

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

WOODWAY USA, INC.
Patent Owner.

U.S. Patent No. 11,465,005 to Bayerlein et al.

Case No.: IPR2024-00083

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. § 311 *ET SEQ.* AND 37 C.F.R. § 42.100 *ET SEQ.*
(U.S. PATENT NO. 11,465,005)**

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...	[9.3] a running belt at least partially supported by the rotatable element, wherein the running belt includes a running surface, at least a portion of which is curved; and	38
...	[1.5] a safety device coupled to the frame and the running belt, the safety device having a first element and a second element, the first element <u>substantially surrounding</u> the second element or the second element substantially surrounding the first element;	39
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...	[1.5] a safety device coupled to the frame and the running belt, the safety device having a first element and a second element, the first element substantially surrounding the second element or the second element substantially surrounding the first element;	80
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...	[15.6] wherein the safety device includes another element, wherein one of the element and the another element substantially surrounds the other of the element and the another element.	80
...	[1.6]/[9.5] wherein one of the first and second elements [of the safety device] and the running belt freely rotate in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the one of the first and second elements is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame.	86
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List of Exhibits

Exhibit #	Description
1001	U.S. Patent No. 11,465,005 (“the ‘005 Patent”)
1002	U.S. Patent No. 11,465,005 File History (“the ‘005 Patent File History”)
1003	Declaration of Robert Giachetti, Ph.D. P.E. (“Giachetti”)
1004	Robert Giachetti, Ph.D. P.E. Curriculum Vitae (“Giachetti CV”)
1005	Complaint, <i>Woodway USA, Inc., v. LifeCORE Fitness, Inc. d/b/a Assault Fitness</i> , Case No. 3:22-cv-00492-JO-BLM, Southern District of California, Filed April 11, 2022 (“Complaint”) (Ex. 1005 at 1-8)
1006	Amended Complaint, <i>Woodway USA, Inc., v. LifeCORE Fitness, Inc. d/b/a Assault Fitness</i> , Case No. 3:22-cv-00492-JO-BLM, Southern District of California, Filed October 24, 2022 (“Amended Complaint”)
1007	Treadmills: Supplier Guide © 2010. Trade Practices (Consumer Product Safety Standard) (Treadmills) Regulations 2009 (“ACCC Product Safety Supplier Guide”)
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”)
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”) (available at https://cod.on.worldcat.org/oclc/49571648)
1017	Neil Sclater and Nicholas P. Chironis, Mechanisms & Mechanical Devices Sourcebook, Third Ed., (McGraw-Hill 2001) (“Sclater”) (available at https://catalog.loc.gov/vwebv/holdingsInfo?searchId=26&recCount=25&recPointer=0&bibId=12308523)
1018	Mechanical Clutches and Torque Overload Devices, (Emerson Industrial Automation, 2001) (“Emerson”)
1019	Standard Specification for Motorized Treadmills, (ASTM, 2005) (“ASTM Standard”)

Exhibit #	Description
1020	Stationary Training Equipment – Part 6: Treadmills, additional specific safety requirements and test methods. (ISO, 2005) (“ISO Standard”)
1021	U.S. Patent No. 8,986,169 File History (“the ‘169 Patent File History”)
1022	Responsive Claim Constructions, <i>Woodway USA, Inc., v. LifeCORE Fitness, Inc. d/b/a Assault Fitness</i> , Case No. 3:22-cv-00492-JO-BLM, Southern District of California, Filed January 5, 2022
1023	United States District Courts – National Judicial Caseload Profile, December 2022
1024	Inhabitat, “HUMAN-POWERED GYMS in Hong Kong” (March 8, 2007) (available at https://inhabitat.com/human-powered-gyms-in-hong-kong/)
1025	Minute Order, <i>Woodway USA, Inc., v. LifeCORE Fitness, Inc. d/b/a Assault Fitness</i> , Case No. 3:22-cv-00492-JO-BLM, Southern District of California, March 30, 2023
1026	<i>Intentionally blank</i>
1027	Claim Construction Brief, <i>Woodway USA, Inc., v. LifeCORE Fitness, Inc. d/b/a Assault Fitness</i> , Case No. 3:22-cv-00492-JO-BLM, Southern District of California, March 1, 2023
1028	Responsive Claim Construction Brief, <i>Woodway USA, Inc., v. LifeCORE Fitness, Inc. d/b/a Assault Fitness</i> , Case No. 3:22-cv-00492-JO-BLM, Southern District of California, March 14, 2023
1029	U.S. Patent No. 4,635,771 to Shoji (“Shoji”)
1030	<i>Intentionally left blank</i>
1031	English Translation of German Patent DE 199 22 822 B4 to Tollkien (“Tollkien”)
1032	U.S. Provisional Patent Application No. 61/161027 File History

Mandatory Notices under 37 C.F.R. § 42.8

Real Party-In-Interest - 37 C.F.R. § 42.8(b)(1)

Petitioner certifies that LifeCore Fitness, Inc. d/b/a Assault Fitness (“Petitioner”) is the real party-in-interest.

Related Matters - 37 C.F.R. § 42.8(b)(2)

Petitioner identifies the following related judicial matter: *Woodway USA, Ind., v. LifeCORE Fitness, Inc. d/b/a Assault Fitness*, Case No. 3:22-cv-00492 (S.D. Cal.), amended complaint filed October 24, 2022. The ‘005 Patent is being asserted in this proceeding, along with three other patents within the same family: U.S. 9,039,580, U.S. 10,799,745, and U.S. 10,561,884.

Petitioner is also aware that the related ‘580 Patent was at issue in *Woodway USA, Inc. v. Samsara Fitness, LLC et al.*, Case No. 2-15-cv-00956 (DWI), and *Chapco, Inc. et al v. Woodway USA, Inc.* Case No. 3-15-cv-01665 (DCT).

Prior filed related petitions include: IPR2023-00836 and IPR2023-00843, and IPR2023-00849.

Lead and Back-Up Counsel - 37 C.F.R. § 42.8(b)(3)

The Petitioner identifies the following lead and back-up counsel:

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Back-Up Counsel	
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An appropriate Power of Attorney is filed concurrently herewith.

Service Information - 37 C.F.R. § 42.8(b)(4)

Service information for lead and back-up counsel is provided in the designations above. Petitioner consents to service by email at the following email address: LCF115IPR@brookskushman.com.

Fees - 37 C.F.R. § 42.15(a)

Filing fees associated with this Petition are being charged to Deposit Account 023978. The Board is authorized to charge any additional fees or credit any refunds pertaining to this Petition to Deposit Account 023978.

I. Introduction

Petitioner (“LifeCORE”) requests *inter partes* review of claims 1-4, 6-13, and 15-16 of U.S. Patent No. 11,465,005 (“the ‘005 Patent”; Ex.1001). The supporting Declaration of Dr. Robert Giachetti is filed as Exhibit 1003.

The ‘005 Patent is one of four related patents Patent Owner (“Woodway”) asserted against LifeCORE in litigation. (Ex.1006, Amended Complaint asserting the ‘005 Patent, filed October 24, 2022, Ex.1005.¹) Patent Owner contends these patents teach “revolutionary” “manual treadmills that are self-propelled and allow a runner or walker to control his/her/their speed without the use of any motor.” (Ex.1005, ¶9.) Patent Owner further contends this “treadmill was the first of its kind when it was introduced in 2009.” *Id.*

Patent Owner’s manual treadmill technology was actually well known in the art. For example, U.S. Patent Nos. 1,211,765 to Schmidt (Ex.1009), 3,637,206 to Chickering (Ex.1013), 5,897,461 to Socwell (Ex.1011), 5,538,489 to Magid (Ex.1012), DE Patent No. 19922822 to Tollkien (Ex.1031), and Patent Owner’s own patent, U.S. 4,614,337 to Schonenberger (Ex.1010), describe such manual treadmills. (Ex.1003, ¶¶52-57.)

Treadmills have safety concerns. Users may be injured by falling off while

¹ The original complaint asserting the related patents was served April 13, 2022.

mounting or dismounting, or during use. (Ex.1003, ¶71.) Falls may be caused by the treadmill belt moving in an unexpected direction or in such a way that the user loses equilibrium. (Ex.1003, ¶¶72-73, 75; Ex.1013, 1:24-39; Ex.1011, 1:28-41; 2:45-55.) Professional organizations have produced standards regarding treadmill safety to address these concerns. See ASTM Standard, Ex.1019, ISO Standard, Ex.1020, and ACCC Product Safety Supplier Guide, Ex.1007. (Ex.1003, ¶¶78-80.) For example, ASTM provides guidance regarding treadmill stability and requires treadmills to have handrails and footrails. (Ex.1019, 3-4.)

The '005 Patent claims start with the well-known manual treadmill with a curved running surface, and then add common components/features also well-known before 2009, such as a one way bearing/clutch to limit belt motion. (Ex.1003, ¶¶95-98.) Using one-way clutches to limit belt motion to one direction dates back to at least 1996. (See e.g., Magid, Ex.1012, 4:46-59, Fig.5; Sclater Ex.1017, 320.) And one-way bearings that include one element that “*substantially surrounds*” another element, were well-known and/or commercially available for exercise equipment since at least 2001. (Emerson, Ex.1018 at 52-53; Sclater, Ex.1017, 318; Shoji, Ex.1029, Fig.1.) (Ex.1003, ¶¶97, 84-91.)

Grounds 1-2 demonstrate how and why it would have been obvious to modify a manual treadmill with a curved running surface to include a sprag-type one-way bearing assembly.

II. Grounds for Standing Requirements under 37 C.F.R. § 42.104

A. Grounds for Standing - 37 C.F.R. § 42.104(a)

Pursuant to 37 C.F.R. § 42.104(a), Petitioner certifies that the '005 patent is available for IPR and they are not barred or estopped from requesting IPR.

B. Challenged Claims - 37 C.F.R. § 42.104(b)(1)

Petitioner requests *inter partes* review for claims 1-4, 6-13, and 15-16 of the '005 Patent and requests that the Patent Trial and Appeal Board ("PTAB") cancel those claims as unpatentable.

C. Prior Art Relied Upon

The '005 Patent is not entitled to the March 17, 2009 priority benefit of its earliest-filed provisional application, but even if it were, the following references are all prior art under 35 U.S.C. § 102(b):

- Socwell – U.S. 5,897,461 (Ex.1011) issued April 27, 1999
- Magid – U.S. 5,538,489 (Ex.1012) issued July 23, 1996
- Sclater – Mechanisms and Mechanical Devices Sourcebook 3rd Edition, McGraw-Hill (2001) (Ex.1017)
- Tollkien – DE 199 22 822 B4 (Ex.1031) issued July 15, 2004

Sclater is not cited on the '005 Patent. Socwell, and Tollkien are cited on the '005 Patent, along with over 400 other references, but were not applied during prosecution. Magid was cited and applied during prosecution.

D. Grounds of Challenge – 37 C.F.R. § 42.104(b)(2)

The grounds of unpatentability presented in this petition are as follows:

Ground	Basis ²	References	Claims Challenged
1	§ 103	Socwell, Magid, and Sclater	1-4, 6-7, 9-13, 15-16
2	§ 103	Tolkien and Sclater	1-4, 6-13, 15-16

There is a reasonable likelihood that at least one Challenged Claim is unpatentable as explained herein. Petitioner requests review of the Challenged Claims, and judgment finding them unpatentable.

III. Person of Ordinary Skill in the Art (POSA)

A person of ordinary skill in the art (POSA) of the '005 Patent would have had a bachelor's degree in mechanical engineering and at least one year of machine design experience related to power transmission equipment and a demonstrated understanding of the biomechanics of exercise, including knowledge in the field of anthropometry (*i.e.*, the study of human proportions). (Ex.1003, ¶¶48, 44-49.) This description is approximate and additional development experience could make up for less education and vice versa. (*Id.*)

² Pre-AIA Sections 102, 103 and 112 apply.

IV. The Challenged '005 Patent

A. The '005 Patent Claims are Not Entitled to the Earliest Claimed Priority Date

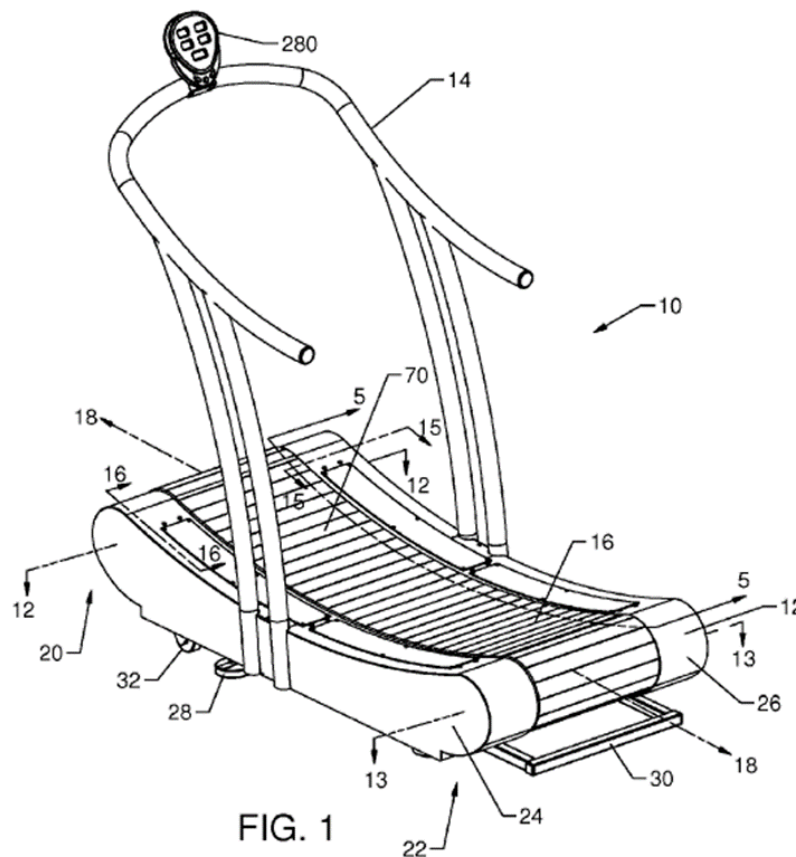
The '005 patent matured from U.S. Application 17/247,101 filed November 30, 2020. The '005 Patent is part of a patent family that claims priority back to Provisional application No. 61/161,027 (Ex.1032), which was filed on March 17, 2009. All prior art relied upon was published and/or issued before this date. But to the extent Patent Owner relies on the March 17, 2009 date in attempt to swear behind a reference, this priority date should not be afforded as the '027 application does not provide written description support or enablement support for the '005 Patent claims, e.g., the “*safety device*” limitations. (See Ex.1032, 3-8.) A graphic of the '005 Patent Family is provided below, with the '005 Patent highlighted in yellow and the related asserted patents shaded in gray. (Ex.1003, ¶99.)

PRV	61/161,027 - 17MAR2009	
PCT	PCT/US2010/027543 - 16MAR2010	
	WO2010/107840 - 23SEPT2010	
CIP	CIP - Abandoned 13/235,065 - 16SEPT2011 US2012/0010053 - 12JAN2012	
	14/243,716 - 2APRIL2014 US8,986,169	14/076,912 - 11NOV2013 US9,114,276
	14/656,942 - 13MAR2015 US9,039,580 - 26MAY2015	14/832,708-21AUG2015 US10,265,566
		15/958,339 - 20APRIL2018 US10,561,884 - 18FEB2020
		15/957,721-19APRIL2018 US10,561,883
		16/792,426 - 17FEB2020 US10,799,745 - 13OCT2020
		16/792,444-17FEB2020 US10,850,150
		17/247,101-30NOV2020 US11,465,005-11OCT2022

The '005 Patent Family

B. Overview

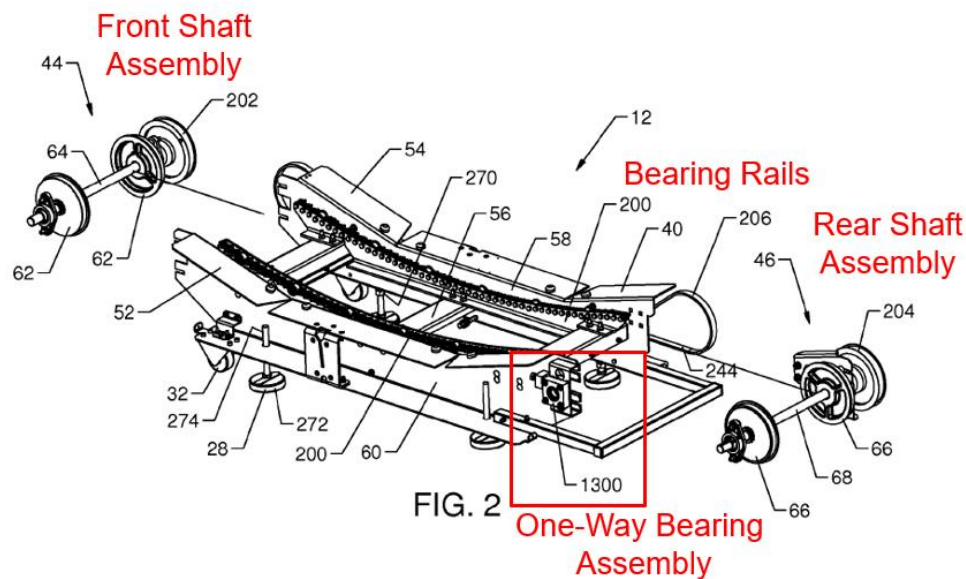
The '005 Patent relates generally to treadmills and mechanisms for controlling the motion of a running belt of the treadmill. (Ex.1001, Abstract.) With reference to Figure 1, the '005 Patent discloses a manual treadmill 10 with “a running belt 16 that extends substantially longitudinally along a longitudinal axis 18” of a base 12. (Ex.1001, 4:52-54; Ex.1003, ¶92.)



Ex.1001, Fig.1

The treadmill includes a “front shaft assembly 44 [that] includes a pair of front running belt pulleys 62 interconnected with ... a shaft 64, and the rear shaft assembly 46 includes a pair of rear running belt pulleys 66 interconnected with, and preferably directly mounted to, a shaft 68.” (Ex.1001, 5:34-39.) The treadmill includes bearing rails 200 that include bearings 208. (Ex.1001, 11:20-23.) The “running belt 16 is disposed about the front and rear running belt pulleys 62, 66” and “moves substantially along the top profile 210 of the bearing rails 200.” (Ex.1001, 5:41-43, 11:36-39.) “Accordingly, the running surface 70 has a shape

that substantially corresponds to the shape of the top profile 210 of the bearing rails 200.” (Ex.1001, 11:50-52; Ex.1003, ¶93.)



Ex.1001, Fig.2

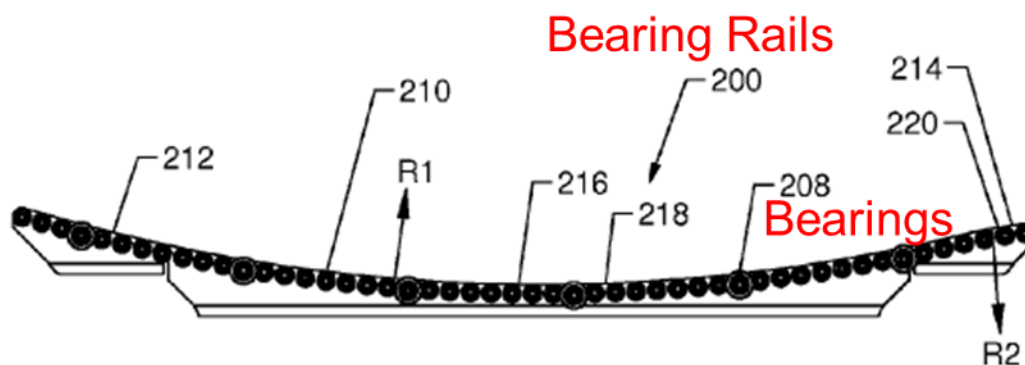


FIG. 9

Ex.1001, Fig.9

As illustrated in Figure 2 above, and Figure 36 below, the treadmill 12 includes a “safety device shown as a one-way bearing assembly 1300 ... that is

configured to permit rotation of at least one of the front and rear shaft assemblies 44, 46 (and hence the running belt 16) in only one direction.” (Ex.1001, 27:13-19.) The ‘005 Patent further discloses that “[t]he one-way bearing assembly 1300 comprises a housing 1302 which supports an inner ring 1304 that cooperates with the rear shaft 68 and supports an outer ring 1306 fixed relative to the housing 1302.” (*Id.*, 27:22-26.) The one-way bearing assembly includes a “plurality of sprags (not shown) [that] are disposed between the inner ring 1304 and the outer ring 1306.” (*Id.*, 27:26-27.) Although the ‘005 Patent does not illustrate the sprags, it states that each sprag has an “asymmetric” shape to “provide for motion in one direction and prevent rotation in the opposite direction” (*Id.*, 27:28-30); and that the “sprags become wedged between the inner ring 1304 and the outer ring 1306, preventing the counterclockwise rotation of the inner ring and key 1312 disposed therein.” (*Id.*, 27:61-64; Ex.1003, ¶94.)

One-Way Bearing Assembly

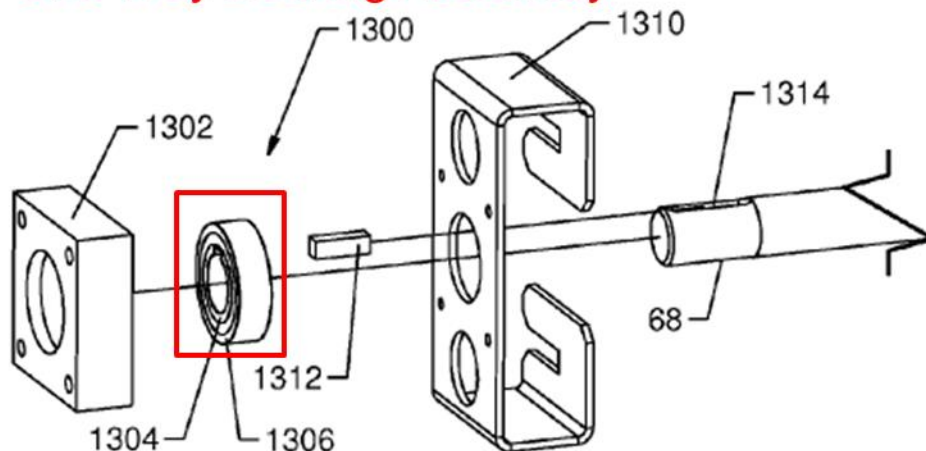


FIG. 36

Ex.1001, Fig.36

Independent claims 1, 9, and 15 of the '005 Patent are directed to a common treadmill topology that includes a belt supported by rotatable elements, *e.g.*, pulleys, to provide a curved running surface. The running belt is disposed about front and rear pulleys and constrained by a safety device so that it moves in only one direction. (Ex.1003, ¶95.) Independent claim 1 is representative and reproduced below:

1. A manually powered treadmill, comprising:
a frame;
at least one front running belt pulley coupled to the frame;
at least one rear running belt pulley coupled to the frame and spaced a distance from the at least one front running belt pulley;

a running belt at least partially supported by at least one of the at least one front running belt pulley and the at least one rear running belt pulley, wherein the running belt includes a running surface, at least a portion of which is curved;

a safety device³ coupled to the frame and the running belt, the safety device having a first element and a second element, the first element substantially surrounding the second element or the second element substantially surrounding the first element;

wherein one of the first and second elements of the safety device and the running belt freely rotate in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the one of the first and second elements is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame.

The technology of the challenged independent claims of the '005 Patent was old and well-known in the art by March 2009. The treadmill topology of claims 1, 9, and 15 is a straightforward treadmill with a curved running surface. This topology has existed for human exercise since at least 1917. (See e.g., Schmidt, Ex.1009, Fig.1.) The use of pulleys to support a treadmill belt is also old and well known. (See e.g., Schonenberger, Ex.1010, Fig.7; Socwell, Ex.1011, Fig.2;

³ Emphasis added by Petitioner unless indicated otherwise.

Tollkien, Ex.1031, Fig.1; Ex.1003, ¶96.)

The need to limit the motion of the treadmill belt motion for user stability and safety was also well known. (See, e.g., Chickering, Ex.1013, 1:24-39; Socwell, Ex.1011, 1:28-41; ASTM Standard, Ex.1019, 3-4.) Further, using one-way clutches to limit belt motion to one direction dates back to at least 1996. (See e.g., Magid, Ex.1012, 4:46-59, Fig.5; Sclater Ex.1017, 320.) And one-way bearings that include one element that “*substantially surrounds*”⁴ another element, were well-known and/or commercially available for exercise equipment since at least 2001. (Emerson, Ex.1018 at 52-53; Sclater, Ex.1017, 318; Shoji, Ex.1029, Fig.1.) (Ex.1003, ¶¶97, 84-91.)

The dependent claims add common features, *e.g.*, shafts for supporting the pulleys (claims 2, 3), one-way bearings (claims 4, 12), bearings for supporting the running belt (claims 6, 13, 16), a handle (claim 7), a running belt that includes slats (claim 8), and manual operation (claim 11). (Ex.1003, ¶98.)

C. Prosecution History

U.S. Patent Application No. 17/247,101 issued as the ‘005 Patent. The ‘101 Application was filed on November 30, 2020 with 20 claims, including independent claims 1, 10, and 17. (Ex.1002 at 91-94.) Each independent claim as

⁴ Petitioner uses italics to indicate claim language.

filed included a “*safety device*” limitation. Dependent claims 9, 12, and 20 narrowed the “*safety device*” limitation to further require that “*one of the first and second elements substantially surrounds the other of the first and second elements.*” (Ex.1003, ¶102.)

On May 20, 2022 the Examiner issued a non-final office action rejecting claims 1-4, 6-7, 10-11, 13-15, and 17-18 as obvious over U.S. 3,642,279 to Cutter (Ex.1014) and U.S. 5,538,489 to Magid (Ex.1012); and claims 5, 16, and 19 over Cutter, Magid and U.S. 5,492,517 to Bostic. (Ex.1002 at 202-205.) The Examiner relied on Magid’s disclosure for satisfying the original “*safety device*” limitations. (*Id.*, 202-203.) The Examiner indicated that dependent claims 9, 12, and 20 would be allowable if written in independent form and if the Patent Owner addressed the double patenting rejections. (*Id.*, 207-208.) On August 22, 2022 Patent Owner filed an amendment amending each independent claim to include the allowable “*one of the first and second elements substantially surrounds the other*” limitations of claims 9, 12, 20 (*id.*, 274-276), and the application proceeded to allowance. (*Id.*, 285-289.) (Ex.1003, ¶103.)

V. Claim Construction — 37 C.F.R. § 42.104(B)(3)

In an IPR proceeding, the claims are construed “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R.

§ 42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc).

The related litigation is in early stages and the parties are pursuing multiple claim construction positions. (See Ex.1022.) While a Markman Hearing was held on April 24, 2023 (Ex.1025), the Court has not yet issued an order. Accordingly, Petitioner is pursuing the following claim construction positions:

A. “*substantially prevent[]*”

In the related litigation, Patent Owner proposed that “*substantially prevent[]*” be construed under its plain and ordinary meaning; and provided the following examples: “entirely/largely/mostly/generally though not necessarily entirely.” (Ex.1022, 5.) During prosecution of the related ‘884 Patent, Patent Owner disavowed such a broad construction (*i.e.*, “generally though not necessarily entirely”) by arguing a narrower interpretation that basically removes the word “*substantially*” to distinguish prior art. (See *e.g.*, Ex.1027, 5-6; Ex.1028, 6-7.)

Accordingly, Petitioner is pursuing a construction of “*substantially prevent[]*,” as “prevent any movement after allowing no or minimal movement” in the litigation; and proposes the same construction here for claims 1, 9, 15. (See Ex.1028, 6-7; Ex.1003, ¶109.) Regardless, the cited art teaches both constructions.

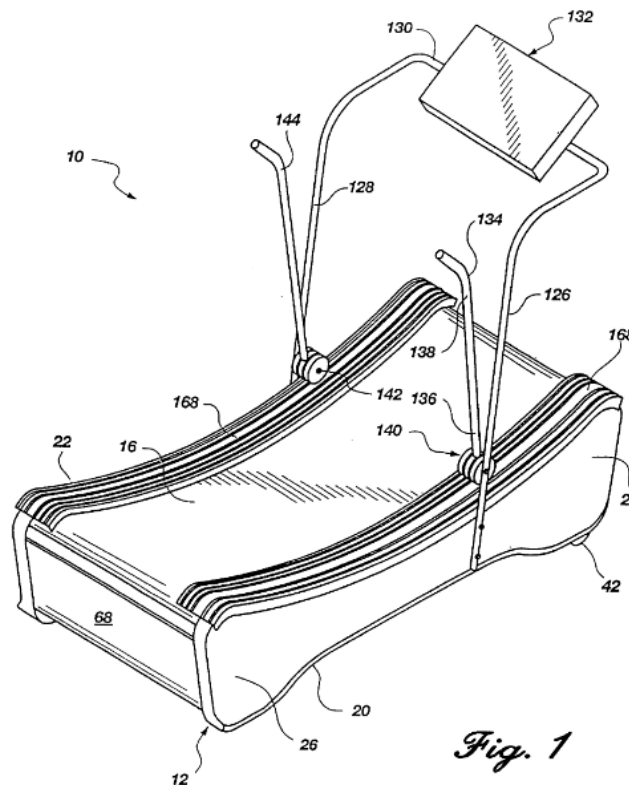
B. “safety device”

Patent Owner proposed construing the term “safety device” as a “device that permits movement in only one direction” in the related litigation. (Ex.1022, 5.) Petitioner proposes that “safety device,” as recited in claims 1, 4, and 15 be construed as a “device having two ring-shaped components.” (*Id.*; Ex.1003, ¶108.) Regardless, the cited art teaches both constructions.

