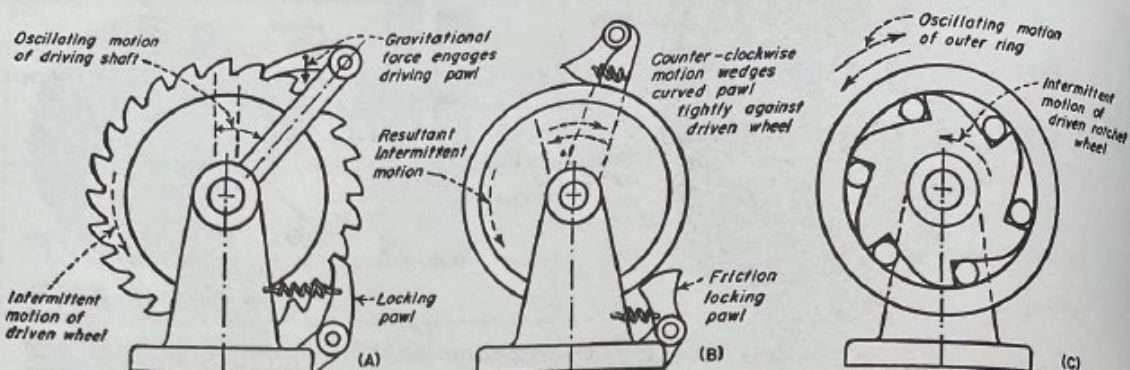


Fig. 1 Elementary overriding clutches: (A) A ratchet and pawl mechanism converts reciprocating or oscillating movement to intermittent rotary motion. This motion is positive but limited to a multiple of the tooth pitch. (B) A friction-type clutch is quieter, but it requires a

spring device to keep the eccentric pawl in constant engagement. (C) Balls or rollers replace the pawls in this device. Motion of the outer race wedges the rollers against the inclined surfaces of the ratchet wheel.

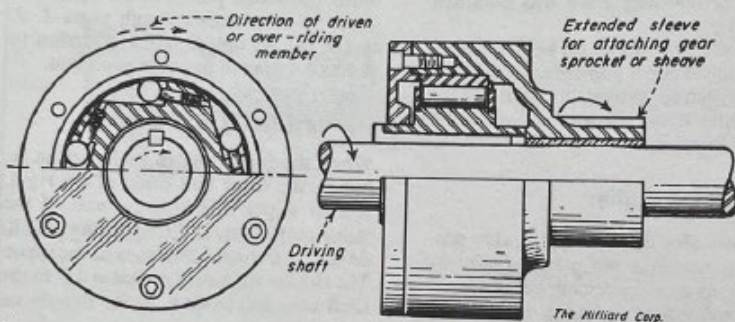


Fig. 2 A commercial overriding clutch has springs that hold the rollers in continuous contact between the cam surfaces and the outer race; thus, there is no backlash or lost motion. This simple design is positive and quiet. For operation in the opposite direction, the roller mechanism can easily be reversed in the housing.

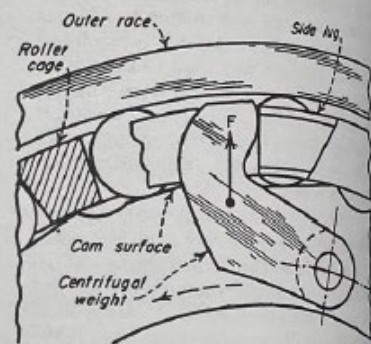


Fig. 3 A centrifugal force can hold the rollers in contact with the cam and outer race. A force is exerted on the lugs of the cage that controls the position of the rollers.

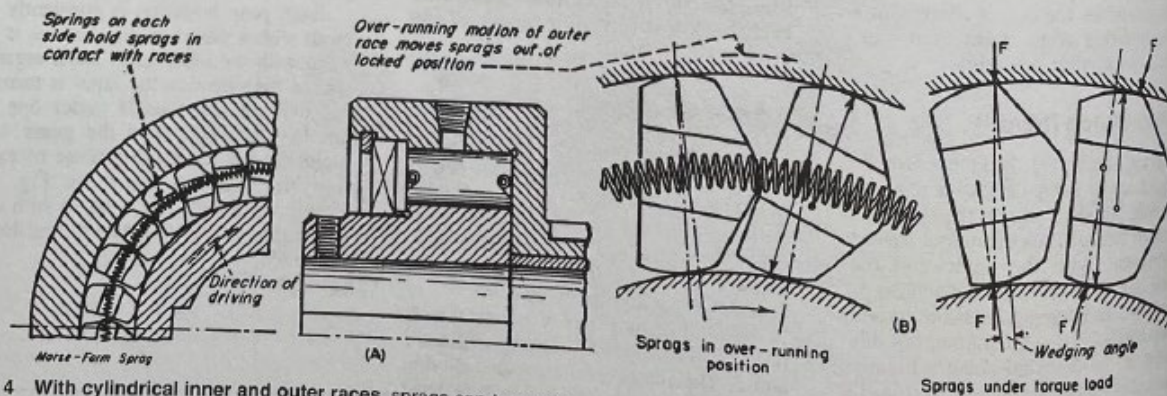
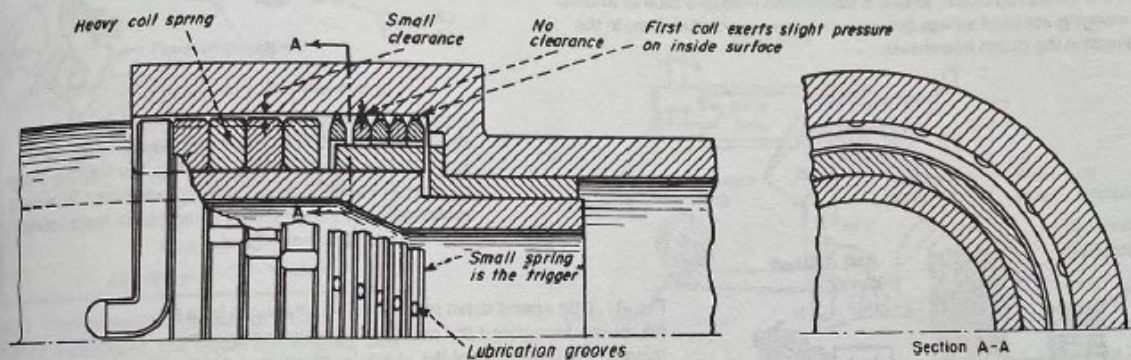
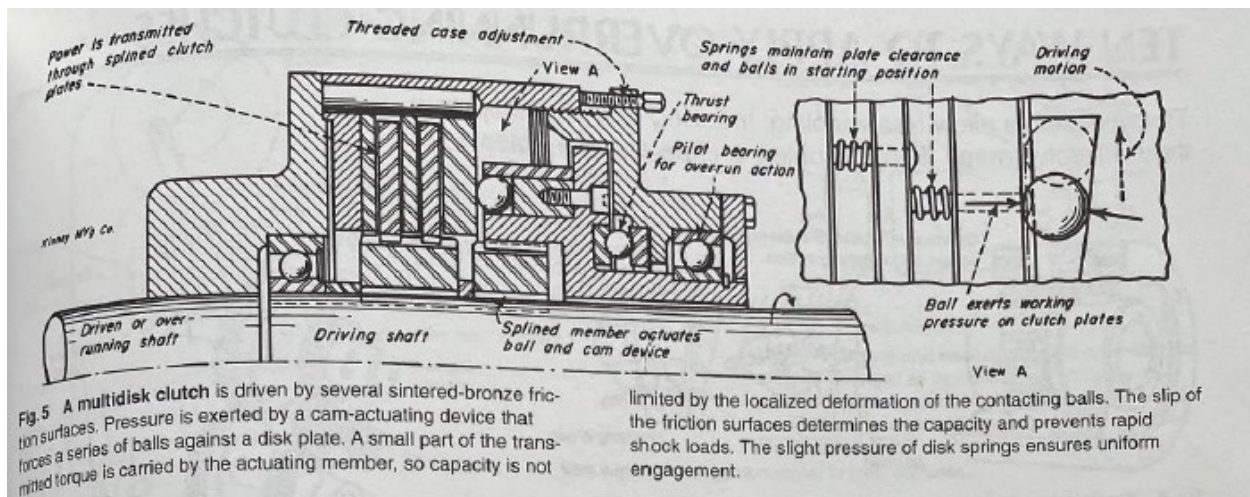


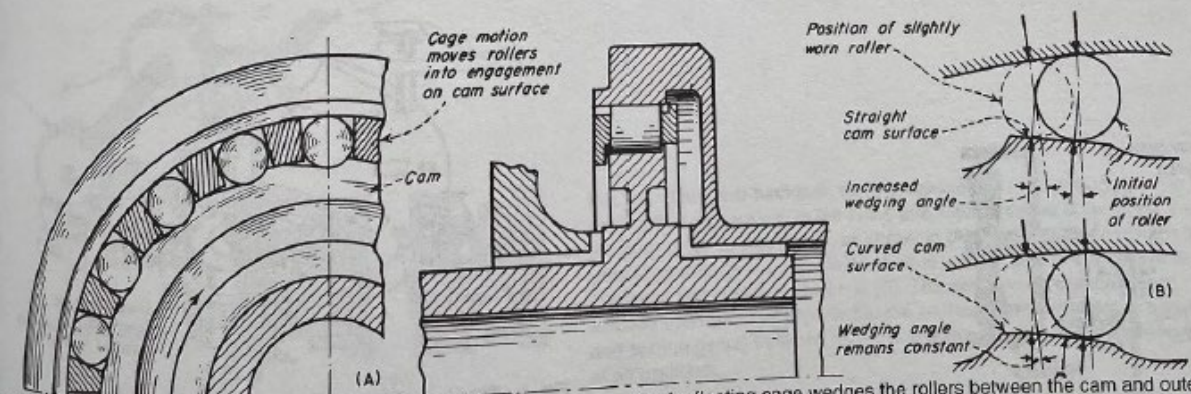
Fig. 4 With cylindrical inner and outer races, sprags can transmit torque. Energizing springs serve as a cage to hold the sprags. (A) Compared to rollers, the shape of a sprag permits a greater number within a limited space; thus higher torque loads are possible. Special

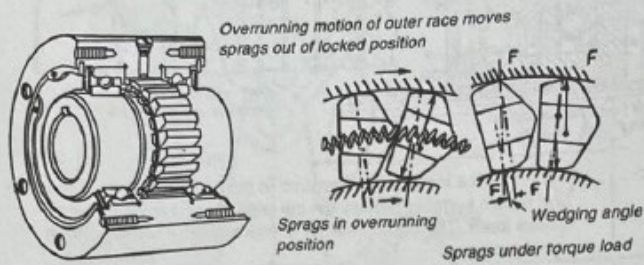
cam surfaces are not required, so this version can be installed inside gear or wheel hubs. (B) Rolling action wedges the sprags tightly between the driving and driven members. A relatively large wedging angle ensures positive engagement.



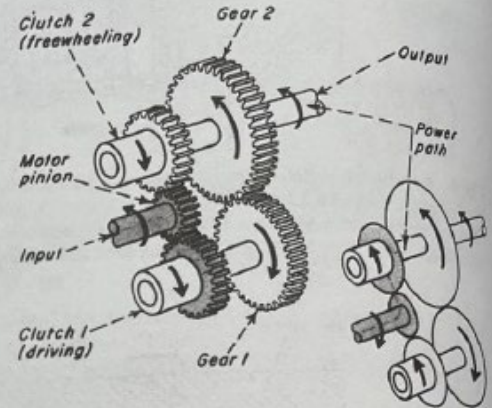


This action expands the spring diameter, which takes up the small clearance and exerts pressure against the inside surface until the entire spring is tightly engaged. The helix angle of the spring can be changed to reverse the overriding direction.

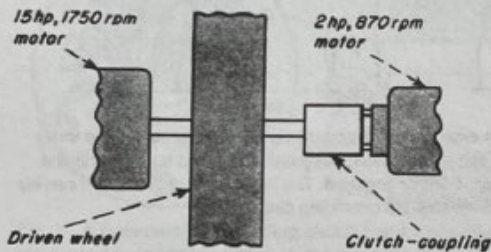




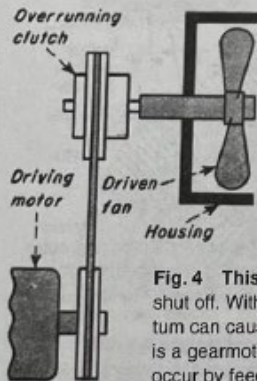
**Fig. 1** Precision sprags act as wedges and are made of hardened alloy steel. In the formsprag clutch, torque is transmitted from one race to another by the wedging action of sprags between the races in one direction; in the other direction the clutch freewheels.



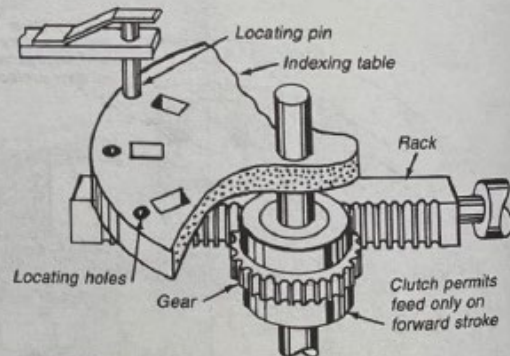
**Fig. 2** This speed drive requires input rotation to be reversible. Counterclockwise input (as shown in the diagram) drives gear 1 through clutch 1; the output is counterclockwise; clutch 2 overruns. Clockwise input (schematic) drives gear 2 through clutch 2; the output is still counterclockwise; clutch 1 overruns.



**Fig. 3** This speed drive for a grinding wheel can be a simple, in-line assembly if the overrunning clutch couples two motors. The outer race of the clutch is driven by a gearmotor; the inner race is keyed to a grinding-wheel shaft. When the gearmotor drives, the clutch is engaged; when the larger motor drives, the inner race overruns.



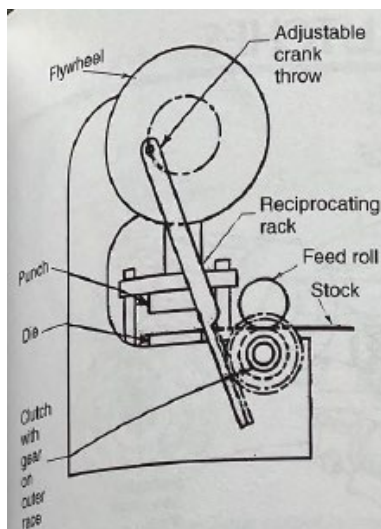
**Fig. 4** This fan freewheels when driving power is shut off. Without an overrunning clutch, fan momentum can cause belt breakage. If the driving source is a gearmotor, excessive gear stress can also occur by feedback of kinetic energy from the fan.



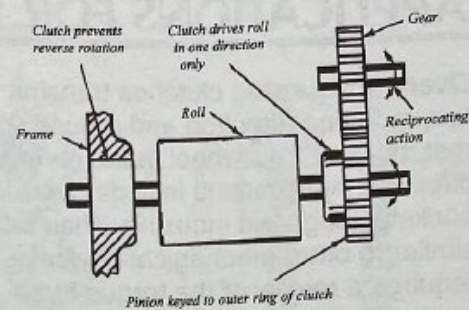
**Fig. 5** This indexing table is keyed to a clutch shaft. The table is rotated by the forward stroke of the rack; power is transmitted through the clutch by its outer-ring gear only during this forward stroke. Indexing is slightly short of the position required. The exact position is then located by a spring-loaded pin that draws the table forward to its final positioning. The pin now holds the table until the next power stroke of the hydraulic cylinder.

*Id.* at 318.

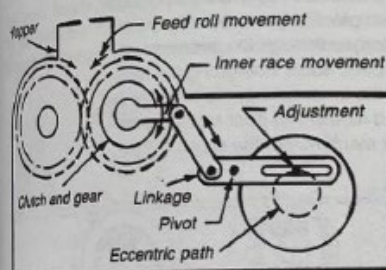




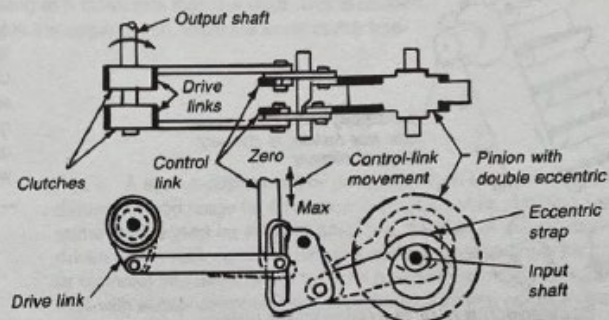
**Fig. 6** This punch press feed is arranged so that the strip is stationary on the downstroke of the punch (clutch freewheels); feed occurs during the upstroke when the clutch transmits torque. The feed mechanism can easily be adjusted to vary the feed amount.



