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(54) **RESISTANCE ROLLER FOR TRAINING BENCHES**

(57) The roller (1) incorporates an electric motor (5) housed therein, which generates a mechanical torque by means of the electromagnetic energy that It produces, which Is connected to a programmable electronic board (6) that is also Integrated Inside the roller (1), allowing the same to be connected to a device with controls. The electronic board (6), which acts as an interface depending on the speed, is provided with: wireless electronic communication in order to connect to other devices, as well as an LED lighting system (12), a speaker (10), and temperature-control software. It has wiring (8) with external connectors, which emerges from a tube (9) provided in one of the two ends (1a) extending from the roller.

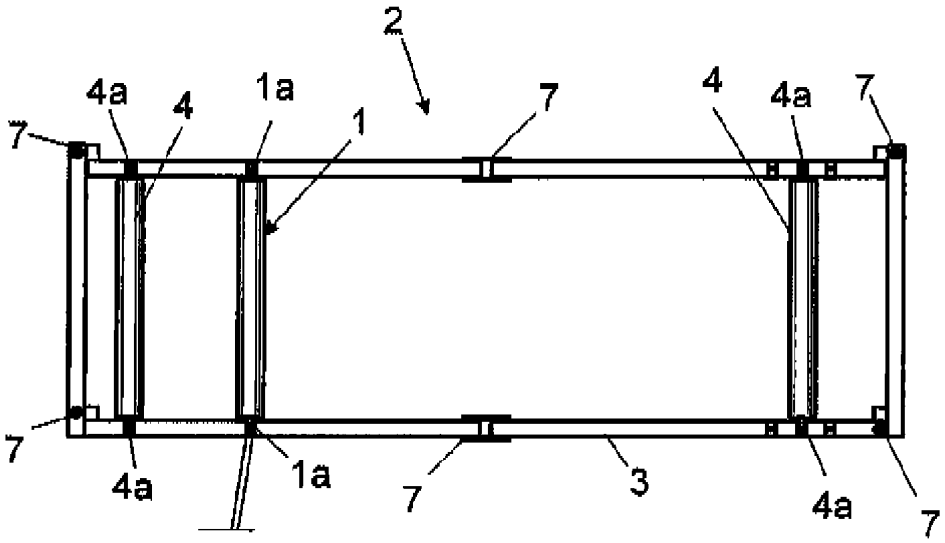

FIG. 1

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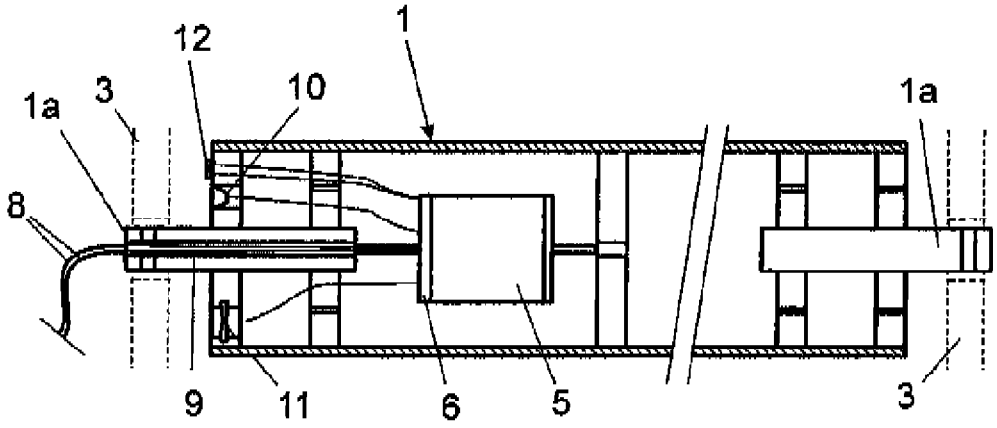

FIG. 2

Description

OBJET OF THE INVENTION

[0001] The invention, as stated in the title of the present specification, relates to a resistance roller for training benches, which provides several advantages and innovative characteristics inherent to the particular configuration thereof, which shall be described in more detail below and which amount to a notable novelty in the current state of the art.

[0002] The object of the present Invention specifically consists of a roller of the type that is incorporated in training benches, and which, next to other parallel ones, provide the rolling surface upon which, for example, a bicycle rolls or to which a treadmill may be coupled, etc., with the particular feature that, among other advantages, said roller is structurally designed to Incorporate a small electric motor therein to generate mechanical torque by means of the electromagnetic energy that it produces, thereby achieving that the resistance force that provides the desired level of training is performed directly through the roller itself, avoiding the existence of external mechanical elements or devices.

