PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	**24 June 2022**
Applicant's or agent's file reference **G185-0001WO1**	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2022/020919	**18 March 2022**	**19 March 2021**

International Patent Classification (IPC) or both national classification and IPC
H04N 5/262(2006.01)i; **H04N 9/75**(2006.01)i; **H04N 5/06**(2006.01)i; **G03B 15/05**(2006.01)i; **G03B 17/56**(2006.01)i; **A63B 22/02**(2006.01)i; **A63B 22/00**(2006.01)i

Applicant
GUERTIN, Matthew

1. This opinion contains indications relating to the following items:
   - [✓] Box No. I Basis of the opinion
   - [ ] Box No. II Priority
   - [ ] Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - [ ] Box No. IV Lack of unity of invention
   - [✓] Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
   - [ ] Box No. VI Certain documents cited
   - [ ] Box No. VII Certain defects in the international application
   - [✓] Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

   If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

   If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

   For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/KR	Date of completion of this opinion	Authorized officer
Korean Intellectual Property Office **189 Cheongsa-ro, Seo-gu, Daejeon, 35208**	**24 June 2022**	**YANG, JEONG ROK**
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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
   - [✓] the international application in the language in which it was filed.
   - [ ] a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. [ ] This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(b)).

3. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
   - a. [ ] forming part of the international application as filed:
     - [ ] in the form of an Annex C/ST.25 text file.
     - [ ] on paper or in the form of an image file.
   - b. [ ] furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
   - c. [ ] furnished subsequent to the international filing date for the purposes of international search only:
     - [ ] in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).
     - [ ] on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. [ ] In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

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Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-20	YES
	Claims	NONE	NO
Inventive step (IS)	Claims	14-16,18	YES
	Claims	1-13,17,19-20	NO
Industrial applicability (IA)	Claims	1-20	YES
	Claims	NONE	NO

2. Citations and explanations :

Reference is made to the following documents:

D1: US 2019-0307982 A1 (NEWTON VR LTD.) 10 October 2019
D2: KR 10-2020-0091594 A (LEANTECH CMS CO., LTD.) 31 July 2020
D3: US 2017-0129105 A1 (KENNETH DEAN STEPHENS, JR.) 11 May 2017
D4: US 2015-0150522 A1 (GEORGE PAPAIOANNOU) 04 June 2015
D5: KR 10-2021-0023190 A (SO, HO SUNG et al.) 04 March 2021

I. Novelty and Inventive Step (PCT Article 33(2) and (3))

1. Claims 1-13

1.1. Claim 1

D1, which is considered to be the closest prior art to the subject matter of claim 1, discloses a motorized treadmill comprising: a linear treadmill belt located on a rotatable surface; and a base upon which a user may walk in all directions with the user's motion uninhibited, wherein the base includes a surface, on which the user contacts the base, with an underlying support (see paragraphs [0180], [0201], [0218] and figure 14A).

Claim 1 differs from D1 in one or more sources of vibration for providing selected vibration to one or more locations on a belt. However, the different feature can be easily derived from the feature of D2 considering a plurality of vertically driven cylinders that allow vibration to be transmitted to specific positions of the treadmill (see paragraphs [0018]-[0019]).

Therefore, claim 1 is considered to lack an inventive step over a combination of D1, D2.

1.2. Claims 2-13

The additional feature of claim 2 can be easily derived from the feature of D2 considering that a control unit controls the operation of the vibrating treadmill (see paragraph [0018]).

The additional feature of claim 3 can be easily derived from the feature of D2 considering that the vertical motion part for generating vibration of the treadmill includes a vertical drive cylinder, an elastic body, and a support plate (see paragraph [0041]).

The additional feature of claim 4 can be easily derived from the feature of D1 considering a controller in communication with the force applying unit, the controller for controlling the amount of positive or negative force to simulate a predetermined force (see paragraph [0055]).

The additional feature of claim 5 can be easily derived from the feature of D2 considering a plurality of vertically driven cylinders that allow vibration to be transmitted to specific positions of the treadmill (see paragraphs [0018]-[0019]).

The additional feature of claim 6 can be easily derived from the feature of D2 considering that the vibration of the earthquake output through the VR device is transmitted to the vibrating treadmill through wired/wireless communication between the vibrating treadmill and the VR device (see paragraph [0016]).

The additional feature of claim 7 can be easily derived from the feature of D1 considering that the omnidirectional treadmill surface is removable (see paragraph [0198]).

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

The additional features of claims 8-9 can be easily derived from the feature of D1 considering that the linear treadmill is located on the rotatable surface which is rotated by one or more actuators (see paragraph [0218]).

The additional feature of claim 10 can be easily derived from the feature of D1 considering within the base are actuators or other lift and/or retraction members, placed at various locations beneath the surface, to raise and depress the surface, resulting in changes, e.g., elevations, in the surface (see paragraph [0192]).

The additional feature of claim 11 can be easily derived from the feature of D1 considering that a batter provides power to all of the electrical components of the omnidirectional treadmill (see paragraph [0210]).

The additional feature of claim 12 can be easily derived from the feature of D1 considering a user wearing a virtual reality headset (see paragraph [0228]).

The additional feature of claim 13 can be easily derived from the feature of D1 considering that one of the advantages of such a harness design is that it can conform to a very wide range of user shapes and sizes with minimal adjustment (see paragraph [0271]).

Therefore, claims 2-13 are considered to lack an inventive step over a combination of D1, D2.

2. Claims 14-16

None of the cited documents disclose the features of claim 14: “wherein the treadmill base is configured to support the user thereon and wherein the treadmill base remains stationary, and the user movement is confined to a surface area of the belt, and the illusion of unrestricted movement is created”. And claim 14 is not obvious to a person skilled in the art from the documents individually or in any combination.

Claims 15-16 are dependent on claim 14.

Therefore, claims 14-16 are novel and involve an inventive step.

3. Claims 17-20

3.1. Claim 17

D1, which is considered to be the closest prior art to the subject matter of claim 17, discloses a method of creating the illusion of movement comprising: providing a linear treadmill belt located on a rotatable surface (see paragraphs [0201], [0218] and figure 14A).

Claim 17 differs from D1 in controlling a speed of an endless track; controlling a direction of the endless track by rotating a turntable; and synching movement of a camera with a real-world speed of the endless track and a distance traveled by a track. However, the different feature can be easily derived from the feature of D1 considering that cameras and sensors are used for tracking the user's motion and physiological parameters, wherein the parameters include position, distance, speed, acceleration, force, energy (see paragraphs [0212], [0245]).

Therefore, claim 17 is considered to lack an inventive step over D1.

3.2. Claims 18-20

The additional feature of claim 18 is not disclosed in any of the documents, nor is it obvious to a person skilled in the art over the documents individually or in combination.

The additional feature of claim 19 can be easily derived from the feature of D1 considering a user wearing a virtual reality headset (see paragraph [0228]).

The additional feature of claim 20 can be easily derived from the feature of D1 considering that cameras and sensors are used for tracking the user's motion and physiological parameters, wherein the parameters include position, distance, speed, acceleration, force, energy (see paragraphs [0212], [0245]).

Therefore, claims 19-20 are considered to lack an inventive step over D1, and claim 18 is novel and involves an inventive step.

II. Industrial Applicability (PCT Article 33(4))

Claims 1-20 are industrially applicable.

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The term “the scene” in claims 6, 18 has not been previously defined. Therefore, claims 6, 18 are not clear, contrary to the requirements of PCT Article 6.

The term “the user” in claim 20 has not been previously defined. Therefore, claim 20 is not clear, contrary to the requirements of PCT Article 6.