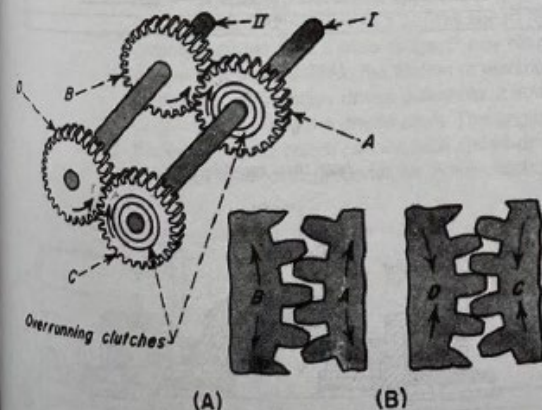
**Fig. 7** Indexing and backstopping is done with two clutches arranged so that one drives while the other freewheels. The application shown here is for a capsuling machine; gelatin is fed by the roll and stopped intermittently so the blade can precisely shear the material to form capsules.



**Fig. 8** The intermittent motion of a candy machine is adjustable. The clutch ratchets the feed rolls around. This keeps the material in the hopper rotated.



**Fig. 9** This double-impulse drive has double eccentrics and drive clutches. Each clutch is indexed 180° out of phase with the other. One revolution of the eccentric produces two drive strokes. Stroke length, and thus the output rotation, can be adjusted from zero to maximum by the control link.



**Fig. 10** This anti-backlash device depends on overrunning clutches to ensure that no backlash is left in the unit. Gear A drives B and shaft II with the gear mesh and backlash, as shown in (A). The overrunning clutch in gear C permits gear D (driven by shaft II) to drive gear C and results in the mesh and backlash shown in (B). The overrunning clutches never actually overrun. They provide flexible connections (something like split and sprung gears) between shaft I and gears A and C to allow absorption of all backlash.

*Id.* at 319.

(4) Dependability, and (5) Durability.

**Fig. 1 A pawl and ratchet, single-cycle Dennis clutch.** The primary parts of this clutch are the driving ratchet B, the driven cam plate C, and the connecting pawl D, which is carried by the cam plate. The pawl is normally held disengaged by the lower tooth of clutch arm A. When activated, arm A rocks counterclockwise until it is out of the path of rim F on cam plate C.

This permits pawl D, under the effect of spring E, to engage with ratchet B. Cam plate C then turns clockwise until, near the end of one cycle, pin G on the plate strikes the upper part of arm A, camming it clockwise back to its normal position. The lower part of A then performs two functions: (1) it cams pawl D out of engagement with the driving ratchet B, and (2) it blocks the further motion of rim F and the cam plate.

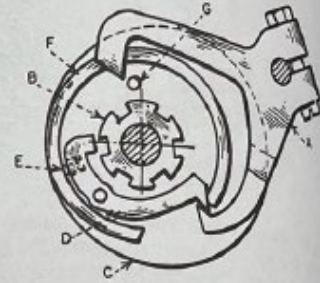


Fig. 1

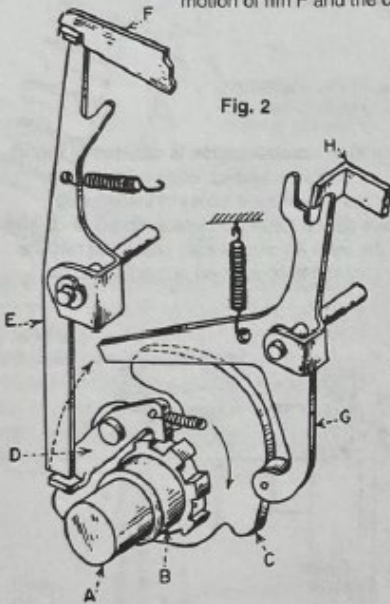


Fig. 2

**Fig. 2 A pawl and ratchet, single-cycle, dual-control clutch.** The principal parts of this clutch are driving ratchet B, driven crank C, and spring-loaded ratchet pawl D. Driving ratchet B is directly connected to the motor and free to rotate on rod A. Driven crank C is directly connected to the main shaft of the machine and is also free to move on rod A. Spring-loaded ratchet pawl D is carried by crank C, which is normally held disengaged by latch E.

To activate the clutch, arm F is raised, permitting latch E to trip and pawl D to engage with ratchet B. The left arm of clutch latch G, which is in the path of the lug on pawl D, is normally permitted to move out of the way by the rotation of the camming edge of crank C. For certain operations, block H is temporarily lowered. This prevents the motion of latch G, resulting in the disengagement of the clutch after part of the cycle. It remains disengaged until the subsequent raising of block H permits the motion of latch G and the resumption of the cycle.

**Fig. 3 Planetary transmission clutch.** This is a positive clutch with external control. Two gear trains provide a bi-directional drive to a calculator for cycling the machine and shifting the carriage. Gear A is the driver; gear L, the driven member, is directly connected to the planet carrier F. The planet consists of integral gears B and C. Gear B meshes with free-wheeling gear D. Gears D and G carry projecting lugs E and H, respectively. Those lugs can contact formings on arms J and K of the control yoke.

When the machine is at rest, the yoke is centrally positioned so that arms J and K are out of the path of the projecting lugs, permitting both D and G to free-wheel. To engage the drive, the yoke rocks clockwise, as shown, until the forming on arm K engages lug H, blocking further motion of ring gear G. A solid gear train is thereby established, driving F and L in the same direction as the drive A. At the same time, the gear train alters the speed of D as it continues counterclockwise. A reversing signal rotates the yoke counterclockwise until arm J encounters lug E, blocking further motion of D. This actuates the other gear train with the same ratio.

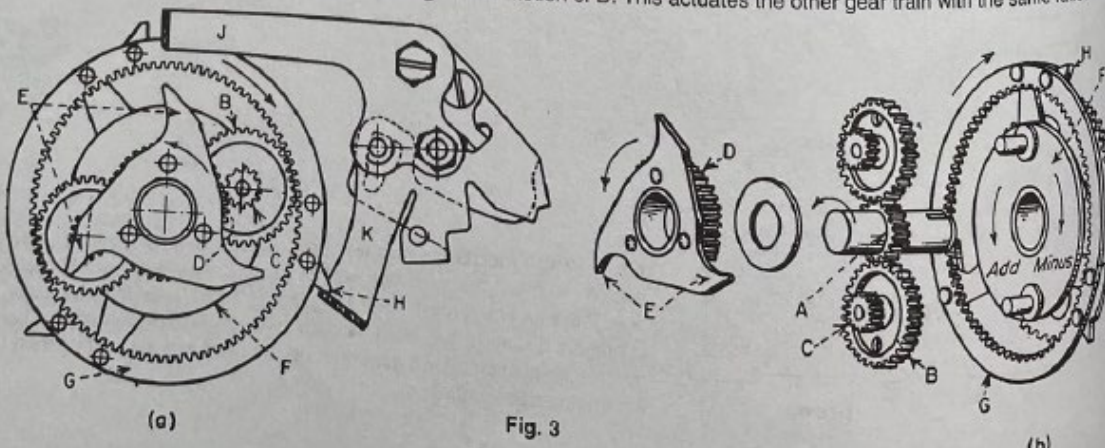


Fig. 3

*Id.* at 322.



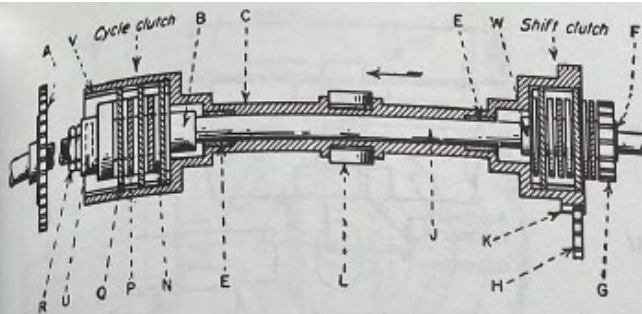


Fig. 4

**Fig. 4 A multiple-disk friction clutch.** Two multiple-disk friction clutches are combined in a single, two-position unit that is shown shifted to the left. A stepped cylindrical housing, C, encloses both clutches. Internal self-lubricated bearings support the housing on coaxial shaft J that is driven by transmission gear H, meshing with housing gear teeth K. At the other end, the housing carries multiple metal disks Q that engage keyways V and can make frictional contact with phenolic laminate disks N. They, in turn, can contact a set of metal disks P that have slotted openings for couplings with flats located on sleeves B and W.

In the position shown, pressure is exerted through rollers L, forcing the housing to the left, making the left clutch compress against adjusting nuts R. Those nuts drive gear A through sleeve B, which is connected to jack shaft J by pin U. When the carriage is to be shifted, rollers L force the housing to the right. However, it first relieves the pressure between the adjoining disks on the left clutch. Then they pass through a neutral position in which both clutches are disengaged, and they finally compress the right clutch against thrust bearing F. That action drives gear G through sleeve W, which rotates freely on the jack shaft.

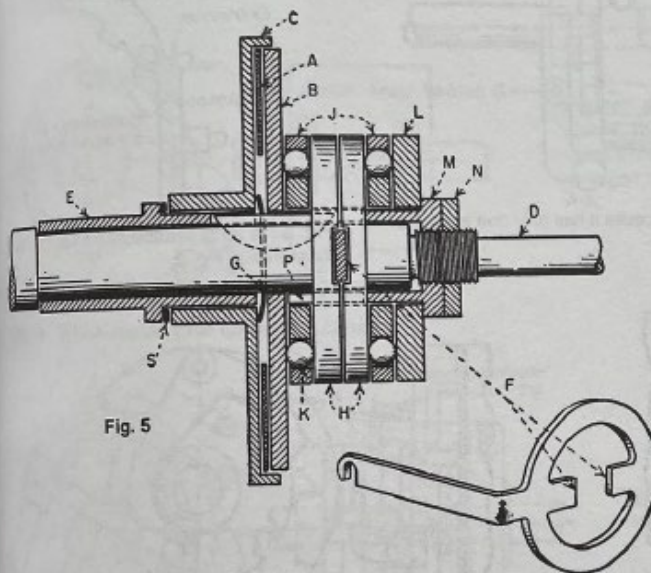


Fig. 5

**Fig. 5 A single-plate friction clutch.** The basic parts of this clutch are the phenolic laminate clutch disk A, steel disk B, and drum C. They are normally kept separated by spring washer G. To engage the drive, the left end of a control arm is raised, causing ears F, which are located in slots in plates H, to rock clockwise. This action spreads the plates axially along sleeve P. Sleeves E and P and plate B are keyed to the drive shaft; all other members can rotate freely.

The axial motion loads the assembly to the right through the thrust ball bearings K against plate L and adjusting nut M. It also loads them to the left through friction surfaces on A, B, and C to thrust washer S, sleeve E, and against a shoulder on shaft D. This response then permits phenolic laminate disk A to drive drum C.

**Fig. 6 An overload relief clutch.** This is a simple, double-plate, friction coupling with spring loading. Shaft G drives collar E, which drives slotted plates C and D faced with phenolic laminate disks B. Spring H is held in compression by the two adjusting nuts on the threaded end of the collar E. These maintain the unit under axial pressure against the shoulder at the left end of the collar.

This enables the phenolic laminate disks B to drive through friction against both faces of the gear, which is free to turn on the collar. This motion of the gear causes output pinion J to rotate. If the machine to which the clutch is attached should jam and pinion J is prevented from turning, the motor can continue to run without overloading. However, slippage can occur between the phenolic laminate clutch plates B and the large gear.

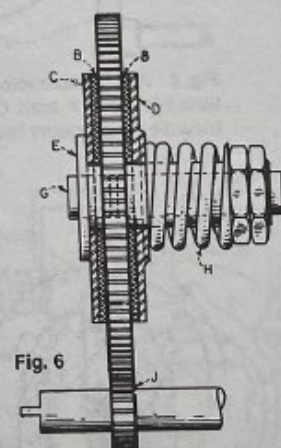


Fig. 6

## **VI. LEVEL OF ORDINARY SKILL IN THE ART**

65. I understand that there are multiple factors relevant to determining the level of ordinary skill in the pertinent art, including the educational level of active workers in the field at the time of the alleged invention, the sophistication of the technology, the type of problems encountered in the art, and the prior art solutions to those problems.

66. In determining the characteristics of a hypothetical person of ordinary skill in the art of the '580 Patent at the time of the claimed invention, I considered several things, including the type of problems encountered in this field, and the rapidity with which innovations were made. I also considered the sophistication of the technology involved, the educational background and experience of those actively working in the field, and the level of education that would be necessary to understand the '580 Patent. Finally, I placed myself back in the relevant period of time and considered the state of the art and the level of skill of the persons working in this field at that time.

67. In order to determine who one of ordinary skill in the art is, I found it necessary to first define what that "art" is. It is my understanding that the art in question relates to designing manual treadmills. Based on the materials I have considered (including the prior art cited herein), my own knowledge and experience, and the level of skill required to design and build a manual treadmill, I have come



to the conclusion that a person of ordinary skill in the art of the '580 Patent would be a person with a bachelor of science degree in mechanical engineering or at least two years of experience in the treadmill industry, including experience and knowledge of the design, construction, testing, and operation of manual treadmills.

68. Although my qualifications and experience exceed those of the hypothetical person having an ordinary level of skill in the art, my analysis and conclusions herein are from the perspective of a person of ordinary skill in the art as of March 17, 2009, unless otherwise noted.

69. I disagree with Dr. Giachetti's more stringent standard as to who constitutes a person of ordinary skill in the art. *See* EX1003 at ¶¶44-49. As an initial matter, Dr. Giachetti does not provide what he considered in coming to his opinion in this regard or otherwise explain what the relevant field of "art" is.

70. Furthermore, in my opinion, it is not necessary for the relevant person of ordinary skill in the art to be a degreed engineer. Indeed, as I understand it, certain of the named inventors of the '580 Patent are not degreed engineers. Also, I do not agree that the relevant person of ordinary skill in the art must have knowledge in the field of anthropometry. Nothing in the claims of the '580 Patent requires any understanding of the study of human proportion, an area that Dr. Giachetti appears to have studied while in school.

## **VII. CLAIM CONSTRUCTION**

71. I understand that the United States District Court for the Southern District of California has entered a Claim Construction Order construing certain terms of the '580 Patent. For purposes of this declaration, I have considered and applied the Court's constructions, including specifically the following constructions for the terms "substantially prevents," "safety device," and "shaft," for which I understand Petitioner has provided alternative constructions that do not take into account the Court's Order:

<b>Term</b>	<b>Construction</b>
substantially prevents	"restricts rotation to allow for only one rotational direction of movement"
safety device	means-plus-function claim limitation with the corresponding structure as a one-way bearing assembly, a cam locking system, a taper lock, a user operated pin system, or a band brake system with a lever
shaft	Plain and ordinary meaning

EX1033 at 16, 22, 27.

72. Nonetheless, I note that the opinions expressed in this declaration would remain the same even if the constructions proposed by Petitioner were applied.

## **VIII. THE CHALLENGED CLAIMS ARE NOT OBVIOUS**

73. I disagree with Petitioner's argument and Dr. Giachetti's opinion that any claim of the '580 Patent is obvious. In my opinion, and as described in more detail below, in some instances, the prior art combinations cited by Petitioner and Dr. Giachetti fails to disclose certain limitations required by the claims and therefore cannot collectively render the Challenged Claims obvious. In other instances, the prior art cited does not render the Challenged Claims obvious as a POSA would not have been motivated to modify or combine the various references in the manner that Petitioner and Dr. Giachetti suggest.

### **A. The Prior Art Fails to Disclose Certain Claim Elements**

#### **1. Chickering (Grounds 1-3)**

74. I understand that Petitioner and Dr. Giachetti rely on Chickering as the primary prior art reference in Grounds 1-3. In these grounds, Petitioner and Dr. Giachetti argue that Chickering in combination with Magid (Ground 1) render Claims 1-5, 10-11, 14, 18, and 25 obvious, that Chickering in combination with Magid and Sclater render Claims 6-9 and 12 obvious (Ground 2), and that Chickering in combination with Magid and Sclater (Ground 3) render Claims 1-12, 14, and 18 obvious.

75. In my opinion, Chickering fails to disclose certain limitations for which Petitioner and Dr. Giachetti rely on it in all of Grounds 1-3. As a result, these grounds cannot establish that the Challenged Claims of the '580 Patent are unpatentable.

**a. Chickering does not disclose a “curved running surface” (Claims 1, 11, 25)**

76. I understand that Petitioner and Dr. Giachetti both rely on Chickering for the vast majority of limitations in Grounds 1-3. This includes the following limitations from Claims 1, 11, and 25, the three independent claims challenged in the Petition:

- Claim 1: “a running belt supported by the first bearing rail and the second bearing rail and disposed about the front shaft and the rear shaft, **wherein the running belt follows a curved running surface;**”
- Claim 11: “a running belt at least partially disposed about the front shaft and the rear shaft and at least partially supported by the first bearing rail and the second bearing rail, wherein the running belt includes a front belt portion proximate the front end, a rear belt portion proximate the rear end, and a central belt portion intermediate the front and rear belt portions, wherein the central belt portion is positioned vertically closer to a ground surface supporting the frame than the front and rear belt portions such that **the running belt follows a curved running surface;**”  
and

- Claim 25: “disposing a running belt on the plurality of bearings of the first bearing rail and the second bearing rail such that the running belt follows a top curved running surface corresponding to the curved top profile of the first and second bearing rails.”