VI. Prior Art Overview

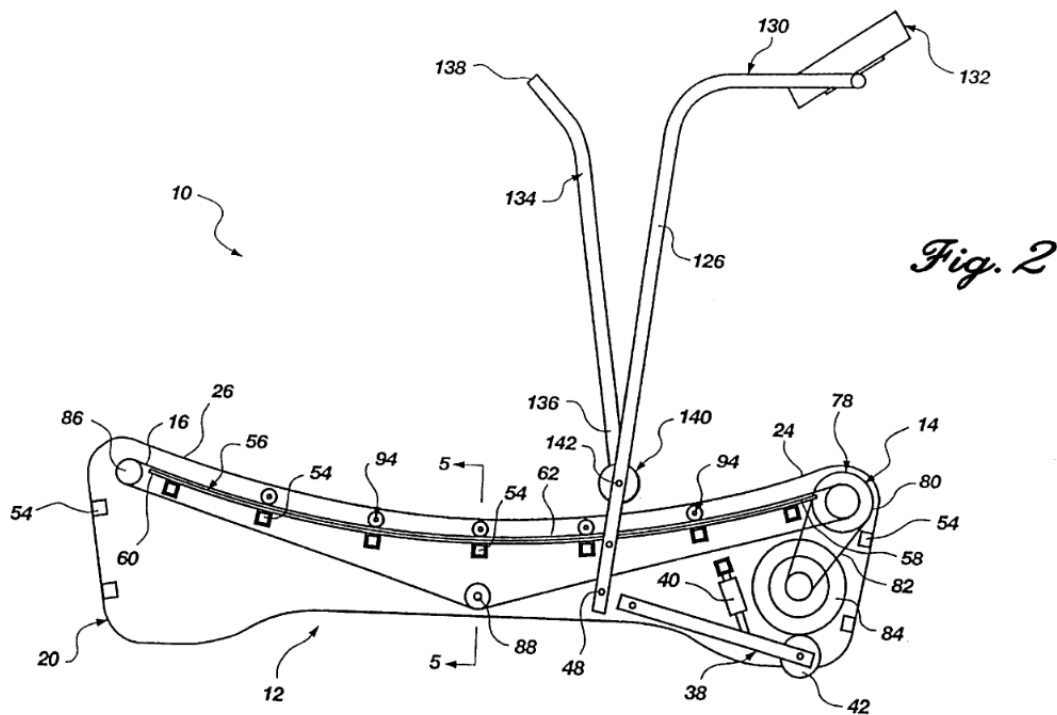
A. U.S. Patent No. 5,897,461 (“Socwell”)

Socwell discloses a manual curved treadmill. (Ex.1011, 1: 10-12; 11:52-60.)



Ex.1011, Fig.1

The belt is looped around front and rear rollers, is supported by a curved deck, and is maintained in the curved shape by upper rollers positioned along the left and right sides of the belt in conjunction with a curved deck. (Ex.1011, 3:30-36, 5:20-44, 7:31-42, 10:17-31.) The rollers are arranged curvilinearly to match the deck and belt curvature. (Ex.1003, ¶¶110-112.)



Ex.1011, Fig.2

The deck and the rollers collectively provide a plurality of bearings that are mounted to the sides of the frame by cover members bolted to the frame. (Ex.1011, 10:49-60, 11:15-33.) Socwell also discloses adjustable support feet to adjust inclination of the running surface. (Ex.1011, 9:29-56; Ex.1003, ¶¶113-114.)

B. U.S. Patent No. 5,538,489 (“Magid”)

Magid discloses a manual treadmill with a belt supported by a plurality of rollers. (Ex.1012, Figs.8, 1.) Magid also discloses a one-way clutch with a ratchet-and-pawl mechanism coupled to a front shaft or a rear shaft to permit only unidirectional belt movement. (Ex.1012, Fig.5, 4:46-59; Ex.1003, ¶¶115-116.)

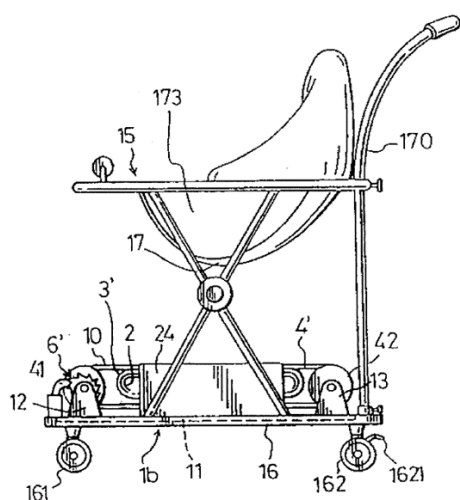


FIG. 5

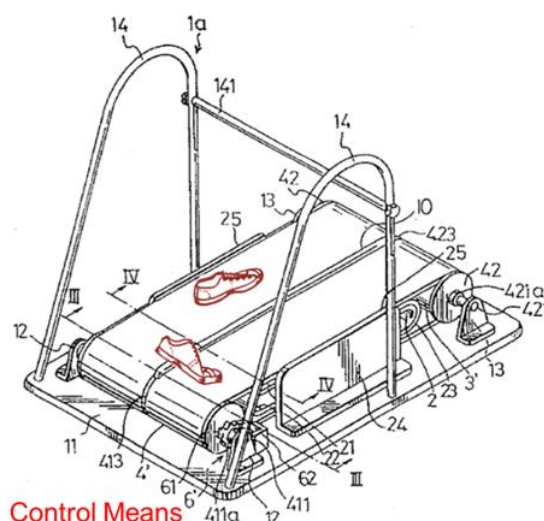


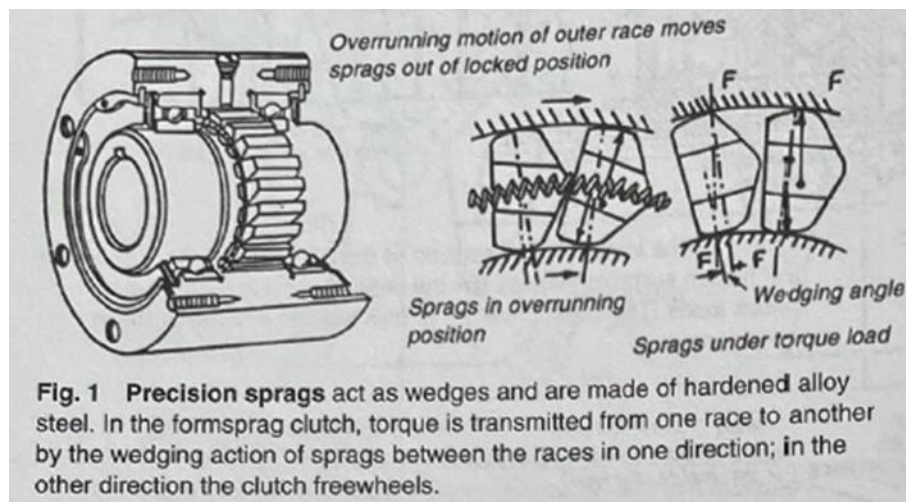
FIG. 2

Ex.1012, Figs. 2, 5 (Annotated)

**C. Neil Sclater, Mechanisms & Mechanical Devices
Sourcebook, Third Ed. (McGraw-Hill 2001) (“Sclater”)**

Sclater is a reference sourcebook that “contains drawings and descriptions of more than 2000 different mechanisms and mechanical devices that have proven themselves in modern products, machines, and systems.” (Ex.1017, 24, Back Cover.) Sclater describes different types of coupling, clutching, and braking devices in Chapter 9, including ratchet clutches and one-way bearing assemblies

that include sprags, to solve various “machine design problems.” (Ex.1017, 311-312, preface; Ex.1003, ¶¶117-118.)



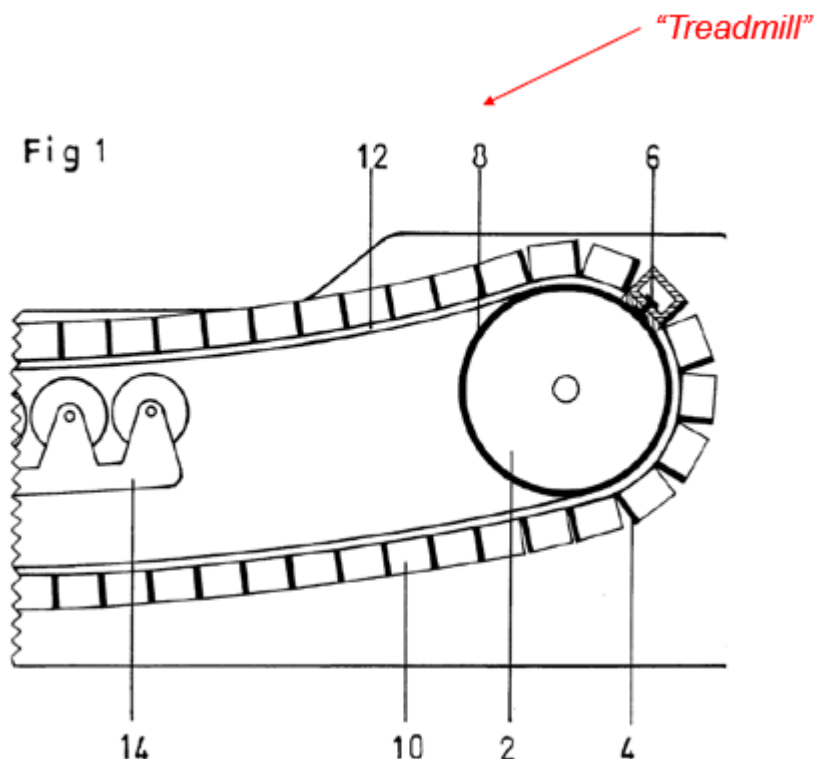
Ex.1017, 318

Sclater explains deficiencies of pawl-and-ratchet clutches as compared to overrunning roller (including sprag) and friction-type clutches, including noise and speed limitations. (Ex.1017, 302-303, 316.) Sclater further describes multiple “Applications for Sprag-Type Clutches” or overrunning sprag clutches, including back stopping for a conveyor. (Ex.1017, 320; Ex.1003, ¶¶119-121.)

D. DE Patent No. 199 22 822 B4 (“Tollkien”)

Tollkien discloses “A treadmill for fitness training with a running surface formed between two rollers (2).” (Ex.1031, Abstract.) With reference to Figure 1, Tollkien discloses “a side view of part of a treadmill without a motor.” (Ex.1031, [0018]). Tollkien further discloses a continuous belt 12 that is wrapped around the

front and rear rollers and supported in the middle by runners 14. (Ex.1031, [0018]–[0020]; Ex.1003, ¶¶122-124.)



Ex.1031, Fig.1 (Annotated)

Tollkien discloses that the curving radius of its curved running surface “can be adjusted,” e.g., by adjusting its tension. (Ex.1031, [0008], [0019].) Tollkien describes Socwell in its prior art section as a treadmill “that has a curved running surface” however the “curving radius is not adjustable.” (Ex.1031, [0005].) Tollkien further discloses integrating the treadmill with a vehicle 20 in which a user propels the vehicle by running on the belt 30. (Ex.1031, [0022]–[0023]; Ex.1003, ¶¶124-126).

VII. Unpatentability Grounds

The combinations of references below render the claimed subject matter invalid under 35 U.S.C. § 103 and the Petitioner therefore has a reasonable likelihood of prevailing as to each of the following grounds of unpatentability. 35 U.S.C. § 314(a); 37 C.F.R. § 42.104(b)(4).

A. Ground 1: Claims 1-4, 6-7, 9-13, 15-16 are Unpatentable as Obvious Over Socwell, Magid, and Sclater

1. Rationale to Combine Socwell with Magid

It would have been obvious to a POSA to combine the manual treadmill topology with a curved running surface disclosed in Socwell with the known technique of a one-way clutch to prevent treadmill belt motion in a forward direction, *i.e.*, in the opposite direction of travel, as disclosed in Magid.

Socwell and Magid are from the same field – Exercise Equipment, more specifically treadmills. (Ex.1011, 1:10-12; Ex.1012, 1:53-56; 3:23-27.) Both Socwell and Magid disclose treadmills with a running belt that is supported by end rollers and a deck. (Ex.1011, 5:33-44; 8:7-27, Fig.3; Ex.1012, 4:64-5:18, Fig.2.) Socwell discloses a curved deck 56 and rollers 98 that cooperate to place the belt 16 in a curved shape. (Ex.1011, 10:5-31, Fig.2.) (Ex.1003, ¶¶129-130.)

It has long been recognized that users may be injured by falling off of a treadmill while mounting or dismounting it, or during use. This may be due to the

treadmill belt moving in an unexpected direction or in such a way that the user cannot regain their equilibrium. It could also be due to the incline of the surface causing the position of user to drift rearwards, and off, over time. (Ex.1003, ¶¶131; *see also* ¶¶ 71-73.)

A person exercising on this type of treadmill is likely to lose his balance because the frictionless surface offers no resistance to the movement of his feet, and he is therefore unable to obtain the leverage necessary for proper balance. Also, the user is likely to run off the lower end of the treadmill because the faster he runs the faster the belt accelerates and moves beneath his feet, carrying him to the rear.

(Ex.1013, 1:30-37.)

In particular, if the rollers supportably disposed in relation to the endless belt are so easily moveable, the user may potentially lose his equilibrium or balance and fall from the exercise treadmill resulting in possible injuries.

(Ex.1011, 1:32-36.)

Another meaningful disadvantage of exercise treadmills of the prior art is the inherent danger associated with users tending to fall off the back end of the treadmill and become injured.

(Ex.1011, 2:45-48.)

Several professional organizations have produced standards to provide guidance to manufacturers regarding both exercise equipment safety in general and

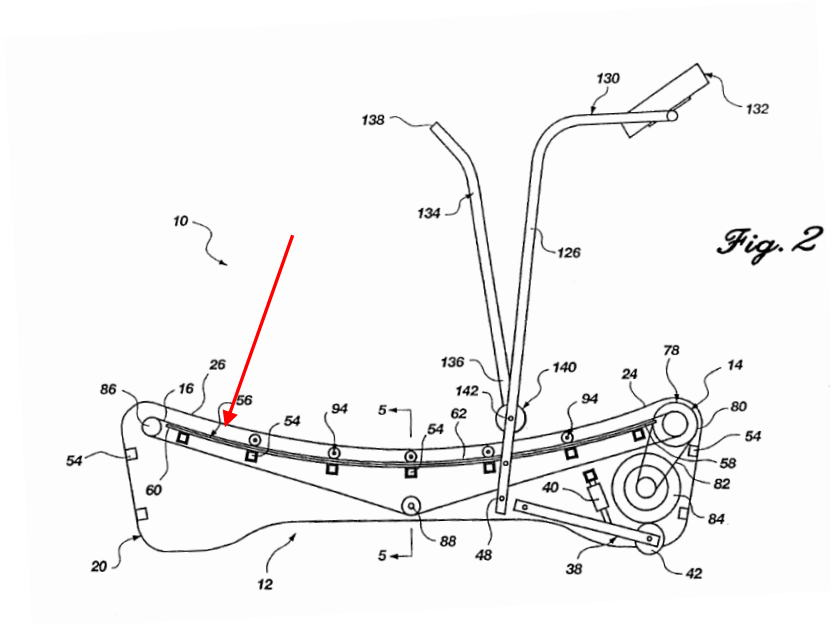
other standards specifically for treadmill safety. *See* ASTM Standard, Ex.1019; ISO Standard, Ex.1020; and ACCC Product Safety Supplier Guide, Ex.1007. These standards establish requirements for foot rails and handrails on treadmills to address user stability. (Ex.1019 at 3-4; Ex.1020 at 8.)

Socwell recognizes that it is difficult to stabilize the running belt in manual treadmills due to the difficulty in balancing the free-moving versus frictional resistance properties of belt supporting devices. (Ex.1011, 1:28-56.) Socwell describes having a motor disposed in relation to the rollers as a prior-art solution to the problem of balancing these qualities (Ex.1011, 1:57-67.)

Rather than relying on a motor, Socwell discloses calibrating the rollers and the deck to provide optimal frictional resistance of the belt to ensure safety while providing proper resistance for exercising. (Ex.1011, 11:56-61.) (Ex.1003, ¶¶132-134.) Socwell's curved running surface does not address the safety issue of the running belt moving in a forward direction when a user steps onto the treadmill. For example, with a manual treadmill having a curved running surface, such as that disclosed in Socwell, belt motion in the opposite direction of travel is likely to occur if a user were to step onto the rearward end of the running surface (red arrow), causing the foot to unexpectedly move towards the lowest portion of the treadmill. In the condition where the user adjusts the frame to a generally horizontal position using the front elevating mechanism, as depicted in the image

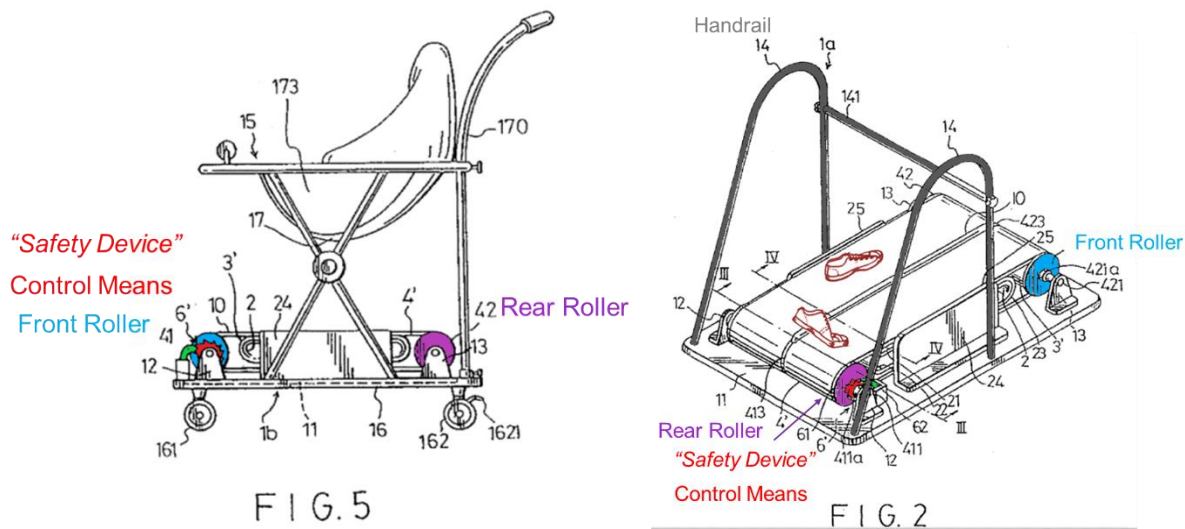
below, this unexpected motion would be exacerbated and could result in a fall.

(Ex.1003, ¶135.)



Ex.1011, Fig.2

Magid discloses a one-way clutch (control means 6, 6') coupled to a front shaft (Fig.5) or a rear shaft (Fig.2) to permit only unidirectional movement of the belt. (Magid, Ex.1012, Fig.5, 4:46-59; Ex.1003, ¶136.)



Ex.1012, Figs. 5, 2

It would have been obvious to a POSA to combine Socwell's treadmill with Magid's control means to permit only unidirectional movement of the running belt to reduce the risk of a user stepping onto the running belt of the treadmill and losing their balance when the belt moves in the forward direction. (Ex.1003, ¶137.)

Accordingly, a POSA would have been motivated to modify Socwell to include Magid's control means mounted to the front roller or the rear roller as discussed above. For example, the ratchet gear 62 would be mounted coaxially with the roller 86 (or roller 78) and the pawl 61 would be rotationally attached to the frame 12. As modified, the ratchet gear 62 would be supported by the journal housing 34 at least through the roller 86 and the control means 6/6' would be coupled to the belt 16 via the roller 86. Thus, the control means ("safety device") is at least partially supported by the journal housing. (Ex.1003, ¶138.)

This modification would have been a simple combination of known elements in the prior art: Socwell's manual treadmill with a curved running surface and Magid's one-way ratchet clutch. The pawl is arranged forward of the ratchet gear and biased to engage the gear teeth. The profile of the ratchet gear teeth is swept forward to yield predictable results: allowing the ratchet gear to overrun counter-clockwise with rearward motion of the belt and providing a backstop clockwise to prevent forward motion of the belt. (Ex.1003, ¶¶82-83, 139.)

The one-way clutch of Magid would function the same when added to Socwell and provide the predictable result of permitting only unidirectional motion of Socwell's running belt in the exercise direction. (Ex.1012, 4:46-59.) The modification would be the use of a known technique – using a one-way clutch in a backstopping mode of operation – to improve similar devices, i.e., treadmills and conveyor belts, in the same way, i.e., to provide unidirectional belt motion. (Ex.1003, ¶¶140, 82-83, 89-90; Ex.1018, 8-9, 52-53.)

As explained above regarding the prosecution history of the '005 Patent the office found that it would have been obvious to combine Magid with prior art manual treadmills. (See Ex.1002 at 202-205.) Similarly, during prosecution of related U.S. Application No. 14/243,716, which issued as the U.S. 8,986,169 (Ex. 1021), Patent Owner argued against the Examiner's rationale for combining Magid with U.S. 2006/0287165 to Pasqualin in view of U.S. 3,642,279 to Cutter

(Ex.1014) stating that: 1) Magid’s disclosure of two-belts “teaches away from the use of a single, wide belt”); and 2) combining Magid with a curved running surface reference like Cutter would render Magid inoperable because “a curved running surface would add difficulty walking for uncoordinated, thereby rendering Magid unsatisfactory for its intended purpose.” (Ex. 1021 at 160-163.)

The Examiner rejected Patent Owner’s arguments stating:

Magid does not explicitly reject using the safety device on a single-belt treadmill. As discussed above, there is a need for a safety device to prevent the user from accidentally or unexpectedly propelling the belt the wrong direction. By Applicant’s own admission, Applicant acknowledges this risk.

Id. at 202-203.

2. Rationale to Combine Socwell and Magid with Sclater

A POSA would have been further motivated to substitute Sclater’s one-way sprag-type bearing assembly for Magid’s ratchet-and-pawl one-way clutch mechanism to obtain predictable results, e.g., reduced noise and improved durability, while maintaining the backstopping functionality and resultant safety benefits of Magid. (Ex.1003, ¶141.)

Magid describes its “unidirectional control means 6, 6’” as including “a pair of ratchet gears 61 ... and a pair of pawls 62” in an “embodiment.” (Ex. 1012, 4:47–55.) This suggests that the unidirectional control means 6 6’ could be a

unidirectional control mechanism other than the ratchet and pawl in another embodiment. For example, Magid states that its invention “is not limited to the disclosed embodiments but is intended to cover various arrangements ... so as to encompass all such modifications and equivalent arrangements.” (Ex. 1012, 7:61–67.)

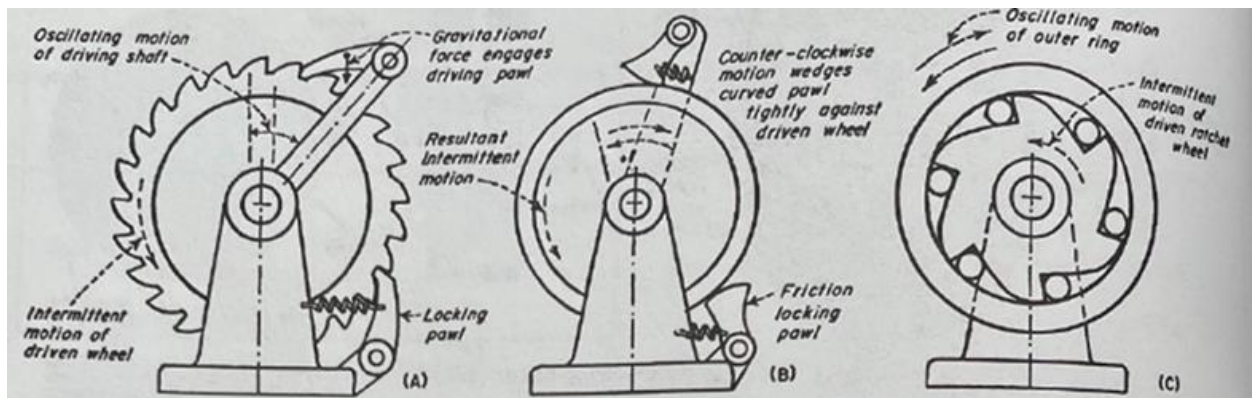
Sclater is a reference sourcebook that “contains drawings and descriptions of more than 2000 different mechanisms and mechanical devices that have proven themselves in modern products, machines, and systems.” (Ex.1017, 24, Back Cover.) Neil Sclater describes Ex. 1017 as a book of “different solutions for machine design problems”:

Readers trying to arrive at **new and different solutions for machine design problems** can thumb through these pages, study their many illustrations, and consider adapting some of the successful mechanical inventions of the past to their new applications. Thus, proven solutions from the past can be recycled to perform new duties in the present. An old invention might be transferred without modification, or perhaps it could be improved if made from newer materials by newer manufacturing methods. What is old can be new again!

(Ex.1017, Preface xii; Ex. ¶¶142, 118.)

Sclater describes different types of coupling, clutching, and braking devices in Chapter 9 to solve various machine design problems. (Ex.1017, 311-312.) For

example, ratchet-and-pawl clutch mechanisms make noise during operation. The pawl is spring-loaded to engage each gear tooth of the ratchet and it would make an audible “click” when colliding with the gear tooth after overrunning or passing over each tooth. (Ex.1003, ¶¶142-143.) A POSA would have been aware of this noise from other common ratchet clutches, such as those included in a ratchet wrench, a bicycle wheel, and an automotive parking brake and consulted Sclater for a solution to this noise problem. (*Id.*) Sclater recognizes this problem and that a “friction-type clutch” is quieter than a ratchet-type clutch. (Ex.1017, 316; Ex.1003, ¶143.)

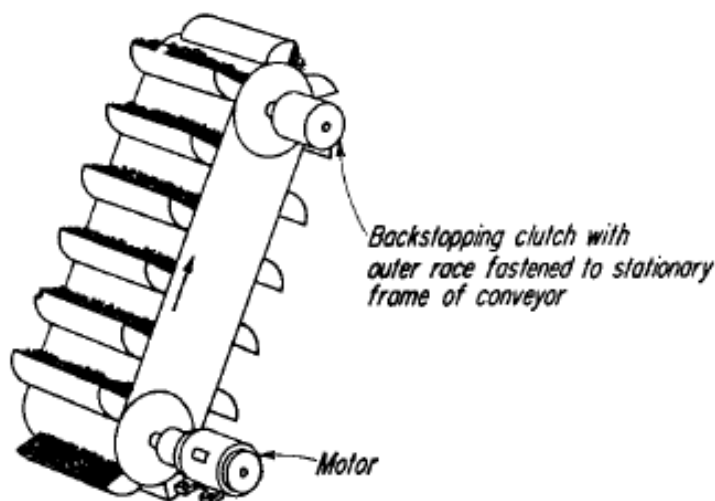


Ex.1017, 316

Sclater further discloses that roller clutches are better suited for high-speed freewheeling than pawl-and-ratchet clutches. (Ex.1017, 316.) This is because the pawl may skip past a few teeth before backstopping the ratchet gear, whereas the sprags are always in contact with the races and do not need to find a discrete gear tooth to stop. Additionally, because there are multiple sprags, they distribute the

load over a larger surface area. (Ex.1017, 303, 320; Ex.1003, ¶144.)