FIELD OF APPLICATION OF THE INTENTION

[0003] The field of application of the present invention falls within the industry sector dedicated to the manufacture of sporting accessories, particularly focusing on the field of roller benches.

BACKGROUND OF THE INVENTION

[0004] As a reference to the current state of the art, It must be noted that In most roller benches currently on the market as a training element, the mechanical toque or resistance force that Is applied to better simulate the conditions of traditional use is generally performed by means of the use of systems and mechanisms based on magnetic resistance that also generally constitute large elements that are coupled to one of the rollers of the bench or substitute one of said rollers.

[0005] In any case, the problem with current systems is the complexity and the space or volume they occupy, the aim of the present invention being the development of a roller for this type of bench that avoids such drawbacks.

[0006] Furthermore, it must be noted that the applicant is unaware of the existence of any other resistance roller or invention with a similar application for benches, which has a number of similar technical, structural and constituent characteristics.

SUMMARY OF THE INVENTION

[0007] Thus, the resistance roller for training benches proposed by the Invention, amounts to a noteworthy novelty within its field of application, since by employing it one may satisfactorily reach the aforementioned objectives, the characterising details that make it possible and set it apart being duly recorded in the claims included at the end of the present specification.

[0008] Specifically, what the invention proposes Is, as previously mentioned, a roller that is incorporated in static training benches, and to which a mechanism is connected in order to generate mechanical torque and offer a resistance force for training, thereby enabling the user to control the level of said resistance in every instance, as desired for their training.

[0009] More specifically, the roller of the invention is of the type that couples to a support structure next to another or other parallel rollers, providing the rolling surface upon which the wheels of a bicycle installed thereon roll, or to which a rolling belt for running may be coupled.

[0010] The proposed roller has as an essential feature the fact that it internally Incorporates a small electric motor capable of generating mechanical torque by means of the electromagnetic energy It produces.

[0011] Likewise, and according to another feature of the Invention, the aforementioned roller is provided with an electronic board or microprocessor that enables wireless electronic communication with which to connect to other devices.

[0012] The roller Is, however, provided with external connectors with which to connect different devices.

[0013] Moreover, said electronic board is programmable in order to make the roller activate the generation and communication system after a few seconds of rotation at a speed greater than a previously established rpm.

[0014] Optionally, the roller is equipped with an acoustic system to inform the user of different characteristics, via the incorporation of a small speaker and of corresponding software in the electronic board or by means of the connection thereof to an external device suitable for reproducing the messages.

[0015] Alternatively or additionally to said acoustic system for informing the user of different characteristics, the roller is also equipped with a lighting system for the same informative purpose via the preferred incorporation of LEDs and of corresponding software in the electronic board or by means of the connection thereof to an external device suitable for reproducing the messages.

[0016] Also optionally, the invention takes Into conslderatlon that the roller may have an internal ventilation system with which to cool the internal elements.

[0017] Likewise and also optionally, the roller enables the physical communication with the user and vice versa via the variation of the rotation speed or acceleration of the roller applied both by the user and by the roller itself, such that the electronic board acts as an interface with the user.

[0018] According to another option, the roller also has a safety system in case the motor exceeds a certain temperature, stopping the generation of energy, for which the electronic board incorporates specific software that

permanently controls the temperature of the motor and automatically disconnects when it exceeds a certain previously established limit.

[0019] Additionally, the roller may enable the energy generated to be reused for other purposes, via the connection thereof to the corresponding elements and devices, for example as ventilation for the user, lighting in the promises or energy storage in a battery.

[0020] The main advantages provided by the roller of the invention as a technical solution are:

- Lower volume and weight of the system for generating a mechanical torque than traditional magnetic resistance systems incorporated in accessory elements.
- Enables energy to be stored and used for other purposes along with the corresponding energy savings.
- It is ecological, since by harnessing the energy it prevents the use of energies from polluting sources.
- It enables communication with the device without the need for another complementary system.
- The experience in the simulation of an effort profile is improved.

[0021] The described resistance roller for training benches therefore consists of an innovative structure with structural and constituent features heretofore unknown for their intended purpose, reasons which, taken together with its usefulness, provide it with sufficient grounds for obtaining the requested exclusivity privilege.

DESCRIPTION OF THE DRAWINGS

[0022] To complement the present description, and for the purpose of helping to make the characteristics of the invention more readily understandable, the present specification is accompanied by one drawing, constituting an integral part of the same, which by way of illustration and not limitation represents the following:

Figure 1.- shows a plan view of an exemplary static cycling bench of the type the advocated roller is intended for, showing the incorporation of the aforementioned roller therein; and

Figure 2.- shows an enlarged and longitudinal cross-sactional schematic view of an exemplary resistance roller for benches, object of the Invention, showing therein the main parts and elements it comprises, as well as the configuration and arrangement thereof.