EX1001 at Claims 1, 11, 25 (emphasis added); Petition at 31-33; EX1003 at ¶¶161-164, 205, 226-228; *see also* Petition at 26-29. I disagree that Chickering discloses such features.

77. I understand that Petitioner and Dr. Giachetti both identify Chickering’s endless belt 28 as the running belt, Chickering’s rollers 13 and 18 as the plurality of bearings, and Chickering’s front and rear support arms 14 and 19 as the bearing rails. Petition at 26-29, 31-33; EX1003 at ¶¶145-164. Notably, this represents a combination of elements from two different embodiments disclosed in Chickering. *Id.*

78. Chickering’s primary embodiment includes the following features:

A first series of transverse parallel rollers 13 have their ends 15 journaled in arms 14. An endless belt 16 of some suitable material such as rubber or heavy cloth, is disposed about the series of rollers 13 to provide a first tread surface 16a.

A second series of transverse parallel rollers 18 have their ends journaled in arms 19. An endless belt 25 is disposed about the series of rollers 18 to provide a second tread surface 25a adjacent the first tread surface.

EX1013 at 2:13-26. Endless belt 28 is not a component of this embodiment.

79. In contrast, Chickering's second embodiment includes the following features:

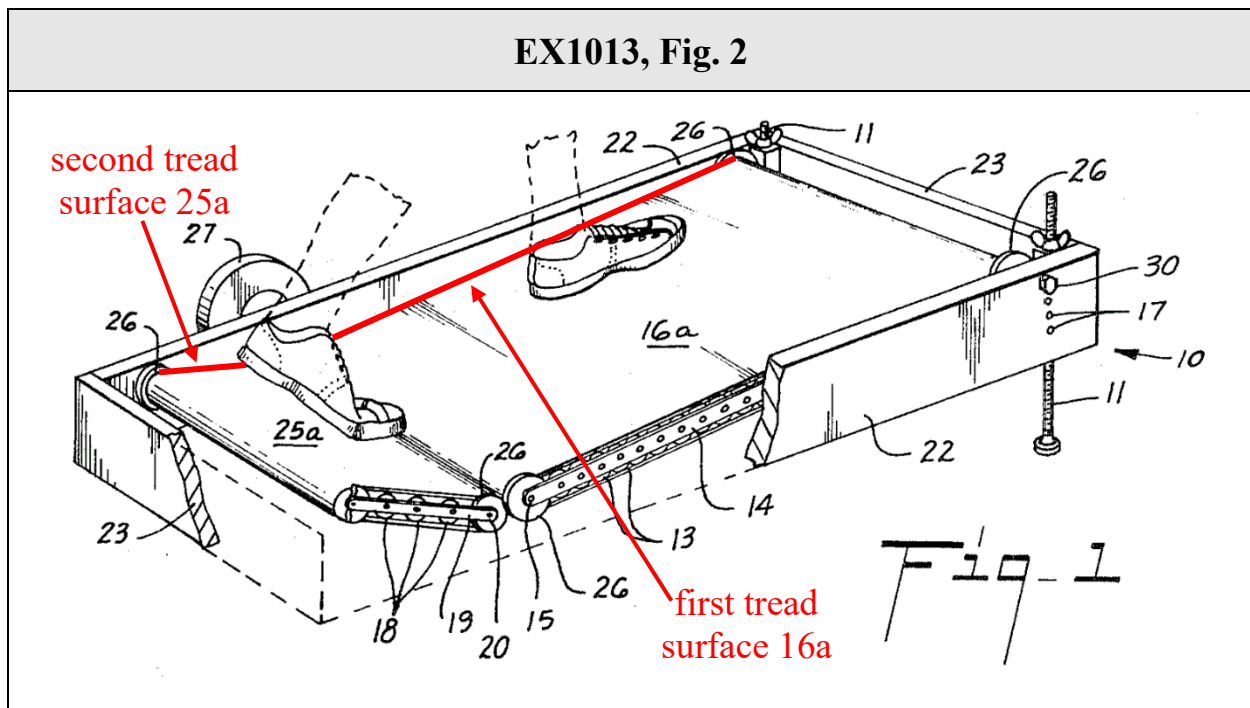
An alternate form of the exercising device of the present invention is shown in FIG. 3, wherein a single endless belt 28 forms both the accelerating and decelerating areas. In the device shown in FIG. 3, a single series of rollers 29 are provided journaled in the sidewalls 22 of base 10. However, the rollers are so disposed that the forward rollers lie approximately in a plane slanting downwardly from the front of the base, while the rear rollers lie approximately in a plane slanting upward toward the rear of the base 10. Thus, when the endless belt 28 is placed about the rollers, it follows their contour and provides a forward accelerating area and a rear decelerating area which are inclined from the horizontal with each being lowest at their point of nearest proximity.

EX1013 at 2:73-3:10. Neither parallel rollers 13 and 16 or endless belts 16 and 25 are components of the second embodiment. Nor are arms 14 and 19 components of the second embodiment as the rollers 29 are instead journaled directly to the sidewalls 22.

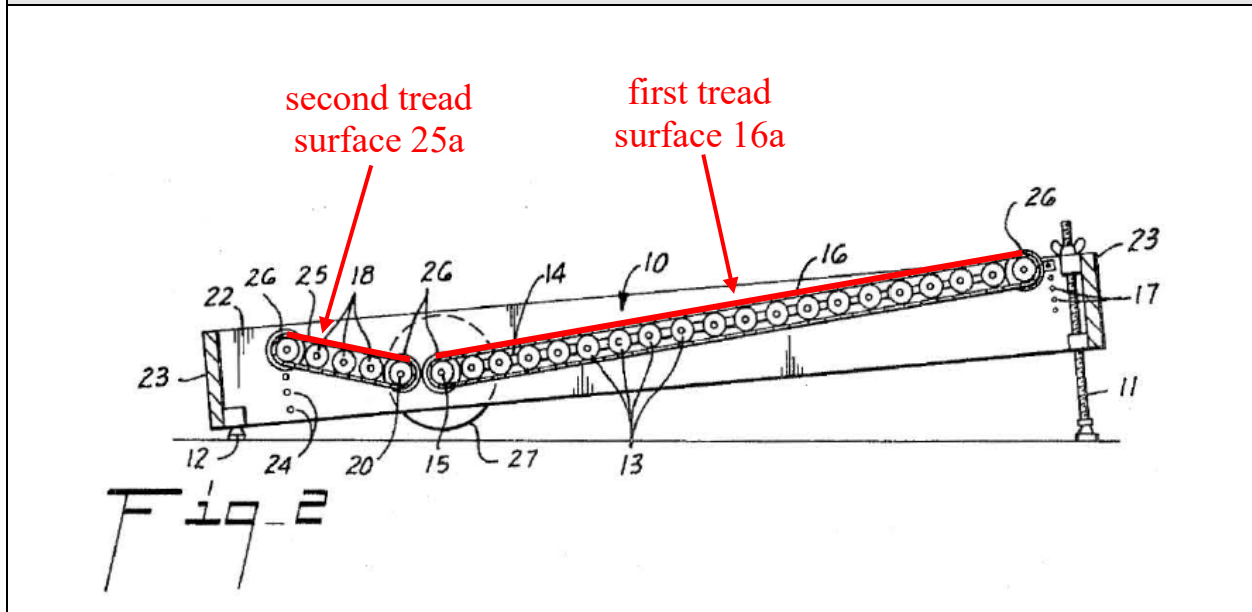
80. As indicated in the foregoing excerpts, both of Chickering's embodiments have two flat running surfaces positioned adjacent each other. A POSA would therefore consider a running surface in either of these embodiments or a combination of the two to constitute a multi-planar running surface, not a curved surface.

81. Looking first at Chickering's primary embodiment, a POSA would understand that, because rollers 13 and 18 are each described as "series of transverse **parallel** rollers," the rollers that support belt 16 and 25 and the arms 14 and 19 are journaled to form a pair of planar surfaces rather than a single curved surface. Thus, Chickering's primary, dual-belt embodiment discloses a multi-planar running surface, not a curved running surface as required by the claims.

82. A POSA's understanding that Chickering's primary embodiment discloses a multi-planar running surface rather than a curved running surface is further confirmed by referencing Chickering's figures. Annotated versions of Figures 1 and 2 are provided below for reference:



EX1013, Fig. 2



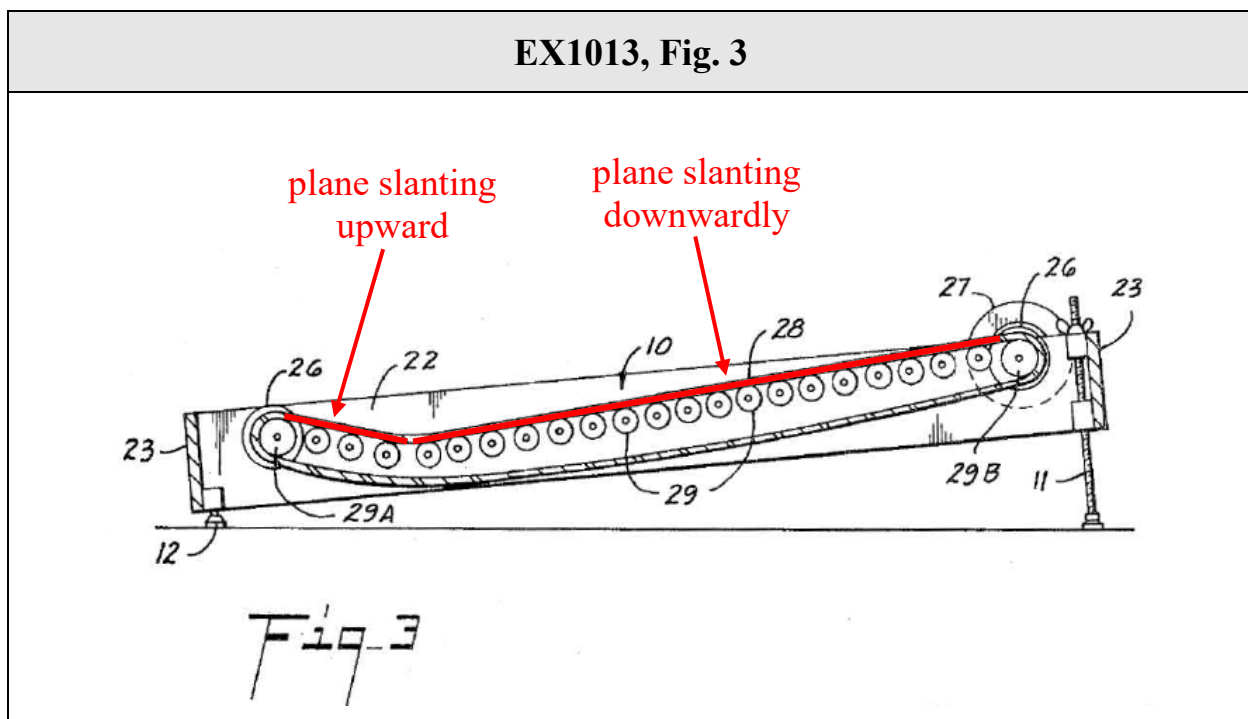
EX1013 at Figs. 1-2 (annotations added).

83. Similarly, for its alternative embodiment, Chickering teaches that the rollers 29 are positioned in two flat planes. More specifically, Chickering discloses that “the rollers are so disposed that the forward rollers lie approximately *in a plane slanting downwardly* from the front of the base, while the rear rollers lie approximately *in a plane slanting upward* toward the rear of the base 10.” *Id.* at 3:2-6 (emphasis added). Meanwhile, “when endless belt 28 is placed about the rollers, it follows their contour and provides a forward accelerating area and a rear decelerating area which are inclined from the horizontal with each being lowest at their point of nearest proximity.” *Id.* at 3:6-10. Because the endless belt 28 “follows” the rollers and the rollers are configured in two flat “plane[s],” a POSA would readily



understand that the endless belt 28 itself follows a dual- or multi-planar running surface, not a curved running surface as required by the claims.

84. As with Chickering's primary embodiment, a POSA's understanding that Chickering's alternative embodiment discloses a multi-planar running surface rather than a curved running surface is further confirmed by referencing Chickering's figures. An annotated version of Figure 3 is provided below for reference:



*Id.* at Fig. 3 (annotations added).

85. Because both of Chickering's embodiments plainly disclose multi-planar running surfaces rather than curved running surfaces, a POSA would not understand a combination of these two embodiments, as proposed by Petitioner and

Dr. Giachetti, to have a curved running surface. There is simply no curve to be incorporated from either embodiment.

86. Despite this, Dr. Giachetti appears to argue that a slight curve can be observed in the “central belt portion” of belt 28, either in the alternative embodiment itself or in a hypothetical treadmill combining features of both Chickering embodiments. EX1003 at ¶206. In my opinion, Dr. Giachetti is mistaken at least because, according to Chickering’s own teachings, the area of the belt 28 he identifies does not constitute a “running surface.”

87. A POSA would understand a treadmill’s “running surface” to be a surface that a runner’s feet would typically make contact when the user is running on the treadmill during normal use.

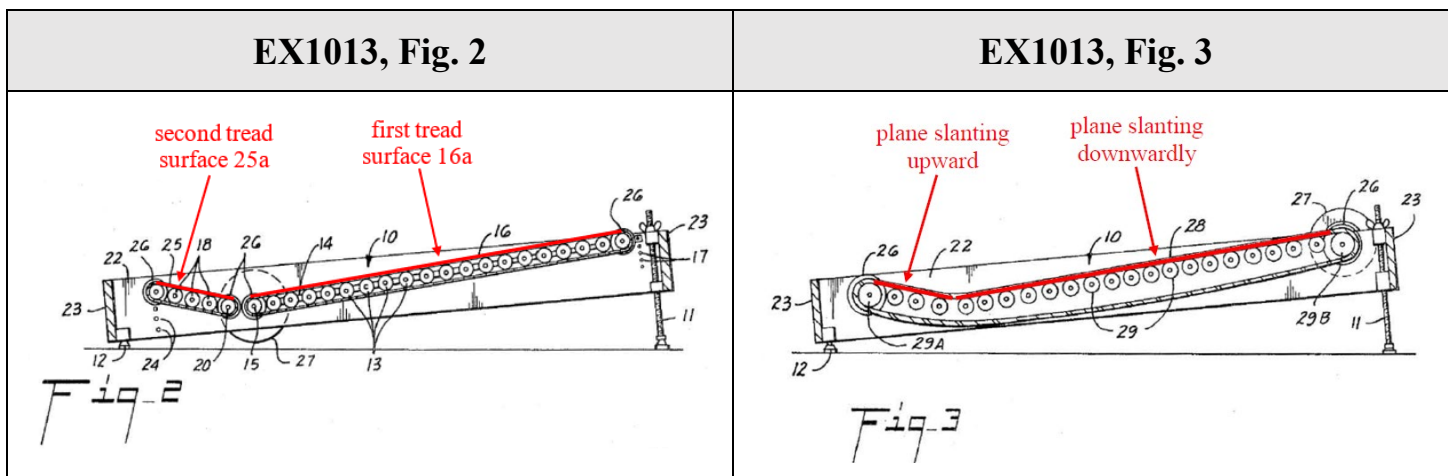
88. The “central belt portion” of Chickering’s belt 28 does not meet the foregoing criteria for a “running surface.” In fact, Chickering expressly teaches as follows:

When a person is using the exercise device, during each step his foot moves in an approximate arc. The foot first contacts the tread surface 16a as shown in FIG. 1, and moves rearwardly and downwardly, the weight of the person acting to accelerate the motion of the belt 16. *Near the bottom of the arc the foot leaves surface 16a and may for a brief instant be out of contact with any surface.* However, further rearward movement will bring at least a portion of the foot into contact with tread surface 25a....

EX1013 at 2:50-58 (emphasis added).

89. Because “the foot leaves surface 16a” and is “out of contact with any surface” before it contacts tread surface 25a, a POSA would recognize that a runner’s feet are not necessarily intended to contact the area between those surfaces – i.e., the point where the two surfaces meet to form an angle – when running on the treadmill during normal use. Thus, a POSA would recognize that there is no “running surface” between the tread surfaces 16a and 25a.

90. The same is true of Chickering’s alternative embodiment and Petitioner’s proposed combination of embodiments, specifically with respect to the purported “central belt portion” identified by Dr. Giachetti. In their relevant aspects, Chickering’s alternative embodiment and its primary embodiment differ only in that the former uses a single running belt while the latter uses two running belts. Both have the same dual-plane profile, as can be seen when comparing the profile formed by the dual-plane slopes depicted as first tread surface 16a and second tread surface 25a in Figure 2 and the profile formed by the downwardly slanting plane and upwardly slanting plane in Figure 3, respectively:



EX1013 at Figs. 2-3 (annotations added).

91. Thus, as with the primary embodiment, a POSA would readily understand that a runner's feet are not intended to contact the area where the downwardly slanting plane of the forward rollers intersects with the upwardly slanting plane of the rear rollers. This portion of belt 28—whether in the alternative embodiment or in the hypothetical treadmill formed by combining the two embodiments—cannot constitute a curved *running* surface as required by the claims.