Sclater illustrates a back stopping mode of operation for a conveyor using a “sprag-type clutch[]” in which the outer race is fixed to the frame using a torque arm:



Ex.1017, 320

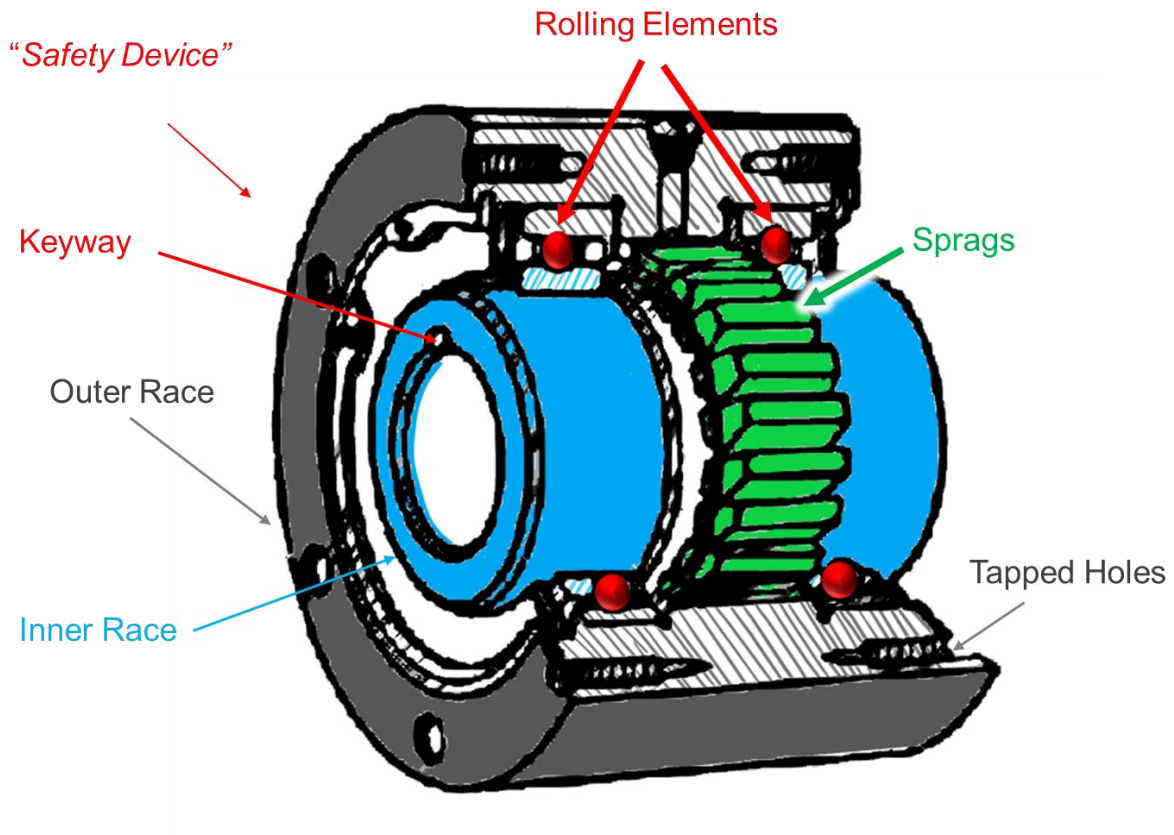
Fig. 2 Backstopping permits rotation in one direction only. The clutch serves as a counter-rotation holding device. An example is a clutch mounted on the headshaft of a conveyor. The outer race is restrained by torque-arming the stationary frame of the conveyor.

(Ex.1017, 320.)

A POSA would have understood that conveyers and treadmills operate the same. Accordingly, a POSA would have considered a sprag-type one-way clutch bearing for an exercise equipment application, such as a treadmill. For example, Emerson is a bearing catalog from 2001 that specifically describes its NSS Series

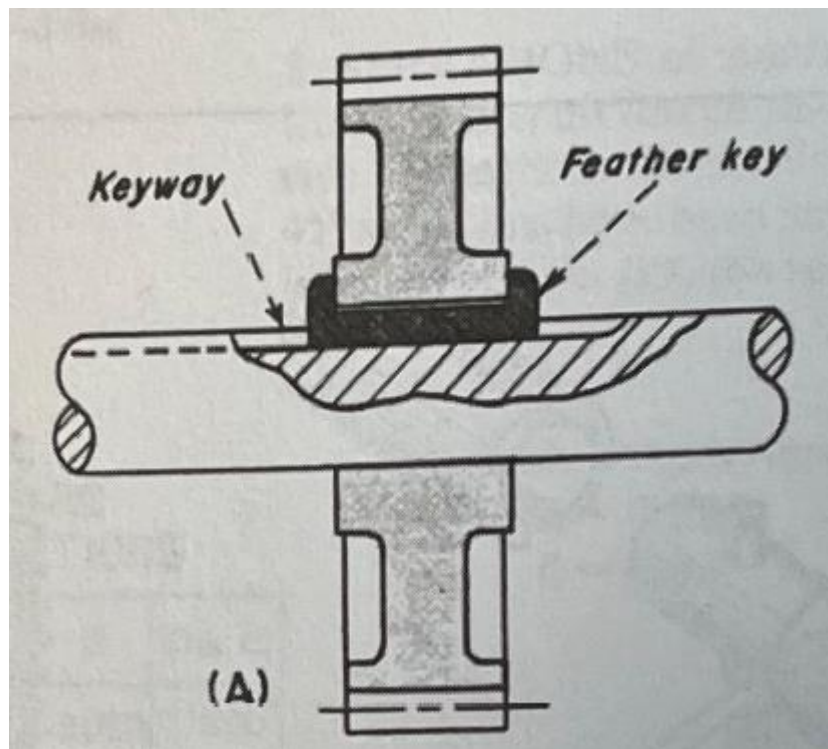
sprag-type one-way clutch as an option for multiple “Field Applications,” including “**Exercise equipment**,” “Food processing equipment,” “Printing presses,” and “**Roll conveyors**.” (Ex.1018, 52-53.) (Ex.1003, ¶¶145-147.)

A POSA would have known how to replace Magid’s control means with Sclater’s one-way bearing assembly with a reasonable expectation of success. For example, the outer race would be fixed to the frame 12 either directly or through one or more intermediaries, e.g., a bracket, the journal housing 34, or other support element as Sclater described with reference to the conveyor application: “The outer race is restrained by torque-arming the stationary frame of the conveyor.” (Ex.1017, 320.) For example, Sclater illustrates below that the outer race includes tapped holes for receiving fasteners for mounting the one-way bearing, and Emerson describes examples of commercially available brackets or torque arms. (See Ex.1018, 38-43; Ex.1003, ¶¶148-149.)



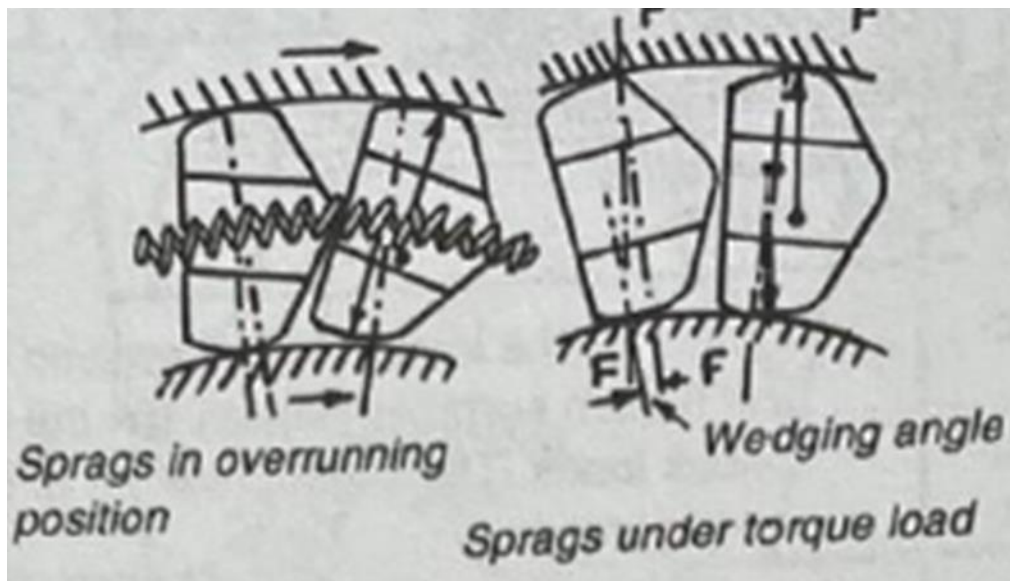
Ex.1017, 318

The inner race of the one-way bearing would be secured to the front roller or rear roller, e.g., with a key/keyway interface, such as that disclosed by Sclater:



Ex.1017, 420

With this arrangement, rearward motion of the endless belt 16 would rotate the front/rear roller and inner race so that the inner race would overrun and move the sprags out of the locked position. However, forward motion of the endless belt 16 would rotate the inner race in the opposite direction and wedge the sprags into the locked position to backstop and prevent forward motion of the belt 16. (Ex.1003, ¶¶150-151.)



Ex.1017, 318

3. Independent claims 1, 9, 15:⁵

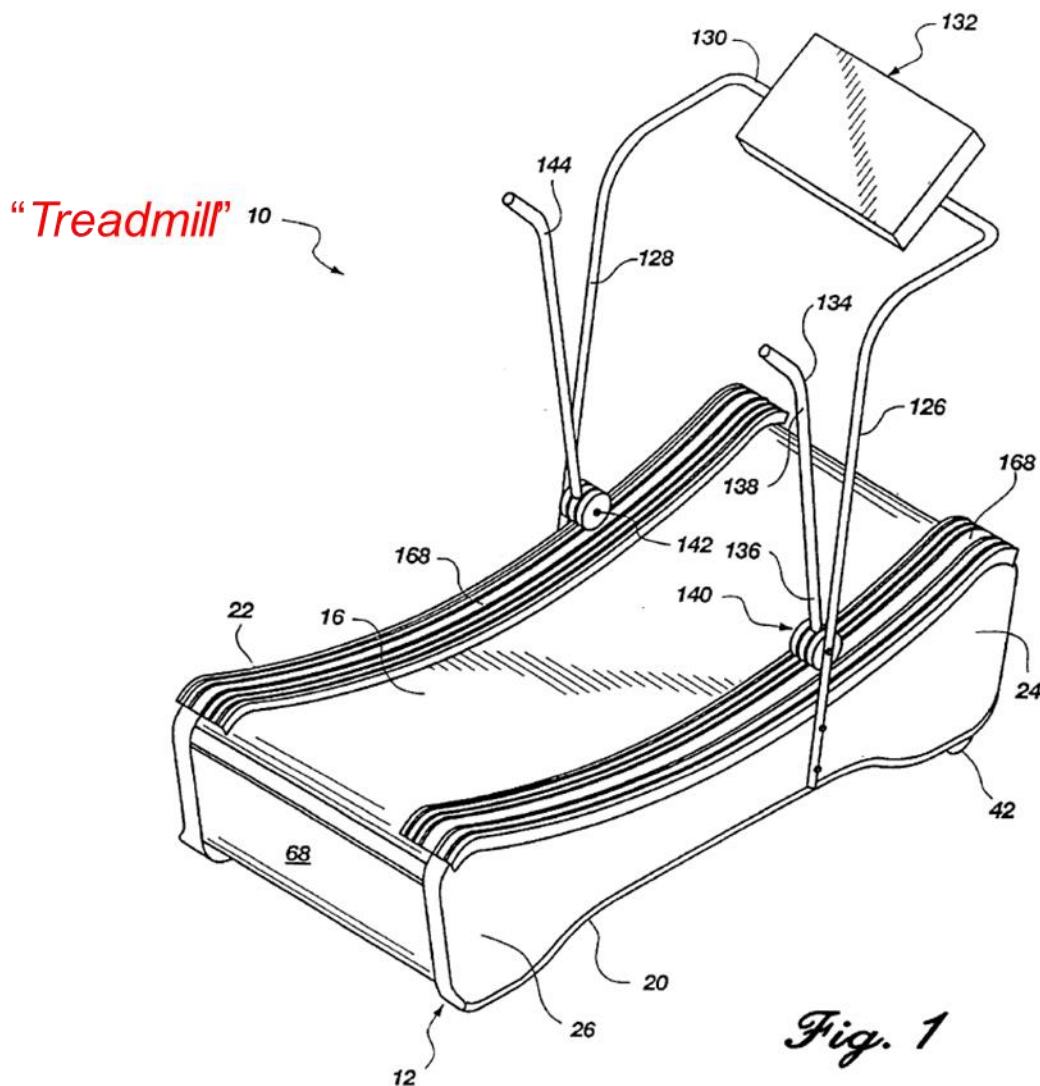
... [1.0]/[15.0] *A manually powered treadmill, comprising:*

... [9.0] *A treadmill, comprising:*

Socwell discloses a treadmill 10. (Ex.1011, Abstract.) Socwell explains it “is a primary object of the present invention to provide a novel curved deck treadmill which provides a structurally supported arcuate shaped, movable surface on which a user may exercise.” (Ex.1011, 3:26-29.) While Socwell discloses the treadmill 10 may include “driving means 84” such as a “conventional electric motor for rotating

⁵ Appendix A includes a listing of all challenged claims and Appendix B includes a table comparing claims that are treated together.

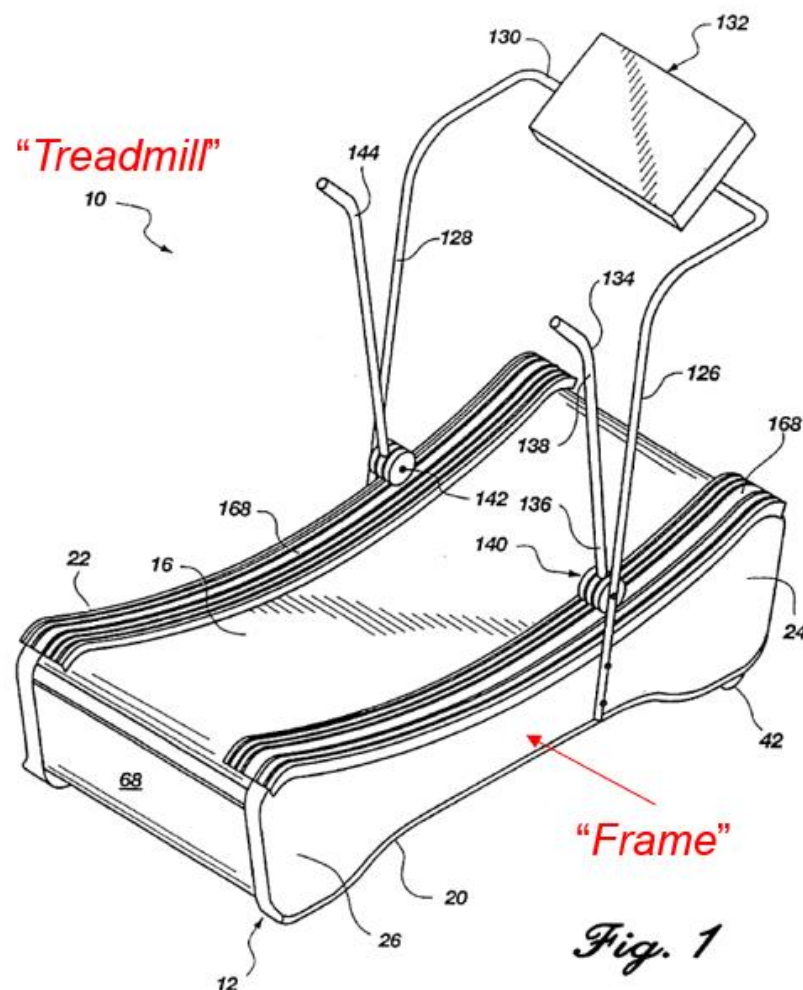
the belt 16” (Ex.1011, 11:34-38), Socwell also discloses that alternatively, “the curved deck treadmill 10 ... may be implemented without a driving means” - i.e. manually. (Ex.1011, 11:53-61.) (Ex.1003, ¶¶152-154, 202, 224.)



Socwell, Ex.1011, Fig.1 (Annotated)

... [1.1]/[9.1]/[15.1] **a frame;**

Socwell discloses that “the curved deck treadmill 10 comprises **a support frame 12** having a first side 20 and a second opposing side 22 and having a deck 56 supportably disposed therebetween.” (Ex.1011, 5:23-26, Fig.1, *see also* 6:23-25, 9:57-65; Ex.1003, ¶¶155-156, 203, 225.)



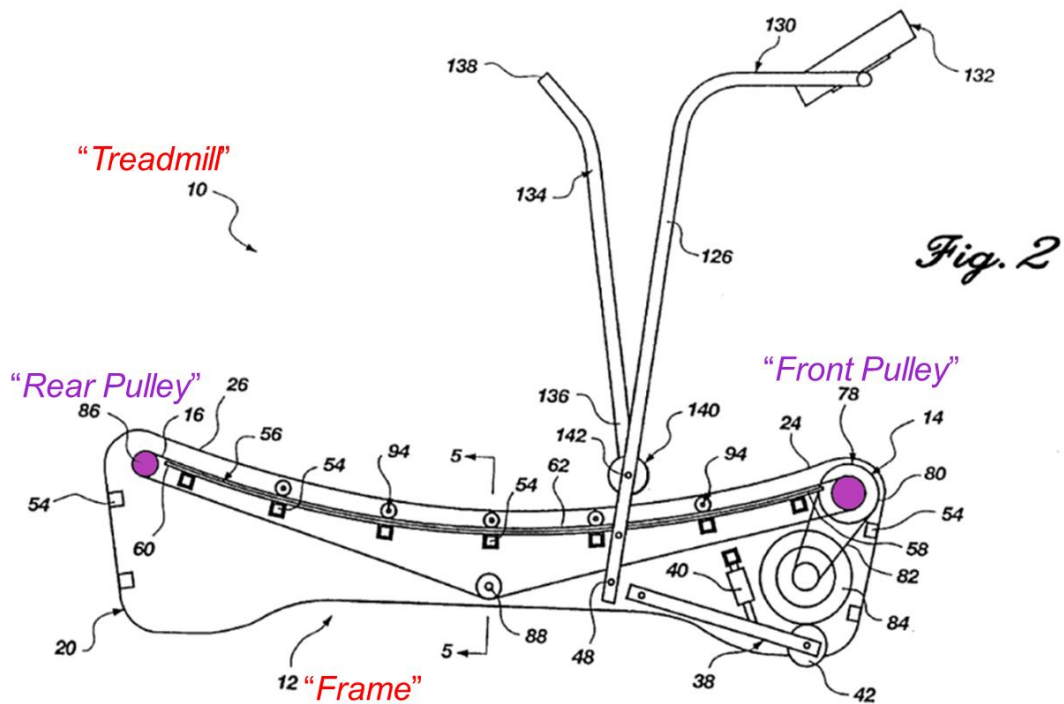
Ex.1011, Fig.1 (Annotated)

... [1.2]/[15.2] *at least one front running belt pulley coupled to the frame;*

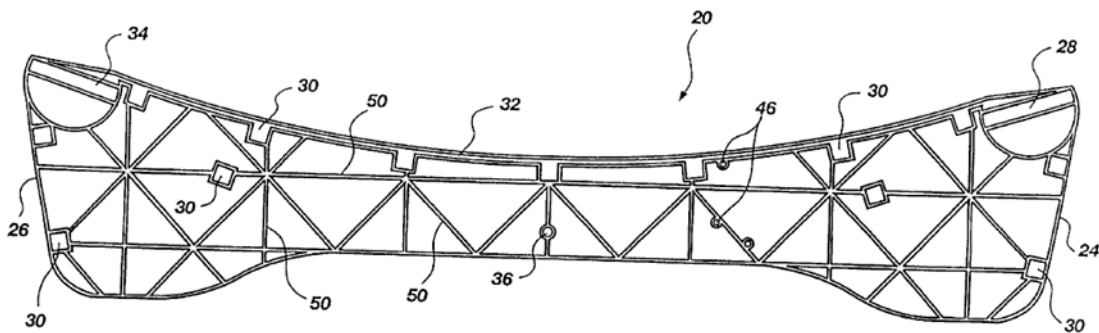
... [1.3]/[15.3] *at least one rear running belt pulley coupled to the frame and spaced a distance from the at least one front running belt pulley;*

... [9.2] *a rotatable element coupled to the frame;*

Socwell discloses a roller assembly 14, supported between the right side frame 20 and the left side frame 22, including a first roller 78 at the front end (“*front running belt pulley*” or “*rotatable element*”) and a second roller 86 at the rear end (“*rear running belt pulley*” or “*rotatable element*”). (Ex.1011, 5:33-41, Fig.2; Ex.1003, ¶157.) The right and left sides 20, 22 of the frame include journal housings 28 and 34, e.g., slots, that are “readily adapted to receive” the journaled ends of the rollers 78, 86 to rotatably couple the rollers (“*pulley[s]*” or “*rotatable element[s]*”) to the right and left sides of the frame 20, 22. (Ex.1011, 6:27-45, Fig.4.) (Ex.1003, ¶¶158-159, 204, 226.)



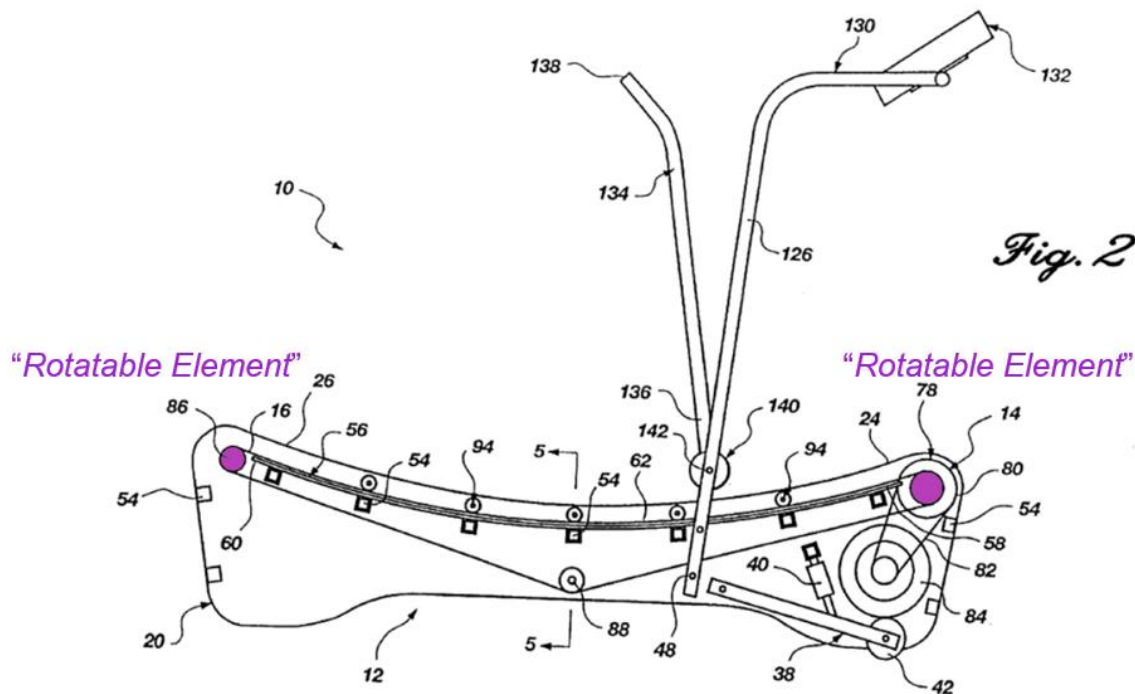
Ex.1011, Fig.2 (Annotated)



Ex.1011, Fig.4

Since the rollers 78, 86 support a belt 16 and transmit power to each other and to other components such as the third roller 88 by means of the belt 16 passing

over their outer rims, a POSA would have understood the first roller 78 to be a “front running belt pulley” or “rotatable element” and the second roller 86 to be a “rear running belt pulley” or “rotatable element.” (Ex.1003, ¶¶158-160, 205.)



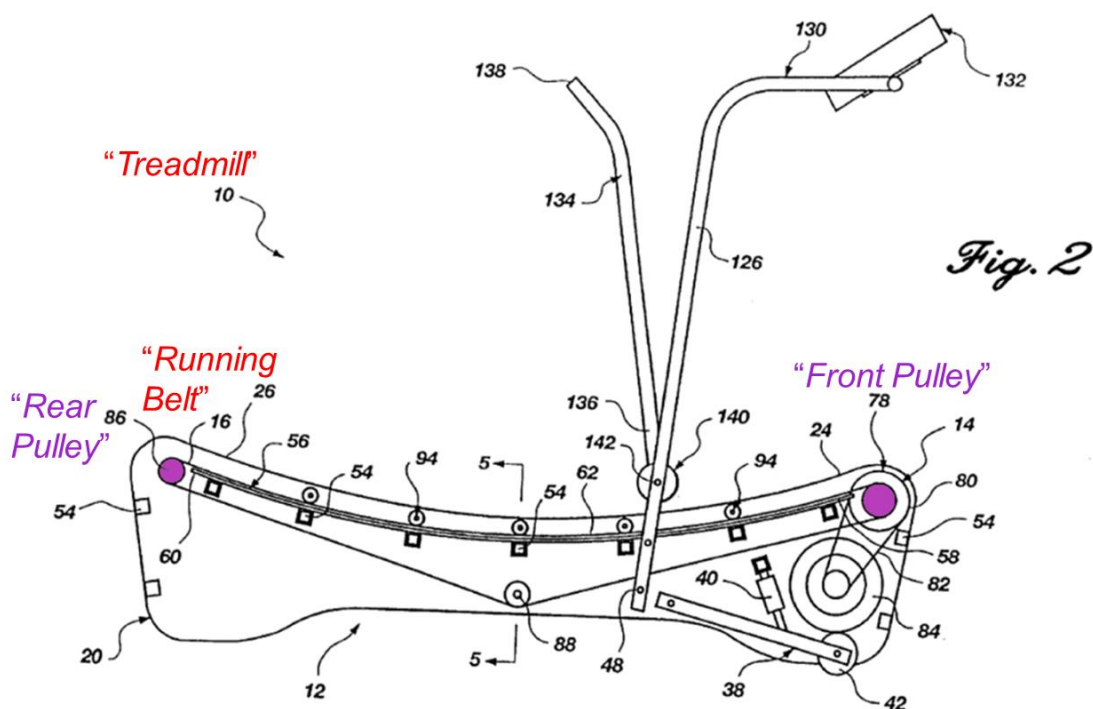
Ex.1011, Fig.2 (Annotated)

... [1.4]/[15.4] a running belt at least partially supported by at least one of the at least one front running belt pulley and the at least one rear running belt pulley, wherein the running belt includes a running surface, at least a portion of which is curved;

... [9.3] a running belt at least partially supported by the rotatable element, wherein the running belt includes a running surface, at least a portion of which is curved; and

Socwell discloses a belt 16 (“running belt”) looped around the front and

rear rollers 78, 86 (“*front [and rear] running belt pulley[s]*” or “*rotatable elements*”) and “operatively disposed in relation to the deck 56, whereby providing a structurally supported arcuate shaped, movable surface.” (Ex.1011, 5:41-45.) Socwell discloses the “arcuate shaped” belt 16 is secured on a curved deck 56 by the rollers 98. (Ex.1011, 10:17-26, Fig.5.) As illustrated in Figure 2 below, at least a portion of Socwell’s “arcuate shaped, movable surface” is curved. (Ex.1011, 4:13-18, Figs.2-3.) (Ex.1003, ¶¶161-163, 206, 227.)



Ex.1011, Fig.2 (Annotated)

... [1.5] a safety device coupled to the frame and the running belt, the safety device having a first element and a second element, the first element substantially surrounding the second element or the

second element substantially surrounding the first element;

... [9.4] a first element and a second element, both of which are coupled to the running belt, and wherein the first element substantially surrounds the second element or the second element substantially surrounds the first element;

... [15.6] wherein the safety device includes another element, wherein one of the element and the another element substantially surrounds the other of the element and the another element.

Magid discloses mounting a unidirectional control means 6,6' ("safety device") to a front shaft assembly (Fig.5) or a rear shaft assembly (Fig.2) of a treadmill to "prevent[] bidirectional movement of" the treadmill belt. Each control means 6, 6' includes a ratchet gear 61 rotationally coupled to the shaft 411 and a pawl 62 coupled to the base 11. (Ex.1012, 4:46-59; Ex.1003, ¶¶164-169, 207-209, 229.)