PREFERRED EMBODIMENT OF THE INVENTION

[0023] In light of the aforementioned figures and in accordance with the adopted numbering, one may observe therein an example of a preferred, non-limiting embodiment of this roller, which comprises the parts and elements that are indicated and described in detail below.

[0024] Thus, as may be seen in figure 1, the resistance roller (1) in question is intended to be incorporated transversely In a bench (2), a bench of the type comprising a support structure (3) to which, next to said resistance roller (1), one or two additional complementary rollers that rotate freely (4) are incorporated, these being arranged parallel to both ends of the structure and resting on the respective ends thereof (1 a and 4a), such that a bicycle may roll thereon or one may run with a treadmill and on which, whilst the freely rotating rollers (4) do not offer any type of resistance since they rotate freely, the resistance roller (1) Is connected to a mechanism that makes the application of a certain force in order to make it rotate necessary.

[0025] Looking at figure 2, it may be seen how the resistance roller (1) has, in order to provide said force, the mechanism to which It is connected, which consists of a small electric motor (5) housed therein and installed such that It is capable of generating a mechanical torque by means of the electromagnetic energy said motor produces.

[0026] The aforementioned electric motor (5) is also connected to a programmable electronic board (6), which is also integrated inside the roller (1) itself, and via which said roller is provided with wireless electronic communication in order to connect to other devices, for example to a device with commands (not shown) in order for a user to programme and control the operation of the roller.

[0027] In any case, the roller (1) has supply and connection wiring (6) that emerges through a tube (9) provided for this purpose at one of the two ends (1a) extending from the roller that serve as a support to rotate upon the structure (3) of the bench (2). This wiring (8) has external connectors (not shown) with which to connect to different devices.

[0028] Optionally, the resistance roller (1) incorporates, conveniently connected to the electronic board (6), an acoustic system with a speaker (10) and/or a LED lighting system (12) to provide informative message to the user via the corresponding software implemented in the electronic board (6) or by means of the connection thereof to an external device, for example, the aforementioned device with commands.

[0029] Also optionally, the roller is provided with a fan (11) as an internal ventilation system to cool the internal elements and components thereof.

[0030] In the example shown In figure 1, the structure (3) of the bench (2) may be folded via articulated points (7).

[0031] Having thus adequately described the nature of the present invention, as well as how to put it into practice, it Is deemed unnecessary to make this description any longer in order for anyone skilled in the art to understand the scope of the Invention and the advantages deriving therefrom. It must be noted that, within its essential nature, the Invention may be carried out according to other embodiments differing in detail from that set out by way of example, which the protection sought would equally cover, provided that the fundamental principle thereof is

not altered, changed or modified.

Claims

1. A resistance roller for training benches that, being of the type of roller intended to be incorporated transversely in a bench (2), which comprises a support structure (3) to which, next to said resistance roller (1), complimentary freely rotating rollers (4) are incorporated, all being arranged In parallel resting on the respective ends (1a and 4a) thereof, such that a bicycle may roll thereon or one may run with a treadmill, said resistance roller (1) being connected to a mechanism that make the application of a certain force in order to make It rotate necessary, is **characterised in that**, in order to have said force, said roller (1) incorporates an electric motor (5) housed therein, which generates a mechanical torque by means of the electromagnetic energy it produces and **in that** the electric motor (5) is connected to a programmable electronic board (6), which is also integrated in the interior of the roller (1) which enables the same to be connected to a device with commands, in order for a user to programme and control the operation of the roller, or to other devices.

2. The resistance roller for training benches, according to claim 1, **characterised in that** wireless electronic communication to connect to other devices is provided via the electronic board (6).

3. The resistance roller for training benches, according to any of claims 1 to 2, **characterised in that** It has supply and connection wiring (8).

4. The resistance roller for training benches, according to claim 3, **characterised In that** the wiring (8) emerges from a tube (9) provided for this purpose in one of the two ends (1a) extending from the roller that serve as a support to rotate upon the structure (3) of the bench (2).

5. The resistance roller for training benches, according to claims 3 or 4, **characterised in that** the wiring (8) has external connectors to connect different devices.

6. The resistance roller for training benches, according to any of claims 1 to 5, **characterised in that** it Incorporates, connected to the electronic board (6), an acoustic system with a speaker (10) in order to provide Informative messages to the user via the corresponding software implemented in the electronic board (6) or by means of the connection thereof to an external device.