92. It is therefore my opinion that a POSA would readily understand that Chickering's two embodiments each disclose a dual-planar running surface and not disclose a “curved running surface” as required by all Challenged Claims, either explicitly or inherently.

**b. Chickering does not disclose that “the first and second bearing rails define a curved top profile” (Claim 25)**

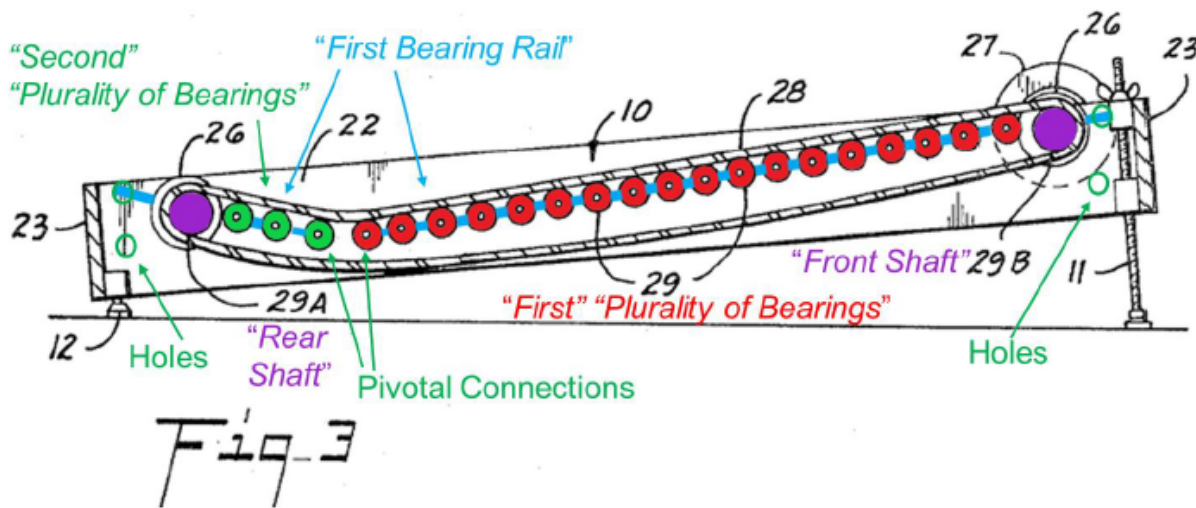
93. I understand that Petitioner and Dr. Giachetti both rely on Chickering for Claim 25’s requirement that “the first and second bearing rails define a curved top profile.” Petition at 31; EX1003 at ¶¶223-225.

94. Based on my review, however, it does not appear that either Petitioner or Dr. Giachetti actually explain how or why the proposed support arms, which they both identify as Chickering’s bearing rails, “define a curved top profile.” Rather, the Petition simply states, without explanation, that “belt 28 (*running belt*) is placed on the rollers (*bearings*) supported by support arms 14, 19 (*first and second bearing rails defin[ing] a curved top profile*) such that the belt follows their curved profile.” Petition at 31.

95. While Dr. Giachetti cites a section of Chickering stating that “when the endless belt 28 is placed about the rollers, it follows their contour” to support this assertion, EX1003 at ¶223, a POSA would not understand this to mean that the support arms (or bearing rails) to which the rollers are connection form a curve or otherwise “define a curved top profile.” In fact, this section does not mention a “curve” at all, let alone one associated with the support arms.

96. Moreover, Chickering’s figures plainly show that the support arms are perfectly straight and, to the extent they are understood to meet at all, meet at a sharp,

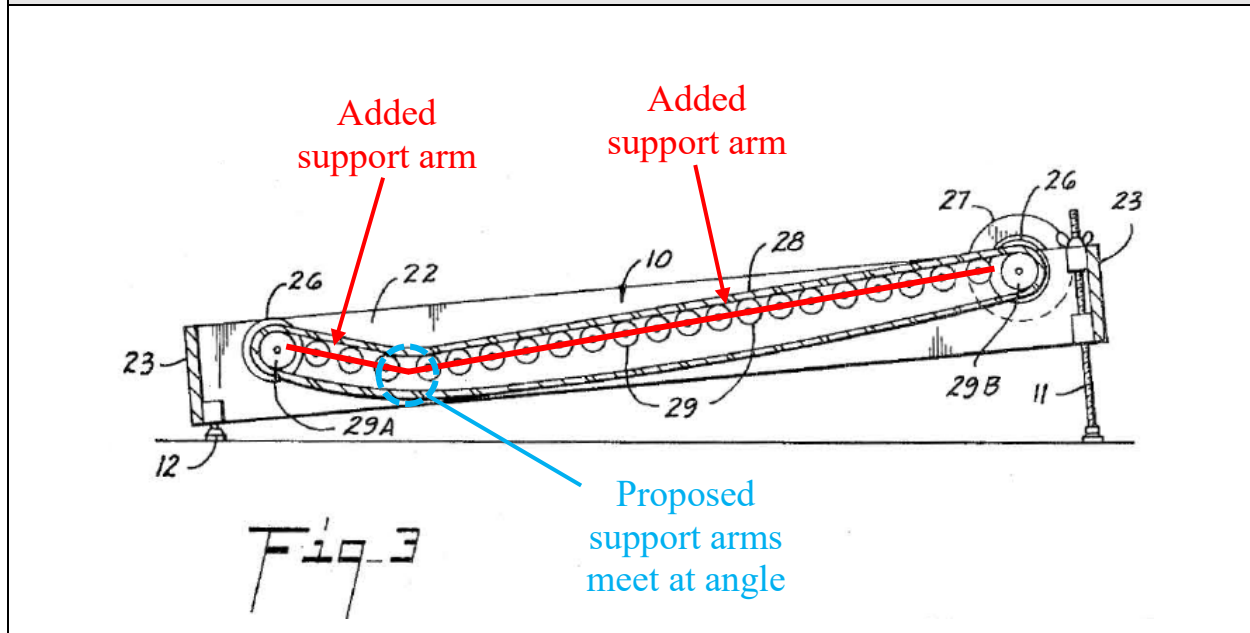
obtuse angle. Indeed, the straight, non-curved nature of Chickering's support arms can be observed even in the figures provided by Petitioner and Dr. Giachetti. For example, the modified version of Figure 3 from the Petition, reproduced below, shows that support arms 14 and 19 (colored blue by Petitioner) do not have any curve:



Petition at 30 (annotating EX1013 at Fig. 3); *see also* EX1003 at ¶224.

97. The angled (i.e., non-curved) junction between the proposed support arms can further be observed in the following annotated version of Figure 3, which omits the extraneous annotations from Petitioner's modified figure:

EX1013, Fig. 3



EX1013 at Fig. 3 (annotations added).

98. It is therefore my opinion that a POSA would readily understand that Chickering's support arms (identified by Petitioner as the bearing rails) form an angled top profile and that Chickering does not disclose a treadmill in which the first and second bearing rails define a curved top profile, either explicitly or inherently.

## 2. Socwell (Grounds 4-6)

99. I understand that Petitioner and Dr. Giachetti rely on Socwell as the primary prior art reference in Grounds 4-6. In these grounds, Petitioner and Dr. Giachetti argue that Socwell in combination with Magid render 1-5, 10-11, 14, 15, 18, and 25 obvious (Ground 4), that Socwell in combination with Magid and Sclater

render Claims 6-9 and 12 obvious (Ground 5), or that Socwell in combination with Magid and Sclater render Claims 1-12, 14-15, 18, and 25 obvious.

100. In my opinion, Socwell fails to disclose certain limitations for which Petitioner and Dr. Giachetti rely on it in all of Grounds 4-6. As a result, these grounds cannot establish that the Challenged Claims of the '580 Patent are unpatentable.

**a. Socwell does not disclose two bearing rails, each having “a plurality of bearings” (Claims 1, 11, 25)**

101. I understand that Petitioner and Dr. Giachetti both rely on Socwell for the vast majority of limitations in Grounds 4-6. This includes the following limitations from Claims 1, 11, and 25, the three independent claims challenged in the Petition:

- Claim 1: “a first bearing rail having a plurality of bearings” and “a second bearing rail having a plurality of bearings;”
- Claim 11: “a first bearing rail having a plurality of bearings” and “a second bearing rail having a plurality of bearings;” and
- Claim 25: “providing a first bearing rail and a second bearing rail, the first and second bearing rails each comprising a plurality of bearings.”

EX1001 at Claims 1, 11, 25; Petition at 69-72; EX1003 at ¶¶344-354, 391-392, 414-415. I disagree that Socwell discloses such features.



102. I understand that Petitioner and Dr. Giachetti both analogize the “bearings” of Claims 1, 11, and 25 to Socwell’s curved deck 56 and roller 98 and the “bearing rail[s]” to Socwell’s cover members 168. Petition at 69-72; EX1003 at ¶¶344-354. Additionally, although it is somewhat unclear given the language of the Petition and Dr. Giachetti’s declaration, Petitioner also appears to suggest that the belt securing assembly 94 is analogous to the “bearings” in Claims 1, 11, and 25. *See* Petition at 71 (annotations to figures identify element 94 as a “bearing”).

103. In my opinion, however, a POSA would understand that the aforementioned structures of Socwell fail to meet the requirements for the “plurality of bearings” and “bearing rail[s]” as described in the ’580 Patent specification and claims.

104. A POSA would understand that the “plurality of bearings” must all be positioned below and have some kind of weight-bearing relationship with the running belt based on the ’580 Patent specification. Indeed, the ’580 Patent specification describes and depicts the “plurality of bearings” as laying below and supporting the running belt 16, as seen in the following exemplary excerpt:

The running belt 16 contacts and *is supported in part by the bearings 208* of the bearing rails and bearing 208 are configured to rotate, thereby decreasing the friction experienced by the running belt 16 as the belt moves along the top profile 210.

EX1001, 11:58-60 (emphasis added). A POSA would understand from this disclosure that the bearings 208 are required to be positioned below the running belt 16.

105. Although other portions of the '580 Patent specification teach that certain elements may be positioned above running belt 16 to ensure that the running surface corresponds to the curved shape of the top profile 210 (*see, e.g.*, EX1001 at 11:66-12:3), the '580 Patent specification never describes “bearings” as being used to accomplish this.

106. One way that the '580 Patent specification teaches that the running belt can be made to conform to the curved shape of the top profile 210 is by using a relatively heavy running belt that is pulled down through the force of gravity:

Further referring to FIGS. 5-6 and 8-11, one way to ensure that the running belt 16 follows the contour of the bearing rails 200 and the front and rear running belt pulleys 62, 66 is to utilize the weight of the running belt 16 itself in addition to adjusting the relative size of the front and rear running belt pulleys 62, 66; and/or providing a synchronizing system 222 according to an exemplary embodiment.

...

In the exemplary embodiment shown in FIG. 5, when positioning the running belt 16 about the front and rear running belt pulleys 62,66, a length of the running belt 16 sufficient to permit the running belt 16 to correspond to (e.g., follow, be positioned against or above, etc.) the desired contours of the bearing rails 200 and the front and rear running belt pulleys 62, 66 is generally disposed

between the front and rear shafts 64, 68. At each location between the front and rear shafts 64, 68, the force of gravity pulls downward on the running belt 16. Generally, this force will help pull the running belt 16 downward and against the desired components of base 12. However, gravity can also cause slippage (e.g., over the front running belt pulley 62, over the rear running belt pulley 66, down along curves of the bearing rail 200, etc.) in an amount that is undesirable and the magnitude of these slippage-problems tends to increase when the treadmill 10 is being operated. Accordingly, the solution typically relies on more than the weight of the running belt alone.

*Id.* at 13:30-67. The specification does not describe the use of bearings positioned above the running belt in such a design.

107. Alternatively, the '580 Patent specification contemplates implementing some kind of running belt retention or braking system. While several such systems are described, none describe using “bearings” to exert downward forces on the belt to force it to hold its preferred shape. *See generally id.*

108. Notably, the foregoing is true even of the running belt retention and braking systems that make use of wheel or roller assemblies. For example, the first running belt retention system disclosed in the '580 specification describes “a track system 700... configured to help induce and maintain the running belt in a desired non-planar shape to define the running surface.” *Id.* at 22:15-19. This is accomplished by using “a pair of opposed tracks 702 configured to provide for movement of a running belt 16” and “[a] plurality of roller or wheel assemblies 716” which are “connected with, preferably mounted directly to or integral with, each of

a plurality of slats 228 of the running belt 16.” *Id.* at 22:20-23, 22:38-40. “One of a plurality of wheel assemblies 716 is coupled at each end 252, 254 of each slat 228 at an interior surface 256. The wheel assemblies 716 are configured to be mated with the tracks 702 and provide for motion of the running belt 16 along the tracks 702.” *Id.* at 22:42-46. Despite describing the “rollers” and “wheels” in significant detail, this system is never described as incorporating “bearings.” *See id.* at 22:47-23:28 (discussing the functionality of a “first roller or wheel 720 and a second roller or wheel 722,” both components of “[e]ach wheel assembly 716”).

109. In another exemplary track system, the ’580 Patent specification also describes how “the running belt 16 includes a plurality of laterally-oriented slats 228 each having a left-hand end 252 generally opposite a right-hand end 254. One of a plurality of roller or wheel assemblies 812 is coupled at each end 252, 254 of each slat 228 to mate with the tracks 802 and to provide for motion of the running belt 16 along the tracks 802.” *Id.* at 23:46-51. Each wheel assembly 812 is described as “including a support shown as a mounting block 814 and a wheel 816 rotatably coupled to the mounting block 814.” While the specification again describes the structure and function of each wheel 816 in detail, as with the first exemplary track system, it never refers to a “wheel” as a “bearing.” *See id.* at 23:52-24:14.

110. The '580 specification describes at least two other track systems that similarly make use of rollers or wheels. *E.g., id.* at 24:15-25:13, 25:63-26:26. Again, neither uses the term “bearing” to refer to the rollers or wheels. *Id.*

111. Based on the foregoing, a POSA would readily understand that the '580 Patent specification distinguishes between the “bearings” associated with the bearing rails and other structures like “rollers” or “wheels” that are intended to hold the running belt in a curved shape. Unlike such “rollers” and “wheels,” a POSA would understand that the plurality of “bearings” associated with the bearing rails are required to have a relative, weight-bearing relationship with the running belt such that, for a structure to constitute a “bearing,” it must support the belt either directly or indirectly and must bear some or all of the weight of the belt.

112. By extension, a POSA would not understand Socwell’s belt securing assembly 94 or its rollers 98 to constitute “bearings” as that term is used in the '580 Patent. With respect to belt securing assembly 94, Socwell teaches as follows:

Referring now to FIG. 5, the curved deck treadmill 10 may include one or more **belt securing assemblies 94 which provide a means for retaining the endless belt 16 in a curvilinear configuration** being substantially flush with the upper surface 66 of the deck 56. Preferably, the belt securing assemblies 94 provide a means for substantially conforming the inherent flexible nature of the belt 16 to the arcuate configuration of the intermediate portion 62 of the deck 56. In design, one or more belt securing assemblies 94 may be disposed in spaced-apart relation along the upper surface 66 of the intermediate portion 62

of the deck 56, as shown in FIG. 2, to sufficiently retain the belt 16 in operable disposition to the deck 56.

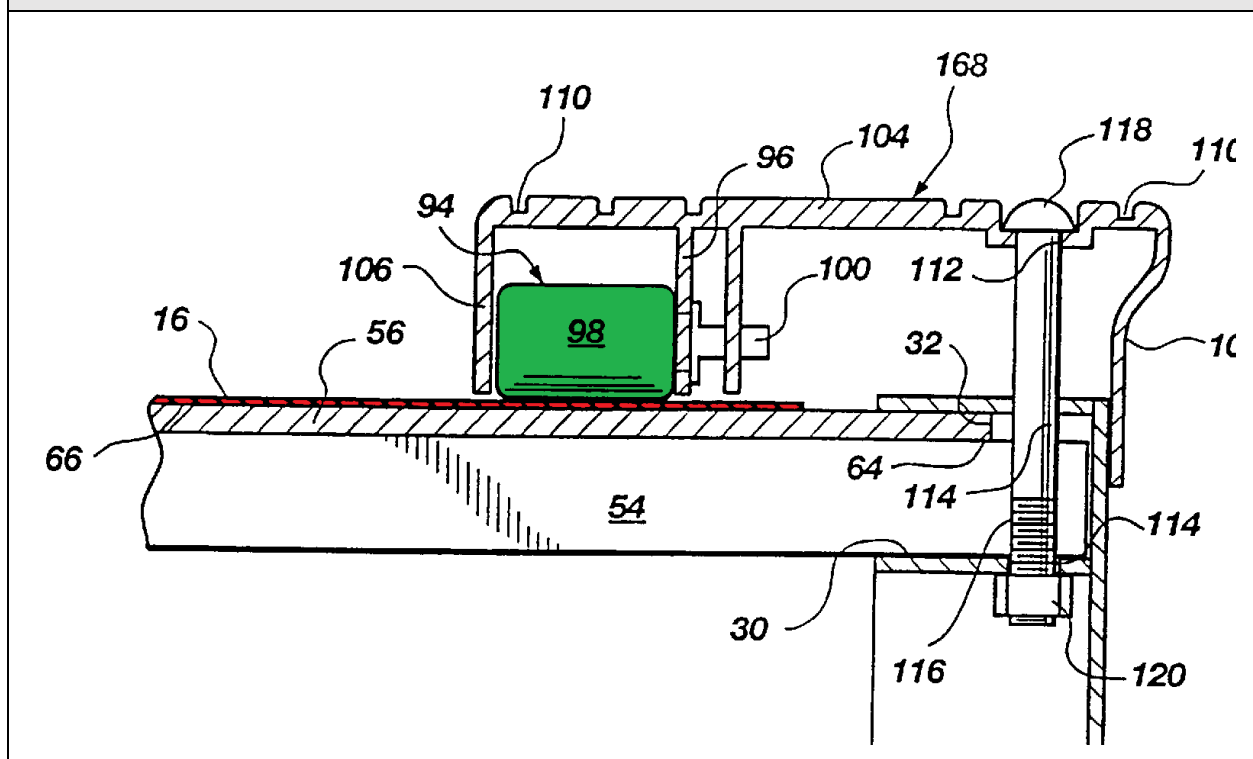
In one presently preferred embodiment of the present invention, the belt securing assembly 94 comprises a roller 98 having an axle 100 which rotatably engages a mounting bracket 96. The mounting bracket 96 is preferably disposed in relation to the roller 98 such that the roller 98 may engage the belt 16, thereby substantially retaining a side portion of the belt 16 substantially flush with the deck 56....