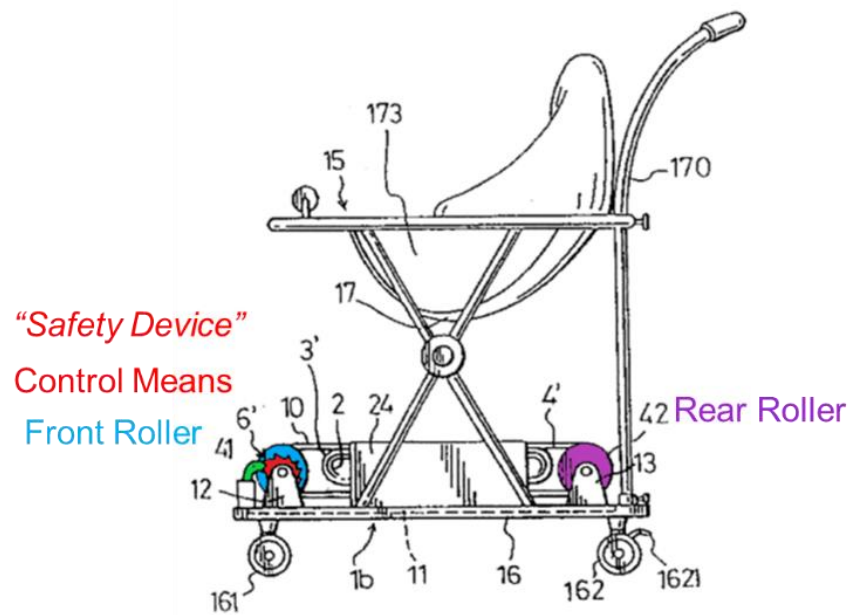
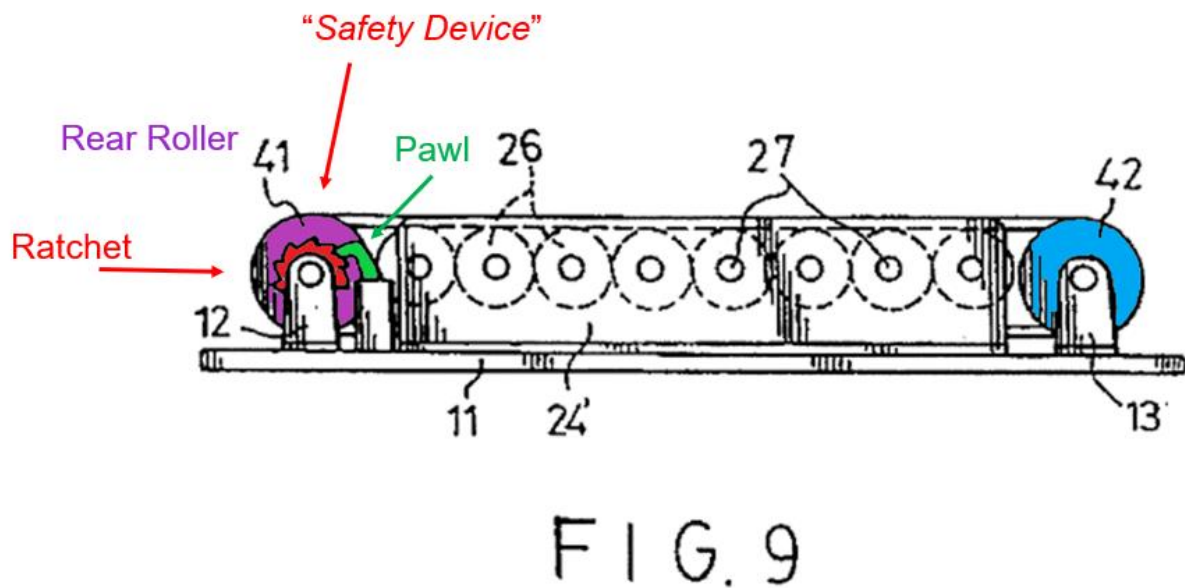
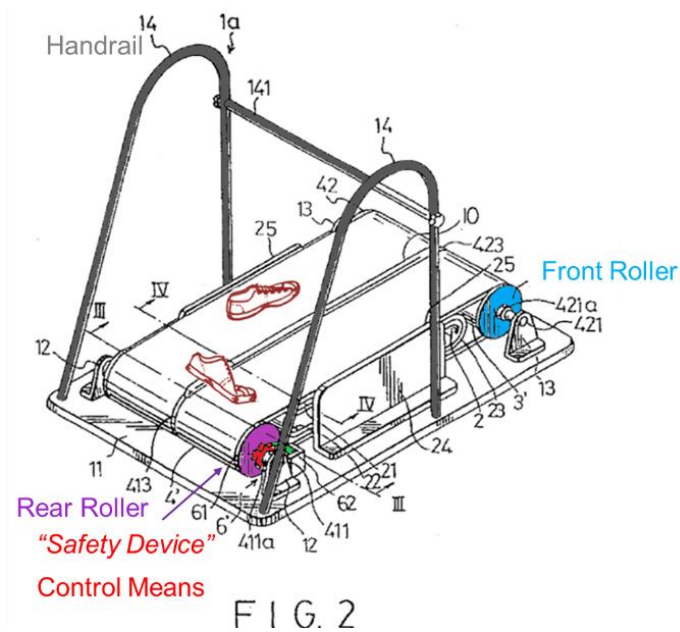


FIG. 5

Ex.1012, Fig.5



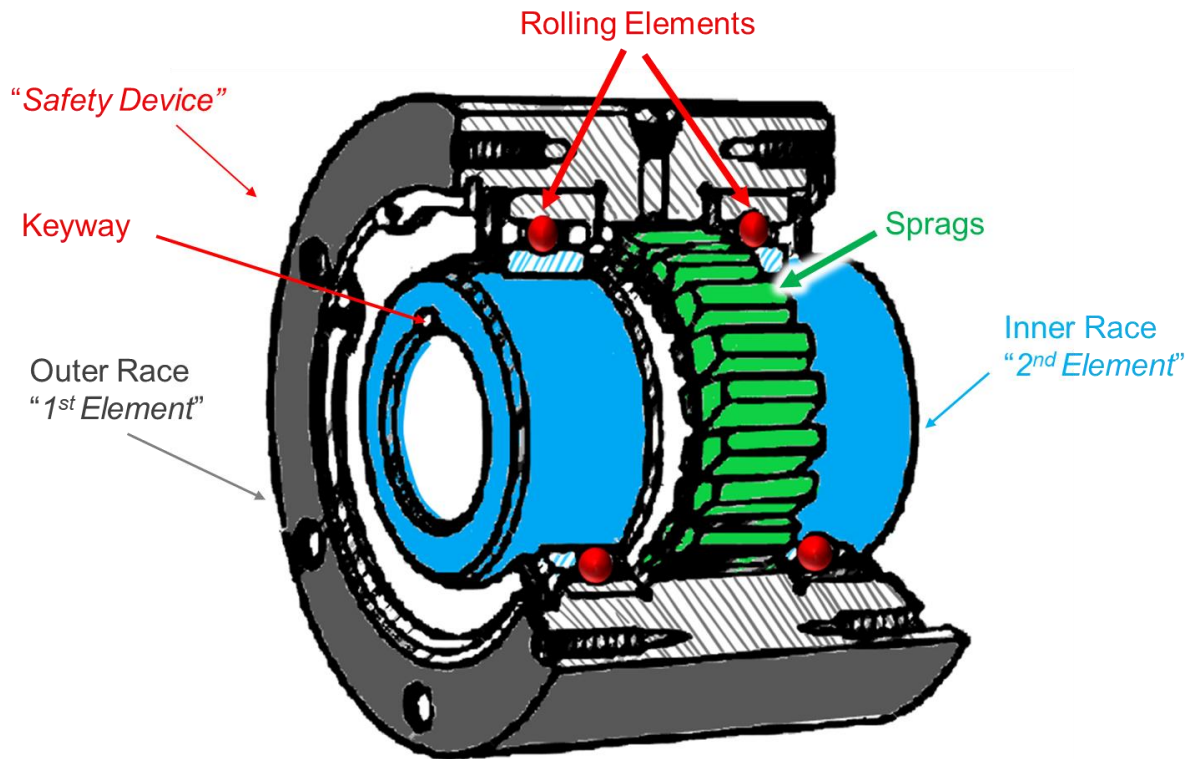
Ex.1012, Figs. 2, 9

Magid does not disclose that the ratchet gear or pawl “*substantially surround[s]*” the other. (Ex.1003, ¶169.)

Slater discloses sprag-type one-way bearing assemblies that include sprags

combined with rolling elements, such as cylindrical rollers or balls. “Sprags combined with cylindrical rollers in a bearing assembly can provide a simple, low-cost method for meeting the torque and bearing requirements of most machine applications.” (Ex.1017, 312.)

As illustrated in the image below, Sclater discloses that the sprag-type one-way bearing assembly includes an inner race, an outer race that “*substantially surrounds*” the inner race, and a plurality of sprags and rolling elements disposed between the inner race and the outer race. The outer race includes tapped holes allowing the outer race to be fixed to another support structure, such as a frame of a treadmill. (Ex.1003, ¶¶169-170, 207-209, 229.)



Ex.1017, 318 (Annotated)

Sclater discloses that the inner race defines a center hole that is sized to receive a shaft and defines a keyway on the inner diameter. The keyway is a traditional means for coupling the inner race to a shaft such that they rotate together via a key. Sclater further discloses that this sprag-type bearing assembly functions as a one-way bearing by providing “one-direction only torque transmission in an overrunning clutch.” (Ex.1017, 312; Ex.1003, ¶¶171-173.)

Sclater further discloses that the:

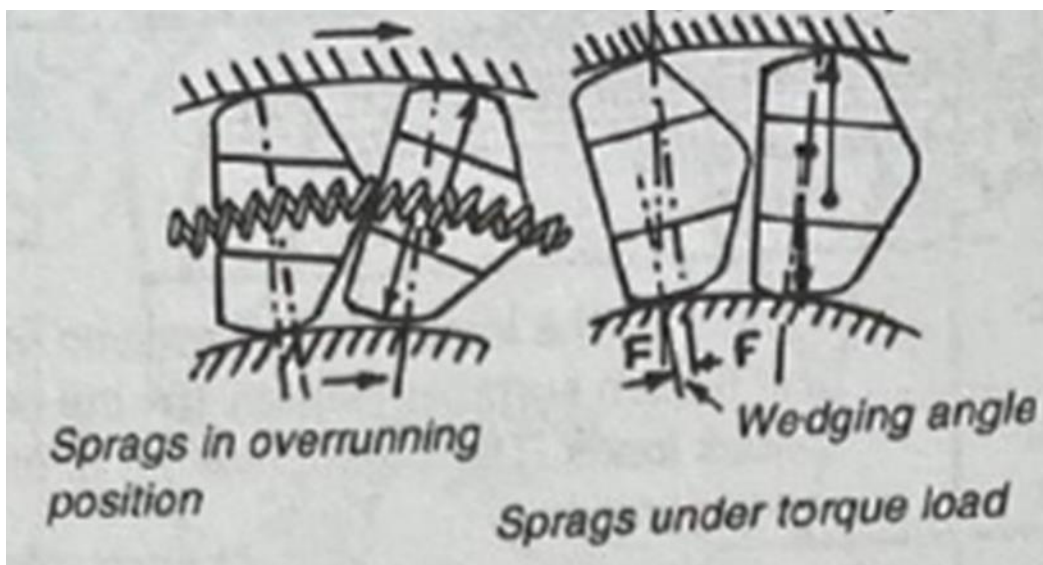
Precision sprags act as wedges and are made of hardened alloy steel.

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.

(Ex.1017, 318.)

The belt 16 (“*running belt*”) would be coupled to the inner race (“*second element*”) via the front roller 78 or the rear roller 86 (Ex.1003, ¶174.) The belt 16 (“*running belt*”) would also be coupled to the outer race (“*first element*”) through the inner race – thus “*both*” the “*first element*” and the “*second element*” “*are coupled to the running belt*” as required by claim [9.4]. (Ex.1003, ¶¶207-209.)

As illustrated in the figure below on the left, the belt 16 and the inner race rotate in a first direction relative to the outer race (“*first element*”) to freewheel or overrun. However, as illustrated in the figure below on the right, wedging or interference between the sprags and the inner and outer race prevents rotation of the inner race in an opposite direction, which prevents the belt 16 from moving forward. (Ex.1003, ¶¶174-175.)



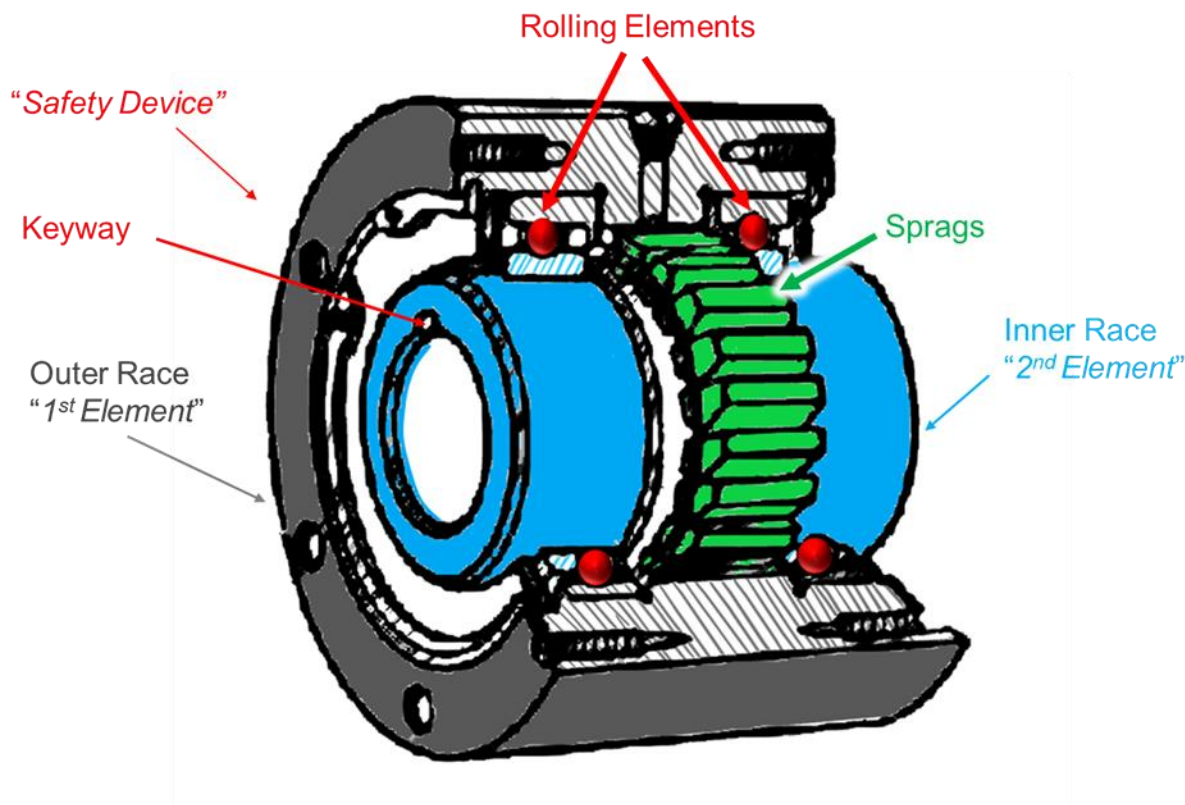
Ex.1017, 318

a. Claim Construction of “*Safety Device*”

Petitioner proposes construing the term “*safety device*” as a “device having two ring-shaped components” and Patent Owner proposed construing the term “*safety device*” as a “device that permits movement in only one direction” in the related litigation. (Ex.1003, ¶176; Ex.1022, 5.) If the Board adopts either construction, then the combination of references still teaches the challenged claims.

Sclater discloses sprag-type one-way bearing assemblies. “Sprags combined with cylindrical rollers in a bearing assembly can provide a simple, low-cost method for meeting the torque and bearing requirements of most machine applications.” (Ex.1017, 312.) As illustrated in the image below, Sclater discloses that the sprag-type one-way bearing assembly includes an inner race, an outer race,

and a plurality of sprags disposed between the inner race and the outer race. The inner race and the outer race are “two ring-shaped components.” (Ex.1003, ¶176.)



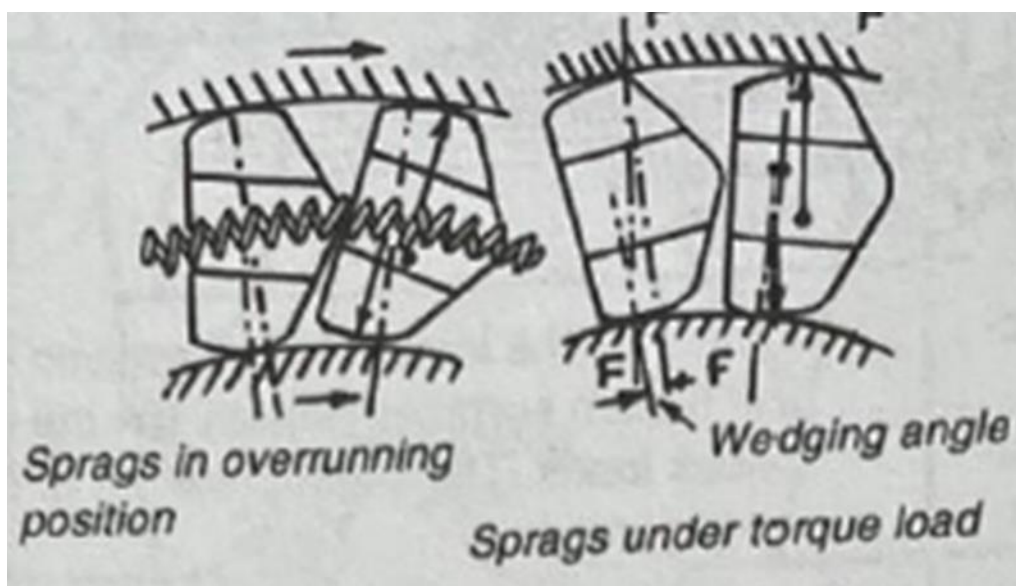
Ex.1017, 316

b. Claim Construction of “*Substantially Prevent[]*”

Petitioner proposes construing the term “*substantially prevent rotation*” as “prevent any movement after allowing no or minimal movement.” Patent Owner proposed the term be construed under its plain and ordinary meaning. (Ex.1003, ¶177; Ex.1022, 5.) If the Board adopts either construction, then the combination of references still teaches the challenged claims.

A sprag-type one-way bearing allows minimal movement before the sprags

rotate into a locked position. As illustrated in the figure below on the left, Sclater discloses that when the inner race rotates in a first direction relative to the outer race, the sprags move out of the locked position such that an overrun condition occurs. However, as illustrated below right, when the inner race rotates in the opposite direction, the sprag profile wedges the sprags into a locked position preventing relative motion between the inner and outer races. (Ex.1003, ¶177.)



Ex.1017, 318

... [1.6]/[9.5] wherein one of the first and second elements [of the safety device] and the running belt freely rotate in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the one of the first and second elements is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame.

... [15.5] a safety device coupled to the frame and the running belt, the safety device having an element adapted for rotation relative to the frame in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the element is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame; and

The combination of Socwell, Magid, and Sclater teaches these limitations. (Ex.1003, ¶¶178-181, 210, 228.) Magid discloses that the unidirectional control means 6,6' ("*safety device*") "prevent[s] bidirectional movement of" the treadmill belt. Each control means 6, 6' includes a ratchet gear 61 rotationally coupled to the shaft 411 and a pawl 62 coupled to the base 11. (Ex.1012, 4:46-59; Ex.1003, ¶178.)

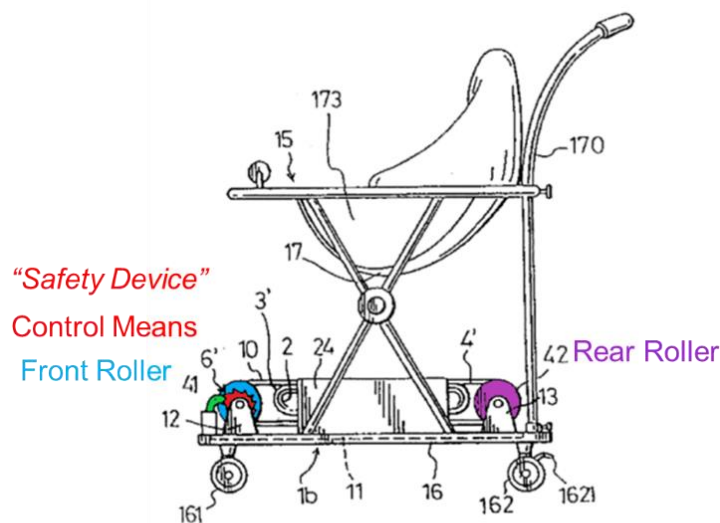
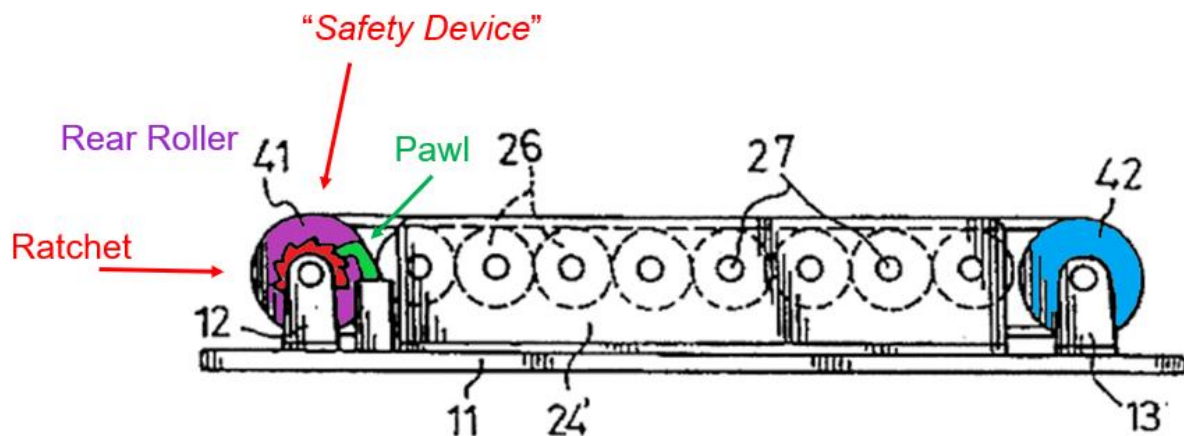
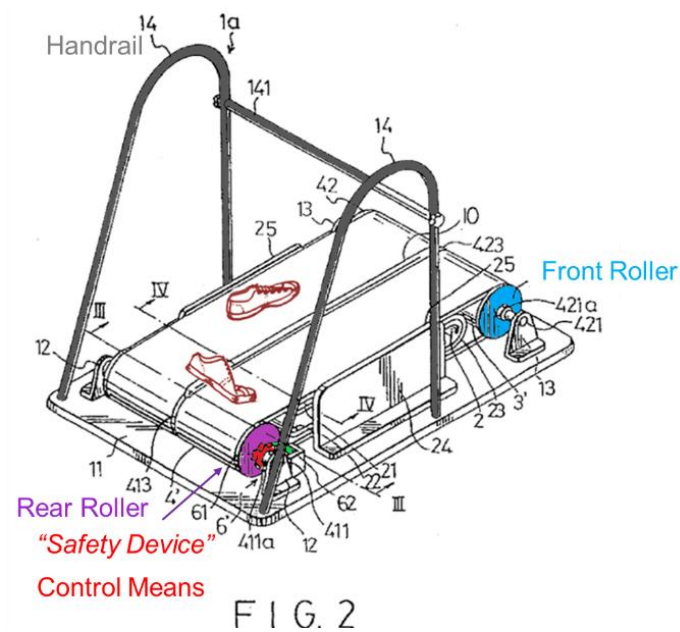


FIG. 5

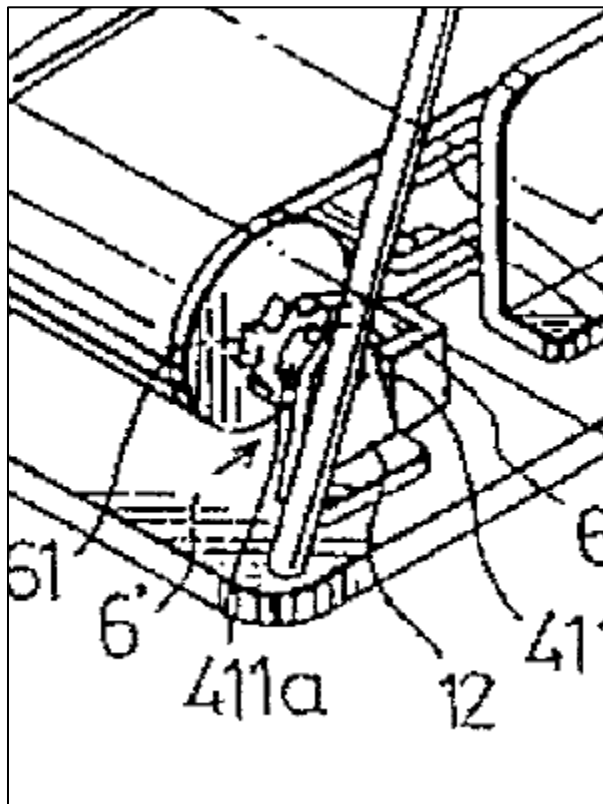
Ex.1012, Fig.5



Ex.1012, Figs.2, 9

As illustrated in Figure 2 below, the ratchet 61 has a gear profile and the pawl 62 is oriented such that the rear roller is prevented from rotating clockwise, which corresponds with the belt being blocked from moving to the right on the

page, or forward. (Ex.1003, ¶178.)

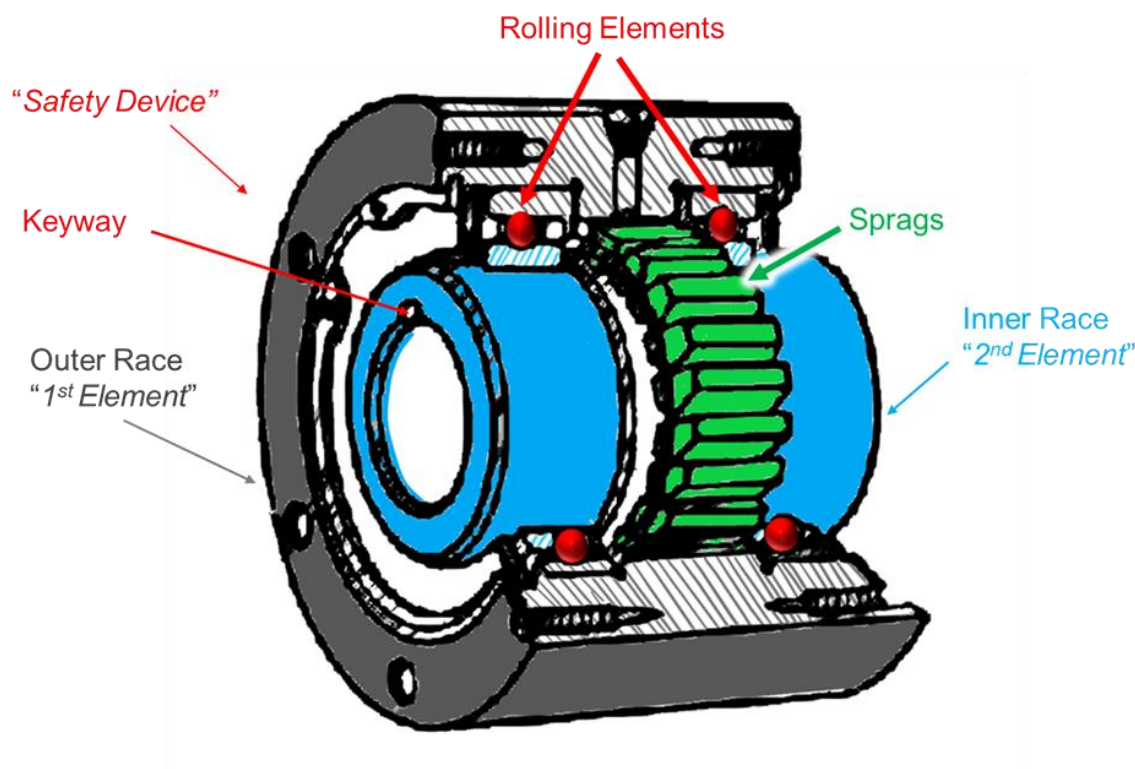


Ex.1012, Fig.2

As explained in Section VII.A.1., it would have been obvious to a POSA to combine Socwell's treadmill with Magid's control means 6, 6' mounted to the front roller or the rear roller to permit only unidirectional movement of the running belt to reduce the risk of a user stepping onto the running belt of the treadmill and losing their balance when the belt moves in the forward direction. Magid's control means 6, 6' provide a "safety device" by preventing the left and right foot belts 4, 4' from moving forward. (Ex.1003, ¶¶179, 129-140.)

As explained in Section VII.A.2, a POSA would have been further

motivated to substitute Sclater's one-way sprag-type bearing assembly for Magid's ratchet-and-pawl one-way clutch mechanism. (Ex.1003, ¶¶179, 141-151.) As illustrated below, Sclater discloses a sprag-type bearing assembly including an inner race, an outer race surrounding the inner race, and a plurality of sprags and rolling elements (balls) disposed between the inner race and the outer race. (Ex.1017, 312; Ex.1003, ¶179.)



Ex.1017, 318

Sclater discloses that the inner race defines a center hole sized to receive a shaft and defines a keyway on the inner diameter. The keyway provides means for coupling the inner race to a shaft via a key. (Ex.1003, ¶179.)

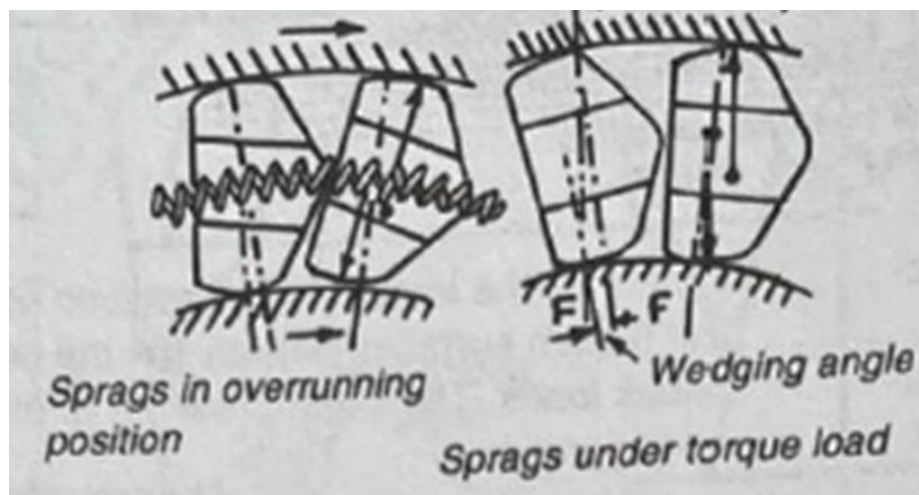
The sprag-type bearing assembly functions as a one-way bearing by providing “one-direction only torque transmission in an overrunning clutch.” (Ex.1017, 312.) The sprags have a “sprag profile, which is composed of two nonconcentric curves of different radius” that provide “a locking ramp.” (*Id.*) Sclater further discloses that the:

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.

(Ex.1017, 318.)