7. The resistance roller for training benches, accordlng to any of claims 1 to 6, **characterised in that** it incorporates, connected to the electronic board (6), a LED lighting system (12) In order to provide informative messages to the user via the corresponding software implemented in the electronic board (6) or by means of the connection thereof to an external device.

8. The resistance roller for training benches, according to any of claims 1 to 7, **characterised in that** It Incorporates a fan (11) as an internal ventilation system to cool the internal elements and components thereof.

9. The resistance roller for training benches, according to any of claims 1 to 8, **characterised in that** the electronic board (6) incorporates software to control the temperature of the motor.

10. The resistance roller for training benches, according to any of claims 1 to 9, **characterised in that** the electronic board (6) acts as an interface as a result of the speed and acceleration variation.

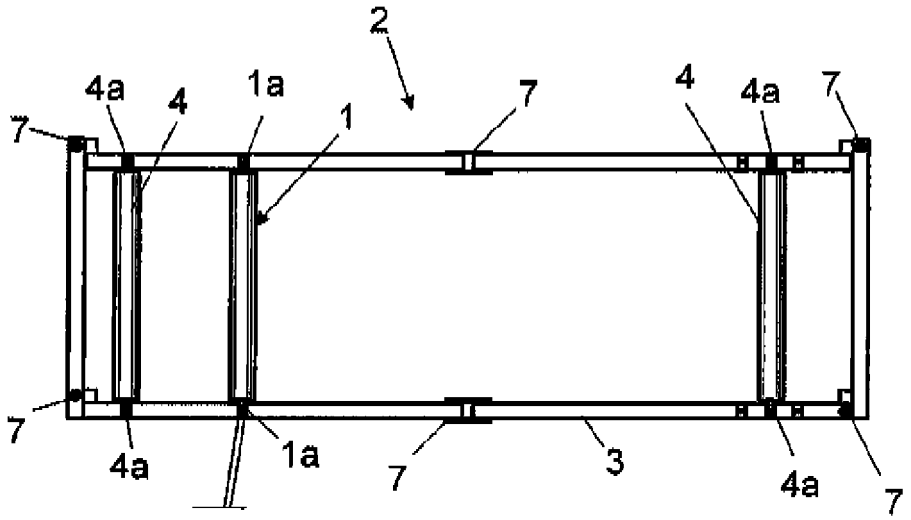

FIG. 1

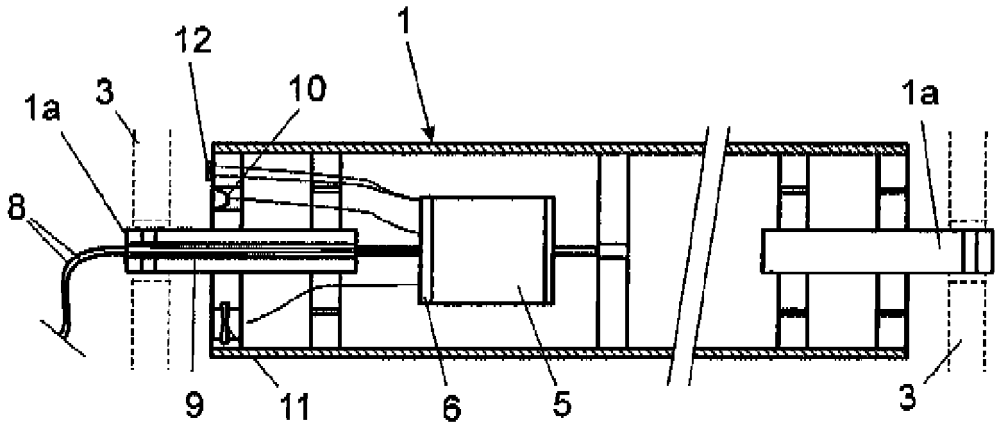

FIG. 2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2014/070875

A. CLASSIFICATION OF SUBJECT MATTER

A63B22/02 (2006.01)
A63B22/20 (2006.01)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A63B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A		2, 11
X	WO 2005039036 A2 (AEC MOTIONSTAR INC ET AL.) 28/04/2005, Abstract, page 7 lines 4 a 7 and figures 1 a 3.	1, 4-6
A		2, 9-11

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance.
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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure use, exhibition, or other means.
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents , such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24/02/2015	**(25/02/2015)**
Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04	Authorized officer A. Martín Moronta Telephone No. 91 3495377

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INTERNATIONAL SEARCH REPORT

International application No.
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C (continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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