EX1011 at 10:8-23 (emphasis added).

113. As described, Socwell's belt securing assemblies 94 and their associated rollers 98 serve the same function and have a similar structure to the '580 Patent's "roller or wheel assemblies" and their associated "rollers" and "wheels." A POSA therefore would not understand them to constitute "bearings" at least because the '580 Patent's "roller or wheel assemblies" and their associated "rollers" and "wheels" are consistently described as being structurally and functionally distinct from the plurality of bearings associated with the '580 Patent's bearing rails.

114. Moreover, Socwell's figures confirm that neither belt securing assemblies 94 nor rollers 98 are capable of serving as "bearings," as that term is used in the '580 Patent. As shown in the following annotated excerpt of Socwell Figure 5, Socwell's roller 98 and belt securing assembly 94 (both green) are positioned vertically *above* running belt 16 (red):

EX1011, Fig. 5



EX1011 at Fig. 5 (annotations added).

115. Because neither Socwell's belt securing assemblies 94 nor their rollers 98 are positioned below running belt 16, it is not possible for either of them to support any of running belt 16's weight. Thus, as previously discussed, roller 98 and belt securing assembly 94 cannot constitute "bearings" as that term is used in the '580 Patent in connection with the bearing rails' plurality of bearings.

116. Furthermore, to the extent the Petition and/or Dr. Giachetti intend to argue that a POSA would modify Socwell to position the belt securing assemblies 94 and their associated rollers 98 below running belt 16, it is my opinion that a POSA

would not be motivated to make such a modification as such modifications would render the belt securing assemblies 94 inoperable for their intended purpose.

117. As articulated in Socwell and as discussed above, Socwell's belt securing assemblies 94 are intended to hold running belt 16 in an arcuate configuration. *Id.* at 9:44-47. Each belt securing assembly 94 accomplishes this only by holding belt 16 in a configuration that renders it "substantially flush with the ***upper surface*** 66 of the deck 56." *Id.* at 10:5-9 (emphasis added). Any modification that would place a roller 98 or a belt securing assembly 94 either below deck 56 or between deck 56 and belt 16 would result in the belt securing assembly 94 and roller 98 being unable to exert a downward force on belt 16 to hold the belt in this arcuate configuration, flush with the upper surface of the deck 56.

118. Thus, a POSA would readily understand that neither belt securing assembly 94 nor roller 98 constitute or could be modified to constitute one or more "bearings."

119. As a result, the only remaining structure that Petitioner and Dr. Giachetti identify as meeting the "plurality of bearings" is the aforementioned deck 56. However, each treadmill taught by Socwell has only a single deck 56, not a "plurality of" decks 56. *See, e.g., id.* at 5:23-45, 7:59-8:27, 13:54-14:24, Figs. 2-3, Figs. 6-7. Because Socwell discloses only a single deck 56, and thus at most a single



bearing, a POSA would immediately recognize that Socwell's deck 56 cannot possibly meet the "plurality of bearings" element required by all Challenged Claims.

120. It is therefore my opinion that a POSA would readily understand that Socwell does not disclose a "plurality of bearings" as required by all Challenged Claims, either explicitly or inherently.

**b. Socwell does not disclose "a running belt [... at least partially] supported by the first bearing rail and the second bearing rail" (Claims 1, 11)**

121. I understand that Petitioner and Dr. Giachetti both rely on Socwell for the requirement in Claims 1 and 11 for "a running belt [... at least partially] supported by the first bearing rail and the second bearing rail." Petition at 69-72; EX1003 at ¶¶355-358, 393. I disagree that Socwell discloses such a feature.

122. As I previously noted, Petitioner and Dr. Giachetti both analogized Claim 1 and 11's "bearing rail[s]" to Socwell's cover members 168. Petition at 69-72; EX1003 at ¶¶344-354. However, based on my review, it does not appear that either Petitioner or Dr. Giachetti ever state that Socwell's cover members 168 "support" Socwell's running belt as the claims require for the "bearing rail[s]," let alone explain how this is the case.

123. Rather, Petitioner argues that "Socwell discloses a cover member 168 ('bearing rail') that supports the belt securing assemblies 94, including the rollers 98 ('bearings'), and attaches to the frame 12 using bolts 118" and that "[t]he bolts 118

may also extend through apertures formed through the deck 56 (*'bearing'*) to attach the deck 56 to the frame 12.” Petition at 71-72 (citing EX1011 at 11:15-29; EX1003 at ¶¶350-351).

124. Dr. Giachetti similarly never states that the purported bearing rails support Socwell’s running belt, instead testifying that “Socwell discloses a cover member 168 (*'bearing rail'*) that supports the belt securing assemblies 94, including the rollers 98 *'bearings'*, and attaches to the frame 12 using bolts 118 the cover members 168 (*'bearing rails'*) are mounted to the frame and support the deck 56 and rollers 98” and that “[t]he cover member 168 that supports the belt securing assemblies 94, including the rollers 98, is attached to the frame 12 using bolts 118... [which] may also extend through apertures formed through the deck 66 [*sic*] to attach the deck to the frame 12.” EX1003 at ¶¶350-351; *see also id.* at ¶356 (“[T]he cover members 168 (*'bearing rails'*) are mounted to the frame and support the deck 56 and rollers 98.”).

125. Thus, both Petitioner and Dr. Giachetti appear to assert that the identified bearing rails support the identified bearings without ever expressly stating how or why this results in the bearing rails also supporting the running belt, as required by Claims 1 and 11.

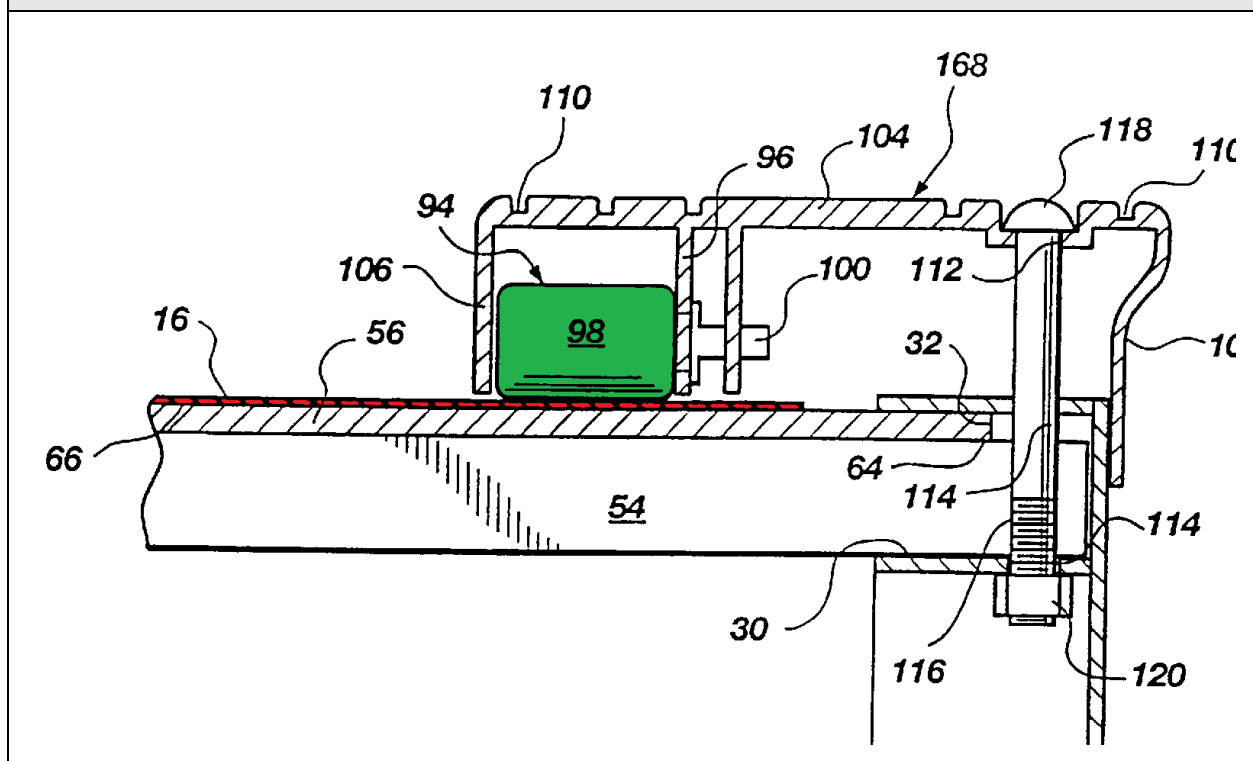
126. Even if Petitioner and Dr. Giachetti intended to argue that cover members 168 indirectly “support[]” the running belt because they allegedly

“support[]” some of the purported bearings, a POSA would not read Socwell to teach such “support[].”

127. As an initial matter, in my opinion, a POSA would understand that the term “support” as used in the ’580 Patent indicates some type of weight-bearing relationship, where the support may be provided directly, may be provided indirectly, may bear some of the weight of another component, and/or may bear all of the weight of another component.

128. In Socwell, neither belt securing assembly 94 nor rollers 98 “support” the running belt. Indeed, as I previously explained, neither belt securing assembly 94 nor rollers 98 bear any weight of the running belt, either directly or indirectly, nor could they as they are positioned vertically **above** the running belt without ever extending below it. *See* §VIII(A)(2)(a), *supra* (discussing orientation of belt securing assembly, rollers, and running belt). For ease of reference, the annotated excerpt of Socwell Figure 5 included earlier in this declaration, which shows how Socwell’s roller 98 and belt securing assembly 94 (both green) are positioned vertically **above** running belt 16 (red), is reproduced below:

EX1011, Fig. 5



EX1011 at Fig. 5 (annotations added).

129. As I also previously explained, because each roller 98 and belt securing assembly 94 are positioned above the running belt 16, the running belt 16 does not rest on roller 98 or belt securing assembly 94. §VIII(A)(2)(a), *supra*. By extension, neither roller 98 nor belt securing assembly 94 supports any of running belt 16’s weight. *Id.* Thus, even if each roller 98 and belt securing assembly 94 is supported by cover member 168, running belt 16 is not, either directly or indirectly.

130. Likewise, nothing in Socwell suggests that cover members 168 “support[]” the running belt via deck 56, the other structure Petitioner identifies as a “bearing.” Indeed, even though the Petition acknowledges that deck 56 may be

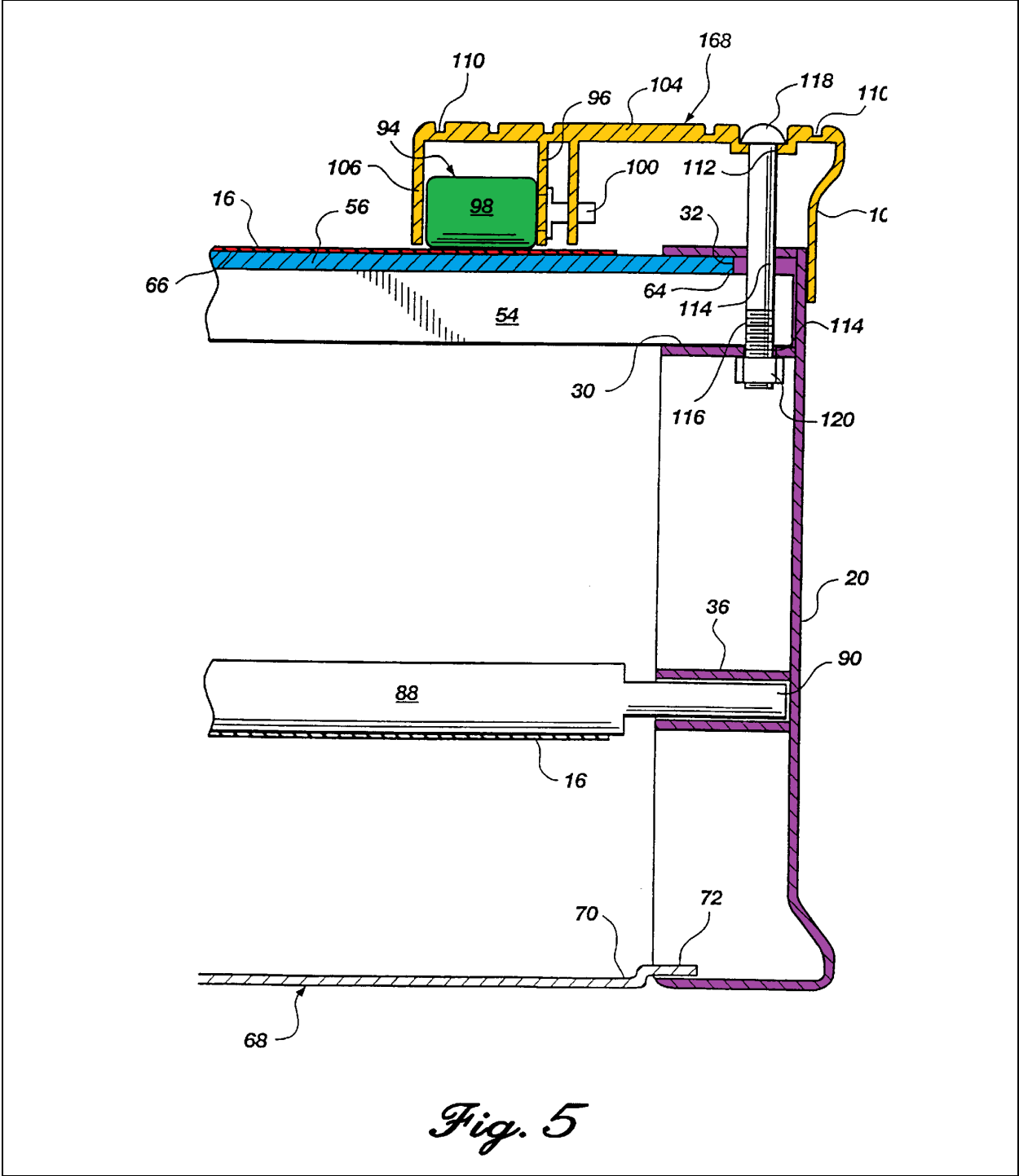
“attach[ed]... *to the frame 12*” via the same set of bolts that also attach cover member 168 to the frame in some embodiments, (Petition at 72 (emphasis added)), this does not mean that cover member 168 supports deck 56 or, indirectly, running belt 16. Rather, at most, this configuration suggests that both cover members 168 and deck 56 are supported by frame 12.

131. Cover members 168 do not support deck 56. This can be most clearly observed by referencing Socwell’s figures. For example, the following annotated version of Socwell Figure 5 demonstrates that cover member 168 (yellow) and deck 56 (blue) never even contact each other but rather are connected via a separate element, frame 12 (purple):<sup>2</sup>

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<sup>2</sup> For ease of reference, running belt 16 is also depicted in red and belt securing assembly 94 and rollers 98 are depicted in green.

# EX1011, Fig. 5



*Fig. 5*

EX1011 at Fig. 5.

132. As Figure 5 demonstrates, cover member 168 does not support any weight of running belt 16, either directly or indirectly via deck 56. In fact, cover member 168 does not even support deck 56 as asserted by Petitioner and Dr. Giachetti. Rather, both cover member 168 and deck 56 are “supported” by frame 12 – a separate component both in Socwell and, importantly, in the ’580 Patent’s Claims 1 and 11. EX1001 at Claim 1 (separately reciting “a frame,” “a first bearing rail,” and “a second bearing rail”), Claim 11 (same).

133. It is therefore my opinion that a POSA would readily understand that Socwell does not disclose a “a running belt [... at least partially] supported by the first bearing rail and the second bearing rail,” either explicitly or inherently, as required by independent Claims 1 and 11 and all of their dependent claims.