Socwell’s belt 16 (“*running belt*”) is coupled to the inner race (“*second element*”) through the front roller 78 or the rear roller 86. As illustrated in the figure below on the left, the belt 16 and the inner race rotate in a first direction relative to the outer race (“*first element*”) which is fixed to the frame to overrun. However, as illustrated in the figure below on the right, wedging or interference between the sprags and the inner and outer race “*substantially prevent[s]*” rotation of the inner race in an opposite direction relative to the outer race and the frame, which “*substantially prevent[s]*” the belt 16 from moving or “rotating” forward. (Ex.1017, 316, 318; Ex.1003, ¶¶180-181, 210, 228.)



Ex.1017, 318

Thus, the combination of references teaches the claim [1.6]/[9.5] limitations: “wherein one of the first and second elements of the safety device and the running belt [inner race and belt 16] freely rotate in a first direction of rotation relative to the frame [frame 12], however, in a second direction of rotation, opposite the first direction of rotation, the one of the first and second elements [inner race] is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt [belt 16] relative to the frame.” (Ex.1003, ¶¶181, 210.)

The combination of references also teaches the claim [15.5] limitations: “a safety device coupled to the frame and the running belt, the safety device having an element [inner race] adapted for rotation relative to the frame in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the element [inner race] is substantially

prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame.” (Ex.1003, ¶228.)

4. Dependent Claims: 2-4, 6-7

... [2.] ... *further comprising a front shaft coupled to frame, the front shaft being adapted to support the at least one front running belt pulley.*

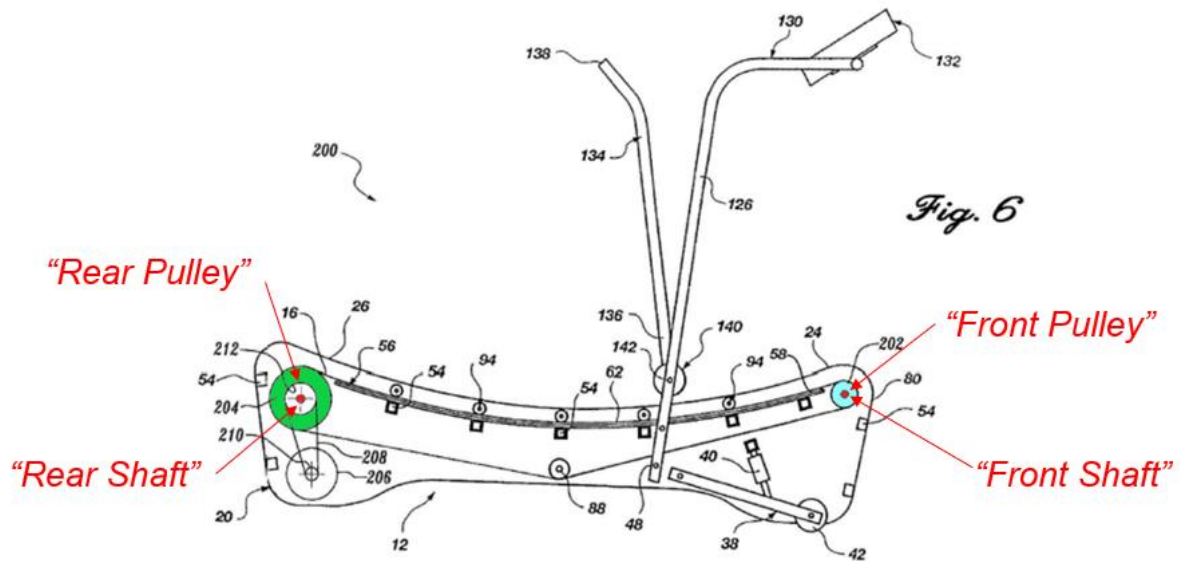
... [3.] ... *further comprising a rear shaft coupled to frame, the rear shaft being adapted to support the at least one rear running belt pulley.*

Socwell discloses a roller assembly 14 that is supported between the right side frame 20 and the left side frame 22 and includes the first roller 78 (“*front running belt pulley*”) and the second roller 86 (“*rear running belt pulley*”). (Ex.1011, 5:33-41; Ex.1003, ¶183.)

Socwell discloses that each roller 78, 86 includes a journaling end (“*front shaft*” and “*rear shaft*”) that is received in a journal housing 28, 34 of the frame:

Preferably, the first journal housing 28 is formed having an opening readily adapted to receive at least one journaling end (not shown) of the first roller 78. Similarly, a second journal housing 34 may be formed substantially adjacent the second end 26 of the first side 20 of the support frame 12 and include an opening readily adapted to receive at least one journaling end (not shown) of the second roller 86.

(Ex.1011, 6:29-37, *see also* 7:8-18; Ex.1003, ¶184.)



Ex.1011, Fig.6 (Annotated)

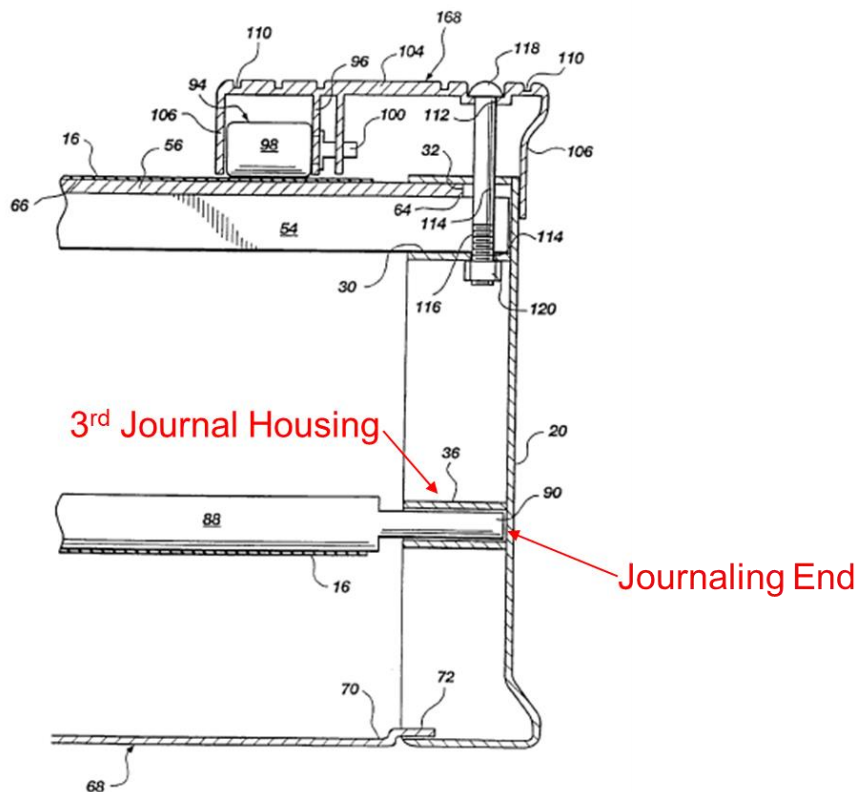


Fig. 5

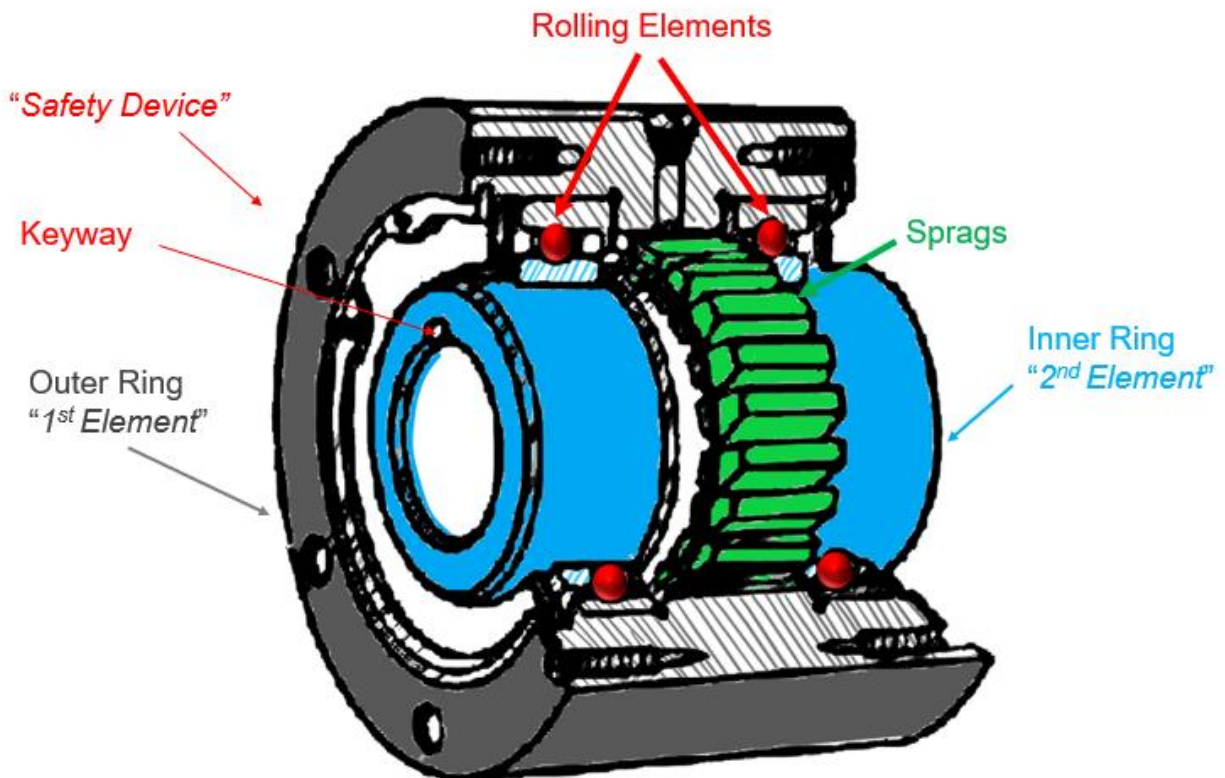
Ex.1011, Fig.5 (Annotated)

Socwell also discloses, with reference to Figure 5 above, a third roller 88 with a journaling end 90 that is received in a third journal housing 36 of the frame “[c]onsistent with the first and second journal housings 28, 34.” (Ex.1011, 6:60-64; Ex.1003, ¶¶185-187.) Therefore, Socwell teaches that the journaling end (“*front shaft*”) supports the first roller 78 (“*front running belt pulley*”) and is coupled to the frame at the first journal housing 28, and that the journaling end (“*rear shaft*”) supports the second roller 86 (“*rear running belt pulley*”) and is coupled to the frame at the second journal housing 34. (Ex.1003, ¶¶188-189.)

... [4.] ... wherein the first and second elements of the safety device at least partly form a one-way bearing.

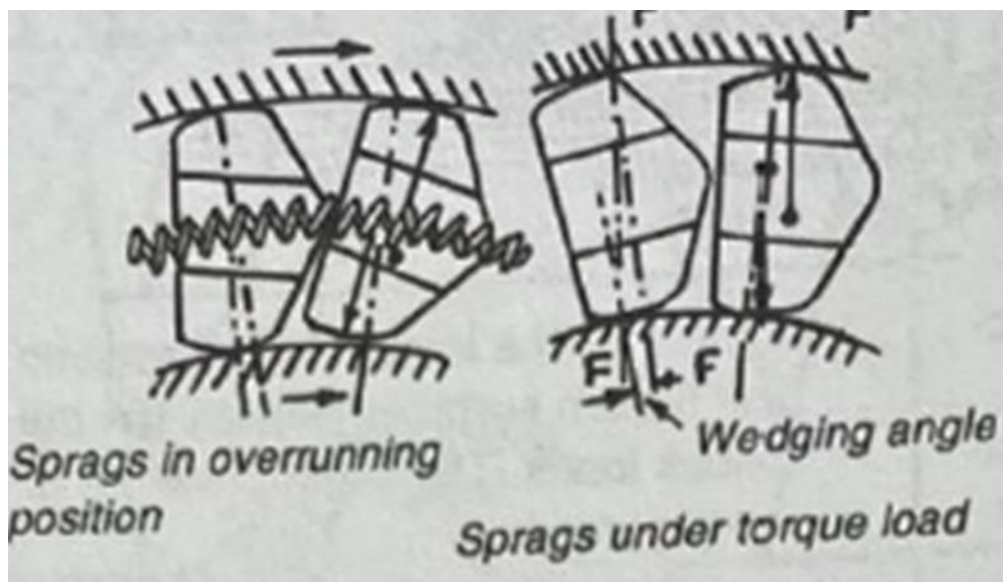
... [12] ... wherein the first and second elements at least partly form a one-way bearing.

Sclater discloses a one-way bearing assembly. (Ex.1017, 312.) As illustrated below, Sclater discloses that the sprag-type one-way bearing assembly includes sprags that are disposed between an inner race (“*second element*”) and an outer race (“*first element*”). (Ex.1003, ¶190.)



Ex.1017, 318

Sclater discloses that the sprags have a “sprag profile, which is composed of two nonconcentric curves of different radius” that provide “a locking ramp.” (Ex.1017, 312.) Sclater further discloses that “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.” (Ex.1017, 316.) The bearing assembly is a “one-way bearing” due to the interaction of the sprags, rolling elements (balls), and the races. (Ex.1003, ¶¶191-192, 219-220.)



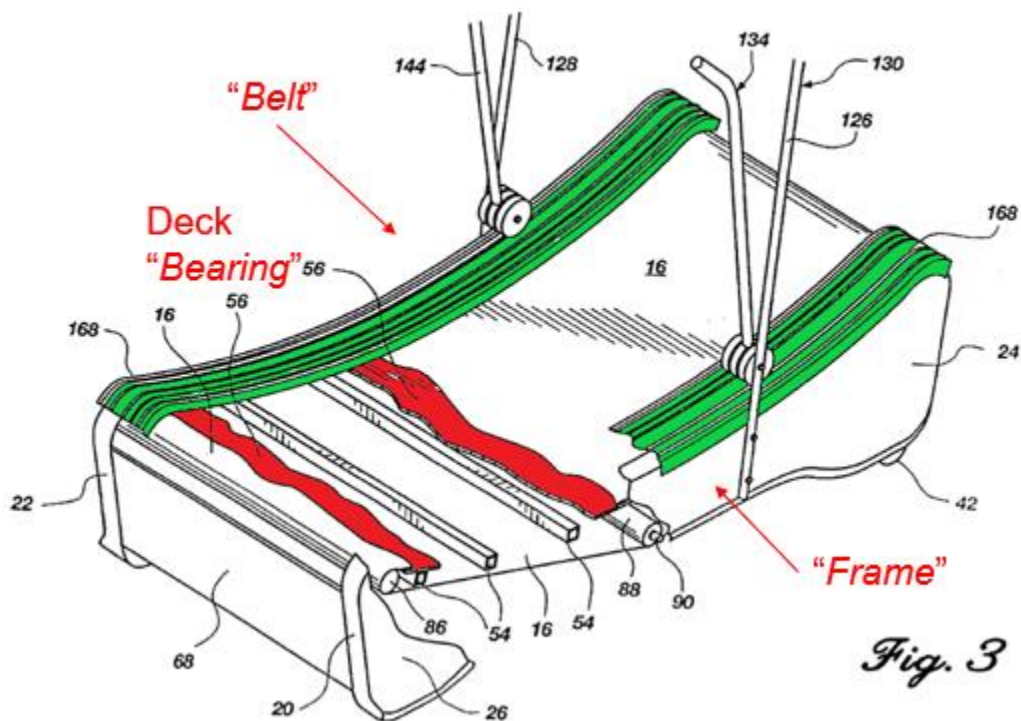
Ex.1017, 318

... [6.]/[13]/[16] ... **further comprising a plurality of bearings coupled to the frame, [wherein] at least one bearing of the plurality of bearings configured to at least partially support the running belt.**

Socwell discloses a “*plurality of bearings*” comprising a deck 56 and rollers 98. (Ex.1003, ¶¶193-197, 221-222, 232-233.)

More specifically, Socwell discloses the deck 56 (“*bearing*”) being coupled to opposing sides of the frame 12: “the curved deck treadmill 10 comprises a support frame 12 having a first side 20 and a second opposing side 22 and having a deck 56 supportably disposed therebetween.” (Ex.1011, 5:22-25.) “[T]he deck 56 is preferably formed consisting of a wood laminate having an upper surface 66 that may be impregnated with a wax material to provide a means for reducing the

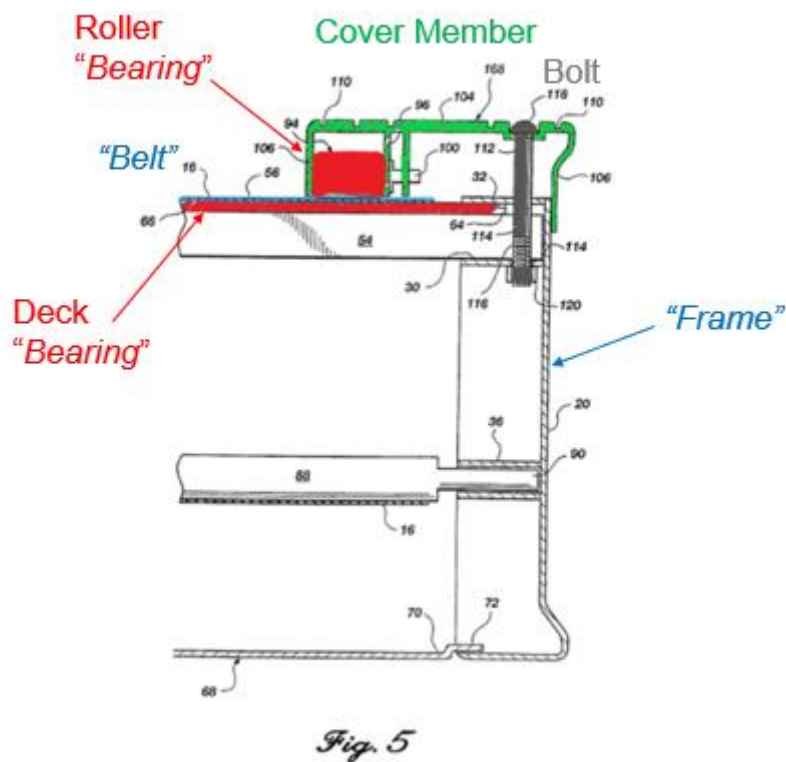
coefficient of friction acting thereon.” (Ex.1011, 8:11-15.) The deck 56 is a bearing surface that supports the belt 16. (Ex.1003, ¶¶193, 69-70.)



Ex.1011, Fig.3

Socwell also discloses "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.” (Ex.1011, 10:5-12.) Each “belt securing assembly 94 comprises a roller 98 [“bearing”] having an axle 100 which rotatably engages a mounting bracket 96 ... 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.” (Ex.1011, 10:17-26; Ex.1003, ¶¶194-195.) Like the deck

56 (“bearing”), the rollers 98 (“bearings”) are coupled to the frame via a mounting bracket 96 and cover member 168 assembly (Ex.1011, 10:17-23, 10:45-60, 11:15-33; Ex.1003, ¶196.) The rollers 98 and the deck 56 collectively provide a “*plurality of bearings*,” and at least the deck 56 supports the belt 16 (Ex.1003, ¶197.)

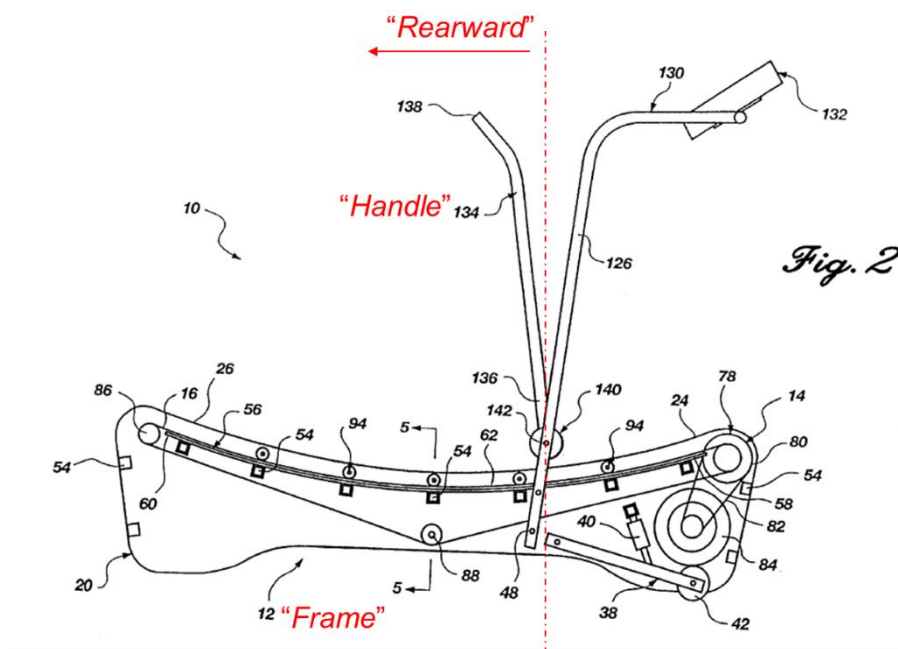


Ex.1011, Fig.5

... [7.] ... further comprising a rearwardly extending handle coupled to the frame.

Socwell discloses “first and second handles 134, 144 [that] may be pivotally connected to the first and second sides 20, 22, respectively, of the support frame

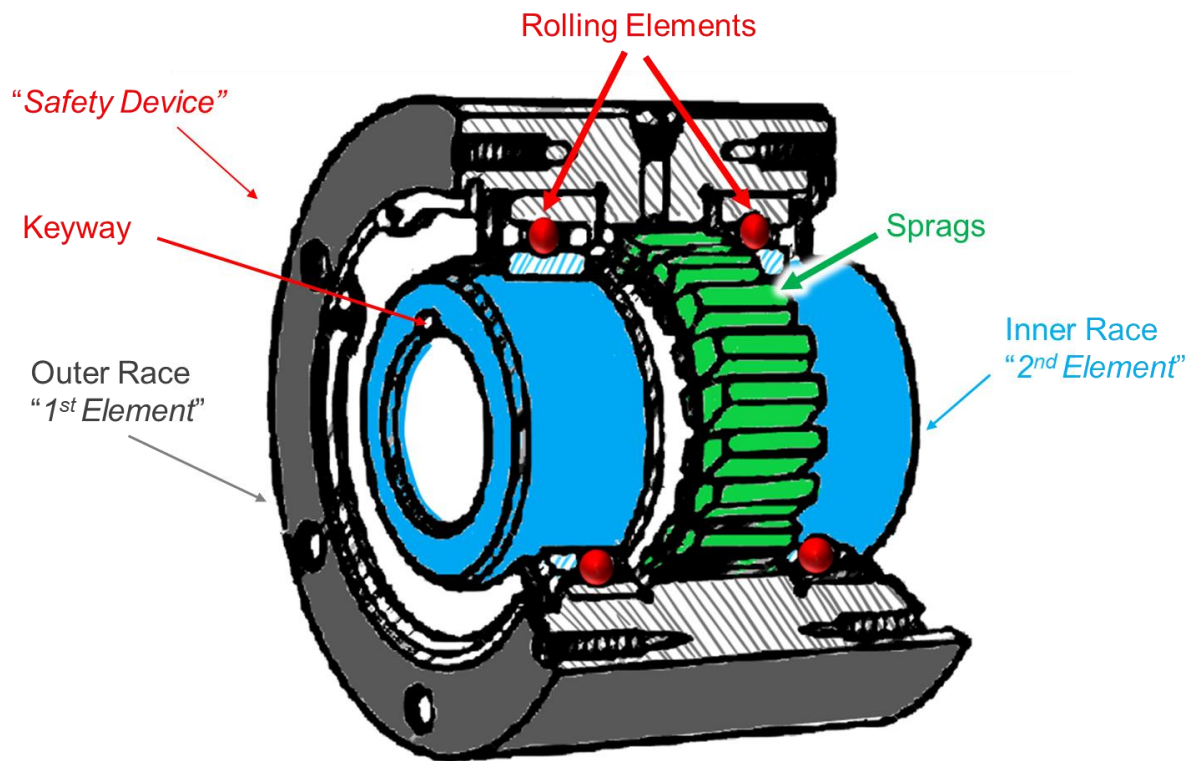
12.” (Ex.1011, 13:8-20; 5:46-56.) As illustrated in Figure 2 below, both handles 134/144 extend “rearwardly” from an imaginary vertical line extending from the frame 12. (Ex.1003, ¶¶198-199.)



Ex.1011, Fig.2 (Annotated)

... [10] ... wherein only one of the first and second elements is freely rotatable relative to the frame.

As discussed above in claim 1, the Socwell-Magid-Sclater combination includes the inner race of Sclater’s one-way bearing fixed to one of Socwell’s rollers 78/86 and the outer race fixed to Socwell’s frame 12. (Ex.1003, ¶213.)



Ex.1017, 318 (Annotated)

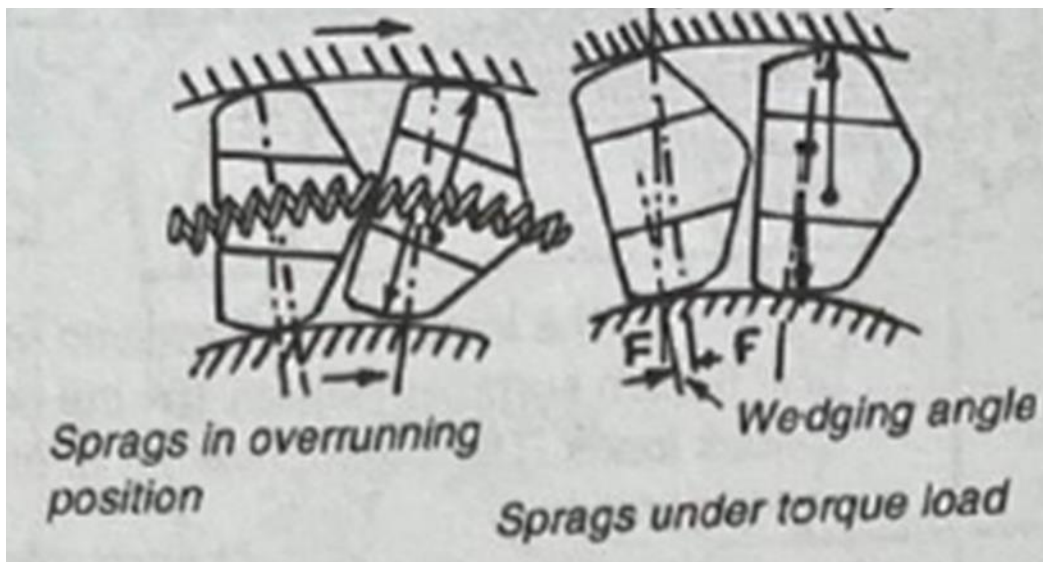
Sclater discloses that the inner race defines a center hole that is sized to receive a shaft and defines a keyway on the inner diameter. The keyway is a traditional means for coupling the inner race to a shaft via a key. Sclater further discloses that this sprag-type bearing assembly functions as a one-way bearing by providing “one-direction only torque transmission in an overrunning clutch.” (Ex.1017, 312; Ex.1003, ¶214.)

Sclater further discloses that the:

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.

(Ex.1017, 318.)

The belt 16 (“*running belt*”) is coupled to the inner race (“*second element*”) through the front roller 78 or the rear roller 86. As illustrated in the figure below on the left, the belt 16 and the inner race rotate in a first direction relative to the outer race (“*first element*”) to freewheel or overrun. However, as illustrated in the figure below on the right, wedging or interference between the sprags and the inner and outer race prevents rotation of the inner race in an opposite direction, which prevents the belt 16 from moving forward. (Ex.1003, ¶¶215-216.)



Ex.1017, 318

B. Ground 2: Claims 1-4, 6-13, 15-16 are Unpatentable as Obvious Over Tollkien and Sclater

1. Rationale to Combine Tollkien and Sclater

It would have been obvious to a POSA to combine the manual curved running surface treadmill topology disclosed in Tollkien with the known technique of backstopping a belt (with a spragtype one-way bearing assembly) disclosed by Sclater to prevent forward motion of the treadmill belt. (Ex.1003, ¶235.)

Tollkien discloses “a treadmill for fitness training.” (Tollkien, Ex.1031, [0001].) Sclater is a reference sourcebook that “contains drawings and descriptions of more than 2000 different mechanisms and mechanical devices that have proven themselves in modern products, machines, and systems.” (Ex.1017, 24, Back Cover.) Sclater describes different types of coupling, clutching, and braking devices in Chapter 9 to solve various design problems. (Ex.1017, 311-312; Ex.1003, ¶236.)

Sclater discloses a well-known mechanism (a sprag-type one-way bearing assembly) for solving the problem of unexpected belt rotation in the opposite direction of travel and explicitly discloses the use of the mechanism to permit only unidirectional motion of a conveyer belt (i.e., backstopping). (Ex.1017, 316–321.) A POSA would have understood conveyers and treadmills operate the same. Therefore, it would have been obvious to a POSA to apply Sclater’s known

technique of backstopping a belt with a sprag type one-way bearing assembly to Tollkien's treadmill to prevent forward motion of the belt. (Ex.1017, 320; Ex.1003, ¶237.)

It has long been recognized that users may be injured by falling off of a treadmill while mounting or dismounting it, or during use. This may be due to the treadmill belt moving in an unexpected direction or in such a way that the user cannot regain their equilibrium. It could also be due to the incline of the surface causing the position of the user to drift rearwards, and off, over time. (Ex.1003, ¶238, *see* ¶¶71-72.)