**c. Socwell does not disclose “disposing a running belt on the plurality of bearings” (Claim 25)**

134. I understand that Petitioner and Dr. Giachetti both rely on Socwell for Claim 25’s requirement for “disposing a running belt on the *plurality* of bearings.” Petition at 73-75; EX1003 at ¶421 (citing ¶¶355-358). I disagree that Socwell discloses such a feature.

135. As I previously explained, Socwell discloses, at most, only one structure – deck 56 – that can arguably constitute a “bearing” as that term is used in the ’580 Patent because belt securing assemblies 94 and rollers 98 are positioned vertically above the running belt 16. §VIII(A)(2)(a), *supra*. By extension, because

Socwell discloses at most only a single “bearing” rather than a “plurality of bearings,” Socwell cannot possibly disclose “disposing a running belt on the plurality of bearings” as required by Claim 25.

136. However, even crediting the argument that, if belt securing assemblies 94 and/or rollers 98 were understood to constitute “bearings,” which they are not, a POSA would still understand that Socwell could not disclose “disposing a running belt *on the plurality* of bearings” as required by Claim 25 due to the orientation of Socwell’s running belt relative to belt securing assemblies 94 and/or rollers 98.

137. Although Petitioner and Dr. Giachetti identify Socwell’s belt securing assemblies 94 and/or rollers 98 and its deck 56 as “bearings,” it is apparent both from Socwell’s written description and its figures that only deck 56 is positioned below Socwell’s running belt. Unlike deck 56, the remaining structures Petitioner identifies as “bearings” – belt securing assembly 94 and rollers 98 – are all positioned above the running belt, as I have repeatedly explained. §VIII(A)(2)(a)-(b), *supra*.

138. Again, an annotated excerpt of Socwell’s Figure 5 showing the relative relationship between the running belt 16 (red), the belt securing assembly 94 and rollers 98 (green), and the deck 56 (blue) is provided below for ease of reference:



EX1011, Fig. 5

This cross-sectional view shows a device assembly. A green rectangular component, labeled 98, is positioned within a housing. The housing includes a top section 110 and a side section 96. A red layer 16 is visible on the left side, with a blue hatched layer 54 below it. A vertical rod 112 passes through the assembly, with a spring 114 and a cap 118 at the top. Other components labeled include 106, 104, 168, 110, 94, 100, 112, 32, 64, 114, 116, 120, 30, 66, and 56.

POSA would understand that Socwell's running belt cannot be "disposed on" either belt securing assembly 94 or rollers 98.

141. Therefore, at most, Socwell's running belt 16 is "disposed on" at most a single bearing – deck 56 – regardless of how the term "bearing" is understood. It is therefore my opinion that a POSA would readily understand that Socwell does not disclose a "disposing a running belt on the plurality of bearings" as required by Claim 25, either explicitly or inherently.

**B. Lack of Motivation to Combine or Modify the Prior Art**

**1. A POSA Would Not Have Been Motivated to Combine Magid with Socwell or Chickering (All Grounds)**

142. I disagree with Petitioner's and Dr. Giachetti's arguments that a POSA would have been motivated to combine the "unidirectional control means 6, 6'" (which Petitioner analogizes to the "safety device" recited in each challenged independent claim) disclosed in Magid with either Socwell or Chickering, as argued in all grounds.

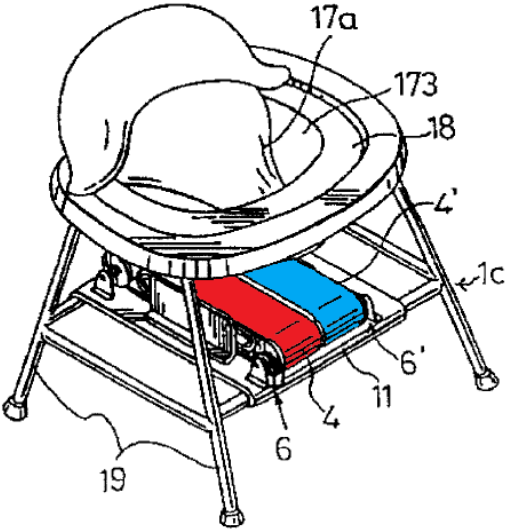
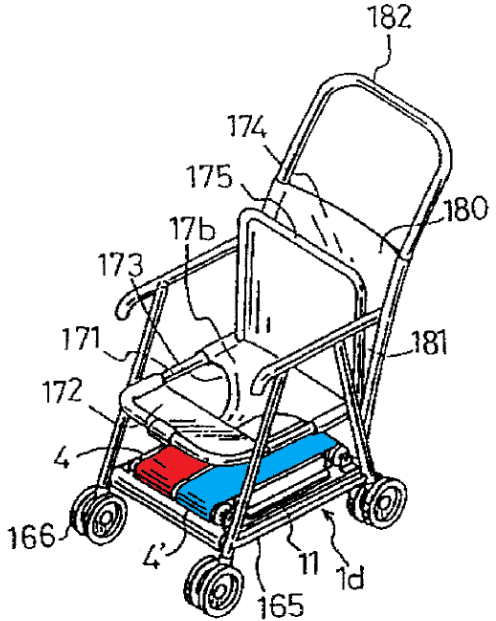
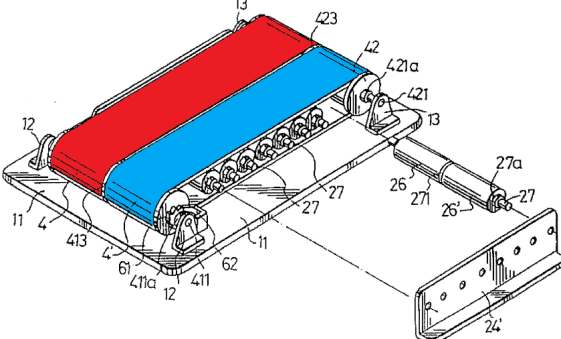
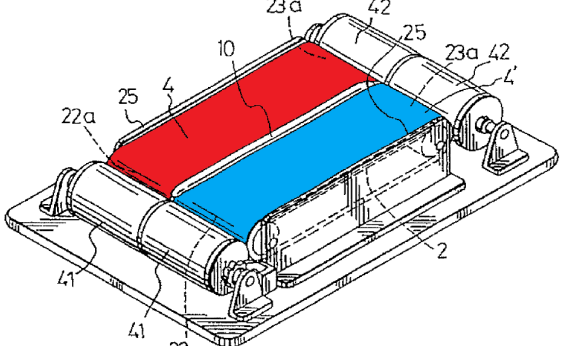
143. Magid discloses a walker device with two independently moving belts for therapeutic purposes. EX1012 at 1:46-52; *see also id.* at Fig. 1 (showing a "prior art" single-belt treadmill, indicating an intent to move away from a single-belt device). In Magid's walker device, two flat, parallel belts "move independently when treaded by the left and right feet of the user, thereby preventing the action of the user's left foot from influencing the action of his right foot and vice-versa..."

such that “the user's feet drive a respective foot belt 4, 4', rather than a single, common wide belt.” *Id.* at 5:19-27.

144. Magid's stated purpose is incompatible with a single belt design. A POSA would readily understand that, if a single belt were used in place of a dual-belt design, Magid's primary goal “preventing the action of the user's left foot from influencing the action of his right foot and vice-versa,” EX1012 at 5:21-25, could not be met. This is because, with a single belt design, both the user's left foot and his right foot contact the same belt and walking surface. Thus, as the user sets each foot on the walking surface and pushes off, the other foot will necessarily move along with the belt unless it is lifted. The action of each foot therefore necessarily influences the action of the user walking.

145. Consistent with this, Magid's Figure 1 shows a “prior art” treadmill with a single belt, further indicating Magid's express intent to move away from a single-belt device, which contrasts with Figure 2's depiction of Magid's invention:



EX1012, Fig. 6	EX1012, Fig. 7
 <p data-bbox="444 961 639 1016">FIG. 6</p>	 <p data-bbox="1003 961 1198 1016">FIG. 7</p>
EX1012, Fig. 8	EX1012, Fig. 10
 <p data-bbox="488 1591 586 1625">FIG. 8</p>	 <p data-bbox="1052 1591 1203 1625">FIG. 10</p>

*Id.* at Figs. 3-4, 6-8, 10; *see also id.* at 3:44-4:3.

146. Thus, a POSA would immediately recognize that Magid is focused on a two-belt therapeutic walker device, and given its focus on “preventing the action of the user’s left foot from influencing the action of his right foot and vice-versa,” EX1012 at 5:19-27, is incompatible with a single belt treadmill design.

147. Further, unlike Magid, both Socwell and the Chickering embodiment Petitioner and Dr. Giachetti cite and make no reference to therapeutic use.

148. Every treadmill disclosed in Socwell has only a single running belt. That is, Socwell describes only a single belt 16 in any given embodiment. *See generally* EX1011. This can further be seen with reference to Socwell’s figures, such as Figure 1, which is provided below for reference:

**EX1011, Fig. 1**

*Fig. 1*

79

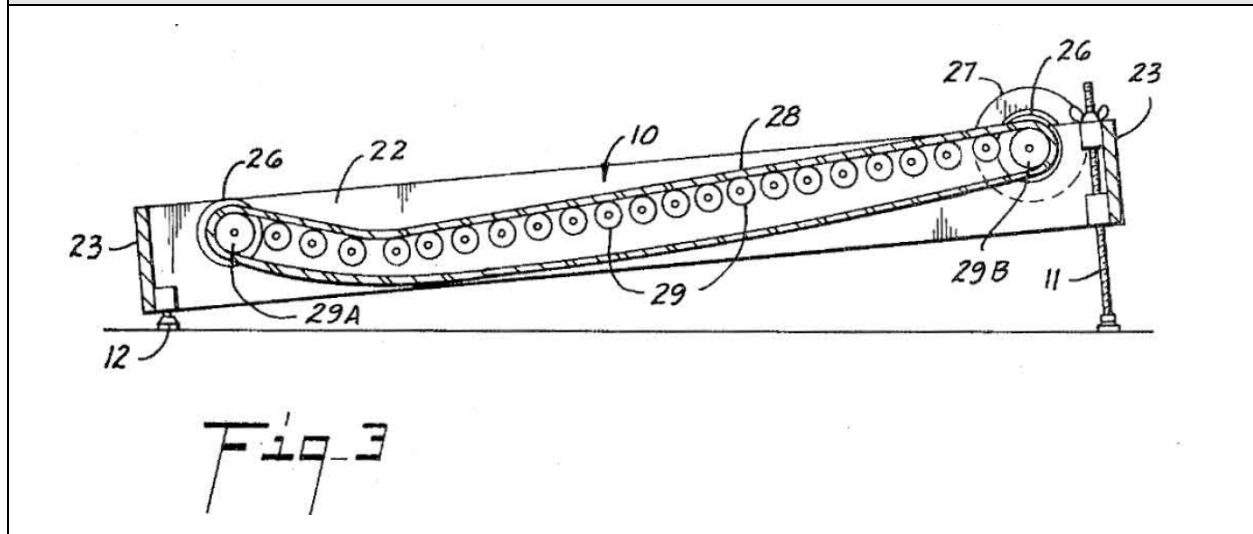
149. Likewise, Petitioner and Dr. Giachetti rely on an embodiment of Chickering that has only a single belt. *See, e.g.*, Petition at 32-33 (citing EX1013 at 2:73-3:10, Fig. 3); EX1003 at ¶¶161-164 (same); *see also* EX1003 at ¶205 (referring back to ¶¶161-164), ¶¶226-228 (same). Specifically, both cite to the following disclosures for the “running belt” limitation:

An alternate form of the exercising device of the present invention is shown in FIG. 3, wherein **a single endless belt 28** forms both the accelerating and decelerating areas. In the device shown in FIG. 3, a single series of rollers 29 are provided journaled in the sidewalls 22 of base 10. However, the rollers are so disposed that the forward rollers lie approximately in a plane slanting downwardly from the front of the base, while the rear rollers lie approximately in a plane slanting upward toward the rear of the base 10. Thus, when the endless belt 28 is placed about the rollers, it follows their contour and provides a forward accelerating area and a rear decelerating area which are inclined from the horizontal with each being lowest at their point of nearest proximity.

EX1013 at 2:73-3:10.



EX1013, Fig. 3



*Id.* at Fig. 3.

150. In addition to the single-belt design referenced above, while Chickering also discloses an alternative dual-belt design, (EX1013 at 1:65-2:73), a POSA would immediately recognize that Chickering’s dual-belt design is fundamentally different from and not comparable with the dual-belt design in Magid. Specifically, where as Magid discloses a treadmill with two parallel belts – one corresponding to the user’s left foot and one corresponding to the user’s right foot (EX1012 at 5:19-27) – Chickering’s dual-belt design uses two sequential belts, *i.e.*, one belt placed behind the other (EX1013 at 2:13-21, 2:50-72). Each of Chickering’s belts are intended to contact both of the user’s feet when the Chickering device is in use. EX1013 at 2:50-72. This is in sharp contrast to Magid’s parallel dual-belt design in which, as discussed above, “the user’s feet drive a respective foot belt 4, 4’, rather than a single,

common wide belt...” and the two belts “move independently when treaded by the left and right feet of the user, thereby preventing the action of the user’s left foot from influencing the action of his right foot and vice-versa....” EX1012 at 5:19-27.

151. Thus, both Socwell and the Chickering embodiment relied on by Petitioner and Dr. Giachetti are directed to a single-belt treadmill, *i.e.*, the exact type of device that Magid rejected.

152. In addition, unlike Magid, which is directed to a treadmill suitable for therapeutic use (*i.e.*, for use “people with uncoordinated feet movements, such as small children, physically handicapped people and old people,” EX1012 at 1:30-35, 5:52-55), both Socwell and Chickering are directed to a non-therapeutic “exercising treadmill” or “exercise device,” which is to be used for recreational jogging or running. With respect to Socwell, the following disclosures are exemplary:

This invention relates to **exercise treadmills** and, more particularly, to novel systems and methods for providing a curved deck treadmill.

EX1011 at 1:10-12 (emphasis added).

Additionally, exercise treadmills of the prior art may furnish a user with an upright handle to grasp while exercising. While Somewhat useful in retaining the user’s balance on the rotating endless belt, having to grasp a fixed handle may impede the natural body motion of a user attempting to exercise. Such an encumbrance may be feasible when a user is attempting to walk, but **when a user begins to jog or run on prior art exercise treadmills, having to grasp a handle to keep centered on the treadmill may severely interfere with one’s**

**natural body motion and further abdicate the inherent physical advantages of the exercise routine.**

*Id.* at 2:56-67 (emphasis added, criticizing prior art).

In addition, it is an object of the present invention to provide a curved deck treadmill which is capable of providing meaningful walking, **jogging, or running** comfort in relation to the physiology of a user, thereby facilitating an upper surface which supportably provides for a longer stride with more flexibility.

*Id.* at 3:46-51 (emphasis added).

In an alternate embodiment, the curved deck treadmill 10 or the present invention may be implemented without a driving means engagably disposed to a roller in order to facilitate the forced rotation of the belt 16. If so implemented, the rollers 78, 86 and 88 and the deck 56 should be generally calibrated in relation to the belt 16 to provide an optimal frictional resistance to **enable a user to safely walk, jog, and/or run thereon, while still providing sufficient resistance to enable a user to exercise.**

*Id.* at 11:53-61 (emphasis added). Indeed, as noted above, Socwell expressly criticizes prior art treadmills that, like Magid, are optimized for walking than for jogging or running. *Id.* at 2:56-67.

153. Similarly with respect to Chickering, the following disclosures are exemplary of Chickering's focus on recreational running by able-bodied adults:

This disclosure relates to a new type of **treadmill exercising device** having a base, rollers carried by the base, and an endless belt disposed about the rollers to provide a tread surface.

EX1013 at Abstract (emphasis added).

This invention relates to a new type of treadmill exercising device, and more particularly to **an exercising device on which the user can simulate the acts of walking, jogging and running** without relying on handles, belts or other external supports for maintaining his balance.

*Id.* at 1:3-7 (emphasis added).

Another object is to provide such an **exercising device** upon which the user may accurately simulate the acts of walking, **jogging and running** without relying on handles, railings, belts, or the like, for maintaining his balance and his position.

A still further object is to provide such an **exercising device** which enables the user to more accurately simulate the movements of ordinary walking, **jogging and running** so as to obtain the greatest possible benefits and pleasure from such exercise.

*Id.* at 1:44-51 (emphasis added).

The first series of rollers 13 and tread surface 16a operate much like a conventional treadmill. As a person walks **or runs on the tread surface 16a**, his weight will cause the rollers 13 and belt 16 to rotate in a counterclockwise motion, carrying the user's foot rearwardly and downwardly.

*Id.* at 2:40-44 (emphasis added).

154. In view of Magid's teachings regarding the criticality of a two-belt design in which the walking belts are positioned parallel to one another, ensuring that the device is capable of therapeutic use, and emphasizing walking rather than running or jogging, a POSA would not have been motivated to look to Magid and combine its teachings with a recreational single-belt treadmill that is suitable for

jogging or running, such as those taught in Socwell and the relevant Chickering embodiment.

155. In fact, a POSA would immediately recognize that there would have been no need to incorporate Magid's unidirectional control means (6) and (6') into the Socwell and Chickering devices. As previously discussed, the purpose of Magid's walking device is fundamentally different from the purpose of the treadmills described in Socwell and Chickering. Magid's walker device is specifically intended for therapeutic use by "people with uncoordinated feet movement, such as small children, physically handicapped people and old people...." EX1012 at 1:30-35, 5:52-55. With a flat or uniplanar walking surface, Magid's walker device would be relatively easy and appropriate to use for these kinds of therapeutic purposes.

156. However, a POSA would expect those with "uncoordinated feet movement" to face a heightened risk if the one of the Magid's two walking belts moves in the opposite direction from that intended during use. Such users would be expected to have balance and coordination problems that significantly limit their ability to correct for an unintended foot movement and thus increase their risk of injury. Such injuries include, for example, ligament, tendon, or muscular damage to the hip or knee that may result from hyperextension of the forward leg as the rearward leg unexpectedly moves in the opposite direction.

157. Thus, in order to limit or eliminate the risk of injury, a POSA would recognize that Magid requires at a minimum some kind of control means that will prevent one of the belts from moving in an unintended direction while the other belt either moves in the intended direction or remains stationary.

158. Magid's concern about the user's feet moving in opposite directions is simply not relevant to the single-belt designs of Socwell and Chickering. In a single-belt design, it is not possible for the user's feet to move in opposite directions while both are in contact with the belt. The belt itself can only move one direction at a time – forward and backward – and as such, the user's feet must also move in the same direction. A POSA therefore would have recognized that the control means of Magid would not serve their intended purpose and would be superfluous if incorporated into Socwell or Chickering.

159. Additionally, a POSA would have immediately recognized that a curved running surface like that in Socwell or a multi-planar running surface like that in Chickering would be difficult, if not practically impossible, to adapt for use by “people with uncoordinated feet movements, such as small children, physically handicapped people and old people,” and inappropriate for the therapeutic uses described in Magid. As previously indicated, such individuals expected to have balance and coordination problems, and these deficiencies make walking or running on a curved or multi-planar surface unnecessarily dangerous as they increase the

propensity for falls, particularly in the absence of features like handles or harnesses that allow the user to maintain their balance independent of their feet movements.

160. Further, both Socwell and Chickering contain teachings that are incompatible with use by those with coordination or balance deficiencies. For example, Chickering criticizes the prior art to the extent “some external support is necessary to enable the user of such treadmills to maintain his balance, as well as his position on the moving belt,” and teaches that one of its primary objectives was to provide a user (of presumably ordinary physical abilities) the ability to exercise without the need for “relying on handles, railings, belts, or the like, for maintaining his balance and his position.” EX1013 at 1:37-47. A POSA would understand such teachings regarding a preference for devices that lack external support to mean that Chickering’s invention would be unsuitable for use by people with uncoordinated feet movement, including the physically handicapped and young children, who would typically have a heightened need for some kind of external support.

161. Likewise, Socwell criticizes prior art devices to the extent they “furnish a user with an upright handle to grasp while exercising,” teaching that, “[w]hile somewhat useful in retaining the user’s balance on the rotating endless belt, having to grasp a fixed handle may impede the natural body motion of a user attempting to exercise.” EX1011 at 2:56-61. While, as in Magid, “[s]uch an encumbrance may be feasible when a user is attempting to walk,” for Socwell teaches that, “[w]hen a user

begins to jog or run on prior art exercise treadmills, having to grasp a handle to keep centered on the treadmill may severely interfere with one's natural body motion and further abdicate the inherent physical advantages of the exercise routine." *Id.* at 2:61-67.

162. Thus, a POSA considering Magid – which discloses a therapeutic “walker apparatus” and teaches away from a single belt, non-planar, or multi-planar exercise treadmill (EX1012 at 1:17) – would be discouraged from combining Magid with elements of Chickering or Socwell, particularly where those references criticize the features emphasized in Magid or features that would be necessary for the intended users of Magid's walker device.

163. To summarize, a POSA would not combine the teachings of Socwell or Chickering and Magid because i) Magid focuses on a two-belt therapeutic treadmill and teaches away from using a single belt treadmill like in Socwell and Chickering, and ii) the therapeutic treadmill of Magid is specifically intended for use by “people with uncoordinated feet movements, such as small children, physically handicapped people and old people.” EX1012 at 1:30-35, 5:52-55. Implementation of a curved or multi-planar running surface would be inappropriate for therapeutic purposes, and thus, Magid teaches away from implementing a curved or multi-planar running surface (such as in Socwell and Chickering) with the treadmill of Magid.



164. Additionally, a POSA simply would not consider Magid to be relevant prior art when considering a curved treadmill like that in Socwell or a multi-planar treadmill like that in Chickering. When looking at Socwell or Chickering, a POSA would necessarily examine the teachings of other treadmills having curved running surfaces like in Socwell or other treadmills having multi-planar running surfaces like in Chickering, not a treadmill belt with a single flat or uniplanar surface as in Magid.

165. A POSA would be well aware that the design and engineering requirements of a treadmill having a curved running surface or a multi-planar running surface differ from those of a treadmill with a single flat or uniplanar running surface. Design and engineering requirements thus urge a POSA to avoid combining the teachings of Socwell or Chickering with Magid, particularly given Magid's express teaching away from a single-belt treadmill.

166. In particular, a POSA would not modify the Socwell treadmill to include the unidirectional control means (6) and (6') of Magid based on the teachings of Socwell and Magid. The treadmill belt of Socwell is free to move in both a forward direction and a rearward direction. When a user steps onto the rear of the treadmill having a curved running surface, the user's weight may cause the treadmill belt to move in the unintended rotational direction, particularly if the user inadvertently mounts the device from or towards the rear. But despite teaching a curved running surface, Socwell does not recognize this potentially unwanted

characteristic. Rather, Socwell explains that its curved running surface is sufficient to address the acknowledged danger of users' tendency to fall off the back of the treadmill.<sup>3</sup> EX1011 at 2:45-48, 3:40-45. Moreover, Dr. Giachetti admits that Socwell discloses "provid[ing] optimal frictional resistance of the belt to ensure safety while providing proper resistant for to [*sic*] running."<sup>4</sup> EX1003 at ¶430 (citing EX1011 at

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<sup>3</sup> Other prior art references cited by Dr. Giachetti similarly explain that using a curved surface or other features besides one-way bearings were sufficient to solve the danger of a user falling off the treadmill. *E.g.*, EX1009 (Schmidt) at 1:50-59 ("Another feature of the present invention not found in prior art structures is that, associated with the frictional resilient tread, is means whereby the tread surface may assume, under the action of the operator, a slightly curved surface, thereby greatly facilitating the operation of running or walking upon the exerciser and, at the same time, allowing the operator to maintain perfect equilibrium and balance."); EX1014 (Cutter) at Abstract ("A handle, if used, can either be in a substantially vertical position for a beginner or can be put down flat and out of the way, for a more practiced user to run without any impediment.").

<sup>4</sup> Notably, this admission contradicts Dr. Giachetti's later assertion that Socwell "does not address the safety issue of the running belt moving in a forward direction when a user steps onto the treadmill." EX1003 at ¶431.

11:57-59). To the extent Socwell discusses the need for adequate friction during rotation at all, it advocates for sufficient friction in *any* direction of belt motion, not unidirectional movement. EX1011 at 1:28-56.

167. The same is true of Chickering, which discloses two embodiments with a dual-planar running surface – one plane angling downward toward the rear of the device for acceleration and one plane angled upward toward the rear of the device for deceleration. Again, if a user were to mount the device from or towards the rear and step only on the upward angled plane, the user's weight may cause the treadmill belt to move in the unintended rotational direction. However, despite teaching a multi-planar running surface, Chickering does not recognize any potentially unwanted characteristics from its multi-planar design.

168. Magid, on the other hand, shows a flat or planar treadmill belt and, in turn, the aforementioned undesired characteristic is irrelevant to Magid. That is, a user of Magid is not concerned with a treadmill belt moving in the unintended direction when the user begins to use the device; while a potential safety hazard exists for users mounting treadmills having curved running surfaces, such a safety hazard is not present in treadmills having flat or planar running surfaces because mounting the device from or towards the rear is no different from mounting it from or at any other point. In this regard and as one would expect, Magid does not disclose

any type of potential safety hazard when the user mounts the device of Magid. *See generally* EX1012.

169. Thus, while Magid discloses a unidirectional control means (6) and (6') for “permit[ting] only unidirectional movement of the left and right foot belts,” EX1012 at 4:46-48, I see no impetus, reason, or motivation to combine Magid with Socwell given these clear differences in structure and intended use, and in my opinion, neither would a POSA.

170. Finally, to the extent Dr. Giachetti points to certain safety standards as indicative of some general motivation to implement a one-way bearing in either Chickering or Socwell, I disagree that a POSA would consider these safety standards to provide any such motivation. None of the safety standards Dr. Giachetti cites call for a one-way bearing or any other means for restricting the movement of the belt in a given direction. *See generally* EX1007; EX1019; EX1020. Rather, as Dr. Giachetti acknowledges, these standards only describe requirements for foot rails and handrails as means to address user stability. EX1003 at ¶428 (discussing standards). A POSA would not understand standards that never so much as mention one-way bearings to suggest the use of one-way bearings.

171. Accordingly, it is my opinion that a POSA would not be motivated to modify the curved running surface device of Socwell or the multi-planar inclined surface device of Chickering to incorporate features from the flat, uniplanar walking

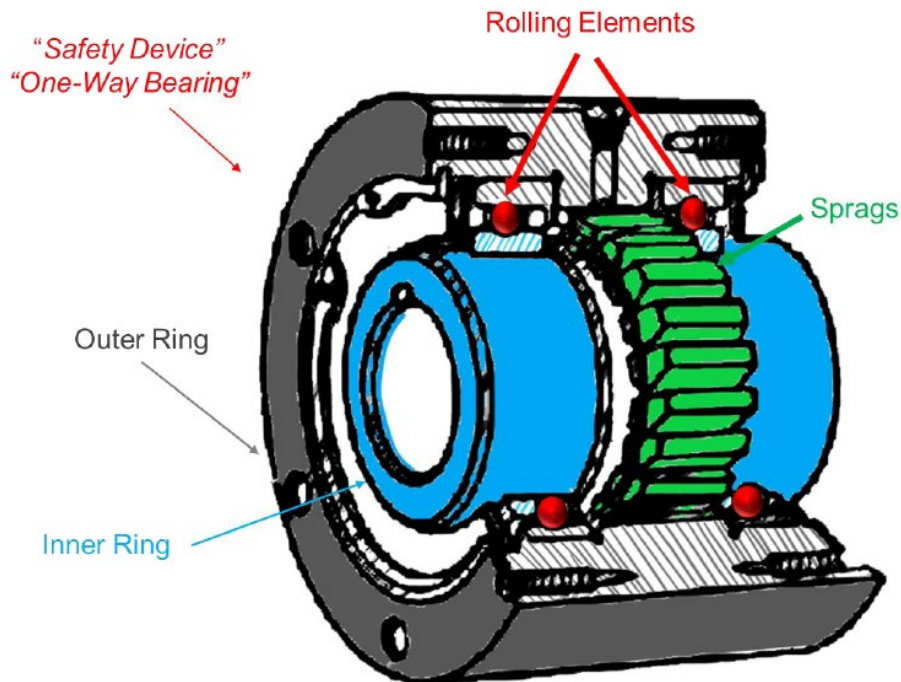
device of Magid because the thus-modified piece of equipment would be unsuited for any of the references' intended purposes. Rather than look to a device like Magid, a POSA looking to improve or modify a curved or multi-planar treadmill like those described in Socwell and Chickering, respectively, would instead look at features implemented in other treadmills with curved or multi-planar surfaces.

**2. A POSA Would Not Have Been Motivated to Replace the Magid Control Means with the Specific Bearing Assembly Described in Sclater (Grounds 2-3 and 5-6)**

172. I also disagree with Petitioner's and Dr. Giachetti's arguments that a POSA would have been motivated to combine the sprag-type clutch depicted in the excerpts of Sclater that Petitioner submitted as Exhibit 1017 (which Petitioner also analogizes to the "safety device" recited in each challenged independent claim) with either Socwell or Chickering, as argued in Grounds 2, 3, 5, and 6.

173. Unlike the other references Dr. Giachetti relies on, Sclater is not a patent or patent application. Instead, it is a general engineering reference book and, by its own description, "contains drawings and descriptions of *more than 2000 different mechanisms and mechanical devices* that have proven themselves in modern products, machines, and systems." EX1017 at 24 (emphasis added). From these thousands of mechanisms, Dr. Giachetti appears to have selected one that he contends a POSA would have found it obvious to incorporate into both Socwell and

Chickering, taking the place of the “control means” he originally argued would be obvious to add. This device is a “sprag-type clutch” and is depicted below:



EX1003 at ¶251 (annotations from Dr. Giachetti’s declaration).

174. Based on my review, the only reasons Dr. Giachetti provides for his opinion that a POSA would have been motivated to substitute Sclater’s sprag-type clutch for Magid’s unidirectional control means is that Sclater’s sprag-type clutch would have “reduced noise and improved durability” compared to Magid’s unidirectional control means, which Dr. Giachetti characterizes as a ratchet-and-pawl clutch. *Id.* at ¶271. A POSA, however, would not understand Sclater to teach that sprag-type clutches necessarily have such characteristics.

175. Although Sclater generally states that a “friction-type clutch is quieter,” possibly in comparison to an “elementary” “ratchet and pawl mechanism,” (EX1017 at 316), sprag-type clutches are not the only friction-type clutches described in Sclater. Rather, even in the limited sections of Sclater Petitioner included in its Exhibit 1017, at least six different kinds of friction-type clutches are described. These include, for example, plate clutches, cone clutches, expanding shoe clutches, cam and roller clutches, expanding shoe centrifugal clutches, and mercury gland clutches, not just the sprag-type clutch Petitioner actually relies on. EX1017 at 302-03. While a POSA could conclude at most that any one of these friction-type clutches would generally be quieter than an “elementary” ratchet-and-pawl clutch, a POSA would have no reason to believe that the sprag-type clutch Dr. Giachetti and Petitioner actually rely on would be the most preferable or even feasible choice for use in a treadmill. Indeed, neither Dr. Giachetti nor Petitioner offer any reasons why a POSA would have elected the chosen sprag-type clutch over any of the others.

176. Additionally, I understand that Dr. Giachetti’s opinions regarding the noise caused by a ratchet-and-pawl clutch depends on the fact that “[t]he pawl is spring-loaded to engage each gear tooth of the ratchet and it makes an audible ‘click’ when colliding with the gear tooth root after overrunning or passing over each tooth.” EX1003 at ¶272; *see also* EX2023 at 106:9-20 (testifying that ratchet-and-pawl clutches to be particularly noisy because “[e]very time the pawl strikes the

ratchet gear, there is going to be a -- a pinging sound or a clicking sound”). However, a POSA would readily recognize that the “pinging” or “clicking” sound Dr. Giachetti references is caused not by ratchet-and-pawl clutches in general but rather only ratchet-and-pawl clutches that include teeth. That is, as Dr. Giachetti testified, these noises result from the teeth of a ratchet coming into repeated contact with the features of the adjacent pawl that are meant to catch the teeth if the direction of rotation changes.

177. A POSA would know, however, that there are a variety of different kinds of ratchet-and-pawl clutches, many of which do not include teeth. In fact, although Petitioner appears to have omitted it from the excerpts submitted as Exhibit 1017, the Sclater reference book Dr. Giachetti repeatedly cites identifies several ratchet-and-pawl clutches that lack teeth on a page aptly titled “No Teeth on These Ratchets:”



## NO TEETH ON THESE RATCHETS

Ratchets with springs, rollers, and other devices keep motion going one way.

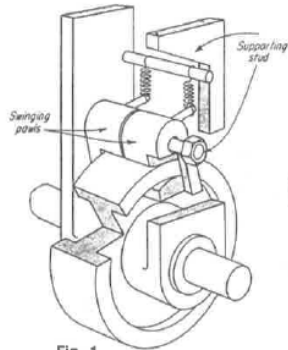


Fig. 1

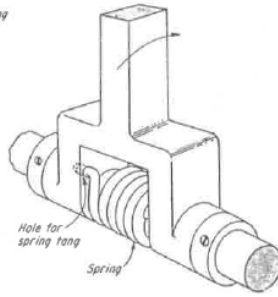


Fig. 2

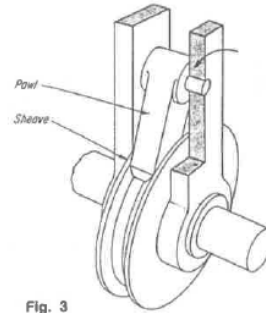


Fig. 3

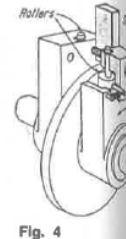


Fig. 4

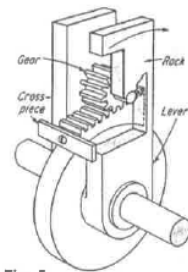


Fig. 5

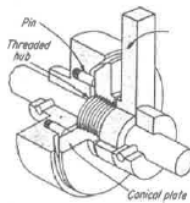


Fig. 6

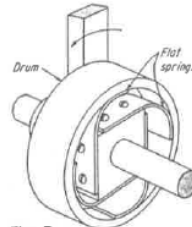


Fig. 7

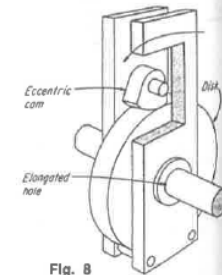


Fig. 8

**Fig. 1** Swinging pawls lock on the rim when the lever swings forward, and release on the return stroke. Oversize holes for the supporting stud make sure that both the top and bottom surfaces of the pawls make contact.