Several professional organizations have produced standards to provide guidance to manufacturers regarding both exercise equipment safety in general and other standards specifically for treadmill safety. *See* ASTM Standard, Ex.1019; ISO Standard, Ex.1020; and ACCC Product Safety Supplier Guide, Ex.1007. These standards establish requirements for foot rails and handrails on treadmills to address user stability. (Ex.1019 at 3-4; Ex.1020 at 8; Ex.1003, ¶239.)

Tollkien explains his invention in view of previous treadmills explained in his background, including Socwell (Ex.1011). (Ex.1031, [0005].) Tollkien describes Socwell as a treadmill “that has a curved running surface” however the “curving radius is not adjustable.” (Ex.1031, [0005].) Accordingly, a POSA reading Tollkien, would have considered Socwell's teachings. (Ex.1003, ¶240.)

Socwell explains that a user may be injured by falling off a treadmill while mounting or dismounting, or during use, due to unexpected belt movement:

In particular, if the rollers supportably disposed in relation to the endless belt are so easily moveable, the user may potentially lose his equilibrium or balance and fall from the exercise treadmill resulting in possible injuries.

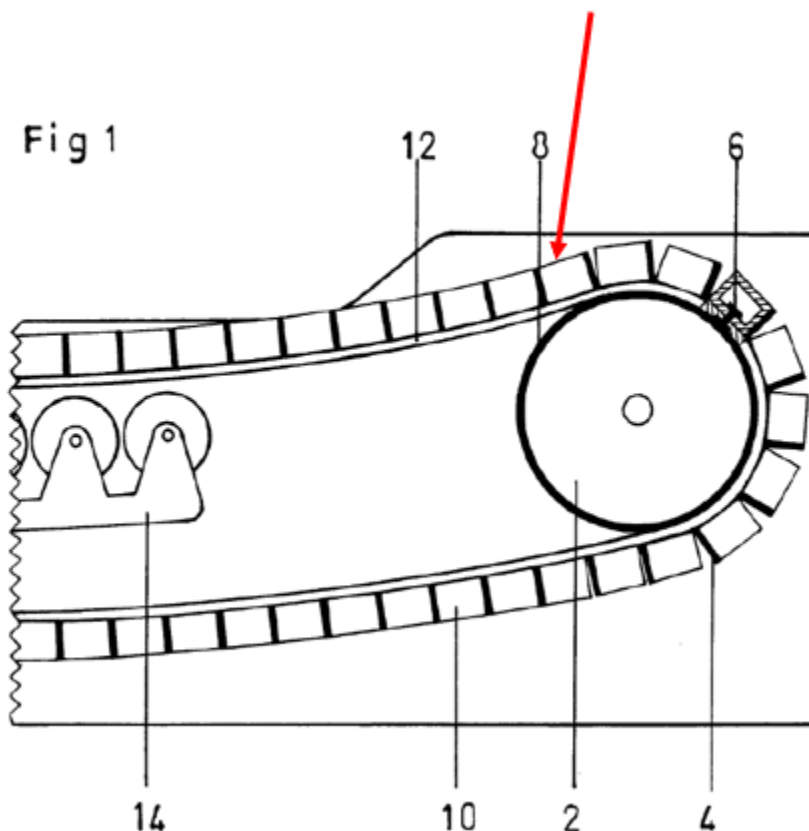
(Ex.1011, 1:32-36.)

Another meaningful disadvantage of exercise treadmills of the prior art is the inherent danger associated with users tending to fall off the back end of the treadmill and become injured.

(Ex.1011, 2:45-48.)

Socwell further recognizes that it is difficult to stabilize the running belt in manual treadmills. According to Socwell, this is due to the difficulty in balancing the frictional and inertial qualities of belt supporting devices. (Ex.1011, 1:30-56; Ex.1003, ¶241-242.)

Tollkien does not address the safety issue of unexpected forward motion of the running belt when a user steps onto the treadmill, e.g., if a user steps onto the rearward end of the running surface (indicated by the red arrow), causing the foot to unexpectedly move towards the lowest portion of the treadmill. This unexpected forward motion could result in a fall. (Ex.1003, ¶243.)



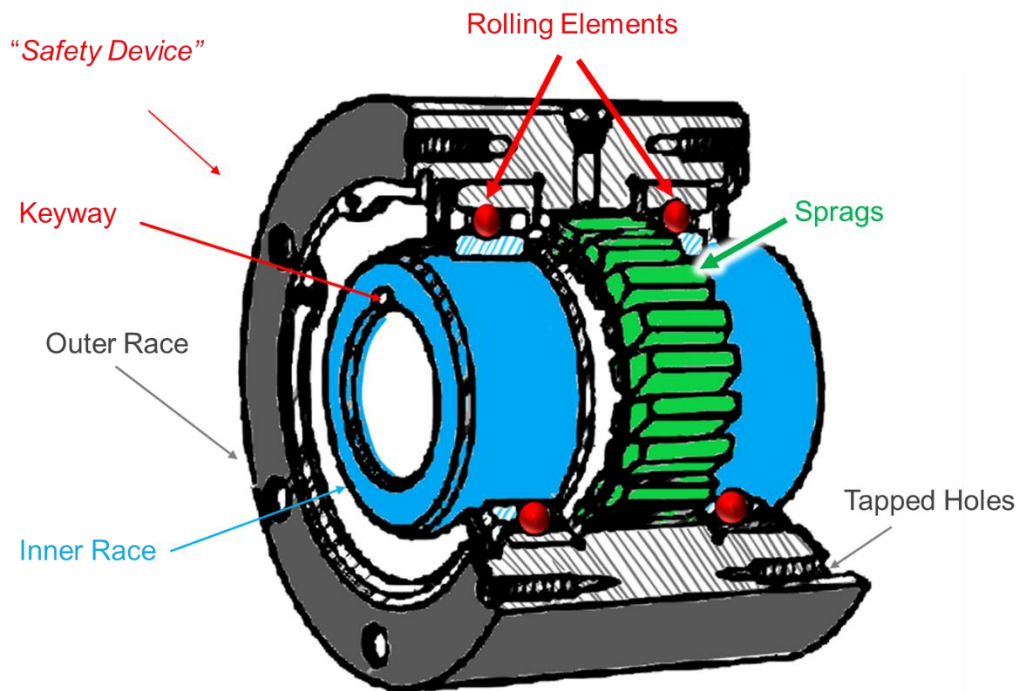
Ex.1031, Fig.1 (Annotated)

A POSA reviewing Tollkien would have been alerted to safety issues associated with curved running surfaces by reviewing the cited Socwell reference. A POSA would have understood that preventing forward belt motion would solve this problem, and that there were dozens of off-the-shelf one-way clutches available. Sclater, and similar publications, e.g., the PT Handbook (Ex.1016), and catalogs, e.g., Emerson (Ex.1018), were useful reference material for a POSA and illustrate how the claimed safety device was merely an off-the-shelf part. Indeed, Sclater explains how to use the one-way bearing assembly as a backstop for a

conveyer belt. (Ex.1017, 320; *see also* Ex.1018 at 52-53; Ex.1003, ¶244.)

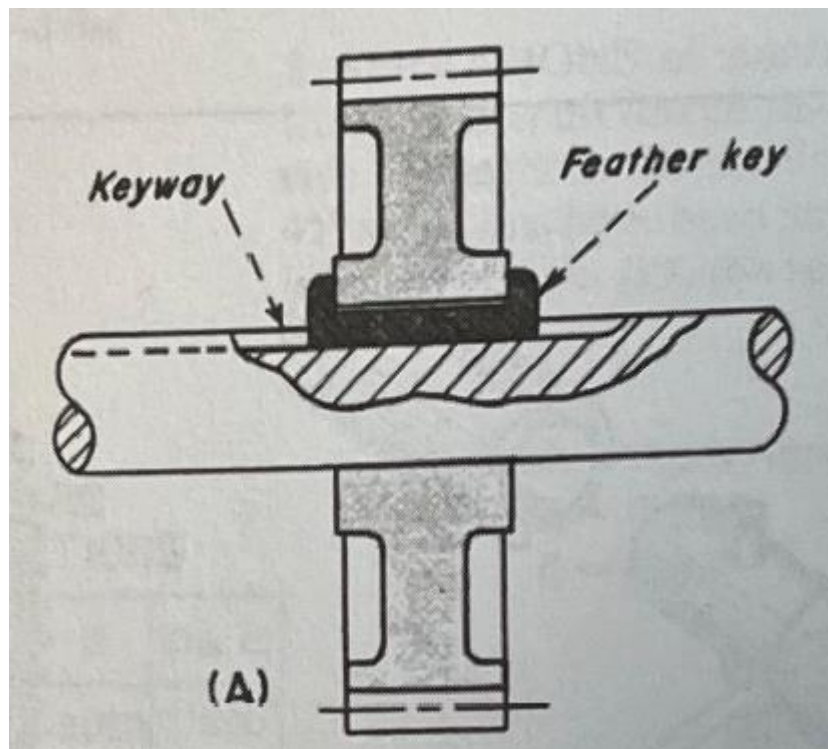
It would have been obvious to a POSA to combine the off-the-shelf one-way bearing assembly of Sclater to the treadmill of Tollkien to permit only unidirectional movement of the running belt to reduce the risk of a user stepping onto the running belt of the treadmill and losing their balance when the belt moves in the forward direction. Accordingly, a POSA would have been motivated to modify Tollkien to include Sclater's one-way bearing to the front roller or the rear roller. (Ex.1003, ¶¶245-246.)

This modification would have been a simple combination of known elements in the prior art: Tollkien's manual treadmill with a curved running surface and Sclater's sprag type one-way bearing. For example, the outer race would be fixed to the frame either directly or through one or more intermediaries, e.g., a bracket. Sclater illustrates that the outer race includes tapped holes for receiving fasteners for mounting the one-way bearing to a treadmill frame or intermediary support structure. Other traditional methods also exist to restrain the outer race, such as using an interference fit with a housing (or other support structure) or a keyway on the outer race as well. (Ex.1003, ¶247.)



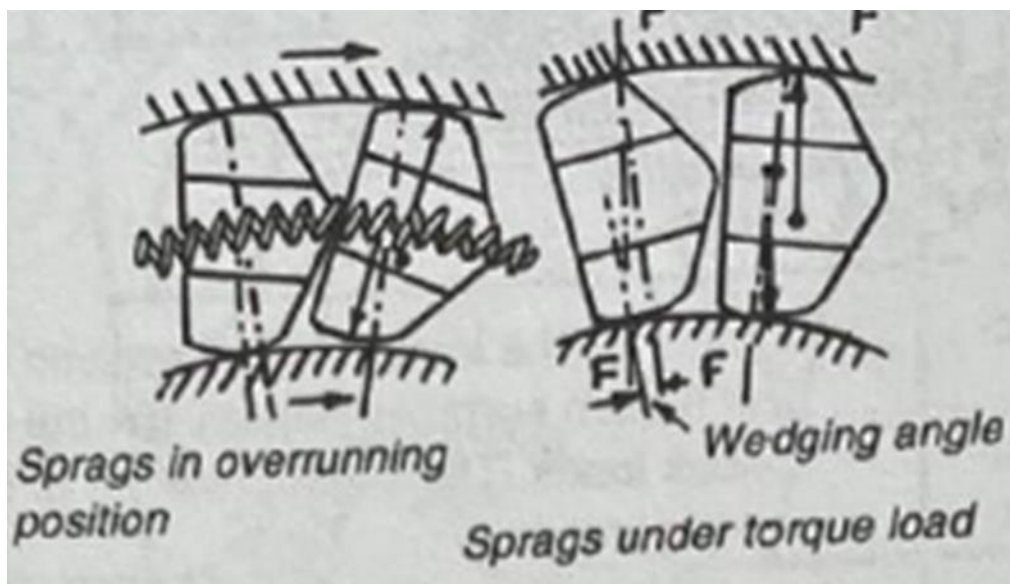
Ex.1017, 318 (Annotated)

The inner race of the one-way bearing would be secured to the front roller or rear roller, e.g., with a traditional key/keyway interface, such as that disclosed by Sclater. (Ex.1003, ¶248.)



Ex.1017, 420

With this arrangement, rearward motion of the belt 12/30 would rotate the front/rear roller and inner race so that the inner race would overrun and move the sprags out of the locked position. However, forward motion of the belt 12/30 would rotate the inner race in the opposite direction and wedge the sprags into the locked position to backstop and prevent forward motion, i.e., rotation, of the belt. (Ex.1003, ¶249.)



Ex.1017, 318

The one-way bearing of Sclater would function the same when added to Tollkien and provide the predictable result of Tollkien's running belt only rotating in the exercise direction thus providing the same benefit described by Sclater in the conveyer example. (Ex.1017, 302). The modification would also be the use of a known technique—using a one-way clutch in a backstopping mode of operation—to improve similar devices, i.e., treadmills and conveyor belts, in the same way, i.e., to provide unidirectional belt motion. (Ex.1003, ¶250, *see also* ¶¶84-91; Ex.1018, 8-9, 52-53.)

A POSA would have considered a sprag-type one-way clutch bearing for an exercise equipment application, such as a treadmill. For example, Emerson is a bearing catalog from 2001 that specifically describes its NSS Series sprag type one-way clutch as an option for multiple “Field Applications,” including “**Exercise**

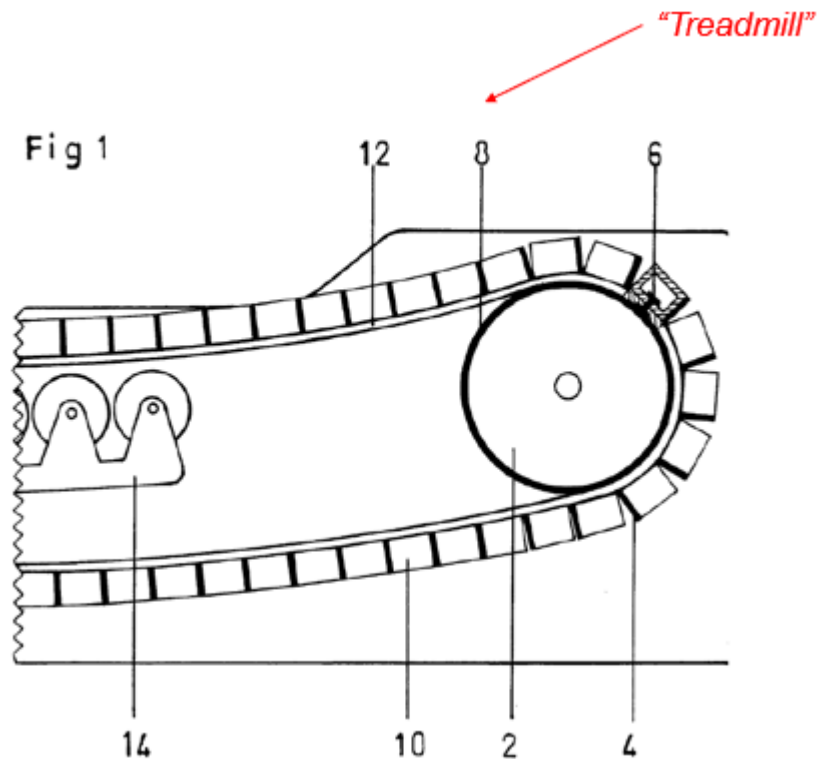
equipment,” “Food processing equipment,” “Printing presses,” and “Roll conveyors.” (Ex.1003, ¶251; Ex.1018, 52-53.)

2. Independent claims 1, 9, 15

... ***[1.0]/[15.0] A manually powered treadmill, comprising:***

... ***[9.0] A treadmill, comprising:***

Tollkien discloses “a treadmill for fitness training.” (Ex.1031, [0001].) Tollkien discloses that the “treadmill is powered by either a motor or the user,” i.e., “*manually powered*” (Ex.1031, [0002]). With reference to Figure 1, Tollkien discloses “a side view of part of a treadmill without a motor.” (Ex.1031, [0018]; Ex.1003, ¶¶253-254, 321, 352).

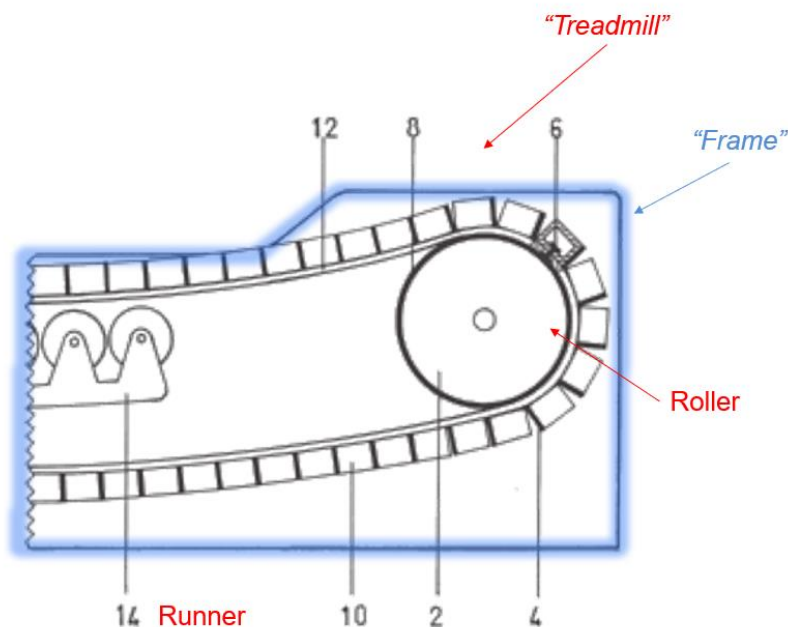


Ex.1031, Fig.1 (Annotated)

Tollkien further discloses integrating the treadmill with a vehicle 20 in which a user propels the vehicle by running on the belt 30. (Ex.1031, [0022]-[0023], Figs. 2-3; Ex.1003, ¶¶255-256.)

... [1.1]/[9.1]/[15.1] a frame;

Tollkien discloses that the treadmill includes a “frame” annotated in blue in the figure below. (Ex.1031, [0018], Fig.1, Abstract; Ex.1003, ¶¶258-260, 322, 353.)



Ex.1031, Abstract (Annotated)

... [1.2]/[15.2] *at least one front running belt pulley coupled to the frame;*

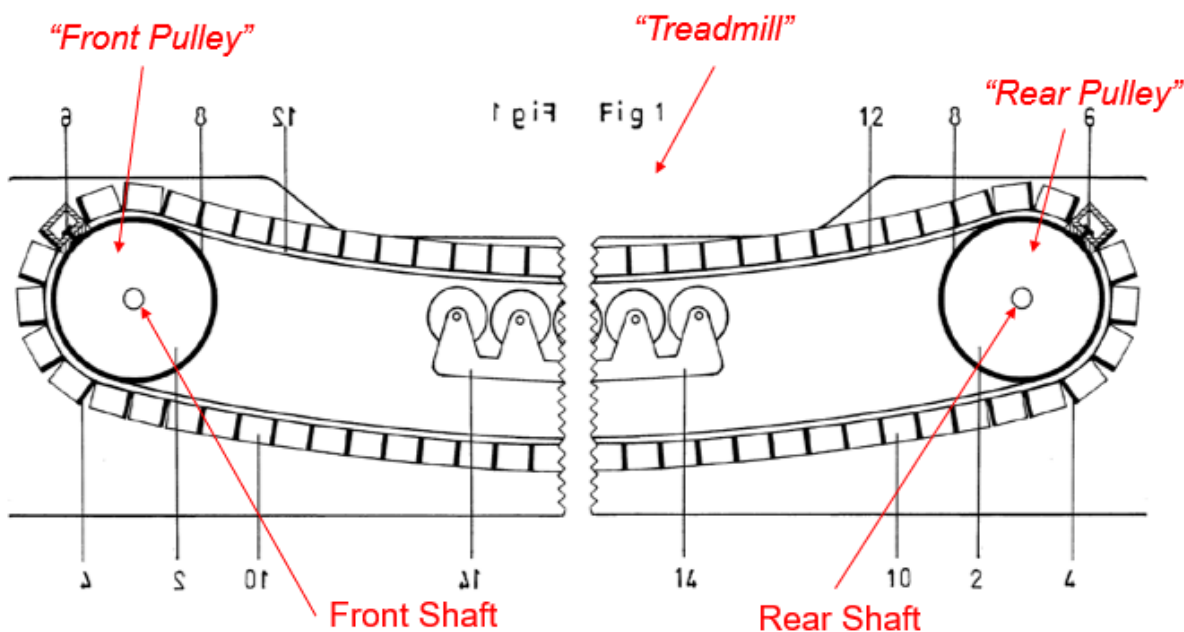
... [1.3]/[15.3] *at least one rear running belt pulley coupled to the frame and spaced a distance from the at least one front running belt pulley;*

... [9.2] *a rotatable element coupled to the frame;*

Tolkien discloses “A treadmill for fitness training with a running surface formed between two rollers (2)” (“front running belt pulley” or “rotatable element”) and (“rear running belt pulley” or “rotatable element”). (Ex.1031, Abstract; Ex.1003, ¶261-262.) “Fig. 1 shows a side view of part of a treadmill” illustrating one roller and explains that “[t]he other side is mirror-symmetrical.”

(Ex.1031, [0018], [0020].) Tolkien further discloses that the “running surface is formed by cross members 10 that are transverse to the direction of movement, which are attached with rivets 6 to a continuous belt 12.” (Ex.1031, [0018]; Ex.1003, ¶¶262-263.)

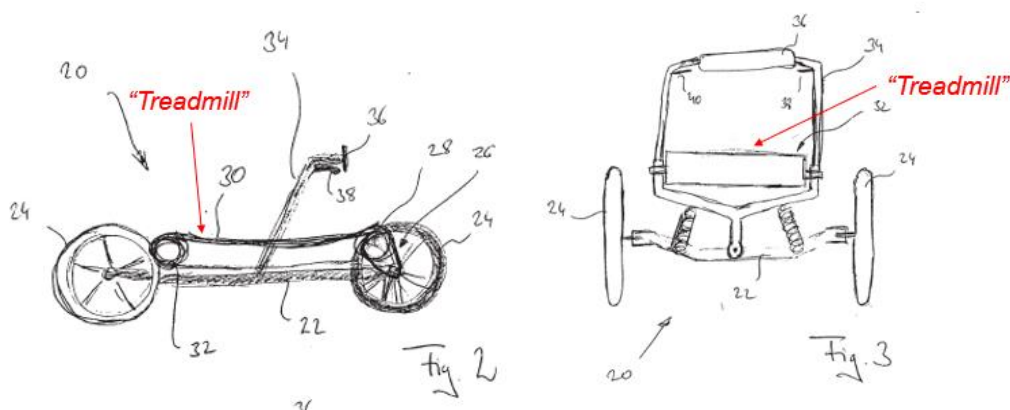
The following image includes Figure 1 with a mirror image of Figure 1 to depict both sides of the treadmill, including a front roller 2 and a rear roller 2 that are spaced apart from each other and support the continuous belt 12. Since the rollers transmit power by means of the endless belt 12, a POSA would have understood the first roller 2 to be a “*front running belt pulley*” and the second roller 2 to a “*rear running belt pulley*.” (Ex.1003, ¶264.)



Ex.1031, Fig.1 (Annotated)

Tollkien also discloses, in Figure 1, a shaft extending through the center of each roller 2. (Ex.1031, Fig.1.) A POSA would have understood that the ends of these shafts are received in journals formed in the frames for support, such that each roller (“pulley” or “rotatable element”) is “coupled to the frame”. (Ex.1003, ¶¶265, 269, 323-324, 354.)

With reference to Figures 2 and 3, Tollkien discloses an embodiment in which the treadmill is integrated with a vehicle. Tollkien discloses a front roller 32 and a rear roller 28 in the vehicle embodiment. A shaft extends from opposing ends of the roller 32 and through holes formed in the frame to couple the roller to the frame for support. (Ex.1031, Fig.3; Ex.1003, ¶¶266-270.)

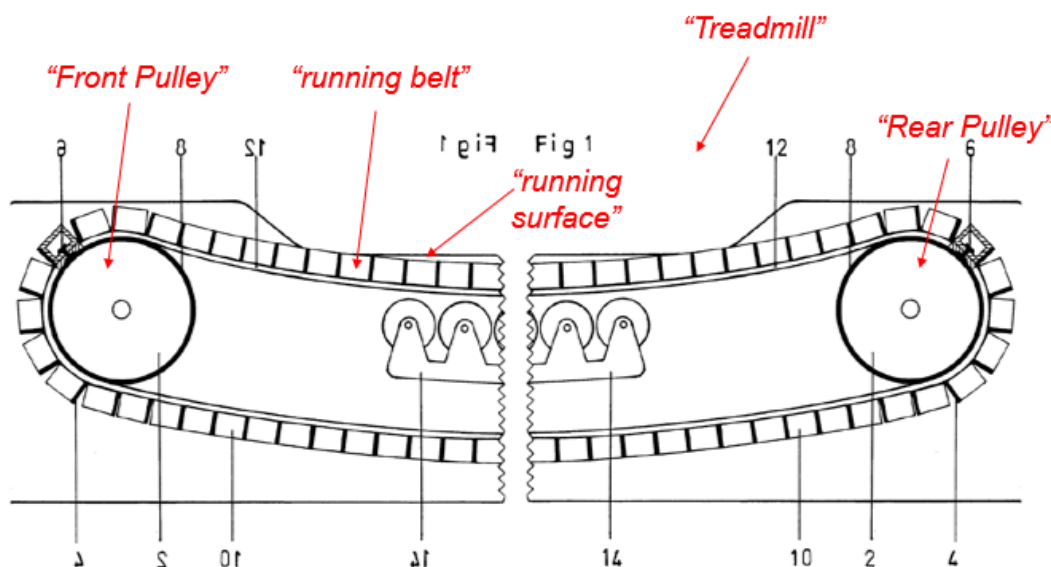


Ex.1031, Figs. 2, 3 (Annotated)

... [1.4]/[15.4] a running belt at least partially supported by at least one of the at least one front running belt pulley and the at least one rear running belt pulley, wherein the running belt includes a running surface, at least a portion of which is curved;

... [9.3] *a running belt at least partially supported by the rotatable element, wherein the running belt includes a running surface, at least a portion of which is curved; and*

Tollkien discloses a continuous belt 12 (“*running belt*”) that is wrapped around the front and rear rollers. (Ex.1031, [0020].) The belt 12 is supported at the ends by the rollers 2 and in the middle by the runners 14. (Ex.1031, [0018]–[0020].) Tollkien discloses that the belt 12 includes cross members 10 that extend outward to form a curved running surface. (Ex.1031, [0018]–[0020], Fig.1; Ex.1003, ¶¶271, 326-327, 355.)



Ex.1031, Fig.1 (Annotated)

Tollkien discloses that the “*running surface formed between two rollers (2), which is curved away from the user*” and that “*the curving radius can be adjusted.*” (Ex.1031, Abstract.) Tollkien further discloses adjusting the tension of the running

surface to adjust its curvature.

The tension or shape of the running surface can be increased or otherwise varied by attaching different strips, in particular when the tension decreases due to wear. A higher tension results in a flatter curvature, which is therefore more suited to larger runners with longer legs that describe a larger arc radius during the running movement.

(Ex.1031, [0019]; Ex.1003, ¶¶272-274.)

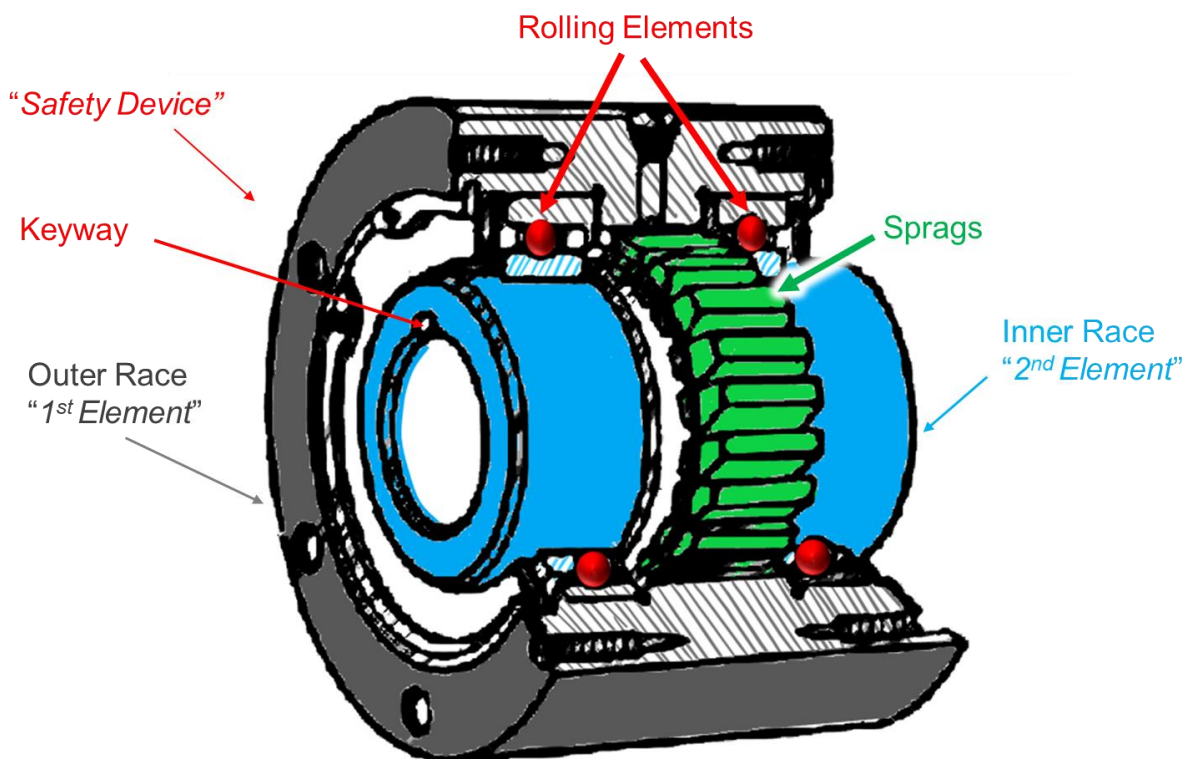
... [1.5] a safety device coupled to the frame and the running belt, the safety device having a first element and a second element, the first element substantially surrounding the second element or the second element substantially surrounding the first element;

... [9.4] a first element and a second element, both of which are coupled to the running belt, and wherein the first element substantially surrounds the second element or the second element substantially surrounds the first element;

... [15.6] wherein the safety device includes another element, wherein one of the element and the another element substantially surrounds the other of the element and the another element.

Sclater discloses sprag-type one-way bearing assemblies that include sprags combined with rolling elements, such as cylindrical rollers or balls. “Sprags combined with cylindrical rollers in a bearing assembly can provide a simple, low-cost method for meeting the torque and bearing requirements of most machine applications.” (Ex.1017, 312.)

As illustrated in the image below, Sclater discloses that the sprag-type one-way bearing assembly includes an inner race, an outer race that “*substantially surrounds*” the inner race, and a plurality of sprags and rolling elements disposed between the inner race and the outer race. The outer race includes tapped holes allowing the outer race to be fixed to another support structure, such as a frame of a treadmill. (Ex.1003, ¶¶275, 328-330, 359.)



Ex.1017, 318 (Annotated)

Sclater discloses that the inner race defines a center hole that is sized to receive a shaft and defines a keyway on the inner diameter. The keyway is a

traditional means for coupling the inner race to a shaft via a key. Sclater further discloses that this sprag-type bearing assembly functions as a one-way bearing by providing “one-direction only torque transmission in an overrunning clutch.” (Ex.1017, 312; Ex.1003, ¶¶275-278.)

Sclater further discloses that the:

Precision sprags act as wedges and are made of hardened alloy steel.

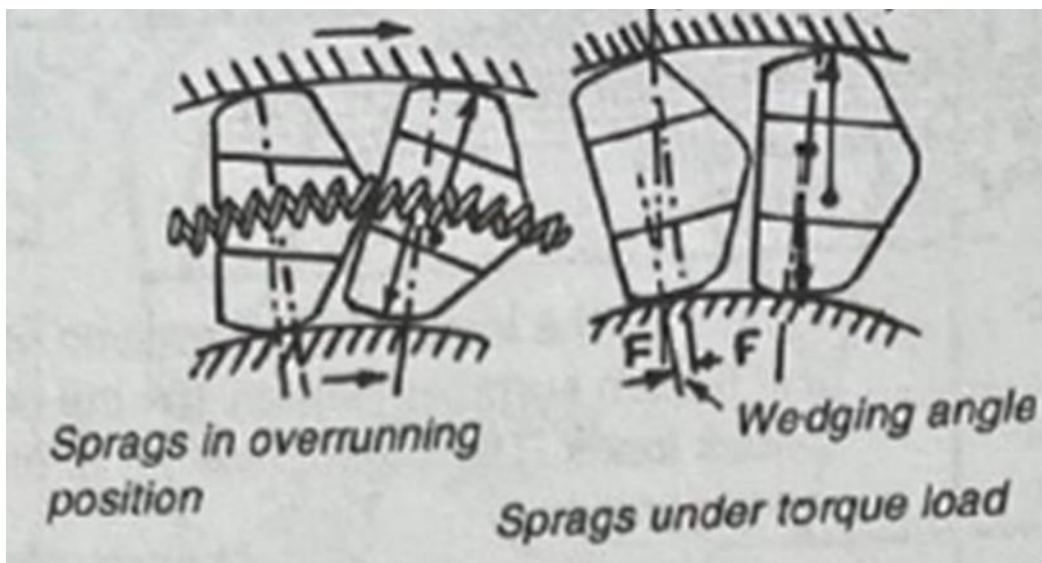
In the formsprag clutch, **torque is transmitted from one race to another by the wedging action of sprags between the races in one direction**; in the other direction the clutch freewheels.

(Ex.1017, 318.)

In the Tollkien/Sclater combination, Tollkien’s continuous belt 12 (“*running belt*”) is coupled to the inner race (“*second element*”) via the front roller 2 or the rear roller 2. (Ex.1003, ¶279.) The belt 12 (“*running belt*”) is also coupled to the outer race (“*first element*”) through the inner race, as required by claim [9.4], e.g., to provide backstop functionality. (Ex.1003, ¶¶328-330.)

As illustrated in the figure below on the left, the belt 12 and the inner race (“*second element*”) rotate in a first direction relative to the outer race (“*first element*”) to overrun. However, as illustrated in the figure below on the right, wedging or interference between the sprags and the inner and outer race prevents rotation of the inner race in an opposite direction, which prevents the belt 12 from

moving forward. The outer race (“*first element*”) would be fixed to the frame by fasteners that are received in the tapped holes defined therein. (Ex.1003, ¶¶280.)



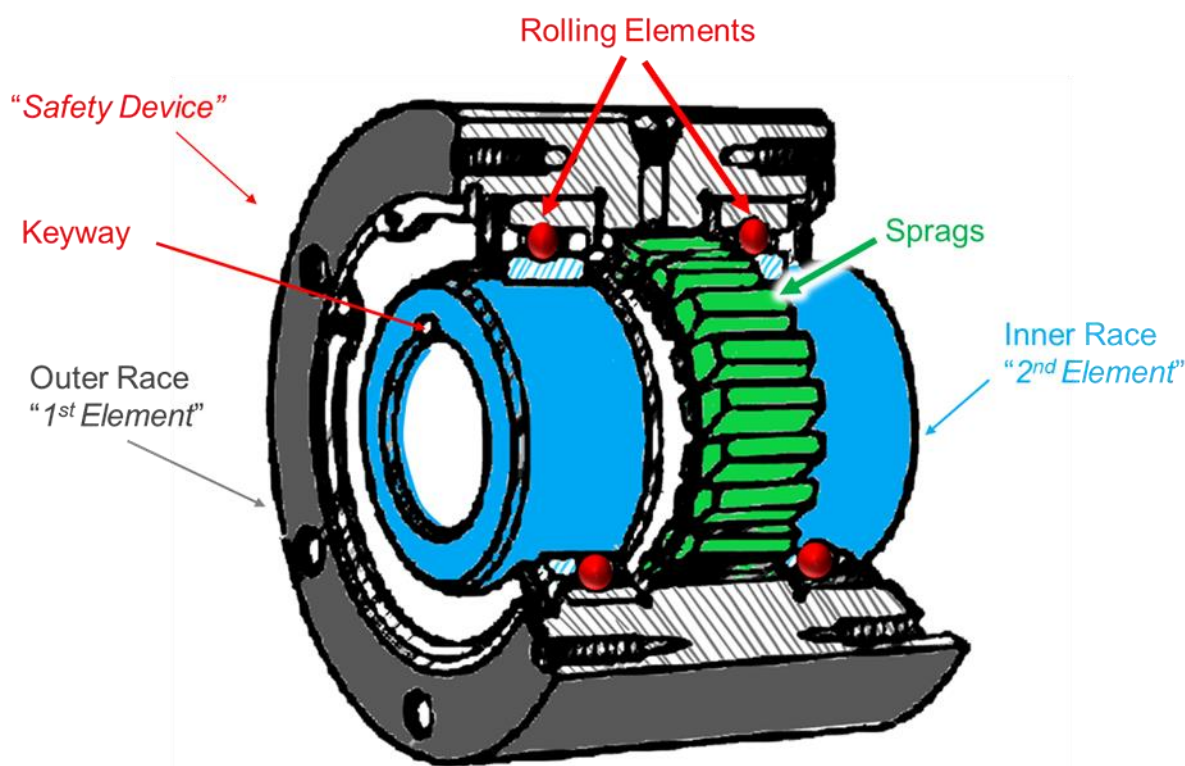
Ex.1017, 318

a. Claim Construction of “*Safety Device*”

Petitioner proposes construing the term “*safety device*” as a “device having two ring-shaped components” and Patent Owner proposed construing the term “*safety device*” as a “device that permits movement in only one direction” in the related litigation. (Ex.1003, ¶283; Ex.1022, 5.) If the Board adopts either construction, then the combination of references still teaches the challenged claims.

Sclater discloses sprag-type one-way bearing assemblies. “Sprags combined with cylindrical rollers in a bearing assembly can provide a simple, low-cost

method for meeting the torque and bearing requirements of most machine applications.” (Ex.1017, 312.) As illustrated in the image below, Sclater discloses that the sprag-type one-way bearing assembly includes an inner race, an outer race, and a plurality of sprags disposed between the inner race and the outer race. The inner race and the outer race are “two ring-shaped components.” (Ex.1003, ¶284.)



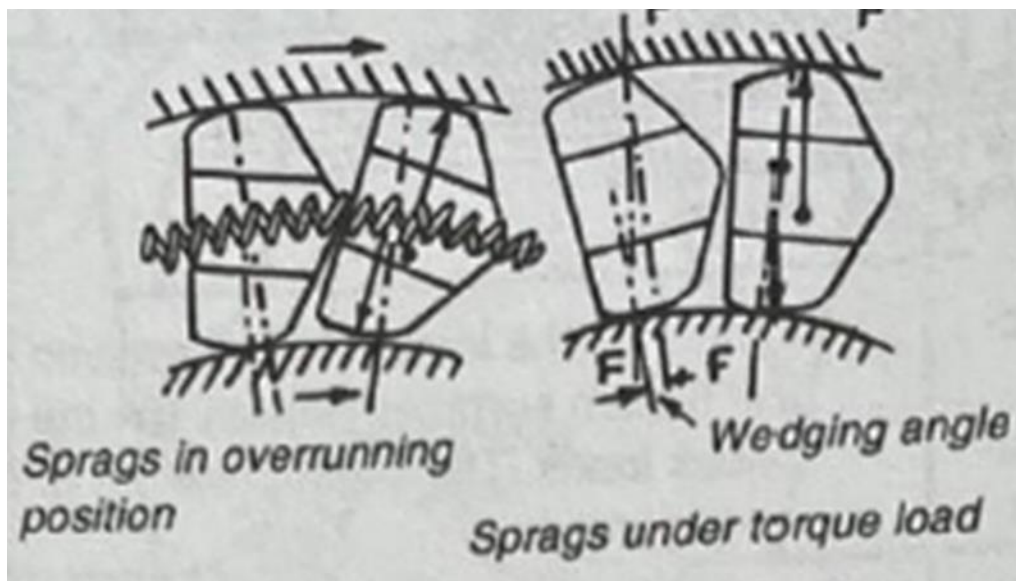
Ex.1017, 318

b. Claim Construction of “Substantially Prevent[]”

Petitioner proposes construing the term “*substantially prevent rotation*” as “prevent any movement after allowing no or minimal movement.” Patent Owner

proposed the term be construed under its plain and ordinary meaning. (Ex.1003, ¶287; Ex.1022, 5.) If the Board adopts either construction, then the combination of references still teaches the challenged claims.

A sprag-type one-way bearing allows minimal movement before the sprags rotate into a locked position. As illustrated in the figure below on the left, Sclater discloses that when the inner race rotates in a first direction relative to the outer race, the sprags move out of the locked position such that an overrun condition occurs. However, as illustrated below right, when the inner race rotates in the opposite direction, the sprag profile wedges the sprags into a locked position preventing relative motion between the inner and outer races. (Ex.1003, ¶288.)

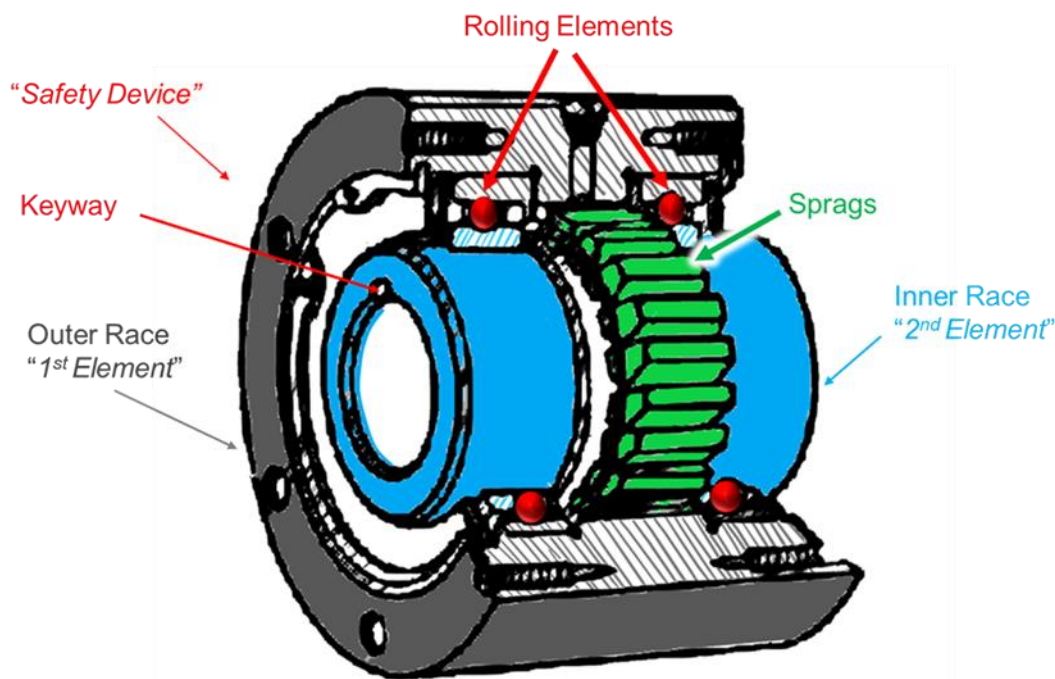


Ex.1017, 318

... [1.6]/[9.5] wherein one of the first and second elements [of the safety device] and the running belt freely rotate in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the one of the first and second elements is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame.

... [15.5] a safety device coupled to the frame and the running belt, the safety device having an element adapted for rotation relative to the frame in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the element is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame; and

As illustrated below, Sclater discloses a sprag-type bearing assembly including an inner race, an outer race surrounding the inner race, and a plurality of sprags and rolling elements (balls) disposed between the inner race and the outer race. (Ex.1017, 312.)



Ex.1017, 318

Sclater discloses that the inner race defines a center hole sized to receive a shaft and defines a keyway on the inner diameter. The keyway provides means for coupling the inner race to a shaft via a key. (Ex.1003, ¶276.)

The sprag-type bearing assembly functions as a one-way bearing by providing “one-direction only torque transmission in an overrunning clutch.” (Ex.1017, 312.) The sprags have a “sprag profile, which is composed of two nonconcentric curves of different radius” that provide “a locking ramp.” (*Id.*) Sclater further discloses that the:

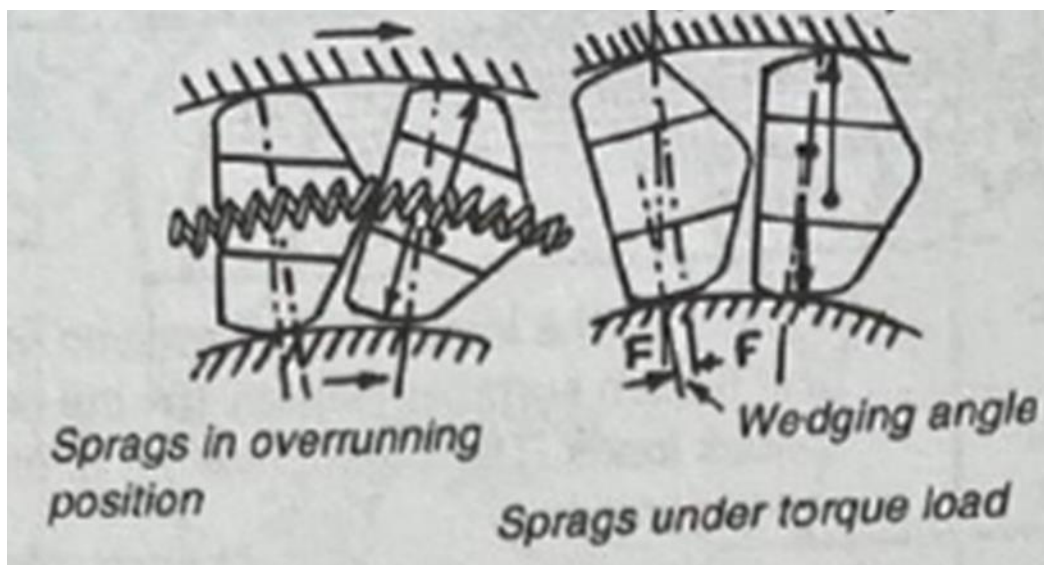
Precision sprags act as wedges and are made of hardened alloy steel. In the formsprag clutch, torque is transmitted from one race to another

by the wedging action of sprags between the races in one direction; in the other direction the clutch freewheels.

(Ex.1017, 318.)

Tollkien's belt 12 (*“running belt”*) is coupled to the inner race (*“second element”*) through the front roller 2 or the rear roller 2. As illustrated in the figure below on the left, the belt 12 and the inner race rotate in a first direction relative to the outer race (*“first element”*) which is fixed to the frame to overrun. However, as illustrated in the figure below on the right, wedging or interference between the sprags and the inner and outer race *“substantially prevent[s]”* rotation of the inner race in an opposite direction relative to the outer race and the frame, which *“substantially prevent[s]”* the belt 12 from moving or *“rotating”* forward.

(Ex.1003, ¶¶291-292.)



Ex.1017, 318

Thus, the combination of references teaches the claim [1.6]/[9.5] limitations: “*wherein one of the first and second elements of the safety device and the running belt [inner race and belt 12] freely rotate in a first direction of rotation relative to the frame [frame], however, in a second direction of rotation, opposite the first direction of rotation, the one of the first and second elements [inner race] is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt [belt 12] relative to the frame.*” (Ex.1003, ¶¶293, 332)

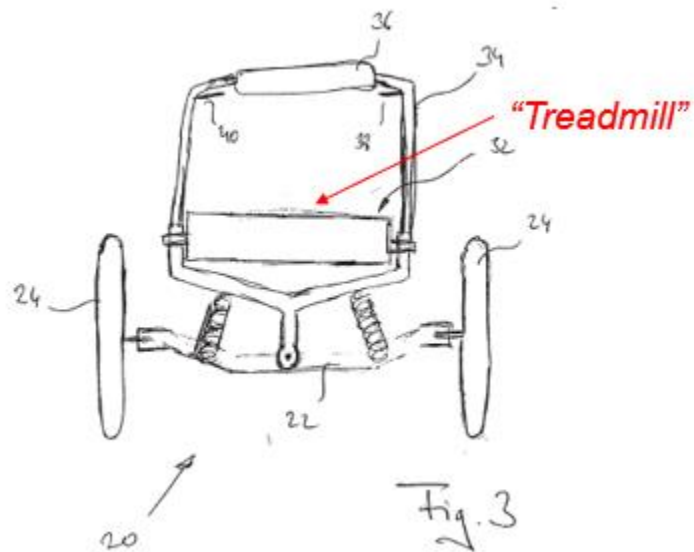
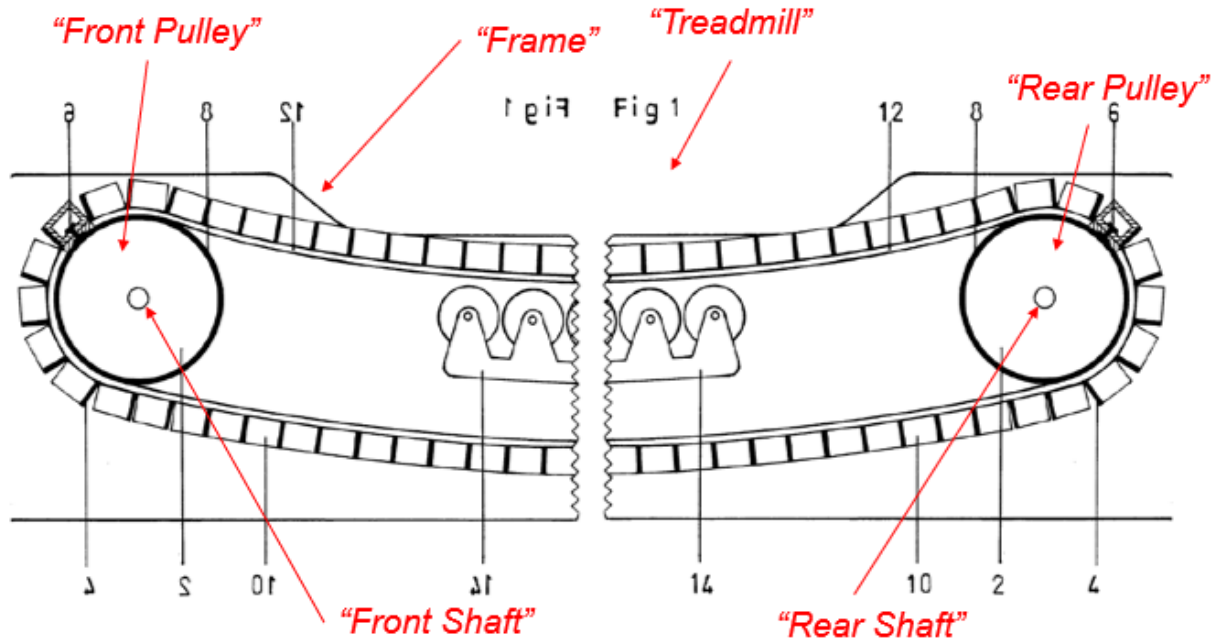
The combination of references also teaches the claim [15.5] limitations: “*a safety device coupled to the frame and the running belt, the safety device having an element [inner race] adapted for rotation relative to the frame in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the element [inner race] is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame.*” (Ex.1003, ¶357)

3. Dependent Claims: 2-4, 6-7

... [2.] ... further comprising a front shaft coupled to frame, the front shaft being adapted to support the at least one front running belt pulley.

... [3.] ... further comprising a rear shaft coupled to frame, the rear shaft being adapted to support the at least one rear running belt pulley.

Tollkien also discloses, in Figure 1, a shaft (“*front shaft*”) extending through the center of the front roller 2 (“*front pulley*”) and a shaft (“*rear shaft*”) extending through the center of the rear roller 2. (Ex.1031, Fig.1.) In Figure 3, Tollkien illustrates the shaft extending from opposing ends of the roller 32 and through holes formed in the frame to couple the roller to the frame for support. (Ex.1031, Fig.3; Ex.1003, ¶¶300-301.)

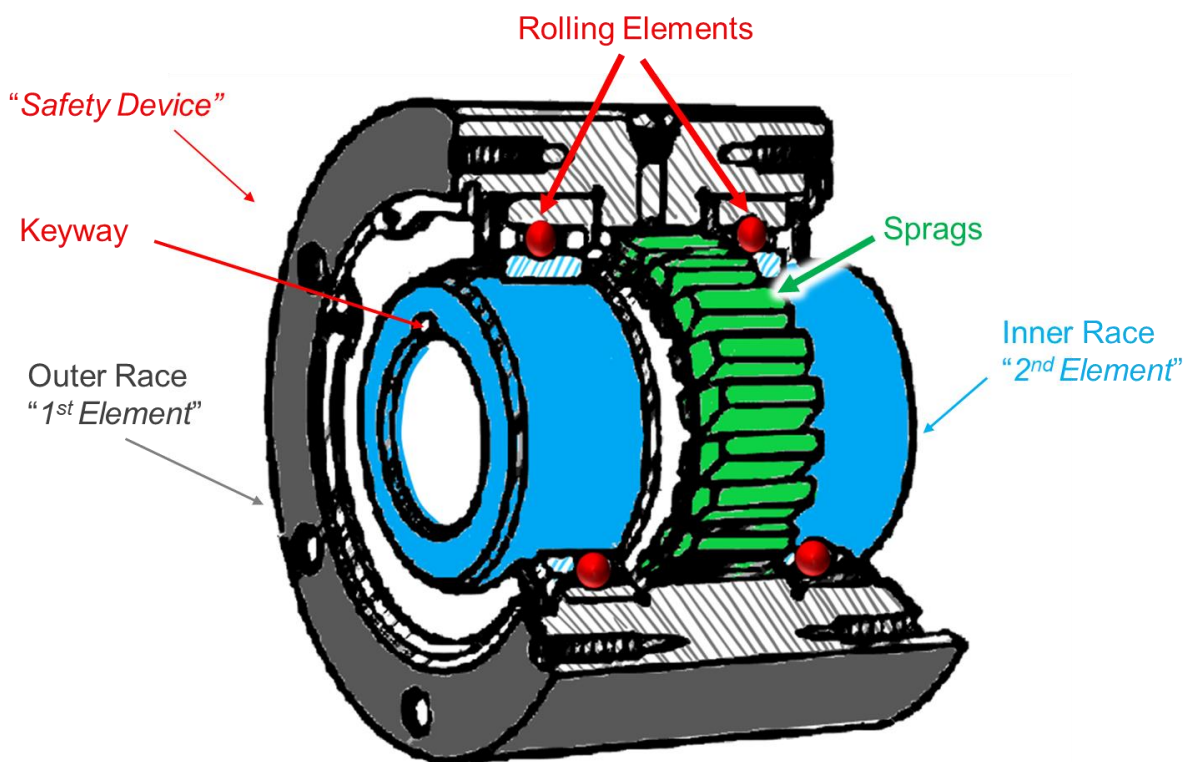


Ex.1031, Figs. 1 and 3 (Annotated)

... [4.] ... wherein the first and second elements of the safety device at least partly form a one-way bearing.

... [12] ... wherein the first and second elements at least partly form a one-way bearing.

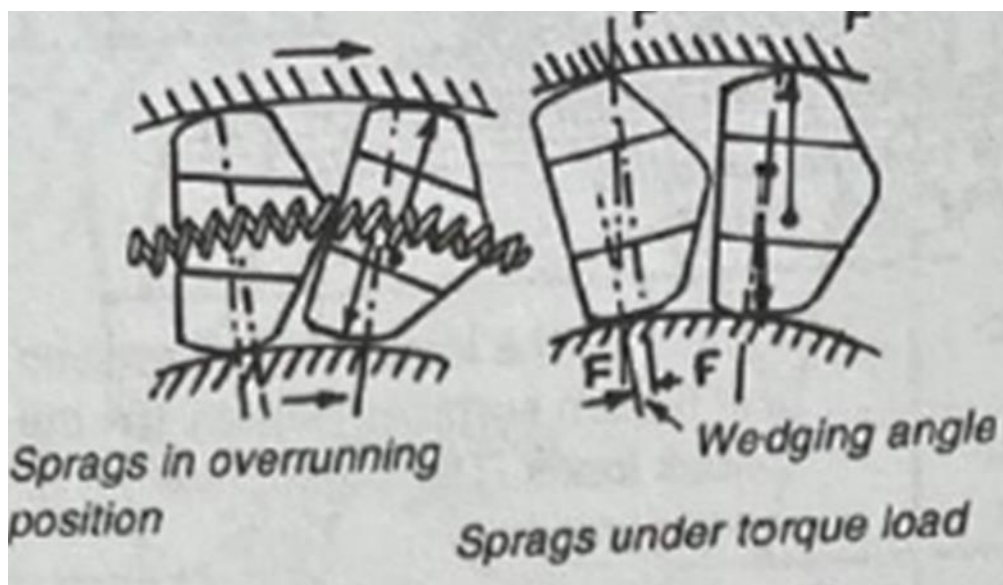
Sclater discloses a one-way bearing assembly. (Ex.1017, 312.) As illustrated below, Sclater discloses that the sprag-type one-way bearing assembly includes sprags that are disposed between an inner race (“second element”) and an outer race (“first element”). (Ex.1003, ¶¶303, 345-346.)



Ex.1017, 318

Sclater discloses that the sprags have a “sprag profile, which is composed of two nonconcentric curves of different radius” that provide “a locking ramp.”

(Ex.1017, 312.) Sclater further discloses that “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.” (Ex.1017, 318.) The bearing assembly is a “one-way bearing” due to the interaction of the sprags, rolling elements (balls), and the races. (Ex.1003, ¶304-305.)