**Fig. 2** A helical spring grips the shaft because its inner diameter is smaller than the outer diameter of shaft. During the forward stroke, the spring winds tighter; during the return stroke, it expands.

**Fig. 3** A V-belt sheave is pushed around when pawl wedges in the groove. For a snug fit, the bottom of the pawl is tapered like a V-belt.

**Fig. 4** Eccentric rollers squeeze a disk on its forward stroke. On the return stroke, rollers rotate backwards and release their grip. Springs keep the rollers in contact with the disk.

**Fig. 5** A rack is wedge-shaped so that it jams between the rolling gear and the disk, pushing the shaft forward. When the driving lever makes its return stroke, it carries along the unattached rack by the cross-piece.

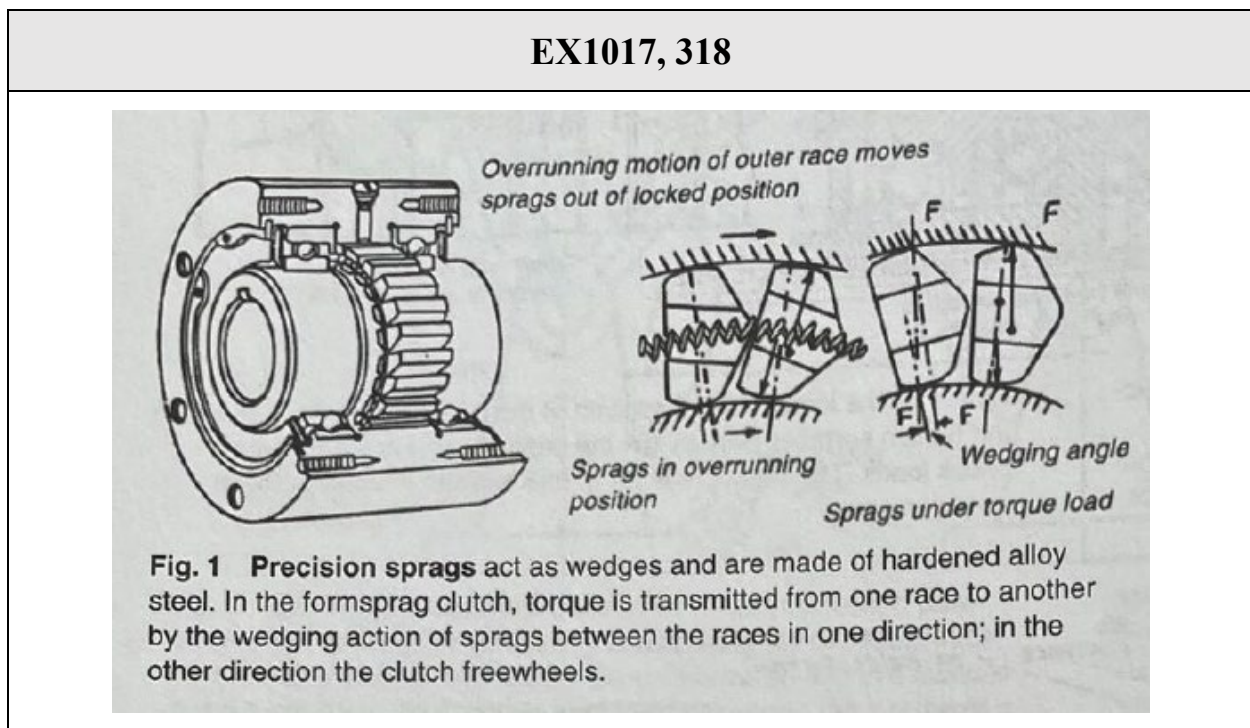
**Fig. 6** A conical plate moves like a nut back and forth along the threaded center hub of the lever. The light friction of spring-loaded pins keeps the plate from rotating with the hub.

**Fig. 7** Flat springs expand against the inside of a drum when a lever moves one way, but they drag loosely when the lever turns the drum in the opposite direction.

**Fig. 8** An eccentric cam jams against the disk during the motion half of a cycle. Elongated holes in the levers allow the cam to wedge itself more tightly in place.

EX2021 at 124. A POSA would readily understand that these non-teeth ratchet-and-pawl clutches would not cause the same “pinging” or “clicking” sound that Dr. Giachetti incorrectly ascribes to all ratchet-and-pawl clutches.

178. As for “durability,” I have not been able to identify any statements in Petitioner’s excerpts from Sclater regarding the durability of sprag-type clutches relative to other options, let alone the durability of the specific clutch relied on by Petitioner. *See generally* EX1017. In fact, based on my review, the entirety of the discussion about the mechanism Petitioner and Dr. Giachetti rely on is found in the following excerpt:



*See also* Petition at 20.

179. The foregoing excerpt is found in a section that also discusses nine other, non-sprag-type overrunning clutches. EX1017 at 318-19. That excerpt further explains that all of those clutches, not just the sprag-type clutch Petitioner and Dr. Giachetti identify, “allow freewheeling, indexing and backstopping” and “will solve

many design problems.” *Id.* at 318. It does not identify any benefits of the sprag-type clutch over the other identified clutches, let alone the dozens of other alternatives discussed in other portions of the exhibit.

180. A POSA would not find Sclater’s lack of specificity surprising, particularly when many of the alternative devices described therein would function just as well as or even better than the sprag-type clutch Petitioner cites, including for purposes of “reduced noise and improved durability.”

181. Sclater’s lack of specificity is expected, as Sclater is merely summarizing the features of the mechanisms and mechanical devices as well as design considerations when using these devices. As is plain, Sclater obviously is not aware of the myriad of applications of these devices.

182. Furthermore, a POSA would have to consider a number of different factors beyond “noise” and basic concerns about “durability” before deciding if a sprag-type clutch was suitable for use in any particular application. In fact, Sclater itself describes some of these factors, teaching as follows:

Overrunning sprag clutches transmit torque in one direction and reduce speed, rest, hold, or free-wheel in the reverse direction. Applications include overrunning, back stopping and indexing. **Their selection – similar to other mechanical devices – requires a review of the torque to be transmitted, overrunning speed, type of lubrication, mounting characteristics, environmental conditions, and shock conditions that might be encountered.**

EX1017 at 320 (emphasis added). To my knowledge, however, Dr. Giachetti did not specifically analyze any of these factors when selecting the specific sprag-type clutch he identifies. Instead, as discussed above, Dr. Giachetti relies on generic statements that are applicable to a wide variety of clutches or, at the very least, the entire class of sprag-type clutches. Unlike Dr. Giachetti, a POSA would not have relied on such vague and non-specific ideas to conclude that the sprag-type clutch identified could be implemented in Socwell or Chickering.

183. In fact, another key element a POSA would have considered in the design is overall product cost which includes both the cost of the components, as well as the assembly time required to construct the product. During the design for manufacturing phase of the development effort, a POSA would have looked to reduce the overall part count of the product which may reduce the total cost of the components, and/or reduce the cost to assemble by reducing the number of assembly steps, which will impact the overall product cost. In this case, Dr. Giachetti and Petitioner say nothing of these considerations, merely using the '580 Patent as a roadmap to drive their selected choice from Sclater.

184. Accordingly, it is my opinion that a POSA would not have been motivated to implement Sclater's sprag-type clutch to either Socwell or Chickering for the reasons discussed by Petitioner and Dr. Giachetti. Their explanations simply are not tied to the specific device they identify.

**IX. SECONDARY CONSIDERATIONS CONFIRM THE NON-OBVIOUSNESS OF THE '580 PATENT CLAIMS**

185. As previously indicated, I understand that certain factors—often called “secondary considerations”—may support or rebut an assertion of obviousness of a claim. I understand that such secondary considerations include, among other things, commercial success of the alleged invention, skepticism of those having ordinary skill in the art at the time of the alleged invention, unexpected results of the alleged invention, any long-felt but unsolved need in the art that was satisfied by the alleged invention, the failure of others to make the alleged invention, praise of the alleged invention by those having ordinary skill in the art, and copying of the alleged invention by others in the field. I further understand that there must be a nexus—a connection—between any such secondary considerations and the alleged invention.

186. I further understand that there is a presumption of nexus between a product and the alleged invention when the product practices the claimed invention.

187. I have been asked to render my expert opinion regarding whether Woodway’s line of CURVE treadmill products practice the claimed invention and specifically whether these products embody Claims 1-12, 14, 15, 18, and 25 of the ’580 Patent. As discussed in further detail below, it is my opinion that Woodway’s CURVE treadmill products do embody Claims 1-12, 14, 15, 18, and 25 of the ’580 Patent and are coextensive with those claims.

188. In addition, it is my opinion that the secondary considerations of nonobvious described below and in other evidence that I understand Patent Owner is submitting confirm my opinion that the claims of the '580 Patent are nonobvious.

**A. Woodway's Line of CURVE Products Practice the Claimed Inventions**

189. I am familiar with Woodway's product offerings over the years from my experience in the industry. I have also reviewed documents describing Woodway's line of CURVE treadmill products, the first of which was released in 2009. At various points in the past, I have also inspected certain of Woodway's treadmills. With this background, it is my opinion that Woodway's line of CURVE treadmills practice at least Claims 1-12, 14, 15, 18, and 25 of the '580 Patent. This analysis is detailed in the claim chart submitted with this report. *See* EX2025.

190. All of the claims of the '580 Patent are directed to a manually powered treadmill or a method of providing a manually powered treadmill, and based on my analysis, at least Claims 1-12, 14, 15, 18, and 25 coextensive with Woodway's line of CURVE treadmills. Each treadmill is a manually powered treadmill that comprises a frame, a front shaft and a rear shaft coupled to the frame, two bearing rails comprising a plurality of bearings and defining a curved top profile, a running belt disposed on the plurality of bearings such that it follows a top curved running surface, and a safety device coupled to a shaft and preventing movement of the running belt in a second direction while permitting movement in a first direction.

Woodway's CURVE Trainer treadmill, which is identical in all material respects to other iterations of the CURVE family of treadmills for purposes of practicing the claims of the '580 Patent, is depicted in the below photograph, which I have taken from Woodway's website ([www.woodway.com](http://www.woodway.com)), with more detail available in the accompanying chart (EX2025).



191. The differences between the original CURVE treadmill and other treadmills within the CURVE line do not affect whether the treadmills practice the claims of the '580 patent. Some exemplary differences are summarized as follows:

- Curve XL – The Curve XL treadmill offers a larger running surface than the original CURVE treadmill, but for purposes of determining nexus with the claims of the '580 patent, is structurally the same as other treadmills within the CURVE line.
- Curve LTG – The Curve LTG treadmill is a lighter duty version of the original CURVE treadmill, but for purposes of determining nexus with the claims of the '580 patent, is structurally the same as other treadmills within the CURVE line.
- Curve FTG – The Curve FTG treadmill has different handrails from the original CURVE treadmill and added features for providing different levels of resistance, but for purposes of determining nexus with the claims of the '580 patent, is structurally the same as other treadmills within the CURVE line.
- Curve 3.0 – The Curve 3.0 treadmill contains upgraded software and other sophisticated electronics but, for purposes of determining nexus with the claims of the '580 patent, is structurally the same as other treadmills within the CURVE line.
- Curve Trainer –The Curve Trainer has a slightly less steep curve than the original CURVE treadmill and may provide a quieter and quicker acceleration than the original CURVE treadmill. However, for purposes



of determining nexus with the claims of the '580 patent, the Curve Trainer is structurally the same as other treadmills within the CURVE line.

- EcoMill and EcoMill Legacy– The EcoMill and EcoMill Legacy each have an onboard generator system that produces power for the display and a USB charging station but, for purposes of determining nexus with the claims of the '580 patent, are structurally the same as other treadmills within the CURVE line.

**B. Commercial Success of the Claimed Inventions, Industry Praise, and Copying**

192. I have reviewed the Declaration of Eric A. Weber, which among other things, documents the prices and sales volumes of Woodway's CURVE family of treadmills, as well as industry praise for and others' copying of the CURVE products. EX2020.

193. I am also very familiar with the state of the art for treadmill technologies as of the earliest possible priority date and the conventional wisdom in the industry with regard to treadmill technologies at the time (and for years thereafter).

194. In my opinion, the objective evidence of commercial success, industry praise, and copying as reflected in Mr. Weber's declaration confirms my opinions regarding the non-obviousness of the invention claimed in the '580 Patent.

**C. The Passage of Time Between Publication of the Prior Art and the Inventions**

195. In addition, the passage of time between the time of invention and the prior art cited and relied upon by Dr. Giachetti and Petitioner demonstrates the long-felt need for the invention. Chickering issued in January 1972 – more than thirty years before Woodway filed the patent application that ultimately issued as the '580 Patent – and Socwell and Magid were both published in the 1990's – more than a decade before the claimed priority date.

196. Despite the purportedly obvious need for improved safety in Chickering and Socwell, nothing really changed in the industry for many years. In my opinion, the passage of time between the publication of the cited prior art and the time of invention was significant and undermines the idea that the combination of prior art Dr. Giachetti and Petitioner rely on would have been obvious to a POSA.

**X. COMPENSATION AND PRIOR TESTIMONY**

197. I have been retained by Patent Owner and am being compensated for the time that I spend on this matter at my regular consulting rate of \$450 per hour. My compensation is not contingent upon the outcome of this proceedings.

198. I have previously testified as an expert, including in intellectual property matters. For example, I have provided deposition testimony in the following matters:


- *Nike, Inc. v. Sketchers USA, Inc.*, United States District Court Central District of California, Case No. 19-cv-09230-FLA(JDEx), February, 2021.
- *Coulter Ventures, LLC, d/b/a/ Rouge Fitness v. Jump Rope Systems, LLC*, United States Patent and Trademark Office – Patent Trial and Appeal Board, Case No. IPR2019-00587, January 2020.
- *Coulter Ventures, LLC, d/b/a/ Rouge Fitness v. Jump Rope Systems, LLC*, United States Patent and Trademark Office – Patent Trial and Appeal Board, Case No. IPR2019-00586, January, 2020.
- *Kelly Christine Loveday Maher Conservator of Riley Maher, a Minor v. Michindoh Conference Center d/b/a Camp Michindoh and Michindoh Outdoor Education School, Jessica Pinkel, and Experiential Systems, Inc.*, State of Michigan Hillsdale County Circuit Court, Case No. 18-000183-NO, August 2019.
- *Speedfit LLC v. Woodway USA Inc.*, United States District Court Eastern District of New York, Case No. 2:17-cv-00768-KAM-AKT, December 2018.
- *Chapco, Inc., and Samsara Fitness, LLC, v. Woodway USA Inc.*, United States District Court for the District of Connecticut, Case No. 3:15-cv-1665-JCH, April 2017.

- *Speedfit LLC and Aurel Astilean v. Woodway USA, Inc. and Douglas G. Bayerlein*, United States District Court Eastern District of New York, 2013 Civ. 01276 (KAM) (AKT), September 2015.
- *Icon Health & Fitness, Inc., Plaintiff and Counterclaim Defendant, v. Park City Entertainment, Inc., Defendant and Counterclaim Plaintiff*, United States District Court for the District of Utah (Northern Division). Civil Action No. 1:10-cv-00195-RJS-DBP, January 2013.
- *Warrior Sports, Inc., Plaintiff-Appellee, v. Dickinson Wright, P.L.L.C., Defendant, Appellant*, United States District Court, Eastern District of Michigan (Southern Division). Case No. 09-12102, July 2012.
- *Bridgestone Sports Co., LTD., and Bridgestone Golf, Inc., Plaintiffs, v. Acushnet Company, Defendant*, United States District Court, District of Delaware. C.A. No. 05-132-JJF, March 2007.
- *High Cedar Enterprises, Co., and Karakal Far East, Ltd., a/k/a Karakal Golf Grips, Plaintiffs, v. Winn Inc., Defendant*, United States District Court, Central District of California, Southern Division. SACV 05-535-AHS, February 2006.
- *Winn Inc., and Ben Huang, an individual, Plaintiff, v. Eaton Corporation, Defendant*, United States District Court, Central District of California, Southern Division. CV 03-1568-SJO, August 2003.

**XI. CONCLUSION**

199. I declare under penalty of perjury that the foregoing is true and correct.

Dated: January 31, 2024

  
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Kim B. Blair, Ph.D.