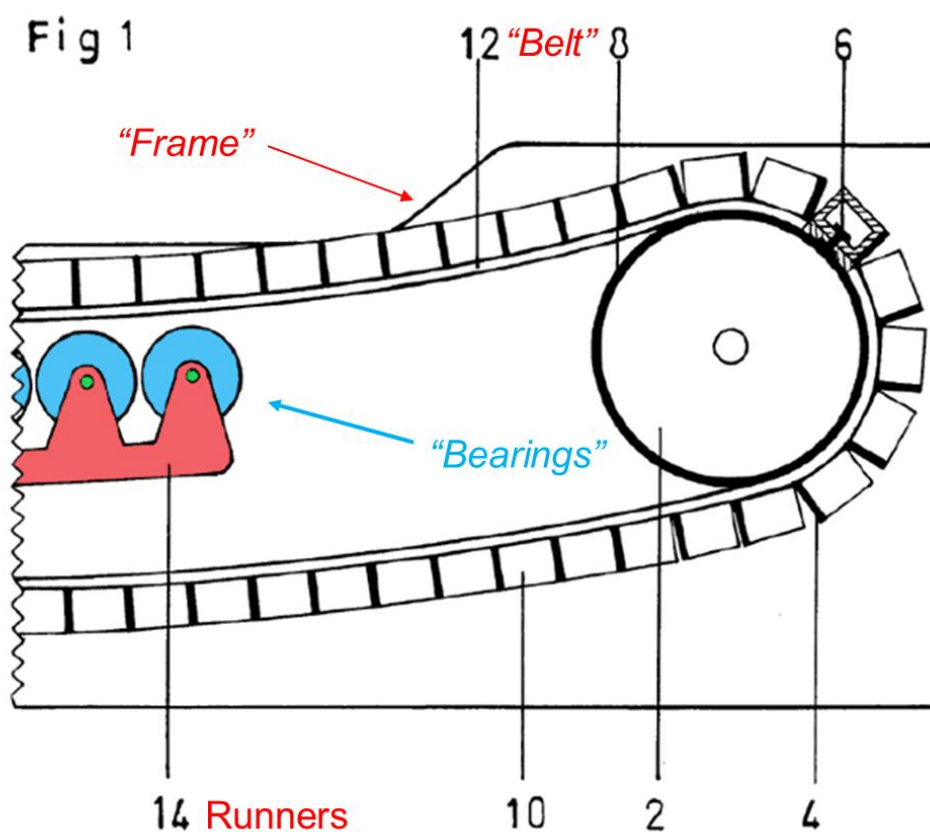


Ex.1017, 318

... [6.]/[13]/[16] ... **further comprising a plurality of bearings coupled to the frame, [wherein] at least one bearing of the plurality of bearings configured to at least partially support the running belt.**

Tollkien discloses runners 14 that support a middle portion of the belt 12: “The runners 14 placed underneath the running surface prevent the belt from bouncing when in use.” (Ex.1031, [0020].) As shown in Fig. 1, the runners 14 include a base or support structure (annotated in red) that supports a plurality of

bearings (annotated in blue). The bearings are supported for rotation relative to the support structure by a plurality of axles (annotated in green). The bearings are arranged underneath the running belt 12 and are configured to engage the underside of the running belt 12 to provide support and to prevent bouncing of the belt. (Ex.1003, ¶¶307, 348-349, 363-364.)



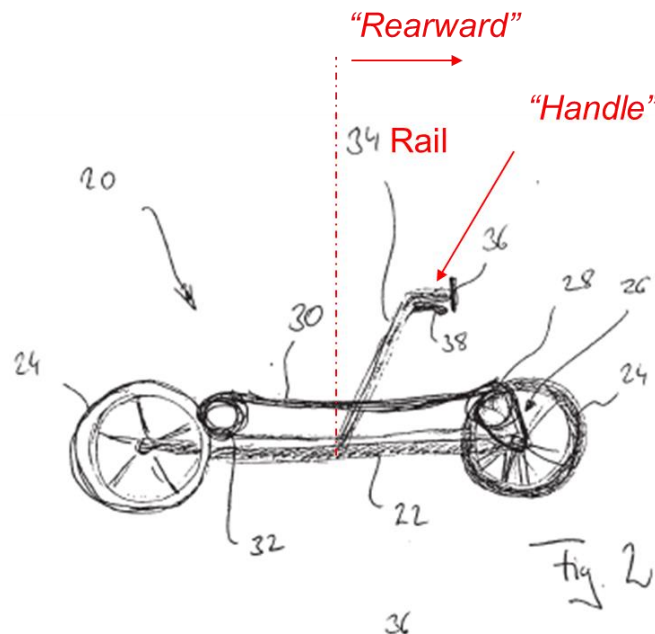
Ex.1031, Fig.1 (Annotated)

A POSA would have understood that the runners 14 are mounted and fixed to the frame and the bearings are mounted for rotation about the axels and relative

to the frame to provide rolling engagement with the continuous belt 12. (Ex.1003, ¶¶308-309.)

... [7.] ... further comprising a rearwardly extending handle coupled to the frame.

Tollkien discloses a rail 34 having left and right side handles that are attached to the chassis 22. The handles are used to control the vehicle and to support or “brace” the user during operation. (Ex.1031, [0022], [0026].) As illustrated in Figure 2, the handles extend “rearwardly.” A POSA would have understood that the treadmill frame is mounted to the chassis 22. (Ex.1003, ¶¶311-313.)



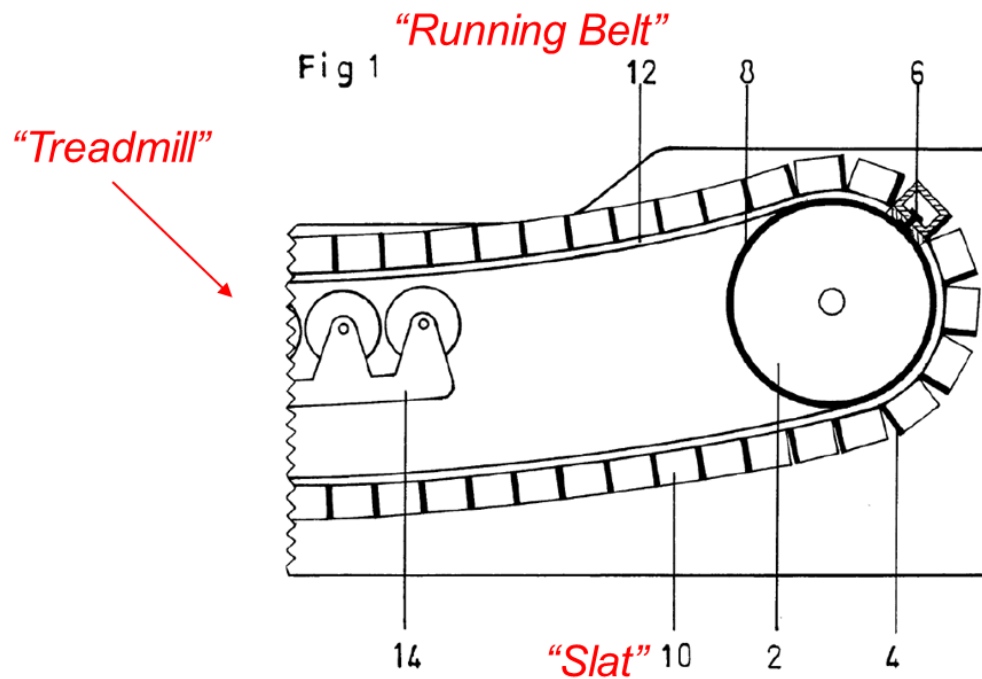
Ex.1031, Fig.2 (Annotated)

A POSA would have understood that the rails could be used to support or

brace a user of the treadmill, even during use without the vehicle. A POSA would have known that handrails were a common feature to prevent a user from falling off of a treadmill. (Ex.1003, ¶¶73-77.) For example, Socwell discloses that “exercise treadmills of the prior art may furnish a user with an upright handle to grasp while exercising.” (Ex.1011, 2:56-58.) Additionally, certain standards required handrails, e.g., “[a]ll treadmills shall be equipped with a handrail for user support during use to assist in dismount.” (ASTM Standard, Ex.1019, 3-4.) Therefore, Tollkien discloses, “a rearwardly extending handle [side handles of rail 34] coupled to the frame.” (Ex.1003, ¶¶314-315.)

... [8] ... *wherein the running belt includes at least one slat.*

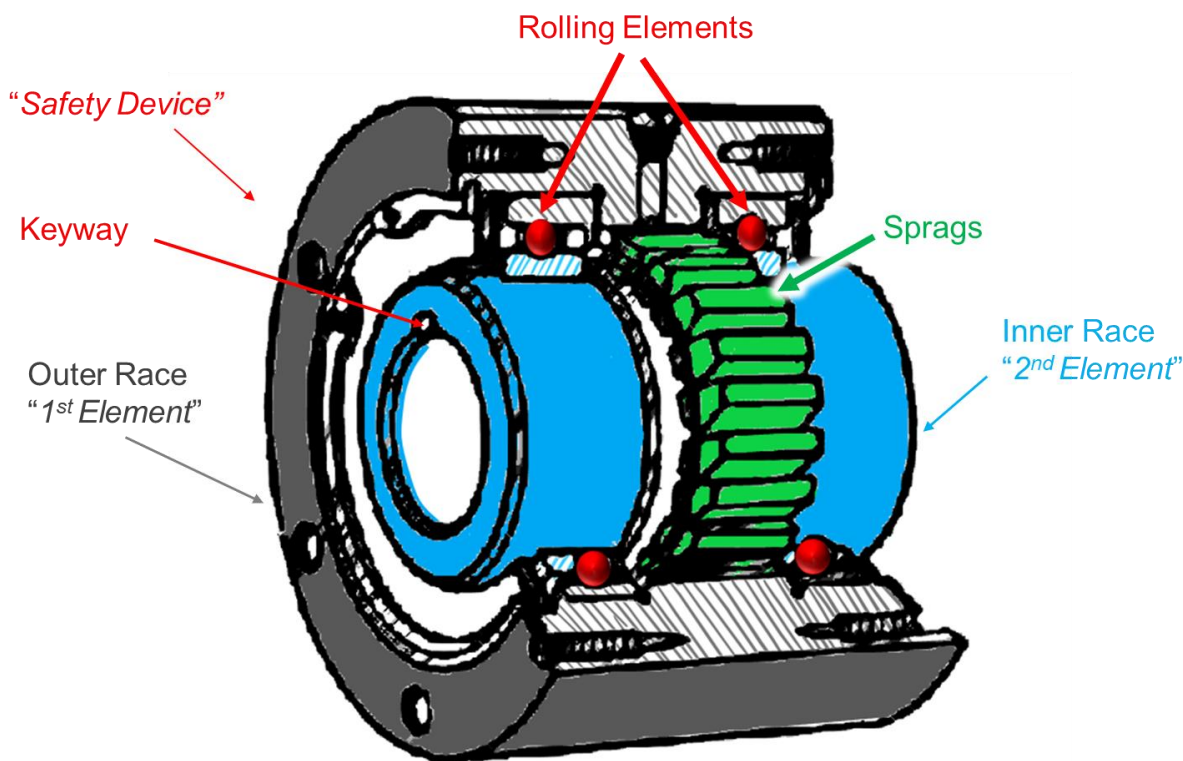
Tollkien discloses that the belt 12 includes cross members 10 (“*slat(s)*”) that form a running surface: “The running surface is formed by cross members 10 that are transverse to the direction of movement, which are attached with rivets 6 to a continuous belt 12.” (Ex.1031, [0018]; Ex.1003, ¶¶317-318.)



Ex.1031, Fig.1 (Annotated)

... [10] ... wherein only one of the first and second elements is freely rotatable relative to the frame.

The inner race of Sclater's one-way bearing is fixed to one of Tollkien's rollers 2, 2 and the outer race is fixed to Tollkien's frame 12. (Ex.1003, ¶337.)



Ex.1017, 318 (Annotated)

Sclater discloses that the inner race defines a center hole that is sized to receive a shaft and defines a keyway on the inner diameter. The keyway is a traditional means for coupling the inner race to a shaft via a key. Sclater further discloses that this sprag-type bearing assembly functions as a one-way bearing by providing “one-direction only torque transmission in an overrunning clutch.” (Ex.1017, 312; Ex.1003, ¶338.)

Sclater further discloses that the:

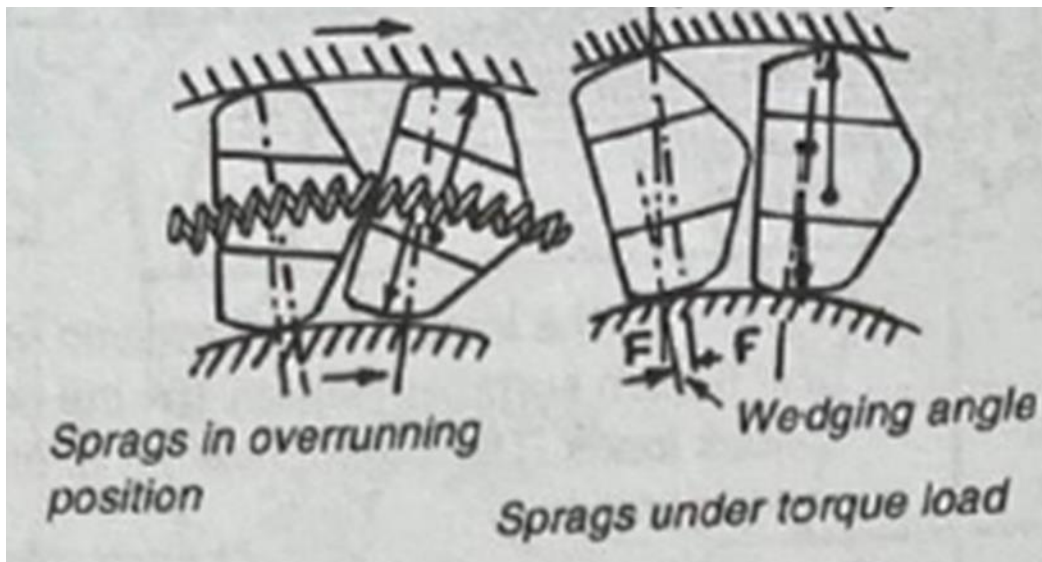
Precision sprags act as wedges and are made of hardened alloy steel.

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.

(Ex.1017, 318.)

The belt 12 (“*running belt*”) is coupled to the inner race (“*second element*”) through the front roller 2 or the rear roller 2. As illustrated in the figure below on the left, the belt 12 and the inner race rotate in a first direction relative to the outer race (“*first element*”) to freewheel or overrun. However, as illustrated in the figure below on the right, wedging or interference between the sprags and the inner and outer race prevents rotation of the inner race in an opposite direction, which prevents the belt 12 from moving forward. (Ex.1003, ¶339-340.)



Ex.1017, 318

By overrunning, the inner race “freely rotates” relative to the frame. Thus, the combination of Tollkien and Sclater disclose, “*wherein only one of the first and*

second elements [inner race] is freely rotatable relative to the frame.” (Ex.1003, ¶341).

... [11] ... wherein the treadmill is non-motorized.

Tollkien discloses that the “treadmill is powered by either a motor or the user.” (Ex.1031, [0002]). With reference to Figure 1, Tollkien discloses “a side view of part of a treadmill without a motor” i.e., “*non-motorized*.” (Ex.1031, [0018]; Ex.1003, ¶343).

VIII. Objective Indicia of Nonobviousness

Petitioner is not aware of any evidence of alleged secondary considerations of non-obviousness having nexus to the challenged claims. (Ex.1003, ¶366.)

IX. Discretionary Considerations Favor Institution

A. The *Fintiv* Factors Strongly Favor Institution

The *Fintiv* factors strongly favor institution. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (P.T.A.B. Mar. 20, 2020) (precedential); see June 21, 2022 Memorandum: Interim Procedure for Discretionary Denials in AIA Post Grant Proceedings with Parallel District Court Litigation (“June 2022 Memo”).

Factor 1 is neutral or favors institution. No motion for stay has been filed and the court has not indicated whether it would grant any such motion. Because the Board typically “will not attempt to predict how the district court in the related district court litigation will proceed,” *Sand Revolution II, LLC v. Continental*

Intermodal Group – Trucking LLC, IPR2019-01393, Paper 24 at 7 (P.T.A.B. June 16, 2020) (informative), factor 1 carries little weight here.

Factor 2 strongly favors institution. The co-pending litigation in S.D. California is progressing very slowly and is still in its early stages. Discovery is ongoing and while a Markman Hearing was held in April 2023, the court has not yet issued a claim construction order. Further, the court has not scheduled any dates – i.e., no discover cutoff or summary judgement dates – beyond the Markman Hearing date. No trial date has been set, and the median time to trial for civil actions in S.D. California is 45.4 months. (Ex.1023, 69; June 2022 Memo at 3.) Thus, the earliest trial would likely occur (if at all) is in early 2026—over six months after the projected final decision here. *See Mylan Pharms. Inc. v. Bayer Pharma Aktiengesellschaft*, IPR2022-00517, Paper 15 at 8-9 (P.T.A.B. Aug. 9, 2022) (evaluating median time to trial for factor 2).

Factor 3 strongly favors institution. By institution, neither the parties nor the S.D. California court will have invested significant resources in the litigation. As noted above, the court has not issued a scheduling order beyond the Markman Hearing, or any substantive rulings (e.g., claim construction, dispositive motion), and the parties have not yet conducted any depositions.

Factors 4 and 5 strongly favor institution. Petitioner stipulates that, if the Board institutes this Petition, Petitioner will not raise at trial in parallel litigation

any Ground raised here. Petitioner's stipulation mitigates concerns for duplicating efforts and inconsistent conclusions.

Factor 6 strongly favors institution. The Petition's merits are strong. (June 2022 Memo at 3-5.) Additionally, under factor 6: (1) the Board is best suited to address the technical issues raised here; (2) a decision on the merits at institution may aid the parties in resolving their dispute; and (3) determining patentability will benefit the public, providing a complete record and rationale absent from a jury verdict form.

Holistically, the *Fintiv* factors strongly favor institution.

B. The *Advanced Bionics* Factors Favor Institution

Denial under §325(d) is not warranted. Sclater is not cited on the '005 Patent. While Socwell and Tollkien are cited on the '005 Patent, they are cited along with over 450 other references,⁶ and were not applied to the Challenged Claims or otherwise analyzed. "The Board has consistently declined exercising its discretion under Section 325(d) when the only fact a Patent Owner can point to is that a reference was disclosed to the Examiner during the prosecution." *Amgen Inc. v. Alexion Pharms., Inc.*, IPR2019-00739, Paper 15, 62 (P.T.A.B. Aug. 30, 2019);

⁶ Patentee filed four Information Disclosure Statements citing 479 references. (Ex.1002, 124, 131, 136, and 148.)

Amazon.com, Inc. v. M2M Solutions LLC, IPR2019-01205, Paper 14, 15-16 (P.T.A.B. Jan. 27, 2020) (instituting IPR where “the prosecution history record shows that the various IDSs include at least about a few hundred references” and “[n]othing in the record indicate[d] that the Examiner substantively considered ... the prior art”); *id.* at 16 (“[A] reference that ‘was neither applied against the claims nor discussed by the Examiner’ does not weigh in favor of exercising the Board’s discretion under §325(d) to deny a petition.” (citations omitted)). Therefore, the combinations of references applied in this Petition were not applied, nor cumulative with, the references applied during Examination.

Moreover, the Office was not presented with the expert report of Dr. Giachetti, which explains how Sclater discloses the added claim language forming the basis for allowing the challenged claims and why the challenged claims are obvious in view of this new combination including Sclater. (Ex.1003.) The ‘005 Patent cites Dr. Giachetti’s expert reports from prior litigation (Ex.1002, 114, 115) but those reports are directed to different patents and different combinations of references than those presented here, none analyze Sclater nor the challenged claims. Additionally, the Examiner did not apply or otherwise analyze Dr. Giachetti’s prior expert reports.

Magid is cited on the ‘005 Patent and was applied by the Examiner. Examination of the ‘005 Patent focused on the “*safety device*” limitations of issued

claims 1, 9, and 15. (Ex.1001.) The Examiner correctly determined (and the Patentee capitulated by narrowing its claims) that Magid discloses the broad “*safety device*” limitations and that it would have been obvious to combine the safety device in known manual curved treadmills. (Ex.1002 at 202, 274-277.)

The Patent Office, however, erred by failing to recognize the added “*substantially surrounds*” limitations and subsequent wherein clause were just a verbose way of claiming a conventional sprag-type one-way bearing assembly arranged in a backstop mode of operation. *Advanced Bionics, LLC v. MED-EL Electromedizinische Geräte GmbH*, IPR2019-01469, Paper 6, p. 8, n.9 (PTAB Feb. 13, 2020) (precedential) (“An example of a material error may include misapprehending or overlooking specific teachings of the relevant prior art where those teachings impact patentability of the challenged claims.”).

It is clear from the above Grounds that Sclater discloses the supposed point of novelty; therefore, discretionary denial is not warranted. *See Quasar Science LLC, v. Colt Int’l Clothing, Inc.*, IPR2023-00614, Paper 8 at 9 (PTAB Oct. 12, 2023) (“Thus, the evidence cited in the Petition demonstrates that the Office overlooked the prior art’s teachings of the limitations that were the basis for allowing the challenged claims. As a result, we decline to exercise our discretion under § 325(d) to deny the Petition.”).

X. Conclusion

There is a reasonable likelihood that Petitioner will prevail on claims 1-4, 6-13, and 15-16 of the '005 Patent. *Inter partes* review should be instituted for all Challenged Claims.

Respectfully submitted,

Dated: October 24, 2023

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Certificate of Service

The undersigned hereby certifies that the foregoing **PETITION FOR INTER PARTES REVIEW UNDER 35 U.S.C. § 311 ET SEQ. AND 37 C.F.R. § 42.100 ET SEQ. (U.S. PATENT NO. 11,465,005)**, including all exhibits and supporting evidence, was served by overnight courier in its entirety on **October 24, 2023**, upon the following correspondence address as shown for the '005 Patent:

26371 - FOLEY & LARDNER LLP 3000 K STREET N.W. SUITE 600 WASHINGTON, DC 20007-5109 UNITED STATES

The undersigned also certifies that on the same date a courtesy copy was served in its entirety on the following parties via electronic service:

Richard J. McKenna Foley & Lardner LLP 777 East Wisconsin Avenue Milwaukee, WI 53202 Direct Line: 414-297-5723 Fax: 414-297-4900 Email: rmckenna@foley.com USPTO Reg. No. 35,610	Kadie M. Jelenchick Foley & Lardner LLP 777 East Wisconsin Avenue Milwaukee, WI 53202 Direct Line: 414-319-7324 Fax: 414-297-4900 Email: kjelenchick@foley.com
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Respectfully submitted,

Dated: October 24, 2023

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Certificate of Compliance Pursuant to 37 C.F.R. § 42.24

This paper complies with the type-volume limitation of 37 C.F.R. § 42.24. The paper contains 13,935 words, excluding the parts of the paper exempted by §42.24(a).

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

Respectfully submitted,

Dated: October 24, 2023

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Appendix A

A. Listing of All Challenged Claims

[1.0]	1. A manually powered treadmill, comprising:
[1.1]	a frame;
[1.2]	at least one front running belt pulley coupled to the frame;
[1.3]	at least one rear running belt pulley coupled to the frame and spaced a distance from the at least one front running belt pulley;
[1.4]	a running belt at least partially supported by at least one of the at least one front running belt pulley and the at least one rear running belt pulley, wherein the running belt includes a running surface, at least a portion of which is curved;
[1.5]	a safety device coupled to the frame and the running belt, the safety device having a first element and a second element, the first element substantially surrounding the second element or the second element substantially surrounding the first element;
[1.6]	wherein one of the first and second elements of the safety device and the running belt freely rotate in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the one of the first and second elements is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame.
[2.]	The manually powered treadmill of claim 1, further comprising a front shaft coupled to frame, the front shaft being adapted to support the at least one front running belt pulley.
[3.]	The manually powered treadmill of claim 1, further comprising a rear shaft coupled to frame, the rear shaft being adapted to support the at least one rear running belt pulley.
[4.]	The manually powered treadmill of claim 1, wherein the first and second elements of the safety device at least partly form a one-way bearing.
[6.]	The manually powered treadmill of claim 1, further comprising a plurality of bearings coupled to the frame, at least one bearing of the plurality of bearings configured to at least partially support the running belt.

[7.]	The manually powered treadmill of claim 1, further comprising a rearwardly extending handle coupled to the frame.
[8.]	The manually powered treadmill of claim 1, wherein the running belt includes at least one slat.
[9.]	A treadmill, comprising:
[9.1]	a frame;
[9.2]	a rotatable element coupled to the frame;
[9.3]	a running belt at least partially supported by the rotatable element, wherein the running belt includes a running surface, at least a portion of which is curved; and
[9.4]	a first element and a second element, both of which are coupled to the running belt, and wherein the first element substantially surrounds the second element or the second element substantially surrounds the first element;
[9.5]	wherein one of the first and second elements and the running belt freely rotate in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the one of the first and second elements is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame.
[10]	The treadmill of claim 9, wherein only one of the first and second elements is freely rotatable relative to the frame.
[11]	The treadmill of claim 9, wherein the treadmill is non-motorized.
[12]	The treadmill of claim 9, wherein the first and second elements at least partly form a one-way bearing.
[13]	The treadmill of claim 9, further comprising a plurality of bearings coupled to the frame, at least one bearing of the plurality of bearings configured to at least partially support the running belt.

[15]	A manually powered treadmill, comprising:
[15.1]	a frame;
[15.2]	at least one front running belt pulley coupled to the frame;
[15.3]	at least one rear running belt pulley coupled to the frame and spaced a distance from the at least one front running belt pulley;
[15.4]	a running belt at least partially supported by at least one of the at least one front running belt pulley and the at least one rear running belt pulley, wherein the running belt includes a running surface, at least a portion of which is curved; and
[15.5]	a safety device coupled to the frame and the running belt, the safety device having an element adapted for rotation relative to the frame in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the element is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame; and
[15.6]	wherein the safety device includes another element, wherein one of the element and the another element substantially surrounds the other of the element and the another element.
[16]	The manually powered treadmill of claim 15, further comprising a plurality of bearings coupled to the frame, wherein at least one bearing in the plurality of bearings at least partially supports the running belt.

Appendix B

A. Comparison of Independent Claims

[1.0] A manually powered treadmill, comprising:	[9.0] A treadmill, comprising:	[15.0] A manually powered treadmill, comprising:
[1.1] a frame;	[9.1] a frame;	[15.1] a frame;
[1.2] at least one front running belt pulley coupled to the frame;	[9.2] a rotatable element coupled to the frame;	[15.2] at least one front running belt pulley coupled to the frame;
[1.3] at least one rear running belt pulley coupled to the frame and spaced a distance from the at least one front running belt pulley;	N/A	[15.3] at least one rear running belt pulley coupled to the frame and spaced a distance from the at least one front running belt pulley;
[1.4] a running belt at least partially supported by at least one of the at least one front running belt pulley and the at least one rear running belt pulley, wherein the running belt includes a running surface, at least a portion of which is curved;	[9.3] a running belt at least partially supported by the rotatable element, wherein the running belt includes a running surface, at least a portion of which is curved; and	[15.4] a running belt at least partially supported by at least one of the at least one front running belt pulley and the at least one rear running belt pulley, wherein the running belt includes a running surface, at least a portion of which is curved; and
[1.5] a safety device coupled to the frame and the running belt, the safety device having a first element and a second element, the first element substantially surrounding the second element or the second element substantially surrounding the first element;	[9.4] a first element and a second element, both of which are coupled to the running belt, and wherein the first element substantially surrounds the second element or the second element substantially surrounds the first element;	[15.6] wherein the safety device includes another element, wherein one of the element and the another element substantially surrounds the other of the element and the another element.

[1.6] wherein one of the first and second elements of the safety device and the running belt freely rotate in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the one of the first and second elements is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame.	[9.5] wherein one of the first and second elements and the running belt freely rotate in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the one of the first and second elements is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame.	[15.5] a safety device coupled to the frame and the running belt, the safety device having an element adapted for rotation relative to the frame in a first direction of rotation relative to the frame, however, in a second direction of rotation, opposite the first direction of rotation, the element is substantially prevented from rotation relative to the frame to substantially prevent or resist rotation of the running belt relative to the frame; and
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B. Comparison of Dependent Claims

Depending from Claim 1	Depending from Claim 9	Depending from Claim 15
[2] The manually powered treadmill of claim 1, further comprising a front shaft coupled to frame, the front shaft being adapted to support the at least one front running belt pulley.		
[3] The manually powered treadmill of claim 1, further comprising a rear shaft coupled to frame, the rear shaft being adapted to support the at least one rear running belt pulley.		
[4] The manually powered treadmill of claim 1, wherein the first and second elements of the safety device at least partly form a one-way bearing.	[12] The treadmill of claim 9, wherein the first and second elements at least partly form a one-way bearing.	
[6] The manually powered treadmill of claim 1, further comprising a plurality of bearings coupled to the frame, at least one bearing of the plurality of bearings configured to at least partially support the running belt.	[13] The treadmill of claim 9, further comprising a plurality of bearings coupled to the frame, at least one bearing of the plurality of bearings configured to at least partially support the running belt.	[16] The manually powered treadmill of claim 15, further comprising a plurality of bearings coupled to the frame, wherein at least one bearing in the plurality of bearings at least partially supports the running belt.

[7] The manually powered treadmill of claim 1, further comprising a rearwardly extending handle coupled to the frame.		
[8] The manually powered treadmill of claim 1, wherein the running belt includes at least one slot.		
	[10] The treadmill of claim 9, wherein only one of the first and second elements is freely rotatable relative to the frame.	
	[11] The treadmill of claim 9, wherein the treadmill is non-motorized.	